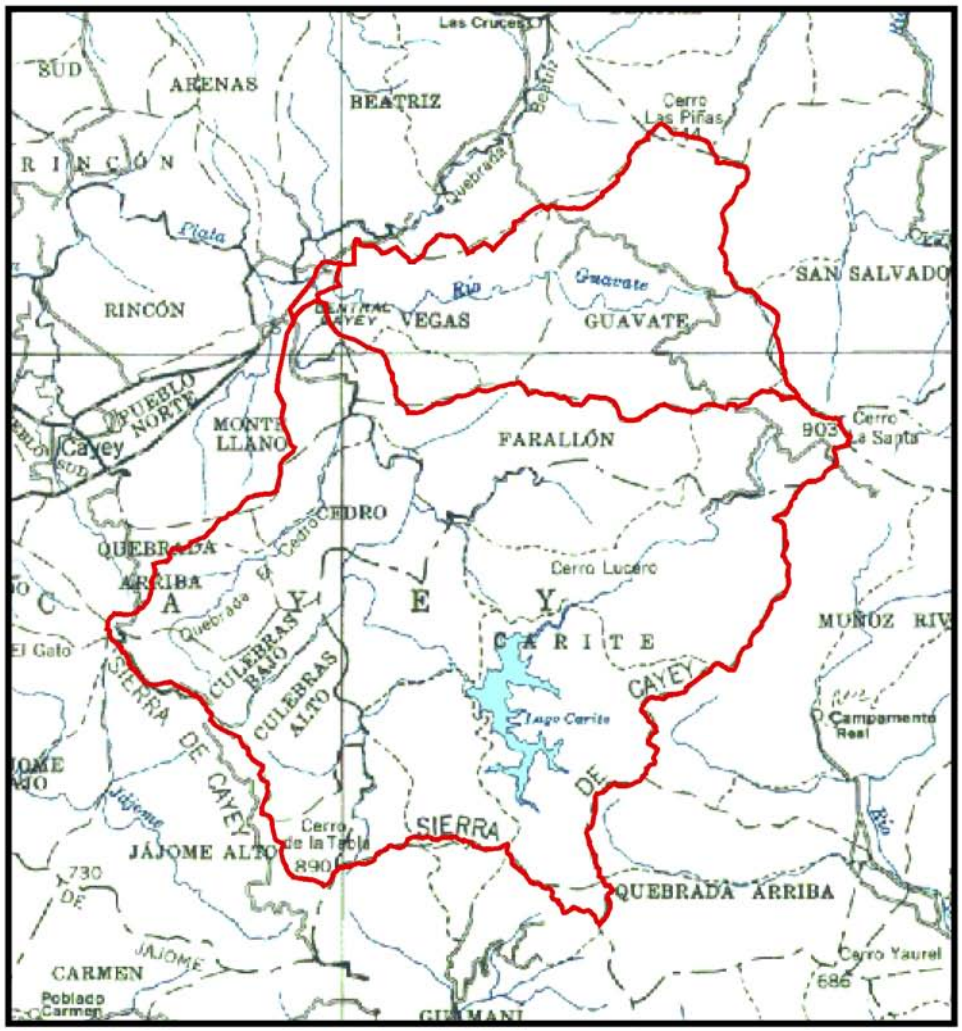
Estudio hidrológico e hidráulico

HYDROLOGIC-HYDRAULIC STUDY
RIO LA PIATA AND RIO GUAVATE
PARQUE TECNOLOGICO DE CAYEY
CAYEY, PUERTO RICO



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1. INTRODUCTION

1.1 Project Description and Location

The "Parque Tecnológico de Cayey" industrial park is planned on a 121 acre property in the municipality of Cayey. The property is bordered to the south by Río La Plata and to the north by Río Guavate, and on the west both rivers join. The site is bounded to the east by PR-52 highway. **Figure 1** shows the study reach and location of the proposed development on the USGS topographic quadrangle.

1.2 Scope and Purpose of Study

This report contains the results of the hydrologic-hydraulic (H/H) analysis of the Río La Plata and Río Guavate. This report provides the hydraulic modeling and documentation required to support an update of the floodway limits in accordance with the technical procedures of the Federal Emergency Management Agency (FEMA) and Puerto Rico Planning Board Regulation #13.

1.3 Report Limitations and Warnings

This report establishes floodway boundaries according to current hydrologic and regulatory conditions. It does not analyze channel or other hydraulic modifications. The site designer has the obligation to contact us if any questions arise concerning interpretation of recommendations given in this report.

The Department of Natural and Environmental Resources requires a maintenance easement on either side of a stream channel. It shall be the responsibility of the Owner and the site Engineer to undertake any required consultations with the Department.

1.4 Authorization

Luis E. Sotomayor of La Vega de Cayey Inc. has authorized preparation of this report through a written agreement with Gregory L. Morris Engineering.

1.5 Personnel Involved in Project

Owner:	La Vega de Cayey Inc.
Report Preparers:	Gregory L. Morris, P.E., Ph D.
	José D. Miranda, P.E.
	Laisha Pomales, B.S.C.E.

2. STUDY AREA DESCRIPTION

2.1 Topography and Water Bodies

Flooding in the study area originates from both Río La Plata and Río Guavate. The Río Guavate joins Río La Plata at the western property limit and 340 m downstream of this confluence Río La Plata passes under the PR-1 bridge. Several small local storm drains discharge to both rivers along the study reach. The reach of Río La Plata and Río Guavate to be studied consists of approximately 2.5 and 2.0 km, respectively. The study reach extends 27 meters downstream of the PR-1 bridge.

2.2 Prior Studies

Río La Plata and Río Guavate have been studied by FEMA and flood levels are presented in the Flood Insurance Study (FIS). **Figure 2** shows a portion of the FEMA FIRM map, panels 72000C1195H, 72000C1215H, 72000C1735H and 72000C1755H with an effective date of April 19, 2005. **Figure 3** shows the flood zones within the study area in a digitized version of the FEMA Flood Insurance Rate Map (FIRM).

It can be seen from **Figure 2** that both rivers have migrated laterally, and in some areas the stream channel now runs outside of the mapped river floodway. This makes it necessary restudy the regulatory flood limits using updated topographic data.

2.3 Field Data

Topographic mapping was by aerial photogrammetric methods by Ramón Figueroa. These data were used to select the locations of river cross sections, and to extend the river cross section geometry as required to include hydraulically effective flow areas of the floodplain.

River cross-sections along Río Guavate and Río La Plata were field surveyed by Surveyor Antonio Meléndez between March and June of 2005. Surveyor Fernando Santiago provided additional river cross-sections to define more precisely the area of the bridge over Río Guavate and its immediate vicinity. This topographic survey was performed during July 2006, immediately prior to a cleaning operation beneath the bridge which occurred in the first week of August, 2006

All topographic data was referenced to mean sea level. Copies of the certified topographic surveys are included in the back pocket of this report.

2.4 Field Visit

The study area was visited several times between August 2005 and August 2006. The following conditions were observed:

- The predominant use on the site is pasture.
- Río La Plata is generally free of debris and has a gravel and cobble bed. Active bank erosion was observed in several places. There is bamboo along the river banks.
- Río Guavate has some debris in its channel, the bed is sand and gravel, and active bank erosion was observed. There is bamboo along the river banks.
- By comparison of recent aerial photographs and survey data against the FEMA map, places were observed where the river channel has migrated laterally such that portions of the channel now fall outside of the mapped floodway.
- Poor hydraulic geometry was observed at the Río Guavate bridge at PR-52, which significantly reduces its hydraulic capacity.

3. HYDROLOGIC ANALYSIS

3.1 Methodology

The hydrologic analysis was performed to determine the discharges to be used in the hydraulic analysis of the study reach.

The peak discharge for the 100-year return period rainfall event was determined by the Soil Conservation Service (SCS) Unit Hydrograph method, as implemented by the HEC-HMS model. These results were checked by three methods: (1) regional regression equation developed by the USGS for ungaged watersheds in Puerto Rico (López Equation), (2) comparison to historical floods in Puerto Rico, and (3) comparison to the FEMA discharge.

3.2 Watershed Limits

Watershed limits were delimited on the USGS topographic quadrangle. The watersheds tributary to the Río La Plata and Río Guavate study reaches areas were divided into three and four basins, respectively, as shown in **Figure 4**. The total drainage area to the Río La Plata and Río Guavate study reaches at the PR-52 bridge are 14,087 acres (57.01 km^2), and 4,607 acres (18.64 km^2), respectively. The configuration of the hydrologic model is shown in **Figure 5**.

Carite reservoir in the upper portion of the La Plata Watershed diverts water to the island's south coast by gravity tunnel, and will only contribute flow to Río La Plata during extreme events by discharge over its ungated spillway. In the hydrologic modeling it was assumed the reservoir was full at the start of the event, thereby producing spillway flow from the onset of the storm, and reservoir detention effects were not computed. This will produce a conservatively high discharge along Río La Plata. The most important characteristics of Carite reservoir are listed in **Table 1.**

Table 1: Characteristic of Lago Carite

Parameter	Lago Carite Reservoir
Watershed area	2,147 ha
Lake area at spillway elevation	135 ha
Elevation of top of dam	550.47 m
Spillway crest elevation	543.64 m
Spillway length	16 m

3.3 Rainfall

A hyetograph was constructed using 100-year rainfall depths as reported by the US Department of Commerce (1961) in Technical Paper-42. The rainfall depths used to construct the hyetograph are shown in **Table 2**.

Table 2: Rainfall Depth from 24 hours

Duration, hrs	Rainfall Depths	
	inches	mm
0.5	4.0	102
1	5.0	127
2	6.5	165
3	7.1	180
6	9.0	229
12	11.0	279
24	13.0	330

3.4 Soils and Curve Number

The Curve Number represents the runoff potential within the watershed and is estimated based on soil type (hydrologic soil group), land use and antecedent moisture condition (AMC). In this study an AMC-II was used. The soil types within the watersheds were obtained from Soil Survey Geographic data base (SSURGO), which contains the most detailed level of soil mapping performed by the Natural Resources Conservation Service (NRCS). A runoff curve number was assigned to each soil type and land use combination within the basin and a weighted average curve number was then calculated for each basin. **Figure 6** illustrates the hydrologic soil groups within the basins.

Aerial photography has been interpreted to determine the land uses within the study area (**Figure 7**).

Table 3 presents the existing condition hydrologic parameters. The curve number computations for all basins are presented in ***Appendix A***.

Table 3: Hydrologic Parameters

Watershed	Area (ha)	Curve Number	Time of Concentration (min)
Río La Plata			
Basin A	2,147	75	76
Basin B	3,464	76	160
Basin C	91	77	22
Río Guavate			
Basin D	540	75	53
Basin E	365	75	41
Basin F	832	81	30
Basin G	129	76	21
Above Confluence			
Basin H	25	84	35

3.5 Time of Concentration

The time of concentration is the time required for a drop of water falling on the most distant point of the watershed to influence discharge at the watershed exit. The time of concentration was calculated using Soil Conservation method (TR-55). For sheet flow calculation the following equation was used:

$$t_c = \frac{0.007 * (n * L)^{0.8}}{P_2^{0.5} * S^{0.4}}$$

where:

tc = time of concentration (minutes)

n = Manning's roughness coefficient

L = flow length (ft)

P2 = 2-year, 24-hour rainfall (in)

S = slope of hydraulic grade line (land slope, ft/ft)

For shallow concentrated flow calculation the following equation was used:

$$t_c = \frac{L}{3600 * V}$$

where:

tc = time of concentration (minutes)

L = flow length (ft)

V = average velocity of flow (ft/s)

For channel flow, Manning's equation was used to calculate velocity:

$$V = \frac{1.49 * R^{2/3} * S^{1/2}}{n}$$

where:

V = channel velocity (ft/s)

R = channel hydraulic radius (ft)

S = channel slope

n = Manning's roughness coefficient

The travel time along the channel was calculated with the following equation:

$$t_c = \frac{L}{3600 * V}$$

where:

tc = time of concentration (minutes)

L = channel length (ft)

V = average velocity of flow (ft/s)

For time of concentration for Carite Reservoir, Wave celerity equation was used to calculated velocity:

$$V = \sqrt{g * D}$$

where:

V = channel velocity (ft/s)

g = acceleration of gravity (32.2 ft/s2)

D = Depth (ft)

Time of Concentration calculations for all basins is included in ***Appendix B***.

3.6 Results of Unit Hydrograph Method

Table 4 presents the peak discharge for all basins. **Table 5** presents the peak discharges along the study reach and incorporates the time effects of hydraulic routing within the HEC-HMS model. ***Appendix C*** show input data and results of the hydrologic model.

Table 4: Peak Discharges obtained with Unit Hydrograph Method

Watershed	Peak Discharges (cms)			
	10-yr	50-yr	100-yr	500-yr
Río La Plata				
Basin A	326	461	542	744
Basin B	318	465	555	775
Basin C	23	33	39	53
Río Guavate				
Basin D	94	137	161	223
Basin E	74	109	127	176
Basin F	214	301	345	467
Basin G	33	49	56	78
Above Confluence				
Basin H	6	9	10	14

Table 5: Peak Discharges obtained with Hydrograph Routing

Location	Peak Discharges (cms)			
	10-yr	50-yr	100-yr	500-yr
Río La Plata above PR-52	477	708	847	1,205
Río La Plata above PR-1	477	708	849	1,206
Río Guavate above PR-52	294	423	493	679

3.7 Peak Discharges Based on Regression Method

López et al. (1979) from the USGS used data on peak flood discharges in watersheds around Puerto Rico to develop a regional regression equation to estimate peak runoff at ungaged sites. The following equations were used:

$$Q_{10} = 3.72 * A^{0.822} * P^{1.29}$$

$$Q_{50} = 89.9 * A^{0.830} * P^{0.734}$$

$$Q_{100} = 286 * A^{0.832} * P^{0.531}$$

where:

Q = peak discharge (cfs)

A = drainage area (mi2)

P = annual rainfall (in/yr)

The annual rainfalls for the watersheds tributary to the study reach are based on the isohyetal map of long term mean annual rainfall prepared by Black & Veatch Consulting Engineers (1970). **Table 6** shows the peak discharges obtained with the USGS regression method.

Table 6: Peak Discharges based on the USGS Regression Method

Watershed	Annual Rainfall (in/yr)	Peak Discharges[a/] (cms)		
		10-yr	50-yr	100-yr
Río La Plata at PR-52	86	419	871	1,129
Río Guavate at PR-52	85	165	342	443
La Plata at PR-1	62	391	930	1,264

[a/] Value calculated as cfs and converted to cms.

3.8 Comparison to Historical Floods in Puerto Rico

Historical peak flood discharges registered at USGS gages in Puerto Rico have been plotted as a function of watershed area in **Figure 8**. Most floods plotted in the graph do not represent flood peaks having a 100-year return interval, but comparison of predicted flood peaks against historical peak floods on the island helps evaluate whether the obtained values are reasonable. With the exception of the FEMA value for Río Guavate, the predicted values all fall within the range of observed peaks, which is reasonable. The FEMA value for Río Guavate is too low.

3.9 Peak Discharges Based on FEMA FIS

The FEMA FIS prepared for Río La Plata reports peak discharges for three points along the study reach. **Table 7** compares 100-year peak discharges for the three different computational methodologies. The FEMA value fro Río Guavate is substantially lower than given by the unit hydrograph method or the López equation, and it is also much lower than the peak values registered at other gage stations in Puerto Rico as previously shown in **Figure 8**.

Table 8 compare peak discharges based on the Unit Hydrograph Method and those reported by FEMA for all analyzed return intervals. The reported FEMA discharges are substantially lower than the unit hydrograph method for all return intervals.

Table 7: Compares the Different Peak Discharges Values

Watershed	100-yr Peak Discharge (cms)		
	Unit Hydrograph	López Equation	FEMA
Río Guavate at PR-52	493	443	250
Río La Plata above PR-52	847	1,129	880
Río La Plata above PR-1	849	1,264	1,130

Table 8: Comparison of Unit Hydrograph and FEMA Peak Discharges.

Location	Area (km²)		Peak Discharges (cms)							
			10-yr		50-yr		100-yr		500-yr	
	GME	FEMA	GME	FEMA	GME	FEMA	GME	FEMA	GME	FEMA
Río La Plata										
@ PR-52	57.01	55.66	477	340	708	680	847	880	1,205	1,445
@ PR-1	75.90	75.89	477	430	708	890	849	1,130	1,206	1,925
Río Guavate	18.64	18.00	294	105	423	200	493	250	679	395

3.10 Peak Discharges Used in Hydraulic Modeling

Based on the verification procedures we have concluded that the FEMA discharge for Río Guavate is substantially under-estimated and should not be used. Therefore, for flow along Río Guavate we have used the peak discharge determined by the unit hydrograph method in this report. For Río La Plata we have continued to use the FEMA discharge, which is somewhat higher than the unit hydrograph value obtained in this report. Thus, the modeling incorporates the higher of the two discharge estimates for each river. The peak discharges used in hydraulic modeling are shown in **Table 9**.

Table 9: Peak Discharges Used in HEC-RAS Model

Location	Peak Discharges (cms)			
	10-yr	50-yr	100-yr	500-yr
Río La Plata above PR-52	340	680	880	1,445
Río La Plata above PR-1	430	890	1,130	1,925
Río Guavate above PR-52	294	423	493	697

4. HYDRAULIC ANALYSIS

4.1 Study Approach and Methodology

Hydraulic modeling was performed using Corp of Engineers' HEC-RAS (v3.0) software for uniform, steady, one-dimensional flow to estimate the effects produced by changes in geometry, roughness and flow. The program can also evaluate hydraulic structures including culverts, intakes, and bridges and also contains hydraulic routines specifically designed to analyze encroachments. Given the type of analysis, HEC-RAS is considered the appropriate model for this analysis. The HEC-RAS models were run in subcritical, steady-flow model.

Prior FEMA modeling for this river was performed by the one-dimensional USGS step backwater program. The geometry from the USGS model datafile printout was reproduced in the HEC-RAS model to create the duplicate effective model.

4.2 Models Prepared

The following hydraulic models were prepared:

1. Duplicate Effective Model. The USGS step backwater geometric file was reproduced in the HEC-RAS model and n-values were adjusted to calibrate against the reported 100-year water surface profile using the FEMA discharge data. A copy of the original USGS step backwater model printout is reproduced in ***Appendix D***.

2. Existing Condition Model. The HEC-RAS model was modified to incorporate the present hydraulic conditions based on field observations and updated field survey data. This analysis was performed for the 10-, 50-, 100-, and 500-year events.

3. Floodway Encroachment Model. The floodway encroachment analysis was performed to define the limits of the 100-year floodway and is based on the existing condition model and Type-1 and 4 encroachment methods. Encroachment limits were determined along both Río La Plata and Río Guavate based on a maximum increase in water surface elevation of 0.3 m, the same value used in the effective FEMA study.

4.3 Hydraulic Geometry

The effective model cross sections were taken directly from the USGS step-backwater model. For the existing condition model cross section locations were selected based on reference to FEMA cross sections, with additional cross-sections added baed on topographic mapping and field reconnaissance to best represent the hydraulic characteristics of the river along the study reach. Cross section locations are shown in

Figure 9, and **Table 10** presents the cross section names used in the model and those used by surveyor.

Table 10: Cross Section Names used in the HEC-RAS Models and those by Surveyor

River	Model Cross Section	Surveyor Cross Section	Surveyor	Description
La Plata	3			Constructed from topographic survey
La Plata	4	XS-12	Antonio Meléndez	D/S face of PR-1 bridge
La Plata	5	XS-12	Antonio Meléndez	U/S face of PR-1 bridge
La Plata	6	XS-11	Antonio Meléndez	
La Plata	7	XS-10	Antonio Meléndez	
La Plata	8	XS-4+81.97	Antonio Meléndez	
La Plata	9	XS-3+69.41	Antonio Meléndez	
La Plata	11	XS-2+89.99	Antonio Meléndez	
La Plata	12	XS-8 (1+30.81)	Antonio Meléndez	
La Plata	14	XS-7	Antonio Meléndez	
La Plata	15	XS-6	Antonio Meléndez	
La Plata	16	XS-5	Antonio Meléndez	
La Plata	17	XS-4	Antonio Meléndez	
La Plata	18	XS-3	Antonio Meléndez	D/S face of PR-52 bridge
La Plata	19	XS-3	Antonio Meléndez	U/S face of PR-52 bridge
Guavate	21	XS-21	Antonio Meléndez	
Guavate	22	XS-20	Antonio Meléndez	
Guavate	23	XS-19	Antonio Meléndez	
Guavate	24	XS-18	Antonio Meléndez	
Guavate	24.1	Profile 1	Fernando Santiago	
Guavate	24.2	Profile 2	Fernando Santiago	
Guavate	24.3	Profile 3	Fernando Santiago	
Guavate	24.4	Profile 4	Fernando Santiago	
Guavate	24.5	Profile 5	Fernando Santiago	
Guavate	24.6	Profile 6	Fernando Santiago	
Guavate	24.7	Profile 7	Fernando Santiago	
Guavate	24.8	Profile 8	Fernando Santiago	
Guavate	26	Profile 9	Fernando Santiago	D/S face bridge
Guavate	26.02			Copy of Profile 10
Guavate	26.04	Profile 10	Fernando Santiago	
Guavate	26.2			Copy of Profile 11
Guavate	26.25	Profile 11	Fernando Santiago	
Guavate	26.4	Profile 12	Fernando Santiago	
Guavate	26.5			Copy of Profile 12
Guavate	27	Profile 13	Fernando Santiago	U/S face bridge

4.4 Hydraulic Coefficients

Manning's n-value indicates the relative roughness in the channel and the energy loss due to friction and turbulence (boundary and form losses). The n-values used in the Duplicate Effective Model were adjusted to match FEMA profile for the FEMA discharges. Manning's n-values for the existing condition model were estimated based on field observations and checked with reference to Barnes (1967) and Chow (1959). The n-values were selected based on channel form, bed material and vegetation. The values employed for the coefficient of expansion and contractions along the reach are those recommended in the HEC-RAS user's manual. These coefficients of expansion and contraction increase for bridge sections characterized by abrupt transitions. **Table 11** shows the coefficients used in the hydraulic modeling.

Table 11: Hydraulic Coefficients used in Hydraulic Model

Parameter	Effective	Duplicate Effective
Manning's N-value		
Main Channel (La Plata)	0.03-0.035	0.03-0.045
Main Channel (Guavate)	0.02-0.04	0.03-0.05
Overbanks (La Plata)	0.045-0.05	0.05
Overbanks (Guavate)	0.045-0.05	0.10-0.15
Coefficient of Expansion		
Gradual Transition	0.1	0.1
Abrupt Transition	0.3	0.3
Coefficient of Contraction		
Gradual Transition	0.3	0.3
Abrupt Transition	0.5	0.5

4.5 Results of Duplicate Effective Model

In comparing FEMA printout results to the mapped cross sections for Río La Plata, it was first necessary to adjust cross section names per **Table 12**. Our report uses the cross-section names as they appear in the map.

Table 12: FEMA Cross-Section Labels

XSEC in FEMA Report	XSEC in Effective Map
I	BH
K	BI
L	BJ
M	BK
N	BL
O	BM

A duplicate effective model was prepared with HEC-RAS and compared to the results obtained with USGS Step Backwater program in **Table 13** and **Figure 10**. Input data and results of the duplicate effective model can be seen in ***Appendix E***.

FEMA did not report water surface elevations at all sections due to lack of data. The results of calibration to the effective model presented a problem at two cross-sections.

- At cross-section BK on Río La Plata the FEMA water level is about 1.6 m below our water level for the same location, even though perfect matches are achieved at the upstream and downstream sections. We believe there is an error in the FEMA report because the cross-section area and flow velocity are similar to our results, despite the large difference in water level. At the reported FEMA water level, the cross-section at area is only 83 m^2, and at a discharge of 880 cms this would produce a highly super-critical flow velocity of 10.6 m/s, which is clearly impossible in this case.
- The same problem occurs at cross-section B on Río Guavate. The FEMA water level is about 0.63 m above our water levels for the same location, even though perfect matches are achieved at the upstream sections.

Therefore, the calibration results at these two locations have been ignored.

Table 13: 100-yr Water Surface Elevations for Effective and Duplicate Effective Models for Río La Plata

River	FEMA Cross Section	Model Cross Section	Effective	Duplicate Effective	Difference
La Plata	BH	1	--	370.74	
La Plata	BI	2	--	371.19	
La Plata	BJ	3	371.8	371.81	0.01
La Plata	BK	4	372.6	374.24	1.64
La Plata	BL	5	375.8	375.84	0.04
La Plata	BM	6	--	376.66	

-- No data available

Table 14: 100-yr Water Surface Elevations for Effective and Duplicate Effective Models for Río Guavate

River	FEMA Cross Section	Model Cross Section	Effective	Duplicate Effective	Difference
Guavate	BJ	0	371.8	371.8	0.00
Guavate	B	1	373.9	373.27	0.63
Guavate	C	2	--	374.39	
Guavate	D	3	--	377.17	
Guavate	E	4	377.8	377.76	0.04
Guavate	F	5	378.6	378.62	0.02

-- No data available

4.6 Results of Existing Condition Model

Table 15 presents the existing condition water surface elevations for Río La Plata and Río Guavate for the 10-, 50-, 100-, and 500-year events. Input data and results of the existing condition model can be seen in ***Appendix F***.

Table 15: Existing Condition Water Surface Elevations

River	Cross Section	Water Surface Elevations (m-msl)			
		10-yr	50-yr	100-yr	500-yr
La Plata	3	368.16	369.63	370.09	371.13
La Plata	4	368.45	369.75	370.10	371.21
La Plata	5	368.63	369.98	370.46	373.13
La Plata	6	368.93	370.73	371.46	374.32
La Plata	7	369.23	370.94	371.73	374.32
La Plata	8	370.53	372.14	372.65	374.57
La Plata	9	370.67	372.19	372.70	374.59
La Plata	11	370.72	372.06	372.53	374.58
La Plata	12	371.46	372.45	372.88	374.62
La Plata	14	372.98	373.80	373.99	374.87
La Plata	15	373.97	374.63	374.93	375.50
La Plata	16	374.48	375.36	375.72	376.22
La Plata	17	376.14	377.10	377.41	378.09
La Plata	18	376.92	377.40	377.64	378.55
La Plata	19	377.14	378.11	378.73	380.38
Guavate	21	371.33	372.07	372.63	374.61
Guavate	22	373.13	373.40	373.49	374.70
Guavate	23	374.21	374.51	374.66	375.02
Guavate	24	374.84	375.20	375.32	375.60
Guavate	24.1	375.29	375.68	375.84	376.29
Guavate	24.2	375.83	375.93	375.99	376.28
Guavate	24.3	375.96	376.42	376.57	376.98
Guavate	24.4	376.57	377.10	377.26	377.71
Guavate	24.5	376.60	376.95	377.29	378.42
Guavate	24.6	376.66	376.99	377.65	378.46
Guavate	24.7	376.80	377.87	378.31	379.28
Guavate	24.8	377.64	378.47	378.87	380.15
Guavate	26	379.08	380.16	380.64	381.92
Guavate	26.02	378.94	380.00	380.50	381.72
Guavate	26.04	378.97	380.03	380.53	381.75
Guavate	26.2	379.21	380.34	380.86	382.14
Guavate	26.25	379.23	380.36	380.88	382.16
Guavate	26.4	379.04	380.12	380.62	381.86
Guavate	26.5	379.08	380.15	380.65	381.89
Guavate	27	379.37	380.54	381.05	382.36

4.7 Results of Floodway Encroachment Model

Figure 11 shows the 100-yr floodplain and floodway for the study reach of Río La Plata and Río Guavate. **Table 16** compares 100-year existing and encroached condition model flood elevations (m-msl) for Río La Plata and Río Guavate respectively. **Table 17** shows the stations where the encroachment limits were established. Input data and results of the encroachment model can be seen in ***Appendix G***.

Table 16: Comparison of 100-year Existing Condition and Floodway Encroachment Model Water Surface Elevations

River	Cross Section	Existing	Encroached	Difference
La Plata	3	370.09	370.11	0.02
La Plata	4	370.10	370.11	0.01
La Plata	5	370.46	370.46	0.00
La Plata	6	371.46	371.46	0.00
La Plata	7	371.73	371.73	0.00
La Plata	8	372.65	372.68	0.03
La Plata	9	372.70	372.75	0.05
La Plata	11	372.53	372.53	0.00
La Plata	12	372.88	372.88	0.00
La Plata	14	373.99	374.13	0.14
La Plata	15	374.93	375.23	0.30
La Plata	16	375.72	376.02	0.30
La Plata	17	377.41	377.49	0.08
La Plata	18	377.64	377.91	0.27
La Plata	19	378.73	378.75	0.02
Guavate	21	372.63	372.62	-0.01
Guavate	22	373.49	373.62	0.13
Guavate	23	374.66	374.77	0.11
Guavate	24	375.32	375.36	0.04
Guavate	24.1	375.84	376.08	0.24
Guavate	24.2	375.99	376.18	0.19
Guavate	24.3	376.57	376.60	0.03
Guavate	24.4	377.26	377.45	0.19
Guavate	24.5	377.29	377.28	-0.01
Guavate	24.6	377.65	377.67	0.02
Guavate	24.7	378.31	378.36	0.05
Guavate	24.8	378.87	378.83	-0.03
Guavate	26	380.64	380.92	0.28
Guavate	26.02	380.50	380.79	0.29
Guavate	26.04	380.53	380.81	0.28
Guavate	26.2	380.86	381.10	0.24
Guavate	26.25	380.88	381.11	0.23
Guavate	26.4	380.62	380.89	0.27
Guavate	26.5	380.65	380.91	0.26
Guavate	27	381.05	381.26	0.21

Table 17: Cross Sections Stations for Floodway Encroachment

River	Cross Section	Left Station	Right Station	Top Width
La Plata	3	16.62	205.17	188.55
La Plata	4*			
La Plata	5*			
La Plata	6	691.92	802.95	111.00
La Plata	7	216.53	396.16	179.63
La Plata	8	589.22	936.81	347.59
La Plata	9	88.00	596.00	508.00
La Plata	11	272.03	455.33	183.30
La Plata	12	223.86	392.77	168.91
La Plata	14	95.00	290.00	195.00
La Plata	15	52.00	388.00	336.00
La Plata	16	47.43	398.00	350.57
La Plata	17	7.15	182.42	175.27
La Plata	18*			
La Plata	19*			
Guavate	21	262.01	497.27	235.26
Guavate	22	188.43	327.86	139.43
Guavate	23	211.82	371.82	160.00
Guavate	24	127.71	266.51	138.80
Guavate	24.1	15.90	158.00	141.65
Guavate	24.2	8.40	122.30	112.11
Guavate	24.3	6.90	108.50	101.42
Guavate	24.4	4.50	93.80	89.04
Guavate	24.5	6.70	74.00	48.82
Guavate	24.6	6.70	65.20	58.50
Guavate	24.7	2.50	43.20	40.70
Guavate	24.8	10.20	47.52	37.32
Guavate	26*			
Guavate	26.02*			
Guavate	26.04*			
Guavate	26.2*			
Guavate	26.25*			
Guavate	26.4*			
Guavate	26.5*			
Guavate	27*			

* Note: Cross Section not encroached.

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

1. The FEMA discharges along Río Guavate are significantly under-estimated. New hydrology has been prepared for Río Guavate. The existing condition 100-year water level of 381.05 m computed at section 27, upstream face of the bridge is 3.25 m higher then the FEMA 100-year water level of 377.8 at the same site due to both the change in hydrology plus more detailed hydraulic geometry of this area.
2. The FEMA 100-year discharge for Río La Plata is slightly higher than the value obtained in the current study. The FEMA discharge values have therefore been used in the hydrologic analysis of Río La Plata.
3. Proposed revisions to floodway limits are shown in **Figure 11**. There limits have been set based on the new encroachment analysis, and have also been adjusted to provide floodway designation in buffer areas where river meanders are actively eroding the stream bank.

6. CERTIFICATION

I hereby certify that the hydrologic/hydraulic study "Hydrologic-Hydraulic Study Río La Plata and Río Guavate, for Parque Tecnológico de Cayey, Cayey, Puerto Rico" has been prepared in accordance with the best hydrologic and hydraulic practices as described in this document and that, based on the studies and field measurements provided by other parties, results are true and correct.

Certified today November 29, 2006

Gregory L. Morris,P.E.,Ph.D.

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PUERTO RICO

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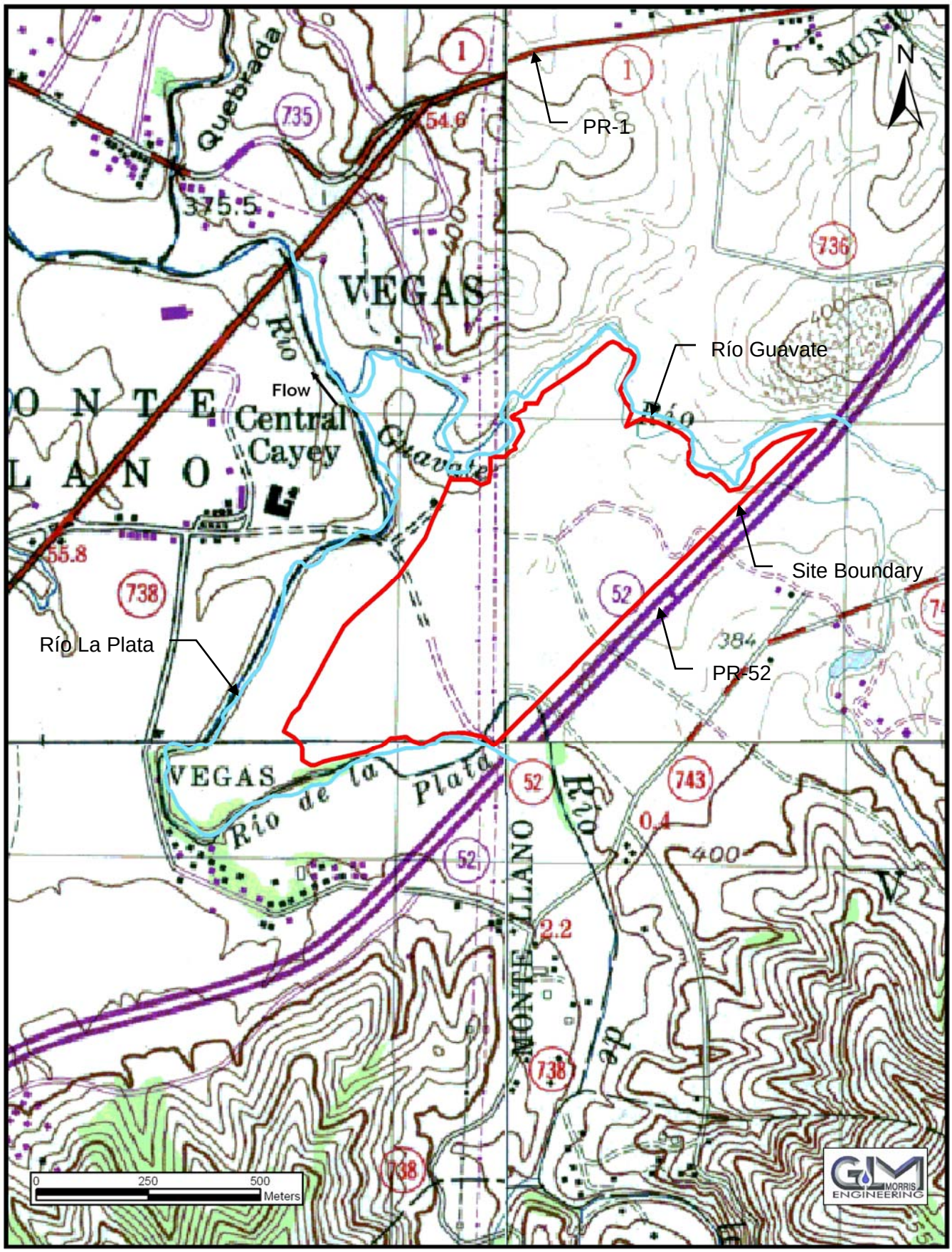

Figure 1: Location map (scale 1:12,000)

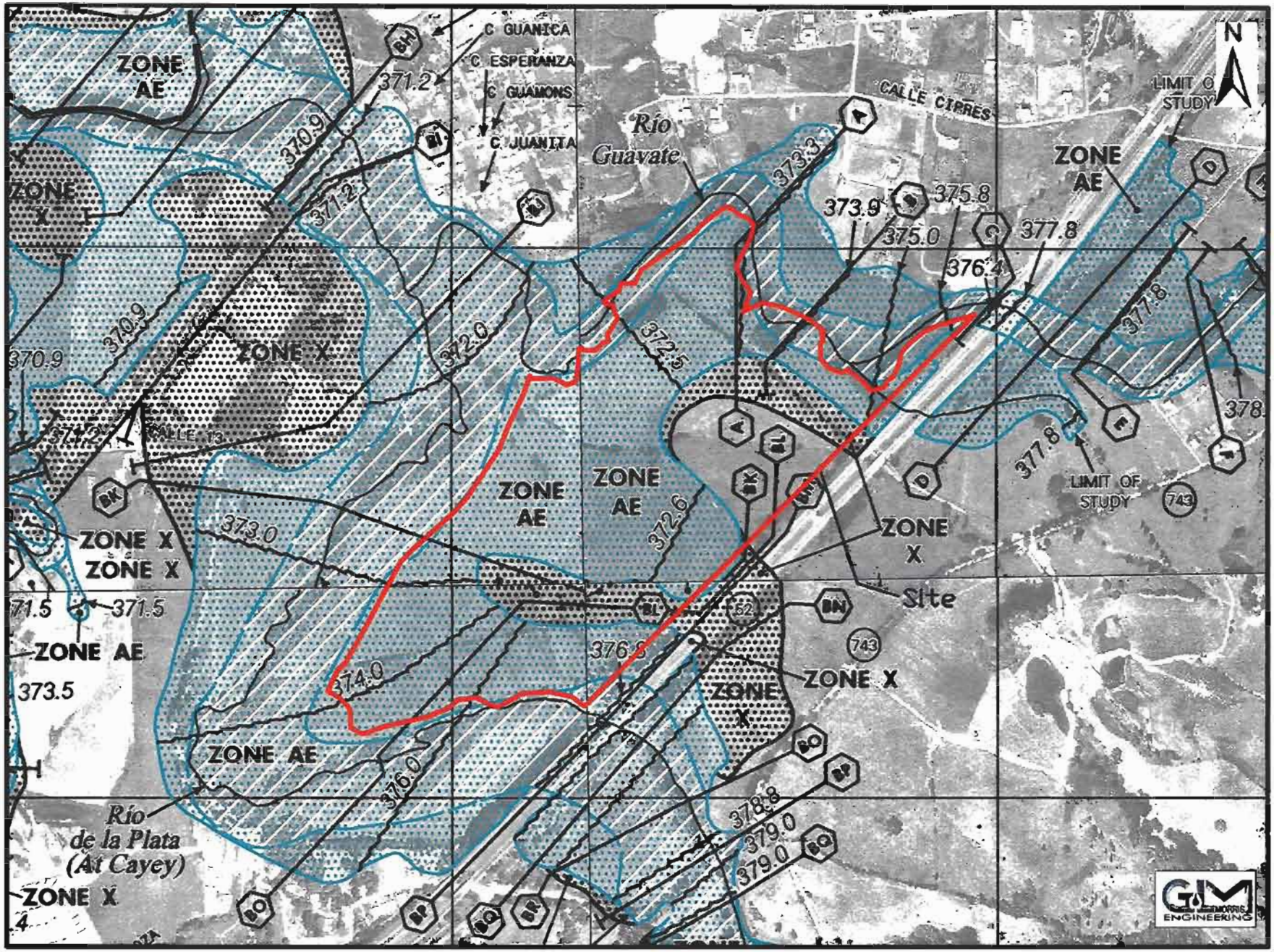

Figure 2: Existing condition FEMA FIRM map, panels 1195H, 1215H, 1735H and 1755H, dated April 19, 2005 (scale 1:20,000)

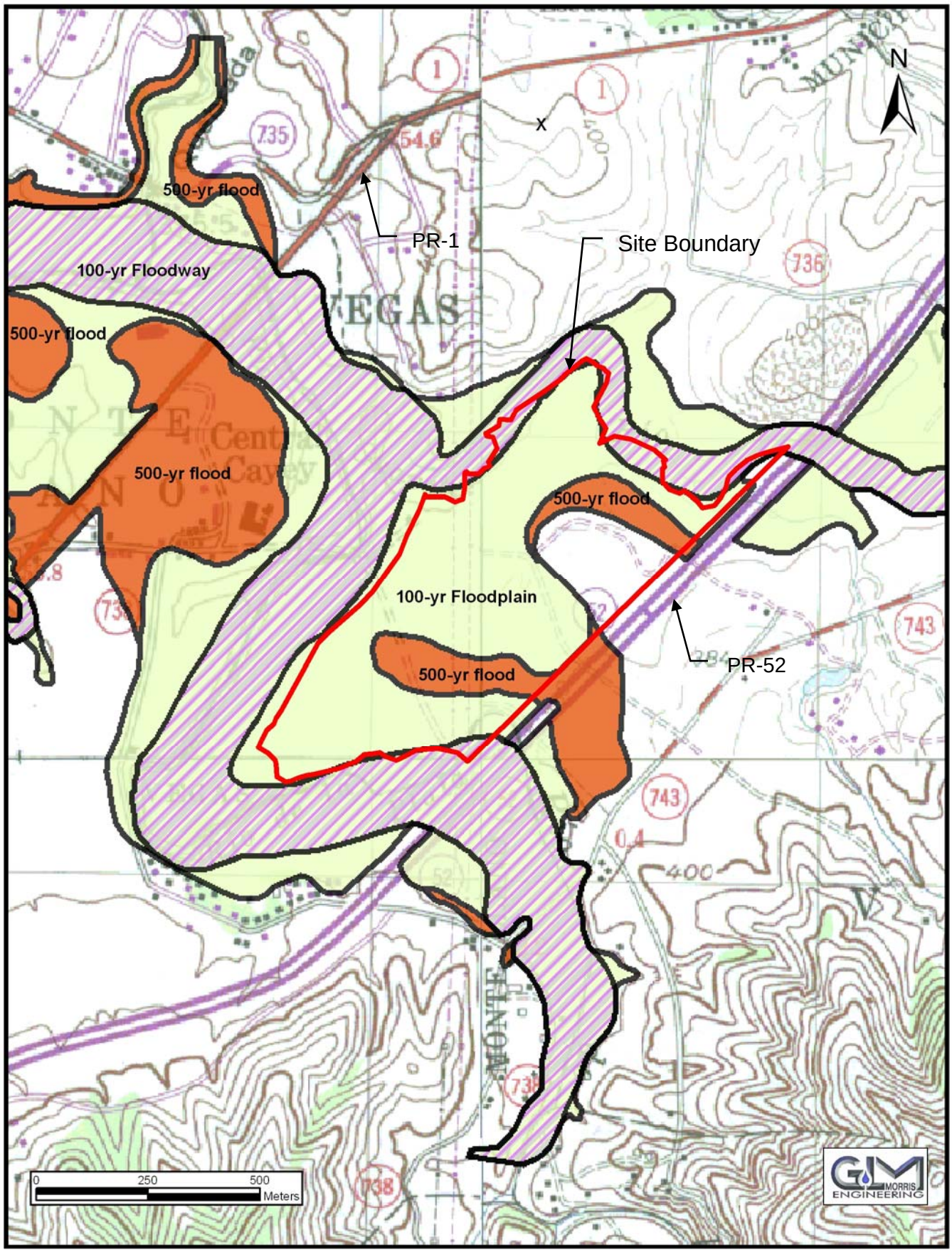

Figure 3: Flood zones within the study area, obtained from FEMA Flood Insurance Rate map dated, April 19, 2005 (scale 1:12,000)

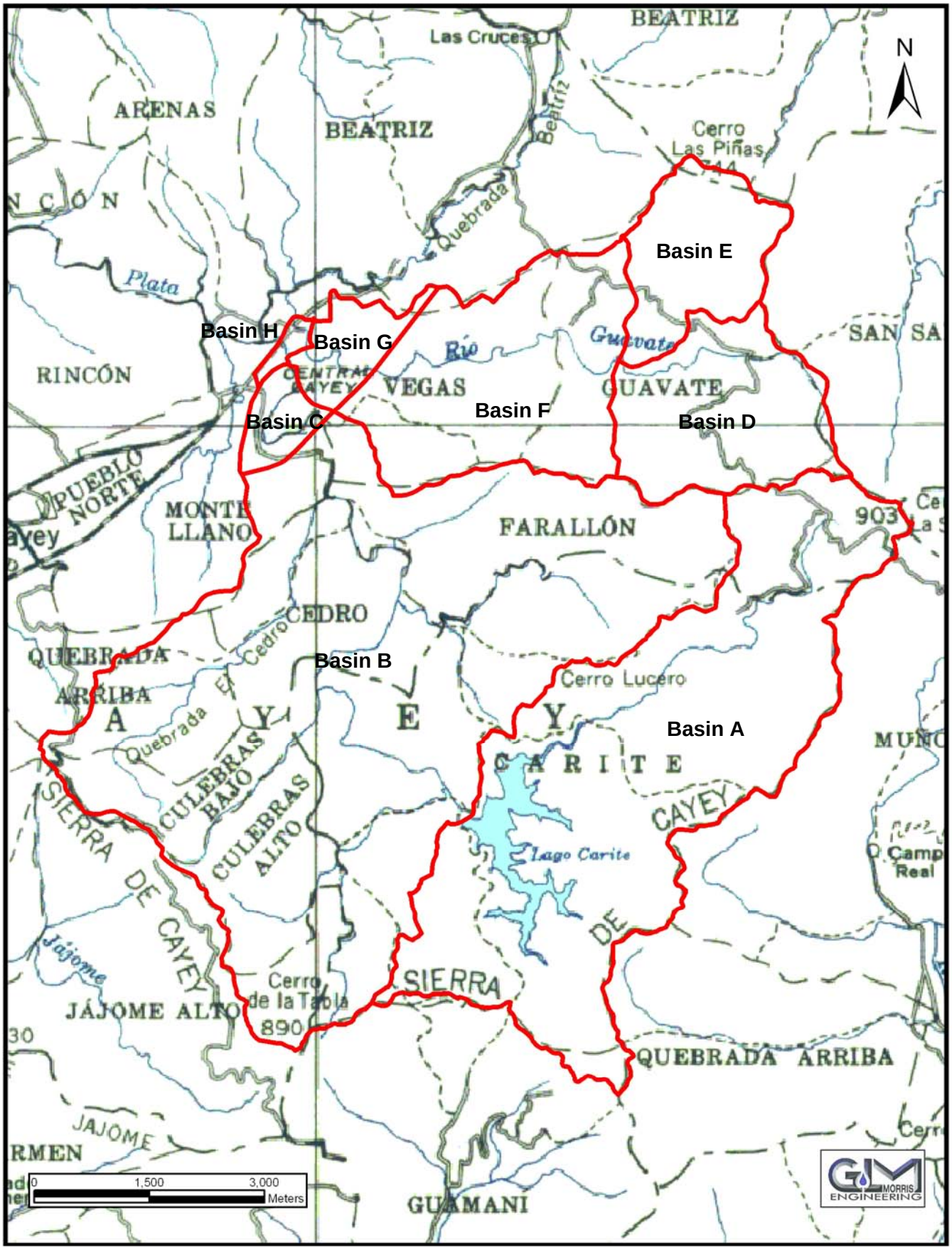

Figure 4: Watersheds limits (scale 1:70,000)

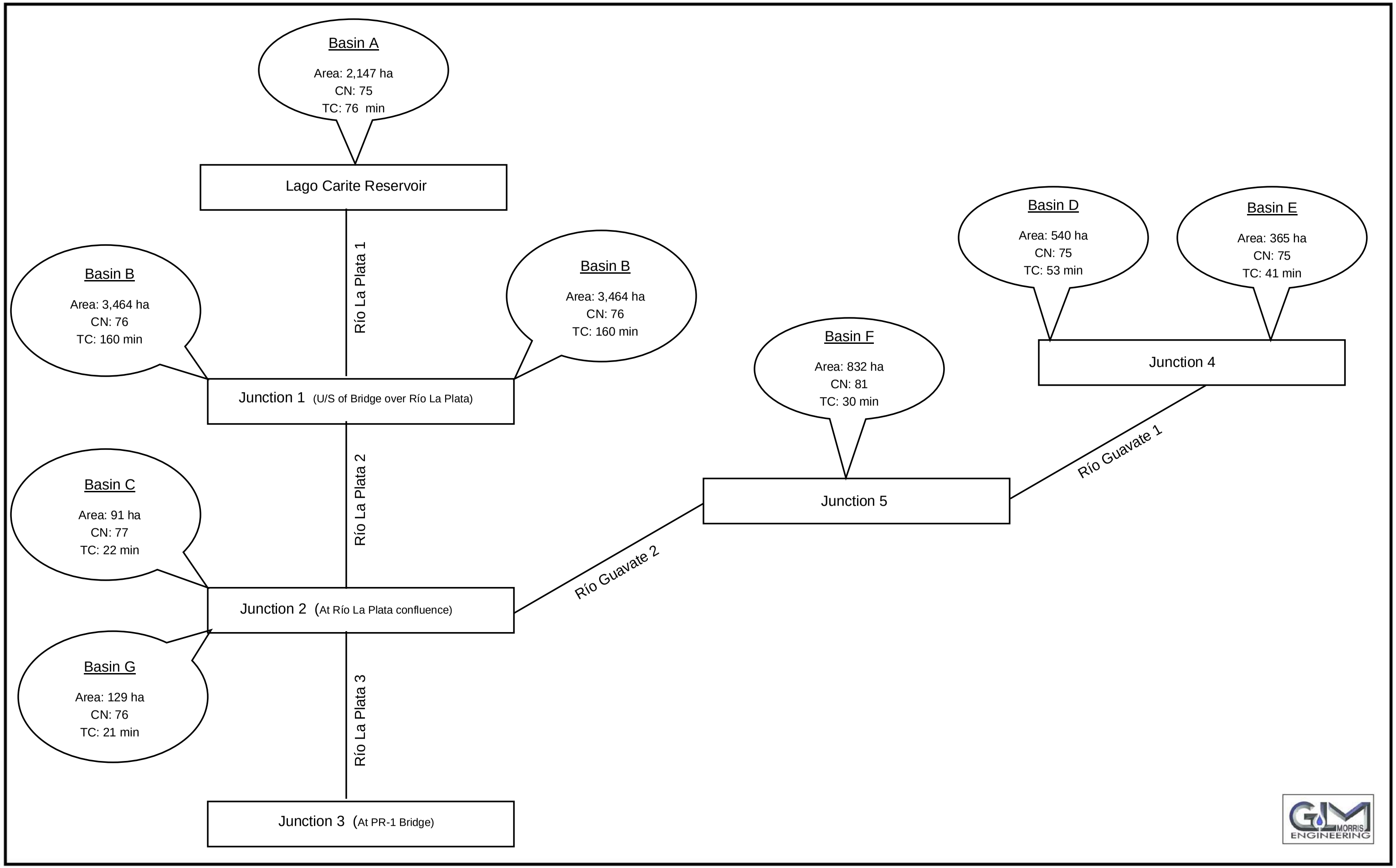

Figure 5: Existing condition link/node diagram

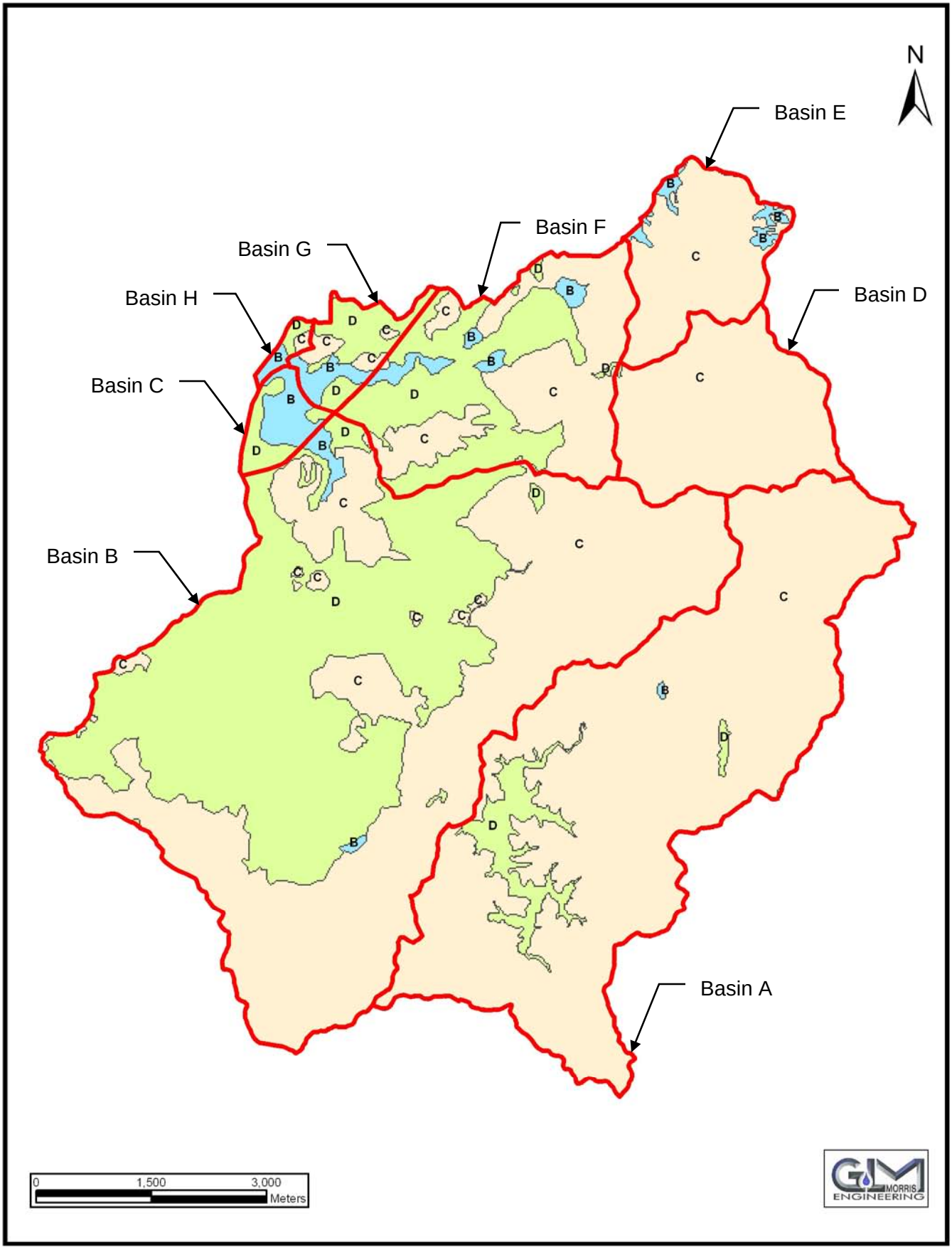

Figure 6: Hydrologic soil group (scale 1:70,000)

