ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
WATER-QUALITY AND FIELD MEASUREMENTS NEAR SHIPPENSBURG, PENNSYLVANIA

The following pages contain data collected from 20 streams and 46 wells near Shippensburg, Pennsylvania. The measurements were made to provide data for simulation of ground water flow, which is being used to determine contributing areas to the Shippensburg Municipal Supply wells. Continuous water-level measurements were also collected at well CU970 for a period of 9 months. For additional information, contact Bruce Lindsey at the USGS Pennsylvania Water Science Center, 215 Limekiln Road, New Cumberland, PA 19070; 717-730-6964, (email: blindsey@usgs.gov).

TABLE 3.--Shippensburg project surface-water-quality station list.

SITE-ID	STATION NAME	LATITUDE	LONGITUDE	LAT/LONG DATUM	DRAINAGE AREA
015693102	Furnace Run US Shirley Run near Mainsville, PA	395951.6	0773031.5	NAD83	2.55
015693103	Shirley Run near Mainsville, PA	395956.2	0773021.3	NAD83	1.24
015693104	Furnace Run at Mainsville, PA	400038.9	0773113.0	NAD83	7.13
015693108	Furnace Run near Mainsville, PA	400140.8	0773132.0	NAD83	8.03
015693112	Middle Spring Creek at Shippensburg, PA	400241.2	0773109.2	NAD27	18.3
015693116	Gum Run near County Line near Mainsville, PA	400039.8	0772831.4	NAD83	.74
015693120	Gum Run US Interstate 81 near Mainsville, PA	400102.7	0772924.1	NAD83	1.38
015693122	Unnamed tributary to Gum Run near Mainsville, PA	400100.5	0772930.4	NAD83	--
015693124	Gum Run at Interstate 81 near Shippensburg, PA	400157.5	0773004.6	NAD83	4.12
015693128	Mains Run at Michaux State Forest nr Mainsville	395959.1	0772917.3	NAD83	--
015693132	Mains Run near Mainsville, PA	400043.0	0772957.9	NAD83	1.41
015693136	Mains Run DS intermittent trib at Mainsville, PA	400131.9	0773034.1	NAD83	2.19
015693158	Middle Spring Cr ab Burd Run bl Shippensburg, PA	400342	0773158	NAD27	20.7
015693165	Thomson Creek at Long Mountain nr Cleversburg, PA	400128.1	0772659.6	NAD83	2.76
015693168	Thomson Creek near Cleversburg, PA	400225.9	0772657.5	NAD83	3.62
015693170	Thomson Creek at Cleversburg Junction, PA	400300	0772738	NAD27	5.05
015693182	Reservoir Hollow near Cleversburg, PA	400054.2	0772738.2	NAD83	3.98
015693186	Reservoir Hollow at Cleversburg, PA	400210.7	0772802.1	NAD83	4.77
015693190	Reservoir Hollow at RR Bridge near Cleversburg, PA	400258.2	0772838.9	NAD83	5.76
015693195	Burd Run at Shippensburg Univ. at Shippensburg, PA	400356.0	0773107.3	NAD83	19.0

TABLE 4.--Shippensburg project ground-water-quality station list.

SITE-ID	LOCAL WELL NUMBER	LATITUDE	LONGITUDE	LAT/LONG DATUM	DEPTH OF WELL (FEET)
400102077292201	CU 604	400102	0772922	NAD27	235
400200077300101	CU 605	400200	0773001	NAD27	110
400152077293301	CU 612	400152	0772933	NAD27	125
400252077272101	CU 907	400253.4	0772720.0	NAD83	129
400249077281601	CU 952	400249.48	0772816.23	NAD83	273
400240077281201	CU 953	400240.42	0772811.78	NAD83	285
400214077290701	CU 954	400213.82	0772906.89	NAD83	198
400110077292801	CU 955	400109.64	0772928.02	NAD83	273
400313077282901	CU 957	400312.77	0772828.88	NAD83	180
400137077292301	CU 958	400136.89	0772922.95	NAD83	73
400226077275201	CU 959	400226.41	0772751.87	NAD83	252
400236077264901	CU 960	400236.02	0772648.86	NAD83	250
400145077285501	CU 961	400145.33	0772854.81	NAD83	246
400302077282501	CU 963	400302.52	0772824.84	NAD83	248
400159077292601	CU 968	400159.01	0772925.61	NAD83	200

