

POL -T- 1

Table 1 Water Quality and Runoff Load of Rivers flowing into Patos Lake

Table.1-1 Rio Gravatai

Table.1-2 Rio dos Sinos

Table.1-3 Rio Cai

Table.1-4 Rio Taquari

Table.1-5 Rio Jacui

Table.1-6 Rio Camaqua

Table.1-7 Canal de Sao Goncalo

Table.1-8 Arroio Diluvio

Table.1-9 Arroio Salso

Table.1-1 Water Quality and Runoff Load of Rivers (Rio Gravatai)

Rio Gravatai (St.GR002,Discharge(87399000))

Sampling Date	Concentration (mg/L)							Load (t/day)					
	BOD	TN	NO ₃ -N	TP	COD	TSS	Discharg e(m ³ /s)	BOD	TN	NO ₃ -N	TP	COD	TSS
12/5/92	9.0		4.6		129.0		22.9	17.8	0.0	9.1	0.0	255.2	0.00
16/6/92	4.0				76.0	94.0	33.0	11.4	0.0	0.0	0.0	216.7	268.01
9/7/92	2.0		0.6	0.26	67.0	144.0	43.4	7.5	0.0	2.2	1.0	251.2	539.97
6/8/92	3.0		0.3	0.21	60.0	105.0	37.8	9.8	0.0	1.0	0.7	196.0	342.92
8/9/92	3.8		0.1		54.0	120.0	28.0	9.2	0.0	0.2	0.0	130.6	290.30
7/10/92	3.0		0.1		48.0	104.0	32.8	8.5	0.0	0.2	0.0	136.0	294.73
5/11/92	5.0		0.6		40.0	142.0	18.7	8.1	0.0	1.0	0.0	64.6	229.43
9/12/92	10.0				129.0	214.0	3.3	2.9	0.0	0.0	0.0	36.8	61.02
7/1/93	17.0				22.0	104.0	6.7	9.8	0.0	0.0	0.0	12.7	60.20
11/2/93	5.0				55.0	122.0	5.5	2.4	0.0	0.0	0.0	26.1	57.97
10/3/93	3.0				55.0	134.0	17.0	4.4	0.0	0.0	0.0	80.8	196.82
13/4/93	3.0				39.0	20.0	10.2	2.6	0.0	0.0	0.0	34.4	17.63
12/5/93	13.0				34.0	223.0	6.8	7.6	0.0	0.0	0.0	20.0	131.02
8/6/93	3.0		0.5		32.0	181.0	43.0	11.1	0.0	1.7	0.0	118.9	672.45
7/7/93	2.0				45.0	56.0	-	#VALUE!	#VALUE!	#VALUE!	#####	#VALUE!	#VALUE!
5/8/93	4.0				35.0	88.0	26.0	9.0	0.0	0.0	0.0	78.6	197.68
9/9/93	13.0	4.2		0.59	50.0		12.4	13.9	4.5	0.0	0.6	53.6	0.00
6/10/93	3.0	4.3		0.46	38.0	138.0	15.7	4.1	5.9	0.0	0.6	51.5	187.19
11/11/93	6.0		2.0	0.49	31.0	143.0	13.3	6.9	0.0	2.3	0.6	35.6	164.32
9/12/93	4.0		0.5	0.39	30.0	124.0	20.7	7.2	0.0	0.9	0.7	53.7	221.77
6/1/94	14.0	19.6		0.79	37.0	161.0	4.7	5.7	8.0	0.0	0.3	15.0	65.38
3/2/94	11.0	7.2		0.48	41.0	153.0	4.7	4.5	2.9	0.0	0.2	16.6	62.13
10/3/94	5.0	0.7		0.22	45.0	133.0	31.0	13.4	1.8	0.0	0.6	120.5	356.23
13/4/94	3.0	0.9		0.41	35.0	109.0	21.3	5.5	1.6	0.0	0.8	64.4	200.59
10/5/94	2.0			0.23	32.0	117.0	31.4	5.4	0.0	0.0	0.6	86.8	317.42
9/6/94	4.0	1.2		0.16	35.0	80.0	31.7	11.0	3.4	0.0	0.4	95.9	219.11
7/7/94	2.0	1.1		0.11	25.0	96.0	37.0	6.4	3.5	0.0	0.3	79.9	306.89
10/8/94	4.0	2.0		0.27	32.0	95.0	-	#VALUE!	#VALUE!	#VALUE!	#####	#VALUE!	#VALUE!
8/9/94	4.0	1.5		0.19	27.0	133.0	-	#VALUE!	#VALUE!	#VALUE!	#####	#VALUE!	#VALUE!
6/10/94	6.0	13.5		0.63	27.0	157.0	13.3	6.9	15.5	0.0	0.7	31.0	180.41
10/11/94	3.0	0.5		0.27	35.0	98.0	28.0	7.3	1.2	0.0	0.7	84.7	237.08
8/12/94	5.0	5.5		0.75	30.0	131.0	9.6	4.1	4.5	0.0	0.6	24.9	108.66
4/5/95	7.0	5.1		0.57	25.0	122.0	16.2	9.8	7.2	0.0	0.8	34.9	170.55
8/6/95	12.0	10.8		1.42	18.0	175.0	10.1	10.5	9.4	0.0	1.2	15.7	152.86
6/7/95	3.0	2.7		0.40	37.0	99.0	35.4	9.2	8.4	0.0	1.2	113.0	302.46
3/8/95	3.0	1.4		0.14	25.0	201.0	50.7	13.1	6.0	0.0	0.6	109.4	879.78
5/9/95	2.0	3.3		0.36	33.0	80.0	24.7	4.3	7.0	0.0	0.8	70.4	170.59
10/10/95	4.0	2.0		0.27	29.0	93.0	29.1	10.1	5.0	0.0	0.7	73.0	233.99
7/11/95		8.0			41.0	135.0	7.8	0.0	5.4	0.0	0.0	27.6	90.98
12/12/95	16.0	5.9			41.0	137.0	2.3	3.2	1.2	0.0	0.0	8.2	27.46
10/1/96	31.0	6.5			49.0	177.0	5.1	13.8	2.9	0.0	0.0	21.8	78.60
8/2/96	5.0	3.2		0.30	58.0	91.0	30.9	13.3	8.4	0.0	0.8	154.8	242.87
6/3/96	25.0	5.0		0.54	46.0	110.0	13.9	30.1	6.0	0.0	0.7	55.4	132.49
9/4/96	15.0	6.2		0.80	47.0	144.0	11.2	14.5	6.0	0.0	0.8	45.6	139.59
7/5/96	17.0	5.6		0.86	34.0	114.0	7.4	10.9	3.6	0.0	0.5	21.8	73.08
4/6/96	7.0	7.9		0.74	36.0	132.0	7.0	4.2	4.8	0.0	0.5	21.8	80.06
2/7/96	6.0			0.25	38.0	100.0	32.4	16.8	0.0	0.0	0.7	106.5	280.28
5/8/96	10.0	10.6		1.31	71.0	136.0	8.4	7.3	7.7	0.0	1.0	51.6	98.82
4/9/96	2.0	1.9		0.20	36.0	133.0	37.1	6.4	6.1	0.0	0.6	115.5	426.67
8/10/96	4.0	1.3		0.27	39.0	107.0	31.8	11.0	3.6	0.0	0.7	107.2	294.17
5/11/96		2.8		0.26	36.0	98.0	32.7	0.0	8.0	0.0	0.7	101.6	276.45
3/12/96	10.0	7.9		1.31	10.0	144.0	8.2	7.1	5.6	0.0	0.9	7.1	102.15
13/2/97	4.0	8.2		0.83	40.0	142.0	9.7	3.4	6.8	0.0	0.7	33.6	119.13
5/3/97	8.0	7.0		0.75	44.0	143.0	12.1	8.4	7.3	0.0	0.8	46.1	149.75
3/4/97	23.0	14.8		0.71	84.0	112.0	5.6	11.2	7.2	0.0	0.3	40.9	54.58
7/7/97	5.0	4.2		0.29	40.0	131.0	29.9	12.9	10.9	0.0	0.7	103.2	337.85
11/8/97	3.0	2.2		0.23	36.0	102.0	41.5	10.8	7.8	0.0	0.8	129.1	365.91
8/9/97	3.0	3.3		0.32	41.0	85.0	28.6	7.4	8.2	0.0	0.8	101.3	210.11
7/10/97	3.0	2.0		0.28	31.0	154.0	38.9	10.1	6.6	0.0	0.9	104.2	517.72
9/11/97	6.0	4.1		0.42	39.0	85.0	39.2	20.3	13.8	0.0	1.4	132.2	288.03
7/12/97	12.0	6.2		0.82	44.0	381.0	14.2	14.7	7.6	0.0	1.0	53.8	465.80
8/1/98	2.0	1.6		0.14	32.0	80.0	5.5	1.0	0.8	0.0	0.1	15.3	38.29
5/2/98	2.0			0.28	32.0	120.0	5.1	0.9	0.0	0.0	0.1	14.0	52.36
9/3/98	3.0	4.4		0.38	34.0	100.0	2.8	0.7	1.1	0.0	0.1	8.2	24.19
6/4/98	7.0	9.5		0.69	36.0	161.0	22.1	13.4	18.1	0.0	1.3	68.8	307.56