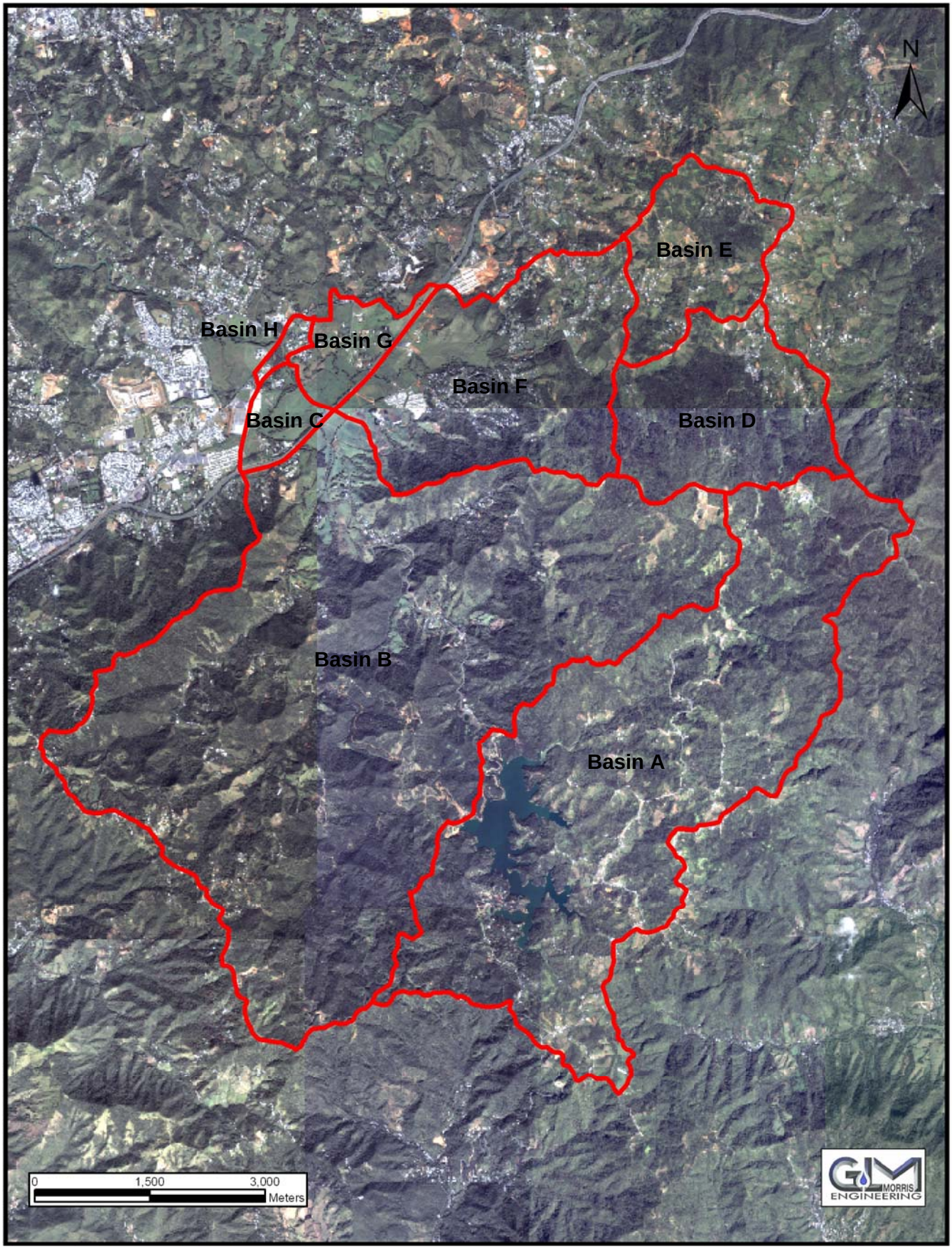

Figure 7: Aerial photo (scale 1:70,000)

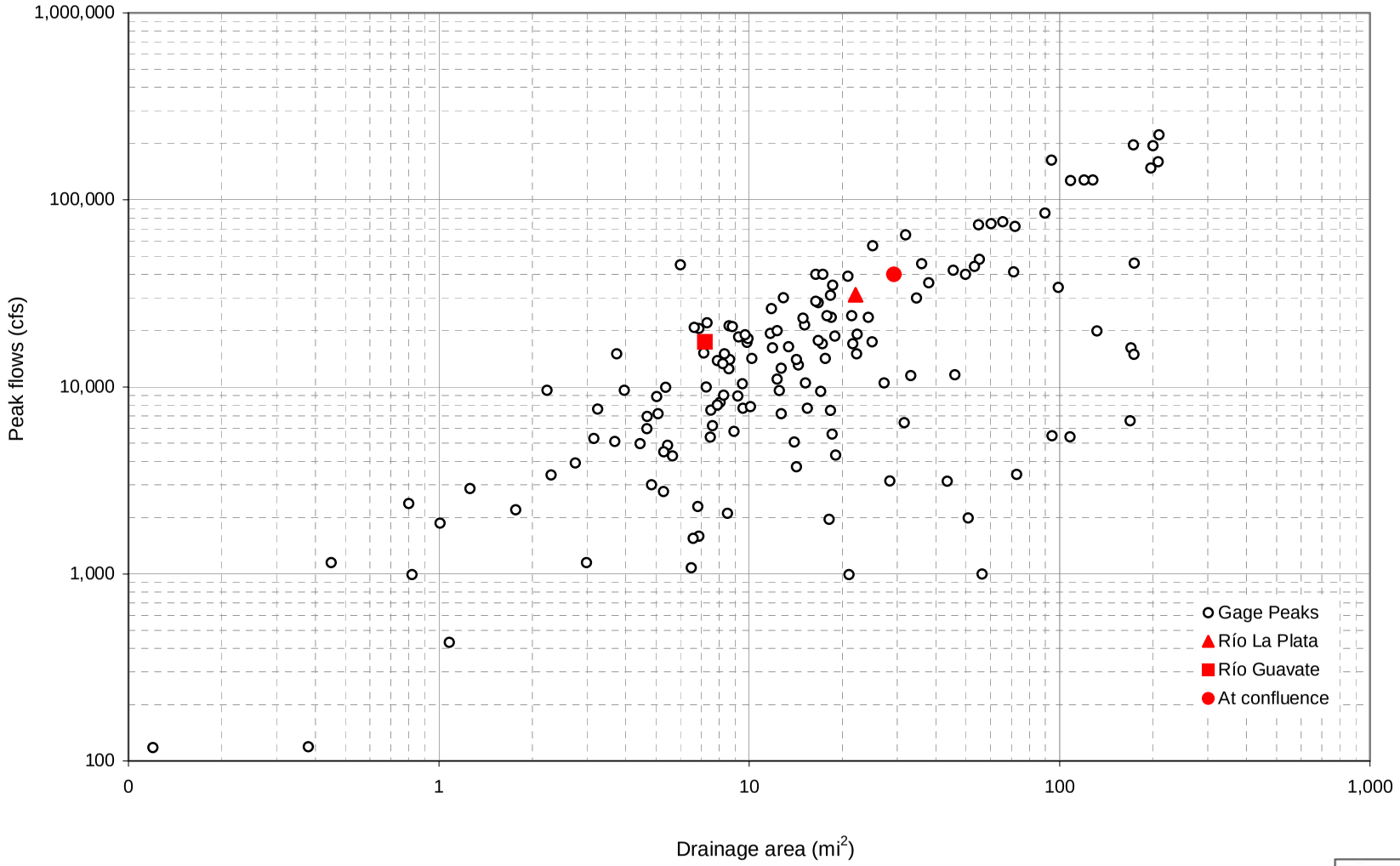

Figure 8: Historical peak flows at USGS Station vs. drainage area

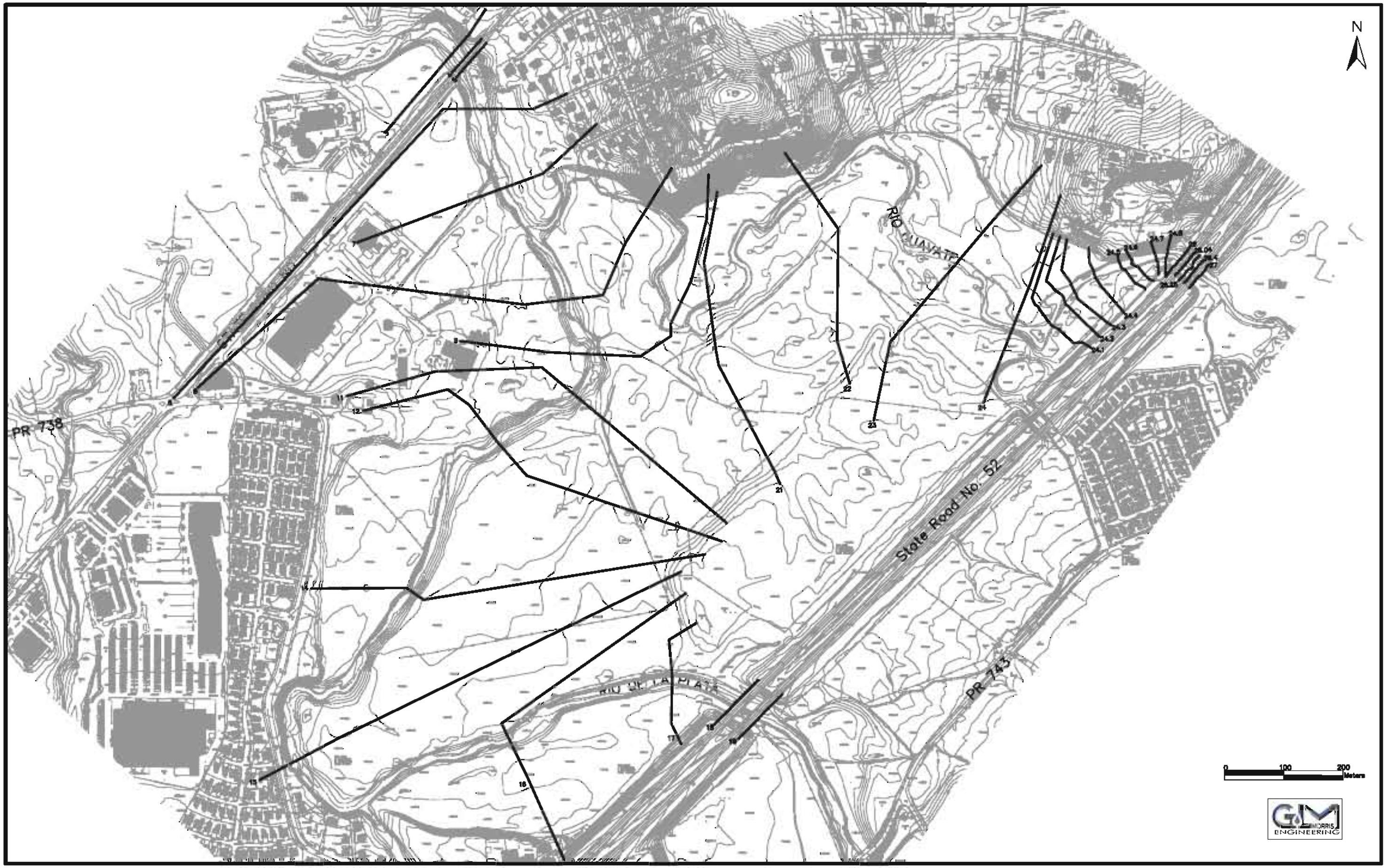

Figure 9: Cross section locations in HEC-RAS Model (scale 1:6,000)

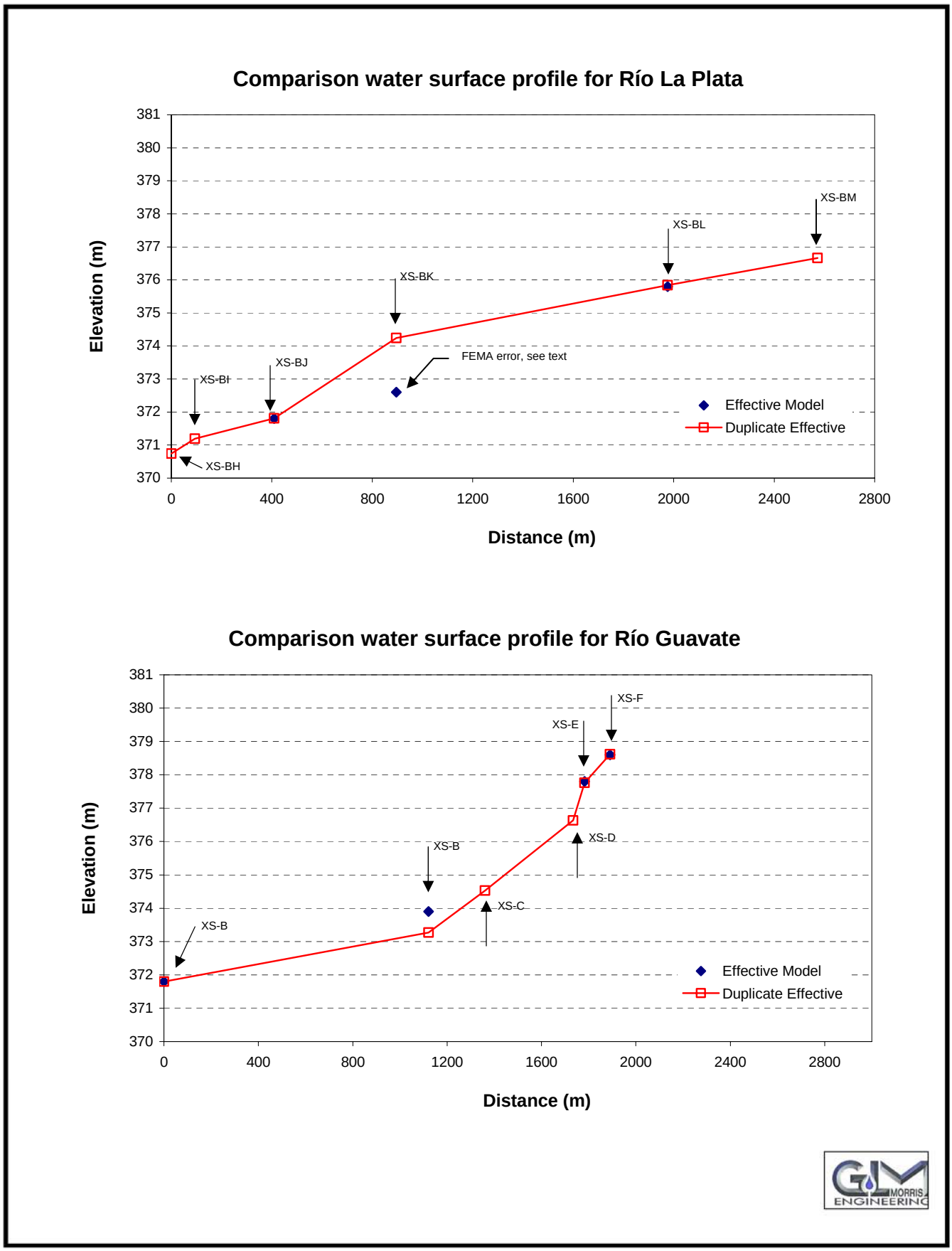

Figure 10: Comparison profiles between Effective and Duplicate Effective models

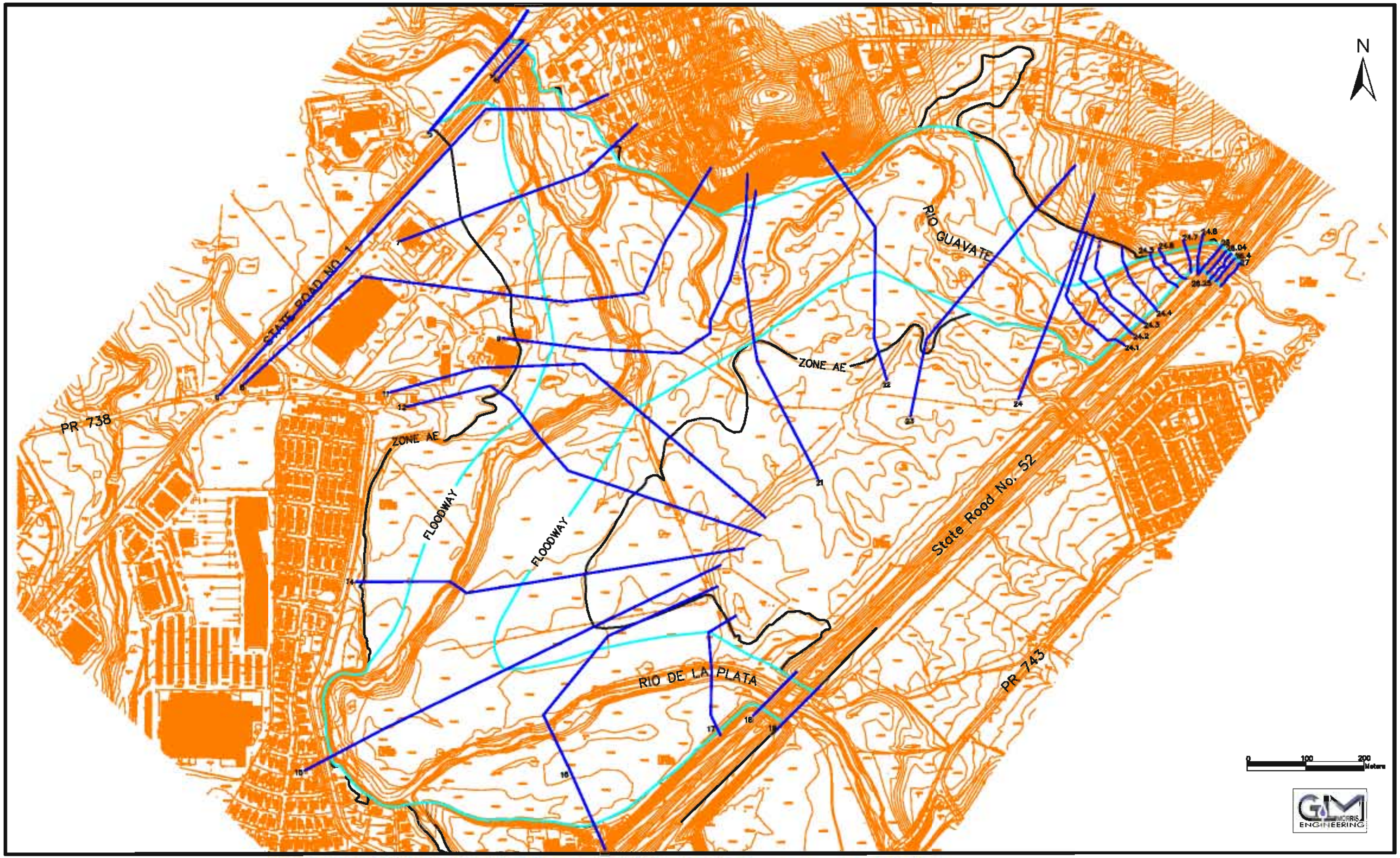

Figure 11: Study reach 100-yr Floodplain and Floodway limits (scale 1:6,000)

Appendix

Appendix A

Curve Number Calculations

Table 1: Curve Number Calculations for Basin A

Hydrologic Soil Group	Land Use Description	Area, acres	CN
B	Woods	4.06	60
C	Pasture	30.1	79
	Woods	4,868.0	73
	Industrial	27.7	91
	Artificial Water Body	48.70	100
D	Woods	41.30	79
	Artificial Water Body	2.80	100
	Weighted Curve Number		**75**

Table 2: Curve Number Calculations for Basin B

Hydrologic Soil Group	Land Use Description	Area, acres	CN
B	Pasture	2.2	69
	PR-52	2.7	98
C	Woods	53.4	60
	Pasture	194.5	79
	Woods	4454.0	73
	Residential	41.2	90
	Industrial	11.1	91
D	Pasture	135.4	84
	PR-52	0.1	98
	Woods	3650.0	79
	Residential	16.5	92
	Weighted Curve Number		**76**

Table 3: Curve Number Calculations for Basin C

Hydrologic Soil Group	Land Use Description	Area, acres	CN
B	Pasture	58.5	69
	PR-52	0.5	98
	Woods	34.3	60
	Residential	0.01	85
D	Pasture	49.8	84
	PR-52	5.1	98
	Woods	65.0	79
	Residential	10.8	92
	Weighted Curve Number		**77**

Table 4: Curve Number Calculations for Basin D

Hydrologic Soil Group	Land Use Description	Area, acres	CN
C	Pasture	23.5	79
	Woods	1,167.1	73
	Residential	142.9	90
	Weighted Curve Number		**75**

Table 5: Curve Number Calculations for Basin E

Hydrologic Soil Group	Land Use Description	Area, acres	CN
B	Pasture	9.31	69
	Woods	57.8	60
C	Pasture	116.6	79
	Woods	628.4	73
	Residential	87.2	90
D	Artificial Water Body	2.80	100
		Weighted Curve Number	**75**

Table 6: Curve Number Calculations for Basin F

Hydrologic Soil Group	Land Use Description	Area, acres	CN
B	Pasture	103.6	69
	PR-52	2.6	98
	Woods	1.6	60
C	Pasture	174.2	79
	PR-52	2.6	98
	Woods	657.4	73
	Residential	181.9	90
	Industrial	3.7	91
	Woods-grass combination	23.8	76
D	Pasture	368.1	84
	PR-52	12.2	98
	Woods	236.0	79
	Residential	267.5	92
	Industrial	19.6	93
		Weighted Curve Number	**81**

Table 7: Curve Number Calculations for Basin G

Hydrologic Soil Group	Land Use Description	Area, acres	CN
B	Pasture	49.7	69
	Woods	13.0	60
	Residential	1.4	85
C	Pasture	34.7	79
	Woods	9.9	73
	Residential	20.0	90
D	Pasture	122.2	84
	PR-52	3.9	98
	Woods	4.2	79
	Residential	59.0	92
		Weighted Curve Number	**76**

Appendix B

Time of Concentration Calculations

Table 1: Time of Concentration Calculations for Basin A

Segment	Length (m)	U/S Elev (m)	D/S Elev (m)	Slope	2-yr Precipitation (in)	n-value	Paved? (Y or N)	Avg. Flow Depth (m)	Velocity (m/s)	Froude No	Tc (min)	Tc (hrs)
1 Sheet Flow (L<300 ft)	91	900	858	0.462	5	0.400	---	---	0.13	---	11.74	0.20
2 Shallow Conc. Flow	259	858	807	0.197	---	---	N	---	2.2	---	1.99	
3 Channel Flow (Manning)	1307	807	680	0.097	---	0.100	---	0.4	1.7	0.85	12.87	0.21
4 Channel Flow (Manning)	2739	680	590	0.033	---	0.060	---	0.6	2.1	0.89	21.24	0.35
5 Channel Flow (Manning)	641	590	570	0.031	---	0.060	---	0.8	2.5	0.91	4.21	0.07
6 Channel Flow (Manning)	2034	570	550	0.010	---	0.060	---	1.2	1.9	0.54	18.16	0.30
7 Wave Celerity	2690	---	---	---	---	---	---	7.0	8.3	---	5.41	0.09
Total Distance	9,761									**Total Time of Concentration**	**75.6**	**1.23**

Table 2: Time of Concentration Calculations for Basin B

Segment	Length (m)	U/S Elev (m)	D/S Elev (m)	Slope	2-yr Precipitation (in)	n-value	Paved? (Y or N)	Avg. Flow Depth (m)	Velocity (m/s)	Froude No	Tc (min)	Tc (hrs)
1 Sheet Flow (L<300 ft)	91.44	800	779	0.230	5	0.400	---	---	0.10	---	15.58	0.26
2 Shallow Conc. Flow	64	779	775	0.063	---	---	N	---	1.2	---	0.87	0.01
3 Channel Flow (Manning)	2047	775	550	0.110	---	0.080	---	0.2	1.3	0.99	25.82	0.43
4 Channel Flow (Manning)	1767	550	520	0.017	---	0.060	---	0.4	1.2	0.60	24.98	0.42
5 Channel Flow (Manning)	2793	520	490	0.011	---	0.060	---	0.6	1.2	0.51	37.88	0.63
6 Channel Flow (Manning)	3202	490	400	0.028	---	0.060	---	0.8	2.4	0.86	22.16	0.37
7 Channel Flow (Manning)	3449	400	380	0.006	---	0.060	---	1.6	1.7	0.44	33.11	0.55
Total Distance	13,413									**Total Time of Concentration**	**160.4**	**2.67**

Table 3: Time of Concentration Calculations for Basin C

Segment	Length (m)	U/S Elev (m)	D/S Elev (m)	Slope	2-yr Precipitation (in)	n-value	Paved? (Y or N)	Avg. Flow Depth (m)	Velocity (m/s)	Froude No	Tc (min)	Tc (hrs)
1 Channel Flow (Manning)	2295	380	370	0.004	---	0.060	---	2.0	1.7	0.39	21.90	0.37
Total Distance	2,295							**Total Time of Concentration**			**21.9**	**0.37**

Table 4: Time of Concentration Calculations for Basin D

Segment	Length (m)	U/S Elev (m)	D/S Elev (m)	Slope	2-yr Precipitation (in)	n-value	Paved? (Y or N)	Avg. Flow Depth (m)	Velocity (m/s)	Froude No	Tc (min)	Tc (hrs)
1 Sheet Flow (L<300 ft)	91.44	900	875	0.273	5	0.400	---	---	0.10	---	14.53	0.24
2 Shallow Conc. Flow	153	875	815	0.392	---	---	N	---	3.1	---	0.83	0.01
3 Channel Flow (Manning)	1053	815	600	0.204	---	0.120	---	0.2	1.3	0.92	13.63	0.23
4 Channel Flow (Manning)	1462	600	500	0.068	---	0.080	---	0.6	2.3	0.96	10.48	0.17
5 Channel Flow (Manning)	986	500	470	0.030	---	0.080	---	1.0	2.2	0.70	7.54	0.13
6 Channel Flow (Manning)	1191	470	425	0.038	---	0.080	—	1.6	3.3	0.84	5.97	0.10
Total Distance	4,936							**Total Time of Concentration**			**53.0**	**0.88**

Table 5: Time of Concentration Calculations for Basin E

Segment	Length (m)	U/S Elev (m)	D/S Elev (m)	Slope	2-yr Precipitation (in)	n-value	Paved? (Y or N)	Avg. Flow Depth (m)	Velocity (m/s)	Froude No	Tc (min)	Tc (hrs)
1 Sheet Flow (L<300 ft)	91.44	740	705	0.383	5	0.400	---	---	0.12	---	12.70	0.21
2 Shallow Conc. Flow	444	705	570	0.304	---	---	N	---	2.7	---	2.75	0.05
3 Shallow Conc. Flow	581	570	500	0.120	---	---	N	---	1.7	—	5.71	0.10
4 Channel Flow (Manning)	2569	500	450	0.019	---	0.080	---	2.0	2.8	0.63	15.47	0.26
5 Channel Flow (Manning)	879	450	425	0.028	---	0.080	—	2.0	3.3	0.76	4.38	0.07
Total Distance	4,564							**Total Time of Concentration**			**41.0**	**0.68**

Table 6: Time of Concentration Calculations for Basin F

Segment	Length (m)	U/S Elev (m)	D/S Elev (m)	Slope	2-yr Precipitation (in)	n-value	Paved? (Y or N)	Avg. Flow Depth (m)	Velocity (m/s)	Froude No	Tc (min)	Tc (hrs)
1 Channel Flow (Manning)	4815	425	375	0.010	---	0.060	---	2.0	2.7	0.61	29.77	0.50
Total Distance	4,815							**Total Time of Concentration**			**29.8**	**0.50**

Table 7: Time of Concentration Calculations for Basin G

Segment	Length (m)	U/S Elev (m)	D/S Elev (m)	Slope	2-yr Precipitation (in)	n-value	Paved? (Y or N)	Avg. Flow Depth (m)	Velocity (m/s)	Froude No	Tc (min)	Tc (hrs)
1 Channel Flow (Manning)	1781	375	370	0.003	---	0.060	—	2.0	1.4	0.32	21.18	0.35
Total Distance	1,781							**Total Time of Concentration**			**21.2**	**0.35**

Appendix C

Input Data and Results of HEC-HMS Model for Existing Conditions

Summary Results

Return interval: 10-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
1	56.1089	393.73	15Sep2004, 14:00	127.82
2	75.6604	476.50	15Sep2004, 13:45	131.12
3	75.9097	477.36	15Sep2004, 13:45	131.17
4	9.0439	161.38	15Sep2004, 12:30	134.91
5	17.3591	294.47	15Sep2004, 12:30	143.48
Basin B	34.6366	318.39	15Sep2004, 13:45	134.26
Basin C	0.9063	23.15	15Sep2004, 12:15	141.65
Basin D	5.3962	93.99	15Sep2004, 12:45	134.77
Basin E	3.6477	74.13	15Sep2004, 12:30	135.12
Basin F	8.3152	214.45	15Sep2004, 12:30	153.54
Basin G	1.2861	33.48	15Sep2004, 12:15	138.65
Basin H	0.2493	6.47	15Sep2004, 12:30	162.49
Lago Carite Basin...	21.4723	325.54	15Sep2004, 13:00	149.52
Lago Carite Rese...	21.4723	90.90	15Sep2004, 14:15	119.67
Río Guavate 1	9.0439		31Dec1969, 20:00	0.00
Río Guavate 2	17.3591		31Dec1969, 20:00	0.00
Río La Plata 1	21.4723		31Dec1969, 20:00	0.00
Río La Plata 2	56.1089		31Dec1969, 20:00	0.00
Río La Plata 3	75.6604		31Dec1969, 20:00	0.00

Project : Frequency StormRun : 10-yr Junction:1			
Start of Run :	15Sep2004, 00:00	Basin Model :	Río La Plata and Río G
End of Run :	16Sep2004, 00:15	Meteorologic Model :	10-yr
Execution Time :	29Nov2006, 16:23:23	Control Specifications :	Control 1

Date	Time	Inflow from Río La Plata 1 (M3/S)	Inflow from Basin B (M3/S)	Outflow (M3/S)
15Sep2004	00:00	0.000	0.000	0.000
15Sep2004	00:15	0.000	0.000	0.000
15Sep2004	00:30	0.000	0.000	0.000
15Sep2004	00:45	0.000	0.000	0.000
15Sep2004	01:00	0.000	0.000	0.000
15Sep2004	01:15	0.000	0.000	0.000
15Sep2004	01:30	0.000	0.000	0.000
15Sep2004	01:45	0.001	0.000	0.001
15Sep2004	02:00	0.003	0.000	0.003
15Sep2004	02:15	0.006	0.000	0.006
15Sep2004	02:30	0.010	0.000	0.010
15Sep2004	02:45	0.018	0.000	0.018
15Sep2004	03:00	0.028	0.000	0.028
15Sep2004	03:15	0.042	0.000	0.042
15Sep2004	03:30	0.061	0.000	0.061
15Sep2004	03:45	0.085	0.000	0.085
15Sep2004	04:00	0.115	0.000	0.115
15Sep2004	04:15	0.151	0.000	0.151
15Sep2004	04:30	0.195	0.000	0.195
15Sep2004	04:45	0.247	0.000	0.247
15Sep2004	05:00	0.308	0.000	0.308
15Sep2004	05:15	0.379	0.000	0.379
15Sep2004	05:30	0.461	0.002	0.463
15Sep2004	05:45	0.554	0.014	0.568
15Sep2004	06:00	0.660	0.050	0.710
15Sep2004	06:15	0.779	0.132	0.911
15Sep2004	06:30	0.913	0.285	1.198

Date	Time	Inflow from Río La Plata 1 (M3/S)	Inflow from Basin B (M3/S)	Outflow (M3/S)
15Sep2004	06:45	1.063	0.535	1.598
15Sep2004	07:00	1.230	0.895	2.126
15Sep2004	07:15	1.417	1.375	2.792
15Sep2004	07:30	1.626	1.975	3.601
15Sep2004	07:45	1.858	2.692	4.550
15Sep2004	08:00	2.116	3.521	5.637
15Sep2004	08:15	2.400	4.457	6.856
15Sep2004	08:30	2.713	5.495	8.208
15Sep2004	08:45	3.058	6.639	9.698
15Sep2004	09:00	3.438	7.895	11.334
15Sep2004	09:15	3.857	9.279	13.136
15Sep2004	09:30	4.319	10.810	15.130
15Sep2004	09:45	4.832	12.518	17.350
15Sep2004	10:00	5.403	14.438	19.842
15Sep2004	10:15	6.046	16.610	22.655
15Sep2004	10:30	6.772	19.078	25.850
15Sep2004	10:45	7.597	21.813	29.410
15Sep2004	11:00	8.537	24.803	33.341
15Sep2004	11:15	9.573	28.342	37.915
15Sep2004	11:30	10.534	32.845	43.378
15Sep2004	11:45	11.307	38.982	50.289
15Sep2004	12:00	12.290	48.789	61.079
15Sep2004	12:15	13.668	71.658	85.326
15Sep2004	12:30	15.836	107.403	123.240
15Sep2004	12:45	19.966	156.617	176.583
15Sep2004	13:00	27.940	217.155	245.095
15Sep2004	13:15	40.528	271.039	311.568
15Sep2004	13:30	55.705	305.281	360.986
15Sep2004	13:45	69.854	318.393	388.247
15Sep2004	14:00	80.200	313.530	393.730
15Sep2004	14:15	86.421	294.485	380.907
15Sep2004	14:30	89.708	266.528	356.236

Date	Time	Inflow from Río La Plata 1 (M3/S)	Inflow from Basin B (M3/S)	Outflow (M3/S)
15Sep2004	14:45	90.902	231.072	321.974
15Sep2004	15:00	90.705	199.288	289.993
15Sep2004	15:15	89.631	173.915	263.547
15Sep2004	15:30	87.990	153.031	241.021
15Sep2004	15:45	85.979	136.046	222.025
15Sep2004	16:00	83.739	121.354	205.093
15Sep2004	16:15	81.363	108.616	189.980
15Sep2004	16:30	78.915	97.830	176.744
15Sep2004	16:45	76.432	88.716	165.148
15Sep2004	17:00	73.924	80.851	154.775
15Sep2004	17:15	71.389	74.107	145.495
15Sep2004	17:30	68.933	68.420	137.352
15Sep2004	17:45	66.564	63.589	130.153
15Sep2004	18:00	64.287	59.381	123.668
15Sep2004	18:15	62.103	55.707	117.811
15Sep2004	18:30	60.011	52.505	112.516
15Sep2004	18:45	58.007	49.706	107.712
15Sep2004	19:00	56.087	47.223	103.310
15Sep2004	19:15	54.245	45.007	99.252
15Sep2004	19:30	52.478	42.937	95.416
15Sep2004	19:45	50.785	41.004	91.789
15Sep2004	20:00	49.164	39.237	88.402
15Sep2004	20:15	47.614	37.594	85.209
15Sep2004	20:30	46.133	36.082	82.216
15Sep2004	20:45	44.719	34.807	79.525
15Sep2004	21:00	43.367	33.747	77.114
15Sep2004	21:15	42.076	32.786	74.862
15Sep2004	21:30	40.842	31.908	72.750
15Sep2004	21:45	39.663	31.096	70.759
15Sep2004	22:00	38.536	30.336	68.872
15Sep2004	22:15	37.458	29.624	67.082
15Sep2004	22:30	36.426	28.956	65.382

Junction 2

Return interval: 10-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_Storm\Frequency_Storm.hms]

Date	Time	Inflow from Río La Plata 2 (M3/S)	Inflow from Basin C (M3/S)	Inflow from Río Guavate 2 (M3/S)	Inflow from Basin G (M3/S)	Outflow (M3/S)
15Sep2004	00:00	0.000	0.000	0.000	0.000	0.000
15Sep2004	00:15	0.000	0.000	0.000	0.000	0.000
15Sep2004	00:30	0.000	0.000	0.000	0.000	0.000
15Sep2004	00:45	0.000	0.000	0.000	0.000	0.000
15Sep2004	01:00	0.000	0.000	0.000	0.000	0.000
15Sep2004	01:15	0.000	0.000	0.000	0.000	0.000
15Sep2004	01:30	0.000	0.000	0.000	0.000	0.000
15Sep2004	01:45	0.000	0.000	0.000	0.000	0.000
15Sep2004	02:00	0.001	0.000	0.000	0.000	0.001
15Sep2004	02:15	0.003	0.000	0.000	0.000	0.003
15Sep2004	02:30	0.006	0.000	0.000	0.000	0.006
15Sep2004	02:45	0.011	0.000	0.000	0.000	0.011
15Sep2004	03:00	0.019	0.000	0.000	0.000	0.019
15Sep2004	03:15	0.030	0.000	0.000	0.000	0.030
15Sep2004	03:30	0.045	0.000	0.000	0.000	0.045
15Sep2004	03:45	0.064	0.000	0.000	0.000	0.064
15Sep2004	04:00	0.089	0.000	0.000	0.000	0.089
15Sep2004	04:15	0.120	0.000	0.004	0.000	0.123
15Sep2004	04:30	0.157	0.000	0.042	0.000	0.199
15Sep2004	04:45	0.202	0.000	0.153	0.000	0.355
15Sep2004	05:00	0.255	0.000	0.330	0.000	0.585
15Sep2004	05:15	0.318	0.003	0.543	0.000	0.864
15Sep2004	05:30	0.390	0.016	0.776	0.006	1.188

Junction 2

Return interval: 10-year

Date	Time	Inflow from Río La Plata 2 (M3/S)	Inflow from Basin C (M3/S)	Inflow from Río Guavate 2 (M3/S)	Inflow from Basin G (M3/S)	Outflow (M3/S)
15Sep2004	05:45	0.477	0.037	1.022	0.025	1.561
15Sep2004	06:00	0.587	0.060	1.283	0.055	1.986
15Sep2004	06:15	0.737	0.087	1.589	0.091	2.505
15Sep2004	06:30	0.949	0.117	1.974	0.131	3.170
15Sep2004	06:45	1.252	0.147	2.439	0.172	4.010
15Sep2004	07:00	1.668	0.179	2.968	0.216	5.032
15Sep2004	07:15	2.214	0.213	3.552	0.263	6.243
15Sep2004	07:30	2.900	0.250	4.183	0.313	7.646
15Sep2004	07:45	3.727	0.289	4.862	0.367	9.245
15Sep2004	08:00	4.695	0.331	5.591	0.425	11.042
15Sep2004	08:15	5.800	0.377	6.376	0.488	13.041
15Sep2004	08:30	7.037	0.428	7.227	0.557	15.248
15Sep2004	08:45	8.407	0.483	8.153	0.633	17.676
15Sep2004	09:00	9.916	0.544	9.168	0.718	20.347
15Sep2004	09:15	11.574	0.624	10.332	0.828	23.357
15Sep2004	09:30	13.402	0.713	11.694	0.951	26.759
15Sep2004	09:45	15.426	0.809	13.241	1.084	30.560
15Sep2004	10:00	17.682	0.920	14.981	1.237	34.819
15Sep2004	10:15	20.217	1.050	16.969	1.418	39.655
15Sep2004	10:30	23.081	1.210	19.289	1.640	45.220
15Sep2004	10:45	26.325	1.231	21.423	1.663	50.642
15Sep2004	11:00	29.934	1.306	23.074	1.777	56.091
15Sep2004	11:15	33.951	2.066	27.059	2.868	65.943
15Sep2004	11:30	38.644	3.066	36.039	4.248	81.997

Junction 2

Return interval: 10-year

Date	Time	Inflow from Río La Plata 2 (M3/S)	Inflow from Basin C (M3/S)	Inflow from Río Guavate 2 (M3/S)	Inflow from Basin G (M3/S)	Outflow (M3/S)
15Sep2004	11:45	44.300	3.884	48.550	5.377	102.111
15Sep2004	12:00	51.728	6.660	69.387	9.392	137.167
15Sep2004	12:15	64.312	23.149	147.695	33.482	268.638
15Sep2004	12:30	90.381	20.818	252.745	28.444	392.389
15Sep2004	12:45	130.352	10.844	285.747	14.708	441.651
15Sep2004	13:00	185.718	7.028	259.146	9.566	461.458
15Sep2004	13:15	253.958	4.489	209.237	6.094	473.777
15Sep2004	13:30	318.157	2.954	150.354	4.031	475.496
15Sep2004	13:45	364.620	2.519	105.844	3.515	476.498
15Sep2004	14:00	388.978	2.408	78.502	3.367	473.256
15Sep2004	14:15	392.020	2.228	62.028	3.116	459.392
15Sep2004	14:30	377.617	2.057	52.262	2.878	434.814
15Sep2004	14:45	351.668	1.911	46.088	2.674	402.340
15Sep2004	15:00	317.710	1.785	41.541	2.499	363.535
15Sep2004	15:15	286.467	1.654	37.924	2.314	328.359
15Sep2004	15:30	260.543	1.541	34.855	2.158	299.097
15Sep2004	15:45	238.488	1.455	32.274	2.039	274.256
15Sep2004	16:00	219.767	1.383	30.163	1.939	253.252
15Sep2004	16:15	203.078	1.320	28.402	1.851	234.650
15Sep2004	16:30	188.215	1.263	26.914	1.773	218.165
15Sep2004	16:45	175.198	1.213	25.632	1.702	203.745
15Sep2004	17:00	163.765	1.167	24.503	1.638	191.074
15Sep2004	17:15	153.538	1.126	23.496	1.580	179.739
15Sep2004	17:30	144.410	1.087	22.589	1.527	169.613

Junction 2

Return interval: 10-year

Date	Time	Inflow from Río La Plata 2 (M3/S)	Inflow from Basin C (M3/S)	Inflow from Río Guavate 2 (M3/S)	Inflow from Basin G (M3/S)	Outflow (M3/S)
15Sep2004	17:45	136.393	1.052	21.767	1.477	160.689
15Sep2004	18:00	129.289	1.020	21.016	1.432	152.756
15Sep2004	18:15	122.887	0.977	20.285	1.371	145.520
15Sep2004	18:30	117.105	0.938	19.541	1.317	138.900
15Sep2004	18:45	111.875	0.908	18.826	1.276	132.886
15Sep2004	19:00	107.125	0.883	18.174	1.241	127.424
15Sep2004	19:15	102.769	0.861	17.593	1.209	122.432
15Sep2004	19:30	98.741	0.839	17.080	1.179	117.840
15Sep2004	19:45	94.932	0.819	16.619	1.152	113.522
15Sep2004	20:00	91.338	0.800	16.196	1.125	109.459
15Sep2004	20:15	87.976	0.783	15.802	1.100	105.660
15Sep2004	20:30	84.810	0.766	15.433	1.076	102.085
15Sep2004	20:45	81.857	0.750	15.086	1.054	98.746
15Sep2004	21:00	79.204	0.734	14.757	1.033	95.728
15Sep2004	21:15	76.814	0.720	14.446	1.012	92.992
15Sep2004	21:30	74.580	0.706	14.151	0.993	90.430
15Sep2004	21:45	72.485	0.693	13.870	0.974	88.022
15Sep2004	22:00	70.508	0.680	13.602	0.957	85.747
15Sep2004	22:15	68.634	0.668	13.347	0.940	83.588
15Sep2004	22:30	66.855	0.657	13.103	0.924	81.538
15Sep2004	22:45	65.167	0.645	12.869	0.908	79.590
15Sep2004	23:00	63.561	0.635	12.646	0.893	77.734
15Sep2004	23:15	62.031	0.625	12.431	0.879	75.966
15Sep2004	23:30	60.573	0.615	12.226	0.865	74.278

Junction 2

Return interval: 10-year

Date	Time	Inflow from Río La Plata 2 (M3/S)	Inflow from Basin C (M3/S)	Inflow from Río Guavate 2 (M3/S)	Inflow from Basin G (M3/S)	Outflow (M3/S)
15Sep2004	23:45	59.181	0.605	12.028	0.852	72.666
16Sep2004	00:00	57.851	0.596	11.838	0.839	71.124
16Sep2004	00:15	56.558	0.327	10.830	0.438	68.154

Junction 3

Return interval: 10-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Date	Time	Inflow from Río La Plata 3 (M3/S)	Inflow from Basin H (M3/S)	Outflow (M3/S)
15Sep2004	00:00	0.000	0.000	0.000
15Sep2004	00:15	0.000	0.000	0.000
15Sep2004	00:30	0.000	0.000	0.000
15Sep2004	00:45	0.000	0.000	0.000
15Sep2004	01:00	0.000	0.000	0.000
15Sep2004	01:15	0.000	0.000	0.000
15Sep2004	01:30	0.000	0.000	0.000
15Sep2004	01:45	0.000	0.000	0.000
15Sep2004	02:00	0.001	0.000	0.001
15Sep2004	02:15	0.003	0.000	0.003
15Sep2004	02:30	0.006	0.000	0.006
15Sep2004	02:45	0.011	0.000	0.011
15Sep2004	03:00	0.019	0.000	0.019
15Sep2004	03:15	0.029	0.000	0.029
15Sep2004	03:30	0.044	0.000	0.044
15Sep2004	03:45	0.063	0.001	0.064
15Sep2004	04:00	0.087	0.005	0.092
15Sep2004	04:15	0.121	0.010	0.131
15Sep2004	04:30	0.194	0.017	0.211
15Sep2004	04:45	0.344	0.024	0.369
15Sep2004	05:00	0.570	0.032	0.602
15Sep2004	05:15	0.846	0.040	0.885
15Sep2004	05:30	1.166	0.048	1.214
15Sep2004	05:45	1.536	0.056	1.592
15Sep2004	06:00	1.958	0.065	2.023
15Sep2004	06:15	2.470	0.075	2.545
15Sep2004	06:30	3.126	0.085	3.211
15Sep2004	06:45	3.954	0.096	4.050
15Sep2004	07:00	4.964	0.107	5.071
15Sep2004	07:15	6.162	0.119	6.281
15Sep2004	07:30	7.552	0.131	7.683
15Sep2004	07:45	9.138	0.144	9.282
15Sep2004	08:00	10.922	0.157	11.080
15Sep2004	08:15	12.908	0.172	13.080

Junction 3

Return interval: 10-year

Date	Time	Inflow from Río La Plata 3 (M3/S)	Inflow from Basin H (M3/S)	Outflow (M3/S)
15Sep2004	08:30	15.101	0.188	15.289
15Sep2004	08:45	17.514	0.206	17.720
15Sep2004	09:00	20.169	0.225	20.394
15Sep2004	09:15	23.157	0.248	23.405
15Sep2004	09:30	26.532	0.276	26.809
15Sep2004	09:45	30.306	0.306	30.613
15Sep2004	10:00	34.535	0.340	34.875
15Sep2004	10:15	39.332	0.379	39.711
15Sep2004	10:30	44.849	0.425	45.274
15Sep2004	10:45	50.281	0.452	50.733
15Sep2004	11:00	55.728	0.463	56.190
15Sep2004	11:15	65.287	0.595	65.882
15Sep2004	11:30	80.927	0.874	81.801
15Sep2004	11:45	100.770	1.150	101.920
15Sep2004	12:00	134.830	1.686	136.516
15Sep2004	12:15	259.873	4.426	264.300
15Sep2004	12:30	384.139	6.473	390.612
15Sep2004	12:45	438.367	4.628	442.995
15Sep2004	13:00	460.138	2.932	463.069
15Sep2004	13:15	472.956	1.953	474.909
15Sep2004	13:30	475.381	1.274	476.656
15Sep2004	13:45	476.431	0.931	477.362
15Sep2004	14:00	473.472	0.800	474.271
15Sep2004	14:15	460.316	0.710	461.027
15Sep2004	14:30	436.453	0.640	437.093
15Sep2004	14:45	404.505	0.590	405.095
15Sep2004	15:00	366.122	0.547	366.669
15Sep2004	15:15	330.704	0.508	331.212
15Sep2004	15:30	301.048	0.472	301.520
15Sep2004	15:45	275.912	0.442	276.354
15Sep2004	16:00	254.652	0.418	255.070
15Sep2004	16:15	235.891	0.397	236.287
15Sep2004	16:30	219.264	0.379	219.642
15Sep2004	16:45	204.706	0.362	205.069
15Sep2004	17:00	191.919	0.348	192.267

Junction 3

Return interval: 10-year

Date	Time	Inflow from Río La Plata 3 (M3/S)	Inflow from Basin H (M3/S)	Outflow (M3/S)
15Sep2004	17:15	180.495	0.335	180.830
15Sep2004	17:30	170.288	0.323	170.611
15Sep2004	17:45	161.284	0.312	161.596
15Sep2004	18:00	153.285	0.302	153.586
15Sep2004	18:15	146.002	0.291	146.293
15Sep2004	18:30	139.341	0.279	139.620
15Sep2004	18:45	133.287	0.269	133.555
15Sep2004	19:00	127.788	0.260	128.049
15Sep2004	19:15	122.765	0.253	123.018
15Sep2004	19:30	118.146	0.247	118.392
15Sep2004	19:45	113.810	0.240	114.050
15Sep2004	20:00	109.730	0.235	109.964
15Sep2004	20:15	105.914	0.229	106.143
15Sep2004	20:30	102.323	0.224	102.547
15Sep2004	20:45	98.969	0.219	99.188
15Sep2004	21:00	95.929	0.215	96.144
15Sep2004	21:15	93.174	0.210	93.385
15Sep2004	21:30	90.601	0.206	90.807
15Sep2004	21:45	88.183	0.202	88.385
15Sep2004	22:00	85.899	0.198	86.097
15Sep2004	22:15	83.732	0.195	83.927
15Sep2004	22:30	81.675	0.191	81.866
15Sep2004	22:45	79.719	0.188	79.907
15Sep2004	23:00	77.858	0.185	78.043
15Sep2004	23:15	76.084	0.182	76.265
15Sep2004	23:30	74.391	0.179	74.570
15Sep2004	23:45	72.774	0.176	72.949
16Sep2004	00:00	71.227	0.173	71.400
16Sep2004	00:15	68.352	0.136	68.488

