Water-Data Report 2011

03072000 DUNKARD CREEK AT SHANNOPIN, PA

Monongahela Basin
Lower Monongahela Subbasin

LOCATION.--Lat 39°45′33″, long 79°58′15″ referenced to North American Datum of 1927, Greene County, PA, Hydrologic Unit 05020005, on left bank 1,300 ft upstream from highway bridge at mine buildings at Shannopin, 1.2 mi north of Dunkard, 3.5 mi upstream from mouth, and 4 mi southwest of Greensboro.

DRAINAGE AREA.--229 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 1940 to current year. Prior to December 1940 monthly discharge only, published in WSP 1305.

REVISED RECORDS.--WSP 1505: 1955.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 806.25 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Satellite telemetry at station.

COOPERATION.--Station established and maintained by the U.S. Geological Survey in cooperation with the U.S. Army Corps of Engineers, Pittsburgh District and the Pennsylvania Department of Environmental Protection.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Gage heights affected by backwater from beaver dam for the period October 1 through November 30. Some regulation at low flow by mine pumpage above station. Several measurements of water temperature were made during the year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft^3/s and (or) maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 1	1030	*7,940	*10.60
Feb 25	1545	4,680	8.92
Feb 28	2200	4,830	9.03
Mar 6	1745	4,550	8.83
Mar 11	0200	5,070	9.19
Apr 5	1415	6,120	9.82
Apr 13	0615	6,270	9.89
Sep 6	2045	5,310	9.35

Minimum discharge, 12 ft^3/s, Oct. 18, 19, (measured on Oct 19, may have been slightly lower during the period); gage height, 3.70, (affected by backwater from beaver dam).

Suggested citation: U.S. Geological Survey, 2012, Water-resources data for the United States, Water Year 2011: U.S. Geological Survey Water-Data Report WDR-US-2011, site 03072000, accessed at http://wdr.water.usgs.gov/wy2011/pdfs/03072000.2011.pdf

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DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	e48	e18	5,020	114	114	2,500	208	544	92	106	70	43
2	e34	e18	1,090	971	1,880	1,070	233	473	86	86	55	61
3	e29	e18	423	524	1,520	680	419	418	76	142	50	51
4	e27	e32	261	325	669	522	450	936	68	162	49	48
5	e31	e40	193	243	496	475	4,130	715	79	126	44	441
6	e52	e29	164	170	495	2,650	1,860	536	79	83	42	2,390
7	e39	e26	143	e133	416	2,090	902	444	75	67	887	2,750
8	e28	e23	120	e103	569	1,150	636	377	79	87	452	687
9	e24	e22	95	e96	e345	1,190	630	318	85	230	253	437
10	e21	e21	92	e81	e307	3,610	530	266	79	148	374	296
11	e19	e19	90	e82	e254	3,910	463	263	111	98	293	237
12	e17	e19	106	e80	e232	1,780	751	240	99	95	155	240
13	e17	e19	449	e71	e196	1,090	4,480	249	83	89	108	191
14	e15	e19	308	e62	e218	767	1,680	236	65	75	99	146
15	e17	e26	e157	e58	234	605	932	311	56	65	192	532
16	e14	e36	e124	e57	211	547	1,060	333	52	58	205	708
17	e13	e54	e108	e55	204	476	1,930	308	55	51	196	360
18	e12	e36	e92	e63	230	415	990	1,700	306	49	120	247
19	e12	e27	e75	e94	233	370	1,290	2,180	489	149	93	185
20	e25	e24	e68	e178	182	318	2,710	928	552	167	88	174
21	e17	e21	e65	e142	217	303	1,160	591	280	99	74	182
22	e15	e20	e62	e115	1,410	434	769	434	164	69	68	154
23	e14	e20	e60	e109	854	424	946	341	119	134	76	154
24	e14	e20	e56	e102	633	406	1,270	277	98	175	61	274
25	e16	e93	e54	e108	2,960	349	1,220	232	84	154	66	243
26	e20	e200	e51	e112	1,750	302	985	193	74	192	96	192
27	e30	e98	e46	e118	873	267	915	175	68	144	93	254
28	e23	e62	e45	e119	2,410	238	1,260	172	382	92	66	412
29	e21	e48	e46	e111	---	208	1,030	159	314	69	58	306
30	e19	e243	51	e106	---	186	701	129	154	58	47	275
31	e19	---	55	e103	---	199	---	104	---	69	42	---
Total	702	1,351	9,769	4,805	20,112	29,531	36,540	14,582	4,403	3,388	4,572	12,670
Mean	22.6	45.0	315	155	718	953	1,218	470	147	109	147	422
Max	52	243	5,020	971	2,960	3,910	4,480	2,180	552	230	887	2,750
Min	12	18	45	55	114	186	208	104	52	49	42	43
Cfsm	0.10	0.20	1.38	0.68	3.14	4.16	5.32	2.05	0.64	0.48	0.64	1.84
In.	0.11	0.22	1.59	0.78	3.27	4.80	5.94	2.37	0.72	0.55	0.74	2.06