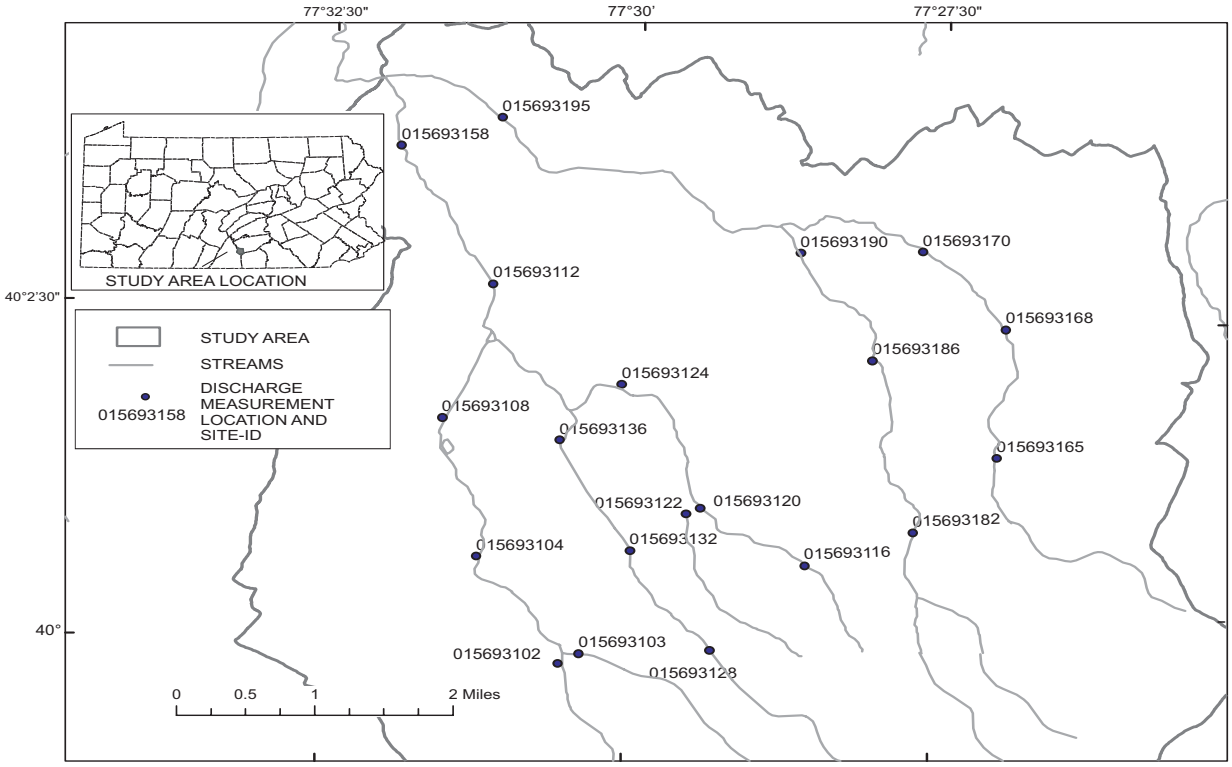

Figure8.--Locations of stream sites where water-quality samples were collected for the Shippensburg project.