Junction 4

Return interval: 10-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Date	Time	Inflow from Basin D (M3/S)	Inflow from Basin E (M3/S)	Outflow (M3/S)
15Sep2004	00:00	0.000	0.000	0.000
15Sep2004	00:15	0.000	0.000	0.000
15Sep2004	00:30	0.000	0.000	0.000
15Sep2004	00:45	0.000	0.000	0.000
15Sep2004	01:00	0.000	0.000	0.000
15Sep2004	01:15	0.000	0.000	0.000
15Sep2004	01:30	0.000	0.000	0.000
15Sep2004	01:45	0.000	0.000	0.000
15Sep2004	02:00	0.000	0.000	0.000
15Sep2004	02:15	0.000	0.000	0.000
15Sep2004	02:30	0.000	0.000	0.000
15Sep2004	02:45	0.000	0.000	0.000
15Sep2004	03:00	0.000	0.000	0.000
15Sep2004	03:15	0.000	0.000	0.000
15Sep2004	03:30	0.000	0.000	0.000
15Sep2004	03:45	0.000	0.000	0.000
15Sep2004	04:00	0.000	0.000	0.000
15Sep2004	04:15	0.000	0.000	0.000
15Sep2004	04:30	0.000	0.000	0.000
15Sep2004	04:45	0.000	0.000	0.000
15Sep2004	05:00	0.000	0.000	0.000
15Sep2004	05:15	0.000	0.000	0.000
15Sep2004	05:30	0.000	0.000	0.000
15Sep2004	05:45	0.005	0.006	0.010
15Sep2004	06:00	0.030	0.033	0.063
15Sep2004	06:15	0.094	0.092	0.186
15Sep2004	06:30	0.197	0.176	0.373
15Sep2004	06:45	0.328	0.275	0.602
15Sep2004	07:00	0.477	0.384	0.861
15Sep2004	07:15	0.642	0.502	1.144
15Sep2004	07:30	0.821	0.629	1.450
15Sep2004	07:45	1.013	0.765	1.778
15Sep2004	08:00	1.221	0.912	2.133
15Sep2004	08:15	1.446	1.071	2.517

Junction 4

Return interval: 10-year

Date	Time	Inflow from Basin D (M3/S)	Inflow from Basin E (M3/S)	Outflow (M3/S)
15Sep2004	08:30	1.690	1.244	2.934
15Sep2004	08:45	1.957	1.434	3.391
15Sep2004	09:00	2.251	1.644	3.895
15Sep2004	09:15	2.587	1.890	4.477
15Sep2004	09:30	2.985	2.184	5.169
15Sep2004	09:45	3.439	2.514	5.953
15Sep2004	10:00	3.951	2.883	6.835
15Sep2004	10:15	4.537	3.312	7.849
15Sep2004	10:30	5.227	3.823	9.050
15Sep2004	10:45	5.886	4.235	10.121
15Sep2004	11:00	6.347	4.480	10.827
15Sep2004	11:15	7.483	5.610	13.093
15Sep2004	11:30	10.399	8.311	18.711
15Sep2004	11:45	14.540	11.516	26.056
15Sep2004	12:00	21.033	17.058	38.091
15Sep2004	12:15	46.636	43.863	90.499
15Sep2004	12:30	87.256	74.127	161.383
15Sep2004	12:45	93.991	64.054	158.044
15Sep2004	13:00	74.975	41.955	116.929
15Sep2004	13:15	52.614	29.161	81.775
15Sep2004	13:30	37.729	19.638	57.367
15Sep2004	13:45	27.006	14.029	41.035
15Sep2004	14:00	20.785	11.549	32.334
15Sep2004	14:15	17.399	10.197	27.596
15Sep2004	14:30	15.139	9.082	24.221
15Sep2004	14:45	13.495	8.204	21.698
15Sep2004	15:00	12.169	7.593	19.762
15Sep2004	15:15	11.041	7.051	18.092
15Sep2004	15:30	10.198	6.548	16.746
15Sep2004	15:45	9.488	6.127	15.615
15Sep2004	16:00	8.900	5.782	14.683
15Sep2004	16:15	8.418	5.488	13.906
15Sep2004	16:30	8.002	5.233	13.235
15Sep2004	16:45	7.635	5.007	12.642
15Sep2004	17:00	7.310	4.805	12.115

Junction 4

Return interval: 10-year

Date	Time	Inflow from Basin D (M3/S)	Inflow from Basin E (M3/S)	Outflow (M3/S)
15Sep2004	17:15	7.019	4.623	11.642
15Sep2004	17:30	6.756	4.457	11.213
15Sep2004	17:45	6.517	4.305	10.822
15Sep2004	18:00	6.297	4.166	10.463
15Sep2004	18:15	6.082	4.020	10.103
15Sep2004	18:30	5.854	3.862	9.715
15Sep2004	18:45	5.636	3.720	9.356
15Sep2004	19:00	5.446	3.604	9.050
15Sep2004	19:15	5.282	3.502	8.784
15Sep2004	19:30	5.135	3.410	8.545
15Sep2004	19:45	5.001	3.325	8.326
15Sep2004	20:00	4.877	3.245	8.122
15Sep2004	20:15	4.761	3.170	7.931
15Sep2004	20:30	4.652	3.099	7.751
15Sep2004	20:45	4.549	3.033	7.582
15Sep2004	21:00	4.452	2.969	7.421
15Sep2004	21:15	4.360	2.909	7.269
15Sep2004	21:30	4.272	2.852	7.124
15Sep2004	21:45	4.189	2.797	6.986
15Sep2004	22:00	4.109	2.745	6.854
15Sep2004	22:15	4.033	2.695	6.728
15Sep2004	22:30	3.961	2.647	6.608
15Sep2004	22:45	3.891	2.602	6.493
15Sep2004	23:00	3.825	2.558	6.383
15Sep2004	23:15	3.761	2.516	6.277
15Sep2004	23:30	3.700	2.475	6.175
15Sep2004	23:45	3.641	2.437	6.077
16Sep2004	00:00	3.584	2.399	5.983
16Sep2004	00:15	3.249	2.025	5.275

Junction 5

Return interval: 10-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Date	Time	Inflow from Río Guavate 1 (M3/S)	Inflow from Basin F (M3/S)	Outflow (M3/S)
15Sep2004	00:00	0.000	0.000	0.000
15Sep2004	00:15	0.000	0.000	0.000
15Sep2004	00:30	0.000	0.000	0.000
15Sep2004	00:45	0.000	0.000	0.000
15Sep2004	01:00	0.000	0.000	0.000
15Sep2004	01:15	0.000	0.000	0.000
15Sep2004	01:30	0.000	0.000	0.000
15Sep2004	01:45	0.000	0.000	0.000
15Sep2004	02:00	0.000	0.000	0.000
15Sep2004	02:15	0.000	0.000	0.000
15Sep2004	02:30	0.000	0.000	0.000
15Sep2004	02:45	0.000	0.000	0.000
15Sep2004	03:00	0.000	0.000	0.000
15Sep2004	03:15	0.000	0.000	0.000
15Sep2004	03:30	0.000	0.000	0.000
15Sep2004	03:45	0.000	0.000	0.000
15Sep2004	04:00	0.000	0.000	0.000
15Sep2004	04:15	0.000	0.007	0.007
15Sep2004	04:30	0.000	0.072	0.072
15Sep2004	04:45	0.000	0.223	0.223
15Sep2004	05:00	0.000	0.423	0.423
15Sep2004	05:15	0.000	0.648	0.648
15Sep2004	05:30	0.000	0.888	0.888
15Sep2004	05:45	0.000	1.139	1.139
15Sep2004	06:00	0.008	1.401	1.410
15Sep2004	06:15	0.053	1.693	1.746
15Sep2004	06:30	0.161	2.012	2.173
15Sep2004	06:45	0.335	2.336	2.671
15Sep2004	07:00	0.556	2.672	3.228
15Sep2004	07:15	0.809	3.025	3.835
15Sep2004	07:30	1.088	3.400	4.488
15Sep2004	07:45	1.389	3.800	5.189
15Sep2004	08:00	1.713	4.230	5.942
15Sep2004	08:15	2.062	4.694	6.756

Junction 5

Return interval: 10-year

Date	Time	Inflow from Río Guavate 1 (M3/S)	Inflow from Basin F (M3/S)	Outflow (M3/S)
15Sep2004	08:30	2.440	5.198	7.638
15Sep2004	08:45	2.851	5.752	8.602
15Sep2004	09:00	3.300	6.364	9.663
15Sep2004	09:15	3.794	7.122	10.916
15Sep2004	09:30	4.361	8.014	12.375
15Sep2004	09:45	5.030	8.969	13.999
15Sep2004	10:00	5.796	10.044	15.840
15Sep2004	10:15	6.658	11.299	17.957
15Sep2004	10:30	7.646	12.808	20.454
15Sep2004	10:45	8.810	13.461	22.271
15Sep2004	11:00	9.907	13.870	23.777
15Sep2004	11:15	10.686	19.246	29.932
15Sep2004	11:30	12.640	28.743	41.383
15Sep2004	11:45	17.587	37.235	54.822
15Sep2004	12:00	24.587	57.544	82.131
15Sep2004	12:15	35.684	169.380	205.064
15Sep2004	12:30	80.018	214.449	294.466
15Sep2004	12:45	147.206	130.911	278.117
15Sep2004	13:00	158.712	83.834	242.546
15Sep2004	13:15	125.152	54.940	180.092
15Sep2004	13:30	88.806	35.528	124.334
15Sep2004	13:45	62.248	27.417	89.665
15Sep2004	14:00	44.302	24.433	68.735
15Sep2004	14:15	34.075	22.084	56.159
15Sep2004	14:30	28.544	20.309	48.853
15Sep2004	14:45	24.896	18.773	43.669
15Sep2004	15:00	22.203	17.476	39.679
15Sep2004	15:15	20.149	16.240	36.389
15Sep2004	15:30	18.426	15.086	33.512
15Sep2004	15:45	17.015	14.175	31.190
15Sep2004	16:00	15.841	13.424	29.265
15Sep2004	16:15	14.869	12.778	27.648
15Sep2004	16:30	14.062	12.210	26.272
15Sep2004	16:45	13.369	11.703	25.072
15Sep2004	17:00	12.761	11.245	24.006

Junction 5

Return interval: 10-year

Date	Time	Inflow from Río Guavate 1 (M3/S)	Inflow from Basin F (M3/S)	Outflow (M3/S)
15Sep2004	17:15	12.221	10.829	23.050
15Sep2004	17:30	11.736	10.450	22.186
15Sep2004	17:45	11.299	10.101	21.400
15Sep2004	18:00	10.900	9.780	20.680
15Sep2004	18:15	10.535	9.405	19.940
15Sep2004	18:30	10.175	9.017	19.192
15Sep2004	18:45	9.793	8.712	18.505
15Sep2004	19:00	9.428	8.456	17.884
15Sep2004	19:15	9.111	8.227	17.339
15Sep2004	19:30	8.838	8.017	16.854
15Sep2004	19:45	8.593	7.820	16.413
15Sep2004	20:00	8.370	7.636	16.005
15Sep2004	20:15	8.163	7.462	15.624
15Sep2004	20:30	7.969	7.297	15.266
15Sep2004	20:45	7.787	7.141	14.928
15Sep2004	21:00	7.616	6.992	14.608
15Sep2004	21:15	7.453	6.851	14.305
15Sep2004	21:30	7.299	6.717	14.016
15Sep2004	21:45	7.153	6.589	13.742
15Sep2004	22:00	7.014	6.467	13.480
15Sep2004	22:15	6.881	6.350	13.230
15Sep2004	22:30	6.754	6.238	12.991
15Sep2004	22:45	6.632	6.130	12.762
15Sep2004	23:00	6.516	6.027	12.543
15Sep2004	23:15	6.405	5.928	12.333
15Sep2004	23:30	6.298	5.833	12.131
15Sep2004	23:45	6.195	5.742	11.937
16Sep2004	00:00	6.097	5.654	11.751
16Sep2004	00:15	6.002	4.023	10.025

Summary Results

Return interval: 50-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
1	56.1089	585.98	15Sep2004, 14:00	195.15
2	75.6604	707.96	15Sep2004, 13:45	199.56
3	75.9097	709.05	15Sep2004, 13:45	199.61
4	9.0439	237.83	15Sep2004, 12:30	206.38
5	17.3591	423.13	15Sep2004, 12:30	216.07
Basin B	34.6366	465.49	15Sep2004, 13:45	204.71
Basin C	0.9063	33.49	15Sep2004, 12:15	214.29
Basin D	5.3962	137.09	15Sep2004, 12:45	206.18
Basin E	3.6477	108.71	15Sep2004, 12:30	206.67
Basin F	8.3152	301.01	15Sep2004, 12:30	227.64
Basin G	1.2861	48.69	15Sep2004, 12:15	210.87
Basin H	0.2493	8.97	15Sep2004, 12:30	237.47
Lago Carite Basin...	21.4723	461.45	15Sep2004, 13:00	221.21
Lago Carite Rese...	21.4723	144.09	15Sep2004, 14:15	182.78
Río Guavate 1	9.0439		31Dec1969, 20:00	0.00
Río Guavate 2	17.3591		31Dec1969, 20:00	0.00
Río La Plata 1	21.4723		31Dec1969, 20:00	0.00
Río La Plata 2	56.1089		31Dec1969, 20:00	0.00
Río La Plata 3	75.6604		31Dec1969, 20:00	0.00

Junction 2

Return interval: 50-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Date	Time	Inflow from Río La Plata 2 (M3/S)	Inflow from Basin C (M3/S)	Inflow from Río Guavate 2 (M3/S)	Inflow from Basin G (M3/S)	Outflow (M3/S)
15Sep2004	00:00	0.000	0.000	0.000	0.000	0.000
15Sep2004	00:15	0.000	0.000	0.000	0.000	0.000
15Sep2004	00:30	0.000	0.000	0.000	0.000	0.000
15Sep2004	00:45	0.000	0.000	0.000	0.000	0.000
15Sep2004	01:00	0.000	0.000	0.000	0.000	0.000
15Sep2004	01:15	0.000	0.000	0.000	0.000	0.000
15Sep2004	01:30	0.000	0.000	0.000	0.000	0.000
15Sep2004	01:45	0.001	0.000	0.000	0.000	0.001
15Sep2004	02:00	0.003	0.000	0.000	0.000	0.003
15Sep2004	02:15	0.007	0.000	0.000	0.000	0.007
15Sep2004	02:30	0.015	0.000	0.000	0.000	0.015
15Sep2004	02:45	0.028	0.000	0.000	0.000	0.028
15Sep2004	03:00	0.046	0.000	0.000	0.000	0.046
15Sep2004	03:15	0.072	0.000	0.003	0.000	0.075
15Sep2004	03:30	0.107	0.000	0.051	0.000	0.158
15Sep2004	03:45	0.153	0.000	0.205	0.000	0.357
15Sep2004	04:00	0.210	0.001	0.463	0.000	0.674
15Sep2004	04:15	0.282	0.013	0.779	0.004	1.077
15Sep2004	04:30	0.370	0.039	1.121	0.027	1.557
15Sep2004	04:45	0.488	0.072	1.481	0.067	2.108
15Sep2004	05:00	0.655	0.107	1.880	0.114	2.756
15Sep2004	05:15	0.901	0.143	2.355	0.163	3.563
15Sep2004	05:30	1.262	0.181	2.926	0.215	4.584
15Sep2004	05:45	1.770	0.221	3.578	0.270	5.838
15Sep2004	06:00	2.444	0.262	4.290	0.326	7.322
15Sep2004	06:15	3.294	0.297	5.015	0.375	8.980
15Sep2004	06:30	4.314	0.334	5.724	0.426	10.798
15Sep2004	06:45	5.495	0.376	6.456	0.485	12.811
15Sep2004	07:00	6.820	0.421	7.240	0.548	15.029
15Sep2004	07:15	8.267	0.470	8.079	0.616	17.432
15Sep2004	07:30	9.827	0.523	8.980	0.689	20.018
15Sep2004	07:45	11.498	0.579	9.947	0.767	22.791
15Sep2004	08:00	13.287	0.640	10.985	0.851	25.764
15Sep2004	08:15	15.204	0.707	12.104	0.944	28.959
15Sep2004	08:30	17.263	0.779	13.317	1.045	32.404
15Sep2004	08:45	19.478	0.860	14.640	1.156	36.134
15Sep2004	09:00	21.870	0.949	16.094	1.281	40.195
15Sep2004	09:15	24.478	1.269	18.512	1.736	45.995
15Sep2004	09:30	27.447	1.601	22.502	2.186	53.737
15Sep2004	09:45	30.949	1.844	27.207	2.520	62.520
15Sep2004	10:00	35.206	2.080	31.993	2.849	72.127
15Sep2004	10:15	40.401	2.340	36.841	3.215	82.797
15Sep2004	10:30	46.445	2.645	41.850	3.644	94.583
15Sep2004	10:45	53.383	2.543	45.740	3.478	105.144
15Sep2004	11:00	61.075	2.541	47.733	3.503	114.852
15Sep2004	11:15	69.326	3.335	51.508	4.659	128.827
15Sep2004	11:30	78.171	4.482	60.593	6.271	149.517
15Sep2004	11:45	87.863	5.934	75.727	8.327	177.850
15Sep2004	12:00	99.608	10.469	106.427	14.911	231.416

Junction 2

Return interval: 50-year

Date	Time	Inflow from Río La Plata 2 (M3/S)	Inflow from Basin C (M3/S)	Inflow from Río Guavate 2 (M3/S)	Inflow from Basin G (M3/S)	Outflow (M3/S)
15Sep2004	12:15	118.122	33.493	217.816	48.685	418.116
15Sep2004	12:30	155.539	29.834	364.838	41.005	591.216
15Sep2004	12:45	213.025	15.105	410.399	20.533	659.062
15Sep2004	13:00	292.803	9.240	369.134	12.582	683.759
15Sep2004	13:15	390.925	6.097	294.240	8.338	699.601
15Sep2004	13:30	482.903	4.362	210.389	6.004	703.658
15Sep2004	13:45	548.173	4.083	149.958	5.750	707.964
15Sep2004	14:00	580.847	4.133	115.571	5.817	706.367
15Sep2004	14:15	583.386	3.918	96.413	5.509	689.226
15Sep2004	14:30	561.819	3.669	85.371	5.155	656.014
15Sep2004	14:45	524.725	3.440	78.149	4.835	611.149
15Sep2004	15:00	477.436	3.241	72.302	4.555	557.534
15Sep2004	15:15	434.818	2.671	66.108	3.722	507.320
15Sep2004	15:30	399.962	2.190	58.572	3.061	463.784
15Sep2004	15:45	370.080	1.974	51.135	2.768	425.957
15Sep2004	16:00	343.667	1.844	44.971	2.591	393.073
15Sep2004	16:15	318.630	1.747	40.254	2.458	363.090
15Sep2004	16:30	294.832	1.667	36.913	2.346	335.759
15Sep2004	16:45	272.788	1.597	34.492	2.249	311.126
15Sep2004	17:00	252.642	1.534	32.606	2.160	288.943
15Sep2004	17:15	234.271	1.477	31.054	2.080	268.881
15Sep2004	17:30	217.832	1.424	29.723	2.006	250.986
15Sep2004	17:45	203.391	1.376	28.550	1.938	235.256
15Sep2004	18:00	190.796	1.332	27.498	1.876	221.502
15Sep2004	18:15	179.661	1.318	26.631	1.860	209.471
15Sep2004	18:30	169.773	1.303	25.991	1.838	198.906
15Sep2004	18:45	160.999	1.274	25.460	1.796	189.530
15Sep2004	19:00	153.217	1.242	24.941	1.751	181.150
15Sep2004	19:15	146.308	1.210	24.401	1.706	173.625
15Sep2004	19:30	140.133	1.180	23.831	1.664	166.808
15Sep2004	19:45	134.451	1.152	23.256	1.624	160.483
15Sep2004	20:00	129.145	1.125	22.695	1.586	154.551
15Sep2004	20:15	124.196	1.100	22.155	1.550	149.001
15Sep2004	20:30	119.575	1.075	21.641	1.517	143.808
15Sep2004	20:45	115.279	1.053	21.153	1.485	138.969
15Sep2004	21:00	111.401	1.031	20.689	1.454	134.575
15Sep2004	21:15	107.891	1.010	20.248	1.425	130.574
15Sep2004	21:30	104.603	0.991	19.829	1.397	126.820
15Sep2004	21:45	101.511	0.972	19.431	1.371	123.284
15Sep2004	22:00	98.591	0.954	19.051	1.346	119.941
15Sep2004	22:15	95.823	0.937	18.688	1.322	116.770
15Sep2004	22:30	93.199	0.920	18.342	1.299	113.760
15Sep2004	22:45	90.711	0.905	18.011	1.276	110.903
15Sep2004	23:00	88.352	0.889	17.694	1.255	108.191
15Sep2004	23:15	86.112	0.875	17.390	1.235	105.612
15Sep2004	23:30	83.983	0.861	17.099	1.215	103.158
15Sep2004	23:45	81.959	0.848	16.819	1.196	100.821
16Sep2004	00:00	80.029	0.835	16.550	1.178	98.592
16Sep2004	00:15	78.160	0.458	15.148	0.615	94.380

Junction 3

Return interval: 50-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Date	Time	Inflow from Río La Plata 3 (M3/S)	Inflow from Basin H (M3/S)	Outflow (M3/S)
15Sep2004	00:00	0.000	0.000	0.000
15Sep2004	00:15	0.000	0.000	0.000
15Sep2004	00:30	0.000	0.000	0.000
15Sep2004	00:45	0.000	0.000	0.000
15Sep2004	01:00	0.000	0.000	0.000
15Sep2004	01:15	0.000	0.000	0.000
15Sep2004	01:30	0.000	0.000	0.000
15Sep2004	01:45	0.001	0.000	0.001
15Sep2004	02:00	0.003	0.000	0.003
15Sep2004	02:15	0.007	0.000	0.007
15Sep2004	02:30	0.015	0.000	0.015
15Sep2004	02:45	0.027	0.000	0.027
15Sep2004	03:00	0.045	0.003	0.048
15Sep2004	03:15	0.073	0.010	0.083
15Sep2004	03:30	0.152	0.019	0.172
15Sep2004	03:45	0.344	0.030	0.374
15Sep2004	04:00	0.653	0.041	0.694
15Sep2004	04:15	1.051	0.053	1.103
15Sep2004	04:30	1.525	0.065	1.590
15Sep2004	04:45	2.071	0.077	2.148
15Sep2004	05:00	2.713	0.089	2.801
15Sep2004	05:15	3.509	0.101	3.610
15Sep2004	05:30	4.516	0.113	4.630
15Sep2004	05:45	5.754	0.126	5.881
15Sep2004	06:00	7.223	0.139	7.362
15Sep2004	06:15	8.870	0.151	9.021
15Sep2004	06:30	10.677	0.162	10.839
15Sep2004	06:45	12.677	0.174	12.851
15Sep2004	07:00	14.881	0.188	15.069
15Sep2004	07:15	17.272	0.203	17.475
15Sep2004	07:30	19.846	0.219	20.065
15Sep2004	07:45	22.606	0.236	22.842
15Sep2004	08:00	25.565	0.255	25.820
15Sep2004	08:15	28.746	0.275	29.020

Junction 3

Return interval: 50-year

Date	Time	Inflow from Río La Plata 3 (M3/S)	Inflow from Basin H (M3/S)	Outflow (M3/S)
15Sep2004	08:30	32.174	0.296	32.470
15Sep2004	08:45	35.886	0.320	36.206
15Sep2004	09:00	39.924	0.346	40.271
15Sep2004	09:15	45.608	0.413	46.021
15Sep2004	09:30	53.221	0.521	53.742
15Sep2004	09:45	61.934	0.610	62.544
15Sep2004	10:00	71.487	0.685	72.172
15Sep2004	10:15	82.085	0.760	82.846
15Sep2004	10:30	93.797	0.843	94.641
15Sep2004	10:45	104.440	0.869	105.309
15Sep2004	11:00	114.205	0.846	115.051
15Sep2004	11:15	127.895	0.961	128.856
15Sep2004	11:30	148.137	1.240	149.378
15Sep2004	11:45	175.961	1.610	177.572
15Sep2004	12:00	227.845	2.461	230.306
15Sep2004	12:15	405.669	6.241	411.910
15Sep2004	12:30	579.676	8.965	588.641
15Sep2004	12:45	654.539	6.354	660.893
15Sep2004	13:00	682.113	3.901	686.013
15Sep2004	13:15	698.545	2.562	701.107
15Sep2004	13:30	703.388	1.744	705.131
15Sep2004	13:45	707.677	1.369	709.046
15Sep2004	14:00	706.474	1.268	707.742
15Sep2004	14:15	690.368	1.183	691.551
15Sep2004	14:30	658.228	1.097	659.325
15Sep2004	14:45	614.140	1.027	615.167
15Sep2004	15:00	561.109	0.964	562.073
15Sep2004	15:15	510.667	0.858	511.525
15Sep2004	15:30	466.687	0.712	467.399
15Sep2004	15:45	428.478	0.616	429.094
15Sep2004	16:00	395.265	0.560	395.825
15Sep2004	16:15	365.089	0.522	365.611
15Sep2004	16:30	337.581	0.493	338.074
15Sep2004	16:45	312.768	0.469	313.238
15Sep2004	17:00	290.422	0.449	290.871

Junction 3

Return interval: 50-year

Date	Time	Inflow from Río La Plata 3 (M3/S)	Inflow from Basin H (M3/S)	Outflow (M3/S)
15Sep2004	17:15	270.219	0.431	270.650
15Sep2004	17:30	252.179	0.415	252.594
15Sep2004	17:45	236.304	0.400	236.705
15Sep2004	18:00	222.419	0.387	222.806
15Sep2004	18:15	210.273	0.378	210.651
15Sep2004	18:30	199.610	0.373	199.984
15Sep2004	18:45	190.155	0.366	190.521
15Sep2004	19:00	181.709	0.358	182.067
15Sep2004	19:15	174.126	0.349	174.475
15Sep2004	19:30	167.263	0.340	167.603
15Sep2004	19:45	160.904	0.332	161.236
15Sep2004	20:00	154.946	0.324	155.270
15Sep2004	20:15	149.371	0.316	149.688
15Sep2004	20:30	144.154	0.309	144.464
15Sep2004	20:45	139.291	0.302	139.594
15Sep2004	21:00	134.868	0.296	135.164
15Sep2004	21:15	130.841	0.290	131.131
15Sep2004	21:30	127.070	0.284	127.355
15Sep2004	21:45	123.520	0.279	123.799
15Sep2004	22:00	120.164	0.273	120.437
15Sep2004	22:15	116.981	0.268	117.249
15Sep2004	22:30	113.960	0.263	114.224
15Sep2004	22:45	111.094	0.259	111.353
15Sep2004	23:00	108.372	0.254	108.626
15Sep2004	23:15	105.784	0.250	106.034
15Sep2004	23:30	103.322	0.246	103.568
15Sep2004	23:45	100.977	0.242	101.219
16Sep2004	00:00	98.740	0.238	98.978
16Sep2004	00:15	94.661	0.187	94.848

Junction 4

Return interval: 50-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Date	Time	Inflow from Basin D (M3/S)	Inflow from Basin E (M3/S)	Outflow (M3/S)
15Sep2004	00:00	0.000	0.000	0.000
15Sep2004	00:15	0.000	0.000	0.000
15Sep2004	00:30	0.000	0.000	0.000
15Sep2004	00:45	0.000	0.000	0.000
15Sep2004	01:00	0.000	0.000	0.000
15Sep2004	01:15	0.000	0.000	0.000
15Sep2004	01:30	0.000	0.000	0.000
15Sep2004	01:45	0.000	0.000	0.000
15Sep2004	02:00	0.000	0.000	0.000
15Sep2004	02:15	0.000	0.000	0.000
15Sep2004	02:30	0.000	0.000	0.000
15Sep2004	02:45	0.000	0.000	0.000
15Sep2004	03:00	0.000	0.000	0.000
15Sep2004	03:15	0.000	0.000	0.000
15Sep2004	03:30	0.000	0.000	0.000
15Sep2004	03:45	0.000	0.000	0.000
15Sep2004	04:00	0.000	0.000	0.000
15Sep2004	04:15	0.000	0.000	0.000
15Sep2004	04:30	0.005	0.006	0.011
15Sep2004	04:45	0.036	0.040	0.076
15Sep2004	05:00	0.119	0.116	0.235
15Sep2004	05:15	0.252	0.225	0.477
15Sep2004	05:30	0.420	0.352	0.771
15Sep2004	05:45	0.609	0.489	1.099
15Sep2004	06:00	0.815	0.636	1.451
15Sep2004	06:15	1.028	0.782	1.809
15Sep2004	06:30	1.237	0.923	2.159
15Sep2004	06:45	1.452	1.071	2.523
15Sep2004	07:00	1.681	1.233	2.914
15Sep2004	07:15	1.929	1.407	3.336
15Sep2004	07:30	2.194	1.593	3.788
15Sep2004	07:45	2.479	1.794	4.272
15Sep2004	08:00	2.785	2.010	4.794
15Sep2004	08:15	3.116	2.244	5.359

Junction 4

Return interval: 50-year

Date	Time	Inflow from Basin D (M3/S)	Inflow from Basin E (M3/S)	Outflow (M3/S)
15Sep2004	08:30	3.476	2.499	5.975
15Sep2004	08:45	3.869	2.780	6.649
15Sep2004	09:00	4.304	3.090	7.394
15Sep2004	09:15	5.005	3.699	8.704
15Sep2004	09:30	6.250	4.751	11.001
15Sep2004	09:45	7.721	5.814	13.535
15Sep2004	10:00	9.157	6.755	15.912
15Sep2004	10:15	10.552	7.716	18.268
15Sep2004	10:30	12.052	8.777	20.830
15Sep2004	10:45	13.271	9.432	22.703
15Sep2004	11:00	13.735	9.470	23.205
15Sep2004	11:15	14.794	10.543	25.336
15Sep2004	11:30	17.935	13.550	31.485
15Sep2004	11:45	23.219	17.908	41.127
15Sep2004	12:00	33.355	27.053	60.408
15Sep2004	12:15	71.284	66.262	137.546
15Sep2004	12:30	129.116	108.713	237.830
15Sep2004	12:45	137.094	92.670	229.764
15Sep2004	13:00	107.252	59.026	166.277
15Sep2004	13:15	73.623	40.047	113.670
15Sep2004	13:30	52.775	27.570	80.345
15Sep2004	13:45	38.965	20.873	59.838
15Sep2004	14:00	31.700	18.417	50.117
15Sep2004	14:15	28.015	17.149	45.164
15Sep2004	14:30	25.447	15.790	41.237
15Sep2004	14:45	23.352	14.593	37.945
15Sep2004	15:00	21.528	13.697	35.225
15Sep2004	15:15	19.506	12.400	31.906
15Sep2004	15:30	17.042	10.509	27.550
15Sep2004	15:45	14.682	8.998	23.680
15Sep2004	16:00	12.943	8.103	21.046
15Sep2004	16:15	11.804	7.493	19.297
15Sep2004	16:30	10.965	7.045	18.010
15Sep2004	16:45	10.314	6.687	17.001
15Sep2004	17:00	9.787	6.386	16.173

Junction 4

Return interval: 50-year

Date	Time	Inflow from Basin D (M3/S)	Inflow from Basin E (M3/S)	Outflow (M3/S)
15Sep2004	17:15	9.342	6.122	15.464
15Sep2004	17:30	8.955	5.888	14.843
15Sep2004	17:45	8.611	5.678	14.289
15Sep2004	18:00	8.302	5.485	13.787
15Sep2004	18:15	8.053	5.344	13.397
15Sep2004	18:30	7.889	5.265	13.153
15Sep2004	18:45	7.749	5.177	12.927
15Sep2004	19:00	7.592	5.062	12.654
15Sep2004	19:15	7.416	4.940	12.356
15Sep2004	19:30	7.237	4.819	12.056
15Sep2004	19:45	7.061	4.701	11.763
15Sep2004	20:00	6.892	4.589	11.482
15Sep2004	20:15	6.731	4.483	11.214
15Sep2004	20:30	6.577	4.382	10.959
15Sep2004	20:45	6.431	4.286	10.717
15Sep2004	21:00	6.292	4.195	10.487
15Sep2004	21:15	6.160	4.109	10.269
15Sep2004	21:30	6.034	4.027	10.061
15Sep2004	21:45	5.915	3.949	9.863
15Sep2004	22:00	5.801	3.874	9.675
15Sep2004	22:15	5.692	3.802	9.495
15Sep2004	22:30	5.588	3.734	9.322
15Sep2004	22:45	5.489	3.669	9.157
15Sep2004	23:00	5.393	3.606	8.999
15Sep2004	23:15	5.302	3.546	8.848
15Sep2004	23:30	5.214	3.488	8.702
15Sep2004	23:45	5.130	3.433	8.563
16Sep2004	00:00	5.049	3.379	8.428
16Sep2004	00:15	4.576	2.852	7.429

Junction 5

Return interval: 50-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Date	Time	Inflow from Río Guavate 1 (M3/S)	Inflow from Basin F (M3/S)	Outflow (M3/S)
15Sep2004	00:00	0.000	0.000	0.000
15Sep2004	00:15	0.000	0.000	0.000
15Sep2004	00:30	0.000	0.000	0.000
15Sep2004	00:45	0.000	0.000	0.000
15Sep2004	01:00	0.000	0.000	0.000
15Sep2004	01:15	0.000	0.000	0.000
15Sep2004	01:30	0.000	0.000	0.000
15Sep2004	01:45	0.000	0.000	0.000
15Sep2004	02:00	0.000	0.000	0.000
15Sep2004	02:15	0.000	0.000	0.000
15Sep2004	02:30	0.000	0.000	0.000
15Sep2004	02:45	0.000	0.000	0.000
15Sep2004	03:00	0.000	0.000	0.000
15Sep2004	03:15	0.000	0.006	0.006
15Sep2004	03:30	0.000	0.090	0.090
15Sep2004	03:45	0.000	0.305	0.305
15Sep2004	04:00	0.000	0.601	0.601
15Sep2004	04:15	0.000	0.934	0.934
15Sep2004	04:30	0.000	1.284	1.284
15Sep2004	04:45	0.009	1.645	1.654
15Sep2004	05:00	0.063	2.015	2.078
15Sep2004	05:15	0.203	2.395	2.598
15Sep2004	05:30	0.428	2.784	3.213
15Sep2004	05:45	0.712	3.185	3.898
15Sep2004	06:00	1.033	3.600	4.633
15Sep2004	06:15	1.380	3.968	5.348
15Sep2004	06:30	1.737	4.315	6.052
15Sep2004	06:45	2.089	4.719	6.809
15Sep2004	07:00	2.450	5.166	7.616
15Sep2004	07:15	2.836	5.648	8.484
15Sep2004	07:30	3.252	6.163	9.414
15Sep2004	07:45	3.697	6.715	10.412
15Sep2004	08:00	4.175	7.310	11.486
15Sep2004	08:15	4.690	7.955	12.645

Junction 5

Return interval: 50-year

Date	Time	Inflow from Río Guavate 1 (M3/S)	Inflow from Basin F (M3/S)	Outflow (M3/S)
15Sep2004	08:30	5.246	8.659	13.905
15Sep2004	08:45	5.852	9.432	15.284
15Sep2004	09:00	6.514	10.289	16.804
15Sep2004	09:15	7.245	12.761	20.006
15Sep2004	09:30	8.442	16.245	24.687
15Sep2004	09:45	10.542	18.871	29.413
15Sep2004	10:00	13.029	21.221	34.250
15Sep2004	10:15	15.436	23.671	39.108
15Sep2004	10:30	17.797	26.452	44.249
15Sep2004	10:45	20.318	26.728	47.045
15Sep2004	11:00	22.328	26.007	48.335
15Sep2004	11:15	23.105	31.179	54.284
15Sep2004	11:30	24.910	41.204	66.114
15Sep2004	11:45	30.255	53.883	84.138
15Sep2004	12:00	39.198	86.732	125.931
15Sep2004	12:15	56.552	241.663	298.215
15Sep2004	12:30	122.118	301.015	423.133
15Sep2004	12:45	217.773	181.484	399.257
15Sep2004	13:00	231.377	111.399	342.776
15Sep2004	13:15	178.975	72.796	251.771
15Sep2004	13:30	124.192	49.988	174.180
15Sep2004	13:45	87.010	41.754	128.764
15Sep2004	14:00	63.939	40.088	104.027
15Sep2004	14:15	52.061	37.689	89.750
15Sep2004	14:30	46.155	35.384	81.539
15Sep2004	14:45	42.022	33.160	75.183
15Sep2004	15:00	38.603	31.179	69.782
15Sep2004	15:15	35.769	27.124	62.893
15Sep2004	15:30	32.570	22.221	54.791
15Sep2004	15:45	28.422	19.515	47.937
15Sep2004	16:00	24.454	17.922	42.376
15Sep2004	16:15	21.573	16.825	38.398
15Sep2004	16:30	19.647	15.967	35.614
15Sep2004	16:45	18.267	15.244	33.511
15Sep2004	17:00	17.203	14.612	31.815

Junction 5

Return interval: 50-year

Date	Time	Inflow from Río Guavate 1 (M3/S)	Inflow from Basin F (M3/S)	Outflow (M3/S)
15Sep2004	17:15	16.338	14.049	30.388
15Sep2004	17:30	15.606	13.536	29.141
15Sep2004	17:45	14.968	13.065	28.032
15Sep2004	18:00	14.400	12.631	27.031
15Sep2004	18:15	13.888	12.394	26.282
15Sep2004	18:30	13.475	12.262	25.737
15Sep2004	18:45	13.202	12.016	25.218
15Sep2004	19:00	12.972	11.726	24.698
15Sep2004	19:15	12.709	11.431	24.140
15Sep2004	19:30	12.415	11.146	23.561
15Sep2004	19:45	12.116	10.874	22.989
15Sep2004	20:00	11.821	10.616	22.437
15Sep2004	20:15	11.538	10.371	21.909
15Sep2004	20:30	11.267	10.140	21.407
15Sep2004	20:45	11.010	9.920	20.930
15Sep2004	21:00	10.765	9.712	20.478
15Sep2004	21:15	10.533	9.514	20.048
15Sep2004	21:30	10.313	9.326	19.639
15Sep2004	21:45	10.103	9.146	19.249
15Sep2004	22:00	9.903	8.975	18.877
15Sep2004	22:15	9.712	8.810	18.523
15Sep2004	22:30	9.531	8.653	18.184
15Sep2004	22:45	9.357	8.503	17.860
15Sep2004	23:00	9.190	8.359	17.549
15Sep2004	23:15	9.031	8.220	17.251
15Sep2004	23:30	8.878	8.087	16.965
15Sep2004	23:45	8.732	7.959	16.691
16Sep2004	00:00	8.591	7.836	16.426
16Sep2004	00:15	8.455	5.575	14.030

Summary Results

Return interval: 100-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
1	56.1089	704.74	15Sep2004, 14:00	229.90
2	75.6604	847.48	15Sep2004, 13:45	234.62
3	75.9097	848.82	15Sep2004, 13:45	234.67
4	9.0439	278.40	15Sep2004, 12:30	242.11
5	17.3591	492.99	15Sep2004, 12:30	252.21
Basin B	34.6366	555.48	15Sep2004, 13:45	240.56
Basin C	0.9063	38.77	15Sep2004, 12:15	250.35
Basin D	5.3962	160.65	15Sep2004, 12:45	241.91
Basin E	3.6477	126.74	15Sep2004, 12:30	242.40
Basin F	8.3152	345.12	15Sep2004, 12:30	264.24
Basin G	1.2861	56.41	15Sep2004, 12:15	246.77
Basin H	0.2493	10.25	15Sep2004, 12:30	274.39
Lago Carite Basin...	21.4723	542.18	15Sep2004, 13:00	257.10
Lago Carite Rese...	21.4723	177.12	15Sep2004, 14:15	216.02
Río Guavate 1	9.0439		31Dec1969, 20:00	0.00
Río Guavate 2	17.3591		31Dec1969, 20:00	0.00
Río La Plata 1	21.4723		31Dec1969, 20:00	0.00
Río La Plata 2	56.1089		31Dec1969, 20:00	0.00
Río La Plata 3	75.6604		31Dec1969, 20:00	0.00

Junction 1

Return interval: 100-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Date	Time	Inflow from Río La Plata 1 (M3/S)	Inflow from Basin B (M3/S)	Outflow (M3/S)
15Sep2004	00:00	0.000	0.000	0.000
15Sep2004	00:15	0.000	0.000	0.000
15Sep2004	00:30	0.000	0.000	0.000
15Sep2004	00:45	0.000	0.000	0.000
15Sep2004	01:00	0.000	0.000	0.000
15Sep2004	01:15	0.000	0.000	0.000
15Sep2004	01:30	0.001	0.000	0.001
15Sep2004	01:45	0.003	0.000	0.003
15Sep2004	02:00	0.006	0.000	0.006
15Sep2004	02:15	0.013	0.000	0.013
15Sep2004	02:30	0.025	0.000	0.025
15Sep2004	02:45	0.042	0.000	0.042
15Sep2004	03:00	0.066	0.000	0.066
15Sep2004	03:15	0.100	0.000	0.100
15Sep2004	03:30	0.143	0.000	0.143
15Sep2004	03:45	0.198	0.000	0.198
15Sep2004	04:00	0.267	0.000	0.267
15Sep2004	04:15	0.350	0.001	0.351
15Sep2004	04:30	0.449	0.013	0.462
15Sep2004	04:45	0.567	0.051	0.618
15Sep2004	05:00	0.703	0.145	0.848
15Sep2004	05:15	0.861	0.329	1.189
15Sep2004	05:30	1.041	0.636	1.677
15Sep2004	05:45	1.244	1.088	2.332
15Sep2004	06:00	1.474	1.693	3.167
15Sep2004	06:15	1.731	2.468	4.199
15Sep2004	06:30	2.017	3.423	5.440
15Sep2004	06:45	2.337	4.572	6.910
15Sep2004	07:00	2.701	5.930	8.631
15Sep2004	07:15	3.120	7.495	10.615
15Sep2004	07:30	3.602	9.253	12.855
15Sep2004	07:45	4.153	11.188	15.341
15Sep2004	08:00	4.773	13.289	18.062
15Sep2004	08:15	5.462	15.547	21.009

Junction 1

Return interval: 100-year

Date	Time	Inflow from Río La Plata 1 (M3/S)	Inflow from Basin B (M3/S)	Outflow (M3/S)
15Sep2004	08:30	6.223	17.961	24.185
15Sep2004	08:45	7.061	20.529	27.590
15Sep2004	09:00	7.980	23.269	31.249
15Sep2004	09:15	8.987	26.289	35.277
15Sep2004	09:30	10.019	29.712	39.731
15Sep2004	09:45	10.837	33.685	44.523
15Sep2004	10:00	11.642	38.391	50.033
15Sep2004	10:15	12.594	43.904	56.498
15Sep2004	10:30	13.723	50.232	63.955
15Sep2004	10:45	15.050	57.067	72.117
15Sep2004	11:00	16.588	64.154	80.742
15Sep2004	11:15	18.325	71.894	90.219
15Sep2004	11:30	20.219	80.883	101.101
15Sep2004	11:45	22.285	92.442	114.727
15Sep2004	12:00	24.754	110.729	135.483
15Sep2004	12:15	28.078	150.837	178.915
15Sep2004	12:30	33.162	212.203	245.364
15Sep2004	12:45	42.447	295.264	337.711
15Sep2004	13:00	59.615	395.377	454.992
15Sep2004	13:15	85.502	482.968	568.470
15Sep2004	13:30	114.995	537.043	652.038
15Sep2004	13:45	141.773	555.483	697.256
15Sep2004	14:00	160.878	543.858	704.736
15Sep2004	14:15	171.690	509.092	680.782
15Sep2004	14:30	176.233	460.335	636.568
15Sep2004	14:45	176.817	400.644	577.461
15Sep2004	15:00	174.968	347.849	522.816
15Sep2004	15:15	171.673	305.896	477.569
15Sep2004	15:30	167.385	271.355	438.740
15Sep2004	15:45	162.459	242.950	405.408
15Sep2004	16:00	157.142	217.804	374.947
15Sep2004	16:15	151.551	195.231	346.782
15Sep2004	16:30	145.784	175.469	321.253
15Sep2004	16:45	139.959	158.343	298.303
15Sep2004	17:00	134.202	143.352	277.554

Junction 1

Return interval: 100-year

Date	Time	Inflow from Río La Plata 1 (M3/S)	Inflow from Basin B (M3/S)	Outflow (M3/S)
15Sep2004	17:15	128.620	130.420	259.040
15Sep2004	17:30	123.268	119.480	242.748
15Sep2004	17:45	118.168	110.272	228.440
15Sep2004	18:00	113.325	102.364	215.689
15Sep2004	18:15	108.737	95.487	204.223
15Sep2004	18:30	104.393	89.436	193.829
15Sep2004	18:45	100.273	84.010	184.282
15Sep2004	19:00	96.342	78.999	175.341
15Sep2004	19:15	92.564	74.326	166.891
15Sep2004	19:30	88.925	69.865	158.790
15Sep2004	19:45	85.430	65.669	151.099
15Sep2004	20:00	82.092	61.837	143.929
15Sep2004	20:15	78.920	58.338	137.258
15Sep2004	20:30	75.901	55.202	131.103
15Sep2004	20:45	72.982	52.621	125.603
15Sep2004	21:00	70.168	50.524	120.691
15Sep2004	21:15	67.515	48.682	116.197
15Sep2004	21:30	65.014	47.047	112.061
15Sep2004	21:45	62.655	45.570	108.225
15Sep2004	22:00	60.428	44.219	104.648
15Sep2004	22:15	58.325	42.980	101.305
15Sep2004	22:30	56.337	41.841	98.178
15Sep2004	22:45	54.457	40.788	95.245
15Sep2004	23:00	52.676	39.811	92.487
15Sep2004	23:15	50.990	38.900	89.890
15Sep2004	23:30	49.391	38.048	87.438
15Sep2004	23:45	47.873	37.246	85.119
16Sep2004	00:00	46.432	36.489	82.921
16Sep2004	00:15	45.062	35.565	80.627

Junction 2

Return interval: 100-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Date	Time	Inflow from Río La Plata 2 (M3/S)	Inflow from Basin C (M3/S)	Inflow from Río Guavate 2 (M3/S)	Inflow from Basin G (M3/S)	Outflow (M3/S)
15Sep2004	00:00	0.000	0.000	0.000	0.000	0.000
15Sep2004	00:15	0.000	0.000	0.000	0.000	0.000
15Sep2004	00:30	0.000	0.000	0.000	0.000	0.000
15Sep2004	00:45	0.000	0.000	0.000	0.000	0.000
15Sep2004	01:00	0.000	0.000	0.000	0.000	0.000
15Sep2004	01:15	0.000	0.000	0.000	0.000	0.000
15Sep2004	01:30	0.000	0.000	0.000	0.000	0.000
15Sep2004	01:45	0.001	0.000	0.000	0.000	0.001
15Sep2004	02:00	0.003	0.000	0.000	0.000	0.003
15Sep2004	02:15	0.007	0.000	0.000	0.000	0.007
15Sep2004	02:30	0.015	0.000	0.000	0.000	0.015
15Sep2004	02:45	0.027	0.000	0.000	0.000	0.027
15Sep2004	03:00	0.045	0.000	0.000	0.000	0.045
15Sep2004	03:15	0.071	0.000	0.002	0.000	0.073
15Sep2004	03:30	0.105	0.000	0.047	0.000	0.152
15Sep2004	03:45	0.150	0.000	0.196	0.000	0.347
15Sep2004	04:00	0.207	0.001	0.453	0.000	0.661
15Sep2004	04:15	0.278	0.013	0.770	0.003	1.064
15Sep2004	04:30	0.366	0.039	1.115	0.026	1.546
15Sep2004	04:45	0.483	0.072	1.481	0.066	2.102
15Sep2004	05:00	0.649	0.107	1.885	0.114	2.755
15Sep2004	05:15	0.894	0.144	2.368	0.165	3.570
15Sep2004	05:30	1.254	0.183	2.948	0.218	4.604
15Sep2004	05:45	1.764	0.224	3.615	0.273	5.876
15Sep2004	06:00	2.444	0.266	4.344	0.331	7.385
15Sep2004	06:15	3.305	0.340	5.255	0.432	9.332
15Sep2004	06:30	4.364	0.418	6.434	0.538	11.754
15Sep2004	06:45	5.636	0.488	7.729	0.633	14.486
15Sep2004	07:00	7.139	0.556	9.041	0.728	17.464
15Sep2004	07:15	8.895	0.627	10.374	0.826	20.723
15Sep2004	07:30	10.913	0.702	11.733	0.930	24.279
15Sep2004	07:45	13.187	0.781	13.139	1.041	28.149
15Sep2004	08:00	15.704	0.866	14.616	1.159	32.345
15Sep2004	08:15	18.455	0.958	16.182	1.287	36.881
15Sep2004	08:30	21.432	1.057	17.857	1.426	41.772
15Sep2004	08:45	24.639	1.165	19.663	1.577	47.045
15Sep2004	09:00	28.078	1.285	21.628	1.745	52.736
15Sep2004	09:15	31.786	1.570	24.326	2.149	59.831
15Sep2004	09:30	35.871	1.868	28.188	2.559	68.487
15Sep2004	09:45	40.370	2.114	32.664	2.900	78.048
15Sep2004	10:00	45.258	2.367	37.356	3.255	88.236
15Sep2004	10:15	50.895	2.653	42.288	3.659	99.495
15Sep2004	10:30	57.493	2.992	47.589	4.137	112.211
15Sep2004	10:45	65.043	2.791	51.496	3.823	123.154
15Sep2004	11:00	73.267	2.705	52.862	3.736	132.570
15Sep2004	11:15	82.006	4.229	58.303	5.970	150.509
15Sep2004	11:30	91.670	6.192	73.839	8.709	180.410
15Sep2004	11:45	102.918	7.720	96.645	10.836	218.119

