Water-Data Report 2011

50046000 RIO DE LA PLATA AT HIGHWAY 2 NEAR TOA ALTA, PR

RIO DE LA PLATA BASIN

LOCATION.--Lat 18°24′41″, long 66°15′39″ referenced to North American Datum of 1927, Dorado Municipio, PR, Hydrologic Unit 21010005, on left bank at downstream side of bridge on Highway 2, 1.3 mi (2.1 km) downstream from Río Lajas, 1.6 mi (2.6 km) northwest of Toa Alta, and 11.3 mi (18.2 km) downstream from the Puerto Rico Aqueduct and Sewer Authority (PRASA) reservoir.

DRAINAGE AREA.--208 mi^2, (539 km^2), excludes 8.2 mi^2 (21.2 km^2) upstream from Lago Carite, flow from which is diverted to Río Guamaní. Area at site used prior to September 25, 1984, 200 mi^2 (518 km^2).

SURFACE-WATER RECORDS

PERIOD OF RECORD.--November 1959 (measurement only), January 1960 to current year. Prior to October 1984, published as Río de la Plata at Toa Alta, PR; October 1984 to September 1988 published as 50046900.

GAGE.--Water-stage recorder and crest-stage gage, satellite telemetry at station. Datum of gage is 9.15 ft (2.789 m), above mean sea level. Prior to October 1984, at site about 1 mi (1.6 km) upstream at mean sea level datum.

REMARKS.--Records fair except those for estimated mean daily discharges, which are poor. Regulation at all stages by the Puerto Rico Aqueduct and Sewer Authority (PRASA) reservoir upstream from gage. Flow affected by water extraction for La Virgencita water treatment plant by the Puerto Rico Aqueduct and Sewer Authority (PRASA) of about 3.99 ft^3/s (0.11 m^3/s). Located about 1,000 ft upstream from station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Approximate discharges and elevations of major floods, as pointed out by local residents are as follows: September 13, 1928, 120,000 ft^3/s (3,400 m^3/s), gage height 37.4 ft (11.4 m); June 16, 1943, 82,000 ft^3/s (2,322 m^3/s), gage height 34.4 ft (10.48 m), at site 1 mi upstream and different datum.

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 50046000, accessed at http://wdr.water.usgs.gov/wy2011/pdfs/50046000.2011.pdf

50046000 RIO DE LA PLATA AT HIGHWAY 2 NEAR TOA ALTA, PR—Continued

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	215	190	125	140	75	64	54	480	387	206	260	537
2	245	354	135	272	73	64	52	140	499	1,950	901	e497
3	850	336	125	334	71	63	55	95	463	767	9,470	e538
4	546	204	125	236	69	62	58	76	2,980	941	1,960	e1,120
5	330	182	123	191	70	65	58	59	3,070	308	545	e1,240
6	736	4,300	117	145	69	63	56	52	693	198	286	e828
7	14,600	888	121	142	68	71	56	52	4,610	227	250	e538
8	14,700	830	123	135	69	63	69	49	1,890	284	225	e456
9	2,470	779	127	124	68	60	59	46	1,190	301	195	e745
10	750	1,050	159	118	68	59	56	1,450	451	204	187	e580
11	559	773	156	113	67	69	59	1,910	232	293	141	e538
12	480	1,170	142	114	66	61	58	125	230	305	160	e1,080
13	556	435	130	117	64	64	64	76	295	217	139	e19,000
14	528	292	120	80	65	61	67	402	174	561	155	6,590
15	275	274	1,310	72	65	69	60	133	325	807	149	1,740
16	332	236	770	69	108	69	60	312	166	549	140	819
17	244	130	360	68	96	62	53	1,110	459	198	249	442
18	243	116	113	68	73	63	58	1,320	195	159	165	588
19	226	121	103	69	177	61	60	760	511	158	154	570
20	206	123	142	72	165	66	63	3,790	296	138	157	1,040
21	187	138	203	73	162	64	61	5,340	167	142	332	775
22	141	195	730	72	160	80	59	585	124	148	18,100	2,030
23	137	358	264	70	90	74	60	602	118	431	22,800	750
24	140	328	148	71	69	62	55	2,250	109	1,380	10,800	569
25	136	195	135	71	68	189	56	2,370	137	311	3,860	631
26	136	177	130	69	69	81	106	658	151	177	1,760	566
27	139	164	368	71	68	61	285	2,090	123	732	874	1,960
28	104	156	1,580	73	67	57	417	2,340	130	1,570	813	547
29	92	146	1,720	72	---	56	121	996	138	636	715	463
30	90	120	438	72	---	53	60	373	118	352	664	751
31	109	---	211	74	---	53	---	225	---	213	586	---
Total	40,502	14,760	10,553	3,467	2,399	2,109	2,455	30,266	20,431	14,863	77,192	48,528
Mean	1,307	492	340	112	85.7	68.0	81.8	976	681	479	2,490	1,618
Max	14,700	4,300	1,720	334	177	189	417	5,340	4,610	1,950	22,800	19,000
Min	90	116	103	68	64	53	52	46	109	138	139	442
Ac-ft	80,340	29,280	20,930	6,880	4,760	4,180	4,870	60,030	40,520	29,480	153,100	96,260
Cfsm	6.28	2.37	1.64	0.54	0.41	0.33	0.39	4.69	3.27	2.31	12.0	7.78
In.	7.24	2.64	1.89	0.62	0.43	0.38	0.44	5.41	3.65	2.66	13.81	8.68