Source:FEPAM/CPRM

Table.1-2 Water Quality and Runoff Load of Rivers (Rio dos Sinos)

Rio Dos Sinos(St.SI019,Discharge(87382000))

Concentration (mg/L)								Load (t/day)						
Sampling Date	BOD	TN	NO ₃ -N	TP	COD	TSS	Discharge (m ³ /s)	BOD	TN	NO ₃ -N	TP	COD	TSS	
1/90			0.63	0.50	4.6	114.2	-	#####	#####	#####	#####	#####	#VALUE!	
7/2/90	9.5	2.8	0.56	0.56	14.2	142.2	-	#####	#####	#####	#####	#####	#VALUE!	
9/3/90	6.4	1.8	0.50	0.50	14.1	127.6	15.6	8.6	2.4	0.7	0.7	19.0	172.0	
4/4/90	3.8	1.6	0.16	0.39	10.8	125.4	25.5	8.4	3.4	0.4	0.9	23.8	276.3	
14/5/90	7.6	1.9	0.22	0.59	18.9	99.4	-	#####	#####	#####	#####	#####	#VALUE!	
6/6/90	2.0	1.2	0.53	0.37	12.5	115.2	153.8	26.6	15.7	7.0	4.9	166.1	1530.8	
11/7/90	2.6	1.4	0.52	0.36	12.3	113.8	96.2	21.6	11.6	4.3	3.0	102.2	945.9	
8/8/90	4.7	2.0	0.06	0.56	12.4	120.4	26.2	10.6	4.5	0.1	1.3	28.1	272.5	
13/9/90	2.9	1.7	0.56	0.51	18.4	171.6	177.2	44.4	26.5	8.6	7.8	281.7	2627.2	
11/10/90	1.8	1.2	0.22	0.34	10.6	131.4	147.3	22.9	15.0	2.8	4.3	134.9	1672.3	
8/11/90	3.2	1.2	0.55	0.31	15.2	122.8	173.8	48.1	17.6	8.3	4.7	228.2	1844.0	
5/12/90	4.0	1.4	0.53	0.29	10.4	87.6	68.4	23.6	8.1	3.1	1.7	61.5	517.7	
9/1/91	1.7	2.1	0.04	0.44	9.0	96.2	24.0	3.5	4.3	0.1	0.9	18.7	199.5	
6/2/91	14.0	3.2	0.08	0.87	15.4	96.2	-	#####	#####	#####	#####	#####	#VALUE!	
6/3/91	2.3	3.3	0.46	0.57	9.3	125.1	-	#####	#####	#####	#####	#####	#VALUE!	
3/4/91	9.3	9.8	0.08	1.06	23.0	244	-	#####	#####	#####	#####	#####	#VALUE!	
5/6/91	5.5	7.2	0.09	1.30	20.2	217.6	35.2	16.7	22.0	0.3	4.0	61.4	661.8	
5/7/91	3.8	2.1	0.08	0.53	17.3	117.6	42.8	14.1	7.6	0.3	2.0	64.0	434.9	
7/8/91	2.3	2.6	1.41	0.90	12.5	212.1	147.3	29.3	32.7	17.9	11.5	159.1	2699.3	
4/9/91	3.2	2.3	0.25	0.32	12.5	135.0	21.9	6.1	4.4	0.5	0.6	23.7	255.4	
9/10/91	3.2	1.8	0.70	0.30	12.5	148.8	100.9	27.9	15.3	6.1	2.6	109.0	1297.2	
11/91	3.9		0.65	0.42	17.0	118.0	-	#####	#####	#####	#####	#####	#VALUE!	
5/12/91	6.0	3.1	0.19	0.33	25.9	114.6	17.2	8.9	4.6	0.3	0.5	38.5	170.3	
8/1/92	2.7	1.1	0.54	0.43	11.0	107.8	69.5	16.2	6.7	3.2	2.6	66.1	647.3	
5/2/92	1.3	1.4	0.02	0.36	21.5	132.8	198.4	22.3	23.5	0.3	6.2	368.5	2276.4	
11/3/91	5.0	4.6	0.46	0.52	11.1	108.4	-	#####	#####	#####	#####	#####	#VALUE!	
8/4/92	3.6	1.7	0.84	0.49	21.7	113.0	112.7	35.1	16.6	8.2	4.8	211.3	1100.3	
6/5/92	6.4	2.9	0.09	0.41	17.9	111.4	-	#####	#####	#####	#####	#####	#VALUE!	
3/6/92	1.4	1.1	0.16	0.27	10.9	105.2	183.3	22.2	17.3	2.5	4.3	172.6	1666.1	
8/7/92	0.8	1.1	0.04	0.32	6.0	125.0	220.6	15.2	21.5	0.8	6.1	114.4	2382.5	
5/8/92	1.7	0.9	0.43	0.24	7.8	133.0	182.4	26.8	14.8	6.8	3.8	122.9	2096.0	
6/9/92	3.4	1.6	0.09	0.33	12.4	109.4	126.5	37.2	17.2	1.0	3.6	135.5	1195.7	
7/10/92	2.2	1.4	0.23	0.30	10.8	89.6	118.4	22.5	14.4	2.4	3.1	110.5	916.6	
5/11/92	2.8	1.2	0.07	0.36	13.8	162.0	107.8	26.1	11.4	0.7	3.4	128.5	1508.9	
3/12/92	3.0	2.3	0.16	0.45	13.7	117.2	21.9	5.7	4.4	0.3	0.9	25.9	221.8	
6/1/93	0.8	2.6	0.12	0.44	17.1	126.2	21.9	1.5	4.9	0.2	0.8	32.4	238.8	