Junction 2

Return interval: 100-year

Date	Time	Inflow from Río La Plata 2 (M3/S)	Inflow from Basin C (M3/S)	Inflow from Río Guavate 2 (M3/S)	Inflow from Basin G (M3/S)	Outflow (M3/S)
15Sep2004	12:00	117.495	12.895	135.023	18.396	283.809
15Sep2004	12:15	141.274	38.775	262.420	56.408	498.877
15Sep2004	12:30	187.775	34.420	427.840	47.406	697.441
15Sep2004	12:45	257.677	18.209	480.150	24.882	780.918
15Sep2004	13:00	353.349	11.901	436.972	16.310	818.532
15Sep2004	13:15	470.122	7.530	352.958	10.270	840.881
15Sep2004	13:30	579.612	4.849	253.529	6.644	844.635
15Sep2004	13:45	658.067	4.421	178.769	6.227	847.484
15Sep2004	14:00	698.253	4.493	134.382	6.330	843.458
15Sep2004	14:15	701.542	4.250	108.973	5.982	820.747
15Sep2004	14:30	674.887	3.966	94.613	5.580	779.046
15Sep2004	14:45	628.687	3.709	85.642	5.218	723.256
15Sep2004	15:00	570.175	3.483	78.645	4.901	657.204
15Sep2004	15:15	516.783	3.034	72.058	4.248	596.124
15Sep2004	15:30	472.391	2.652	65.065	3.721	543.830
15Sep2004	15:45	434.296	2.450	58.498	3.444	498.687
15Sep2004	16:00	401.347	2.310	53.052	3.252	459.961
15Sep2004	16:15	371.191	2.198	48.749	3.096	425.235
15Sep2004	16:30	343.378	2.102	45.489	2.962	393.931
15Sep2004	16:45	318.193	2.016	42.950	2.842	366.002
15Sep2004	17:00	295.536	1.939	40.856	2.734	341.065
15Sep2004	17:15	275.086	1.869	39.063	2.635	318.652
15Sep2004	17:30	256.868	1.804	37.487	2.544	298.703
15Sep2004	17:45	240.841	1.745	36.077	2.461	281.124
15Sep2004	18:00	226.740	1.690	34.801	2.384	265.615
15Sep2004	18:15	214.161	1.529	33.291	2.148	251.130
15Sep2004	18:30	202.838	1.389	31.303	1.955	237.484
15Sep2004	18:45	192.556	1.321	29.237	1.861	224.974
15Sep2004	19:00	183.090	1.275	27.427	1.798	213.590
15Sep2004	19:15	174.214	1.237	25.967	1.746	203.164
15Sep2004	19:30	165.811	1.204	24.860	1.699	193.574
15Sep2004	19:45	157.765	1.173	23.993	1.656	184.586
15Sep2004	20:00	150.143	1.144	23.264	1.615	176.166
15Sep2004	20:15	143.040	1.117	22.622	1.577	168.356
15Sep2004	20:30	136.437	1.092	22.039	1.541	161.108
15Sep2004	20:45	130.370	1.067	21.499	1.506	154.443
15Sep2004	21:00	124.948	1.044	20.995	1.474	148.461
15Sep2004	21:15	120.092	1.022	20.520	1.443	143.077
15Sep2004	21:30	115.645	1.001	20.071	1.413	138.131
15Sep2004	21:45	111.550	0.981	19.646	1.385	133.562
15Sep2004	22:00	107.748	0.962	19.241	1.358	129.310
15Sep2004	22:15	104.202	0.944	18.856	1.333	125.334
15Sep2004	22:30	100.888	0.926	18.488	1.308	121.611
15Sep2004	22:45	97.787	0.910	18.137	1.284	118.118
15Sep2004	23:00	94.877	0.894	17.800	1.262	114.833
15Sep2004	23:15	92.141	0.878	17.479	1.240	111.738
15Sep2004	23:30	89.563	0.863	17.170	1.219	108.816
15Sep2004	23:45	87.129	0.849	16.874	1.199	106.052
16Sep2004	00:00	84.826	0.836	16.590	1.180	103.432
16Sep2004	00:15	82.615	0.458	15.177	0.616	98.866

Junction 3

Return interval: 100-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Date	Time	Inflow from Río La Plata 3 (M3/S)	Inflow from Basin H (M3/S)	Outflow (M3/S)
15Sep2004	00:00	0.000	0.000	0.000
15Sep2004	00:15	0.000	0.000	0.000
15Sep2004	00:30	0.000	0.000	0.000
15Sep2004	00:45	0.000	0.000	0.000
15Sep2004	01:00	0.000	0.000	0.000
15Sep2004	01:15	0.000	0.000	0.000
15Sep2004	01:30	0.000	0.000	0.000
15Sep2004	01:45	0.001	0.000	0.001
15Sep2004	02:00	0.003	0.000	0.003
15Sep2004	02:15	0.007	0.000	0.007
15Sep2004	02:30	0.014	0.000	0.014
15Sep2004	02:45	0.026	0.000	0.026
15Sep2004	03:00	0.044	0.003	0.047
15Sep2004	03:15	0.071	0.009	0.081
15Sep2004	03:30	0.147	0.019	0.166
15Sep2004	03:45	0.334	0.030	0.363
15Sep2004	04:00	0.640	0.041	0.681
15Sep2004	04:15	1.037	0.053	1.090
15Sep2004	04:30	1.514	0.065	1.579
15Sep2004	04:45	2.065	0.077	2.141
15Sep2004	05:00	2.712	0.089	2.801
15Sep2004	05:15	3.516	0.102	3.618
15Sep2004	05:30	4.535	0.114	4.649
15Sep2004	05:45	5.791	0.128	5.919
15Sep2004	06:00	7.285	0.141	7.426
15Sep2004	06:15	9.202	0.162	9.364
15Sep2004	06:30	11.593	0.191	11.784
15Sep2004	06:45	14.304	0.216	14.520
15Sep2004	07:00	17.265	0.239	17.504
15Sep2004	07:15	20.505	0.261	20.767
15Sep2004	07:30	24.042	0.284	24.326
15Sep2004	07:45	27.891	0.308	28.198
15Sep2004	08:00	32.066	0.333	32.398
15Sep2004	08:15	36.579	0.359	36.938

Junction 3

Return interval: 100-year

Date	Time	Inflow from Río La Plata 3 (M3/S)	Inflow from Basin H (M3/S)	Outflow (M3/S)
15Sep2004	08:30	41.446	0.388	41.834
15Sep2004	08:45	46.693	0.419	47.112
15Sep2004	09:00	52.357	0.453	52.810
15Sep2004	09:15	59.358	0.515	59.873
15Sep2004	09:30	67.910	0.607	68.517
15Sep2004	09:45	77.411	0.689	78.100
15Sep2004	10:00	87.557	0.764	88.320
15Sep2004	10:15	98.744	0.843	99.587
15Sep2004	10:30	111.363	0.934	112.297
15Sep2004	10:45	122.425	0.950	123.375
15Sep2004	11:00	131.942	0.899	132.841
15Sep2004	11:15	149.313	1.107	150.420
15Sep2004	11:30	178.416	1.610	180.026
15Sep2004	11:45	215.605	2.098	217.703
15Sep2004	12:00	279.429	3.039	282.468
15Sep2004	12:15	484.539	7.255	491.794
15Sep2004	12:30	684.203	10.252	694.455
15Sep2004	12:45	775.353	7.370	782.722
15Sep2004	13:00	816.024	4.729	820.754
15Sep2004	13:15	839.391	3.165	842.556
15Sep2004	13:30	844.384	2.048	846.432
15Sep2004	13:45	847.294	1.523	848.818
15Sep2004	14:00	843.726	1.385	845.112
15Sep2004	14:15	822.261	1.283	823.544
15Sep2004	14:30	781.827	1.183	783.010
15Sep2004	14:45	726.975	1.103	728.079
15Sep2004	15:00	661.608	1.032	662.639
15Sep2004	15:15	600.196	0.937	601.133
15Sep2004	15:30	547.316	0.822	548.138
15Sep2004	15:45	501.697	0.741	502.437
15Sep2004	16:00	462.543	0.687	463.230
15Sep2004	16:15	427.550	0.647	428.198
15Sep2004	16:30	396.018	0.615	396.633
15Sep2004	16:45	367.864	0.588	368.451
15Sep2004	17:00	342.728	0.564	343.291

Junction 3

Return interval: 100-year

Date	Time	Inflow from Río La Plata 3 (M3/S)	Inflow from Basin H (M3/S)	Outflow (M3/S)
15Sep2004	17:15	320.147	0.542	320.688
15Sep2004	17:30	300.033	0.522	300.556
15Sep2004	17:45	282.296	0.504	282.800
15Sep2004	18:00	266.649	0.488	267.137
15Sep2004	18:15	252.095	0.458	252.554
15Sep2004	18:30	238.394	0.417	238.811
15Sep2004	18:45	225.808	0.389	226.197
15Sep2004	19:00	214.349	0.371	214.719
15Sep2004	19:15	203.859	0.357	204.216
15Sep2004	19:30	194.213	0.347	194.560
15Sep2004	19:45	185.185	0.337	185.522
15Sep2004	20:00	176.728	0.328	177.056
15Sep2004	20:15	168.876	0.320	169.196
15Sep2004	20:30	161.591	0.312	161.904
15Sep2004	20:45	154.887	0.305	155.192
15Sep2004	21:00	148.860	0.298	149.158
15Sep2004	21:15	143.436	0.292	143.728
15Sep2004	21:30	138.461	0.286	138.747
15Sep2004	21:45	133.866	0.280	134.146
15Sep2004	22:00	129.593	0.274	129.868
15Sep2004	22:15	125.599	0.269	125.868
15Sep2004	22:30	121.859	0.264	122.123
15Sep2004	22:45	118.351	0.259	118.610
15Sep2004	23:00	115.052	0.254	115.307
15Sep2004	23:15	111.944	0.250	112.194
15Sep2004	23:30	109.011	0.246	109.256
15Sep2004	23:45	106.236	0.242	106.478
16Sep2004	00:00	103.606	0.238	103.844
16Sep2004	00:15	99.170	0.187	99.357

Junction 4

Return interval: 100-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Date	Time	Inflow from Basin D (M3/S)	Inflow from Basin E (M3/S)	Outflow (M3/S)
15Sep2004	00:00	0.000	0.000	0.000
15Sep2004	00:15	0.000	0.000	0.000
15Sep2004	00:30	0.000	0.000	0.000
15Sep2004	00:45	0.000	0.000	0.000
15Sep2004	01:00	0.000	0.000	0.000
15Sep2004	01:15	0.000	0.000	0.000
15Sep2004	01:30	0.000	0.000	0.000
15Sep2004	01:45	0.000	0.000	0.000
15Sep2004	02:00	0.000	0.000	0.000
15Sep2004	02:15	0.000	0.000	0.000
15Sep2004	02:30	0.000	0.000	0.000
15Sep2004	02:45	0.000	0.000	0.000
15Sep2004	03:00	0.000	0.000	0.000
15Sep2004	03:15	0.000	0.000	0.000
15Sep2004	03:30	0.000	0.000	0.000
15Sep2004	03:45	0.000	0.000	0.000
15Sep2004	04:00	0.000	0.000	0.000
15Sep2004	04:15	0.000	0.000	0.000
15Sep2004	04:30	0.005	0.006	0.011
15Sep2004	04:45	0.036	0.039	0.074
15Sep2004	05:00	0.118	0.116	0.233
15Sep2004	05:15	0.252	0.226	0.478
15Sep2004	05:30	0.422	0.355	0.777
15Sep2004	05:45	0.616	0.496	1.112
15Sep2004	06:00	0.827	0.645	1.472
15Sep2004	06:15	1.078	0.835	1.913
15Sep2004	06:30	1.403	1.085	2.488
15Sep2004	06:45	1.771	1.349	3.120
15Sep2004	07:00	2.150	1.607	3.757
15Sep2004	07:15	2.533	1.872	4.405
15Sep2004	07:30	2.931	2.146	5.077
15Sep2004	07:45	3.347	2.436	5.783
15Sep2004	08:00	3.788	2.744	6.532
15Sep2004	08:15	4.258	3.074	7.332

Junction 4

Return interval: 100-year

Date	Time	Inflow from Basin D (M3/S)	Inflow from Basin E (M3/S)	Outflow (M3/S)
15Sep2004	08:30	4.762	3.430	8.192
15Sep2004	08:45	5.309	3.816	9.125
15Sep2004	09:00	5.906	4.240	10.146
15Sep2004	09:15	6.714	4.892	11.605
15Sep2004	09:30	7.931	5.873	13.804
15Sep2004	09:45	9.340	6.889	16.228
15Sep2004	10:00	10.770	7.854	18.624
15Sep2004	10:15	12.234	8.882	21.116
15Sep2004	10:30	13.855	10.045	23.900
15Sep2004	10:45	15.095	10.656	25.752
15Sep2004	11:00	15.305	10.420	25.725
15Sep2004	11:15	16.841	12.224	29.064
15Sep2004	11:30	22.393	17.625	40.018
15Sep2004	11:45	30.530	23.930	54.460
15Sep2004	12:00	43.025	34.514	77.539
15Sep2004	12:15	86.400	79.053	165.454
15Sep2004	12:30	151.665	126.737	278.402
15Sep2004	12:45	160.651	108.626	269.277
15Sep2004	13:00	127.847	71.643	199.490
15Sep2004	13:15	90.027	49.811	139.839
15Sep2004	13:30	64.269	33.278	97.547
15Sep2004	13:45	45.955	23.882	69.837
15Sep2004	14:00	36.159	20.533	56.693
15Sep2004	14:15	31.374	18.906	50.280
15Sep2004	14:30	28.153	17.267	45.420
15Sep2004	14:45	25.601	15.862	41.462
15Sep2004	15:00	23.437	14.821	38.258
15Sep2004	15:15	21.304	13.588	34.892
15Sep2004	15:30	19.127	12.035	31.162
15Sep2004	15:45	17.115	10.777	27.892
15Sep2004	16:00	15.575	9.946	25.521
15Sep2004	16:15	14.483	9.326	23.809
15Sep2004	16:30	13.623	8.836	22.459
15Sep2004	16:45	12.914	8.425	21.340
15Sep2004	17:00	12.316	8.069	20.385

Junction 4

Return interval: 100-year

Date	Time	Inflow from Basin D (M3/S)	Inflow from Basin E (M3/S)	Outflow (M3/S)
15Sep2004	17:15	11.795	7.752	19.547
15Sep2004	17:30	11.334	7.467	18.801
15Sep2004	17:45	10.919	7.208	18.127
15Sep2004	18:00	10.542	6.971	17.513
15Sep2004	18:15	10.080	6.608	16.688
15Sep2004	18:30	9.397	6.065	15.462
15Sep2004	18:45	8.713	5.617	14.330
15Sep2004	19:00	8.187	5.334	13.521
15Sep2004	19:15	7.816	5.127	12.943
15Sep2004	19:30	7.524	4.961	12.485
15Sep2004	19:45	7.282	4.818	12.100
15Sep2004	20:00	7.071	4.690	11.761
15Sep2004	20:15	6.882	4.572	11.454
15Sep2004	20:30	6.709	4.462	11.170
15Sep2004	20:45	6.547	4.359	10.906
15Sep2004	21:00	6.396	4.261	10.657
15Sep2004	21:15	6.254	4.169	10.423
15Sep2004	21:30	6.120	4.081	10.201
15Sep2004	21:45	5.992	3.997	9.989
15Sep2004	22:00	5.870	3.918	9.788
15Sep2004	22:15	5.754	3.842	9.596
15Sep2004	22:30	5.643	3.769	9.412
15Sep2004	22:45	5.538	3.699	9.237
15Sep2004	23:00	5.436	3.633	9.069
15Sep2004	23:15	5.339	3.569	8.908
15Sep2004	23:30	5.246	3.507	8.753
15Sep2004	23:45	5.157	3.449	8.605
16Sep2004	00:00	5.071	3.392	8.463
16Sep2004	00:15	4.593	2.861	7.454

Junction 5

Return interval: 100-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Date	Time	Inflow from Río Guavate 1 (M3/S)	Inflow from Basin F (M3/S)	Outflow (M3/S)
15Sep2004	00:00	0.000	0.000	0.000
15Sep2004	00:15	0.000	0.000	0.000
15Sep2004	00:30	0.000	0.000	0.000
15Sep2004	00:45	0.000	0.000	0.000
15Sep2004	01:00	0.000	0.000	0.000
15Sep2004	01:15	0.000	0.000	0.000
15Sep2004	01:30	0.000	0.000	0.000
15Sep2004	01:45	0.000	0.000	0.000
15Sep2004	02:00	0.000	0.000	0.000
15Sep2004	02:15	0.000	0.000	0.000
15Sep2004	02:30	0.000	0.000	0.000
15Sep2004	02:45	0.000	0.000	0.000
15Sep2004	03:00	0.000	0.000	0.000
15Sep2004	03:15	0.000	0.004	0.004
15Sep2004	03:30	0.000	0.084	0.084
15Sep2004	03:45	0.000	0.295	0.295
15Sep2004	04:00	0.000	0.591	0.591
15Sep2004	04:15	0.000	0.926	0.926
15Sep2004	04:30	0.000	1.281	1.281
15Sep2004	04:45	0.008	1.648	1.656
15Sep2004	05:00	0.062	2.025	2.086
15Sep2004	05:15	0.202	2.412	2.614
15Sep2004	05:30	0.429	2.812	3.241
15Sep2004	05:45	0.717	3.224	3.942
15Sep2004	06:00	1.045	3.652	4.697
15Sep2004	06:15	1.400	4.343	5.743
15Sep2004	06:30	1.824	5.213	7.038
15Sep2004	06:45	2.373	5.962	8.335
15Sep2004	07:00	2.993	6.665	9.658
15Sep2004	07:15	3.630	7.370	11.000
15Sep2004	07:30	4.275	8.099	12.374
15Sep2004	07:45	4.943	8.866	13.809
15Sep2004	08:00	5.642	9.680	15.322
15Sep2004	08:15	6.382	10.552	16.934

Junction 5

Return interval: 100-year

Date	Time	Inflow from Río Guavate 1 (M3/S)	Inflow from Basin F (M3/S)	Outflow (M3/S)
15Sep2004	08:30	7.172	11.493	18.664
15Sep2004	08:45	8.020	12.517	20.537
15Sep2004	09:00	8.939	13.643	22.582
15Sep2004	09:15	9.942	15.910	25.852
15Sep2004	09:30	11.313	18.919	30.232
15Sep2004	09:45	13.364	21.428	34.792
15Sep2004	10:00	15.744	23.856	39.599
15Sep2004	10:15	18.145	26.495	44.640
15Sep2004	10:30	20.617	29.552	50.170
15Sep2004	10:45	23.343	29.314	52.657
15Sep2004	11:00	25.381	27.660	53.041
15Sep2004	11:15	25.730	37.178	62.908
15Sep2004	11:30	28.396	55.007	83.404
15Sep2004	11:45	37.827	70.403	108.231
15Sep2004	12:00	51.572	106.895	158.467
15Sep2004	12:15	72.924	280.455	353.379
15Sep2004	12:30	147.871	345.123	492.994
15Sep2004	12:45	255.813	213.098	468.911
15Sep2004	13:00	271.102	137.923	409.025
15Sep2004	13:15	213.447	90.453	303.900
15Sep2004	13:30	151.769	57.687	209.455
15Sep2004	13:45	106.005	45.913	151.918
15Sep2004	14:00	75.379	43.658	119.037
15Sep2004	14:15	59.322	40.845	100.167
15Sep2004	14:30	51.563	38.191	89.754
15Sep2004	14:45	46.392	35.653	82.044
15Sep2004	15:00	42.254	33.416	75.670
15Sep2004	15:15	38.899	29.999	68.898
15Sep2004	15:30	35.565	26.145	61.710
15Sep2004	15:45	31.908	23.779	55.687
15Sep2004	16:00	28.546	22.202	50.748
15Sep2004	16:15	25.995	21.006	47.001
15Sep2004	16:30	24.151	20.016	44.167
15Sep2004	16:45	22.729	19.156	41.885
15Sep2004	17:00	21.564	18.393	39.956

Junction 5

Return interval: 100-year

Date	Time	Inflow from Río Guavate 1 (M3/S)	Inflow from Basin F (M3/S)	Outflow (M3/S)
15Sep2004	17:15	20.576	17.705	38.281
15Sep2004	17:30	19.715	17.078	36.792
15Sep2004	17:45	18.950	16.501	35.451
15Sep2004	18:00	18.262	15.970	34.232
15Sep2004	18:15	17.636	14.832	32.468
15Sep2004	18:30	16.853	13.431	30.283
15Sep2004	18:45	15.707	12.614	28.321
15Sep2004	19:00	14.557	12.088	26.645
15Sep2004	19:15	13.683	11.690	25.373
15Sep2004	19:30	13.059	11.353	24.412
15Sep2004	19:45	12.577	11.049	23.626
15Sep2004	20:00	12.177	10.769	22.946
15Sep2004	20:15	11.829	10.509	22.338
15Sep2004	20:30	11.515	10.262	21.778
15Sep2004	20:45	11.227	10.029	21.256
15Sep2004	21:00	10.959	9.808	20.767
15Sep2004	21:15	10.707	9.597	20.305
15Sep2004	21:30	10.470	9.397	19.867
15Sep2004	21:45	10.245	9.207	19.452
15Sep2004	22:00	10.032	9.025	19.057
15Sep2004	22:15	9.828	8.852	18.680
15Sep2004	22:30	9.634	8.686	18.320
15Sep2004	22:45	9.449	8.527	17.976
15Sep2004	23:00	9.272	8.375	17.647
15Sep2004	23:15	9.102	8.229	17.331
15Sep2004	23:30	8.940	8.089	17.029
15Sep2004	23:45	8.784	7.954	16.738
16Sep2004	00:00	8.635	7.825	16.459
16Sep2004	00:15	8.491	5.564	14.055

Junction 1

Return interval: 50-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Date	Time	Inflow from Río La Plata 1 (M3/S)	Inflow from Basin B (M3/S)	Outflow (M3/S)
15Sep2004	00:00	0.000	0.000	0.000
15Sep2004	00:15	0.000	0.000	0.000
15Sep2004	00:30	0.000	0.000	0.000
15Sep2004	00:45	0.000	0.000	0.000
15Sep2004	01:00	0.000	0.000	0.000
15Sep2004	01:15	0.000	0.000	0.000
15Sep2004	01:30	0.001	0.000	0.001
15Sep2004	01:45	0.003	0.000	0.003
15Sep2004	02:00	0.006	0.000	0.006
15Sep2004	02:15	0.014	0.000	0.014
15Sep2004	02:30	0.025	0.000	0.025
15Sep2004	02:45	0.043	0.000	0.043
15Sep2004	03:00	0.068	0.000	0.068
15Sep2004	03:15	0.101	0.000	0.101
15Sep2004	03:30	0.145	0.000	0.145
15Sep2004	03:45	0.201	0.000	0.201
15Sep2004	04:00	0.270	0.000	0.270
15Sep2004	04:15	0.354	0.001	0.356
15Sep2004	04:30	0.454	0.013	0.467
15Sep2004	04:45	0.572	0.053	0.625
15Sep2004	05:00	0.709	0.147	0.856
15Sep2004	05:15	0.866	0.331	1.197
15Sep2004	05:30	1.046	0.637	1.683
15Sep2004	05:45	1.248	1.086	2.334
15Sep2004	06:00	1.476	1.684	3.161
15Sep2004	06:15	1.731	2.429	4.160
15Sep2004	06:30	2.014	3.307	5.321
15Sep2004	06:45	2.325	4.303	6.629
15Sep2004	07:00	2.666	5.395	8.061
15Sep2004	07:15	3.036	6.570	9.606
15Sep2004	07:30	3.435	7.827	11.262
15Sep2004	07:45	3.865	9.169	13.034
15Sep2004	08:00	4.331	10.602	14.933
15Sep2004	08:15	4.835	12.135	16.970

Junction 1

Return interval: 50-year

Date	Time	Inflow from Río La Plata 1 (M3/S)	Inflow from Basin B (M3/S)	Outflow (M3/S)
15Sep2004	08:30	5.382	13.780	19.162
15Sep2004	08:45	5.977	15.552	21.529
15Sep2004	09:00	6.625	17.466	24.091
15Sep2004	09:15	7.331	19.662	26.993
15Sep2004	09:30	8.106	22.292	30.398
15Sep2004	09:45	8.979	25.549	34.528
15Sep2004	10:00	9.947	29.664	39.612
15Sep2004	10:15	10.825	34.709	45.534
15Sep2004	10:30	11.734	40.634	52.367
15Sep2004	10:45	12.839	47.146	59.985
15Sep2004	11:00	14.146	54.013	68.159
15Sep2004	11:15	15.644	61.264	76.908
15Sep2004	11:30	17.296	69.088	86.384
15Sep2004	11:45	19.093	78.381	97.474
15Sep2004	12:00	21.139	92.345	113.484
15Sep2004	12:15	23.706	124.566	148.272
15Sep2004	12:30	27.509	175.264	202.772
15Sep2004	12:45	34.605	245.059	279.664
15Sep2004	13:00	48.143	330.060	378.204
15Sep2004	13:15	69.068	404.548	473.617
15Sep2004	13:30	93.151	450.117	543.268
15Sep2004	13:45	114.570	465.488	580.058
15Sep2004	14:00	129.801	456.177	585.977
15Sep2004	14:15	138.600	427.945	566.545
15Sep2004	14:30	142.815	388.289	531.104
15Sep2004	14:45	143.987	339.277	483.264
15Sep2004	15:00	143.241	296.316	439.557
15Sep2004	15:15	141.318	262.696	404.013
15Sep2004	15:30	138.625	235.002	373.627
15Sep2004	15:45	135.380	211.646	347.026
15Sep2004	16:00	131.682	190.152	321.834
15Sep2004	16:15	127.577	170.229	297.806
15Sep2004	16:30	123.142	152.363	275.505
15Sep2004	16:45	118.505	136.620	255.125
15Sep2004	17:00	113.821	122.678	236.499

Junction 1

Return interval: 50-year

Date	Time	Inflow from Río La Plata 1 (M3/S)	Inflow from Basin B (M3/S)	Outflow (M3/S)
15Sep2004	17:15	109.217	110.575	219.791
15Sep2004	17:30	104.764	100.333	205.097
15Sep2004	17:45	100.493	91.810	192.303
15Sep2004	18:00	96.419	84.580	181.000
15Sep2004	18:15	92.546	78.416	170.961
15Sep2004	18:30	88.870	73.183	162.053
15Sep2004	18:45	85.389	68.763	154.152
15Sep2004	19:00	82.101	65.039	147.140
15Sep2004	19:15	79.003	61.894	140.897
15Sep2004	19:30	76.078	59.087	135.165
15Sep2004	19:45	73.268	56.543	129.811
15Sep2004	20:00	70.557	54.260	124.817
15Sep2004	20:15	68.002	52.154	120.155
15Sep2004	20:30	65.590	50.213	115.803
15Sep2004	20:45	63.310	48.563	111.873
15Sep2004	21:00	61.153	47.179	108.332
15Sep2004	21:15	59.111	45.908	105.018
15Sep2004	21:30	57.175	44.728	101.903
15Sep2004	21:45	55.338	43.624	98.962
15Sep2004	22:00	53.595	42.580	96.175
15Sep2004	22:15	51.940	41.593	93.533
15Sep2004	22:30	50.366	40.662	91.028
15Sep2004	22:45	48.869	39.784	88.653
15Sep2004	23:00	47.445	38.953	86.398
15Sep2004	23:15	46.088	38.167	84.255
15Sep2004	23:30	44.795	37.423	82.217
15Sep2004	23:45	43.562	36.715	80.276
16Sep2004	00:00	42.385	36.038	78.423
16Sep2004	00:15	41.262	35.184	76.447

Summary Results

Return interval: 500-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
1	56.1089	1004.36	15Sep2004, 14:00	334.89
2	75.6604	1204.69	15Sep2004, 13:45	340.72
3	75.9097	1206.28	15Sep2004, 13:45	340.77
4	9.0439	388.76	15Sep2004, 12:30	351.60
5	17.3591	679.09	15Sep2004, 12:30	362.54
Basin B	34.6366	774.90	15Sep2004, 13:45	348.97
Basin C	0.9063	53.42	15Sep2004, 12:15	360.80
Basin D	5.3962	222.88	15Sep2004, 12:45	351.34
Basin E	3.6477	176.24	15Sep2004, 12:30	351.97
Basin F	8.3152	466.69	15Sep2004, 12:30	375.78
Basin G	1.2861	77.90	15Sep2004, 12:15	356.90
Basin H	0.2493	13.77	15Sep2004, 12:30	386.58
Lago Carite Basin...	21.4723	744.13	15Sep2004, 13:00	366.55
Lago Carite Rese...	21.4723	266.72	15Sep2004, 14:00	316.45
Río Guavate 1	9.0439		31Dec1969, 20:00	0.00
Río Guavate 2	17.3591		31Dec1969, 20:00	0.00
Río La Plata 1	21.4723		31Dec1969, 20:00	0.00
Río La Plata 2	56.1089		31Dec1969, 20:00	0.00
Río La Plata 3	75.6604		31Dec1969, 20:00	0.00

Junction 1

Return interval: 500-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Date	Time	Inflow from Río La Plata 1 (M3/S)	Inflow from Basin B (M3/S)	Outflow (M3/S)
15Sep2004	00:00	0.000	0.000	0.000
15Sep2004	00:15	0.000	0.000	0.000
15Sep2004	00:30	0.000	0.000	0.000
15Sep2004	00:45	0.000	0.000	0.000
15Sep2004	01:00	0.000	0.000	0.000
15Sep2004	01:15	0.000	0.000	0.000
15Sep2004	01:30	0.002	0.000	0.002
15Sep2004	01:45	0.005	0.000	0.005
15Sep2004	02:00	0.012	0.000	0.012
15Sep2004	02:15	0.025	0.000	0.025
15Sep2004	02:30	0.047	0.000	0.047
15Sep2004	02:45	0.080	0.000	0.080
15Sep2004	03:00	0.126	0.000	0.126
15Sep2004	03:15	0.188	0.000	0.188
15Sep2004	03:30	0.269	0.001	0.270
15Sep2004	03:45	0.371	0.015	0.386
15Sep2004	04:00	0.497	0.064	0.561
15Sep2004	04:15	0.649	0.183	0.833
15Sep2004	04:30	0.830	0.422	1.252
15Sep2004	04:45	1.041	0.823	1.865
15Sep2004	05:00	1.286	1.417	2.703
15Sep2004	05:15	1.565	2.214	3.779
15Sep2004	05:30	1.882	3.212	5.094
15Sep2004	05:45	2.239	4.400	6.639
15Sep2004	06:00	2.637	5.760	8.397
15Sep2004	06:15	3.079	7.316	10.395
15Sep2004	06:30	3.569	9.099	12.668
15Sep2004	06:45	4.115	11.164	15.279
15Sep2004	07:00	4.742	13.584	18.325
15Sep2004	07:15	5.477	16.370	21.848
15Sep2004	07:30	6.343	19.484	25.827
15Sep2004	07:45	7.346	22.876	30.221
15Sep2004	08:00	8.481	26.508	34.989
15Sep2004	08:15	9.690	30.349	40.039

Junction 1

Return interval: 500-year

Date	Time	Inflow from Río La Plata 1 (M3/S)	Inflow from Basin B (M3/S)	Outflow (M3/S)
15Sep2004	08:30	10.732	34.386	45.117
15Sep2004	08:45	11.600	38.596	50.196
15Sep2004	09:00	12.554	43.013	55.567
15Sep2004	09:15	13.603	47.932	61.535
15Sep2004	09:30	14.759	53.667	68.426
15Sep2004	09:45	16.061	60.594	76.655
15Sep2004	10:00	17.593	69.152	86.746
15Sep2004	10:15	19.464	79.432	98.896
15Sep2004	10:30	21.751	91.268	113.018
15Sep2004	10:45	24.487	103.850	128.337
15Sep2004	11:00	27.675	116.494	144.169
15Sep2004	11:15	31.257	129.265	160.522
15Sep2004	11:30	35.085	142.502	177.587
15Sep2004	11:45	39.081	158.087	197.168
15Sep2004	12:00	43.520	182.348	225.869
15Sep2004	12:15	49.117	236.054	285.171
15Sep2004	12:30	57.439	319.111	376.550
15Sep2004	12:45	72.375	431.827	504.201
15Sep2004	13:00	99.042	566.715	665.758
15Sep2004	13:15	138.738	683.462	822.200
15Sep2004	13:30	183.860	753.576	937.435
15Sep2004	13:45	222.267	774.896	997.163
15Sep2004	14:00	248.374	755.985	1004.360
15Sep2004	14:15	261.951	706.750	968.701
15Sep2004	14:30	266.685	639.804	906.489
15Sep2004	14:45	265.822	559.668	825.490
15Sep2004	15:00	261.737	489.908	751.645
15Sep2004	15:15	255.893	435.268	691.162
15Sep2004	15:30	248.995	390.444	639.439
15Sep2004	15:45	241.379	352.940	594.319
15Sep2004	16:00	233.184	318.645	551.829
15Sep2004	16:15	224.460	286.703	511.164
15Sep2004	16:30	215.325	257.865	473.189
15Sep2004	16:45	205.998	232.311	438.309
15Sep2004	17:00	196.746	209.625	406.371

Junction 1

Return interval: 500-year

Date	Time	Inflow from Río La Plata 1 (M3/S)	Inflow from Basin B (M3/S)	Outflow (M3/S)
15Sep2004	17:15	187.786	189.899	377.684
15Sep2004	17:30	179.227	173.140	352.367
15Sep2004	17:45	171.056	159.120	330.177
15Sep2004	18:00	163.112	147.194	310.305
15Sep2004	18:15	155.606	136.846	292.452
15Sep2004	18:30	148.572	127.710	276.282
15Sep2004	18:45	141.960	119.428	261.388
15Sep2004	19:00	135.687	111.651	247.338
15Sep2004	19:15	129.671	104.273	233.943
15Sep2004	19:30	123.878	97.176	221.054
15Sep2004	19:45	118.325	90.490	208.815
15Sep2004	20:00	113.045	84.387	197.431
15Sep2004	20:15	108.057	78.862	186.919
15Sep2004	20:30	103.363	73.971	177.335
15Sep2004	20:45	98.954	69.988	168.942
15Sep2004	21:00	94.816	66.783	161.599
15Sep2004	21:15	90.934	64.009	154.943
15Sep2004	21:30	87.291	61.575	148.866
15Sep2004	21:45	83.870	59.400	143.270
15Sep2004	22:00	80.656	57.435	138.092
15Sep2004	22:15	77.634	55.655	133.289
15Sep2004	22:30	74.767	54.038	128.806
15Sep2004	22:45	71.979	52.560	124.540
15Sep2004	23:00	69.342	51.203	120.545
15Sep2004	23:15	66.861	49.951	116.812
15Sep2004	23:30	64.526	48.791	113.316
15Sep2004	23:45	62.324	47.707	110.031
16Sep2004	00:00	60.247	46.688	106.935
16Sep2004	00:15	58.285	45.464	103.749

Junction 2

Return interval: 500-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Date	Time	Inflow from Río La Plata 2 (M3/S)	Inflow from Basin C (M3/S)	Inflow from Río Guavate 2 (M3/S)	Inflow from Basin G (M3/S)	Outflow (M3/S)
15Sep2004	00:00	0.000	0.000	0.000	0.000	0.000
15Sep2004	00:15	0.000	0.000	0.000	0.000	0.000
15Sep2004	00:30	0.000	0.000	0.000	0.000	0.000
15Sep2004	00:45	0.000	0.000	0.000	0.000	0.000
15Sep2004	01:00	0.000	0.000	0.000	0.000	0.000
15Sep2004	01:15	0.000	0.000	0.000	0.000	0.000
15Sep2004	01:30	0.001	0.000	0.000	0.000	0.001
15Sep2004	01:45	0.002	0.000	0.000	0.000	0.002
15Sep2004	02:00	0.006	0.000	0.000	0.000	0.006
15Sep2004	02:15	0.014	0.000	0.000	0.000	0.014
15Sep2004	02:30	0.028	0.000	0.000	0.000	0.028
15Sep2004	02:45	0.052	0.000	0.014	0.000	0.066
15Sep2004	03:00	0.086	0.000	0.117	0.000	0.203
15Sep2004	03:15	0.134	0.000	0.381	0.000	0.516
15Sep2004	03:30	0.199	0.013	0.778	0.003	0.993
15Sep2004	03:45	0.286	0.045	1.236	0.032	1.599
15Sep2004	04:00	0.410	0.089	1.726	0.086	2.311
15Sep2004	04:15	0.597	0.137	2.269	0.149	3.152
15Sep2004	04:30	0.889	0.186	2.913	0.217	4.205
15Sep2004	04:45	1.333	0.237	3.683	0.287	5.540
15Sep2004	05:00	1.976	0.289	4.557	0.359	7.182
15Sep2004	05:15	2.846	0.343	5.504	0.434	9.128
15Sep2004	05:30	3.955	0.399	6.503	0.511	11.368
15Sep2004	05:45	5.300	0.457	7.545	0.591	13.893
15Sep2004	06:00	6.873	0.517	8.628	0.675	16.693
15Sep2004	06:15	8.664	0.665	10.096	0.881	20.305
15Sep2004	06:30	10.698	0.819	12.196	1.088	24.801
15Sep2004	06:45	13.016	0.937	14.543	1.251	29.748
15Sep2004	07:00	15.685	1.049	16.859	1.406	34.999
15Sep2004	07:15	18.795	1.161	19.128	1.563	40.646
15Sep2004	07:30	22.378	1.277	21.346	1.726	46.728
15Sep2004	07:45	26.413	1.400	23.573	1.898	53.284
15Sep2004	08:00	30.857	1.530	25.867	2.082	60.335
15Sep2004	08:15	35.662	1.669	28.268	2.278	67.877
15Sep2004	08:30	40.716	1.819	30.814	2.489	75.839
15Sep2004	08:45	45.794	1.983	33.540	2.720	84.037
15Sep2004	09:00	50.912	2.163	36.487	2.974	92.536
15Sep2004	09:15	56.363	2.810	41.248	3.908	104.329
15Sep2004	09:30	62.454	3.463	48.987	4.806	119.710
15Sep2004	09:45	69.523	3.914	58.058	5.432	136.926
15Sep2004	10:00	78.000	4.337	67.175	6.028	155.540
15Sep2004	10:15	88.366	4.796	76.179	6.678	176.019
15Sep2004	10:30	100.779	5.326	85.195	7.432	198.732
15Sep2004	10:45	115.061	4.760	90.916	6.565	217.301
15Sep2004	11:00	130.448	4.397	91.173	6.115	232.133
15Sep2004	11:15	146.349	6.189	95.308	8.773	256.620
15Sep2004	11:30	162.797	8.620	111.875	12.197	295.490
15Sep2004	11:45	180.197	11.126	140.208	15.750	347.281
15Sep2004	12:00	200.994	19.007	194.828	27.282	442.111
15Sep2004	12:15	233.776	53.416	369.249	77.904	734.345

Junction 2

Return interval: 500-year

Date	Time	Inflow from Río La Plata 2 (M3/S)	Inflow from Basin C (M3/S)	Inflow from Río Guavate 2 (M3/S)	Inflow from Basin G (M3/S)	Outflow (M3/S)
15Sep2004	12:30	297.355	47.136	591.733	65.164	1001.387
15Sep2004	12:45	393.570	24.658	661.269	33.746	1113.243
15Sep2004	13:00	525.742	15.599	598.725	21.388	1161.454
15Sep2004	13:15	686.617	9.994	479.761	13.681	1190.052
15Sep2004	13:30	837.565	6.698	343.305	9.220	1196.788
15Sep2004	13:45	945.399	6.527	243.521	9.247	1204.695
15Sep2004	14:00	998.123	6.908	187.393	9.769	1202.193
15Sep2004	14:15	999.605	6.642	157.374	9.376	1172.997
15Sep2004	14:30	960.406	6.257	141.149	8.825	1116.637
15Sep2004	14:45	895.689	5.889	130.919	8.305	1040.803
15Sep2004	15:00	815.644	5.562	122.270	7.843	951.318
15Sep2004	15:15	743.580	4.630	112.598	6.476	867.286
15Sep2004	15:30	684.265	3.840	100.529	5.386	794.020
15Sep2004	15:45	633.423	3.480	88.460	4.896	730.259
15Sep2004	16:00	588.653	3.260	78.347	4.596	674.857
15Sep2004	16:15	546.407	3.096	70.545	4.368	624.415
15Sep2004	16:30	506.100	2.957	64.971	4.175	578.203
15Sep2004	16:45	468.539	2.837	60.896	4.006	536.279
15Sep2004	17:00	434.051	2.729	57.696	3.853	498.329
15Sep2004	17:15	402.546	2.630	55.044	3.714	463.934
15Sep2004	17:30	374.309	2.539	52.762	3.586	433.196
15Sep2004	17:45	349.408	2.455	50.745	3.469	406.077
15Sep2004	18:00	327.527	2.378	48.932	3.360	382.198
15Sep2004	18:15	307.925	2.080	46.579	2.919	359.503
15Sep2004	18:30	290.296	1.822	43.187	2.563	337.868
15Sep2004	18:45	274.296	1.709	39.582	2.411	317.998
15Sep2004	19:00	259.515	1.642	36.455	2.319	299.931
15Sep2004	19:15	245.552	1.591	34.006	2.247	283.396
15Sep2004	19:30	232.225	1.546	32.253	2.185	268.208
15Sep2004	19:45	219.422	1.505	30.959	2.128	254.014
15Sep2004	20:00	207.297	1.467	29.922	2.074	240.760
15Sep2004	20:15	196.030	1.431	29.037	2.023	228.522
15Sep2004	20:30	185.641	1.397	28.250	1.975	217.264
15Sep2004	20:45	176.216	1.365	27.529	1.930	207.040
15Sep2004	21:00	167.963	1.335	26.860	1.887	198.044
15Sep2004	21:15	160.712	1.306	26.232	1.846	190.096
15Sep2004	21:30	154.133	1.278	25.641	1.807	182.860
15Sep2004	21:45	148.120	1.252	25.082	1.770	176.224
15Sep2004	22:00	142.580	1.227	24.550	1.735	170.092
15Sep2004	22:15	137.451	1.203	24.044	1.701	164.399
15Sep2004	22:30	132.691	1.180	23.561	1.669	159.101
15Sep2004	22:45	128.237	1.158	23.100	1.638	154.134
15Sep2004	23:00	124.007	1.137	22.660	1.608	149.413
15Sep2004	23:15	120.047	1.117	22.238	1.580	144.982
15Sep2004	23:30	116.346	1.098	21.834	1.553	140.831
15Sep2004	23:45	112.878	1.079	21.447	1.527	136.931
16Sep2004	00:00	109.618	1.061	21.075	1.501	133.256
16Sep2004	00:15	106.510	0.582	19.280	0.784	127.155

Junction 3

Return interval: 500-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Date	Time	Inflow from Río La Plata 3 (M3/S)	Inflow from Basin H (M3/S)	Outflow (M3/S)
15Sep2004	00:00	0.000	0.000	0.000
15Sep2004	00:15	0.000	0.000	0.000
15Sep2004	00:30	0.000	0.000	0.000
15Sep2004	00:45	0.000	0.000	0.000
15Sep2004	01:00	0.000	0.000	0.000
15Sep2004	01:15	0.000	0.000	0.000
15Sep2004	01:30	0.001	0.000	0.001
15Sep2004	01:45	0.002	0.000	0.002
15Sep2004	02:00	0.006	0.000	0.006
15Sep2004	02:15	0.013	0.000	0.014
15Sep2004	02:30	0.027	0.004	0.031
15Sep2004	02:45	0.063	0.013	0.076
15Sep2004	03:00	0.193	0.027	0.220
15Sep2004	03:15	0.495	0.042	0.537
15Sep2004	03:30	0.961	0.058	1.019
15Sep2004	03:45	1.559	0.074	1.633
15Sep2004	04:00	2.263	0.090	2.353
15Sep2004	04:15	3.096	0.106	3.202
15Sep2004	04:30	4.135	0.122	4.257
15Sep2004	04:45	5.451	0.139	5.590
15Sep2004	05:00	7.073	0.156	7.229
15Sep2004	05:15	8.998	0.173	9.171
15Sep2004	05:30	11.218	0.190	11.408
15Sep2004	05:45	13.725	0.208	13.933
15Sep2004	06:00	16.506	0.226	16.732
15Sep2004	06:15	20.064	0.262	20.326
15Sep2004	06:30	24.501	0.315	24.816
15Sep2004	06:45	29.418	0.360	29.778
15Sep2004	07:00	34.649	0.396	35.045
15Sep2004	07:15	40.270	0.430	40.700
15Sep2004	07:30	46.323	0.464	46.786
15Sep2004	07:45	52.847	0.498	53.345
15Sep2004	08:00	59.865	0.534	60.400
15Sep2004	08:15	67.375	0.572	67.947

Junction 3

Return interval: 500-year

Date	Time	Inflow from Río La Plata 3 (M3/S)	Inflow from Basin H (M3/S)	Outflow (M3/S)
15Sep2004	08:30	75.308	0.613	75.921
15Sep2004	08:45	83.491	0.658	84.148
15Sep2004	09:00	91.969	0.706	92.675
15Sep2004	09:15	103.543	0.828	104.371
15Sep2004	09:30	118.685	1.023	119.708
15Sep2004	09:45	135.778	1.181	136.959
15Sep2004	10:00	154.299	1.309	155.608
15Sep2004	10:15	174.654	1.434	176.088
15Sep2004	10:30	197.218	1.571	198.789
15Sep2004	10:45	216.064	1.561	217.625
15Sep2004	11:00	231.144	1.419	232.563
15Sep2004	11:15	254.987	1.617	256.604
15Sep2004	11:30	292.899	2.193	295.091
15Sep2004	11:45	343.828	2.858	346.686
15Sep2004	12:00	435.789	4.274	440.063
15Sep2004	12:15	714.862	9.900	724.762
15Sep2004	12:30	983.584	13.766	997.349
15Sep2004	12:45	1105.786	9.870	1115.656
15Sep2004	13:00	1158.240	6.233	1164.474
15Sep2004	13:15	1188.146	4.133	1192.278
15Sep2004	13:30	1196.339	2.725	1199.065
15Sep2004	13:45	1204.167	2.117	1206.284
15Sep2004	14:00	1202.360	2.029	1204.388
15Sep2004	14:15	1174.943	1.941	1176.884
15Sep2004	14:30	1120.394	1.823	1122.217
15Sep2004	14:45	1045.858	1.718	1047.577
15Sep2004	15:00	957.284	1.620	958.904
15Sep2004	15:15	872.888	1.450	874.338
15Sep2004	15:30	798.904	1.218	800.122
15Sep2004	15:45	734.510	1.062	735.571
15Sep2004	16:00	678.551	0.969	679.520
15Sep2004	16:15	627.778	0.907	628.685
15Sep2004	16:30	581.284	0.859	582.143
15Sep2004	16:45	539.074	0.819	539.893
15Sep2004	17:00	500.859	0.785	501.644

Junction 3

Return interval: 500-year

Date	Time	Inflow from Río La Plata 3 (M3/S)	Inflow from Basin H (M3/S)	Outflow (M3/S)
15Sep2004	17:15	466.227	0.755	466.982
15Sep2004	17:30	435.245	0.727	435.972
15Sep2004	17:45	407.885	0.703	408.587
15Sep2004	18:00	383.790	0.680	384.469
15Sep2004	18:15	361.016	0.629	361.645
15Sep2004	18:30	339.311	0.554	339.865
15Sep2004	18:45	319.323	0.505	319.828
15Sep2004	19:00	301.135	0.476	301.611
15Sep2004	19:15	284.498	0.457	284.955
15Sep2004	19:30	269.220	0.442	269.662
15Sep2004	19:45	254.960	0.429	255.389
15Sep2004	20:00	241.644	0.417	242.061
15Sep2004	20:15	229.338	0.406	229.744
15Sep2004	20:30	218.014	0.397	218.411
15Sep2004	20:45	207.721	0.387	208.109
15Sep2004	21:00	198.644	0.378	199.022
15Sep2004	21:15	190.626	0.370	190.996
15Sep2004	21:30	183.342	0.362	183.704
15Sep2004	21:45	176.666	0.354	177.020
15Sep2004	22:00	170.501	0.347	170.848
15Sep2004	22:15	164.779	0.340	165.119
15Sep2004	22:30	159.455	0.334	159.788
15Sep2004	22:45	154.465	0.327	154.792
15Sep2004	23:00	149.727	0.321	150.049
15Sep2004	23:15	145.278	0.315	145.593
15Sep2004	23:30	141.108	0.310	141.417
15Sep2004	23:45	137.191	0.304	137.495
16Sep2004	00:00	133.501	0.299	133.800
16Sep2004	00:15	127.562	0.235	127.797

Junction 4

Return interval: 500-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Date	Time	Inflow from Basin D (M3/S)	Inflow from Basin E (M3/S)	Outflow (M3/S)
15Sep2004	00:00	0.000	0.000	0.000
15Sep2004	00:15	0.000	0.000	0.000
15Sep2004	00:30	0.000	0.000	0.000
15Sep2004	00:45	0.000	0.000	0.000
15Sep2004	01:00	0.000	0.000	0.000
15Sep2004	01:15	0.000	0.000	0.000
15Sep2004	01:30	0.000	0.000	0.000
15Sep2004	01:45	0.000	0.000	0.000
15Sep2004	02:00	0.000	0.000	0.000
15Sep2004	02:15	0.000	0.000	0.000
15Sep2004	02:30	0.000	0.000	0.000
15Sep2004	02:45	0.000	0.000	0.000
15Sep2004	03:00	0.000	0.000	0.000
15Sep2004	03:15	0.000	0.000	0.000
15Sep2004	03:30	0.000	0.000	0.000
15Sep2004	03:45	0.007	0.009	0.016
15Sep2004	04:00	0.051	0.055	0.106
15Sep2004	04:15	0.165	0.161	0.326
15Sep2004	04:30	0.347	0.311	0.658
15Sep2004	04:45	0.577	0.483	1.060
15Sep2004	05:00	0.835	0.669	1.504
15Sep2004	05:15	1.112	0.865	1.977
15Sep2004	05:30	1.404	1.069	2.473
15Sep2004	05:45	1.709	1.282	2.991
15Sep2004	06:00	2.028	1.503	3.531
15Sep2004	06:15	2.440	1.830	4.271
15Sep2004	06:30	3.051	2.321	5.372
15Sep2004	06:45	3.750	2.820	6.570
15Sep2004	07:00	4.434	3.270	7.704
15Sep2004	07:15	5.087	3.710	8.797
15Sep2004	07:30	5.743	4.156	9.899
15Sep2004	07:45	6.416	4.618	11.034
15Sep2004	08:00	7.117	5.104	12.220
15Sep2004	08:15	7.856	5.619	13.475

Junction 4

Return interval: 500-year

Date	Time	Inflow from Basin D (M3/S)	Inflow from Basin E (M3/S)	Outflow (M3/S)
15Sep2004	08:30	8.643	6.171	14.815
15Sep2004	08:45	9.490	6.767	16.257
15Sep2004	09:00	10.408	7.417	17.825
15Sep2004	09:15	11.872	8.687	20.559
15Sep2004	09:30	14.452	10.859	25.310
15Sep2004	09:45	17.432	12.986	30.418
15Sep2004	10:00	20.243	14.783	35.026
15Sep2004	10:15	22.872	16.561	39.432
15Sep2004	10:30	25.623	18.478	44.101
15Sep2004	10:45	27.417	19.154	46.571
15Sep2004	11:00	26.958	18.010	44.968
15Sep2004	11:15	27.941	19.584	47.525
15Sep2004	11:30	34.246	26.069	60.315
15Sep2004	11:45	44.837	34.662	79.499
15Sep2004	12:00	63.358	50.945	114.303
15Sep2004	12:15	124.247	112.676	236.923
15Sep2004	12:30	212.512	176.243	388.755
15Sep2004	12:45	222.881	149.891	372.771
15Sep2004	13:00	175.476	97.514	272.990
15Sep2004	13:15	122.116	66.799	188.915
15Sep2004	13:30	86.944	45.011	131.954
15Sep2004	13:45	63.167	33.372	96.539
15Sep2004	14:00	51.493	30.082	81.575
15Sep2004	14:15	46.343	28.710	75.053
15Sep2004	14:30	42.779	26.793	69.572
15Sep2004	14:45	39.632	24.976	64.607
15Sep2004	15:00	36.796	23.550	60.346
15Sep2004	15:15	33.568	21.431	54.999
15Sep2004	15:30	29.546	18.324	47.871
15Sep2004	15:45	25.664	15.832	41.497
15Sep2004	16:00	22.785	14.337	37.122
15Sep2004	16:15	20.884	13.306	34.191
15Sep2004	16:30	19.471	12.542	32.012
15Sep2004	16:45	18.361	11.927	30.288
15Sep2004	17:00	17.457	11.407	28.864

Junction 4

Return interval: 500-year

Date	Time	Inflow from Basin D (M3/S)	Inflow from Basin E (M3/S)	Outflow (M3/S)
15Sep2004	17:15	16.690	10.951	27.641
15Sep2004	17:30	16.021	10.544	26.566
15Sep2004	17:45	15.424	10.179	25.603
15Sep2004	18:00	14.887	9.843	24.730
15Sep2004	18:15	14.154	9.236	23.390
15Sep2004	18:30	12.949	8.247	21.196
15Sep2004	18:45	11.728	7.445	19.172
15Sep2004	19:00	10.819	6.975	17.795
15Sep2004	19:15	10.222	6.656	16.877
15Sep2004	19:30	9.776	6.415	16.190
15Sep2004	19:45	9.423	6.215	15.638
15Sep2004	20:00	9.127	6.041	15.168
15Sep2004	20:15	8.867	5.882	14.749
15Sep2004	20:30	8.632	5.735	14.368
15Sep2004	20:45	8.416	5.599	14.015
15Sep2004	21:00	8.214	5.470	13.684
15Sep2004	21:15	8.027	5.348	13.374
15Sep2004	21:30	7.849	5.232	13.081
15Sep2004	21:45	7.680	5.121	12.801
15Sep2004	22:00	7.519	5.016	12.535
15Sep2004	22:15	7.366	4.916	12.282
15Sep2004	22:30	7.220	4.820	12.040
15Sep2004	22:45	7.080	4.728	11.809
15Sep2004	23:00	6.947	4.641	11.588
15Sep2004	23:15	6.819	4.557	11.376
15Sep2004	23:30	6.697	4.476	11.173
15Sep2004	23:45	6.579	4.399	10.978
16Sep2004	00:00	6.466	4.324	10.790
16Sep2004	00:15	5.855	3.646	9.501

Junction 5

Return interval: 500-year

HEC-HMS 3.0.0 [P:\Cayey\Water Resources\Parque Tecnologico de Cayey\HMS\Frequency_...