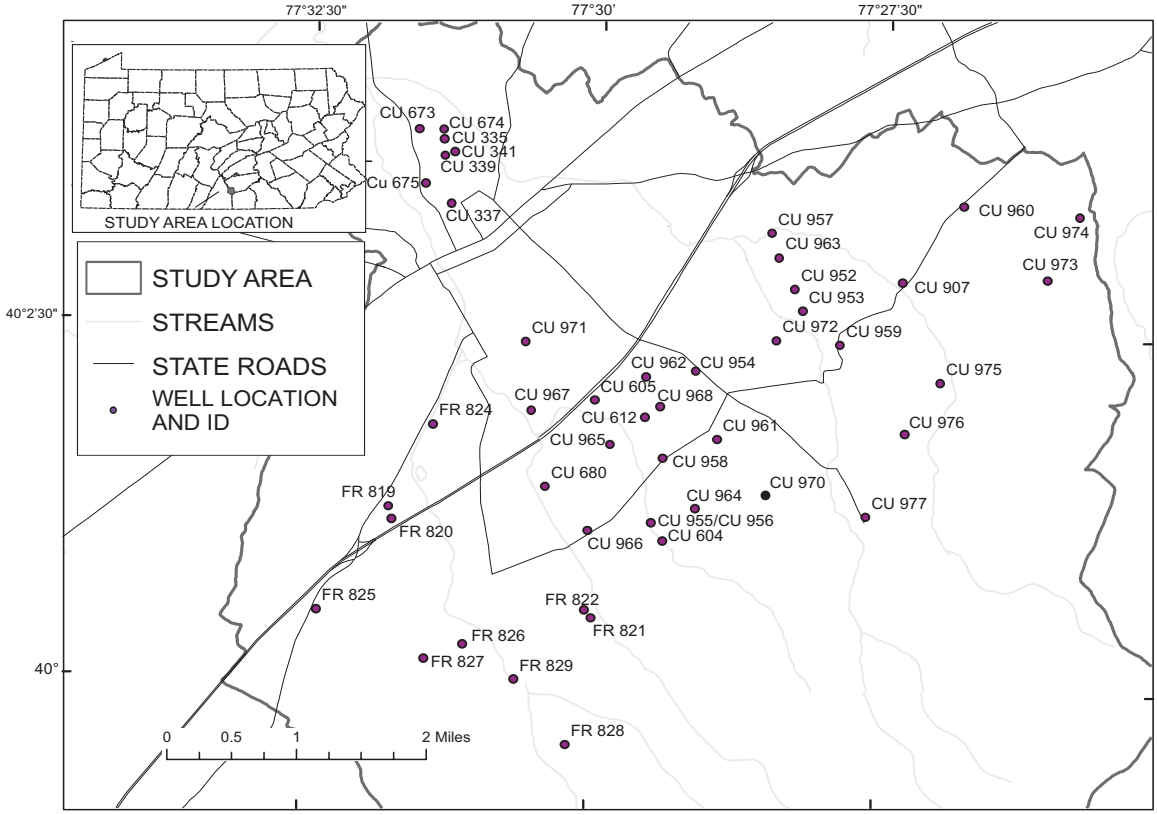

Figure 9.--Locations of wells where water levels were measured or water-quality samples were collected for the Shippensburg project.

ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
WATER-QUALITY AND FIELD MEASUREMENTS NEAR SHIPPENSBURG, PENNSYLVANIA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