10/2/93	1.8	2.1	0.05	0.44	14.7	139.4	76.6	11.9	14.0	0.3	2.9	97.3	922.6	
3/3/93	1.5	1.4	0.09	0.41	17.5	136.2	-	#####	#####	#####	#####	#####	#VALUE!	
7/4/93	2.0	1.5	0.21	0.33	15.2	125.6	171.2	29.6	22.5	3.1	4.9	224.8	1857.8	
5/5/93	2.3	1.7	0.18	0.36	12.5	111.6	100.2	19.9	14.8	1.6	3.1	108.2	966.2	
3/6/93	2.4	1.4	0.42	0.37	17.9	137.4	190.3	39.5	22.4	6.9	6.1	294.3	2259.1	
7/7/93	1.0	1.7	0.06	0.46	23.3	185.8	190.3	16.4	27.3	1.0	7.6	383.1	3054.9	
4/8/93	2.6	2.4	0.04	0.30	14.9	98.6	66.1	14.8	13.5	0.2	1.7	85.1	563.1	
15/9/93	4.8	2.9	0.04	0.47	17.8	106.4	20.8	8.6	5.2	0.1	0.8	32.0	191.2	
6/10/93	3.2	2.9	0.04	0.21	15.6	110.8	29.0	8.0	7.3	0.1	0.5	39.1	277.6	
10/11/93	3.3	2.5	0.10	0.39	14.0	103.2	138.7	39.5	30.0	1.2	4.7	167.8	1236.7	
8/12/93	2.9	1.5	0.06	0.35	14.9	129.2	29.8	7.5	3.9	0.2	0.9	38.4	332.7	
5/1/94	3.8	3.2	0.04	0.46	12.0	123.4	20.5	6.7	5.7	0.1	0.8	21.3	218.6	
9/2/94	0.2	2.0	0.52	0.43	12.0	105.6	-	#####	#####	#####	#####	#####	#VALUE!	
3/3/94	3.3	1.2	0.11	0.32	15.4	96.0	-	#####	#####	#####	#####	#####	#VALUE!	
6/4/94	2.9	2.3	0.60	0.27	9.3	99.6	-	#####	#####	#####	#####	#####	#VALUE!	
4/5/94	1.9	1.3	0.83	0.03	15.3	111.4	95.5	15.7	10.8	6.8	0.2	126.2	919.2	
8/6/94	1.1	0.9	0.92	0.23	9.9	95.8	204.8	19.5	15.6	16.3	4.1	175.2	1695.2	
7/7/94	2.0	1.5	1.70	0.31	15.6	117.8	176.3	30.5	22.7	25.9	4.7	237.6	1794.4	
4/8/94	1.4	1.4	1.21	0.34	13.8	106.0	135.6	16.4	16.6	14.2	4.0	161.7	1241.9	
14/9/94	3.1	2.2	0.76	0.48	11.2	108.0	33.5	9.0	6.5	2.2	1.4	32.4	312.6	
19/10/94	1.4	2.2	0.82	0.48	18.3	129.2	130.3	15.8	24.5	9.2	5.4	206.0	1454.5	
9/11/94	2.4	2.3	0.92	0.48	6.8	108.0	68.4	14.2	13.5	5.4	2.8	40.2	638.3	
7/12/94	2.3		0.30	0.54	15.2	99.9	-	#####	#####	#####	#####	#####	#VALUE!	
4/1/95	2.6		1.80	0.67	22.8	124.5	*45.5	10.2	0.0	7.1	2.6	89.6	489.4	
8/2/95	2.0		1.40	0.49	10.3	125.0	*69.7	12.0	0.0	8.4	3.0	62.0	752.8	
8/3/95	6.5		1.20	0.30	17.8	113.0	*174.5	98.0	0.0	18.1	4.5	268.4	1703.7	
8/6/95	4.4	3.7	0.30	0.69	15.0	108.4	117.7	44.7	37.1	3.1	7.0	152.5	1102.3	
7/7/95	1.7	1.1	0.15	0.43	13.0	93.4	170.4	25.0	15.6	2.2	6.3	191.4	1375.1	
10/8/95	1.3	1.0	0.55	0.15	7.0	98.4	210.3	23.6	18.7	10.0	2.7	127.2	1787.9	
13/9/95	3.4	3.3	0.69	1.21	22.0	116.6	74.2	21.8	20.8	4.4	7.8	141.0	747.5	
4/10/95	2.3		0.47	0.77	13.0	138.4	178.1	35.4	0.0	7.2	11.8	200.0	2129.7	
8/11/95	4.4		0.54	0.64	13.0	105.2	*56.1	21.3	0.0	2.6	3.1	63.0	509.9	
6/12/95	5.5	3.9	0.73	0.70	16.0	142.6	*63.6	30.2	21.5	4.0	3.8	87.9	783.6	
11/1/96	2.4	2.6	0.20	0.15	18.0	132.0	*19.1	4.0	4.3	0.3	0.2	29.7	217.8	
7/2/96	0.7	0.8	0.08	0.37	11.0	90.0	218.7	13.2	14.9	1.5	7.0	207.9	1700.6	
6/3/96	1.1	1.2	0.31	0.43	9.0	98.0	107.1	10.2	11.2	2.9	4.0	83.3	906.8	
3/4/96	2.7	2.7	0.18	0.18	16.0	126.0	30.6	7.1	7.0	0.5	0.5	42.3	333.1	
8/5/96	6.7	3.9	0.38	0.21	29.0	69.0	*25.3	14.6	8.6	0.8	0.5	63.4	150.8	
5/6/96	4.5	3.5	0.54	0.75	20.0	119.0	*30.2	11.7	9.2	1.4	2.0	52.2	310.5	