Date	Time	Inflow from Río Guavate 1 (M3/S)	Inflow from Basin F (M3/S)	Outflow (M3/S)
15Sep2004	00:00	0.000	0.000	0.000
15Sep2004	00:15	0.000	0.000	0.000
15Sep2004	00:30	0.000	0.000	0.000
15Sep2004	00:45	0.000	0.000	0.000
15Sep2004	01:00	0.000	0.000	0.000
15Sep2004	01:15	0.000	0.000	0.000
15Sep2004	01:30	0.000	0.000	0.000
15Sep2004	01:45	0.000	0.000	0.000
15Sep2004	02:00	0.000	0.000	0.000
15Sep2004	02:15	0.000	0.000	0.000
15Sep2004	02:30	0.000	0.000	0.000
15Sep2004	02:45	0.000	0.027	0.027
15Sep2004	03:00	0.000	0.195	0.195
15Sep2004	03:15	0.000	0.544	0.544
15Sep2004	03:30	0.000	0.982	0.982
15Sep2004	03:45	0.000	1.457	1.457
15Sep2004	04:00	0.012	1.949	1.961
15Sep2004	04:15	0.088	2.450	2.538
15Sep2004	04:30	0.282	2.959	3.241
15Sep2004	04:45	0.592	3.477	4.069
15Sep2004	05:00	0.980	4.004	4.984
15Sep2004	05:15	1.415	4.544	5.959
15Sep2004	05:30	1.882	5.097	6.979
15Sep2004	05:45	2.374	5.666	8.040
15Sep2004	06:00	2.888	6.255	9.143
15Sep2004	06:15	3.423	7.508	10.931
15Sep2004	06:30	4.123	9.180	13.303
15Sep2004	06:45	5.152	10.477	15.629
15Sep2004	07:00	6.330	11.606	17.936
15Sep2004	07:15	7.477	12.694	20.171
15Sep2004	07:30	8.578	13.797	22.375
15Sep2004	07:45	9.678	14.943	24.622
15Sep2004	08:00	10.807	16.150	26.957
15Sep2004	08:15	11.983	17.433	29.416

Junction 5

Return interval: 500-year

Date	Time	Inflow from Río Guavate 1 (M3/S)	Inflow from Basin F (M3/S)	Outflow (M3/S)
15Sep2004	08:30	13.224	18.812	32.037
15Sep2004	08:45	14.547	20.308	34.855
15Sep2004	09:00	15.969	21.946	37.915
15Sep2004	09:15	17.512	26.653	44.165
15Sep2004	09:30	20.012	33.194	53.207
15Sep2004	09:45	24.360	37.943	62.303
15Sep2004	10:00	29.396	42.043	71.439
15Sep2004	10:15	34.104	46.223	80.327
15Sep2004	10:30	38.551	50.904	89.455
15Sep2004	10:45	43.167	49.026	92.193
15Sep2004	11:00	46.077	44.204	90.281
15Sep2004	11:15	45.289	54.419	99.707
15Sep2004	11:30	47.014	75.508	122.521
15Sep2004	11:45	57.757	97.928	155.685
15Sep2004	12:00	75.662	153.417	229.079
15Sep2004	12:15	107.342	384.556	491.898
15Sep2004	12:30	212.399	466.689	679.088
15Sep2004	12:45	358.389	287.288	645.677
15Sep2004	13:00	375.968	181.674	557.642
15Sep2004	13:15	292.946	118.669	411.615
15Sep2004	13:30	205.730	77.804	283.534
15Sep2004	13:45	143.347	65.163	208.510
15Sep2004	14:00	103.622	65.294	168.917
15Sep2004	14:15	84.568	62.706	147.273
15Sep2004	14:30	76.357	59.433	135.790
15Sep2004	14:45	70.668	55.989	126.657
15Sep2004	15:00	65.600	52.830	118.430
15Sep2004	15:15	61.198	46.298	107.496
15Sep2004	15:30	56.068	38.364	94.433
15Sep2004	15:45	49.296	33.938	83.234
15Sep2004	16:00	42.772	31.300	74.071
15Sep2004	16:15	37.997	29.463	67.460
15Sep2004	16:30	34.777	28.016	62.793
15Sep2004	16:45	32.448	26.789	59.237
15Sep2004	17:00	30.633	25.715	56.348

Junction 5

Return interval: 500-year

Date	Time	Inflow from Río Guavate 1 (M3/S)	Inflow from Basin F (M3/S)	Outflow (M3/S)
15Sep2004	17:15	29.149	24.755	53.904
15Sep2004	17:30	27.885	23.878	51.763
15Sep2004	17:45	26.781	23.073	49.853
15Sep2004	18:00	25.796	22.331	48.127
15Sep2004	18:15	24.904	20.320	45.224
15Sep2004	18:30	23.658	17.747	41.404
15Sep2004	18:45	21.635	16.352	37.987
15Sep2004	19:00	19.577	15.537	35.114
15Sep2004	19:15	18.070	14.967	33.037
15Sep2004	19:30	17.061	14.505	31.566
15Sep2004	19:45	16.328	14.100	30.427
15Sep2004	20:00	15.748	13.731	29.479
15Sep2004	20:15	15.262	13.389	28.651
15Sep2004	20:30	14.832	13.067	27.899
15Sep2004	20:45	14.444	12.761	27.205
15Sep2004	21:00	14.085	12.472	26.557
15Sep2004	21:15	13.750	12.197	25.948
15Sep2004	21:30	13.436	11.936	25.373
15Sep2004	21:45	13.139	11.688	24.827
15Sep2004	22:00	12.857	11.451	24.308
15Sep2004	22:15	12.589	11.225	23.813
15Sep2004	22:30	12.333	11.008	23.341
15Sep2004	22:45	12.088	10.802	22.890
15Sep2004	23:00	11.855	10.604	22.459
15Sep2004	23:15	11.632	10.414	22.045
15Sep2004	23:30	11.418	10.231	21.650
15Sep2004	23:45	11.213	10.056	21.270
16Sep2004	00:00	11.017	9.888	20.905
16Sep2004	00:15	10.828	7.030	17.858

Appendix D

Copy of Original FEMA Model

Río La Plata

USGS STFP-BACKWATER PROGRAM - VERSION 77.091 *** PAGE COUNT= 2,DATE= 6/29/77

*** INPUT CARD PRINTOUT ***

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  5   644    1818  4 12243 1855  4 12257 1858  4 12255 1875  4 12248 1876  4 12256
  5   646    1882  4 12245 1886  4 12271 1983  4 12317
  6   660  6 10 050 035 10 14 045 035  6 10 040 035  6  8 060 035
  3   700 SEC F 0  58  4 1195  295126 99 99
  5   730       0  1 12666  011  1 12577  021  1 12575  033  1 12576  045  1 12573
  5   732     055  1 12574  066  1 12614  071  1 12594  167  1 12472  358  1 12332
  5   734     430  1 12294  521  1 12243  600  1 12193  658  1 12222  739  1 12219
  5   736     817  2 12215  850  2 12173  887  2 12045  959  2 12007  995  2 11959
  5   738    1074  2 11959 1085  2 11938 1093  2 11889 1101  2 11877 1108  2 11937
  5   740    1114  2 11941 1140  2 12017 1172  2 12038 1211  3 12059 1242  3 12056
  5   742    1303  3 12013 1331  3 12002 1350  3 11933 1377  3 11907 1411  3 11880
  5   744    1428  3 11856 1447  3 11880 1461  3 11967 1472  3 11994 1487  3 12088
  5   746    1495  3 12097 1517  4 12148 1559  4 12182 1632  4 12211 1707  4 12255
  5   748    1819  4 12234 1907  4 12244 2010  4 12266 2147  4 12277 2236  4 12293
  5   750    2305  4 12322 2352  4 12342 2361  4 12303 2369  4 12292 2392  4 12302
  5   752    2405  4 12310 2435  4 12347 2480  4 12391
  6   760  3  5 085 060 15 20 060 050 15 20 060 050  6  8 045 035
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  5   832    1909  2 11884 1936  2 11867 1964  2 11884 1969  2 11922 1980  2 11956
  5   834    2058  3 12026 2147  3 11967 2232  3 12045 2479  3 12003 2550  4 12111
  5   836    2660  4 12112 2740  4 12197 2856  4 12300 2926  4 12386 2937  4 12395
  5   838    2961  4 12399 2966  4 12397 2994  4 12349 2998  4 12334 3008  4 12328
  5   840    3026  4 12328 3032  4 12425 3050  4 12383 3166  4 12387
  6   860  4  6 045 035 10 15 045 035  6 10 045 035  4  6 050 035
  3   900 SEC H 0  37  5 1185  296635 99 99
  5   930    1637  1 12400 1637  1 12061 1810  1 11949 1884  1 11942 2019  1 11942
  5   932    2049  1 11943 2087  1 11912 2120  2 11934 2251  2 11925 2468  2 11930
  5   934    2634  3 11952 2899  3 11971 3182  3 11984 3194  3 11984 3378  4 11997
  5   936    3400  4 11918 3417  4 11878 3422  4 11823 3433  4 11759 3445  4 11741
  5   938    3459  4 11759 3463  4 11791 3474  4 11822 3486  4 11833 3566  4 11826
  5   940    3711  5 11934 3822  5 11923 3878  5 11965 3974  5 11984 4072  5 12027
  5   942    4087  5 12035 4138  5 12048 4217  5 12097 4377  5 12157 4551  5 12216
  5   944    4622  5 12266 4622  5 12400
  6   960  6  8 045 030  6  8 045 030  6  8 045 035 15 20 045 035  6  8 060 045
  3  1000 SEC I 0  50  3 1205  297620 99 99
  5  1030    1962  1 12350 1962  1 12236 1986  1 12250 2040  1 12154 2150  1 12121
  5  1032    2251  1 12133 2318  1 12121 2380  1 12117 2436  1 12121 2491  1 12127
  5  1034    2565  1 12132 2612  1 12136 2671  1 12141 2735  1 12147 2794  1 12155
  5  1036    2875  1 12160 2919  1 12159 2972  1 12169 3040  2 12173 3132  2 12178
  5  1038    3199  2 12183 3255  2 12182 3309  2 12185 3401  2 12225 3424  2 12184
  5  1040    3515  2 12194 3601  2 12189 3649  2 12118 3713  2 12122 3769  2 12149
  5  1042    3807  3 12171 3846  3 12158 3882  3 12134 3967  3 12137 4035  3 12133
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BK

USGS STEP-BACKWATER PROGRAM - VERSION 77.091 *** PAGE COUNT= 3, DATE= 6/29/77

*** INPUT CARD PRINTOUT ***

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5  1046    4213  3 12003 4231  3 12093 4252  3 12049 4259  3 12093 4270  3 12124
5  1048    4294  3 12167 4332  3 12255 4346  3 12274 4395  3 12292 4540  3 12350
6  1060  4 10 045 030  4 10 045 030 15 20 045 035
3  1100 SEC J 2  14  1 1205  297620         0 12183 1 0
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5  1132    4127  1 11965 4148  1 11960 4168  1 11964 4187  1 12002 4218  1 12028
5  1134    4257  1 12087 4284  1 12111 4308  1 12183 4057 -9 12183
6  1160 10 15 050 045
3  1200 SEC J 4  22  3  40          1 99.          1 1 1              2
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5  1232    2425  1 12192 2712  1 12184 2865  1 12184 3022  1 12188 3354  1 12188
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5  1238    4522  3 12322 4605  3 12371
3  1300 SEC K 5  48  4 1210  297870. 2  4
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5  1332    2038  1 12162 2045  1 12161 2195  1 12165 2415  1 12183 2887  1 12211
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5  1336    3168  2 12216 3234  2 12216 3304  2 12210 3372  2 12208 3411  2 12168
5  1338    3487  2 12173 3577  2 12167 3672  2 12167 3807  2 12167 3849  3 12146
5  1340    3880  3 12034 3901  3 11968 3909  3 11960 3937  3 12052 3963  3 12044
5  1342    4001  3 12027 4048  3 12064 4081  3 12067 4100  4 12066 4183  4 12106
5  1344    4201  4 12149 4228  4 12191 4245  4 12214 4310  4 12275 4345  4 12282
5  1346    4421  4 12285 4496  4 12269 4544  4 12318 4573  4 12329 4630  4 12375
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3  1400 SEC L 0  44  5 1210  298866 99 99
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5  1434    3287  2 12129 3376  2 12144 3440  2 12135 3523  2 12142 3536  2 12159
5  1436    3592  2 12163 3640  2 12161 3686  3 12148 3699  3 12108 3712  3 12108
5  1438    3720  3 12061 3736  3 12005 3746  3 11986 3756  3 12005 3760  3 12027
5  1440    3768  4 12097 3770  4 12119 3776  4 12132 3884  4 12099 3930  4 12131
5  1442    3937  4 12132 4036  4 12127 4131  4 12108 4161  4 12126 4208  5 12135
5  1444    4288  5 12019 4289  5 12003 4290  5 12019 4305  5 12024 4315  5 12051
5  1446    4331  5 12133 4344  5 12195 4352  5 12266 4368  5 12357
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5  1538     636  1 12185  640  1 12169  646  1 12189  661  1 12195  665  1 12207
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BL

BM

Bat

Highway 52

*** INPUT CARD PRINTOUT ***

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 5  1638    1425  2 12154 1443  2 12171 1460  3 12301 1476  3 12331 1534  3 12320
 5  1640    1624  3 12303 1704  3 12317 1768  3 12323 1851  3 12313 1947  3 12303
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 5  1742    1794  3 12360 1873  3 12366 1986  4 12419 2122  4 12429 2293  4 12428
 5  1744    2443  4 12421 2575  4 12431 2659  4 12427 2783  4 12435 2783  4 12527
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 5  1764    1446  1 12219 1424  1 12276 1535  1 12284 1570  1 12479 1570  1 12503
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 5  1932     314  1 12362  329  1 12290  344  1 12351  422  1 12330  549  1 12347
 5  1934     666  1 12358  774  1 12364  851  1 12384  943  1 12397 1025  2 12383
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USGS STEP-BACKWATER PROGRAM - VERSION 77.091 *** PAGE COUNT= 24,DATE= 6/29/77

CROSS-SECTION PROPERTIES FOR: RIO DE LA PLATA AT CAYEY, P.R.
SECID=SEC 1 AT DISTANCE= 297620

PART 1 OF 2

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1205.6	717	80361	1.00	110	115	4118	4253	10391
1205.9	751	83336	1.00	117	122	4114	4254	10796
1206.2	787	86718	1.00	124	129	4109	4254	11249
1206.5	825	90498	1.00	131	137	4105	4255	11747
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1208.0	1047	115212	1.00	166	173	4082	4257	14920
1208.3	1098	121605	1.00	172	180	4078	4257	15719
1208.6	1151	123925	1.00	178	185	4076	4258	16616
1208.9	1205	136575	1.00	183	190	4073	4258	17550
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1209.5	1317	153413	1.00	192	200	4068	4260	19578
1209.8	1376	162841	1.00	196	203	4065	4261	20692
1210.1	1435	172601	1.00	199	207	4063	4262	21839
1210.4	1495	182690	1.00	203	211	4060	4263	23021
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1211.3	1683	214950	1.00	214	222	4052	4266	26771
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1211.9	1820	238217	1.01	297	305	2349	4268	25471
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1212.8	2247	280413	1.17	625	634	2127	4272	22320
1213.1	2451	297695	1.25	734	743	2117	4274	22739
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1214.0	3288	288875	1.30	1095	1104	2087	4279	28313
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1214.9	4349	394328	1.31	1258	1268	2057	4284	40043
1215.2	4734	435561	1.30	1304	1313	2047	4286	44825
1215.5	5132	479859	1.29	1347	1356	2039	4287	50022
1215.8	5545	525162	1.29	1410	1420	2038	4289	54966
1216.1	5985	567783	1.30	1517	1526	2036	4291	59244
1216.4	6446	621064	1.27	1552	1562	2034	4292	66132
1216.7	6917	677583	1.24	1588	1598	2033	4294	73417
1217.0	7399	735826	1.23	1635	1644	2031	4295	80635
1217.3	7899	798394	1.22	1695	1705	2029	4297	87429
1217.6	8417	866578	1.22	1756	1766	2028	4298	94485
1217.9	8952	941317	1.22	1811	1821	2026	4299	102217
1218.2	9502	1025910	1.21	1856	1866	2024	4300	111059

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CROSS-SECTION PROPERTIES FOR: RIO DE LA PLATA AT CAYEY, P.R.
SECID=SEC I AT DISTANCE= 297620 PART 2 OF 2

WS	A	K	ALPHA	B	P	LEW	REW	QC
1218.5	10086	1110888	1.21	1994	2004	2023	4302	116907
1218.8	10690	1211773	1.19	2035	2045	2021	4303	127188
1219.1	11310	1315981	1.19	2109	2119	2019	4304	136442
1219.4	11956	1426070	1.18	2199	2210	2018	4306	145451
1219.7	12618	1550495	1.17	2211	2222	2016	4307	158371
1220.0	13283	1681784	1.15	2223	2233	2014	4308	171660
1220.3	13951	1819999	1.14	2234	2245	2012	4310	185268
1220.6	14623	1965534	1.13	2246	2257	2011	4311	199178
1220.9	15299	2118521	1.12	2257	2268	2009	4312	213341
1221.2	15978	2279199	1.12	2269	2280	2007	4313	227721
1221.5	16660	2450225	1.11	2280	2292	2006	4315	242527
1221.8	17346	2631448	1.10	2292	2303	2004	4316	257666
1222.1	18035	2822404	1.10	2304	2315	2002	4317	273005
1222.4	18728	3023387	1.10	2315	2327	2001	4319	288502
1222.7	19424	3237823	1.09	2321	2332	1999	4320	304758
1223.0	20121	3465266	1.09	2324	2336	1997	4321	321469
1223.3	20818	3704766	1.09	2327	2339	1996	4322	338284
1223.6	21517	3957401	1.09	2330	2342	1994	4324	355203
1223.9	22217	4207941	1.09	2338	2350	1962	4325	372258
1224.2	22920	4470801	1.09	2346	2359	1962	4326	389489
1224.5	23625	4724109	1.08	2354	2367	1962	4328	407587
1224.8	24332	4959216	1.08	2362	2376	1962	4329	426842
1225.1	25042	5205929	1.07	2368	2382	1962	4330	446583
1225.4	25753	5479981	1.06	2370	2383	1962	4332	467099
1225.7	26464	5768043	1.06	2371	2386	1962	4333	488010
1226.0	27176	6064362	1.05	2374	2388	1962	4336	509218
1226.3	27888	6371807	1.04	2376	2391	1962	4338	530740
1226.6	28601	6689819	1.04	2378	2393	1962	4340	552586
1226.9	29315	7019137	1.03	2380	2396	1962	4342	574710
1227.2	30029	7360270	1.03	2383	2398	1962	4345	597079
1227.5	30745	7702525	1.02	2387	2403	1962	4349	619188
1227.8	31462	7988790	1.02	2395	2411	1962	4357	639627
1228.1	32181	8279041	1.02	2403	2420	1962	4365	660264
1228.4	32904	8574746	1.02	2411	2428	1962	4373	681122
1228.7	33628	8875899	1.03	2419	2437	1962	4381	702203
1229.0	34356	9182504	1.03	2428	2445	1962	4390	723511
1229.3	35085	9495646	1.03	2435	2453	1962	4397	745101
1229.6	35816	9817181	1.03	2443	2461	1962	4405	767089
1229.9	36551	10144165	1.03	2450	2469	1962	4412	789317
1230.2	37287	10476598	1.03	2458	2477	1962	4420	811787
1230.5	38026	10814512	1.03	2466	2485	1962	4428	834500
1230.8	38766	11157617	1.03	2473	2492	1962	4435	857439
1231.1	39509	11506491	1.03	2480	2500	1962	4442	880642
1231.4	40254	11860872	1.03	2488	2508	1962	4450	904091
1231.7	41002	12220769	1.03	2495	2516	1962	4457	927786

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CROSS-SECTION PROPERTIES FOR: RIO DE LA PLATA AT CAYEY, P.R.
SECID=SEC I AT DISTANCE= 297620

PART 1 OF 2

WS	A	K	ALPHA	B	P	LEW	REW	QC
1205.0	778	71697	1.00	141	143	4091	4233	10351
1205.3	820	77252	1.00	144	146	4090	4235	11095
1205.6	864	83040	1.00	147	149	4089	4237	11867
1205.9	909	89061	1.00	151	152	4088	4238	12667
1206.2	955	95317	1.00	154	156	4087	4240	13493
1206.5	1001	101811	1.00	157	159	4086	4242	14348
1206.8	1049	108540	1.00	160	162	4085	4244	15230
1207.1	1097	115519	1.00	163	165	4083	4246	16141
1207.4	1146	122890	1.00	166	168	4083	4248	17097
1207.7	1197	130577	1.00	168	171	4082	4250	18088
1208.0	1248	138508	1.00	171	173	4081	4252	19107
1208.3	1299	146679	1.00	174	176	4081	4254	20153
1208.6	1352	155103	1.00	176	179	4080	4256	21227
1208.9	1405	163245	1.00	180	183	4079	4259	22274
1209.2	1460	171393	1.00	184	187	4079	4263	23325
1209.5	1515	179325	1.00	188	191	4078	4266	24410
1209.8	1572	188538	1.00	192	195	4077	4269	25527
1210.1	1631	197549	1.00	196	199	4077	4273	26679
1210.4	1690	206857	1.00	200	203	4076	4276	27866
1210.7	1751	216464	1.00	204	207	4076	4280	29087
1211.0	1812	226376	1.00	208	211	4075	4283	30344
1211.3	1875	237705	1.00	210	214	4074	4285	31750
1211.6	1939	249883	1.00	212	216	4074	4286	33244
1211.9	2003	262336	1.00	214	217	4073	4287	34766
1212.2	2067	275064	1.00	215	219	4072	4288	36317
1212.5	2132	288066	1.00	217	221	4072	4289	37896
1212.8	2197	301621	1.00	219	223	4071	4290	39501
1213.1	2263	316605	1.00	220	224	4070	4291	41136
1213.4	2329	331994	1.00	222	226	4070	4292	42799
1213.7	2396	347794	1.00	224	228	4069	4293	44490
1214.0	2463	364009	1.00	225	230	4068	4294	46209
1214.3	2531	380629	1.00	227	231	4068	4295	47955
1214.6	2600	397688	1.00	229	233	4067	4296	49730
1214.9	2668	415176	1.00	230	235	4067	4297	51532
1215.2	2738	433099	1.00	232	237	4066	4298	53363
1215.5	2808	451463	1.00	233	238	4065	4299	55221
1215.8	2878	470257	1.00	235	240	4065	4300	57106
1216.1	2949	489517	1.00	237	242	4064	4301	59020
1216.4	3020	509234	1.00	238	244	4063	4302	60962
1216.7	3092	529413	1.00	240	245	4063	4303	62932
1217.0	3164	550060	1.00	242	247	4062	4304	64929
1217.3	3237	570113	1.00	244	249	4061	4305	66885
1217.6	3310	590641	1.00	246	252	4060	4306	68872
1217.9	3384	611634	1.00	248	254	4059	4307	70889
1218.2	3459	633099	1.00	250	256	4057	4308	72935

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CROSS-SECTION PROPERTIES FOR: RIO DE LA PLATA AT CAYEY, P.R.
SECID=SEC I AT DISTANCE= 297620 PART 2 OF 2

WS	A	K	ALPHA	B	P	LEW	REW	QC
1218.3	3484	416553	1.00	0	508	4057	4308	0

CROSS-SECTION PROPERTIES FOR: RIO DE LA PLATA AT CAYEY, P.R.
SECID=SEC K AT DISTANCE= 297870 PART 1 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1210.0	1574	162714	1.10	309	313	3862	4171	19246
1210.3	1668	176474	1.11	316	320	3861	4177	20657
1210.6	1764	190786	1.12	323	327	3860	4183	22116
1210.9	1861	205856	1.12	325	329	3859	4184	23830
1211.2	1959	221453	1.13	327	331	3858	4186	25596
1211.5	2057	237569	1.13	329	334	3858	4187	27414
1211.8	2156	254184	1.14	331	336	3857	4188	29280
1212.1	2256	271318	1.14	333	338	3856	4189	31197
1212.4	2356	288953	1.14	335	340	3855	4191	33161
1212.7	2457	307084	1.14	338	342	3854	4192	35173
1213.0	2559	325827	1.14	340	344	3853	4193	37248
1213.3	2661	345554	1.14	342	347	3853	4194	39439
1213.6	2764	365946	1.14	344	349	3852	4196	41698
1213.9	2867	387007	1.13	346	351	3851	4197	44023
1214.2	2971	408757	1.13	348	353	3850	4198	46416
1214.5	3076	435365	1.12	350	355	3849	4199	48827
1214.8	3182	466218	1.12	356	361	3845	4201	51011
1215.1	3289	499128	1.12	363	369	3839	4202	53047
1215.4	3400	533723	1.12	371	377	3833	4204	55095
1215.7	3512	570255	1.12	379	385	3827	4206	57189
1216.0	3627	608851	1.13	387	392	3821	4208	59332
1216.3	3753	649664	1.13	480	486	2035	4210	55862
1216.6	3916	693393	1.16	586	591	2024	4212	53313
1216.9	4149	740127	1.22	913	918	2014	4214	45383
1217.2	4443	792885	1.30	1045	1051	2014	4216	45567
1217.5	4770	851305	1.38	1117	1123	2014	4218	47583
1217.8	5111	915267	1.45	1158	1165	2014	4220	50492
1218.1	5465	984704	1.52	1200	1207	2014	4222	53605
1218.4	5831	1054802	1.58	1246	1253	2014	4224	56851
1218.7	6214	1115207	1.63	1302	1309	2014	4225	60279
1219.0	6612	1176981	1.68	1357	1365	2014	4227	63857
1219.3	7028	1239189	1.73	1413	1421	2014	4229	67546
1219.6	7460	1304546	1.78	1468	1477	2014	4232	71481
1219.9	7909	1373130	1.82	1524	1533	2014	4234	75671
1220.2	8374	1444989	1.86	1580	1589	2014	4236	80120
1220.5	8857	1520180	1.90	1636	1645	2014	4238	84832
1220.8	9355	1598692	1.93	1691	1701	2014	4241	89809

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CROSS-SECTION PROPERTIES FOR: RIO DE LA PLATA AT CAYEY, P.R.
SECID=SEC K AT DISTANCE= 297870

PART 2 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1221.1	9904	1656163	2.05	1953	1963	2014	4243	88283
1221.4	10514	1734921	2.13	2104	2115	2014	4245	91393
1221.7	11165	1814726	2.21	2234	2245	2014	4248	95249
1222.0	11836	1919928	2.22	2238	2249	2014	4251	103741
1222.3	12508	2029578	2.21	2241	2252	2014	4255	112698
1222.6	13181	2143737	2.20	2244	2256	2014	4258	122129
1222.9	13854	2262225	2.18	2247	2259	2014	4261	132024
1223.2	14529	2384938	2.16	2251	2263	2014	4264	142375
1223.5	15205	2511807	2.14	2254	2266	2014	4267	153178
1223.8	15881	2642645	2.11	2257	2270	2014	4271	164416
1224.1	16559	2777594	2.08	2260	2273	2014	4274	176099
1224.4	17237	2921756	2.05	2263	2277	2014	4277	189613
1224.7	17917	3073815	2.00	2267	2280	2014	4280	201847
1225.0	18598	3231077	1.96	2270	2285	1965	4283	215553
1225.3	19279	3405316	1.90	2274	2289	1965	4287	230734
1225.6	19962	3593139	1.84	2278	2294	1964	4290	247083
1225.9	20646	3790617	1.78	2282	2298	1964	4293	264233
1226.2	21331	3998288	1.72	2286	2303	1963	4296	282190
1226.5	22018	4216756	1.66	2290	2307	1962	4299	300956
1226.8	22705	4446480	1.60	2294	2312	1962	4303	320507
1227.1	23395	4673381	1.55	2309	2328	1961	4498	339308
1227.4	24091	4908513	1.51	2330	2349	1960	4501	358094
1227.7	24794	5152210	1.47	2358	2378	1960	4504	376505
1228.0	25506	5411854	1.43	2391	2412	1959	4507	395135
1228.3	26229	5643680	1.42	2444	2465	1959	4510	409500
1228.6	26975	5850224	1.42	2508	2530	1958	4513	420363
1228.9	27728	6165455	1.38	2511	2534	1957	4516	444765
1229.2	28482	6486387	1.34	2515	2538	1957	4519	469308
1229.5	29237	6759002	1.32	2519	2542	1956	4521	491538
1229.8	29993	7039501	1.30	2522	2547	1956	4524	514300
1230.1	30750	7326992	1.28	2526	2551	1955	4527	537495
1230.4	31508	7599414	1.27	2529	2555	1954	4530	559452
1230.7	32268	7876278	1.26	2533	2559	1954	4533	581699
1231.0	33028	8157563	1.25	2537	2564	1953	4536	604230
1231.3	33789	8443001	1.24	2540	2568	1952	4539	627022
1231.6	34552	8733015	1.23	2544	2572	1952	4542	650107
1231.9	35316	9025659	1.23	2549	2578	1951	4547	673120
1232.2	36082	9319235	1.22	2558	2587	1951	4555	695705
1232.5	36851	9617178	1.22	2566	2596	1950	4562	718541
1232.8	37621	9919989	1.21	2574	2605	1950	4570	741721
1233.1	38395	10230447	1.20	2579	2611	1950	4575	765803
1233.4	39169	10546696	1.20	2583	2616	1950	4579	790454
1233.7	39945	10867117	1.19	2587	2620	1950	4583	815355
1234.0	40721	11191692	1.19	2591	2625	1950	4587	840500
1234.3	41499	11520129	1.18	2594	2630	1950	4590	865869

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CROSS-SECTION PROPERTIES FOR: RIO DE LA PLATA AT CAYEY, P.R.
SECID=SEC K AT DISTANCE= 297870 PART 3 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1234.6	42278	11852936	1.18	2598	2634	1950	4594	891498
1234.9	43058	12189835	1.17	2602	2639	1950	4598	917367
1235.2	43839	12530781	1.17	2606	2644	1950	4602	943470
1235.5	44621	12875776	1.16	2609	2648	1950	4605	969805
1235.8	45404	13224516	1.16	2613	2653	1950	4609	996350
1236.1	46189	13577516	1.16	2617	2658	1950	4613	1023147
1236.4	46975	13934513	1.15	2621	2662	1950	4616	1050170
1236.7	47762	14295453	1.15	2624	2667	1950	4620	1077418

CROSS-SECTION PROPERTIES FOR: RIO DE LA PLATA AT CAYEY, P.R.
SECID=SEC L AT DISTANCE= 298866 PART 1 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1210.0	841	78092	1.04	152	162	3713	4325	11006
1210.3	889	83951	1.05	170	180	3713	4325	11294
1210.6	943	90153	1.06	187	197	3712	4326	11669
1210.9	1003	91035	1.04	225	235	3699	4326	11783
1211.2	1076	98273	1.07	263	273	3698	4327	11962
1211.5	1161	106188	1.10	301	312	3697	4327	12344
1211.8	1257	114870	1.13	341	353	3281	4328	12858
1212.1	1366	124430	1.17	383	395	3279	4329	13541
1212.4	1487	134970	1.20	425	437	3277	4329	14399
1212.7	1621	146502	1.23	470	482	3276	4330	15377
1213.0	1777	158140	1.30	571	584	3275	4330	15615
1213.3	1964	172317	1.35	664	677	3275	4331	16508
1213.6	2170	190284	1.36	715	728	3275	4332	18415
1213.9	2396	211196	1.36	791	805	3274	4332	20285
1214.2	2645	234365	1.36	868	882	3274	4333	22442
1214.5	2911	260254	1.35	899	913	3273	4334	25545
1214.8	3181	288667	1.33	903	917	3273	4334	29348
1215.1	3454	319674	1.31	917	931	3272	4335	33201
1215.4	3731	352735	1.29	931	945	3272	4335	37296
1215.7	4013	387809	1.27	945	960	3271	4336	41618
1216.0	4299	425906	1.26	972	987	3271	4337	45601
1216.3	4603	466204	1.28	1067	1082	3271	4337	47888
1216.6	4923	517647	1.26	1068	1083	3270	4338	53408
1216.9	5244	573138	1.24	1069	1084	3270	4339	59137
1217.2	5564	632834	1.22	1070	1085	3269	4339	65040
1217.5	5886	698775	1.21	1071	1087	3269	4340	71059
1217.8	6207	771217	1.20	1072	1088	3268	4340	77184
1218.1	6529	849065	1.20	1073	1089	3268	4341	83431
1218.4	6851	932595	1.19	1074	1090	3267	4342	89777
1218.7	7173	1023434	1.19	1075	1092	3267	4342	96327

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CROSS-SECTION PROPERTIES FOR: RIO DE LA PLATA AT CAYEY, P.R.
SECTO=SEC L AT DISTANCE= 298800

PART 2 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1219.0	7496	1123881	1.18	1076	1093	3267	4343	103230
1219.3	7819	1232451	1.17	1077	1094	3266	4344	110255
1219.6	8143	1350364	1.17	1078	1095	3266	4344	117410
1219.9	8466	1475289	1.16	1079	1096	3265	4344	124954
1220.2	8790	1596585	1.14	1080	1097	3265	4345	133041
1220.5	9114	1706003	1.13	1081	1098	3264	4345	141433
1220.8	9439	1820751	1.11	1082	1099	3264	4345	150030
1221.1	9767	1941377	1.10	1109	1126	3219	4346	156979
1221.4	10104	2068263	1.09	1136	1154	3211	4346	164051
1221.7	10446	2202710	1.08	1145	1163	3202	4346	172594
1222.0	10791	2343206	1.07	1155	1173	3192	4347	181210
1222.3	11139	2478697	1.06	1167	1185	3180	4347	189979
1222.6	11530	2621013	1.05	1322	1340	2954	4347	188072
1222.9	11932	2749349	1.06	1359	1378	2938	4348	194658
1223.2	12345	2876714	1.07	1391	1410	2928	4348	201641
1223.5	12766	3007274	1.08	1413	1433	2928	4349	209519
1223.8	13192	3141124	1.09	1421	1441	2928	4349	218656
1224.1	13618	3278279	1.09	1421	1441	2928	4349	228546
1224.4	14044	3418727	1.10	1422	1442	2928	4350	238660
1224.7	14471	3563231	1.11	1422	1443	2928	4350	249074
1225.0	14898	3711348	1.11	1422	1444	2928	4350	259741
1225.3	15324	3863084	1.11	1423	1444	2928	4351	270663
1225.6	15751	4018844	1.11	1423	1445	2928	4351	281873
1225.9	16178	4178699	1.11	1423	1446	2928	4351	293377
1226.2	16605	4342906	1.11	1424	1447	2928	4352	305195
1226.5	17032	4507715	1.11	1424	1447	2928	4352	316963
1226.8	17459	4673037	1.11	1424	1448	2928	4352	328702
1227.1	17887	4841103	1.11	1425	1449	2928	4353	340607
1227.4	18314	5011911	1.11	1425	1450	2928	4353	352673
1227.7	18742	5185439	1.12	1426	1451	2928	4354	364899
1228.0	19170	5361660	1.12	1426	1452	2928	4354	377280
1228.3	19598	5540398	1.12	1427	1453	2928	4355	389804
1228.6	20026	5721927	1.12	1428	1454	2928	4356	402490
1228.9	20454	5906065	1.12	1428	1454	2928	4356	415324
1229.2	20883	6092802	1.12	1429	1455	2928	4357	428304
1229.5	21312	6282121	1.12	1429	1456	2928	4357	441429
1229.8	21740	6473834	1.12	1430	1457	2928	4358	454686
1230.1	22169	6668242	1.12	1430	1458	2928	4358	468094
1230.4	22598	6865162	1.12	1431	1459	2928	4359	481640
1230.7	23028	7064578	1.12	1431	1460	2928	4359	495322
1231.0	23457	7266478	1.12	1432	1461	2928	4360	509141
1231.3	23887	7470672	1.12	1432	1462	2928	4360	523081
1231.6	24316	7677486	1.12	1433	1463	2928	4361	537165
1231.9	24746	7886726	1.12	1433	1464	2928	4361	551379
1232.2	25177	8098373	1.12	1434	1464	2928	4362	565723

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CROSS-SECTION PROPERTIES FOR: RIO DE LA PLATA AT CAYEY, P.R.
SECID=SEC L AT DISTANCE= 298866 PART 3 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1232.5	25607	8312424	1.12	1434	1465	2928	4362	580194
1232.8	26037	8528690	1.12	1435	1466	2928	4363	594780
1233.1	26468	8747500	1.12	1435	1467	2928	4363	609503
1233.4	26898	8968664	1.12	1436	1468	2928	4364	624349
1233.7	27329	9192164	1.12	1436	1469	2928	4364	639319
1234.0	27760	9418009	1.12	1437	1470	2928	4365	654410
1234.3	28191	9645979	1.12	1438	1471	2928	4366	669609
1234.6	28623	9876433	1.12	1438	1472	2928	4366	684940
1234.9	29054	10109184	1.12	1439	1473	2928	4367	700389
1235.2	29486	10344207	1.12	1439	1474	2928	4367	715955
1235.5	29918	10581501	1.12	1440	1474	2928	4368	731637
1235.7	30206	10740889	1.12	1440	1475	2928	4368	742153

CROSS-SECTION PROPERTIES FOR: RIO DE LA PLATA AT CAYEY, P.R.
SECID=SEC M AT DISTANCE= 302360 PART 1 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1215.0	97	5824	1.00	32	34	700	732	964
1215.3	107	6675	1.00	33	35	699	732	1096
1215.6	117	7583	1.00	34	37	699	733	1235
1215.9	127	8549	1.00	35	38	698	733	1382
1216.2	138	9572	1.00	36	39	697	733	1537
1216.5	149	10653	1.00	37	40	697	733	1699
1216.8	160	11792	1.00	38	41	696	734	1870
1217.1	172	12771	1.00	40	44	640	734	2022
1217.4	184	13732	1.00	42	46	639	734	2173
1217.7	199	12756	1.00	59	63	577	735	2077
1216.0	219	12801	1.00	75	80	572	735	2122
1218.3	244	13505	1.00	92	97	568	735	2261
1218.6	274	14679	1.00	109	114	564	736	2471
1218.9	311	15893	1.00	133	138	561	736	2697
1219.2	352	18522	1.00	145	151	561	736	3119
1219.5	398	21501	1.00	157	163	560	736	3593
1219.8	446	25385	1.00	162	169	560	737	4188
1220.1	495	29586	1.00	168	174	560	737	4824
1220.4	546	34105	1.00	173	180	559	737	5501
1220.7	599	38947	1.00	179	186	559	738	6220
1221.0	653	44801	1.00	179	187	559	738	7063
1221.3	707	50974	1.00	180	188	558	738	7942
1221.6	761	57466	1.00	181	189	558	739	8855
1221.9	815	64265	1.00	181	189	558	739	9803
1222.2	870	69864	1.00	189	197	557	746	10605
1222.5	928	75124	1.00	199	207	557	756	11371

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CROSS-SECTION PROPERTIES FOR: RIO DE LA PLATA AT CAYEY, P.R.
SECID=SEC M AT DISTANCE= 302360 PART 2 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1222.8	990	80819	1.00	210	218	557	766	12196
1223.1	1054	86970	1.00	220	229	556	776	13082
1223.4	1122	93581	1.00	231	240	556	787	14029
1223.7	1193	100663	1.00	241	250	556	797	15038
1224.0	1267	108226	1.00	252	261	555	807	16110
1224.3	1360	116813	1.02	420	429	555	1109	13727
1224.6	1493	127619	1.07	471	480	555	1138	14567
1224.9	1642	139772	1.12	521	531	554	1167	15645
1225.2	1806	153307	1.15	572	581	554	1196	16950
1225.5	1985	168303	1.18	622	632	554	1225	18480
1225.8	2178	184987	1.21	665	675	553	1247	20369
1226.1	2384	203346	1.22	704	714	553	1265	22547
1226.4	2600	225243	1.22	730	740	553	1282	25197
1226.7	2821	249715	1.22	748	758	552	1300	28165
1227.0	3049	275787	1.21	766	776	552	1318	31315
1227.3	3281	303427	1.21	784	794	552	1336	34641
1227.6	3519	332677	1.20	802	812	551	1353	38144
1227.9	3762	363517	1.19	820	831	551	1371	41818
1228.2	4011	396665	1.18	832	843	551	1383	45900
1228.5	4260	436840	1.15	833	844	550	1383	51020
1228.8	4510	483168	1.10	833	845	550	1383	56633
1229.1	4760	533748	1.07	834	846	549	1383	62466
1229.4	5011	589710	1.03	836	849	547	1383	68414
1229.7	5262	652436	1.01	838	851	545	1383	74341
1230.0	5514	723216	1.00	840	853	543	1383	80078
1230.3	5766	803965	1.00	842	856	541	1383	85435
1230.6	6019	871351	1.00	844	858	539	1383	90977
1230.9	6273	940649	1.00	846	860	537	1383	96656
1231.2	6528	992660	1.01	857	872	509	1383	101644
1231.5	6788	1027114	1.03	879	893	500	1383	105490
1231.8	7053	1097599	1.03	883	899	500	1383	111273
1232.1	7318	1179420	1.03	884	900	499	1383	117727
1232.4	7583	1264638	1.03	885	901	498	1383	124328
1232.7	7849	1353363	1.02	886	902	497	1383	131071
1233.0	8115	1445713	1.02	886	903	497	1383	137952
1233.3	8381	1541747	1.02	887	904	496	1383	144959
1233.6	8647	1641774	1.01	888	905	495	1383	152096
1233.9	8917	1624026	1.06	927	945	456	1383	152538
1234.2	9197	1700064	1.07	937	955	446	1383	158287
1234.5	9480	1778579	1.07	948	966	435	1383	164139
1234.8	9765	1859518	1.08	958	976	425	1383	170099
1235.1	10054	1943012	1.09	968	987	415	1383	176179
1235.4	10346	2029005	1.09	979	998	404	1383	182379
1235.7	10642	2117519	1.10	989	1008	394	1383	188707
1236.0	10940	2208570	1.11	999	1019	384	1383	195163

CROSS-SECTION PROPERTIES FOR: RIO DE LA PLATA AT CAYEY, P.R.
SECID=SEC M AT DISTANCE= 302360 PART 3 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1236.3	11241	2297241	1.12	1011	1031	372	1383	201308
1236.6	11547	2379212	1.13	1026	1047	357	1383	206707
1236.9	11857	2464310	1.14	1042	1062	341	1383	212246
1237.2	12172	2552474	1.16	1057	1078	326	1383	217933
1237.5	12491	2643659	1.17	1073	1094	310	1383	223774
1237.8	12815	2737754	1.18	1088	1109	295	1383	229770
1238.1	13148	2728956	1.27	1148	1169	235	1383	223780
1238.4	13500	2802202	1.31	1179	1201	204	1383	226575
1238.7	13855	2930056	1.30	1184	1207	199	1383	236075
1239.0	14211	3061586	1.28	1190	1213	193	1383	245795
1239.3	14568	3196796	1.27	1196	1219	187	1383	255728
1239.6	14928	3336027	1.26	1201	1224	182	1383	265894
1239.9	15289	3479290	1.25	1207	1230	176	1383	276287
1240.2	15652	3626729	1.24	1212	1236	171	1383	286908
1240.5	16017	3778489	1.22	1218	1242	165	1383	297760
1240.8	16383	3934610	1.21	1224	1248	159	1383	308837
1241.1	16751	4095504	1.20	1229	1254	154	1383	320155
1241.4	17120	4261221	1.19	1235	1260	148	1383	331708
1241.7	17492	4431961	1.18	1240	1266	143	1383	343494

CROSS-SECTION PROPERTIES FOR: RIO DE LA PLATA AT CAYEY, P.R.
SECID=SEC N AT DISTANCE= 303886 PART 1 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1220.0	117	7217	1.00	38	40	1409	1447	1174
1220.3	129	8273	1.00	39	41	1408	1447	1333
1220.6	141	9396	1.00	40	42	1408	1448	1501
1220.9	153	10587	1.00	41	43	1407	1448	1678
1221.2	165	11845	1.00	42	44	1407	1448	1864
1221.5	178	13170	1.00	43	45	1406	1449	2059
1221.8	191	14562	1.00	44	47	1406	1449	2262
1222.1	204	16023	1.00	45	48	1405	1450	2474
1222.4	217	17553	1.00	46	49	1404	1450	2695
1222.7	231	19153	1.00	47	50	1404	1450	2925
1223.0	245	20822	1.00	47	51	1403	1451	3164
1223.3	260	22561	1.00	48	52	1403	1451	3412
1223.6	277	24384	1.02	104	108	599	1452	2545
1223.9	328	26733	1.21	213	217	527	1452	2090
1224.2	399	30126	1.41	248	252	502	1452	2416
1224.5	475	34469	1.50	259	264	501	1453	2977
1224.8	555	39604	1.52	270	275	500	1453	3653
1225.1	639	45105	1.54	297	302	499	1453	4283
1225.4	734	50733	1.54	334	339	498	1454	4975

CROSS-SECTION PROPERTIES FOR: RIO DE LA PLATA AT CAYEY, P.R.
SECID=SEC N AT DISTANCE= 303886

WS	A	K	ALPHA	B	P	LEW	REW	QC
1225.7	839	57094	1.51	371	377	496	1454	5831
1226.0	956	64532	1.46	408	414	495	1455	6858
1226.3	1084	73105	1.42	446	451	494	1455	8062
1226.6	1223	83133	1.36	479	485	493	1455	9517
1226.9	1371	94851	1.29	504	510	492	1456	11275
1227.2	1526	107783	1.24	529	536	491	1456	13200
1227.5	1689	121954	1.20	555	561	489	1457	15289
1227.8	1859	137382	1.16	580	586	488	1457	17534
1228.1	2036	154119	1.13	605	612	487	1457	19937
1228.4	2222	171804	1.11	633	640	486	1458	22426
1228.7	2417	190033	1.09	668	675	485	1458	24927
1229.0	2622	209734	1.08	703	710	484	1459	27610
1229.3	2842	225107	1.07	768	776	482	1459	29970
1229.6	3104	241640	1.07	981	989	481	2341	30220
1229.9	3436	258938	1.10	1232	1240	480	2375	31055
1230.2	3836	293150	1.11	1382	1390	474	2377	34461
1230.5	4262	332251	1.11	1463	1471	474	2380	39141
1230.8	4711	379189	1.13	1530	1538	473	2383	44202
1231.1	5180	429923	1.14	1597	1605	472	2385	49632
1231.4	5669	484515	1.15	1662	1671	471	2388	55457
1231.7	6177	543058	1.15	1725	1734	470	2391	61708
1232.0	6707	604990	1.16	1803	1812	469	2393	67995
1232.3	7259	670998	1.17	1881	1890	468	2396	74678
1232.6	7827	745745	1.17	1902	1911	467	2398	83245
1232.9	8401	829382	1.17	1923	1932	466	2401	92083
1233.2	8981	947357	1.18	1938	1947	465	2404	101087
1233.5	9563	1079826	1.18	1942	1951	465	2406	110598
1233.8	10145	1227307	1.20	1945	1954	464	2409	120120
1234.1	10730	1392209	1.21	1949	1958	463	2411	129591
1234.4	11315	1577155	1.24	1952	1961	462	2414	138917
1234.7	11901	1785666	1.27	1956	1965	461	2417	148009
1235.0	12489	1993761	1.29	1959	1969	460	2419	157493
1235.3	13076	2141548	1.28	1962	1972	460	2422	168921
1235.6	13666	2294770	1.28	1965	1975	459	2425	180625
1235.9	14256	2453369	1.28	1968	1978	459	2427	192572
1236.2	14847	2616135	1.28	1975	1985	459	2433	204444
1236.5	15441	2780125	1.28	1988	1998	459	2447	215928
1236.8	16040	2939067	1.28	2002	2012	458	2460	227755
1237.1	16642	3107362	1.27	2016	2026	458	2474	240272
1237.4	17249	3302562	1.25	2030	2040	458	2487	254896
1237.7	17860	3507813	1.23	2043	2054	457	2501	270131
1238.0	18476	3723989	1.21	2057	2068	457	2514	285994
1238.3	19094	3960693	1.18	2066	2077	457	2523	303410
1238.6	19714	4233677	1.14	2067	2078	456	2523	323513
1238.9	20334	4531105	1.10	2067	2079	456	2523	344419

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CROSS-SECTION PROPERTIES FOR: RIO DE LA PLATA AT CAYEY, P.R.
SECID=SEC N AT DISTANCE= 303886 PART 3 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1239.2	20954	4857747	1.07	2067	2079	456	2523	365918
1239.5	21575	5156296	1.05	2068	2080	456	2523	385451
1239.8	22195	5396955	1.05	2068	2081	455	2523	402675
1240.1	22815	5642297	1.05	2068	2082	455	2523	420152
1240.4	23436	5891988	1.04	2069	2082	454	2523	437862
1240.7	24056	6146163	1.04	2069	2083	454	2523	455806
1241.0	24677	6404781	1.04	2070	2084	453	2523	473982
1241.3	25298	6667589	1.04	2070	2085	453	2523	492371
1241.6	25919	6934976	1.04	2070	2086	453	2523	511000
1241.9	26540	7206691	1.03	2071	2087	452	2523	529853
1242.2	27162	7482688	1.03	2071	2087	452	2523	548924
1242.5	27783	7762941	1.03	2072	2088	451	2523	568214
1242.8	28405	8047178	1.03	2072	2089	451	2523	587702
1243.1	29026	8335827	1.03	2073	2090	450	2523	607419
1243.4	29648	8628635	1.03	2073	2091	450	2523	627346
1243.7	30270	8925554	1.03	2074	2092	449	2523	647481
1244.0	30893	9226569	1.03	2074	2092	449	2523	667822
1244.3	31515	9531391	1.02	2074	2093	449	2523	688349
1244.6	32137	9840488	1.02	2075	2094	448	2523	709096
1244.9	32760	10153586	1.02	2075	2095	448	2523	730042
1245.2	33382	10470663	1.02	2076	2096	447	2523	751186
1245.5	34005	10791686	1.02	2076	2097	447	2523	772527
1245.8	34628	11116357	1.02	2077	2098	446	2523	794044
1246.1	35251	11445197	1.02	2077	2098	446	2523	815773
1246.4	35874	11777907	1.02	2078	2099	445	2523	837692
1246.7	36498	12114449	1.02	2078	2100	445	2523	859801

CROSS-SECTION PROPERTIES FOR: RIO DE LA PLATA AT CAYEY, P.R.
SECID=SEC O AT DISTANCE= 305330 PART 1 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1230.0	579	37581	1.00	177	180	1269	1447	5936
1230.3	636	40964	1.00	210	213	1248	1458	6274
1230.6	706	46635	1.02	257	260	1208	1465	6568
1230.9	790	52995	1.05	299	302	1173	1472	7096
1231.2	886	60157	1.09	342	345	1141	1786	7764
1231.5	995	68227	1.12	385	388	1109	1788	8595
1231.8	1117	77330	1.14	425	428	1078	1789	9626
1232.1	1249	87727	1.15	458	462	1053	1790	10895
1232.4	1392	99240	1.16	491	495	1027	1790	12327
1232.7	1544	111916	1.17	524	528	1001	1791	13920
1233.0	1716	123055	1.24	653	657	750	1791	14187
1233.3	1938	136512	1.32	829	833	679	1791	14631