MISCELLANEOUS STATION ANALYSES

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif. conduct-ance, wat unf µS/cm 25 degC (00095)	Temperature, water, deg C (00010)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)
015693102	Furnace Run US Shirley Run near Mainsville, PA							
NOV 2003 17...	1300	1028	1028	1.7	5.5	30	10.0	.0
015693103	Shirley Run near Mainsville, PA							
NOV 2003 14...	1441	1028	1028	.92	4.9	31	7.5	.0
015693104	Furnace Run at Mainsville, PA							
NOV 2003 14...	1542	1028	1028	2.5	6.4	37	7.3	2
015693108	Furnace Run near Mainsville, PA							
NOV 2003 14...	1646	1028	1028	1.5	6.7	39	6.8	2
015693112	Middle Spring Creek at Shippensburg, PA							
NOV 2003 17...	1128	1028	1028	4.3	7.7	352	10.5	120
015693116	Gum Run near County Line near Mainsville, PA							
NOV 2003 17...	1233	1028	1028	.53	4.2	33	9.3	.0
015693120	Gum Run US Interstate 81 near Mainsville, PA							
NOV 2003 17...	1333	1028	1028	.43	4.5	26	11.3	.0
015693122	Unnamed tributary to Gum Run near Mainsville, PA							
NOV 2003 17...	1200	1028	1028	.20	6.2	58	11.6	8
015693124	Gum Run at Interstate 81 near Shippensburg, PA							
NOV 2003 17...	1400	1028	1028	.28	7.1	313	10.3	107
015693128	Mains Run at Michaux State Forest nr Mainsville, PA							
NOV 2003 17...	1326	1028	1028	1.4	5.0	34	7.3	.0
015693132	Mains Run near Mainsville, PA							
NOV 2003 14...	1214	1028	1028	1.4	5.5	33	7.1	.0
015693136	Mains Run DS intermittent trib at Mainsville, PA							
NOV 2003 14...	1052	1028	1028	1.1	7.2	41	5.7	2
015693158	Middle Spring Cr ab Burd Run bl Shippensburg, PA							
NOV 2003 17...	1019	1028	1028	14.0	8.0	487	11.5	122

ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
WATER-QUALITY AND FIELD MEASUREMENTS NEAR SHIPPENSBURG, PENNSYLVANIA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

MISCELLANEOUS STATION ANALYSES

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif. conduct-ance, wat unf µS/cm 25 degC (00095)	Temperature, water, deg C (00010)	ANC, wat unf fixed end pt, field, mg/L as CaCO3 (00410)
015693165	Thomson Creek at Long Mountain nr Cleversburg, PA							
NOV 2003 14...	1215	1028	1028	1.4	4.0	34	7.6	.0
015693168	Thomson Creek near Cleversburg, PA							
NOV 2003 14...	1033	1028	1028	2.5	4.5	30	6.5	1
015693170	Thomson Creek at Cleversburg Junction, PA							
NOV 2003 14...	0932	1028	1028	1.9	5.1	31	5.2	.0
015693182	Reservoir Hollow near Cleversburg, PA							
NOV 2003 14...	1305	1028	1028	7.2	5.1	37	7.0	1
015693186	Reservoir Hollow at Cleversburg, PA							
NOV 2003 14...	1349	1028	1028	6.9	6.0	46	7.5	5
015693190	Reservoir Hollow at RR Bridge near Cleversburg, PA							
NOV 2003 14...	1434	1028	1028	5.5	6.5	49	7.4	6
015693195	Burd Run at Shippensburg Univ. at Shippensburg, PA							
NOV 2003 17...	0830	1028	1028	9.3	7.9	498	10.6	190

ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
WATER-QUALITY AND FIELD MEASUREMENTS NEAR SHIPPENSBURG, PENNSYLVANIA

REMARKS.--NAD27: North American Datum of 1927; NAD83: North American Datum of 1983; Geologic codes: 377ANTM, Antietam Formation; 377TMSN, Tomstown Formation; 377WSBR, Waynesboro Formation; 371ELBK, Elbrook Formation; 371ZLGR, Zullinger Formation; 367RCKR, Rockdale Run Formation;111CLVM, Colluvium.