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2011, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	71.4	168	334	432	509	635	470	339	184	94.3	78.2	79.9
Max	381	1,149	1,071	1,243	1,100	1,475	1,218	903	877	461	890	573
(WY)	(1955)	(1986)	(1991)	(2005)	(1956)	(1994)	(2011)	(1968)	(1981)	(1996)	(1980)	(1975)
Min	1.73	2.44	7.46	26.5	63.5	112	80.9	57.4	10.2	4.62	2.45	2.38
(WY)	(1952)	(1954)	(1954)	(1967)	(1954)	(1987)	(1971)	(1986)	(1966)	(1962)	(1962)	(1999)

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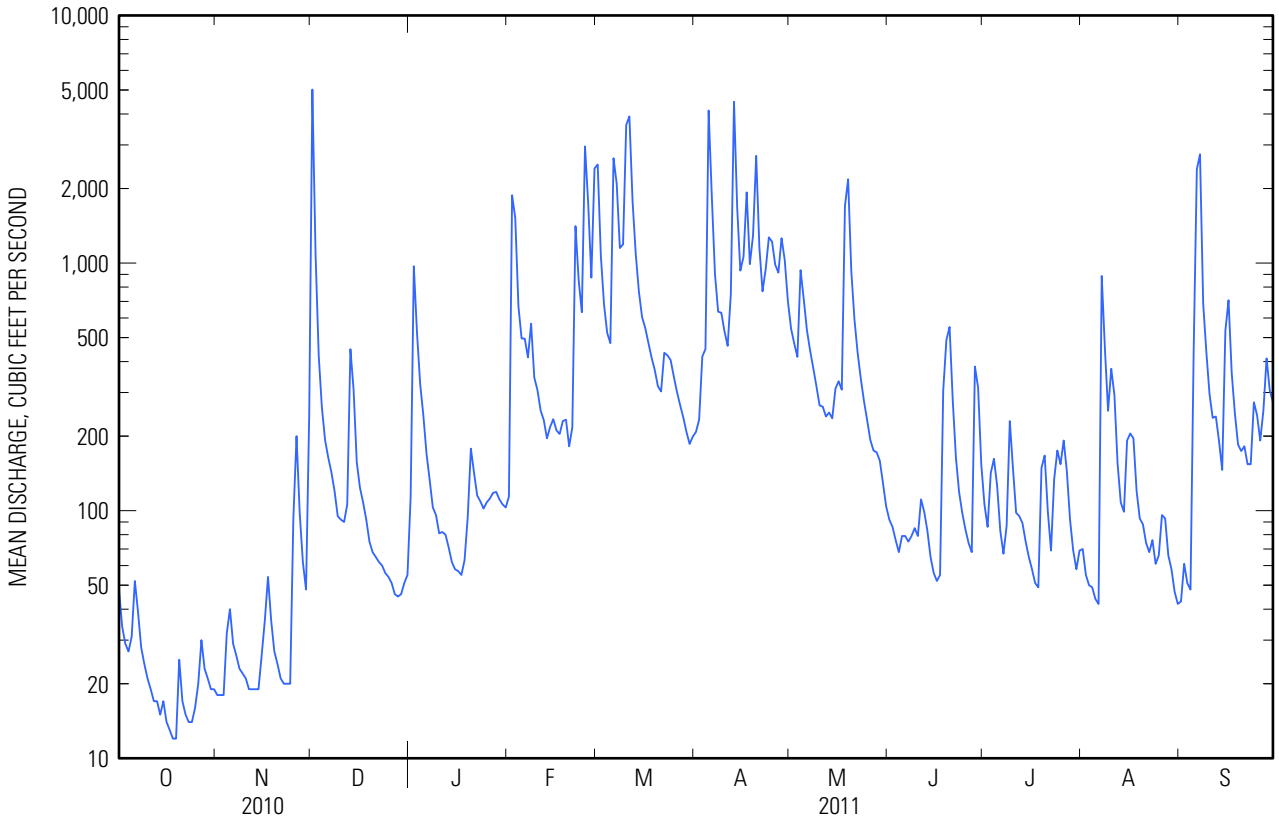
SUMMARY STATISTICS