*Calculated Value by Tank Model
Source:FEPAM/CPRM

Table.1-3 Water Quality and Runoff Load of Rivers (Rio Cai)

Rio Cai (St.CA001)

Sampling Date	Concentration (mg/L)							Load (ton/day)					
	BOD	TN	NO ₃ -N	TP	COD	TSS	Discharge (m ³ /s)	BOD	TN	NO ₃ -N	TP	COD	TSS
21/5/92	1.0		0.54	0.12	44.0	106.0	160.1	13.8	0.0	7.5	1.7	608.6	1466.3
11/8/92	1.0		0.56	0.12	34.0	91.0	227.6	19.7	0.0	11.0	2.4	668.6	1789.5
11/11/92	1.0		0.50		22.0	128.0	84.5	7.3	0.0	3.7	0.0	160.6	934.5
10/2/93	1.0		0.44		54.0	112.0	55.0	4.8	0.0	2.1	0.0	256.6	532.2
13/5/93	1.0		0.04		12.0	84.0	135.5	11.7	0.0	0.5	0.0	140.5	983.4
11/8/93	1.0				10.0	84.0	116.6	10.1	0.0	0.0	0.0	100.7	846.2
22/11/93	2.0	0.63		0.09	13.0	108.0	162.2	28.0	8.8	0.0	1.3	182.2	1513.5
24/2/94	2.0	0.54		0.11	14.0	76.0	149.6	25.9	7.0	0.0	1.5	181.0	982.3
16/5/94	1.0			0.11	25.0	114.0	342.9	29.6	0.0	0.0	3.3	740.7	3377.4
16/8/94	2.0	0.96			20.0	137.0	387.6	67.0	32.1	0.0	0.0	669.8	4587.9
20/11/94	2.0			0.07	14.0	73.0	-	#####	#####	#VALUE!	#####	#VALUE!	#VALUE!
23/2/95	1.0	0.93		0.12	11.0	101.0	87.7	7.6	7.0	0.0	0.9	83.4	765.3
17/8/95	3.0	0.63		0.17	19.0	88.0	292.3	75.8	15.9	0.0	4.4	479.8	2222.4
27/11/95	3.0	0.94			19.0	97.0	48.9	12.7	4.0	0.0	0.0	80.3	409.8
28/5/96	1.0	0.53		0.04	12.0	124.0	83.0	7.2	3.8	0.0	0.3	86.1	889.2
27/8/96		0.56		0.06	11.0	80.0	127.8	0.0	6.2	0.0	0.7	121.5	883.4
26/11/96	2.0	0.56		0.08	10.0	84.0	65.5	11.3	3.2	0.0	0.4	56.6	475.4
26/2/97	2.0	1.43		0.33	29.0	265.0	191.2	33.0	23.6	0.0	5.4	479.1	4377.7
19/5/97	2.0	0.50		0.05	13.0	157.0	14.7	2.5	0.6	0.0	0.1	16.5	199.4
25/8/97	1.0	0.88		0.07	12.0	94.0	400.8	34.6	30.5	0.0	2.6	415.5	3255.1
25/11/97	1.0	1.32		0.32	23.0	157.0	295.2	25.5	33.7	0.0	8.3	586.6	4004.3
14/2/98	1.0	0.65		0.09	10.0	120.0	407.5	35.2	22.9	0.0	3.1	352.1	4225.0
19/5/98	1.0	0.43		0.11	17.0	102.0	321.5	27.778	11.944	0	3.1389	472.219	2833.3
29/9/98	1.0	0.64		0.08	10.0	87.0	235.2	20.321	13.006	0	1.6826	203.213	1768.0

