01536000 LACKAWANNA RIVER AT OLD FORGE, PA

Upper Susquehanna Basin
Upper Susquehanna-Lackawanna Subbasin

LOCATION.--Lat 41°21′33″, long 75°44′41″ referenced to North American Datum of 1927, Lackawanna County, PA, Hydrologic Unit 02050107, on right bank 100 ft downstream from bridge on SR 3017, 150 ft upstream from Delaware-Lackawanna-Western Railroad bridge in Old Forge, and 0.5 mi upstream from St. Johns Creek.

DRAINAGE AREA.--332 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 1938 to current year.

REVISED RECORDS.--WSP 1432: 1939(M), 1940, 1945. WDR PA-90-2: 1985(M).

GAGE.--Water-stage recorder. Datum of gage is 595.26 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1974, to Aug. 17, 1975, non-recording gage at site 150 ft upstream at different datum. Satellite and landline telemetry at station.

COOPERATION.--Station established and maintained by the U.S. Geological Survey. Funding for the operation of this station is provided by the Pennsylvania Department of Environmental Protection and the U.S. Geological Survey through the Cooperative Water Program.

REMARKS.--Records good, except those for estimated daily discharges, which are poor. Flow regulated since December 1959 by Stillwater Dam (station 01534180) about 33 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 01536000, accessed at http://wdr.water.usgs.gov/wy2013/pdfs/01536000.2013.pdf

01536000 LACKAWANNA RIVER AT OLD FORGE, PA—Continued

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

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	127	1,280	189	424	1,650	451	363	272	203	2,000	101	95
2	194	973	187	387	1,320	385	377	250	206	1,860	161	105
3	215	766	197	358	1,000	346	354	236	177	1,220	111	122
4	239	651	200	342	762	318	323	214	156	827	97	94
5	229	564	251	324	621	299	310	201	144	605	89	83
6	206	494	230	311	548	290	292	191	136	523	83	78
7	186	443	218	304	465	279	279	185	169	405	79	73
8	173	401	349	287	437	289	265	213	199	347	79	72
9	155	364	351	285	432	277	258	341	161	306	389	72
10	146	332	346	290	373	293	285	335	204	280	447	66
11	137	312	446	291	378	323	492	375	616	258	517	399
12	130	300	433	394	382	1,300	495	480	421	222	358	400
13	117	631	387	602	355	1,870	508	449	709	215	386	227
14	111	622	353	1,010	349	1,440	478	388	1,990	202	283	155
15	118	496	328	1,110	334	1,050	429	328	1,250	179	211	119
16	109	429	313	1,020	347	837	384	294	836	159	173	108
17	105	380	324	785	310	685	410	262	610	146	153	97
18	105	343	581	639	263	577	377	237	467	130	129	87
19	1,590	321	714	502	280	569	382	226	380	121	119	81
20	1,050	304	619	478	271	543	736	216	313	114	111	75
21	792	290	3,010	436	241	482	571	204	271	105	101	117
22	577	272	2,330	e407	224	433	505	191	239	148	171	254
23	466	255	1,750	e286	231	395	443	274	217	202	116	115
24	501	247	1,300	e288	232	368	412	347	223	175	101	93
25	446	231	1,000	e281	228	363	407	363	223	139	88	85
26	403	217	780	e298	221	357	365	262	256	116	118	80
27	370	220	728	315	328	354	333	221	371	104	158	84
28	339	216	604	337	483	351	309	293	5,530	175	108	81
29	552	203	542	444	---	342	297	331	2,270	139	113	71
30	1,460	193	511	875	---	333	290	280	1,810	142	124	66
31	1,340	---	446	2,340	---	327	---	231	---	111	98	---
Total	12,688	12,750	20,017	16,450	13,065	16,526	11,729	8,690	20,757	11,675	5,372	3,654
Mean	409	425	646	531	467	533	391	280	692	377	173	122
Max	1,590	1,280	3,010	2,340	1,650	1,870	736	480	5,530	2,000	517	400
Min	105	193	187	281	221	277	258	185	136	104	79	66

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1959, BY WATER YEAR (WY) (PRIOR TO REGULATION)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	305	503	600	512	531	986	1,195	814	454	360	303	229
Max	1,618	1,199	1,260	1,047	1,263	1,652	2,614	1,750	866	1,375	1,448	778
(WY)	(1956)	(1956)	(1939)	(1949)	(1939)	(1945)	(1958)	(1947)	(1946)	(1947)	(1955)	(1945)
Min	106	122	169	166	160	526	368	262	188	125	130	116
(WY)	(1942)	(1942)	(1942)	(1944)	(1940)	(1941)	(1946)	(1941)	(1955)	(1955)	(1954)	(1943)

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SUMMARY STATISTICS

	Water Years 1939 - 1959	
Annual mean	566	
Highest annual mean	781	1956
Lowest annual mean	401	1944
Highest daily mean	14,000	Aug 19 1955
Lowest daily mean	73	Sep 26 1943
Annual seven-day minimum	87	Oct 8 1943
Maximum peak flow	[a]31,000	Aug 19 1955
Maximum peak stage	[b]20.05	Aug 19 1955
Instantaneous low flow	54	Sep 1 1957
Annual runoff (cfsm)	1.70	
Annual runoff (inches)	23.16	
10 percent exceeds	1,200	
50 percent exceeds	340	
90 percent exceeds	138	

[a] From rating curve extended above 3,800 ft³/s on basis of slope-area measurements of peak flow at gage heights 15.30 ft and 20.05 ft.
[b] From floodmark.
c Also Sep 2.