	Calendar Year 2010		Water Year 2011		Water Years 1941 - 2011	
Annual total	96,200.2		142,425			
Annual mean	264		390		282	
Highest annual mean					462	1994
Lowest annual mean					104	1954
Highest daily mean	5,020	Dec 1	5,020	Dec 1	11,200	Mar 5, 1963
Lowest daily mean	[a]5.9	Sep 10	[a]12	Oct 18[b]	0.50	Aug 27, 1944
Annual seven-day minimum	[c]6.0	Sep 6	[c]14	Oct 13	0.73	Aug 25, 1944
Maximum peak flow			7,940	Dec 1	[d]17,600	Aug 18, 1980
Maximum peak stage			10.60	Dec 1	14.27	Aug 18, 1980
Instantaneous low flow			[e]12	Oct 18[b]	0.40	Aug 28, 1944
Annual runoff (cfsm)	1.15		1.70		1.23	
Annual runoff (inches)	15.63		23.14		16.75	
10 percent exceeds	571		987		688	
50 percent exceeds	85		149		101	
90 percent exceeds	9.7		25		8.6	

[a] Estimated.
[b] Also October 19.
[c] Computed using estimated daily discharges.
[d] From rating curve extended above 16,000 ft³/s.
[e] Measured on October 19. Lower flows may have occurred during the estimated period.



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WATER-QUALITY RECORDS

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

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.

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 2010 TO SEPTEMBER 2011

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)	Osmotic pressure, water, unfiltered, milliosmoles per kilogram (82550)	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)
10-21-2010	**1200**	461	11.9	--	7.5	7.5	3,990	3,970	10.5	3,400
11-17-2010	**1400**	639	10.3	60	7.4	7.7	4,320	4,430	9.2	3,770
12-16-2010	**1330**	132	14.0	24	7.6	7.8	1,660	1,720	.3	1,210
02-24-2011	**1030**	642	13.3	10	7.4	7.8	682	685	3.5	420
03-28-2011	**1300**	235	13.2	21	7.3	7.6	1,440	1,460	7.1	1,030
04-27-2011	**1445**	929	10.3	8.0	7.1	7.5	574	543	17.2	334
05-24-2011	**1415**	272	10.4	16	7.8	8.0	1,200	1,250	20.2	898
06-22-2011	**1430**	157	8.7	18	7.9	7.9	1,450	1,480	24.0	1,050
07-27-2011	**1415**	135	10.8	21	8.2	8.3	1,720	1,700	25.3	1,200
08-17-2011	**1330**	178	9.8	14	8.3	8.3	--	1,320	22.8	912
09-21-2011	**1400**	185	11.1	12	8.0	7.9	1,540	1,540	17.7	1,100