Source:FEPAM/CPRM

Table.1-4 Water Quality and Runoff Load of Rivers (Rio Taquari)

Rio Taquari(St.TA004)

Sampling Date	Concentration (mg/L)							Load (ton/day)					
	BOD	TN	NO ₃ -N	TP	COD	TSS	Discharge(m ³ /s)	BOD	TN	NO ₃ -N	TP	COD	TSS
22/9/93	2.0	<0.50		0.14	13.0	112.0	2322.0	401.2	100.3	0.0	27.7	2608.1	22469.5
22/12/93	2.0	<0.50		0.08	12.0	66.0	391.0	67.6	16.9	0.0	2.8	405.4	2229.6
23/4/94	13.0	<0.50		0.06	28.0	70.0	1860.0	2089.2	80.4	0.0	10.0	4499.7	11249.3
16/6/94		<0.50		0.05	8.0	59.0	434.0	0.0	18.7	0.0	2.0	300.0	2212.4
28/9/94	1.0	<0.50		0.07	9.0	175.0	221.0	19.1	9.5	0.0	1.4	171.8	3341.5
22/12/94	3.0	0.75		0.12	14.0	67.0	675.0	175.0	43.7	0.0	6.7	816.5	3907.4
28/3/95	1.0	0.71			11.0		121.8	10.5	7.5	0.0	0.0	115.8	0.0
29/6/95	1.0	0.71		0.13	15.0	142.0	673.6	58.2	41.3	0.0	7.7	873.0	8264.3
2/10/95	2.0	0.94			19.0	101.0	1082.3	187.0	87.9	0.0	0.0	1776.7	9444.6
26/3/96	1.0	0.54		0.06	16.0	84.0	199.0	17.2	9.3	0.0	1.0	275.1	1444.3
25/6/96	2.0	0.54		0.09	12.0	166.0	582.0	100.6	27.2	0.0	4.3	603.4	8347.3
25/9/96	2.0	0.50		0.05	7.0	73.0	390.0	67.4	16.8	0.0	1.6	235.9	2459.8
17/12/96	1.0	<0.50		0.01	13.0	68.0	374.0	32.3	16.2	0.0	0.2	420.1	2197.3
20/3/97	1.0	<0.50		0.04	12.0	75.0	149.0	12.9	6.4	0.0	0.5	154.5	965.5
26/6/97	1.0	0.56		0.13	16.0	114.0	1170.0	101.1	56.6	0.0	13.4	1617.4	11524.0
24/9/97	1.0	0.61		0.06	12.0	71.0	223.0	19.3	11.8	0.0	1.1	231.2	1368.0
17/12/97	1.0	<0.50		0.03	7.0	69.0	260.0	22.5	11.2	0.0	0.7	157.2	1550.0
24/3/98	1.0	0.40		0.05	11.0	63.0	526.0	45.4	18.2	0.0	2.1	499.9	2863.1
24/6/98	1.0			0.07	9.0	84.0	1441.0	124.5	0.0	0.0	8.2	1120.5	10458.2

*:Calculated Value by Tank Model

Source:FEPAM/CPRM

Table.1-5 Water Quality and Runoff Load of Rivers (Rio Jacui)

Rio Jacui (St.Charqueadas)

Sampling Date	Concentration (mg/L)							Load(t/day)					
	BOD	TN	NO ₃ -N	TP	COD	TSS	Discharge(m ³ /s)	BOD	TN	NO ₃ -N	TP	COD	TSS
23/1/92	1.0	1.42	1.4	0.26	9.0	97.6	*50.2	4.3	6.2	6.1	1.1	39.0	423.3
11/2/92	1.9	1.72	1.7	0.29	14.9	101.2	*456.8	75.0	67.9	67.1	11.4	588.1	3994.1
26/3/92	4.6	2.02	1.9	0.27	7.7	103.1	*277.0	110.1	48.3	45.5	6.5	184.3	2467.5
11/8/92	0.8	1.41	1.4	0.17	12.4	101.2	*275.4	19.0	33.6	33.3	4.0	295.1	2408.0
11/11/92	2.7	2.33	2.0	0.32	12.2	113.8	*213.3	49.8	42.9	36.9	5.9	224.8	2097.2
10/12/92	1.7	1.81	1.7	0.23	9.3	114.6	*188.9	27.7	29.5	27.7	3.8	151.8	1870.4
6/1/93	2.0	2.12	2.0	0.29	14.0	123.4	*2838.9	490.6	520.0	490.6	71.1	3433.9	30267.7
18/1/93	2.2	1.91	1.8	0.23	13.8	96.5	*2053.6	390.3	338.9	319.4	40.8	2448.5	17122.1
25/3/93	1.2	1.73	1.5	0.04	10.6	80.7	*224.3	23.3	33.5	29.1	0.8	205.4	1563.9
15/4/93	1.0	1.02	0.8	0.15	10.5	93.6	*223.3	19.3	19.7	15.4	2.9	202.6	1805.8
27/5/93	1.1	1.85	1.5	0.16	13.5	103.8	*478.0	45.4	76.4	61.9	6.6	557.5	4286.9
23/6/93	1.1	0.92	0.8	0.22	12.5	104.7	*254.3	24.2	20.2	17.6	4.8	274.6	2300.4
22/7/93	0.7	1.13	1.0	0.15	9.1	102.7	*267.1	16.2	26.1	23.1	3.5	210.0	2370.1
19/8/93	0.9	2.13	1.9	0.12	5.8	80.5	*268.8	20.9	49.5	44.1	2.8	134.7	1869.6
18/10/93	0.9	1.32	1.2	0.15	9.0	108.5	*524.7	40.8	59.8	54.4	6.8	408.0	4918.7
23/11/93	1.5	1.82	1.7	0.25	16.5	151.0	*912.3	118.2	143.5	134.0	19.7	1300.6	11902.2
14/12/93	1.2	1.32	1.2	0.30	15.5	136.4	*1285.1	133.2	146.6	133.2	33.3	1721.0	15144.9
10/3/94	3.8	8.34	5.6	0.65	14.5	116.9	*336.4	110.4	242.4	162.8	18.9	421.4	3397.7
18/4/94	1.3	1.30	1.0	0.21	10.6	110.2	*338.7	38.0	38.0	29.3	6.1	310.2	3224.9
12/5/94	2.2	1.61	1.5	0.26	11.5	125.1	*1019.4	193.8	141.8	132.1	22.9	1012.9	11018.3
13/7/94	1.3	1.72	1.6	0.24	8.3	109.4	*1078.4	121.1	160.3	149.1	22.4	773.3	10193.2
24/10/94	0.9	1.31	1.3	0.54	16.5	138.7	*2868.2	223.0	324.6	322.2	133.8	4088.9	34371.6
8/12/94	0.8	2.21	2.1	0.26	5.3	124.3	*1217.9	84.2	232.6	221.0	27.4	557.7	13079.7
5/4/95	0.3	1.63	1.5	0.21	9.0	81.0	*769.9	20.0	108.4	99.8	14.0	598.7	5388.1
14/9/95	2.2	2.04	1.7	0.12	19.0	163.0	*2714.7	516.0	478.5	398.7	28.1	4456.5	38231.7
12/12/95	0.3	2.11	2.0	0.09	7.0	128.0	*517.8	13.4	94.4	89.5	4.0	313.2	5726.5
26/3/96	1.3	1.21	1.1	0.13	14.0	107.0	*95.6	10.7	10.0	9.1	1.1	115.6	883.8
17/6/96	0.8	0.40	0.4	0.04	10.0	58.0	*403.8	27.9	14.0	14.0	1.4	348.9	2023.5
11/9/96	2.3	0.51	0.3	0.11	13.0	150.0	*494.8	98.3	21.8	12.8	4.7	555.8	6412.6