WATER-LEVEL MEASUREMENTS AT GROUND-WATER WELLS

Date	Station Number	Local Identifier	Latitude	Longitude	Datum	Geologic Unit	Well Depth	Water Level
6-Jan-2004	400350077312201	CU 335	400350.0	773122.0	NAD27	367RCKR	68	9.3
6-Jan-2004	400322077311701	CU 337	400322.0	773117.0	NAD27	367RCKR	142	14.9
6-Jan-2004	400342077312101	CU 339	400342.0	773121.0	NAD27	367RCKR	105	22.6
6-Jan-2004	400344077311701	CU 341	400344.0	773117.0	NAD27	367RCKR	105	29.9
21-Nov-2003	400102077292201	CU 604	400102.0	772922.0	NAD27	377TMSN	235	106
24-Nov-2003	400200077300101	CU 605	400200.0	773001.0	NAD27	371ELBK	110	26.1
21-Nov-2003	400152077293301	CU 612	400152.0	772933.0	NAD27	371ELBK	125	35.4
23-Jan-2004	400353077313501	CU 673	400353.0	773135.0	NAD27	367RCKR	144	34.0
23-Jan-2004	400353077312201	CU 674	400353.0	773122.0	NAD27	367RCKR	60	9.0
23-Jan-2004	400330077313001	CU 675	400330.1	773130.9	NAD83	367RCKR	150	9.3
5-Dec-2003	400123077302501	CU 680	400123.0	773025.0	NAD27	367RCKR	97	9.3
5-Dec-2003	400252077272101	CU 907	400253.4	772720.0	NAD83	371ELBK	129	48.9
24-Nov-2003	400249077281601	CU 952	400249.5	772816.2	NAD83	371ELBK	273	60.8
24-Nov-2003	400240077281201	CU 953	400240.4	772811.8	NAD83	371ELBK	285	57.8
21-Nov-2003	400214077290701	CU 954	400213.8	772906.9	NAD83	371ELBK	198	79.1
21-Nov-2003	400110077292801	CU 955	400109.6	772928.0	NAD83	377WSBR	273	80.3
21-Nov-2003	400110077292802	CU 956	400109.7	772928.0	NAD83	111CLVM	30	10.5
21-Nov-2003	400313077282901	CU 957	400312.8	772828.9	NAD83	371ZLGR	180	10.9
24-Nov-2003	400137077292301	CU 958	400136.9	772923.0	NAD83	371ELBK	73	22.9
24-Nov-2003	400226077275201	CU 959	400226.4	772751.9	NAD83	371ELBK	252	115.4
24-Nov-2003	400236077264901	CU 960	400236.0	772648.9	NAD83	371ELBK	250	87.9
24-Nov-2003	400145077285501	CU 961	400145.3	772854.8	NAD83	377WSBR	246	149
3-Dec-2003	400211077293301	CU 962	400211.0	772932.7	NAD83	371ELBK	100	66.3
21-Nov-2003	400303077282501	CU 963	400302.5	772824.8	NAD83	371ZLGR	248	38.0
17-Nov-2003	400116077290601	CU 964	400116.0	772906.1	NAD83	377WSBR	248	129.5
5-Dec-2003	400142077295101	CU 965	400142.0	772950.5	NAD83	371ELBK	181	21.3
5-Dec-2003	400106077300101	CU 966	400105.6	773001.2	NAD83	377WSBR	180	81.4
5-Dec-2003	400156077303201	CU 967	400155.7	773032.2	NAD83	371ELBK	120	21.0
21-Nov-2003	400159077292601	CU 968	400159.0	772925.6	NAD83	371ELBK	200	62.0
1-Jul-2003	400122077282801	CU 970	400122.5	772828.4	NAD83	377TMSN	395	148.6
23-Feb-2003	400225077303601	CU 971	400224.5	773036.3	NAD83	371ELBK	148	25.2
10-Mar-2003	400028077282501	CU 972	400027.6	772825.2	NAD83	371ELBK	170	57.2
10-Mar-2004	400256077260401	CU 973	400255.7	772604.3	NAD83	377TMSN	273	145.9
10-Mar-2004	400323077254801	CU 974	400322.7	772548.2	NAD83	377WSBR	240	156.7
23-Feb-2004	400211077265901	CU 975	400211.4	772658.8	NAD83	377TMSN	448	157.1
25-Feb-2004	400150077271701	CU 976	400149.5	772716.8	NAD83	377ANTM	475	264.1
6-Apr-2004	400114077273601	CU 977	400114.1	772736.4	NAD83	377ANTM	480	245.2
5-Dec-2003	400114077314601	FR 819	400113.7	773145.5	NAD83	371ELBK	68	44.7
5-Dec-2003	400111077314501	FR 820	400110.7	773145.1	NAD83	371ELBK	109	44.9
5-Dec-2003	400029077295801	FR 821	400028.7	772958.2	NAD83	377TMSN	302	118.9
5-Dec-2003	400030077295801	FR 822	400030.3	772957.7	NAD83	377TMSN	200	115.1
10-Mar-2004	400149077312301	FR 824	400148.7	773123.5	NAD83	371ELBK	62	32.3
10-Mar-2004	400030077322201	FR 825	400029.6	773221.8	NAD83	371ELBK	140	15.5
22-Feb-2004	400017077310601	FR 826	400016.9	773105.6	NAD83	377WSBR	180	19.9
23-Feb-2004	400010077312601	FR 827	400010.2	773125.9	NAD83	377WSBR	140	9.0
6-Apr-2004	400002077303801	FR 829	400002.1	773037.5	NAD83	377TMSN	315	90.0

ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
WATER-QUALITY AND FIELD MEASUREMENTS NEAR SHIPPENSBURG, PENNSYLVANIA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

MISCELLANEOUS STATION ANALYSES

Date	Time	Depth to water level, feet below LSD (72019)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conduc-tance, wat unf µS/cm 25 degC (00095)	Temper-ature, water, deg C (00010)
400102077292201 CU 604						
NOV 2003 21...	0900	106.40	4.0	6.5	222	11.6
400110077292801 CU 955						
NOV 2003 21...	0800	80.30	3.5	7.3	210	11.3
400137077292301 CU 958						
NOV 2003 24...	1600	22.90	2.6	7.0	314	12.2
400145077285501 CU 961						
NOV 2003 24...	1500	149.00	4.5	7.0	572	--
400152077293301 CU 612						
NOV 2003 21...	1200	35.40	2.5	7.1	599	12.1
400159077292601 CU 968						
NOV 2003 21...	1400	62.00	4.6	7.2	448	11.7
400200077300101 CU 605						
NOV 2003 24...	0900	26.10	5.8	7.4	255	11.5
400214077290701 CU 954						
NOV 2003 21...	1400	79.10	3.2	7.2	454	12.1
400226077275201 CU 959						
NOV 2003 24...	1200	115.40	4.3	7.2	232	11.6
400236077264901 CU 960						
NOV 2003 24...	1230	87.90	3.8	7.4	242	--
400240077281201 CU 953						
NOV 2003 24...	1100	57.80	2.1	7.4	192	11.9
400249077281601 CU 952						
NOV 2003 24...	0900	60.80	6.6	7.0	264	12.2
400252077272101 CU 907						
NOV 2003 17...	1100	48.95	--	7.0	269	--
400303077282501 CU 963						
NOV 2003 21...	1600	36.40	2.1	7.6	211	11.8
400313077282901 CU 957						
NOV 2003 21...	1600	10.90	2.1	7.3	363	13.7

ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
WATER-QUALITY AND FIELD MEASUREMENTS NEAR SHIPPENSBURG, PENNSYLVANIA