03072000 DUNKARD CREEK AT SHANNOPIN, PA—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011
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	Hardness, water, mg/L as $CaCO_3$ (00900)	Suspended solids, water, unfiltered, mg/L (00530)	Calcium, water, unfiltered, recoverable, mg/L (00916)	Magnesium, water, unfiltered, recoverable, mg/L (00927)	Sodium, water, unfiltered, recoverable, mg/L (00929)	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)
10-21-2010	**1200**	930	22	250	74.1	--	87	.5	87.5	204
11-17-2010	**1400**	980	< 5	260	81.0	760	109	.8	113	2,340
12-16-2010	**1330**	260	6	67.1	21.1	233	81	.4	62.2	674
02-24-2011	**1030**	140	14	39.1	11.1	81.0	60	.2	33.3	217
03-28-2011	**1300**	260	12	67.0	23.5	224	78	.4	50.6	601
04-27-2011	**1445**	140	12	36.9	10.9	63.1	71	.1	15.9	172
05-24-2011	**1415**	240	< 5	60.9	20.3	168	97	.3	42.3	471
06-22-2011	**1430**	280	16	72.0	24.6	206	100	.3	38.3	553
07-27-2011	**1415**	2,200	22	821	27.1	261	106	.3	48.1	684
08-17-2011	**1330**	260	22	68.0	20.6	193	102	.2	36.0	491
09-21-2011	**1400**	300	< 5	77.8	25.2	236	114	.4	51.6	609

WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011
Part 3 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	Ammonia, water, unfiltered, mg/L as N (00610)	Nitrate, water, unfiltered, mg/L as N (00620)	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)	Barium, water, unfiltered, recoverable, µg/L (01007)	Copper, water, unfiltered, recoverable, µg/L (01042)
10-21-2010	**1200**	< .020	1.63	< .040	< .01	.022	1.9	1,000	--	10
11-17-2010	**1400**	.460	.96	< .200	.02	.029	1.7	500	M	M
12-16-2010	**1330**	.470	.74	.060	.02	.060	1.4	400	M	< 4
02-24-2011	**1030**	.170	.74	< .040	.02	.035	1.1	600	M	< 4
03-28-2011	**1300**	.220	.34	< .200	< .01	.023	.84	700	M	M
04-27-2011	**1445**	.060	.24	< .040	< .01	.033	.52	600	M	< 4
05-24-2011	**1415**	.060	.25	< .040	.01	.026	.42	500	M	< 4
06-22-2011	**1430**	.090	.61	.060	.01	.056	1.0	800	M	30
07-27-2011	**1415**	.030	.78	< .040	.02	.046	1.3	800	M	< 4
08-17-2011	**1330**	.050	.92	< .040	< .01	.043	1.4	900	M	M
09-21-2011	**1400**	.090	.59	< .040	< .01	.016	.93	400	M	< 4

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WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

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	Iron, water, unfiltered, recoverable, µg/L (01045)	Lead, water, unfiltered, recoverable, µg/L (01051)	Manganese, water, unfiltered, recoverable, µg/L (01055)	Nickel, water, unfiltered, recoverable, µg/L (01067)	Strontium, water, unfiltered, recoverable, micrograms per liter (01082)	Zinc, water, unfiltered, recoverable, µg/L (01092)	Boron, water, unfiltered, recoverable, micrograms per liter (01022)	Selenium, water, unfiltered, µg/L (01147)
10-21-2010	**1200**	640	< 1.0	320	< 50	--	20	--	--
11-17-2010	**1400**	460	< 1.0	210	< 50	1,360	< 10	210	< 7
12-16-2010	**1330**	480	M	100	< 50	610	< 10	< 200	< 7
02-24-2011	**1030**	560	M	60	< 50	260	10	< 200	< 7
03-28-2011	**1300**	1,180	< 1.0	150	< 50	470	10	< 200	< 7
04-27-2011	**1445**	1,100	< 1.0	100	< 50	240	10	< 200	< 7
05-24-2011	**1415**	480	< 1.0	100	< 50	480	< 10	< 200	< 7
06-22-2011	**1430**	750	< 1.0	160	< 50	570	< 10	< 200	< 7
07-27-2011	**1415**	960	< 1.0	150	< 50	600	< 10	< 200	< 7
08-17-2011	**1330**	950	< 1.0	110	< 50	500	< 10	< 200	< 7
09-21-2011	**1400**	420	< 1.0	80	< 50	560	< 10	< 200	< 7