*Calculated Value by Tank Model(Basin Area:45251km2)

Source: CORSAN/CPRM

Table.1-6 Water Quality and Runoff Load of Rivers (Rio Camaqua)

Rio Camaqua (St. R-2:Passo do Mendonca)

Sampling Date	Concentration (mg/L)							Load(t/day)					
	BOD	TN	NO ₃ -N	TP	COD	SS	Discharge(m ³ /s)	BOD	TN	NO ₃ -N	TP	COD	SS
10/10/94	1.0			<0.10	28.5	43.6	116.0	10.0		0.0	1.0	285.6	436.98
4/6/95	1.0	0.30		<0.07	10.7	9.5	49.1	4.2	1.3	0.0	0.3	45.4	40.301
24/7/95	1.0	<0.42		0.36	29.7	36.8	1024.0	88.5	37.2	0.0	31.9	2627.7	3255.8
23/9/95	1.0	<0.21		0.54	15.4	108.3	298.0	25.7	5.4	0.0	13.9	396.5	2788.4
4/12/95	1.2	<0.10		0.35	28.9	7.2	56.6	5.9	0.5	0.0	1.7	141.3	35.21
18/3/96	1.2			0.23	3.8	15.8	76.0	7.9		0.0	1.5	25.0	103.75
7/9/96	0.3			0.18		28.7	249.0	6.5		0.0	3.9	0.0	617.44
3/10/98	2.2			0.18	7.0	7.5	335.0	63.7		0.0	5.2	202.6	217.08
18/12/98	2.2			0.20	14.7	32.3	102.0	19.4		0.0	1.8	129.5	284.65
15/1/99	0.8			0.13	9.5	21.3	46.1	3.2		0.0	0.5	37.8	84.839
10/2/99	0.8	0.62	0.2	0.05	17.0	25.3	57.8	4.0	3.1	1.0	0.2	84.9	126.35
2/3/99	0.7		0.1	0.07	14.0	23.4	54.2	3.3		0.5	0.3	65.6	109.58
12/4/99	2.2	0.54	0.2	0.07	21.0	34.3	177.0	33.6	8.3	3.1	1.1	321.1	524.54
19/5/99	7.9	0.20	0.1	0.95	12.0	19.0	60.0	41.0	1.0	0.5	4.9	62.2	98.496
30/6/99	1.7	0.86	0.3	0.25	31.0	197.0	392.0	57.6	29.1	10.2	8.5	1049.9	6672.2
19/7/99	0.8	0.42		0.11	16.0	22.4	643.0	44.4	23.3	0.0	6.1	888.9	1244.4
24/8/99								0.0	0.0	0.0	0.0	0.0	0
								0.0	0.0	0.0	0.0	0.0	0
								0.0	0.0	0.0	0.0	0.0	0
							233.5	26.2	12.1	1.0	5.2	397.8	1040.0

Source:JICA/CPRM/UNISINOS

Table.1-7 Water Quality and Runoff Load of Rivers (Canal de Sao Goncalo)

Sao Goncalo Canal(St.R-3:Barrage)