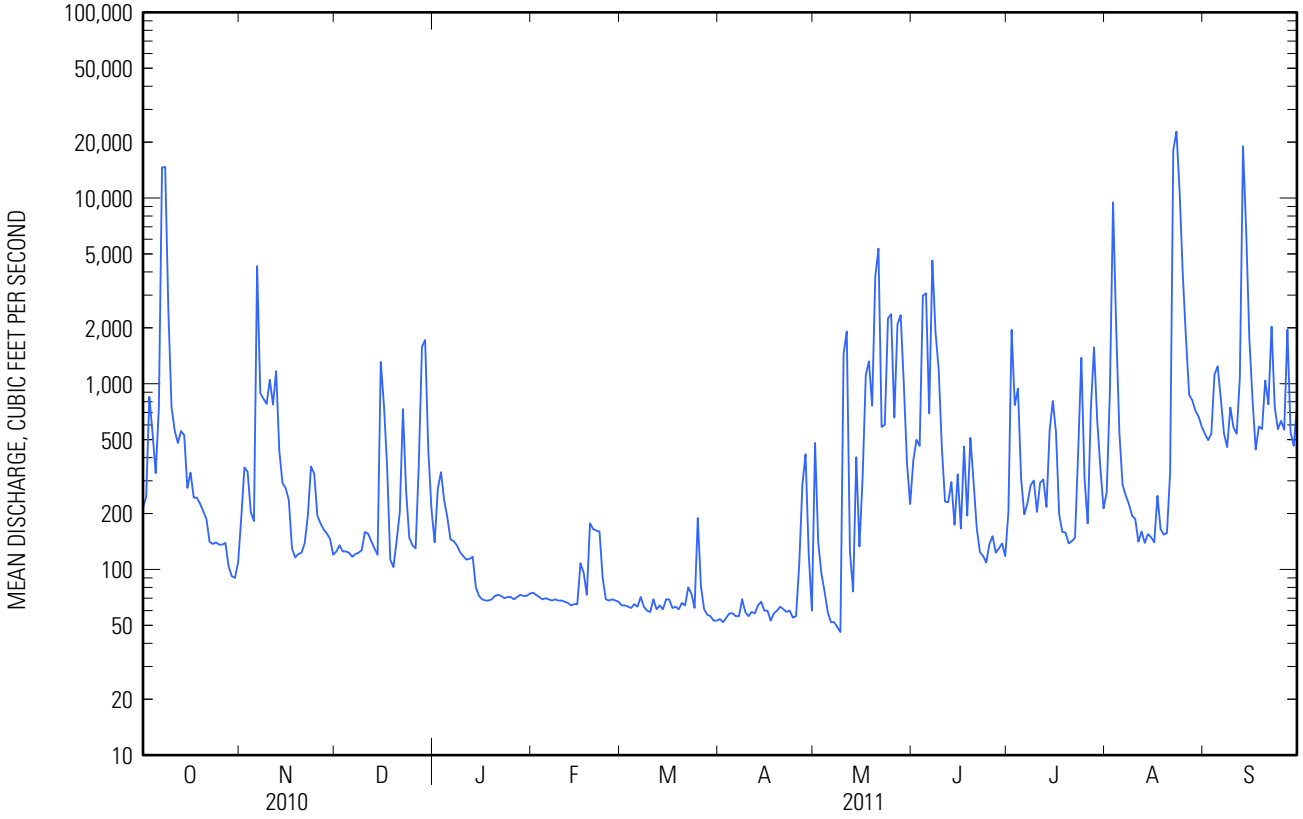
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2011, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	475	528	355	195	119	100	183	360	169	174	274	466
Max	4,813	2,982	1,352	929	409	482	722	1,939	884	958	2,490	3,173
(WY)	(1971)	(2004)	(1971)	(1992)	(1989)	(2009)	(1987)	(1985)	(2010)	(2005)	(2011)	(1996)
Min	18.8	18.4	14.8	16.9	16.0	8.31	5.07	7.63	11.4	13.2	16.5	19.2
(WY)	(1995)	(1995)	(1995)	(1984)	(1983)	(1986)	(1984)	(1984)	(1977)	(1994)	(1976)	(1991)

