Water-Data Report 2012

50038100 RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR

RIO GRANDE DE MANATI BASIN

LOCATION.--Lat 18°25′52″, long 66°31′37″ referenced to North American Datum of 1927, Manatí Municipio, PR, Hydrologic Unit 21010002, at bridge on Highway 2 and 2.3 mi (3.7 km) west of Manatí.

DRAINAGE AREA.--197 mi^2, (510 km^2), approximately of which about 38 mi^2 (98 km^2) is partly or entirely noncontributing, excludes 6 mi^2 (15.5 km^2) upstream from Lago El Guineo and Lago de Matrullas.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--1963-68 (annual maximum discharge only), February 1970 to current year.

REVISED RECORDS.--WRD PR-86-1: 1970-71 (M), 1975, 1979, 1982-85 (P).

GAGE.--Water-stage recorder, satellite telemetry at station. Elevation of gage is 14 ft (4 m), from topographic map. Prior to 1968 crest-stage gage at same site and datum 3.57 ft (1.09 m) lower.

REMARKS.--No estimated daily discharges. Records good. Possible water extraction about 500 ft (152.4 m) upstream of gage by unknown source affecting low flow.

EXTREMES OUTSIDE PERIOD OF RECORD.--Approximate gage heights to gage datum of major floods, pointed out by local residents, are as follows: September 13, 1928, 36.6 ft (11.16 m), September 27, 1932, 36.3 ft (11.06 m), and August 4, 1945, 34.3 ft (10.45 m).

REVISIONS.--The figures for WY 2010 mean daily discharge for the month of September has been revised.Revision does not exceeded USGS parameters for publication of a superseding table. Revisedfigures are available at the CWSC files.

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DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	2,180	1,270	805	416	328	222	1,230	322	462	265	327	149
2	1,100	2,130	841	408	302	215	952	395	437	238	215	146
3	918	1,750	715	403	290	213	776	705	422	231	167	461
4	802	895	674	420	272	206	677	819	411	238	223	183
5	776	872	645	375	288	195	1,040	3,930	509	496	242	207
6	927	675	661	394	239	194	643	12,100	387	414	193	154
7	836	906	858	777	228	232	596	6,020	364	253	163	218
8	799	1,080	617	422	226	340	879	2,900	357	221	154	193
9	670	971	723	369	228	245	1,160	4,460	348	211	154	165
10	624	810	5,500	359	214	214	989	2,980	342	226	149	258
11	613	1,140	1,860	340	211	612	724	1,100	350	198	138	168
12	883	1,430	1,140	332	213	1,530	513	907	337	190	136	141
13	989	760	895	319	205	1,300	2,500	1,740	324	243	138	147
14	632	656	774	314	2,200	413	4,920	1,730	310	371	136	228
15	568	737	1,430	307	1,300	355	2,990	1,250	309	215	146	286
16	528	934	1,030	306	834	266	1,240	1,240	301	187	276	414
17	540	712	799	324	612	239	891	893	295	177	296	501
18	621	656	713	654	404	320	732	930	341	180	172	204
19	846	597	662	468	339	1,390	637	969	320	187	145	165
20	658	574	624	329	359	445	561	774	285	212	134	158
21	607	1,310	654	301	280	859	603	788	274	197	162	181
22	880	1,570	628	301	256	946	550	718	272	177	279	209
23	1,660	1,840	566	291	245	1,440	572	671	261	164	333	167
24	782	1,050	541	281	235	1,530	464	615	260	160	1,000	138
25	653	1,550	536	276	228	973	518	567	252	161	1,170	154
26	680	4,230	521	262	228	1,030	654	570	248	159	427	186
27	644	2,430	497	259	255	2,860	454	556	244	155	255	185
28	600	1,450	471	255	246	6,850	390	634	238	152	205	327
29	572	1,100	455	247	235	13,200	357	765	236	150	174	304
30	630	912	437	248	---	2,590	345	526	239	161	163	173
31	636	---	417	373	---	2,210	---	482	---	346	155	---
Total	24,854	36,997	27,689	11,130	11,500	43,634	29,557	53,056	9,735	6,935	8,027	6,570
Mean	802	1,233	893	359	397	1,408	985	1,711	324	224	259	219
Max	2,180	4,230	5,500	777	2,200	13,200	4,920	12,100	509	496	1,170	501
Min	528	574	417	247	205	194	345	322	236	150	134	138
Ac-ft	49,300	73,380	54,920	22,080	22,810	86,550	58,630	105,200	19,310	13,760	15,920	13,030
Cfsm	4.07	6.26	4.53	1.82	2.01	7.14	5.00	8.69	1.65	1.14	1.31	1.11
In.	4.69	6.99	5.23	2.10	2.17	8.24	5.58	10.02	1.84	1.31	1.52	1.24

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2012, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	699	951	588	402	224	278	475	755	385	220	397	1,003
Max	3,103	3,885	2,399	1,742	458	1,408	1,187	1,711	1,965	651	3,319	3,732
(WY)	(2006)	(2005)	(2008)	(2005)	(2005)	(2012)	(2002)	(2012)	(2011)	(2005)	(2011)	(1998)
Min	130	71.0	55.1	59.1	72.0	56.2	49.9	97.7	63.8	53.0	75.9	67.4
(WY)	(2002)	(1995)	(1998)	(1995)	(1994)	(1994)	(1995)	(1994)	(1994)	(1994)	(1994)	(1994)