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CROSS-SECTION PROPERTIES FOR: RIO DE LA PLATA AT CAYEY, P.R.
SECID=SEC 0 AT DISTANCE= 305330

PART 2 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1233.6	2209	153719	1.38	984	989	563	1792	16004
1233.9	2525	175652	1.39	1088	1092	467	1792	18532
1234.2	2859	201828	1.36	1137	1142	424	1792	22080
1234.5	3208	230776	1.32	1187	1192	382	1793	26020
1234.8	3566	264442	1.27	1201	1206	375	1793	30967
1235.1	3928	300923	1.22	1215	1220	369	1793	36294
1235.4	4298	341511	1.20	1253	1258	362	1793	41237
1235.7	4680	385752	1.18	1290	1296	356	1794	46530
1236.0	5073	433017	1.16	1328	1334	349	1794	52097
1236.3	5482	482777	1.16	1406	1412	343	1833	57065
1236.6	5916	535958	1.16	1483	1490	336	1873	62333
1236.9	6368	592895	1.15	1528	1535	330	1879	68671
1237.2	6833	653263	1.15	1562	1569	323	1886	755[illegible]8
1237.5	7303	717297	1.14	1575	1582	317	1892	834[illegible]
1237.8	7777	784350	1.14	1588	1595	310	1899	915[illegible]
1238.1	8256	854466	1.13	1601	1608	304	1905	999[illegible]
1238.4	8738	927543	1.13	1614	1621	297	1911	108714
1238.7	9225	1003536	1.12	1627	1634	291	1918	117735
1239.0	9715	1082404	1.11	1640	1646	284	1924	127033
1239.3	10208	1179224	1.11	1653	1659	278	1931	136378
1239.6	10706	1306275	1.10	1666	1672	271	1937	146460
1239.9	11208	1445459	1.10	1679	1685	265	1943	156681
1240.2	11713	1598249	1.10	1692	1698	258	1950	166997
1240.5	12223	1766396	1.10	1704	1711	252	1956	177358
1240.8	12736	1951854	1.10	1717	1724	245	1963	187701
1241.1	13253	2157478	1.10	1730	1737	239	1969	197982
1241.4	13774	2386275	1.11	1743	1750	232	1975	208123
1241.7	14299	2592266	1.12	1760	1766	222	1982	218424
1242.0	14831	2747823	1.12	1789	1796	210	2000	228756
1242.3	15382	2910338	1.12	1911	1918	198	2469	233610
1242.6	15979	3079621	1.13	2068	2074	187	2509	237019
1242.9	16638	3258900	1.14	2447	2454	175	2690	230254
1243.2	17394	3459007	1.16	2574	2580	163	2736	238633
1243.5	18175	3679256	1.17	2627	2633	156	2783	251024
1243.8	18963	3917093	1.18	2631	2638	152	2783	266362
1244.1	19753	4162904	1.18	2635	2642	148	2783	282466
1244.4	20544	4398293	1.18	2639	2647	144	2783	299885
1244.7	21337	4645782	1.17	2644	2652	127	2783	317961
1245.0	22131	4881959	1.17	2650	2658	126	2783	335465
1245.3	22926	5109845	1.17	2656	2664	126	2783	352670
1245.6	23723	5349950	1.18	2658	2667	125	2783	370530
1245.9	24521	5598925	1.18	2658	2668	125	2783	388896
1246.2	25319	5853494	1.18	2659	2669	124	2783	407644
1246.5	26117	6113573	1.18	2660	2670	123	2783	426765
1246.8	26914	6382088	1.18	2661	2672	122	2783	446620

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CROSS-SECTION PROPERTIES FOR: RIO DE LA PLATA AT CAYEY, P.R.
SECID=SEC O AT DISTANCE= 305330 PART 3 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1247.1	27713	6666123	1.17	2663	2675	120	2783	467929
1247.4	28513	6961489	1.16	2666	2677	117	2783	490094
1247.7	29313	7266449	1.15	2670	2682	113	2783	513090
1248.0	30115	7584156	1.14	2675	2687	108	2783	537042
1248.3	30917	7917991	1.12	2679	2691	104	2783	562044
1248.6	31722	8271257	1.11	2684	2696	99	2783	588185
1248.9	32528	8604080	1.10	2688	2701	95	2783	612588
1249.2	33335	8923894	1.09	2693	2706	90	2783	636016
1249.5	34144	9249279	1.09	2697	2711	86	2783	659778
1249.8	34953	9579918	1.09	2702	2716	81	2783	683849
1250.1	35765	9916306	1.08	2707	2721	76	2783	708261
1250.4	36577	10258136	1.08	2711	2726	72	2783	732990
1250.7	37392	10605366	1.08	2716	2730	67	2783	758030
1251.0	38207	10957955	1.07	2720	2735	63	2783	783377
1251.3	39023	11315579	1.07	2725	2740	58	2783	809005
1251.6	39842	11678792	1.07	2729	2745	54	2783	834952
1251.9	40661	12047252	1.07	2734	2750	49	2783	861193
1252.2	41482	12420948	1.06	2738	2755	45	2783	887723
1252.5	42306	12733079	1.06	2762	2778	21	2783	912289
1252.7	42861	12923326	1.06	2783	2800	0	2783	928043

CROSS-SECTION PROPERTIES FOR: RIO DE LA PLATA AT CAYEY, P.R.
SECID=SEC P AT DISTANCE= 305330 PART 1 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1230.0	530	25922	1.00	206	252	1332	1538	4822
1230.3	591	31039	1.00	207	253	1332	1538	5672
1230.6	654	36535	1.00	208	255	1331	1539	6570
1230.9	716	42395	1.00	210	256	1330	1539	7513
1231.2	779	48612	1.00	211	257	1329	1540	8500
1231.5	843	55178	1.00	212	259	1328	1541	9529
1231.8	907	62081	1.00	214	260	1328	1541	10598
1232.1	971	69327	1.00	215	262	1327	1542	11708
1232.4	1036	76905	1.00	216	263	1326	1542	12858
1232.7	1101	84811	1.00	217	265	1325	1543	14045
1233.0	1166	93041	1.00	219	266	1324	1543	15270
1233.3	1232	101583	1.00	220	268	1324	1544	16530
1233.6	1298	110449	1.00	221	269	1323	1544	17828
1233.9	1365	119628	1.00	223	271	1322	1545	19161
1234.2	1432	129118	1.00	224	272	1321	1545	20529
1234.5	1499	138916	1.00	225	274	1321	1546	21931
1234.8	1567	149012	1.00	227	275	1320	1546	23367
1235.1	1635	159419	1.00	228	276	1319	1547	24837

Río Guavate

USGS STEP-BACKWATER PROGRAM - VERSION 77.091 *** PAGE COUNT= 1,DATE= 1/16/79

*** INPUT CARD PRINTOUT ***

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1  1400 RIO GUAVATE AT CAYEY P R                                11 20 05 03 20
2  1420 122200 122210 122220 122230 122240 122350 122360 122370 122380 122390
2  1422 122450 122460 122470 122480 122490 122550 122560 122570 122580 122590
3  1500 GUA B 1  24  3 1215    3020 99 99
4  1520   3700   3700   3700   3700   3700   7000   7000   7000   7000   7000
4  1522   8800   8800   8800   8800   8800  14000  14000  14000  14000  14000
5  1530   4992  1 12320 4992  1 12239 5063  1 12225 5145  1 12215 5295  1 12212
5  1532   5375  1 12209 5395  2 12212 5418  2 12168 5420  2 12150 5442  2 12112
5  1534   5450  2 12174 5482  2 12171 5490  2 12161 5503  2 12184 5550  2 12205
5  1536   5570  3 12239 5597  3 12230 5615  3 12210 5760  3 12220 5800  3 12217
5  1538   5835  3 12246 5918  3 12257 6140  3 12315 6140  3 12320
6  1560  3  6 045 030  8 12 050 035  3  6 045 035
3  1600 GUA C 0  29  3 1220    3805 99 99
5  1656   4031  1 12528 4031  1 12353 4089  1 12334 4135  1 12300 4210  1 12282
5  1658   4259  1 12271 4305  1 12286 4379  1 12292 4461  2 12290 4467  2 12171
5  1660   4483  2 12159 4504  2 12178 4511  2 12198 4557  2 12228 4581  2 12239
5  1662   4631  2 12251 4703  3 12265 4783  3 12251 4857  3 12244 4933  3 12253
5  1664   4992  3 12246 5064  3 12246 5155  3 12258 5185  3 12300 5241  3 12392
5  1666   5308  3 12417 5416  3 12454 5486  3 12484 5607  3 12528
6  1670  6  8 045 030  8 12 050 035  6  8 050 040
3  1700 GUA D 0   9  1 1225    5030 99 99
5  1745   4545  1 12390 4740  1 12367 4783  1 12357 4815  1 12245 4850  1 12263
5  1746   4880  1 12293 4918  1 12405 4942  1 12430 4950  1 12450
6  1760  4  6 050 040
3  1900 GUA2E 0  25  3 1230    5190 99 99
5  1930   3490  1 12584 3640  1 12583 3735  1 12577 3800  1 12574 3935  1 12559
5  1932   3975  1 12556 4070  1 12543 4370  1 12499 4525  1 12484 4675  1 12484
5  1934   4830  1 12500 4885  2 12507 4885  2 12463 4915  2 12312 4940  2 12320
5  1936   4953  2 12283 4962  2 12278 4965  2 12275 4968  2 12278 4995  2 12306
5  1938   5015  2 12307 5045  2 12485 5045  3 12534 5090  3 12542 5215  3 12558
6  1940  6  8 020 020  6  8 045 040  6  8 020 020
3  2000 GUA F 0  28  4 1230    5545 99 99
5  2030   3027  1 12516 3105  1 12512 3180  1 12493 3250  1 12496 3340  1 12480
5  2032   3400  1 12463 3430  1 12457 3500  1 12459 3655  2 12427 3730  2 12328
5  2034   3815  2 12340 3900  2 12343 3955  2 12327 4025  2 12337 4130  2 12342
5  2036   4280  2 12336 4380  2 12345 4525  3 12362 4575  3 12333 4595  3 12295
5  2038   4620  3 12290 4635  3 12277 4650  3 12292 4655  3 12355 4675  4 12367
5  2040   4735  4 12370 4800  4 12364 4800  4 12516
6  2060  4  6 045 035  6 10 045 035 10 12 045 035  6 10 045 035
3  2100 GUA G 0  39  7 1230    5840 99 99
5  2130      0  1 12576   98  1 12498  211  1 12485  214  1 12482  220  1 12468
5  2132    230  1 12476  268  1 12483  384  2 12464  432  2 12400  440  2 12372
5  2134    447  2 12382  454  2 12400  516  2 12416  606  2 12446  611  2 12417
5  2136    648  2 12400  664  2 12415  681  3 12442  735  3 12452  818  3 12454
5  2138    875  3 12429  906  4 12345  927  4 12346  938  4 12294  943  4 12290
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CROSS-SECTION PROPERTIES FOR: RIO GUAVATE AT CAYEY P R
SECID=GUA B AT DISTANCE= 3020 PART 1 OF 2

WS	A	K	ALPHA	B	P	LEW	REW	QC
1215.0	51	2247	1.00	27	29	5420	5447	400
1215.3	59	2816	1.00	28	29	5420	5447	493
1215.6	68	3439	1.00	28	30	5419	5448	593
1215.9	76	4115	1.00	29	31	5419	5448	701
1216.2	85	4715	1.00	31	34	5419	5491	799
1216.5	95	5172	1.00	36	39	5418	5492	879
1216.8	107	5762	1.00	41	44	5418	5494	980
1217.1	120	6399	1.00	47	50	5416	5496	1088
1217.4	139	5733	1.00	82	86	5415	5497	1027
1217.7	165	7378	1.00	86	89	5413	5499	1293
1218.0	191	9212	1.00	89	92	5412	5501	1584
1218.3	218	11235	1.00	92	96	5410	5502	1900
1218.6	246	13186	1.00	99	102	5409	5507	2207
1218.9	277	15242	1.00	107	111	5407	5514	2531
1219.2	311	17554	1.00	115	119	5405	5521	2892
1219.5	347	20133	1.00	124	127	5404	5528	3291
1219.8	385	22990	1.00	132	136	5402	5534	3729
1220.1	426	26140	1.00	140	144	5401	5541	4208
1220.4	469	29594	1.00	149	152	5399	5548	4729
1220.7	515	33790	1.00	154	157	5398	5551	5344
1221.0	563	38495	1.01	190	194	5348	5553	5477
1221.3	643	43915	1.09	356	360	5245	5658	4700
1221.6	778	51063	1.25	512	516	5137	5702	4866
1221.9	945	60238	1.37	614	618	5112	5802	5683
1222.2	1141	71790	1.43	674	678	5088	5806	7033
1222.5	1348	85547	1.43	707	711	5063	5810	8826
1222.8	1564	101495	1.40	730	734	5048	5813	10987
1223.1	1786	119286	1.35	756	760	5033	5817	13394
1223.4	2018	138789	1.31	785	790	5017	5821	15997
1223.7	2258	160150	1.28	815	819	5002	5824	18841
1224.0	2506	184208	1.24	836	840	4992	5828	22069
1224.3	2757	211803	1.20	839	844	4992	5831	25820
1224.6	3010	241285	1.17	843	848	4992	5835	29775
1224.9	3266	272311	1.15	866	871	4992	5858	33510
1225.2	3529	307635	1.13	888	894	4992	5880	37510
1225.5	3799	346360	1.12	911	917	4992	5903	41656
1225.8	4075	389276	1.10	930	936	4992	5922	46051
1226.1	4356	440427	1.09	941	948	4992	5933	50796
1226.4	4640	498387	1.09	953	960	4992	5945	55545
1226.7	4928	562056	1.10	964	972	4992	5956	60376
1227.0	5219	632007	1.10	976	983	4992	5968	65267
1227.3	5513	708849	1.11	987	995	4992	5979	70191
1227.6	5811	793495	1.12	999	1007	4992	5991	75131
1227.9	6112	875069	1.13	1010	1019	4992	6002	80383
1228.2	6417	952354	1.12	1022	1030	4992	6014	86013

CROSS-SECTION PROPERTIES FOR: RIO GUAVATE AT CAYEY P R
SECID=GUA B AT DISTANCE= 3020 PART 2 OF 2

WS	A	K	ALPHA	B	P	LEW	REW	QC
1228.5	6725	1033803	1.12	1033	1042	4992	6025	91788
1228.8	7037	1119537	1.12	1045	1054	4992	6037	97696
1229.1	7352	1209909	1.12	1056	1066	4992	6048	103736
1229.4	7671	1305087	1.13	1068	1078	4992	6060	109890
1229.7	7993	1405336	1.13	1079	1089	4992	6071	116145
1230.0	8318	1507667	1.13	1091	1101	4992	6083	122607
1230.3	8647	1602412	1.12	1102	1113	4992	6094	129662
1230.6	8979	1700778	1.12	1114	1125	4992	6106	136919
1230.9	9315	1796894	1.11	1125	1137	4992	6117	144015
1231.2	9655	1893610	1.12	1137	1148	4992	6129	151139
1231.5	9997	1992787	1.12	1148	1160	4992	6140	158407
1231.8	10341	2101444	1.11	1148	1161	4992	6140	167038
1232.0	10571	2175352	1.11	1148	1161	4992	6140	172885

CROSS-SECTION PROPERTIES FOR: RIO GUAVATE AT CAYEY P R
SECID=GUA C AT DISTANCE= 3805 PART 1 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1220.0	133	7534	1.00	49	51	4466	4514	1249
1220.3	148	8487	1.00	53	56	4465	4519	1403
1220.6	165	9580	1.00	58	61	4465	4523	1577
1220.9	183	10817	1.00	63	66	4465	4528	1773
1221.2	203	12204	1.00	68	71	4465	4532	1991
1221.5	224	13746	1.00	72	75	4465	4537	2231
1221.8	246	15448	1.00	77	80	4465	4542	2493
1222.1	270	17318	1.00	82	85	4464	4546	2780
1222.4	295	19362	1.00	87	90	4464	4551	3090
1222.7	322	21586	1.00	91	95	4464	4555	3426
1223.0	350	23806	1.00	97	101	4464	4561	3764
1223.3	380	26155	1.00	104	108	4464	4568	4122
1223.6	412	28748	1.00	111	115	4464	4574	4514
1223.9	447	31587	1.00	117	122	4464	4581	4940
1224.2	484	33758	1.00	130	135	4463	4594	5291
1224.5	526	36383	1.00	162	167	4463	4865	5365
1224.8	602	39753	1.09	335	341	4463	5079	4378
1225.1	721	44487	1.22	453	459	4463	5102	4656
1225.4	872	50517	1.32	542	548	4463	5125	5448
1225.7	1043	58503	1.35	598	604	4463	5147	6728
1226.0	1229	68452	1.32	640	646	4463	5156	8412
1226.3	1426	80233	1.27	674	681	4462	5159	10441
1226.6	1633	94826	1.22	699	705	4462	5161	12816
1226.9	1843	113232	1.19	701	708	4462	5163	15561
1227.2	2054	133173	1.16	711	718	4255	5165	18401

CROSS-SECTION PROPERTIES FOR: RIO GUAVATE AT CAYEY P R
SECID=GUA C AT DISTANCE= 3805 PART 2 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1227.5	2271	154652	1.14	735	743	4241	5167	21202
1227.8	2495	177702	1.13	760	768	4228	5169	24148
1228.1	2727	202394	1.12	785	793	4214	5171	27249
1228.4	2966	228744	1.11	809	817	4202	5174	30519
1228.7	3213	256658	1.11	843	851	4189	5176	33752
1229.0	3474	286216	1.12	895	903	4177	5178	36768
1229.3	3766	317563	1.13	1016	1024	4164	5180	38625
1229.6	4073	352679	1.14	1030	1039	4152	5182	43073
1229.9	4384	389987	1.14	1045	1053	4139	5184	47776
1230.2	4699	429693	1.13	1054	1062	4132	5186	52890
1230.5	5016	471627	1.13	1060	1068	4128	5188	58331
1230.8	5335	516063	1.12	1066	1074	4124	5190	63966
1231.1	5656	567644	1.12	1072	1080	4120	5192	69512
1231.4	5978	624576	1.13	1077	1086	4116	5194	75266
1231.7	6302	691496	1.12	1083	1092	4112	5195	81355
1232.0	6628	763448	1.12	1089	1098	4108	5197	87580
1232.3	6956	840691	1.12	1095	1104	4104	5199	93926
1232.6	7285	923716	1.12	1101	1110	4100	5201	100392
1232.9	7616	1012880	1.12	1107	1116	4096	5203	106964
1233.2	7949	1108646	1.12	1113	1121	4092	5204	113631
1233.5	8284	1211051	1.13	1120	1129	4086	5206	120248
1233.8	8622	1298037	1.14	1131	1140	4077	5208	126386
1234.1	8963	1389289	1.15	1142	1151	4068	5210	132514
1234.4	9307	1484971	1.17	1153	1162	4058	5212	138601
1234.7	9655	1585351	1.19	1164	1173	4049	5214	144616
1235.0	10006	1674243	1.19	1175	1184	4040	5215	151588
1235.3	10360	1760407	1.19	1186	1195	4031	5217	158997
1235.6	10716	1852102	1.19	1188	1197	4031	5219	167497
1235.9	11073	1953225	1.17	1190	1199	4031	5221	176814
1236.2	11430	2067193	1.15	1192	1202	4031	5223	187142
1236.5	11788	2188106	1.13	1194	1204	4031	5225	197841
1236.8	12146	2316867	1.11	1195	1206	4031	5226	208859
1237.1	12505	2454954	1.08	1197	1208	4031	5228	220133
1237.4	12864	2603895	1.07	1199	1210	4031	5230	231521
1237.7	13225	2765797	1.05	1201	1212	4031	5232	242801
1238.0	13585	2896305	1.05	1203	1214	4031	5234	253028
1238.3	13946	3020171	1.05	1205	1217	4031	5236	263179
1238.6	14308	3146357	1.04	1206	1219	4031	5237	273462
1238.9	14670	3274742	1.04	1208	1221	4031	5239	283869
1239.2	15033	3405309	1.04	1210	1223	4031	5241	294398
1239.5	15397	3527076	1.04	1218	1231	4031	5249	303987
1239.8	15763	3651029	1.04	1226	1240	4031	5257	313676
1240.1	16132	3777363	1.05	1234	1248	4031	5265	323483
1240.4	16504	3905970	1.05	1242	1256	4031	5273	333397
1240.7	16878	4036852	1.05	1250	1265	4031	5281	343422

CROSS-SECTION PROPERTIES FOR: RIO GUAVATE AT CAYEY P R
SECID=GUA C AT DISTANCE= 3805 PART 3 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1241.0	17254	4170001	1.05	1258	1273	4031	5289	353556
1241.3	17633	4305300	1.05	1266	1281	4031	5297	363791
1241.6	18014	4442976	1.05	1274	1290	4031	5305	374146
1241.9	18397	4581961	1.06	1283	1299	4031	5314	384506
1242.2	18784	4722762	1.06	1292	1308	4031	5323	394926
1242.5	19172	4865860	1.06	1300	1317	4031	5331	405457
1242.8	19564	5011135	1.06	1309	1326	4031	5340	416091
1243.1	19958	5158820	1.07	1318	1335	4031	5349	426848
1243.4	20354	5308791	1.07	1327	1344	4031	5358	437717
1243.7	20754	5461056	1.07	1335	1353	4031	5366	448701
1244.0	21156	5615609	1.07	1344	1362	4031	5375	459798
1244.3	21560	5772328	1.07	1353	1371	4031	5384	471003
1244.6	21967	5931463	1.08	1362	1380	4031	5393	482332
1244.9	22377	6092888	1.08	1370	1389	4031	5401	493778
1245.2	22790	6256605	1.08	1379	1398	4031	5410	505340
1245.5	23205	6423963	1.08	1387	1407	4031	5418	517189
1245.8	23622	6596125	1.08	1394	1414	4031	5425	529481
1246.1	24041	6770633	1.09	1401	1421	4031	5432	541901
1246.4	24463	6947346	1.09	1408	1429	4031	5439	554437
1246.7	24886	7126270	1.09	1415	1436	4031	5446	567090

CROSS-SECTION PROPERTIES FOR: RIO GUAVATE AT CAYEY P R
SECID=GUA D AT DISTANCE= 5030 PART 1 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1225.0	3	33	1.00	11	11	4814	4825	8
1225.3	7	115	1.00	18	18	4813	4831	26
1225.6	13	268	1.00	25	25	4812	4836	57
1225.9	22	510	1.00	31	31	4811	4842	104
1226.2	32	857	1.00	38	38	4810	4848	169
1226.5	44	1350	1.00	43	43	4809	4852	257
1226.8	58	1976	1.00	47	47	4808	4855	365
1227.1	72	2724	1.00	50	51	4808	4858	492
1227.4	88	3597	1.00	54	55	4807	4861	636
1227.7	105	4600	1.00	58	59	4806	4864	800
1228.0	123	5739	1.00	62	63	4805	4867	982
1228.3	142	7017	1.00	66	67	4804	4870	1184
1228.6	162	8441	1.00	70	71	4803	4873	1407
1228.9	184	10015	1.00	74	74	4802	4876	1650
1229.2	207	11745	1.00	77	78	4802	4879	1914
1229.5	230	13768	1.00	80	81	4801	4881	2217
1229.8	255	16011	1.00	82	83	4800	4882	2546
1230.1	279	18408	1.00	84	85	4799	4883	2895

CROSS-SECTION PROPERTIES FOR: RIO GUAVATE AT CAYEY P R
SECID=GUA D AT DISTANCE= 5030 PART 2 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1230.4	305	20959	1.00	86	87	4798	4884	3262
1230.7	331	23662	1.00	87	89	4797	4885	3648
1231.0	357	26518	1.00	89	91	4796	4886	4052
1231.3	384	30170	1.00	91	93	4796	4887	4475
1231.6	412	34143	1.00	93	95	4795	4888	4916
1231.9	440	38451	1.00	95	97	4794	4889	5375
1232.2	469	43116	1.00	97	99	4793	4890	5854
1232.5	498	48160	1.00	99	101	4792	4891	6350
1232.8	528	53603	1.00	101	103	4791	4892	6865
1233.1	559	59481	1.00	102	105	4790	4893	7399
1233.4	590	65819	1.00	104	107	4790	4894	7951
1233.7	621	72649	1.00	106	109	4789	4895	8522
1234.0	653	79554	1.00	108	111	4788	4896	9112
1234.3	686	85287	1.00	110	113	4787	4897	9720
1234.6	719	91231	1.00	112	115	4786	4898	10348
1234.9	753	97382	1.00	114	116	4785	4899	10995
1235.2	788	103740	1.00	116	118	4784	4900	11661
1235.5	823	110310	1.00	117	120	4784	4901	12346
1235.8	858	114651	1.00	123	126	4779	4902	12841
1236.1	897	115153	1.00	137	140	4766	4903	13014
1236.4	941	116922	1.00	151	154	4753	4904	13308
1236.7	988	119564	1.00	165	168	4740	4905	13710
1237.0	1042	110854	1.00	192	195	4715	4906	13776
1237.3	1103	107288	1.00	218	221	4689	4907	14072
1237.6	1172	106986	1.00	244	248	4664	4908	14562
1237.9	1250	109039	1.00	271	274	4638	4909	15224
1238.2	1335	112969	1.00	297	301	4613	4910	16043
1238.5	1428	118512	1.00	324	327	4587	4911	17011
1238.8	1529	125521	1.00	350	354	4562	4912	18123
1239.1	1638	137288	1.00	368	372	4545	4913	19592
1239.4	1749	157455	1.00	369	373	4545	4914	21580
1239.7	1859	179590	1.00	370	375	4545	4915	23634
1240.0	1971	203867	1.00	371	376	4545	4916	25751
1240.3	2082	230462	1.00	372	377	4545	4917	27929
1240.6	2194	259065	1.00	374	379	4545	4919	30144
1240.9	2307	284686	1.00	377	382	4545	4922	32370
1241.2	2420	306707	1.00	380	386	4545	4925	34656
1241.5	2535	329423	1.00	383	389	4545	4928	37001
1241.8	2650	352811	1.00	385	392	4545	4930	39403
1242.1	2766	376903	1.00	388	395	4545	4933	41865
1242.4	2883	401677	1.00	391	398	4545	4936	44384
1242.7	3001	427129	1.00	394	402	4545	4939	46960
1243.0	3119	453256	1.00	397	405	4545	4942	49592
1243.3	3239	481274	1.00	398	406	4545	4943	52383
1243.6	3358	509990	1.00	399	408	4545	4944	55230

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CROSS-SECTION PROPERTIES FOR: RIO GUAVATE AT CAYEY P R
SECID=GUA D AT DISTANCE= 5030 PART 3 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1243.9	3478	539374	1.00	401	409	4545	4946	58130
1244.2	3599	569421	1.00	402	411	4545	4947	61082
1244.5	3719	600122	1.00	403	413	4545	4948	64086
1244.8	3840	631448	1.00	404	414	4545	4949	67139
1245.0	3921	652723	1.00	405	415	4545	4950	69206

CROSS-SECTION PROPERTIES FOR: RIO GUAVATE AT CAYEY P R
SECID=GUA2E AT DISTANCE= 5190 PART 1 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1230.0	60	2502	1.00	42	43	4947	4989	407
1230.3	73	3284	1.00	46	47	4946	4992	524
1230.6	88	4194	1.00	50	51	4945	4995	659
1230.9	108	4680	1.00	71	72	4944	5015	753
1231.2	130	6252	1.00	73	74	4943	5016	980
1231.5	153	7491	1.00	85	85	4914	5016	1171
1231.8	180	9017	1.00	96	97	4914	5017	1402
1232.1	211	11072	1.00	104	105	4913	5017	1701
1232.4	242	13847	1.00	105	107	4913	5018	2084
1232.7	274	16871	1.00	106	108	4912	5018	2493
1233.0	306	20134	1.00	107	109	4911	5019	2929
1233.3	338	23628	1.00	109	110	4911	5019	3388
1233.6	371	27353	1.00	110	112	4910	5020	3872
1233.9	404	31301	1.00	111	113	4910	5020	4379
1234.2	438	35467	1.00	112	114	4909	5021	4909
1234.5	471	39848	1.00	113	116	4908	5021	5460
1234.8	505	44437	1.00	114	117	4908	5022	6033
1235.1	540	49238	1.00	115	118	4907	5022	6627
1235.4	574	54246	1.00	116	119	4907	5023	7242
1235.7	609	59457	1.00	117	121	4906	5023	7878
1236.0	645	64871	1.00	118	122	4905	5024	8534
1236.3	681	70480	1.00	120	123	4905	5024	9209
1236.6	717	76292	1.00	121	124	4904	5025	9905
1236.9	753	83148	1.00	122	126	4904	5025	10620
1237.2	790	90655	1.00	123	127	4903	5026	11354
1237.5	827	98565	1.00	124	128	4902	5026	12108
1237.8	864	106887	1.00	125	129	4902	5027	12881
1238.1	902	115647	1.00	126	131	4901	5027	13673
1238.4	940	124856	1.00	127	132	4901	5028	14483
1238.7	978	134529	1.00	128	133	4900	5028	15313
1239.0	1017	144685	1.00	129	134	4900	5029	16161
1239.3	1056	154506	1.00	131	136	4899	5029	17027
1239.6	1095	163216	1.00	132	137	4898	5030	17913

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CROSS-SECTION PROPERTIES FOR: RIO GUAVATE AT CAYEY P R
SECID=GUA2E AT DISTANCE= 5190 PART 2 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1239.9	1135	172139	1.00	133	138	4898	5031	18816
1240.2	1175	181275	1.00	134	139	4897	5031	19738
1240.5	1215	190624	1.00	135	141	4897	5032	20679
1240.8	1256	200178	1.00	136	142	4896	5032	21637
1241.1	1297	209952	1.00	137	143	4895	5033	22613
1241.4	1338	219938	1.00	138	144	4895	5033	23608
1241.7	1380	230137	1.00	139	146	4894	5034	24622
1242.0	1422	240547	1.00	141	147	4894	5034	25653
1242.3	1464	251162	1.00	142	148	4893	5035	26702
1242.6	1507	261997	1.00	143	149	4892	5035	27769
1242.9	1550	273044	1.00	144	151	4892	5036	28855
1243.2	1593	284305	1.00	145	152	4891	5036	29958
1243.5	1637	295777	1.00	146	153	4891	5037	31080
1243.8	1681	307454	1.00	147	154	4890	5037	32218
1244.1	1725	319352	1.00	148	156	4889	5038	33376
1244.4	1770	331464	1.00	149	157	4889	5038	34552
1244.7	1815	343790	1.00	150	158	4888	5039	35746
1245.0	1860	356330	1.00	152	159	4888	5039	36957
1245.3	1905	369074	1.00	153	161	4887	5040	38186
1245.6	1951	382042	1.00	154	162	4886	5040	39434
1245.9	1998	395226	1.00	155	163	4886	5041	40700
1246.2	2044	408625	1.00	156	164	4885	5041	41983
1246.5	2091	422644	1.00	157	165	4885	5042	43339
1246.8	2138	437044	1.00	157	166	4885	5042	44737
1247.1	2185	451644	1.00	158	167	4885	5043	46153
1247.4	2233	466429	1.00	158	168	4885	5043	47586
1247.7	2280	481400	1.00	159	169	4885	5044	49035
1248.0	2328	496554	1.00	159	170	4885	5044	50501
1248.3	2376	511879	1.00	160	171	4885	5045	51981
1248.6	2458	528398	1.02	350	362	4504	5045	36512
1248.9	2572	547903	1.06	410	422	4473	5045	35497
1249.2	2704	569959	1.09	470	483	4442	5045	35149
1249.5	2854	594798	1.13	530	544	4411	5045	35336
1249.8	3022	622664	1.16	590	604	4380	5045	35982
1250.1	3207	654303	1.19	641	656	4356	5045	37326
1250.4	3406	689734	1.21	686	701	4336	5045	39227
1250.7	3619	728704	1.22	730	745	4315	5045	41433
1251.0	3841	774365	1.21	750	766	4295	5045	44743
1251.3	4069	823590	1.21	770	787	4275	5045	48305
1251.6	4303	876424	1.19	791	808	4254	5045	52114
1251.9	4543	932810	1.18	811	828	4234	5045	56155
1252.2	4790	992745	1.16	832	849	4213	5045	60420
1252.5	5042	1056235	1.15	852	870	4193	5045	64901
1252.8	5301	1123238	1.13	873	891	4172	5045	69584
1253.1	5566	1193885	1.12	893	911	4152	5045	74472

CROSS-SECTION PROPERTIES FOR: RIO GUAVATE AT CAYEY P R
SECID=GUA2E AT DISTANCE= 5190 PART 3 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1253.4	5837	1268145	1.11	914	932	4131	5045	79554
1253.7	6117	1347035	1.10	951	970	4111	5062	84070
1254.0	6408	1429875	1.09	988	1007	4090	5079	88783
1254.3	6710	1516748	1.08	1028	1046	4070	5098	93599
1254.6	7025	1607232	1.07	1073	1092	4048	5121	98356
1254.9	7354	1702287	1.07	1119	1137	4026	5145	103361
1255.2	7696	1802107	1.07	1164	1182	4004	5168	108625
1255.5	8052	1906871	1.07	1209	1228	3982	5192	114156
1255.8	8423	2008346	1.07	1267	1285	3948	5215	119243
1256.1	8808	2119207	1.07	1298	1317	3917	5215	126082
1256.4	9201	2238695	1.06	1325	1344	3890	5215	133486
1256.7	9603	2363625	1.06	1352	1371	3863	5215	141177

CROSS-SECTION PROPERTIES FOR: RIO GUAVATE AT CAYEY P R
SECID=GUA F AT DISTANCE= 5545 PART 1 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1230.0	68	2459	1.00	58	59	4592	4651	414
1230.3	85	3546	1.00	60	61	4591	4651	578
1230.6	104	4797	1.00	62	63	4589	4651	761
1230.9	123	6205	1.00	64	65	4588	4651	964
1231.2	142	7768	1.00	66	67	4586	4652	1185
1231.5	162	9483	1.00	67	69	4584	4652	1423
1231.8	182	11347	1.00	69	71	4583	4652	1679
1232.1	203	13361	1.00	71	73	4581	4652	1952
1232.4	225	15523	1.00	73	75	4580	4653	2243
1232.7	247	17835	1.00	75	77	4578	4653	2550
1233.0	276	20348	1.04	123	126	3728	4653	2297
1233.3	321	23306	1.14	180	183	3726	4653	2278
1233.6	385	26286	1.27	240	243	3724	4653	2448
1233.9	485	29927	1.53	437	440	3722	4654	2341
1234.2	652	35550	1.86	690	693	3719	4654	2632
1234.5	873	45206	1.88	763	766	3717	4654	3866
1234.8	1107	57782	1.71	796	799	3715	4654	5659
1235.1	1350	72810	1.54	829	833	3713	4655	7878
1235.4	1604	90188	1.40	863	866	3710	4655	10481
1235.7	1868	109168	1.28	899	903	3708	4658	13492
1236.0	2144	130217	1.19	937	941	3706	4663	16842
1236.3	2430	154730	1.13	965	969	3703	4668	20551
1236.6	2723	183757	1.09	994	998	3701	4800	24433
1236.9	3030	216089	1.08	1070	1075	3699	4800	27808
1237.2	3360	251702	1.08	1103	1108	3697	4800	31973
1237.5	3691	290069	1.08	1106	1111	3694	4800	36849

CROSS-SECTION PROPERTIES FOR: RIO GUAVATE AT CAYEY P R
SECID=GUA F AT DISTANCE= 5545 PART 2 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1237.8	4023	330943	1.07	1108	1113	3692	4800	41990
1238.1	4356	374287	1.07	1110	1116	3690	4800	47383
1238.4	4689	419986	1.06	1112	1119	3688	4800	53008
1238.7	5023	467972	1.06	1115	1121	3685	4800	58854
1239.0	5358	518186	1.05	1117	1124	3683	4800	64911
1239.3	5693	570534	1.05	1119	1126	3681	4800	71165
1239.6	6029	625053	1.04	1122	1129	3678	4800	77619
1239.9	6366	681661	1.04	1124	1131	3676	4800	84262
1240.2	6704	740319	1.04	1126	1134	3674	4800	91088
1240.5	7042	809433	1.03	1128	1137	3672	4800	98176
1240.8	7381	883322	1.03	1131	1139	3669	4800	105427
1241.1	7720	961204	1.03	1133	1142	3667	4800	112833
1241.4	8060	1043154	1.02	1135	1144	3665	4800	120381
1241.7	8401	1129319	1.02	1137	1147	3663	4800	128065
1242.0	8743	1219864	1.02	1140	1150	3660	4800	135878
1242.3	9085	1317023	1.02	1142	1152	3658	4800	143777
1242.6	9428	1425438	1.02	1144	1155	3656	4800	151718
1242.9	9772	1543312	1.03	1155	1166	3645	4800	159254
1243.2	10121	1670702	1.03	1169	1180	3631	4800	166656
1243.5	10474	1806339	1.03	1184	1195	3616	4800	174136
1243.8	10831	1950744	1.03	1198	1210	3602	4800	181679
1244.1	11193	2104859	1.04	1213	1225	3587	4800	189287
1244.4	11559	2257320	1.04	1227	1240	3573	4800	197313
1244.7	11929	2372984	1.04	1242	1255	3558	4800	205609
1245.0	12304	2491558	1.04	1256	1269	3544	4800	214045
1245.3	12683	2612990	1.04	1271	1284	3529	4800	222615
1245.6	13067	2737518	1.04	1285	1299	3515	4800	231334
1245.9	13463	2862842	1.05	1380	1394	3420	4800	232932
1246.2	13879	2994587	1.05	1395	1409	3405	4800	242046
1246.5	14299	3129848	1.06	1407	1422	3393	4800	251602
1246.8	14723	3268012	1.06	1418	1432	3382	4800	261439
1247.1	15150	3404775	1.06	1428	1443	3372	4800	271272
1247.4	15580	3544273	1.07	1439	1454	3361	4800	281265
1247.7	16013	3686488	1.07	1449	1465	3351	4800	291417
1248.0	16450	3831421	1.08	1460	1476	3340	4800	301726
1248.3	16890	3978237	1.08	1477	1493	3323	4800	311451
1248.6	17336	4127918	1.09	1494	1510	3306	4800	321331
1248.9	17786	4280349	1.09	1511	1528	3289	4800	331362
1249.2	18242	4435549	1.10	1528	1545	3272	4800	341543
1249.5	18708	4585666	1.11	1599	1617	3172	4800	345051
1249.8	19197	4744800	1.11	1640	1658	3160	4800	352887
1250.1	19691	4911046	1.12	1652	1670	3148	4800	364422
1250.4	20188	5080233	1.12	1663	1682	3137	4800	376132
1250.7	20689	5252358	1.13	1675	1694	3125	4800	388018
1251.0	21193	5427411	1.13	1687	1706	3113	4800	400078

CROSS-SECTION PROPERTIES FOR: RIO GUAVATE AT CAYEY P R
SECID=GUA F AT DISTANCE= 5545 PART 3 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1251.3	21702	5603037	1.14	1714	1734	3086	4800	410217
1251.6	22225	5773069	1.15	1773	1793	3027	4800	416032

CROSS-SECTION PROPERTIES FOR: RIO GUAVATE AT CAYEY P R
SECID=GUA G AT DISTANCE= 5840 PART 1 OF 3

WS	A	K	ALPHA	B	P	LEW	REW	QC
1230.0	13	273	1.00	15	16	937	952	71
1230.3	18	433	1.00	16	17	936	952	109
1230.6	23	624	1.00	17	18	935	953	152
1230.9	29	846	1.00	18	19	935	953	202
1231.2	34	1099	1.00	19	21	934	953	258
1231.5	40	1382	1.00	20	22	934	954	320
1231.8	46	1697	1.00	21	23	933	954	388
1232.1	53	2043	1.00	22	24	932	954	462
1232.4	59	2421	1.00	23	25	932	955	542
1232.7	66	2832	1.00	24	26	931	955	628
1233.0	74	3301	1.01	28	30	930	958	681
1233.3	83	3836	1.03	34	36	930	963	733
1233.6	94	4450	1.06	39	42	929	968	806
1233.9	107	5158	1.08	45	48	928	973	901
1234.2	121	5975	1.09	50	53	928	978	1019
1234.5	139	6765	1.18	78	80	927	1005	972
1234.8	174	6295	1.16	137	140	905	1042	1028
1235.1	217	8368	1.14	153	156	904	1057	1373
1235.4	265	10881	1.12	169	172	903	1072	1785
1235.7	318	13862	1.10	185	188	902	1086	2264
1236.0	376	17338	1.08	201	204	900	1101	2811
1236.3	440	21335	1.07	229	232	899	1275	3334
1236.6	522	24801	1.14	322	325	898	1278	3527
1236.9	631	30389	1.17	385	388	897	1282	4240
1237.2	747	38549	1.12	389	392	896	1285	5539
1237.5	865	47789	1.09	397	400	439	1289	6934
1237.8	985	58053	1.07	404	408	438	1292	8426
1238.1	1107	69330	1.06	411	415	437	1295	10011
1238.4	1232	81916	1.05	418	422	437	1299	11677
1238.7	1358	95759	1.05	425	429	436	1302	13424
1239.0	1487	110670	1.05	431	435	435	1305	15256
1239.3	1617	126637	1.05	438	442	434	1309	17167
1239.6	1750	145342	1.06	450	454	433	1318	18975
1239.9	1888	167843	1.09	473	478	432	1338	20482
1240.2	2035	193408	1.13	511	516	431	1358	21679
1240.5	2195	223090	1.17	556	561	428	1379	22832

Appendix E

Input Data and Results of HEC-RAS Model for Duplicate Effective Model

Río La Plata

HEC-RAS Version 3.1.3 May 2005
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X      X   X     X  X    X
X     X  X        X           X   X    X    X   X
XXXXXXX  XXXX     X       XXX XXXX     XXXXXX    XXXX
X     X  X        X           X  X     X    X        X
X     X  X        X    X      X   X    X    X        X
X     X  XXXXXX    XXXX       X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: Río La Plata
Project File : DupplicatedEffectiveModel.prj
Run Date and Time: 11/21/2006 2:00:15 PM

Project in SI units

Project Description:
Duplicate Effective Model for Río La Plata

PLAN DATA

Plan Title: Plan 03
Plan File : p:\Cayey\Water Resources\Parque Tecnologico de Cayey\Duplicated Effective Model\HEC-RAS\DupplicatedEffectiveModel.p03

Geometry Title: Río La Plata
Geometry File : p:\Cayey\Water Resources\Parque Tecnologico de Cayey\Duplicated Effective Model\HEC-RAS\DupplicatedEffectiveModel.g01

Flow Title : Río La Plata
Flow File : p:\Cayey\Water Resources\Parque Tecnologico de Cayey\Duplicated Effective Model\HEC-RAS\DupplicatedEffectiveModel.f01

Plan Summary Information:

Number of:	Cross Sections =	6	Multiple Openings =	0
	Culverts =	0	Inline Structures =	0
	Bridges =	0	Lateral Structures =	0

Computational Information

Water surface calculation tolerance =	0.01
Critical depth calculation tolerance =	0.01
Maximum number of iterations =	20
Maximum difference tolerance =	0.3
Flow tolerance factor =	0.001

Computation Options

Critical depth computed only where necessary	
Conveyance Calculation Method:	At breaks in n values only
Friction Slope Method:	Average Conveyance
Computational Flow Regime:	Subcritical Flow

FLOW DATA

Flow Title: Río La Plata

Flow File : p:\Cayey\Water Resources\Parque Tecnologico de Cayey\Duplicated Effective Model\HEC-RAS\DupplicatedEffectiveModel.f01

Flow Data (m3/s)

River	Reach	RS	100-yr
Río La Plata	1	6	880
Río La Plata	1	1	1130

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Río La Plata	1	100-yr		Known WS = 368.2

GEOMETRY DATA

Geometry Title: Río La Plata
Geometry File : p:\Cayey\Water Resources\Parque Tecnologico de Cayey\Duplicated Effective Model\HEC-RAS\DupplicatedEffectiveModel.g01

CROSS SECTION

RIVER: Río La Plata
REACH: 1 RS: 6

INPUT
Description: Model XS-6, FEMA XS-BM
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	381.83	13.11	381.71	35.36	380.24	37.49	380	38.71	379.36
39.62	379.6	48.46	378.96	70.1	378.41	116.44	376.28	150.88	376.04
192.33	375.98	243.23	375.76	286.82	375.94	331.32	375.43	364.24	375.12
384.36	374.97	396.76	374.671	410.88	374.33	413.92	372.71	418.8	372.23
424.29	372.26	428.25	372.68	432.82	374.7	444.4	375	455.38	375.46
477.02	376.46	511.16	376.8	539.81	377.07	542.86	375.34	543.77	375.18
545.6	375.49	744.64	378.6	784.87	378.9	810.47	378.78	848.27	379.02
848.27	381.83								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	396.76	.045	432.82	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
396.76	432.82	440.13	440.13	440.13	.1	.3

CROSS SECTION

RIVER: Río La Plata
REACH: 1 RS: 5

INPUT
Description: Model XS-5, FEMA XS-BL
Station Elevation Data num= 38

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
135.33	381	135.33	380.18	138.69	377.96	140.21	376.43	144.78	374.91
146.31	374.88	153.32	373.08	189.89	372.93	208.49	372.99	250.24	374.39
264.57	374.63	292.92	374.79	318.52	374.85	341.38	373.84	372.17	373.35
391.06	374.45	404.17	375.06	416.06	374.6	426.42	373.45	430.69	371.22
434.35	370.46	439.83	370.98	442.92	373.342	445.01	374.94	449.89	375.85
467.57	374.91	495	375	519.39	375.43	538.89	375.61	564.19	375.3
593.45	375	623.93	374.85	657.16	374.91	683.98	374.7	723.3	374.82
740.37	376.77	769.02	377.41	769.02	381				

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
  135.33     .05  426.42     .03  442.92     .05

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        426.42  442.92           465.13  465.13  465.13             .1       .3

CROSS SECTION


RIVER: Río La Plata
REACH: 1                  RS: 4

INPUT
Description: Model XS-4, FEMA XS-BK
Station Elevation Data    num=      37
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0   380.4    5.49  380.03     6.4  379.79   10.67  379.63   13.11  379.85
    37.8  378.78    63.4  377.41   88.39  377.32  114.91   376.8  138.99   376.1
  150.88  376.04  152.71  375.24  154.23  375.37  155.75  375.21  162.16   375.4
  167.64  374.57  170.99  371.49  177.09  371.07  186.84  371.37  189.59  371.53
  193.86   371.4  195.07  370.92   196.9  371.53  201.48  371.71  202.69  372.07
  210.92  371.43  214.58  369.79  216.41  369.18  220.37  369.15  225.25  372.47
  248.11  373.14  259.69  373.75  289.56  373.17  332.24  373.11  376.43  373.57
  421.54  374.33  421.54   380.4

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .05  202.69    .035  225.25     .05

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        202.69  225.25             1065    1065    1065             .1       .3

CROSS SECTION


RIVER: Río La Plata
REACH: 1                  RS: 3

INPUT
Description: Model XS-3, FEMA XS-BJ
Station Elevation Data    num=      44
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  892.47  376.65  892.47  372.81  904.96  372.56  940.93  372.56  954.04  372.96
  974.15  372.44  983.91   372.1  994.57  372.29  998.54   369.6 1000.67  369.27
 1001.89   369.7 1029.02  370.15 1048.52  369.88 1073.82  370.09 1077.79  370.61
 1094.85  370.73 1109.49  370.67 1123.51  370.28 1127.47  369.06 1131.43  369.06
 1133.87  367.62 1138.75  365.92 1141.79  365.34 1144.54  365.92 1146.06  366.59
  1148.5  368.72 1149.11  369.39 1150.94  369.79 1183.86  368.78 1197.88  369.76
 1200.01  369.79 1230.19  369.64 1259.14  369.06 1268.29   369.6 1282.61  369.88
    1307  366.34  1307.3  365.86 1307.61  366.34 1312.18   366.5 1315.23  367.32
  1320.1  369.82 1324.07  371.71 1326.51  373.87 1331.38  376.65

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  892.47     .05 1131.43    .035 1149.11     .05

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       1131.43 1149.11           303.58  303.58  303.58             .1       .3

CROSS SECTION


RIVER: Río La Plata
REACH: 1                  RS: 2

INPUT
Description: Model XS-2, FEMA XS-BI
Station Elevation Data    num=      48
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  594.37  379.91  594.37  375.67  599.24  373.29  608.69  370.85  613.87  370.92
  621.19   370.7  623.32  370.67  669.04  370.79   736.1  371.34  879.97   372.2
```

882.1	372.13	886.67	372.26	898.56	372.1	917.46	372.32	948.55	372.1
965.62	372.35	985.74	372.35	1007.07	372.17	1027.8	372.1	1039.69	370.89
1062.85	371.04	1090.28	370.85	1119.24	370.85	1160.39	370.85	1173.19	370.85
1182.64	366.8	1189.04	364.79	1191.48	364.55	1200.01	367.35	1207.94	367.11
1219.52	366.59	1233.85	367.72	1243.9	367.81	1249.7	367.78	1274.99	369
1280.48	370.31	1288.71	371.59	1293.89	372.29	1313.7	374.15	1324.37	374.36
1347.54	374.45	1370.4	373.96	1385.03	375.46	1393.87	375.79	1411.24	377.19
1432.27	378.02	1442.03	378.72	1460.62	379.91				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
594.37	.05	1182.64	.035	1200.01	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
1182.64	1200.01	76.2	76.2	76.2	.1	.3

CROSS SECTION

RIVER: Río La Plata
REACH: 1 RS: 1

INPUT
Description: Model XS-1, FEMA XS-BH
Station Elevation Data num= 51

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
598.02	376.43	598.02	372.96	605.34	373.38	621.8	370.46	655.33	369.45
686.11	369.82	706.53	369.45	725.43	369.33	742.5	369.45	759.27	369.64
781.82	369.79	796.15	369.91	814.13	370.06	833.64	370.25	851.62	370.49
876.31	370.64	889.72	370.61	905.88	370.92	926.6	371.04	954.65	371.19
975.07	371.34	992.14	371.31	1008.6	371.4	1036.64	372.62	1043.65	371.37
1071.39	371.68	1097.6	371.53	1112.23	369.36	1131.74	369.48	1148.81	370.31
1160.39	370.98	1172.28	370.58	1183.25	369.85	1209.16	369.94	1229.88	369.82
1243.29	368.26	1257.62	367.32	1264.94	365.09	1278.65	364.36	1281.39	363.72
1284.14	365.86	1286.64	367.11	1289.62	368.6	1296.03	367.26	1298.16	368.6
1301.51	369.54	1308.83	370.85	1320.41	373.54	1324.68	374.12	1339.61	374.66
1383.81	376.43								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
598.02	.05	1257.62	.035	1286.64	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
1257.62	1286.64	0	0	0	.1	.3

SUMMARY OF MANNING'S N VALUES

River:Río La Plata

Reach	River Sta.	n1	n2	n3
1	6	.05	.045	.05
1	5	.05	.03	.05
1	4	.05	.035	.05
1	3	.05	.035	.05
1	2	.05	.035	.05
1	1	.05	.035	.05

SUMMARY OF REACH LENGTHS

River: Río La Plata

Reach	River Sta.	Left	Channel	Right
1	6	440.13	440.13	440.13
1	5	465.13	465.13	465.13
1	4	1065	1065	1065
1	3	303.58	303.58	303.58
1	2	76.2	76.2	76.2
1	1	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Río La Plata

Reach	River Sta.	Contr.	Expan.
1	6	.1	.3
1	5	.1	.3
1	4	.1	.3
1	3	.1	.3
1	2	.1	.3
1	1	.1	.3

Río Guavate

```
                    HEC-RAS Version 3.1.3 May 2005
                     U.S. Army Corp of Engineers
                    Hydrologic Engineering Center
                          609 Second Street
                          Davis, California

          X     X  XXXXXX    XXXX        XXXX       XX      XXXX
          X     X  X        X    X       X   X     X  X    X
          X     X  X        X            X   X    X    X   X
          XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
          X     X  X        X            X  X     X    X        X
          X     X  X        X    X       X   X    X    X        X
          X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: Río Guavate
Project File : RioGuavate.prj
Run Date and Time: 11/29/2006 3:39:24 PM