CUMBERLAND COUNTY

400122077282801. Local number, CU 970.

LOCATION.--Lat 40°01'22", long 77°28'28", Hydrologic Unit 02050305.
Owner: Shippensburg Borough Authority.
AQUIFER.--Tomstown Formation.
WELL CHARACTERISTICS.--Drilled observation well, diameter 12 in., depth 395 ft, cased to 250 ft, open hole.
INSTRUMENTATION.--Electronic data logger with 60-minute recording interval.
DATUM.--Elevation of land surface is 870 ft above National Geodetic Vertical Datum of 1929, from topographic map.
REMARKS.--In addition to the daily mean water level table shown below, daily maximum and minimum water levels are also available from the USGS Pennsylvania Water Science Center.
PERIOD OF RECORD.--October 1, 2003 to May 4, 2004. (Discontinued)
EXTREMES FOR CURRENT YEAR.--The extremes are based on the instantaneous depth below land-surface datum. Highest water level, 134.91 ft below land-surface datum, May 5; lowest, 151.31 ft below land-surface datum, Oct. 25, 30, 31.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	150.99	151.10	149.54	145.09	143.35	142.90	139.46	135.56	---	---	---	---
2	150.94	151.00	149.80	144.72	143.40	142.76	139.47	135.20	---	---	---	---
3	150.92	150.89	150.02	144.47	143.17	142.73	139.31	135.22	---	---	---	---
4	150.64	150.87	149.91	144.29	143.44	142.40	139.08	135.21	---	---	---	---
5	150.67	150.83	149.62	144.12	143.67	142.01	139.16	---	---	---	---	---
6	150.70	150.80	149.54	144.28	143.22	141.53	---	---	---	---	---	---
7	150.73	150.84	149.56	144.25	142.97	141.38	138.92	---	---	---	---	---
8	150.74	151.02	149.82	144.13	143.38	141.10	138.78	---	---	---	---	---
9	150.78	151.11	149.91	144.00	143.29	141.25	138.79	---	---	---	---	---
10	150.83	150.87	149.60	143.99	143.12	141.25	138.71	---	---	---	---	---
11	150.77	150.73	149.23	143.81	143.22	140.96	138.57	---	---	---	---	---
12	150.56	150.48	149.64	143.51	143.21	140.73	138.45	---	---	---	---	---
13	150.69	150.34	149.53	143.51	143.15	140.93	138.08	---	---	---	---	---
14	150.54	150.59	148.76	143.53	143.00	140.70	137.94	---	---	---	---	---
15	150.45	150.69	148.33	143.58	143.11	140.64	138.11	---	---	---	---	---
16	150.78	150.78	148.17	143.62	143.37	140.56	138.09	---	---	---	---	---
17	150.89	150.78	147.62	143.52	143.44	140.41	137.81	---	---	---	---	---
18	150.83	150.77	147.35	142.96	143.21	140.55	137.61	---	---	---	---	---
19	150.76	150.30	147.24	143.06	142.97	140.65	137.30	---	---	---	---	---
20	150.85	150.43	147.22	143.31	142.79	140.44	137.12	---	---	---	---	---
21	150.48	150.52	147.16	143.36	142.63	140.12	136.90	---	---	---	---	---
22	150.52	150.57	146.81	143.03	142.91	140.32	136.83	---	---	---	---	---
23	150.68	150.51	146.54	143.13	143.01	140.44	136.70	---	---	---	---	---
24	151.03	150.26	146.21	143.04	142.89	140.46	136.64	---	---	---	---	---
25	151.20	150.44	146.06	143.23	143.06	140.43	136.49	---	---	---	---	---
26	150.96	150.31	145.89	143.13	143.22	140.32	136.08	---	---	---	---	---
27	150.65	150.15	145.82	142.91	143.24	140.15	135.88	---	---	---	---	---
28	150.73	149.50	145.72	142.91	143.14	140.12	136.03	---	---	---	---	---
29	150.81	149.37	145.41	143.01	142.96	140.07	135.94	---	---	---	---	---
30	151.22	149.51	145.15	142.91	---	140.00	135.79	---	---	---	---	---
31	151.19	---	145.21	143.10	---	139.77	---	---	---	---	---	---
MEAN	150.79	150.55	147.95	143.60	143.16	140.91	137.73	135.30	---	---	---	---
MAX	151.22	151.11	150.02	145.09	143.67	142.90	139.47	135.56	---	---	---	---
MIN	150.45	149.37	145.15	142.91	142.63	139.77	135.79	135.20	---	---	---	---