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2013, BY WATER YEAR (WY)

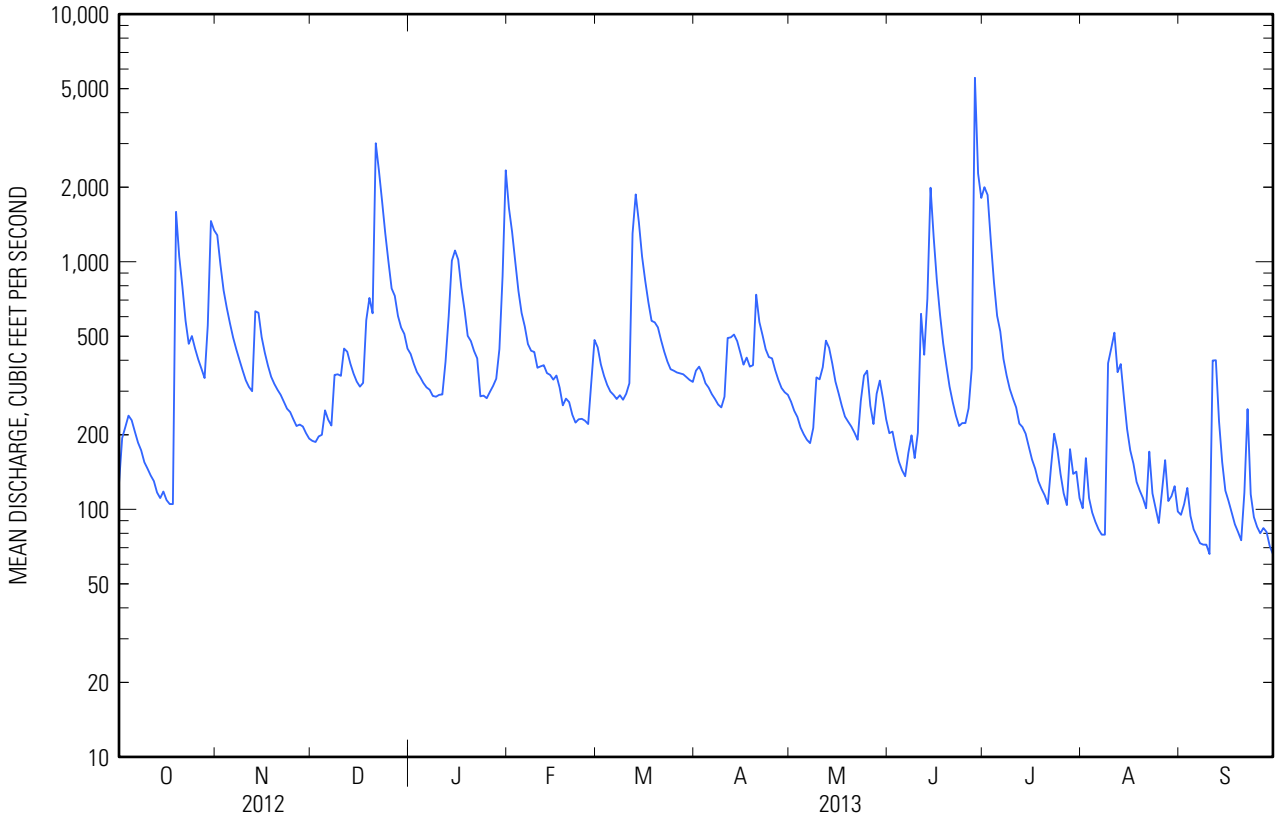
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	317	430	529	469	492	828	894	580	393	194	162	243
Max	1,276	1,223	1,414	1,521	1,218	1,767	2,712	1,658	1,498	566	526	1,856
(WY)	(1978)	(1973)	(1997)	(1996)	(2008)	(1977)	(1993)	(1989)	(2003)	(1984)	(2009)	(2011)
Min	37.3	45.2	76.2	61.4	88.7	234	353	192	69.8	46.4	42.8	33.4
(WY)	(1965)	(1965)	(1999)	(1981)	(1980)	(2006)	(1985)	(2001)	(1962)	(1965)	(2005)	(2005)

SUMMARY STATISTICS

	Calendar Year 2012		Water Year 2013		Water Years 1960 - 2013	
Annual total	135,405		153,373			
Annual mean	370		420		460	
Highest annual mean					784	2011
Lowest annual mean					194	1965
Highest daily mean	3,010	Dec 21	5,530	Jun 28	15,000	Sep 18, 2004
Lowest daily mean	54	Jul 14	66	Sep 10[a]	23	Sep 5, 1999
Annual seven-day minimum	60	Jul 11	77	Sep 4	25	Sep 19, 2005
Maximum peak flow			[b]8,360	Jun 28	[b,c]24,000	Sep 27, 1985
Maximum peak stage			8.43	Jun 28	16.70	Sep 18, 2004
10 percent exceeds	656		782		1,080	
50 percent exceeds	284		309		260	
90 percent exceeds	91		109		67	

[a] Also Sep 30.
[b] From rating curve extended above 3,800 ft³/s on basis of slope-area measurements at gage heights 15.30 ft, 16.49 ft and 20.05 ft.
[c] At gage height 16.49 ft, from outside floodmark.