Sampling Date	Concentration (mg/L)						Load(ton/day)						
	BOD	TN	NO ₃ -N	TP	COD	SS	Discharge (m ³ /s)	BOD	TN	NO ₃ -N	TP	COD	SS
10/2/99	1.0	0.56	0.1	0.07	24.0	72.5	820.0	70.8	39.7	7.1	5.0	1700.4	5136.5
2/3/99	1.0	0.53	0.1	0.10	20.0	41.0	742.8	64.2	34.0	6.4	6.4	1283.6	2631.3
11/4/99	2.2	0.31	0.1	0.09	24.0	90.5	600.5	114.1	16.1	5.2	4.7	1245.2	4695.4
19/5/99	1.4	0.17	0.1	0.16	23.0	122.0	563.1	68.1	8.3	4.9	7.8	1119.0	5935.5
30/6/99	1.3	0.76	0.3	0.05	31.0	162.0	1213.3	136.3	79.7	31.4	5.2	3249.7	16982.3
19/7/99	1.2	0.81	0.2	0.20	28.0	116.0	1075.4	111.5	75.3	14.9	18.6	2601.6	10778.1
24/8/99	1.1	0.96	0.2	0.04	31.0	96.0	973.9	92.6	80.8	13.5	3.3	2608.5	8077.9
29/9/99	2.4	0.70	0.1	0.12	27.0	82.0	519.7	107.8	31.4	4.0	5.4	1212.4	3682.0
10/11/99	0.8	0.83	0.4	0.28	25.0	116.0	439.8	30.4	31.5	15.4	10.6	950.0	4407.9
14/12/99	1.1	1.43	0.8	0.09	21.0	99.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17/1/00	1.1			0.12	23.0	78.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
								0.0	0.0	0.0	0.0	0.0	0.0
								0.0	0.0	0.0	0.0	0.0	0.0
								0.0	0.0	0.0	0.0	0.0	0.0
								0.0	0.0	0.0	0.0	0.0	0.0
								0.0	0.0	0.0	0.0	0.0	0.0
								0.0	0.0	0.0	0.0	0.0	0.0
								0.0	0.0	0.0	0.0	0.0	0.0
								0.0	0.0	0.0	0.0	0.0	0.0
								0.0	0.0	0.0	0.0	0.0	0.0
								0.0	0.0	0.0	0.0	0.0	0.0
								0.0	0.0	0.0	0.0	0.0	0.0
								0.0	0.0	0.0	0.0	0.0	0.0
								0.0	0.0	0.0	0.0	0.0	0.0
								0.0	0.0	0.0	0.0	0.0	0.0
								0.0	0.0	0.0	0.0	0.0	0.0
								0.0	0.0	0.0	0.0	0.0	0.0
								0.0	0.0	0.0	0.0	0.0	0.0
								0.0	0.0	0.0	0.0	0.0	0.0
Average							631.7	94.2	42.2	11.6	7.9	1866.6	7693.2

Source: JICA

(Continued)

Date	Discharge (m ³ /s)	BOD (mg/ℓ)	TN (mg/ℓ)	TP (mg/ℓ)	COD (Cr) (mg/ℓ)	TSS (mg/ℓ)	SS (mg/ℓ)	Cl ⁻ (mg/ℓ)	DO (mg/ℓ)	Fecal Coliform (MPN/100mℓ)
1997/1/6		AP	1.03	0.29	AP	47.00		97.00	6.71	
1997/1/13		AP	0.70	0.26	AP	51.50		36.13	7.32	
1997/1/20		AP	0.84	0.50	AP	59.00		20.84	6.10	
1997/1/29		3.05	0.56	AP	27.7	1261.50		1475.10	7.93	
Average	#DIV/0!	3.05	0.78	0.35	27.75	354.75	#DIV/0!	407.27	7.02	#DIV/0!
1997/2/3		2.44	0.00	0.21	26.0			1028.00	6.92	
1997/2/17		2.24	0.98	AP	25.4	AP		10.46	4.48	
1997/2/24		0.79	1.26	0.18	21.2	1173.00		2071.38	5.15	
Average	#DIV/0!	1.82	0.75	0.20	24.19	1173.00	#DIV/0!	1036.61	5.52	#DIV/0!
1997/3/3		0.79	0.70	0.18	21.2	1378.50		56.02	5.54	
1997/3/11		4.76	1.26	0.26	32.7	827.50		400.25	7.33	
1997/3/17		0.40	1.12	0.06	20.1			5539.45	5.35	
1997/3/31		1.98	0.70	0.04	24.6	873.00		5031.17	5.74	
Average	#DIV/0!	1.98	0.95	0.14	24.65	1026.33	#DIV/0!	2756.72	5.99	#DIV/0!
1997/4/7		2.38	0.98	0.00	25.8	< 526.00		1885.76	8.02	
1997/4/15		4.52	1.26	ND	32.0	696.00		3056.62	10.20	
1997/4/28		0.50	0.56	ND	20.4	550.00		3301.61	7.88	
Average	#DIV/0!	2.47	0.93	0.00	26.05	590.67	#DIV/0!	2748.00	8.70	#DIV/0!
1997/5/12		3.00	AP	AP	27.6	1694.00		4071.60	8.58	
1997/5/20		2.69	AP	0.19	26.7	77.00		1080.87	7.86	
1997/5/26		1.69	AP	0.12	23.8	130.00		1739.33	7.76	
Average	#DIV/0!	2.46	#DIV/0!	0.16	26.03	633.67	#DIV/0!	2297.27	8.07	#DIV/0!
1997/6/2		2.49	AP	0.04	26.1	460.00		4787.91	8.66	2.20
1997/6/17		2.19	AP	0.20	25.3	AP		14.78	8.76	
1997/6/23		1.79	AP	0.18	24.1	AP		9.51	8.16	
1997/6/30		1.99	1.18	0.13	24.7	76.00		14.26	9.15	
Average	#DIV/0!	2.12	1.18	0.14	25.03	268.00	#DIV/0!	1206.62	8.68	2.20
1997/7/14		2.38	1.25	0.24	25.8	79.00		14.44	8.91	> 16.00
1997/7/22		1.09	1.12	0.15	22.1	55.00		13.03	8.81	
1997/7/28		1.39	0.84	0.15	22.9	AP		15.14	9.11	
Average	#DIV/0!	1.62	1.07	0.18	23.60	67.00	#DIV/0!	14.20	8.94	16.00
1997/8/4		2.37	0.98	0.15	25.8	67.00		14.09	8.71	160.00
1997/8/13		1.19	AP	0.16	22.4	61.00		14.85	9.50	
1997/8/18		1.98	0.84	0.16	24.6	16.00		15.20	7.92	
1997/8/26		0.99	ND	0.13	21.8	55.00		14.85	8.71	
Average	#DIV/0!	1.63	0.91	0.15	23.63	49.75	#DIV/0!	14.75	8.71	160.00
1997/9/1		1.59	ND	0.17	23.5	86.00		16.26	8.32	92.00
1997/9/10		2.38	1.12	0.22	25.8	112.00		12.02	8.32	
1997/9/15		1.38	1.12	0.07	22.9	75.00		13.08	8.51	
1997/9/24		1.78	1.26	0.14	24.1	58.00		14.14	8.51	
Average	#DIV/0!	1.78	1.17	0.15	24.07	82.75	#DIV/0!	13.88	8.42	92.00
1997/10/6		2.18	1.12	0.22	25.2	144.00		16.87	8.32	160.00
1997/10/13		1.49	1.12	0.17	23.2	95.00		15.46	8.02	
1997/10/22		1.98	0.99	0.16	24.6	42.00		12.65	7.92	
Average	#DIV/0!	1.88	1.08	0.18	24.36	93.67	#DIV/0!	14.99	8.09	160.00
1997/11/3		1.19	1.12	0.18	22.4	82.00		14.41	7.72	160.00
1997/11/10		1.60	0.98	0.18	23.5	75.00		11.95	7.82	
1997/11/17		1.71	0.91	0.19	23.9	45.00		12.65	6.63	
Average	#DIV/0!	1.50	1.00	0.18	23.25	67.33	#DIV/0!	13.00	7.39	160.00
1997/12/1		1.91	0.83	0.18	24.4	37.00		15.58	6.23	
1997/12/8		2.41	0.83	0.13	25.9	55.00		16.47	7.33	
Average	#DIV/0!	2.16	0.83	0.16	25.16	46.00	#DIV/0!	16.03	6.78	#DIV/0!
1998/1/12		1.11	0.83	0.17	22.1	61.00		11.68	5.73	51.00
1998/1/19		0.60	0.70	0.19	20.6	42.00		14.76	6.33	
1998/1/26		1.19	0.83	0.17	22.4	28.00		15.64	5.97	
Average	#DIV/0!	0.97	0.79	0.18	21.70	43.67	#DIV/0!	14.03	6.01	51.00
1998/2/3		1.69	0.90	0.18	23.8	160.00		11.95	5.87	160.00
1998/2/11		1.39	0.97	0.16	22.9	64.00		8.08	5.77	
1998/2/16		1.00	AP	0.15	21.8	29.00		12.30	6.17	
Average	#DIV/0!	1.36	0.94	0.16	22.84	84.33	#DIV/0!	10.78	5.94	160.00
1998/3/2		0.90	1.11	0.13	21.5	6.00		12.13	6.47	22.00
1998/3/16		0.99	0.97	0.14	21.8	19.00		10.30	6.76	
1998/3/23		1.99	1.11	0.13	24.7	28.00		10.12	6.17	
Average	#DIV/0!	1.29	1.06	0.13	22.65	17.67	#DIV/0!	10.85	6.47	22.00
1998/4/6		1.60	0.56	0.16	23.5	38.00		12.68	7.60	< 2.20
1998/4/15		1.40	0.56	0.17	23.0	72.00		9.29	6.80	
1998/4/27		1.70	0.56	0.19	23.8	64.00		10.72	7.20	
Average	#DIV/0!	1.57	0.56	0.17	23.44	58.00	#DIV/0!	10.90	7.20	2.20