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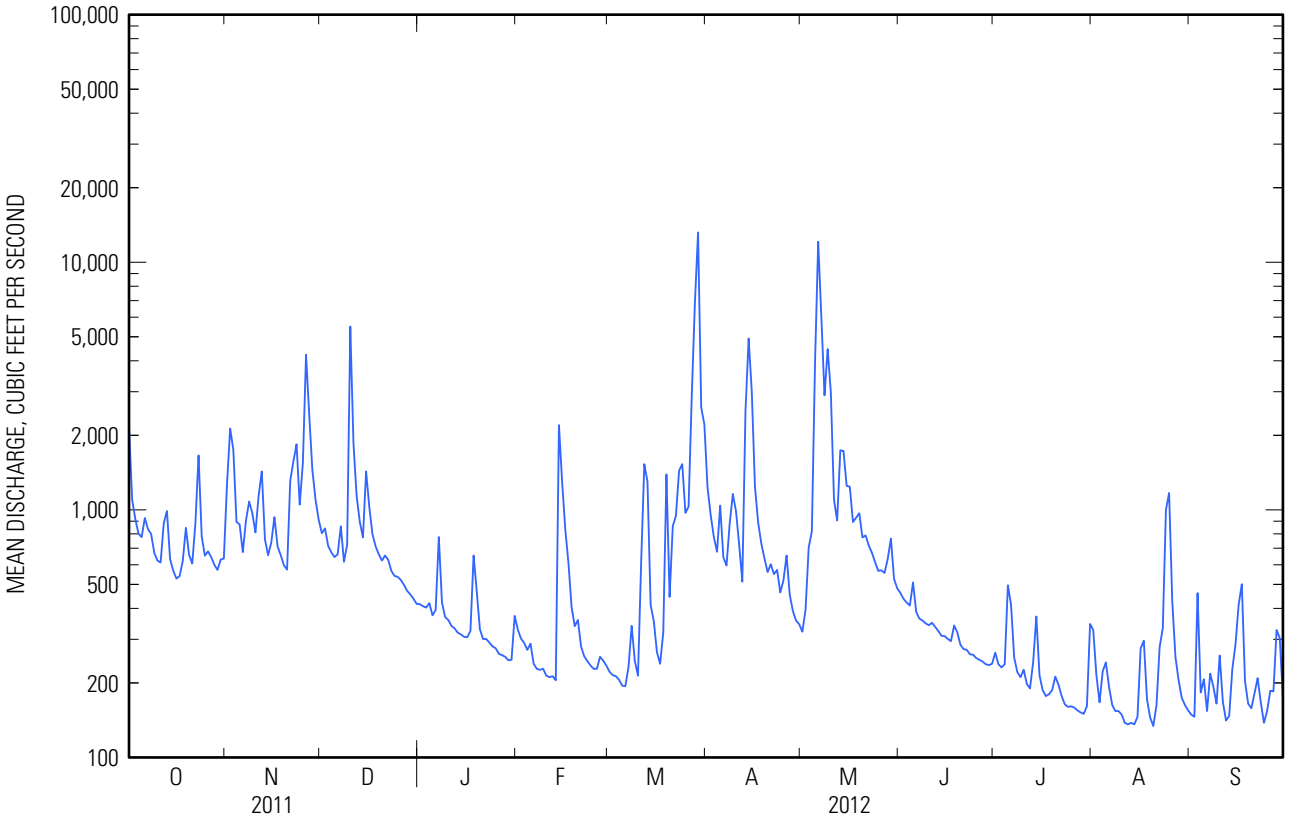
SUMMARY STATISTICS

	Calendar Year 2011		Water Year 2012		Water Years 1992 - 2012	
Annual total	400,774		269,684			
Annual mean	1,098		737		532	
Highest annual mean					1,250	2011
Lowest annual mean					96.5	1994
Highest daily mean	47,100	Aug 23	13,200	Mar 29	80,400	Sep 22, 1998
Lowest daily mean	133	May 9	134	Aug 20	31	Jan 24, 1995
Annual seven-day minimum	147	Apr 6	142	Aug 9	33	Jul 23, 1994
Maximum peak flow			34,300	May 6	198,000	Sep 10, 1996
Maximum peak stage			33.02	May 6	36.39	Sep 10, 1996
Instantaneous low flow					28	Jan 23, 1995
Annual runoff (ac-ft)	794,900		534,900		385,300	
Annual runoff (cfsm)	5.57		3.74		2.70	
Annual runoff (inches)	75.68		50.93		36.68	
10 percent exceeds	1,850		1,300		937	
50 percent exceeds	566		416		212	
90 percent exceeds	182		173		81	



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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969 to current year.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

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)
11-03-2011	**1030**	1,410	7.9	7.4	143	23.7	450	--	--
02-07-2012	**0900**	228	8.4	7.7	323	24.0	E 7.76	42.0	8.00
05-11-2012	**1100**	1,100	7.5	7.4	246	25.4	110	--	--
08-07-2012	**1100**	165	9.2	7.9	315	29.4	E 3.0	40.6	7.49

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

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)
11-03-2011	**1030**	0.00004	0.02	0.568	0.005	0.657	1.54	34,000	220,000
02-07-2012	**0900**	.00002	< .02	.825	.005	.062	.94	E 140	460
05-11-2012	**1100**	.00004	< .02	.690	.002	.606	1.18	2,000	40,000
08-07-2012	**1100**	.00001	.03	.417	.005	.051	.54	E 100	E 140

50038100 RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
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)
11-03-2011	**1030**	--	--	--	--	--	--	--	--	--
02-07-2012	**0900**	< .016	< .6	1.8	.12	1.78	< 1.4	.60	< .0050	.200
05-11-2012	**1100**	--	--	--	--	--	--	--	--	--
08-07-2012	**1100**	< .016	.9	1.7	.07	1.38	< 1.4	.47	< .0050	.191

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
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)
11-03-2011	**1030**	--
02-07-2012	**0900**	< .050
05-11-2012	**1100**	--
08-07-2012	**1100**	< .050