Project in SI units

Project Description:
Duplicate Effective Model for Río Guavate

PLAN DATA

Plan Title: Plan 01
Plan File : p:\Cayey\Water Resources\Parque Tecnologico de Cayey\Duplicated Effective Model\HEC-RAS\RioGuavate.p01

Geometry Title: Río Guavate
Geometry File : p:\Cayey\Water Resources\Parque Tecnologico de Cayey\Duplicated Effective Model\HEC-RAS\RioGuavate.g01

Flow Title : Río Guavate
Flow File : p:\Cayey\Water Resources\Parque Tecnologico de Cayey\Duplicated Effective Model\HEC-RAS\RioGuavate.f01

Plan Summary Information:

Number of:	Cross Sections =	6	Multiple Openings =	0
	Culverts =	0	Inline Structures =	0
	Bridges =	0	Lateral Structures =	0

Computational Information

Water surface calculation tolerance =	0.01
Critical depth calculation tolerance =	0.01
Maximum number of iterations =	20
Maximum difference tolerance =	0.3
Flow tolerance factor =	0.001

Computation Options

Critical depth computed only where necessary	
Conveyance Calculation Method:	At breaks in n values only
Friction Slope Method:	Average Conveyance
Computational Flow Regime:	Subcritical Flow

FLOW DATA

Flow Title: Río Guavate
Flow File : p:\Cayey\Water Resources\Parque Tecnologico de Cayey\Duplicated Effective Model\HEC-RAS\RioGuavate.f01

Flow Data (m3/s)

River	Reach	RS	100-yr
Río Guavate	1	5	250

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Río Guavate	1	100-yr		Known WS = 371.8

GEOMETRY DATA

Geometry Title: Río Guavate
Geometry File : p:\Cayey\Water Resources\Parque Tecnologico de Cayey\Duplicated Effective Model\HEC-RAS\RioGuavate.g01

CROSS SECTION

RIVER: Río Guavate
REACH: 1 RS: 5

INPUT
Description: Model XS-5, FEMA XS-F
XS-F
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
922.64	381.49	946.42	381.37	969.28	380.79	990.61	380.88	1018.04	380.4
1036.33	379.88	1045.48	379.69	1066.81	379.75	1114.06	378.78	1136.92	375.76
1162.83	376.13	1188.73	376.22	1205.5	375.73	1226.83	376.04	1258.84	376.19
1304.56	376.01	1335.04	376.28	1379.24	376.8	1394.48	375.91	1400.57	374.76
1408.19	374.6	1412.77	374.21	1417.34	374.66	1418.86	376.58	1424.96	376.95
1443.25	377.04	1463.06	376.86	1463.06	381.49				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
922.64	.15	1408.19	.05	1417.34	.15

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
1408.19	1417.34	108.2	108.2	108.2	.1	.3

CROSS SECTION

RIVER: Río Guavate
REACH: 1 RS: 4

INPUT
Description: Model XS-4, FEMA XS-E
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1063.76	383.56	1109.49	383.53	1138.44	383.35	1158.25	383.26	1199.4	382.8
1211.59	382.71	1240.55	382.32	1331.99	380.97	1379.24	380.52	1424.96	380.52
1472.2	381	1488.97	381.22	1488.97	379.88	1498.11	375.27	1505.73	375.52
1509.69	374.39	1512.44	374.24	1513.35	374.15	1514.26	374.24	1522.49	375.09
1528.59	375.12	1537.73	382.04	1551.45	382.28	1589.55	382.77		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1063.76	.1	1505.73	.03	1522.49	.1

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       1505.73 1522.49            48.76   48.76   48.76             .1       .3


CROSS SECTION
RIVER: Río Guavate
REACH: 1                  RS: 3

INPUT
Description: Model XS-3, FEMA XS-D
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 1385.33  377.65 1444.77  376.95 1457.88  376.65 1466.34 373.683 1467.63  373.23
  1478.3  373.78 1491.85 376.612 1499.02  378.11 1506.34  378.87 1508.78  379.48

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 1385.33     .15 1466.34     .05  1478.3     .15

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       1466.34  1478.3           373.38  373.38  373.38             .1       .3


CROSS SECTION
RIVER: Río Guavate
REACH: 1                  RS: 2

INPUT
Description: Model XS-2, FEMA XS-C
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 1228.66  381.86 1228.66  376.52 1246.34  375.94 1260.36  374.91 1283.22  374.36
 1298.16  374.02 1312.18  374.48 1334.74  374.66 1359.73   374.6 1361.13 371.831
 1361.56  370.98 1366.44  370.61 1372.84  371.19 1374.97   371.8 1388.99  372.71
 1396.31  373.05 1411.55  373.42 1433.49  373.84 1457.88  373.42 1480.43   373.2
  1503.6  373.48 1521.58  373.26 1543.53  373.26 1571.26  373.63 1580.41  374.91
 1597.48  377.71  1617.9  378.47 1650.82   379.6 1672.15  380.52 1709.03  381.86

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 1228.66     .15 1359.73     .05 1411.55     .15

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       1359.73 1411.55           239.27  239.27  239.27             .1       .3


CROSS SECTION

RIVER: Río Guavate
REACH: 1                  RS: 1

INPUT
Description: Model XS-1, FEMA XS-B
Station Elevation Data    num=      25
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 1521.58  375.52 1521.58  373.05 1543.22  372.62 1568.22  372.32 1613.94  372.23
 1638.32  372.13 1644.42  372.23 1651.43  370.89 1652.04  370.34 1658.74  369.18
 1660.32 370.404 1661.18  371.07 1670.93  370.98 1673.37  370.67 1677.33  371.37
 1691.66  372.01 1697.76  373.05 1705.99  372.77 1711.47  372.17 1755.67  372.47
 1767.86  372.38 1778.53  373.26 1803.83   373.6 1871.49  375.37 1871.49  375.52

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 1521.58     .15 1651.43     .03 1661.18     .15

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

1651.43	1661.18	1121	1121	1121	.1	.3

CROSS SECTION

RIVER: Río Guavate
REACH: 1 RS: 0

INPUT
Description: Model XS-0, FEMA XS-BJ
Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
892.47	376.65	892.47	372.81	904.96	372.56	940.93	372.56	954.04	372.96
974.15	372.44	983.91	372.1	994.57	372.29	998.54	369.6	1000.67	369.27
1001.89	369.7	1029.02	370.15	1048.52	369.88	1073.82	370.09	1077.79	370.61
1094.85	370.73	1109.49	370.67	1123.51	370.28	1127.47	369.06	1131.43	369.06
1133.87	367.62	1138.75	365.92	1141.79	365.34	1144.54	365.92	1146.06	366.59
1148.5	368.72	1149.11	369.39	1150.94	369.79	1183.86	368.78	1197.88	369.76
1200.01	369.79	1230.19	369.64	1259.14	369.06	1268.29	369.6	1282.61	369.88
1307	366.34	1307.3	365.86	1307.61	366.34	1312.18	366.5	1315.23	367.32
1320.1	369.82	1324.07	371.71	1326.51	373.87	1331.38	376.65		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
892.47	.15	1131.43	.05	1148.5	.15

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
1131.43	1148.5	0	0	0	.1	.3

SUMMARY OF MANNING'S N VALUES

River:Río Guavate

Reach	River Sta.	n1	n2	n3
1	5	.15	.05	.15
1	4	.1	.03	.1
1	3	.15	.05	.15
1	2	.15	.05	.15
1	1	.15	.03	.15
1	0	.15	.05	.15

SUMMARY OF REACH LENGTHS

River: Río Guavate

Reach	River Sta.	Left	Channel	Right
1	5	108.2	108.2	108.2
1	4	48.76	48.76	48.76
1	3	373.38	373.38	373.38
1	2	239.27	239.27	239.27
1	1	1121	1121	1121
1	0	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Río Guavate

Reach	River Sta.	Contr.	Expan.
1	5	.1	.3
1	4	.1	.3
1	3	.1	.3
1	2	.1	.3
1	1	.1	.3
1	0	.1	.3

Appendix F

Input Data and Results of HEC-RAS Model for Existing Conditions

```
                    HEC-RAS Version 3.1.3 May 2005
                     U.S. Army Corp of Engineers
                    Hydrologic Engineering Center
                          609 Second Street
                          Davis, California


          X     X  XXXXXX    XXXX        XXXX       XX      XXXX
          X     X  X        X    X       X   X     X  X    X
          X     X  X        X            X   X    X    X   X
          XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
          X     X  X        X            X  X     X    X        X
          X     X  X        X    X       X   X    X    X        X
          X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: Existing Condition_PTC
Project File : Existing_PTC.prj
Run Date and Time: 11/21/2006 1:51:19 PM

Project in SI units

Project Description:
Río de la Plata and Río Guavate Model

PLAN DATA

Plan Title: Existing Condition_PTC
Plan File : p:\Cayey\Water Resources\Parque Tecnologico de Cayey\HEC-RAS\Noviembre 2006\Existing_PTC.p10

Geometry Title: Existing Condition_PTC
Geometry File : p:\Cayey\Water Resources\Parque Tecnologico de Cayey\HEC-RAS\Noviembre 2006\Existing_PTC.g03

Flow Title : Existing Condition_PTC
Flow File : p:\Cayey\Water Resources\Parque Tecnologico de Cayey\HEC-RAS\Noviembre 2006\Existing_PTC.f07

Plan Summary Information:

Number of:	Cross Sections =	35	Multiple Openings =	0
	Culverts =	0	Inline Structures =	0
	Bridges =	2	Lateral Structures =	0

Computational Information

Water surface calculation tolerance	=	0.01
Critical depth calculation tolerance	=	0.01
Maximum number of iterations	=	20
Maximum difference tolerance	=	0.3
Flow tolerance factor	=	0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: Existing Condition_PTC

Flow File : p:\Cayey\Water Resources\Parque Tecnologico de Cayey\HEC-RAS\Noviembre 2006\Existing_PTC.f07

Flow Data (m3/s)

River	Reach	RS	10-yr	50-yr	100-yr	500-yr
Río de la Plata	1	19	340	680	880	1445
Río de la Plata	2	9	430	890	1130	1925
Río Guavate	2	27	294	423	493	679

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Río de la Plata	2	10-yr		Normal S = 0.006

GEOMETRY DATA

Geometry Title: Existing Condition_PTC
Geometry File : p:\Cayey\Water Resources\Parque Tecnologico de Cayey\HEC-RAS\Noviembre 2006\Existing_PTC.g03

Reach Connection Table

River	Reach	Upstream Boundary	Downstream Boundary
Río de la Plata	1		1
Río de la Plata	2	1	
Río Guavate	2		1

JUNCTION INFORMATION

Name: 1
Description:
Energy computation Method

Length across Junction River	Reach	Tributary River	Reach	Length	Angle
Río de la Plata	1	to Río de la Plata	2	79	
Río Guavate	2	to Río de la Plata	2	91	

CROSS SECTION

RIVER: Río de la Plata
REACH: 1 RS: 19

INPUT
Description: Model XS-19 ; XS-3 (U/S PR-52 South Bridge), Survey Cross Section Name
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	383.05	5.47	382.68	9.2	380.46	21.6	375.45	36.63	374.94
36.73	374.914	37.43	374.73	44.78	373.9	45.15	372.95	51.88	373.02
59.29	373.14	68.06	372.97	68.86	373.15	71.3	373.26	72.22	374.48
85.57	374.913	86.7	374.95	97.16	379.12	103.14	381.13	106.6	381.46

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	36.73	.03	85.57	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

```
         36.73   85.57                47      47      47              .3       .5

BRIDGE


RIVER: Río de la Plata
REACH: 1                  RS: 18.5

INPUT
Description: PR-52 Bridge
Distance from Upstream XS =       .9
Deck/Roadway Width        =      46
Weir Coefficient          =    1.44
Upstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0  383.85  381.45   106.6  382.27  379.94

Upstream Bridge Cross Section Data
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  383.05    5.47  382.68     9.2  380.46    21.6  375.45   36.63  374.94
   36.73 374.914   37.43  374.73   44.78   373.9   45.15  372.95   51.88  373.02
   59.29  373.14   68.06  372.97   68.86  373.15    71.3  373.26   72.22  374.48
   85.57 374.913    86.7  374.95   97.16  379.12  103.14  381.13   106.6  381.46

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06   36.73     .03   85.57     .06

Bank Sta: Left   Right    Coeff Contr.   Expan.
         36.73   85.57              .3       .5

Downstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0  384.09  381.62   107.2  381.62  380.14

Downstream Bridge Cross Section Data
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  383.16    2.82  382.77    9.19  380.49   25.04  375.44   37.51  375.31
   38.35  374.53   40.59  374.84    44.5  373.77   47.15  372.52   48.83  372.32
   51.48  372.66   69.37     374   70.23  374.46   74.31  374.76   77.73   374.3
   85.82  374.68   97.57  378.98   107.2  381.41

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06   40.59     .03   70.23     .06

Bank Sta: Left   Right    Coeff Contr.   Expan.
         40.59   70.23              .3       .5

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  2

Pier Data
Pier Station     Upstream=   37.03    Downstream=   37.93
Upstream     num=       2
    Width   Elev    Width   Elev
     .85     375     .85     381
Downstream     num=       2
    Width   Elev    Width   Elev
     .85     375     .85     382
```

```
Pier Data
Pier Station     Upstream=   68.46    Downstream=    69.8
Upstream     num=       2
    Width   Elev    Width   Elev
     .85     370     .85   380.5
Downstream     num=       2
    Width   Elev    Width   Elev
     .85     370     .85     381

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION


RIVER: Río de la Plata
REACH: 1                  RS: 18

INPUT
Description: Model XS-18 ; XS-3 (D/S PR-52 North Bridge), Survey Cross Section
             Name
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  383.16    2.82  382.77    9.19  380.49   25.04  375.44   37.51  375.31
   38.35  374.53   40.59  374.84    44.5  373.77   47.15  372.52   48.83  372.32
   51.48  372.66   69.37     374   70.23  374.46   74.31  374.76   77.73   374.3
   85.82  374.68   97.57  378.98   107.2  381.41

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06   40.59     .03   70.23     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         40.59   70.23            113.31  113.31  132.92              .3       .5

CROSS SECTION


RIVER: Río de la Plata
REACH: 1                  RS: 17

INPUT
Description:
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     379    4.89     378    9.29     377   11.72     376    15.3     376
   39.13  376.45    52.9  376.65   97.15  374.98   98.12 374.799  114.22  371.79
  117.83  371.79  123.82 374.893  124.74  375.37  140.07  375.79   178.4  375.68
  200.98     376  213.95     377  221.63     378  233.61     379

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06   98.12     .03  123.82     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         98.12  123.82            301.7   301.7   117.9              .1       .3
```

CROSS SECTION

RIVER: Río de la Plata
REACH: 1 RS: 16

INPUT
Description: Model XS-16 ; XS-5, Survey Cross Section Name
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	384	18.98	382	22.34	381	28.05	380	35.21	379
53.6	378	56.59	377	59.41	376	77.52	375	165.91	375.15
172.71	375.21	199.77	375	217.94	375	226.53	373.926	228.44	373.687
229.38	373.008	233.31	370.17	241.14	370.28	248.22	371.14	250.92	373.64
251.24	373.725	253.19	374.24	379.12	375	428.05	375	582.86	375
612.97	375	625.47	376	633.22	377				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	226.53	.03	253.19	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
226.53	253.19	430.73	430.73	27	.1	.3

CROSS SECTION

RIVER: Río de la Plata
REACH: 1 RS: 15

INPUT
Description: Model XS-15 ; XS-6, Survey Cross Section Name
Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	376	21.12	375	23.34	374	28.73	374	30.1	375
40.68	375.32	51.81	375	55.98	374.32	56.95	373.615	57.27	373.382
57.36	373.317	57.5	373.215	62.65	369.47	74.81	369.13	82.64	369.74
87.14	372.09	96.6	373	100.39	373.213	103.35	373.379	104.42	373.439
114.37	374	154.42	374	176.2	374	199.73	374	225.25	374
256.1	374	280.74	374	572.61	375	659.17	375	765.48	375
771.65	376	778.73	377	794.23	378				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	57.27	.03	104.42	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
57.27	104.42	391.77	391.77	152.7	.1	.3

CROSS SECTION

RIVER: Río de la Plata
REACH: 1 RS: 14

INPUT
Description: Model XS-14 ; XS-7, Survey Cross Section Name
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	375	11.96	374	16.64	373	48.93	372.3	88.88	373
92.87	373.2	97.36	373	124.53	372.569	160.4	372	160.71	371.827
161.3	371.497	162.19	371	163.96	370	165.71	369	167.47	368
171.54	368	174.11	367.12	175.23	370	181.7	371	183.42	371.496
184.57	371.827	185.17	372	191.53	372.597	195.83	373	401.7	374
617.56	375	627.97	376	642.89	377	676.74	378		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	124.53	.03	191.53	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.

124.53	191.53	330.43	327.61	200.21	.1	.3	

CROSS SECTION

RIVER: Río de la Plata
REACH: 1 RS: 12

INPUT
Description: Model XS-12 ; XS-8 (1+30.81), Survey Cross Section Name
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	375.8	33.58	376	37.09	376	48.86	375	59	374
71.03	373	90.29	373	147	373.3	179.27	373	189.59	372.22
223.86	371.9	252.94	370.82	259.39	370.58	260.46	369.321	262.45	366.98
271.52	366.62	277.12	366.76	280.08	369.319	281.82	370.823	283.02	371.86
291.81	371.68	308.26	370.86	325.35	372.02	345.95	371.99	417.97	372
451.41	372	468.41	373	563.42	374	593.08	374	611.93	374
617.98	374	651.53	374	657.32	375	663.61	376	671.5	377
693.71	378								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	223.86	.03	283.02	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
223.86	283.02	149.41	164.78	161.7	.1	.3

CROSS SECTION

RIVER: Río de la Plata
REACH: 1 RS: 11

INPUT
Description: Model XS-11 ; XS-2+89.99, Survey Cross Section Name
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	376	13.24	376	47.04	375	57.1	374	89.3	373
149.86	373	155.98	373.2	203.17	373	228.16	372	289.46	371
334.08	370.78	350.03	371.58	356.06	371.42	362.05	371.57	365.36	370.68
382.87	370.89	392.46	369.96	401.78	369.12	405.38	367.378	405.52	367.31
409.63	366.65	414.44	366.23	418.76	366.63	418.92	366.806	419.41	367.345
419.46	367.4	421.58	369.73	445.71	370.19	452.42	369.37	466.34	370.86
472.88	371.06	495.21	372.17	576.21	373	708.17	373	718.45	373
724.73	374	730.71	375	737.32	376	744.56	377		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	392.46	.03	421.58	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
392.46	421.58	0	0	0	.1	.3

CROSS SECTION

RIVER: Río de la Plata
REACH: 2 RS: 9

INPUT
Description: Model XS-9 ; XS-3+69.41, Survey Cross Section Name
Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	373.3	12.16	373	48.25	372	62.17	371	108.27	371
151.2	370.65	169.02	370.65	192.34	370.37	212.05	368.7	216.04	366.96
216.99	366.545	217.85	366.17	226.12	366.02	232.58	365.93	233.05	366.455
236.63	370.45	275.29	371.5	304.82	371.27	325.52	371	332.92	371
348.32	371	366.92	369.943	367.99	368.523	372.68	368.063	377.49	368.583
378.23	369.124	383.49	369.094	388.65	369.783	392.07	370	429.01	371
468.25	371	473.95	372	576.01	372	605.31	373	651.46	400

```
Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  192.34     .04  236.63     .06  366.92     .04  392.07     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        192.34  236.63            91.23  113.16  104.22             .1       .3

CROSS SECTION


RIVER: Río de la Plata
REACH: 2                  RS: 8

INPUT
Description: Model XS-8 ; XS-4+81.97, Survey Cross Section Name
Station Elevation Data    num=      41
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     373  278.07     372  351.37     372  446.93     372  524.24     373
     533     373  537.75     372  559.62     371  563.49     370  630.49   369.8
  656.76  370.09  677.35  370.52  687.38  370.32  697.17 370.241  697.21 370.241
  697.28  370.24  697.34 368.983  697.51  365.42  705.97  365.47  709.89   365.3
  713.74  368.69  723.16  369.05  730.46   369.5  757.05  368.88  763.29     370
  774.75     371  818.15     371  852.94     370  911.55     370  916.47  369.19
  923.61  368.88  927.97  366.33  932.05  365.96  935.62   366.3  940.07   369.3
  964.17     392   973.1     394   982.6  394.77  987.43     395  996.35     399
 1002.55     400

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  697.28     .04  723.16     .06  911.55     .04  940.07     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        697.34  723.16           201.11  222.85   224.5             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
       0  522.44  372.98       T

CROSS SECTION


RIVER: Río de la Plata
REACH: 2                  RS: 7

INPUT
Description: Model XS-7 ; XS-10, Survey Cross Section Name
Station Elevation Data    num=      41
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     372   44.15     372   56.86     372   59.04     372      64     372
   78.35     372  184.71  371.11  199.26     371  207.59     370  209.49  369.86
  211.57     370  221.49     371  246.29     370   254.3  369.29  254.78 368.083
  254.88 367.832  255.38 366.575  256.11  364.74  261.19  364.33  265.63  364.87
  269.43  366.45  270.67  366.42  277.59  366.02  279.22 366.583  282.81 367.822
  283.58 368.088  283.99  368.23  290.53     368  299.82     368  313.64     369
  333.29     370  393.23     371  399.09     372  412.04     373  422.13     374
  427.79     375   436.5     376  438.18     377  444.18     378  447.15     379
  457.52     380

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  254.78     .04  283.99     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        254.78  283.99            142.8  136.68  129.17             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
       0  221.49     372       T

CROSS SECTION
```

```
RIVER: Río de la Plata
REACH: 2                    RS: 6

INPUT
Description: Model XS-6 ; XS-11, Survey Cross Section Name
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     372  432.95     371  466.72  371.08  668.44  371.56  676.09     372
  691.91     372  704.43     371  711.93  368.52  712.36 368.044  712.42 367.978
  713.72  366.54  716.68 366.263   727.8  365.22  732.34  364.94  744.06  364.61
  748.53  364.67   750.4  365.99  751.48 366.263  758.29 367.982  758.36     368
  758.71 368.042  766.72     369  795.08     370   805.5     372  819.71     373
  845.68     374  857.27     375  869.89     376  882.16     377

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  691.91     .04   805.5     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        691.91   805.5             68.03   89.88   98.41             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
       0  676.09     372       T

CROSS SECTION


RIVER: Río de la Plata
REACH: 2                    RS: 5

INPUT
Description: Model XS-5 ; XS-12 U/S PR-1 South Bridge, Survey Cross Section Name
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  372.45    1.17  370.37    7.86  367.46   10.87  367.12   16.16   366.5
   16.28 366.215   17.11  364.24    29.7   364.1   36.79  364.05   38.09  364.31
   39.05  364.73   43.29   365.3   48.61 366.204   51.76  366.74   60.15  368.07
   61.12  368.25   75.97  370.57      77  373.14   79.11   373.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06   16.16     .04   48.61     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         16.16   48.61               11      11      11             .3       .5

BRIDGE


RIVER: Río de la Plata
REACH: 2                    RS: 4.5

INPUT
Description: PR-1 Bridge
Distance from Upstream XS =       1
Deck/Roadway Width        =      10
Weir Coefficient          =    1.44
Upstream  Deck/Roadway Coordinates
    num=      14
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0  373.56  371.41    1.17  373.56  371.41   10.87  373.56  371.51
   13.51  373.56  371.15   16.16  373.56  370.28   17.11  373.56  370.28
   26.95  373.56  371.74   38.09  373.56  370.58   39.05  373.56  370.65
   47.52  373.56  371.97   60.15  373.56  370.64   61.12  373.56  370.67
   68.54  373.56  371.97   79.11  373.56  371.81

Upstream Bridge Cross Section Data
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  372.45    1.17  370.37    7.86  367.46   10.87  367.12   16.16   366.5
   16.28 366.215   17.11  364.24    29.7   364.1   36.79  364.05   38.09  364.31
```

```
   39.05  364.73   43.29   365.3   48.61 366.204   51.76  366.74   60.15  368.07
   61.12  368.25   75.97  370.57      77  373.14   79.11   373.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06   16.16     .04   48.61     .06

Bank Sta: Left   Right    Coeff Contr.   Expan.
         16.16   48.61             .3       .5

Downstream  Deck/Roadway Coordinates
    num=      15
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0  373.65  371.58   11.66  373.65  371.59   15.68  373.65  371.61
   19.71  373.65  370.29   20.67  373.65  370.28   30.57  373.65   371.7
    41.7  373.65  370.58   42.65  373.65  370.65    51.9  373.65  371.92
   63.67  373.65  370.64   64.65  373.65  370.67   68.04  373.65  371.61
   71.44  373.65  372.03    79.5  373.65  372.06   80.64  373.65  372.06

Downstream Bridge Cross Section Data
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  372.41    2.35  372.09    4.73  370.69   11.66   367.3   17.55 366.151
   19.71  365.73   20.67  365.77   28.11  364.55   33.04  364.08   40.95  364.05
    41.7  364.57   42.65  364.59    47.4     365   51.89 366.151   56.41  367.31
   63.67  368.07   64.65  368.25   71.44  368.84    79.5  370.86   80.64  372.95

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06   17.55     .04   51.89     .06

Bank Sta: Left   Right    Coeff Contr.   Expan.
         17.55   51.89             .3       .5

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  3

Pier Data
Pier Station     Upstream=   16.64    Downstream=   20.19
Upstream     num=       2
    Width   Elev    Width   Elev
     .97     365     .97   370.5
Downstream     num=       2
    Width   Elev    Width   Elev
     .97     365     .97   370.5

Pier Data
Pier Station     Upstream=   38.57    Downstream=   42.18
Upstream     num=       2
    Width   Elev    Width   Elev
     .97     365     .97   371.5
Downstream     num=       2
    Width   Elev    Width   Elev
     .97     365     .97   371.5

Pier Data
Pier Station     Upstream=   60.64    Downstream=   64.16
Upstream     num=       2
    Width   Elev    Width   Elev
     .97     368     .97     372
Downstream     num=       2
    Width   Elev    Width   Elev
     .97     368     .97     372
```

```
Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION


RIVER: Río de la Plata
REACH: 2                  RS: 4

INPUT
Description: Model XS-4 ; XS-12 D/S PR-1 North Bridge, Survey Cross Section Name
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  372.41    2.35  372.09    4.73  370.69   11.66   367.3   17.55 366.151
   19.71  365.73   20.67  365.77   28.11  364.55   33.04  364.08   40.95  364.05
    41.7  364.57   42.65  364.59    47.4     365   51.89 366.151   56.41  367.31
   63.67  368.07   64.65  368.25   71.44  368.84    79.5  370.86   80.64  372.95

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06   17.55     .04   51.89     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         17.55   51.89            20.97      24   21.45             .3       .5

CROSS SECTION


RIVER: Río de la Plata
REACH: 2                  RS: 3

INPUT
Description: Model XS-3,  From topo contours
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     371   13.64     370  148.56     369   155.2     368  160.25     367
  166.39     366  169.36     365  177.97  364.01  183.48  363.86  188.74  364.01
  190.79     365  192.83     366  196.42     367  199.88     368  202.97     369
     204 369.333  206.06     370  209.32     371  212.29     372  216.21     373
  244.45     374  265.78     375

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  148.56     .04     204     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        148.56     204                0       0       0             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 27

INPUT
Description: Model XS- 27, (Profile 13; Seccion julio 26 Surveyor Fernado
             Santiago)
Station Elevation Data    num=       9
```

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  380.93   12.24  375.23    22.2  375.08   25.11  374.21   33.44  374.12
   34.55  375.48   40.99   375.4    49.7  378.36   53.73  380.99

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07    22.2     .03   34.55     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          22.2   34.55               .1      .1      .1             .3       .5

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 26.5

INPUT
Description: Model XS-26.5
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  379.83     .15  378.75    3.01  378.48     5.8  376.88    8.02  376.02
    9.14  375.27   13.23  375.39   16.28  375.48   16.28   379.9   17.05   379.9
   17.05  375.48   17.06  375.04   21.12  374.45   21.99  373.95   25.13  373.86
   29.08  374.19   33.58  375.16   33.58   379.9   34.23   379.9   34.23  375.16
   37.95  375.05   41.47  375.35   43.39  376.62   46.44  378.02   50.42  379.95
   50.55  380.55

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   21.12     .03   29.08     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         21.12   29.08             12.8    12.8    12.8             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 26.4

INPUT
Description: Model XS-26.4, (Profile 12; Seccion julio 26 06  Surveyor Fernado
             Santiago)
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  379.83     .15  378.75    3.01  378.48     5.8  376.88    8.02  376.02
    9.14  375.27   13.23  375.39   16.28  375.48   16.28   379.9   17.05   379.9
   17.05  375.48   17.06  375.04   21.12  374.45   21.99  373.95   25.13  373.86
   29.08  374.19   33.58  375.16   33.58   379.9   34.23   379.9   34.23  375.16
   37.95  375.05   41.47  375.35   43.39  376.62   46.44  378.02   50.42  379.95
   50.55  380.55

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   21.12     .03   29.08     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         21.12   29.08               .1      .1      .1             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 26.25

INPUT
Description: Model XS-26.25, (Profile 11; Seccion julio 26 06  Surveyor Fernado
             Santiago)
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
```

```
       0  379.55   13.32  375.18   21.53  375.35   24.92  373.93   33.14  373.97
   33.63  374.62   41.47  375.83   46.95  375.69   59.19  380.93

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   21.53     .03   33.63     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         21.53   33.63               16      16      16             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 26.2

INPUT
Description: Model XS-26.2
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  379.55   13.32  375.18   21.53  375.35   24.92  373.93   33.14  373.97
   33.63  374.62   41.47  375.83   46.95  375.69   59.19  380.93

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   21.53     .03   33.63     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         21.53   33.63                .1      .1      .1             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 26.04

INPUT
Description: Model XS-26.04, (Profile 10; Seccion julio 26 06  Surveyor Fernado
             Santiago)
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  379.56     .57  378.76    2.51  378.56    3.52  378.29    4.36  377.79
    4.86  377.16    5.63  376.89    6.27  376.33    8.27  376.42    9.16  375.94
   12.16  374.91   16.64  375.28   16.64   379.5   17.64   379.5   17.64  375.28
   20.59  374.42   21.54  373.92   25.24  373.89   29.11  374.09   31.42  374.92
   34.14  375.18   34.14   379.5   34.94   379.5   34.94  375.18   35.44  375.18
   38.93  374.89    40.3  375.06   41.57   375.7   44.85  376.93   48.51  378.68
   51.16  379.41   51.66  380.19

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   20.59     .03   31.42     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         20.59   31.42              13.2    13.2    13.2             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 26.02

INPUT
Description: Model XS-26.02
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  379.56     .57  378.76    2.51  378.56    3.52  378.29    4.36  377.79
    4.86  377.16    5.63  376.89    6.27  376.33    8.27  376.42    9.16  375.94
   12.16  374.91   16.64  375.28   16.64   379.5   17.64   379.5   17.64  375.28
   20.59  374.42   21.54  373.92   25.24  373.89   29.11  374.09   31.42  374.92
   34.14  375.18   34.14   379.5   34.94   379.5   34.94  375.18   35.44  375.18
```

```
   38.93  374.89    40.3  375.06   41.57   375.7   44.85  376.93   48.51  378.68
   51.16  379.41   51.66  380.19

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   20.59     .03   31.42     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         20.59   31.42               .1      .1      .1             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 26

INPUT
Description: Model XS-26, (Profile 9; Seccion julio 26 06 Surveyor Fernado
             Santiago)
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  380.61      12     380   15.57  377.48   21.89  375.29    26.5   375.1
   29.03  375.42   32.84  374.33    36.7  373.98   39.99  374.31   43.68  375.28
   50.92   375.3   55.48  376.33   64.31  380.29

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   29.03     .03   43.68     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         29.03   43.68            22.69    23.6    23.6             .3       .5

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 24.8

INPUT
Description: Model XS-24.8, (Profile 8; Seccion julio 26 06 Surveyor Fernado
             Santiago)
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     380    9.75     379    12.8     378    15.9     377    19.2     376
   26.86     375    27.1  374.78   28.09   373.9   36.98  373.85   37.99   374.1
   39.44 374.814   41.87  376.01   65.42  386.78

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07    27.1     .03   39.44     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          27.1   39.44            18.72   19.34   20.51             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 24.7

INPUT
Description: Model XS-24.7, (Profile 7; Seccion julio 26 06 Surveyor Fernado
             Santiago)
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     379    3.68     378     8.9     377   21.23   376.4   24.44  375.49
   25.31 374.848   27.13 373.506   28.82  372.26   32.48  372.32   35.83  372.84
   36.88 373.554   38.87 374.907   57.21  387.38

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
```

```
       0     .07   25.31     .03   38.87     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         25.31   38.87            41.53   41.53   41.53             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 24.6

INPUT
Description: Model XS-24.6, (Profile 6; Seccion julio 26 06 Surveyor Fernado
             Santiago)
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  379.84    7.64  377.52   22.13  377.15   36.58   376.8      42 375.103
   46.68 373.638   50.25  372.52   54.32  372.52   58.65  372.81   59.87 373.674
   61.55 374.864   75.49  384.74

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07      42     .03   61.55     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            42   61.55            20.25   20.25   20.25             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 24.5

INPUT
Description: Model XS-24.5, (Profile 5; Seccion julio 26 06 Surveyor Fernado
             Santiago)
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  379.68    4.78   377.7    22.3  377.41   48.76  376.01   51.72 374.584
   54.79 373.104   56.54  372.26   60.81  372.43   64.53  372.36   65.92 373.119
   67.57  374.02   70.63   374.7   80.15     383

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   51.72     .03   70.63     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         51.72   70.63            46.79   46.79   46.79             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 24.4

INPUT
Description: Model XS-24.4, (Profile 4; Seccion julio 26 06 Surveyor Fernado
             Santiago)
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  379.67    5.88  376.92   58.33   375.4   73.42  374.47    75.3  374.09
    77.9  373.01   81.48  372.63   84.56  372.91   85.44  373.54   89.44  374.17
   90.31 374.596   92.44  375.64  104.13  375.54  125.52     376  129.21     377

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   73.42     .03   90.31     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         73.42   90.31            43.11   43.11   43.56             .1       .3
```

CROSS SECTION

RIVER: Río Guavate
REACH: 2 RS: 24.3

INPUT
Description: Model XS-24.3, (Profile 3; Seccion julio 26 06 Surveyor Fernado Santiago)
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	380.02	8.58	375.87	70.95	375.16	76.38	374.509	86.04	373.35
88.18	372.23	97.84	371.95	98.89	372.979	100.4	374.459	101.36	375.4
107.27	375.59	115.91	375.66	128.11	375.49	178.03	376	184.89	377

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.07	76.38	.03	100.4	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
76.38	100.4	24.53	25.41	25.41	.1	.3

CROSS SECTION

RIVER: Río Guavate
REACH: 2 RS: 24.2

INPUT
Description: Model XS-24.2, (Profile 2; Seccion julio 26 06 Surveyor Fernado Santiago)
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	380.34	11.33	375.72	79.88	373.73	87.44	372.88	89.54	371.66
95.09	370.74	103.01	372.987	105.26	373.626	112.43	375.66	120.25	375.65
132.52	375.56	163.48	375	204.24	375	208.3	376	211.13	377

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.07	79.88	.03	105.26	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
79.88	105.26	41.5	74.93	40.61	.1	.3

CROSS SECTION

RIVER: Río Guavate
REACH: 2 RS: 24.1

INPUT
Description: Model XS-24.1, (Profile 1; Seccion julio 26 06 Surveyor Fernado Santiago)
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	380.96	4.54	380.59	18.38	375.3	33.64	374.37	52.35	374.5
67.7	374.18	76.27	374.73	80.22	371.57	81.09	371.35	83.55	371.87
86.94	371.17	89.51	372.06	91.55	373.36	104.96	374.12	109.88	373.56
111.65	373.86	121.29	373.91	126.4	374.71	139.32	374.81	150.27	375
200.12	375	246.31	375	254.21	376				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.07	76.27	.03	91.55	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
76.27	91.55	52.48	102.63	102.63	.1	.3

CROSS SECTION

RIVER: Río Guavate
REACH: 2 RS: 24

INPUT
Description: Model XS-24, (XS-18, Surveyor Antonio Melendez)
Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	376	51.06	376	59.07	375.87	61.34	376	92.8	377
114.37	377	126.08	376.3	127.5	375.129	128.87	373.999	129.01	373.883
132.25	371.21	137.89	371.34	144.35	371.97	147.66	373.75	154.37	373.886
160.09	374.002	209.14	375	212.94	375	255.69	375	271.2	374
284.43	374	302.49	375	311.21	376	315.03	377	318.96	378
324.06	379	329.76	380	335.62	381	347.5	382	355.7	383
360.57	384	366.84	385	374.85	386				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.07	127.5	.03	209.14	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
127.5	209.14	158.58	167.7	112.6	.1	.3

CROSS SECTION

RIVER: Río Guavate
REACH: 2 RS: 23

INPUT
Description: Model XS-23, (XS-19, Surveyor Antonio Melendez)
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	377	83.61	376	99.73	375	134.13	374	155.01	374
216.2	373	229.77	373	243.08	373	253.27	373	258.36	373
290.26	373	298.96	373.19	312.42	372.21	315.22	371.01	318.05	370.78
319.51	371.098	321.7	372.143	322.73	373.47	376.48	373	393.15	373.34
424.93	374	431.28	375	434.71	376	440.6	377	458.48	378
480.46	379	490.25	380	509.06	381	527.88	382		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.07	298.96	.03	322.73	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
298.96	322.73	198.31	450.02	450.02	.1	.3

CROSS SECTION

RIVER: Río Guavate
REACH: 2 RS: 22

INPUT
Description: Model XS-22, (XS-20, Surveyor Antonio Melendez)
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	376	13.85	375	23.92	374	74.71	373	105.99	373
264.06	373	320.71	372	332.5	371.78	333.91	371.591	335.13	371.427
335.26	371.41	336.19	370.709	338.8	368.74	345.53	368.73	351.17	368.83
354.96	370.706	356.42	371.428	356.75	371.591	358.06	372.24	366.16	373
371.43	373.431	371.89	373.469	378.39	374	397.94	380	405.15	381
420.99	390								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.07	264.06	.03	358.06	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
264.06	358.06	264.63	333.71	194.84	.1	.3

CROSS SECTION

RIVER: Río Guavate
REACH: 2 RS: 21

INPUT
Description: Model XS- 21, (XS-21, Surveyor Antonio Melendez)
Station Elevation Data num= 42

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	376	22.27	375	31.29	374	111.83	373	123.53	373
141.66	373	160.85	373	228.78	373.3	249.52	373	258.12	373
267.68	372	281.95	371	303.82	371	305.48	371	306.03	370.949
306.96	370.863	309.03	370.672	312.39	370.362	313.77	370.235	317.62	369.88
318.1	369.668	320.58	368.57	325.27	368.11	330.08	368.63	330.82	369.17
336.08	369.14	340.6	369.744	341.24	369.83	344.81	370.23	346.15	370.38
347.37	370.517	348.77	370.674	350.25	370.84	351.33	370.961	360.61	372
384.25	372	400.51	372	511.07	373	514.66	374	517.74	375
520.17	376	522.52	377						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.07	305.48	.03	360.61	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
305.48	360.61	0	0	0	.1	.3

SUMMARY OF MANNING'S N VALUES

River:Río de la Plata

Reach	River Sta.	n1	n2	n3	n4	n5
1	19	.06	.03	.06		
1	18.5	Bridge				
1	18	.06	.03	.06		
1	17	.06	.03	.06		
1	16	.06	.03	.06		
1	15	.06	.03	.06		
1	14	.06	.03	.06		
1	12	.06	.03	.06		
1	11	.06	.03	.06		
2	9	.06	.04	.06	.04	.06
2	8	.06	.04	.06	.04	.06
2	7	.06	.04	.06		
2	6	.06	.04	.06		
2	5	.06	.04	.06		
2	4.5	Bridge				
2	4	.06	.04	.06		
2	3	.06	.04	.06		

River:Río Guavate

Reach	River Sta.	n1	n2	n3
2	27	.07	.03	.07
2	26.5	.07	.03	.07
2	26.4	.07	.03	.07
2	26.25	.07	.03	.07
2	26.2	.07	.03	.07
2	26.04	.07	.03	.07
2	26.02	.07	.03	.07
2	26	.07	.03	.07
2	24.8	.07	.03	.07
2	24.7	.07	.03	.07
2	24.6	.07	.03	.07
2	24.5	.07	.03	.07
2	24.4	.07	.03	.07
2	24.3	.07	.03	.07

2	24.2	.07	.03	.07
2	24.1	.07	.03	.07
2	24	.07	.03	.07
2	23	.07	.03	.07
2	22	.07	.03	.07
2	21	.07	.03	.07

SUMMARY OF REACH LENGTHS

River: Río de la Plata

Reach	River Sta.	Left	Channel	Right
1	19	47	47	47
1	18.5	Bridge		
1	18	113.31	113.31	132.92
1	17	301.7	301.7	117.9
1	16	430.73	430.73	27
1	15	391.77	391.77	152.7
1	14	330.43	327.61	200.21
1	12	149.41	164.78	161.7
1	11	0	0	0
2	9	91.23	113.16	104.22
2	8	201.11	222.85	224.5
2	7	142.8	136.68	129.17
2	6	68.03	89.88	98.41
2	5	11	11	11
2	4.5	Bridge		
2	4	20.97	24	21.45
2	3	0	0	0

River: Río Guavate

Reach	River Sta.	Left	Channel	Right
2	27	.1	.1	.1
2	26.5	12.8	12.8	12.8
2	26.4	.1	.1	.1
2	26.25	16	16	16
2	26.2	.1	.1	.1
2	26.04	13.2	13.2	13.2
2	26.02	.1	.1	.1
2	26	22.69	23.6	23.6
2	24.8	18.72	19.34	20.51
2	24.7	41.53	41.53	41.53
2	24.6	20.25	20.25	20.25
2	24.5	46.79	46.79	46.79
2	24.4	43.11	43.11	43.56
2	24.3	24.53	25.41	25.41
2	24.2	41.5	74.93	40.61
2	24.1	52.48	102.63	102.63
2	24	158.58	167.7	112.6
2	23	198.31	450.02	450.02
2	22	264.63	333.71	194.84
2	21	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Río de la Plata

Reach	River Sta.		Contr.	Expan.
1	19		.3	.5
1	18.5	Bridge		
1	18		.3	.5
1	17		.1	.3
1	16		.1	.3
1	15		.1	.3
1	14		.1	.3
1	12		.1	.3
1	11		.1	.3
2	9		.1	.3
2	8		.1	.3
2	7		.1	.3
2	6		.1	.3
2	5		.3	.5
2	4.5	Bridge		
2	4		.3	.5
2	3		.1	.3

River: Río Guavate

Reach	River Sta.	Contr.	Expan.
2	27	.3	.5
2	26.5	.1	.3
2	26.4	.1	.3
2	26.25	.1	.3
2	26.2	.1	.3
2	26.04	.1	.3
2	26.02	.1	.3
2	26	.3	.5
2	24.8	.1	.3
2	24.7	.1	.3
2	24.6	.1	.3
2	24.5	.1	.3
2	24.4	.1	.3
2	24.3	.1	.3
2	24.2	.1	.3
2	24.1	.1	.3
2	24	.1	.3
2	23	.1	.3
2	22	.1	.3
2	21	.1	.3

Appendix G

Input Data and Results of HEC-RAS Model for Floodway Encroachment Model

```
                    HEC-RAS Version 3.1.3 May 2005
                     U.S. Army Corp of Engineers
                    Hydrologic Engineering Center
                          609 Second Street
                          Davis, California


          X     X  XXXXXX    XXXX        XXXX       XX      XXXX
          X     X  X        X    X       X   X     X  X    X
          X     X  X        X            X   X    X    X   X
          XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
          X     X  X        X            X  X     X    X        X
          X     X  X        X    X       X   X    X    X        X
          X     X  XXXXXX    XXXX        X    X   X    X   XXXXX


PROJECT DATA
Project Title: Encroachment_PTC
Project File : Encroachment_PTC.prj
Run Date and Time: 11/21/2006 1:56:15 PM

Project in SI units

Project Description:
 Río de la Plata and Río Guavate Model



PLAN DATA

Plan Title: Encroachment_PTC
Plan File : p:\Cayey\Water Resources\Parque Tecnologico de Cayey\HEC-RAS\Noviembre
2006\Encroachment_PTC.p02

           Geometry Title: Existing Condition_PTC
           Geometry File : p:\Cayey\Water Resources\Parque Tecnologico de Cayey\HEC-RAS\Noviembre
2006\Encroachment_PTC.g03

           Flow Title    : Encroachment_PTC
           Flow File     : p:\Cayey\Water Resources\Parque Tecnologico de Cayey\HEC-RAS\Noviembre
2006\Encroachment_PTC.f01

Plan Summary Information:
Number of:  Cross Sections =   35    Multiple Openings  =    0
            Culverts       =    0    Inline Structures  =    0
            Bridges        =    2    Lateral Structures =    0

Computational Information
    Water surface calculation tolerance  =  0.01
    Critical depth calculation tolerance =  0.01
    Maximum number of iterations         =  20
    Maximum difference tolerance         =  0.3
    Flow tolerance factor                =  0.001

Computation Options
    Critical depth computed only where necessary
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Subcritical Flow

Encroachment Data
   Equal Conveyance = True
   Left Offset      =        0
   Right Offset     =        0

River = Río Guavate      Reach = 2
RS      Profile           Method  Valuel  Value2
```

24.8	Enc	4	.15	
24.7	Enc	1	2.5	43.2
24.6	Enc	1	7	65.5
24.5	Enc	1	6.7	74
24.4	Enc	1	4.5	93.8
24.3	Enc	1	6.9	108.5
24.2	Enc	1	8.4	122.3
24.1	Enc	1	15.9	158
24	Enc	4	.3	
23	Enc	4	.28	
22	Enc	4	.068	
21	Enc	4	.11	

River = Río de la Plata Reach = 2

RS	Profile	Method	Value1	Value2
9	Enc	1	88	596
8	Enc	4	.27	
7	Enc	4	.001	
6	Enc	4	.15	
3	Enc	1	16.62	205.17

River = Río de la Plata Reach = 1

RS	Profile	Method	Value1	Value2
17	Enc	4	.185	
16	Enc	1	47.43	398
15	Enc	1	52	388
14	Enc	1	95	290
12	Enc	4	.12	
11	Enc	4	.08	

FLOW DATA

Flow Title: Encroachment_PTC
Flow File : p:\Cayey\Water Resources\Parque Tecnologico de Cayey\HEC-RAS\Noviembre 2006\Encroachment_PTC.f01

Flow Data (m3/s)

River	Reach	RS	100-yr	Enc
Río de la Plata	1	19	880	880
Río de la Plata	2	9	1130	1130
Río Guavate	2	27	493	493

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Río de la Plata	2	100-yr		Normal S = 0.006

GEOMETRY DATA

Geometry Title: Existing Condition_PTC
Geometry File : p:\Cayey\Water Resources\Parque Tecnologico de Cayey\HEC-RAS\Noviembre 2006\Encroachment_PTC.g03

Reach Connection Table

River	Reach	Upstream Boundary	Downstream Boundary
Río de la Plata	1		1
Río de la Plata	2	1	
Río Guavate	2		1

JUNCTION INFORMATION

Name: 1
Description:
Energy computation Method

Length across Junction River	Reach	Tributary River	Reach	Length	Angle
Río de la Plata	1	to Río de la Plata	2	79	
Río Guavate	2	to Río de la Plata	2	91	

CROSS SECTION

RIVER: Río de la Plata
REACH: 1 RS: 19

INPUT
Description: Model XS-19 ; XS-3 (U/S PR-52 South Bridge), Survey Cross Section
Name
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	383.05	5.47	382.68	9.2	380.46	21.6	375.45	36.63	374.94
36.73	374.914	37.43	374.73	44.78	373.9	45.15	372.95	51.88	373.02
59.29	373.14	68.06	372.97	68.86	373.15	71.3	373.26	72.22	374.48
85.57	374.913	86.7	374.95	97.16	379.12	103.14	381.13	106.6	381.46

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	36.73	.03	85.57	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
36.73	85.57	47	47	47	.3	.5

BRIDGE

RIVER: Río de la Plata
REACH: 1 RS: 18.5

INPUT
Description: PR-52 Bridge
Distance from Upstream XS = .9
Deck/Roadway Width = 46
Weir Coefficient = 1.44
Upstream Deck/Roadway Coordinates
num= 2

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	383.85	381.45	106.6	382.27	379.94

Upstream Bridge Cross Section Data
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	383.05	5.47	382.68	9.2	380.46	21.6	375.45	36.63	374.94
36.73	374.914	37.43	374.73	44.78	373.9	45.15	372.95	51.88	373.02
59.29	373.14	68.06	372.97	68.86	373.15	71.3	373.26	72.22	374.48
85.57	374.913	86.7	374.95	97.16	379.12	103.14	381.13	106.6	381.46

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	36.73	.03	85.57	.06

Bank Sta: Left	Right	Coeff Contr.	Expan.
36.73	85.57	.3	.5

Downstream Deck/Roadway Coordinates
num= 2

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	384.09	381.62	107.2	381.62	380.14