01536000 LACKAWANNA RIVER AT OLD FORGE, PA—Continued



01536000 LACKAWANNA RIVER AT OLD FORGE, PA—Continued

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. Occasionally, values for filtered parameters may exceed values for the corresponding unfiltered parameter. These results are within the limits of analytical precision and methods.

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 2012 TO SEPTEMBER 2013

Part 1 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; <, less than; M, presence verified but not quantified]

Date	Sample start time	Discharge, instantaneous, ft^3/s (00061)	Dissolved oxygen, water, unfiltered, mg/L (00300)	Osmotic pressure, water, unfiltered, millios-moles per kilogram (82550)	pH, water, unfiltered, field, standard units (00400)	pH, water, unfiltered, laboratory, standard units (00403)	Specific conduc-tance, water, unfiltered, laboratory, µS/cm at 25°C (90095)	Specific conduc-tance, water, unfiltered, µS/cm at 25°C (00095)	Tempera-ture, water, °C (00010)	Dissolved solids dried at 180°C, water, filtered, mg/L (70300)
11-19-2012	**1330**	321	13.5	< 1.0	7.9	7.5	199	204	6.1	90
01-29-2013	**1100**	321	14.4	15	7.6	7.1	956	982	1.7	516
03-19-2013	**1600**	599	13.5	6.0	7.5	7.3	396	390	4.0	222
05-22-2013	**0930**	182	9.1	6.0	7.3	7.6	270	281	20.3	164
07-22-2013	**1530**	102	8.7	7.0	7.9	8.0	396	392	24.4	228
09-17-2013	**0900**	91	11.0	4.0	7.7	7.8	413	409	14.2	246

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; 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; <, 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, recover-able, mg/L (00916)	Magne-sium, water, unfiltered, recover-able, mg/L (00927)	Sodium, water, unfiltered, recover-able, 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)
11-19-2012	**1330**	52	< 5	11.4	5.7	14.8	24	< 0.025	23.6	29.4
01-29-2013	**1100**	68	6	16.4	6.5	144	23	.1	260	33.6
03-19-2013	**1600**	48	< 5	10.8	5.1	48.5	15	M	85.6	24.4
05-22-2013	**0930**	66	< 5	13.5	7.9	21.6	26	< 0.025	37.8	37.3
07-22-2013	**1530**	100	< 5	19.6	13.4	30.2	33	M	49.0	64.8
09-17-2013	**0900**	100	< 5	20.7	11.8	35.6	42	M	47.8	49.6

01536000 LACKAWANNA RIVER AT OLD FORGE, 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; <, 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)	Orthophos-phate, 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, recover-able, µg/L (01105)	Barium, water, unfiltered, recover-able, µg/L (01007)	Copper, water, unfiltered, recover-able, µg/L (01042)
11-19-2012	**1330**	< .020	1.29	< .040	0.11	0.127	1.4	< 200	M	< 4
01-29-2013	**1100**	.080	1.42	< .040	.09	.119	1.8	< 200	M	M
03-19-2013	**1600**	.040	1.16	< .040	.07	.079	1.4	< 200	M	< 4
05-22-2013	**0930**	.120	2.33	< .040	.19	.230	2.8	< 200	M	< 4
07-22-2013	**1530**	.030	3.84	< .040	.27	.311	4.2	< 200	M	M
09-17-2013	**0900**	.030	4.78	< .040	.34	.364	4.9	< 200	M	M

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; <, less than; M, presence verified but not quantified]

Date	Sample start time	Iron, water, unfiltered, recover-able, µg/L (01045)	Lead, water, unfiltered, recover-able, µg/L (01051)	Manga-nese, water, unfiltered, recover-able, µg/L (01055)	Nickel, water, unfiltered, recover-able, µg/L (01067)	Strontium, water, unfiltered, recover-able, micro-grams per liter (01082)	Zinc, water, unfiltered, recover-able, µg/L (01092)	Boron, water, unfiltered, recover-able, micro-grams per liter (01022)	Selenium, water, unfiltered, µg/L (01147)
11-19-2012	**1330**	140	< 1.0	40	< 50	50	20	< 200	< 7
01-29-2013	**1100**	180	M	80	< 50	100	20	< 200	< 7
03-19-2013	**1600**	150	< 1.0	60	< 50	50	20	< 200	< 7
05-22-2013	**0930**	190	< 1.0	60	< 50	70	10	< 200	< 7
07-22-2013	**1530**	120	< 1.0	20	< 50	110	20	< 200	< 7
09-17-2013	**0900**	170	< 1.0	40	< 50	100	20	< 200	< 7