50046000 RIO DE LA PLATA AT HIGHWAY 2 NEAR TOA ALTA, PR—Continued

SUMMARY STATISTICS

	Calendar Year 2010		Water Year 2011		Water Years 1960 - 2011	
Annual total	201,471		267,525			
Annual mean	552		733		282	
Highest annual mean					824	1971
Lowest annual mean					31.5	1994
Highest daily mean	14,700	Oct 8	22,800	Aug 23	68,100	Sep 10, 1996
Lowest daily mean	39	Mar 28	46	May 9	2.7	Apr 17, 1984
Annual seven-day minimum	40	Mar 26	54	Mar 28	2.9	Apr 15, 1984
Maximum peak flow			33,500	Sep 13	160,000	Sep 10, 1996
Maximum peak stage			21.20	Sep 13	27.33	Sep 10, 1996
Annual runoff (ac-ft)	399,600		530,600		204,400	
Annual runoff (cfsm)	2.65		3.52		1.36	
Annual runoff (inches)	36.03		47.85		18.43	
10 percent exceeds	1,040		1,210		507	
50 percent exceeds	215		164		79	
90 percent exceeds	47		61		19	



50046000 RIO DE LA PLATA AT HIGHWAY 2 NEAR TOA ALTA, PR—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958 to current year.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Part 1 of 4

[MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft³/s, cubic feet per second; mg/L, milligrams per liter; ng/L, nanograms per liter; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated]

Date	Sample start time	Discharge, instantaneous, ft³/s (00061)	Dissolved oxygen, water, unfiltered, mg/L (00300)	pH, water, unfiltered, field, standard units (00400)	Specific conductance, water, unfiltered, µS/cm at 25 °C (00095)	Temperature, water, °C (00010)	Turbidity, water, unfiltered, broad band light source (400-680 nm), detectors at multiple angles including 90 +/- 30 degrees, ratiometric correction, NTRU (63676)	Calcium, water, unfiltered, recoverable, mg/L (00916)	Magnesium, water, unfiltered, recoverable, mg/L (00927)
12-01-2010	**1150**	129	7.8	7.6	383	26.0	E 11	--	--
02-01-2011	**1140**	79	10.4	7.8	437	25.5	E 3.6	48.7	11.4
05-10-2011	**0940**	49	6.2	7.6	504	27.3	E 3.4	--	--
08-26-2011	**1230**	1,600	7.9	7.3	188	27.5	280	24.6	9.04

WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Part 2 of 4

[MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft³/s, cubic feet per second; mg/L, milligrams per liter; ng/L, nanograms per liter; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated]

Date	Sample start time	Hydrogen ion, water, unfiltered, calculated, mg/L (00191)	Ammonia, water, unfiltered, mg/L as N (00610)	Nitrate plus nitrite, water, filtered, mg/L as N (00631)	Nitrite, water, filtered, mg/L as N (00613)	Phosphorus, water, unfiltered, mg/L as P (00665)	Total nitrogen, water, unfiltered, analytically determined, mg/L (62855)	Fecal coliform, M-FC MF (0.7 micron) method, water, col/100 mL (31625)	Total coliform, M-Endo MF method, immediate, water, col/100 mL (31501)
12-01-2010	**1150**	.00002	.10	1.23	.052	.059	1.59	5,300	54,000
02-01-2011	**1140**	.00002	< .02	.96	.032	.048	1.31	320	E 1,100
05-10-2011	**0940**	.00003	.06	1.22	.064	.042	1.56	E 40	230
08-26-2011	**1230**	.00005	.07	.53	.015	.374	1.26	E 12,000	47,000

50046000 RIO DE LA PLATA AT HIGHWAY 2 NEAR TOA ALTA, PR—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011
Part 3 of 4
[MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft³/s, cubic feet per second; mg/L, milligrams per liter; ng/L, nanograms per liter; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated]

Date	Sample start time	Cadmium, water, unfiltered, µg/L (01027)	Chromium, water, unfiltered, recover-able, µg/L (01034)	Copper, water, unfiltered, recover-able, µg/L (01042)	Lead, water, unfiltered, recover-able, µg/L (01051)	Mercury, water, unfiltered, ng/L (50286)	Zinc, water, filtered, µg/L (01090)	Arsenic, water, unfiltered, µg/L (01002)	Cyanide, water, unfiltered, milligrams per liter (00720)	Selenium, water, unfiltered, µg/L (01147)
12-01-2010	**1150**	--	--	--	--	--	--	--	--	--
02-01-2011	**1140**	< .05	1	1.4	.06	1.32	< 1.4	1.2	< .0050	.20
05-10-2011	**0940**	--	--	--	--	--	--	--	--	--
08-26-2011	**1230**	.05	13	27.3	4.01	31.4	< 1.4	1.3	< .0050	.22

WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011
Part 4 of 4
[MF, membrane filter; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft³/s, cubic feet per second; mg/L, milligrams per liter; ng/L, nanograms per liter; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated]

Date	Sample start time	Methylene blue active sub-stances, water, unfiltered, recover-able, mg/L (38260)
12-01-2010	**1150**	--
02-01-2011	**1140**	< .05
05-10-2011	**0940**	--
08-26-2011	**1230**	< .05