Downstream Bridge Cross Section Data

```
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  383.16    2.82  382.77    9.19  380.49   25.04  375.44   37.51  375.31
   38.35  374.53   40.59  374.84    44.5  373.77   47.15  372.52   48.83  372.32
   51.48  372.66   69.37     374   70.23  374.46   74.31  374.76   77.73   374.3
   85.82  374.68   97.57  378.98   107.2  381.41

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06   40.59     .03   70.23     .06

Bank Sta: Left   Right    Coeff Contr.   Expan.
         40.59   70.23             .3       .5

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  2

Pier Data
Pier Station     Upstream=   37.03    Downstream=   37.93
Upstream     num=       2
    Width   Elev    Width   Elev
     .85     375     .85     381
Downstream     num=       2
    Width   Elev    Width   Elev
     .85     375     .85     382

Pier Data
Pier Station     Upstream=   68.46    Downstream=    69.8
Upstream     num=       2
    Width   Elev    Width   Elev
     .85     370     .85   380.5
Downstream     num=       2
    Width   Elev    Width   Elev
     .85     370     .85     381

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION


RIVER: Río de la Plata
REACH: 1                  RS: 18

INPUT
Description: Model XS-18 ; XS-3 (D/S PR-52 North Bridge), Survey Cross Section
             Name
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  383.16    2.82  382.77    9.19  380.49   25.04  375.44   37.51  375.31
   38.35  374.53   40.59  374.84    44.5  373.77   47.15  372.52   48.83  372.32
```

```
   51.48  372.66   69.37     374   70.23  374.46   74.31  374.76   77.73   374.3
   85.82  374.68   97.57  378.98   107.2  381.41

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06   40.59     .03   70.23     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         40.59   70.23           113.31  113.31  132.92             .3       .5

CROSS SECTION


RIVER: Río de la Plata
REACH: 1                  RS: 17

INPUT
Description: Model XS-17
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     379    4.89     378    9.29     377   11.72     376    15.3     376
   39.13  376.45    52.9  376.65   97.15  374.98   98.12 374.799  114.22  371.79
  117.83  371.79  123.82 374.893  124.74  375.37  140.07  375.79   178.4  375.68
  200.98     376  213.95     377  221.63     378  233.61     379

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06   98.12     .03  123.82     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         98.12  123.82            301.7   301.7   117.9             .1       .3

CROSS SECTION


RIVER: Río de la Plata
REACH: 1                  RS: 16

INPUT
Description: Model XS-16 ; XS-5, Survey Cross Section Name
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     384   18.98     382   22.34     381   28.05     380   35.21     379
    53.6     378   56.59     377   59.41     376   77.52     375  165.91  375.15
  172.71  375.21  199.77     375  217.94     375  226.53 373.926  228.44 373.687
  229.38 373.008  233.31  370.17  241.14  370.28  248.22  371.14  250.92  373.64
  251.24 373.725  253.19  374.24  379.12     375  428.05     375  582.86     375
  612.97     375  625.47     376  633.22     377

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  226.53     .03  253.19     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        226.53  253.19           430.73  430.73      27             .1       .3

CROSS SECTION


RIVER: Río de la Plata
REACH: 1                  RS: 15

INPUT
Description: Model XS-15 ; XS-6, Survey Cross Section Name
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     376   21.12     375   23.34     374   28.73     374    30.1     375
   40.68  375.32   51.81     375   55.98  374.32   56.95 373.615   57.27 373.382
   57.36 373.317    57.5 373.215   62.65  369.47   74.81  369.13   82.64  369.74
   87.14  372.09    96.6     373  100.39 373.213  103.35 373.379  104.42 373.439
  114.37     374  154.42     374   176.2     374  199.73     374  225.25     374
```

```
   256.1      374  280.74      374  572.61      375  659.17      375  765.48      375
  771.65      376  778.73      377  794.23      378

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06   57.27     .03  104.42     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         57.27  104.42           391.77  391.77   152.7             .1       .3

CROSS SECTION


RIVER: Río de la Plata
REACH: 1                  RS: 14

INPUT
Description: Model XS-14 ; XS-7, Survey Cross Section Name
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     375   11.96     374   16.64     373   48.93   372.3   88.88     373
   92.87   373.2   97.36     373  124.53 372.569   160.4     372  160.71 371.827
   161.3 371.497  162.19     371  163.96     370  165.71     369  167.47     368
  171.54     368  174.11  367.12  175.23     370   181.7     371  183.42 371.496
  184.57 371.827  185.17     372  191.53 372.597  195.83     373   401.7     374
  617.56     375  627.97     376  642.89     377  676.74     378

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  124.53     .03  191.53     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        124.53  191.53           330.43  327.61  200.21             .1       .3

CROSS SECTION


RIVER: Río de la Plata
REACH: 1                  RS: 12

INPUT
Description: Model XS-12 ; XS-8 (1+30.81), Survey Cross Section Name
Station Elevation Data    num=      36
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0   375.8   33.58     376   37.09     376   48.86     375      59     374
   71.03     373   90.29     373     147   373.3  179.27     373  189.59  372.22
  223.86   371.9  252.94  370.82  259.39  370.58  260.46 369.321  262.45  366.98
  271.52  366.62  277.12  366.76  280.08 369.319  281.82 370.823  283.02  371.86
  291.81  371.68  308.26  370.86  325.35  372.02  345.95  371.99  417.97     372
  451.41     372  468.41     373  563.42     374  593.08     374  611.93     374
  617.98     374  651.53     374  657.32     375  663.61     376   671.5     377
  693.71     378

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  223.86     .03  283.02     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        223.86  283.02           149.41  164.78   161.7             .1       .3

CROSS SECTION


RIVER: Río de la Plata
REACH: 1                  RS: 11

INPUT
Description: Model XS-11 ; XS-2+89.99, Survey Cross Section Name
Station Elevation Data    num=      39
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     376   13.24     376   47.04     375    57.1     374    89.3     373
```

```
  149.86     373  155.98   373.2  203.17     373  228.16     372  289.46     371
  334.08  370.78  350.03  371.58  356.06  371.42  362.05  371.57  365.36  370.68
  382.87  370.89  392.46  369.96  401.78  369.12  405.38 367.378  405.52  367.31
  409.63  366.65  414.44  366.23  418.76  366.63  418.92 366.806  419.41 367.345
  419.46   367.4  421.58  369.73  445.71  370.19  452.42  369.37  466.34  370.86
  472.88  371.06  495.21  372.17  576.21     373  708.17     373  718.45     373
  724.73     374  730.71     375  737.32     376  744.56     377

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  392.46     .03  421.58     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        392.46  421.58                 0       0       0             .1       .3

CROSS SECTION


RIVER: Río de la Plata
REACH: 2                  RS: 9

INPUT
Description: Model XS-9 ; XS-3+69.41, Survey Cross Section Name
Station Elevation Data    num=      35
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0   373.3   12.16     373   48.25     372   62.17     371  108.27     371
   151.2  370.65  169.02  370.65  192.34  370.37  212.05   368.7  216.04  366.96
  216.99 366.545  217.85  366.17  226.12  366.02  232.58  365.93  233.05 366.455
  236.63  370.45  275.29   371.5  304.82  371.27  325.52     371  332.92     371
  348.32     371  366.92 369.943  367.99 368.523  372.68 368.063  377.49 368.583
  378.23 369.124  383.49 369.094  388.65 369.783  392.07     370  429.01     371
  468.25     371  473.95     372  576.01     372  605.31     373  651.46     400

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  192.34     .04  236.63     .06  366.92     .04  392.07     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        192.34  236.63            91.23  113.16  104.22             .1       .3

CROSS SECTION


RIVER: Río de la Plata
REACH: 2                  RS: 8

INPUT
Description: Model XS-8 ; XS-4+81.97, Survey Cross Section Name
Station Elevation Data    num=      41
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     373  278.07     372  351.37     372  446.93     372  524.24     373
     533     373  537.75     372  559.62     371  563.49     370  630.49   369.8
  656.76  370.09  677.35  370.52  687.38  370.32  697.17 370.241  697.21 370.241
  697.28  370.24  697.34 368.983  697.51  365.42  705.97  365.47  709.89   365.3
  713.74  368.69  723.16  369.05  730.46   369.5  757.05  368.88  763.29     370
  774.75     371  818.15     371  852.94     370  911.55     370  916.47  369.19
  923.61  368.88  927.97  366.33  932.05  365.96  935.62   366.3  940.07   369.3
  964.17     392   973.1     394   982.6  394.77  987.43     395  996.35     399
 1002.55     400

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  697.28     .04  723.16     .06  911.55     .04  940.07     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        697.34  723.16           201.11  222.85   224.5             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
       0  522.44  372.98        T

CROSS SECTION
```

RIVER: Río de la Plata
REACH: 2 RS: 7

INPUT
Description: Model XS-7 ; XS-10, Survey Cross Section Name
Station Elevation Data num= 41

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	372	44.15	372	56.86	372	59.04	372	64	372
78.35	372	184.71	371.11	199.26	371	207.59	370	209.49	369.86
211.57	370	221.49	371	246.29	370	254.3	369.29	254.78	368.083
254.88	367.832	255.38	366.575	256.11	364.74	261.19	364.33	265.63	364.87
269.43	366.45	270.67	366.42	277.59	366.02	279.22	366.583	282.81	367.822
283.58	368.088	283.99	368.23	290.53	368	299.82	368	313.64	369
333.29	370	393.23	371	399.09	372	412.04	373	422.13	374
427.79	375	436.5	376	438.18	377	444.18	378	447.15	379
457.52	380								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	254.78	.04	283.99	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
254.78	283.99		142.8	136.68	129.17	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
0	221.49	372	T

CROSS SECTION

RIVER: Río de la Plata
REACH: 2 RS: 6

INPUT
Description: Model XS-6 ; XS-11, Survey Cross Section Name
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	372	432.95	371	466.72	371.08	668.44	371.56	676.09	372
691.91	372	704.43	371	711.93	368.52	712.36	368.044	712.42	367.978
713.72	366.54	716.68	366.263	727.8	365.22	732.34	364.94	744.06	364.61
748.53	364.67	750.4	365.99	751.48	366.263	758.29	367.982	758.36	368
758.71	368.042	766.72	369	795.08	370	805.5	372	819.71	373
845.68	374	857.27	375	869.89	376	882.16	377		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	691.91	.04	805.5	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
691.91	805.5		68.03	89.88	98.41	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
0	676.09	372	T

CROSS SECTION

RIVER: Río de la Plata
REACH: 2 RS: 5

INPUT
Description: Model XS-5 ; XS-12 U/S PR-1 South Bridge, Survey Cross Section Name
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	372.45	1.17	370.37	7.86	367.46	10.87	367.12	16.16	366.5
16.28	366.215	17.11	364.24	29.7	364.1	36.79	364.05	38.09	364.31
39.05	364.73	43.29	365.3	48.61	366.204	51.76	366.74	60.15	368.07
61.12	368.25	75.97	370.57	77	373.14	79.11	373.1		

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06   16.16     .04   48.61     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         16.16   48.61               11      11      11             .3       .5

BRIDGE


RIVER: Río de la Plata
REACH: 2                  RS: 4.5

INPUT
Description: PR-1 Bridge
Distance from Upstream XS =       1
Deck/Roadway Width        =      10
Weir Coefficient          =    1.44
Upstream  Deck/Roadway Coordinates
    num=      14
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0  373.56  371.41    1.17  373.56  371.41   10.87  373.56  371.51
   13.51  373.56  371.15   16.16  373.56  370.28   17.11  373.56  370.28
   26.95  373.56  371.74   38.09  373.56  370.58   39.05  373.56  370.65
   47.52  373.56  371.97   60.15  373.56  370.64   61.12  373.56  370.67
   68.54  373.56  371.97   79.11  373.56  371.81

Upstream Bridge Cross Section Data
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  372.45    1.17  370.37    7.86  367.46   10.87  367.12   16.16   366.5
   16.28 366.215   17.11  364.24    29.7   364.1   36.79  364.05   38.09  364.31
   39.05  364.73   43.29   365.3   48.61 366.204   51.76  366.74   60.15  368.07
   61.12  368.25   75.97  370.57      77  373.14   79.11   373.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06   16.16     .04   48.61     .06

Bank Sta: Left   Right    Coeff Contr.   Expan.
         16.16   48.61             .3       .5

Downstream  Deck/Roadway Coordinates
    num=      15
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0  373.65  371.58   11.66  373.65  371.59   15.68  373.65  371.61
   19.71  373.65  370.29   20.67  373.65  370.28   30.57  373.65   371.7
    41.7  373.65  370.58   42.65  373.65  370.65    51.9  373.65  371.92
   63.67  373.65  370.64   64.65  373.65  370.67   68.04  373.65  371.61
   71.44  373.65  372.03    79.5  373.65  372.06   80.64  373.65  372.06

Downstream Bridge Cross Section Data
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  372.41    2.35  372.09    4.73  370.69   11.66   367.3   17.55 366.151
   19.71  365.73   20.67  365.77   28.11  364.55   33.04  364.08   40.95  364.05
    41.7  364.57   42.65  364.59    47.4     365   51.89 366.151   56.41  367.31
   63.67  368.07   64.65  368.25   71.44  368.84    79.5  370.86   80.64  372.95

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06   17.55     .04   51.89     .06

Bank Sta: Left   Right    Coeff Contr.   Expan.
         17.55   51.89             .3       .5

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
```

```
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  3

Pier Data
Pier Station     Upstream=   16.64    Downstream=   20.19
Upstream     num=       2
    Width   Elev    Width   Elev
     .97     365     .97   370.5
Downstream     num=       2
    Width   Elev    Width   Elev
     .97     365     .97   370.5

Pier Data
Pier Station     Upstream=   38.57    Downstream=   42.18
Upstream     num=       2
    Width   Elev    Width   Elev
     .97     365     .97   371.5
Downstream     num=       2
    Width   Elev    Width   Elev
     .97     365     .97   371.5

Pier Data
Pier Station     Upstream=   60.64    Downstream=   64.16
Upstream     num=       2
    Width   Elev    Width   Elev
     .97     368     .97     372
Downstream     num=       2
    Width   Elev    Width   Elev
     .97     368     .97     372

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION


RIVER: Río de la Plata
REACH: 2                 RS: 4

INPUT
Description: Model XS-4 ; XS-12 D/S PR-1 North Bridge, Survey Cross Section Name
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  372.41    2.35  372.09    4.73  370.69   11.66   367.3   17.55 366.151
   19.71  365.73   20.67  365.77   28.11  364.55   33.04  364.08   40.95  364.05
    41.7  364.57   42.65  364.59    47.4     365   51.89 366.151   56.41  367.31
   63.67  368.07   64.65  368.25   71.44  368.84    79.5  370.86   80.64  372.95

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06   17.55     .04   51.89     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         17.55   51.89            20.97      24   21.45             .3       .5

CROSS SECTION
```

RIVER: Río de la Plata
REACH: 2 RS: 3

INPUT
Description: Model XS-3 ; From topo contours
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	371	13.64	370	148.56	369	155.2	368	160.25	367
166.39	366	169.36	365	177.97	364.01	183.48	363.86	188.74	364.01
190.79	365	192.83	366	196.42	367	199.88	368	202.97	369
204	369.333	206.06	370	209.32	371	212.29	372	216.21	373
244.45	374	265.78	375						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	148.56	.04	204	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
148.56	204	0	0	0	.1	.3

CROSS SECTION

RIVER: Río Guavate
REACH: 2 RS: 27

INPUT
Description: Model XS-27, (Profile 13; Seccion julio 26 Surveyor Fernado Santiago)
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	380.93	12.24	375.23	22.2	375.08	25.11	374.21	33.44	374.12
34.55	375.48	40.99	375.4	49.7	378.36	53.73	380.99		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.07	22.2	.03	34.55	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
22.2	34.55	.1	.1	.1	.3	.5

CROSS SECTION

RIVER: Río Guavate
REACH: 2 RS: 26.5

INPUT
Description: Model XS-26.5
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	379.83	.15	378.75	3.01	378.48	5.8	376.88	8.02	376.02
9.14	375.27	13.23	375.39	16.28	375.48	16.28	379.9	17.05	379.9
17.05	375.48	17.06	375.04	21.12	374.45	21.99	373.95	25.13	373.86
29.08	374.19	33.58	375.16	33.58	379.9	34.23	379.9	34.23	375.16
37.95	375.05	41.47	375.35	43.39	376.62	46.44	378.02	50.42	379.95
50.55	380.55								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.07	21.12	.03	29.08	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
21.12	29.08	12.8	12.8	12.8	.1	.3

CROSS SECTION

RIVER: Río Guavate

```
REACH: 2                    RS: 26.4

INPUT
Description: Model XS-26.4, (Profile 12; Seccion julio 26 06  Surveyor Fernado
             Santiago)
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  379.83     .15  378.75    3.01  378.48     5.8  376.88    8.02  376.02
    9.14  375.27   13.23  375.39   16.28  375.48   16.28   379.9   17.05   379.9
   17.05  375.48   17.06  375.04   21.12  374.45   21.99  373.95   25.13  373.86
   29.08  374.19   33.58  375.16   33.58   379.9   34.23   379.9   34.23  375.16
   37.95  375.05   41.47  375.35   43.39  376.62   46.44  378.02   50.42  379.95
   50.55  380.55

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   21.12     .03   29.08     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         21.12   29.08               .1      .1      .1             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                    RS: 26.25

INPUT
Description: Model XS-26.25, (Profile 11; Seccion julio 26 06  Surveyor Fernado
             Santiago)
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  379.55   13.32  375.18   21.53  375.35   24.92  373.93   33.14  373.97
   33.63  374.62   41.47  375.83   46.95  375.69   59.19  380.93

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   21.53     .03   33.63     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         21.53   33.63               16      16      16             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                    RS: 26.2

INPUT
Description: Model XS-26.2
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  379.55   13.32  375.18   21.53  375.35   24.92  373.93   33.14  373.97
   33.63  374.62   41.47  375.83   46.95  375.69   59.19  380.93

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   21.53     .03   33.63     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         21.53   33.63               .1      .1      .1             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                    RS: 26.04

INPUT
Description: Model XS-26.04, (Profile 10; Seccion julio 26 06  Surveyor Fernado
             Santiago)
```

```
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  379.56     .57  378.76    2.51  378.56    3.52  378.29    4.36  377.79
    4.86  377.16    5.63  376.89    6.27  376.33    8.27  376.42    9.16  375.94
   12.16  374.91   16.64  375.28   16.64   379.5   17.64   379.5   17.64  375.28
   20.59  374.42   21.54  373.92   25.24  373.89   29.11  374.09   31.42  374.92
   34.14  375.18   34.14   379.5   34.94   379.5   34.94  375.18   35.44  375.18
   38.93  374.89    40.3  375.06   41.57   375.7   44.85  376.93   48.51  378.68
   51.16  379.41   51.66  380.19

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   20.59     .03   31.42     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         20.59   31.42             13.2    13.2    13.2             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 26.02

INPUT
Description: Model XS-26.02
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  379.56     .57  378.76    2.51  378.56    3.52  378.29    4.36  377.79
    4.86  377.16    5.63  376.89    6.27  376.33    8.27  376.42    9.16  375.94
   12.16  374.91   16.64  375.28   16.64   379.5   17.64   379.5   17.64  375.28
   20.59  374.42   21.54  373.92   25.24  373.89   29.11  374.09   31.42  374.92
   34.14  375.18   34.14   379.5   34.94   379.5   34.94  375.18   35.44  375.18
   38.93  374.89    40.3  375.06   41.57   375.7   44.85  376.93   48.51  378.68
   51.16  379.41   51.66  380.19

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   20.59     .03   31.42     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         20.59   31.42               .1      .1      .1             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 26

INPUT
Description: Model XS-26, (Profile 9; Seccion julio 26 06 Surveyor Fernado
             Santiago)
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  380.61      12     380   15.57  377.48   21.89  375.29    26.5   375.1
   29.03  375.42   32.84  374.33    36.7  373.98   39.99  374.31   43.68  375.28
   50.92   375.3   55.48  376.33   64.31  380.29

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   29.03     .03   43.68     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         29.03   43.68            22.69    23.6    23.6             .3       .5

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 24.8

INPUT
```

```
Description: Model XS-24.8, (Profile 8; Seccion julio 26 06 Surveyor Fernado
             Santiago)
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     380    9.75     379    12.8     378    15.9     377    19.2     376
   26.86     375    27.1  374.78   28.09   373.9   36.98  373.85   37.99   374.1
   39.44 374.814   41.87  376.01   65.42  386.78

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07    27.1     .03   39.44     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          27.1   39.44            18.72   19.34   20.51             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 24.7

INPUT
Description: Model XS-24.7, (Profile 7; Seccion julio 26 06 Surveyor Fernado
             Santiago)
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     379    3.68     378     8.9     377   21.23   376.4   24.44  375.49
   25.31 374.848   27.13 373.506   28.82  372.26   32.48  372.32   35.83  372.84
   36.88 373.554   38.87 374.907   57.21  387.38

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   25.31     .03   38.87     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         25.31   38.87            41.53   41.53   41.53             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 24.6

INPUT
Description: Model XS-24.6, (Profile 6; Seccion julio 26 06 Surveyor Fernado
             Santiago)
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  379.84    7.64  377.52   22.13  377.15   36.58   376.8      42 375.103
   46.68 373.638   50.25  372.52   54.32  372.52   58.65  372.81   59.87 373.674
   61.55 374.864   75.49  384.74

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07      42     .03   61.55     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            42   61.55            20.25   20.25   20.25             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 24.5

INPUT
Description: Model XS-24.5, (Profile 5; Seccion julio 26 06 Surveyor Fernado
             Santiago)
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  379.68    4.78   377.7    22.3  377.41   48.76  376.01   51.72 374.584
```

```
   54.79 373.104   56.54  372.26   60.81  372.43   64.53  372.36   65.92 373.119
   67.57  374.02   70.63   374.7   80.15     383

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   51.72     .03   70.63     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         51.72   70.63             46.79   46.79   46.79             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 24.4

INPUT
Description: Model XS-24.4, (Profile 4; Seccion julio 26 06 Surveyor Fernado
             Santiago)
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  379.67    5.88  376.92   58.33   375.4   73.42  374.47    75.3  374.09
    77.9  373.01   81.48  372.63   84.56  372.91   85.44  373.54   89.44  374.17
   90.31 374.596   92.44  375.64  104.13  375.54  125.52     376  129.21     377

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   73.42     .03   90.31     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         73.42   90.31             43.11   43.11   43.56             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 24.3

INPUT
Description: Model XS-24.3, (Profile 3; Seccion julio 26 06 Surveyor Fernado
             Santiago)
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  380.02    8.58  375.87   70.95  375.16   76.38 374.509   86.04  373.35
   88.18  372.23   97.84  371.95   98.89 372.979   100.4 374.459  101.36   375.4
  107.27  375.59  115.91  375.66  128.11  375.49  178.03     376  184.89     377

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   76.38     .03   100.4     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         76.38   100.4             24.53   25.41   25.41             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 24.2

INPUT
Description: Model XS-24.2, (Profile 2; Seccion julio 26 06 Surveyor Fernado
             Santiago)
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  380.34   11.33  375.72   79.88  373.73   87.44  372.88   89.54  371.66
   95.09  370.74  103.01 372.987  105.26 373.626  112.43  375.66  120.25  375.65
  132.52  375.56  163.48     375  204.24     375   208.3     376  211.13     377

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
```

```
       0     .07   79.88     .03  105.26     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         79.88  105.26             41.5   74.93   40.61             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 24.1

INPUT
Description: Model XS-24.1, (Profile 1; Seccion julio 26 06 Surveyor Fernado
             Santiago)
Station Elevation Data    num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  380.96    4.54  380.59   18.38   375.3   33.64  374.37   52.35   374.5
    67.7  374.18   76.27  374.73   80.22  371.57   81.09  371.35   83.55  371.87
   86.94  371.17   89.51  372.06   91.55  373.36  104.96  374.12  109.88  373.56
  111.65  373.86  121.29  373.91   126.4  374.71  139.32  374.81  150.27     375
  200.12     375  246.31     375  254.21     376

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   76.27     .03   91.55     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         76.27   91.55            52.48  102.63  102.63             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 24

INPUT
Description: Model XS-24, ( XS-18, Surveyor Antonio Melendez)
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     376   51.06     376   59.07  375.87   61.34     376    92.8     377
  114.37     377  126.08   376.3   127.5 375.129  128.87 373.999  129.01 373.883
  132.25  371.21  137.89  371.34  144.35  371.97  147.66  373.75  154.37 373.886
  160.09 374.002  209.14     375  212.94     375  255.69     375   271.2     374
  284.43     374  302.49     375  311.21     376  315.03     377  318.96     378
  324.06     379  329.76     380  335.62     381   347.5     382   355.7     383
  360.57     384  366.84     385  374.85     386

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07   127.5     .03  209.14     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         127.5  209.14           158.58   167.7   112.6             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 23

INPUT
Description: Model XS-23, (XS-19, Surveyor Antonio Melendez)
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     377   83.61     376   99.73     375  134.13     374  155.01     374
   216.2     373  229.77     373  243.08     373  253.27     373  258.36     373
  290.26     373  298.96  373.19  312.42  372.21  315.22  371.01  318.05  370.78
  319.51 371.098   321.7 372.143  322.73  373.47  376.48     373  393.15  373.34
  424.93     374  431.28     375  434.71     376   440.6     377  458.48     378
  480.46     379  490.25     380  509.06     381  527.88     382
```

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07  298.96     .03  322.73     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        298.96  322.73           198.31  450.02  450.02             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 22

INPUT
Description: Model XS-20, (XS-20, Surveyor Antonio Melendez)
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     376   13.85     375   23.92     374   74.71     373  105.99     373
  264.06     373  320.71     372   332.5  371.78  333.91 371.591  335.13 371.427
  335.26  371.41  336.19 370.709   338.8  368.74  345.53  368.73  351.17  368.83
  354.96 370.706  356.42 371.428  356.75 371.591  358.06  372.24  366.16     373
  371.43 373.431  371.89 373.469  378.39     374  397.94     380  405.15     381
  420.99     390

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07  264.06     .03  358.06     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        264.06  358.06           264.63  333.71  194.84             .1       .3

CROSS SECTION


RIVER: Río Guavate
REACH: 2                  RS: 21

INPUT
Description: Model XS-21, ( XS-21, Surveyor Antonio Melendez)
Station Elevation Data    num=      42
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     376   22.27     375   31.29     374  111.83     373  123.53     373
  141.66     373  160.85     373  228.78   373.3  249.52     373  258.12     373
  267.68     372  281.95     371  303.82     371  305.48     371  306.03 370.949
  306.96 370.863  309.03 370.672  312.39 370.362  313.77 370.235  317.62  369.88
   318.1 369.668  320.58  368.57  325.27  368.11  330.08  368.63  330.82  369.17
  336.08  369.14   340.6 369.744  341.24  369.83  344.81  370.23  346.15  370.38
  347.37 370.517  348.77 370.674  350.25  370.84  351.33 370.961  360.61     372
  384.25     372  400.51     372  511.07     373  514.66     374  517.74     375
  520.17     376  522.52     377

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .07  305.48     .03  360.61     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        305.48  360.61                 0       0       0             .1       .3
```

SUMMARY OF MANNING'S N VALUES

River:Río de la Plata

Reach	River Sta.	n1	n2	n3	n4	n5
1	19	.06	.03	.06		
1	18.5	Bridge				
1	18	.06	.03	.06		
1	17	.06	.03	.06		
1	16	.06	.03	.06		
1	15	.06	.03	.06		
1	14	.06	.03	.06		
1	12	.06	.03	.06		
1	11	.06	.03	.06		
2	9	.06	.04	.06	.04	.06
2	8	.06	.04	.06	.04	.06
2	7	.06	.04	.06		
2	6	.06	.04	.06		
2	5	.06	.04	.06		
2	4.5	Bridge				
2	4	.06	.04	.06		
2	3	.06	.04	.06		

River:Río Guavate

Reach	River Sta.	n1	n2	n3
2	27	.07	.03	.07
2	26.5	.07	.03	.07
2	26.4	.07	.03	.07
2	26.25	.07	.03	.07
2	26.2	.07	.03	.07
2	26.04	.07	.03	.07
2	26.02	.07	.03	.07
2	26	.07	.03	.07
2	24.8	.07	.03	.07
2	24.7	.07	.03	.07
2	24.6	.07	.03	.07
2	24.5	.07	.03	.07
2	24.4	.07	.03	.07
2	24.3	.07	.03	.07
2	24.2	.07	.03	.07
2	24.1	.07	.03	.07
2	24	.07	.03	.07
2	23	.07	.03	.07
2	22	.07	.03	.07
2	21	.07	.03	.07

SUMMARY OF REACH LENGTHS

River: Río de la Plata

Reach	River Sta.	Left	Channel	Right
1	19	47	47	47
1	18.5	Bridge		
1	18	113.31	113.31	132.92
1	17	301.7	301.7	117.9
1	16	430.73	430.73	27
1	15	391.77	391.77	152.7
1	14	330.43	327.61	200.21
1	12	149.41	164.78	161.7
1	11	0	0	0
2	9	91.23	113.16	104.22
2	8	201.11	222.85	224.5
2	7	142.8	136.68	129.17
2	6	68.03	89.88	98.41
2	5	11	11	11
2	4.5	Bridge		
2	4	20.97	24	21.45
2	3	0	0	0

River: Río Guavate

Reach	River Sta.	Left	Channel	Right
2	27	.1	.1	.1
2	26.5	12.8	12.8	12.8
2	26.4	.1	.1	.1
2	26.25	16	16	16
2	26.2	.1	.1	.1
2	26.04	13.2	13.2	13.2
2	26.02	.1	.1	.1
2	26	22.69	23.6	23.6
2	24.8	18.72	19.34	20.51
2	24.7	41.53	41.53	41.53
2	24.6	20.25	20.25	20.25
2	24.5	46.79	46.79	46.79
2	24.4	43.11	43.11	43.56
2	24.3	24.53	25.41	25.41
2	24.2	41.5	74.93	40.61
2	24.1	52.48	102.63	102.63
2	24	158.58	167.7	112.6
2	23	198.31	450.02	450.02
2	22	264.63	333.71	194.84
2	21	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Río de la Plata

Reach	River Sta.		Contr.	Expan.
1	19		.3	.5
1	18.5	Bridge		
1	18		.3	.5
1	17		.1	.3
1	16		.1	.3
1	15		.1	.3
1	14		.1	.3
1	12		.1	.3
1	11		.1	.3
2	9		.1	.3
2	8		.1	.3
2	7		.1	.3
2	6		.1	.3
2	5		.3	.5
2	4.5	Bridge		
2	4		.3	.5
2	3		.1	.3

River: Río Guavate

Reach	River Sta.	Contr.	Expan.
2	27	.3	.5
2	26.5	.1	.3
2	26.4	.1	.3
2	26.25	.1	.3
2	26.2	.1	.3
2	26.04	.1	.3
2	26.02	.1	.3
2	26	.3	.5
2	24.8	.1	.3
2	24.7	.1	.3
2	24.6	.1	.3
2	24.5	.1	.3
2	24.4	.1	.3
2	24.3	.1	.3
2	24.2	.1	.3
2	24.1	.1	.3
2	24	.1	.3
2	23	.1	.3
2	22	.1	.3
2	21	.1	.3

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4 de diciembre de 2006

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Re: Parque Tecnológico de Cayey, Cayey PR
Límites Zona 1 y Zona 2

Sr. Sotomayor

La Figura 1 presenta el área que comprende la zona-1 (floodway) desde el centro del los ríos hacia el área del proyecto. En la parte superior se muestra el área de la zona-1 según los mapas de FEMA vigentes, y en la parte inferior el área de la zona-1 en el presente, según nuestro estudio.

La Figura 2 presenta el área que comprende la zona-2 entre el Río La Plata y Río Guavate. En la parte superior se muestra el área de la zona-2 según los mapas de FEMA vigentes, y en la parte inferior el área de la zona-2 en el presente, según nuestro estudio.

La Figura 3 muestra el área no inundable durante el evento de 100-años. En la parte superior se muestra el área no inudable durante el evento de 100-años según los mapas de FEMA vigentes, y en la parte inferior el área no inundable durante el evento de 100-años en el presente, según nuestro estudio.

La Tabla 1 muestra una comparación de áreas entre FEMA y nuestro estudio.

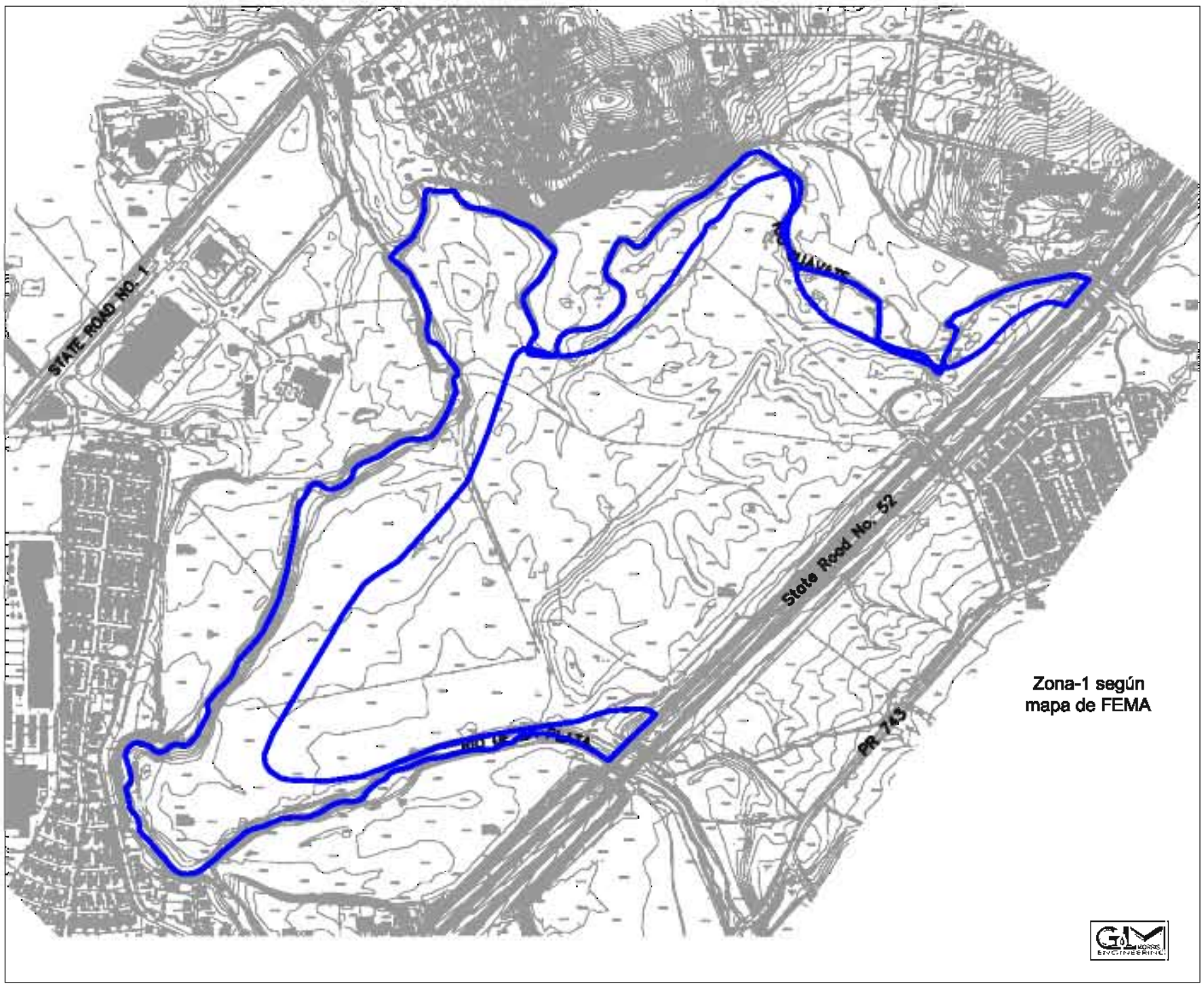
Tabla 1: Comparación de áreas entre FEMA y Estudio Actual

Zona	Area (acres)	
	FEMA	GME
Zona 1	54	74
Zona 2	84	27
No inundable bajo 100-años	31	68

Culaquier duda puede comunicarse a nuestra oficina al 723-8005.

Coordialmente,

Laisha Pomales



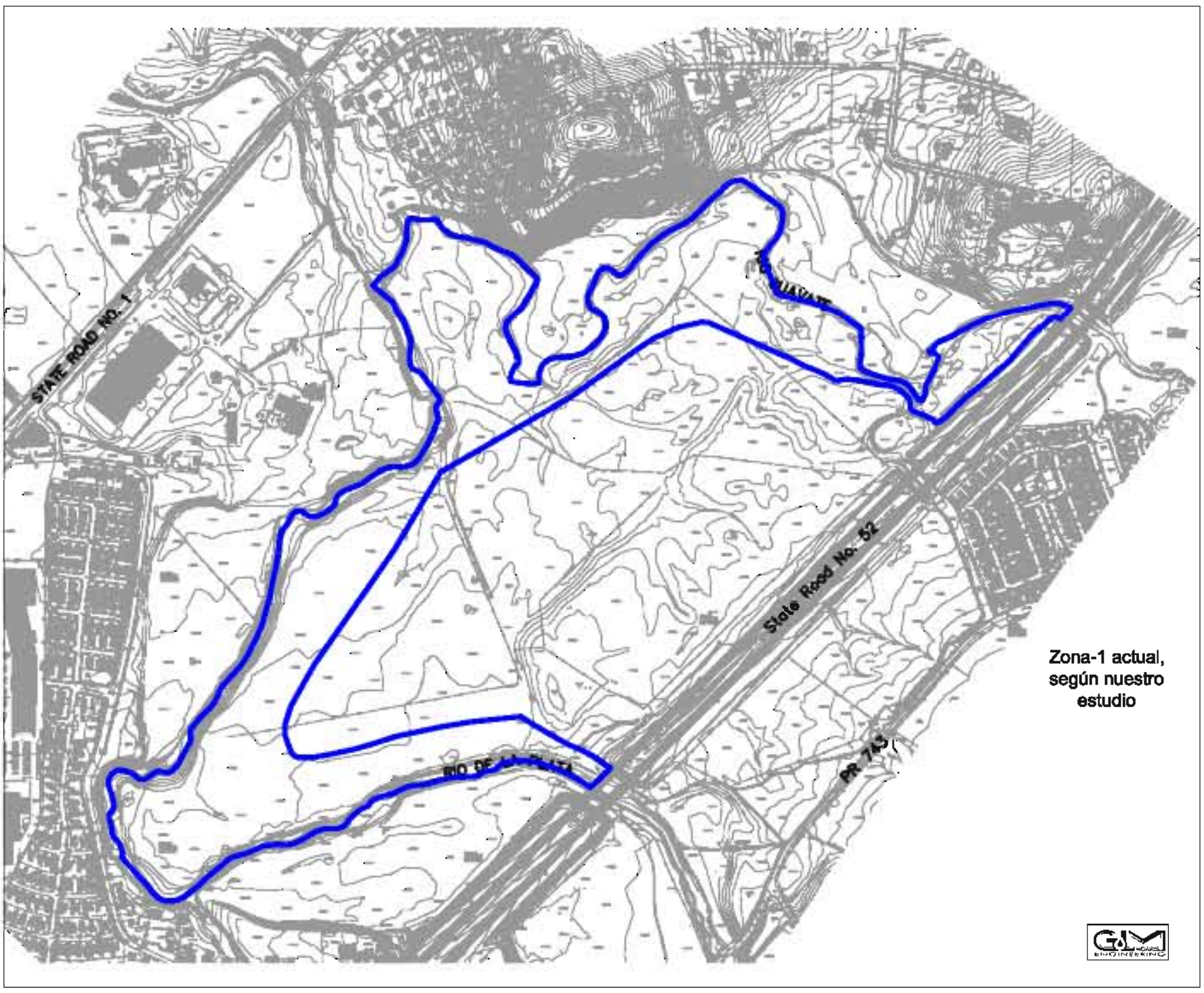
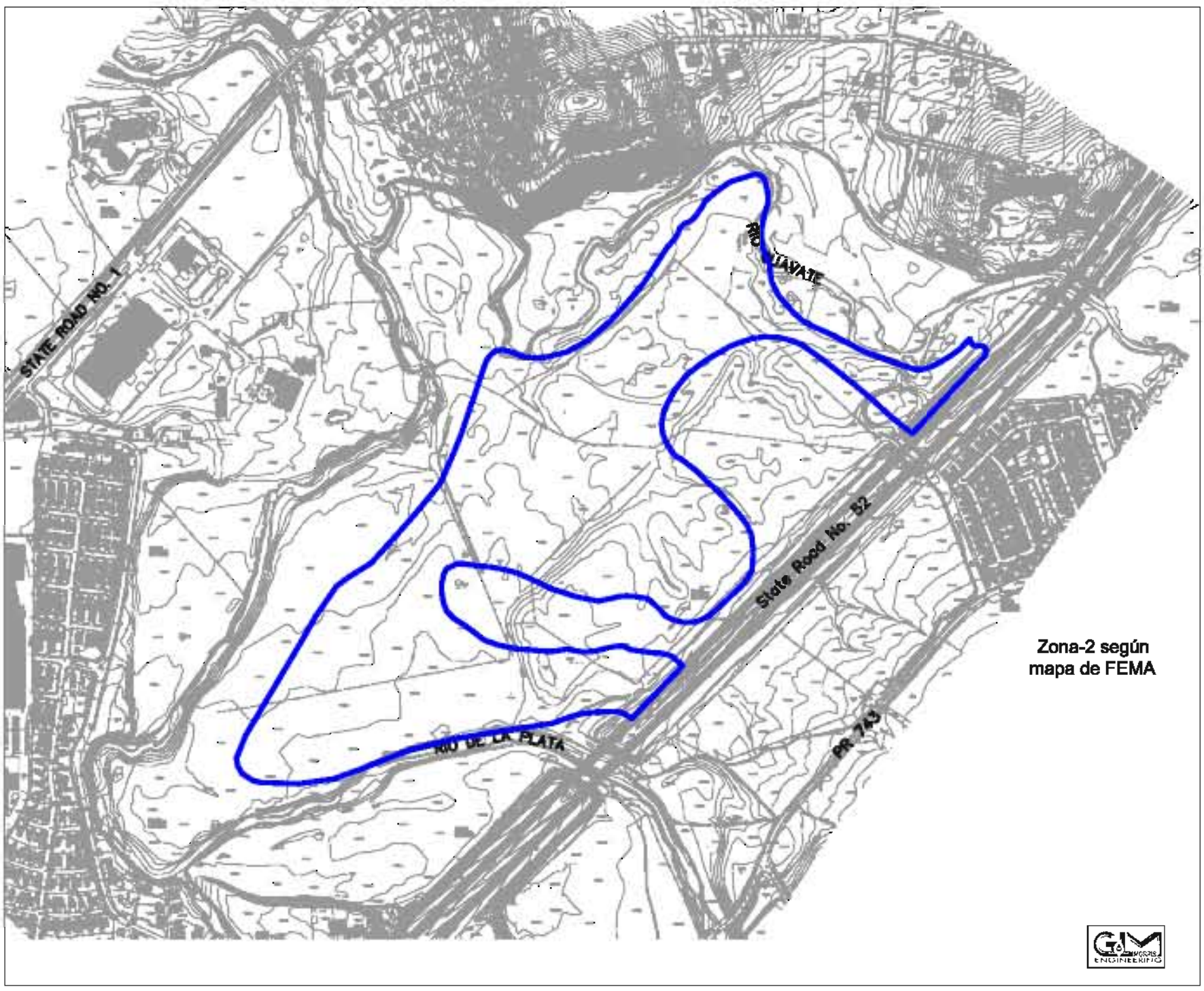


Figura 1: Area de inundación Zona 1 (scale 1:8,000)



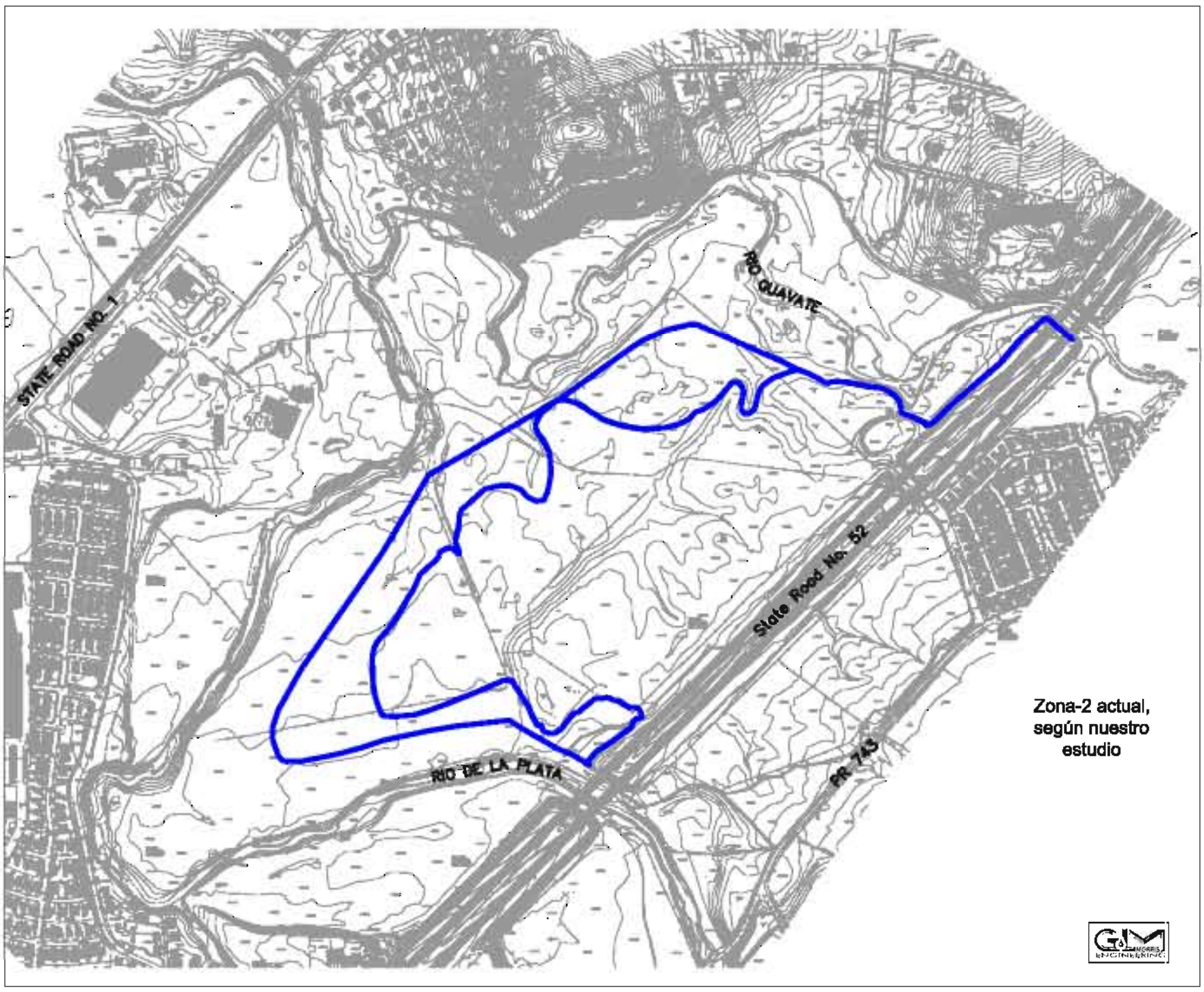
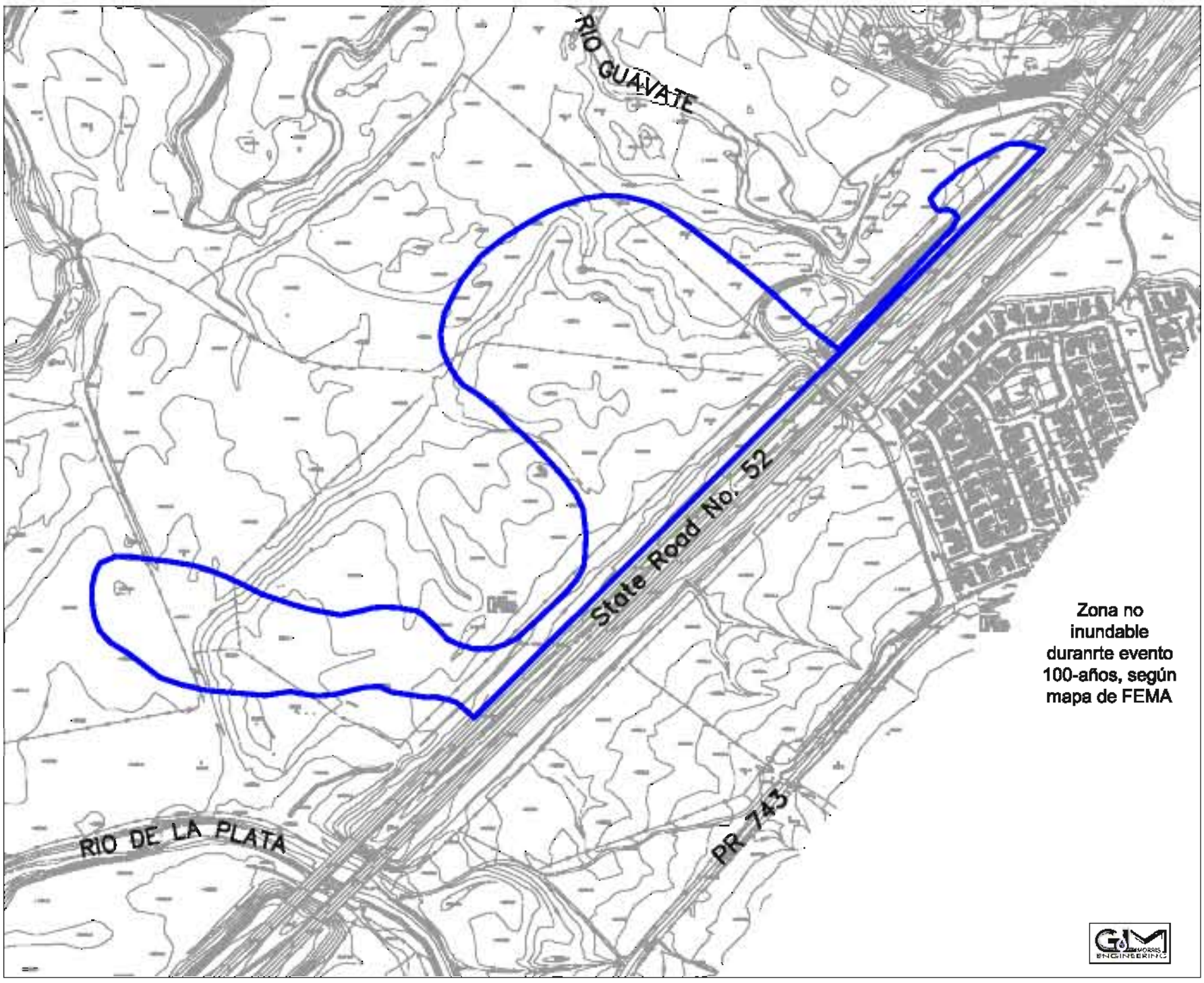


Figura 2: Area de Inundación Zona-2 (scale 1:8,000)



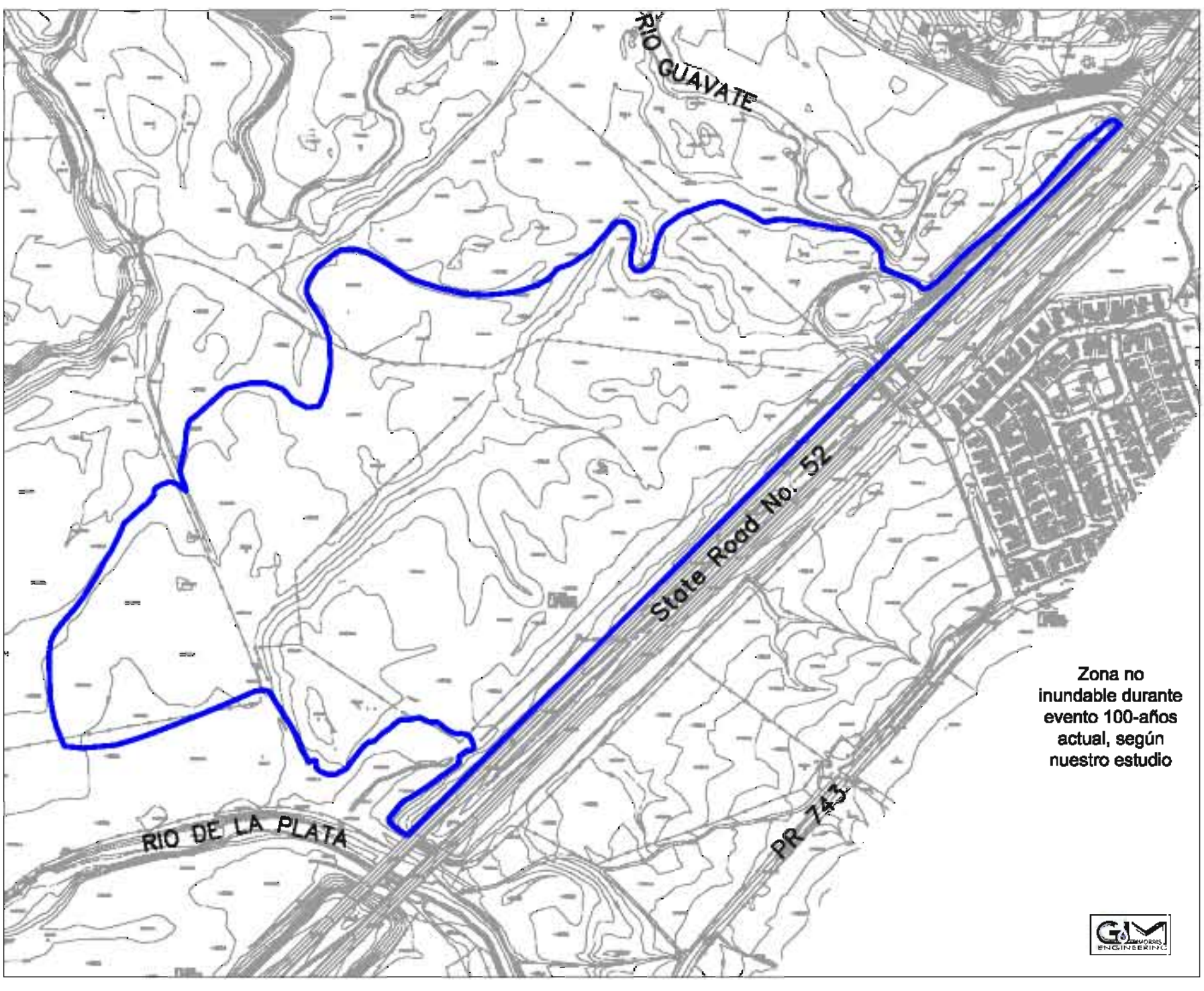


Figura 3: Zona no inundable bajo evento de 100-años (scale 1:5,000)