Source: Agencia da Lagoa Mirim

(Continued)

Average	#DIV/0!	1.57	0.56	0.17	23.4	58.00	#DIV/0!	10.90	7.20	2.20
1998/6/1		0.80	0.99	0.12	21.2	61.00		9.90	7.20	22.00
1998/6/15		0.80	0.71	0.14	21.2	72.00		7.07	6.17	
Average	#DIV/0!	0.80	0.85	0.13	21.22	66.50	#DIV/0!	8.49	6.69	22.00
1998/7/6		1.19	1.13	0.14	22.4	51.00		10.96	7.36	> 16.00
1998/7/13		0.60	0.71	0.11	20.6	41.00		11.31	7.36	
1998/7/20		0.20	0.92	0.14	19.5	AP		10.96	6.17	
Average	#DIV/0!	0.66	0.92	0.13	20.82	46.00	#DIV/0!	11.08	6.96	16.00
1998/8/5		1.00	0.63	0.12	21.8	45.00		9.20	6.78	51.00
1998/8/12		1.10	0.71	0.14	22.1	14.00		8.13	6.68	
1998/8/17		1.00	0.71	0.12	21.8	26.00		7.43	6.48	
1998/8/31		1.79	0.71	0.17	24.1	44.00		4.60	6.28	
Average	#DIV/0!	1.22	0.69	0.14	22.45	32.25	#DIV/0!	7.34	6.56	51.00
1998/9/14		0.80	0.42	0.16	21.2	23.00		7.43	6.58	92.00
1998/9/21		0.62	0.85	0.16	20.7	10.00		6.72	6.58	
1998/9/30		0.40	0.71	0.16	20.1	28.00		7.98	6.95	
Average	#DIV/0!	0.61	0.66	0.16	20.66	20.33	#DIV/0!	7.38	6.70	92.00
1998/10/26		1.19	0.85	0.16	22.4	39.00		8.12	7.34	
Average	#DIV/0!	1.19	0.85	0.16	22.35	39.00	#DIV/0!	8.12	7.34	#DIV/0!
1998/11/3		1.70	0.99	0.16	23.8	62.00		8.48	7.74	22.00
1998/11/16		0.59	0.92	0.15	20.6	36.00		9.01	7.25	
1998/11/23		-	0.99	0.17		49.00		10.24	7.65	
1998/11/30		-	0.99	0.21		56.00		9.54	7.15	
Average	#DIV/0!	1.15	0.97	0.17	22.22	50.75	#DIV/0!	9.32	7.45	22.00
1998/12/7		-	0.99	0.22		59.00		10.19	6.95	22.00
1998/12/14		-	1.21	0.21		104.00		10.19	7.55	
1998/12/21		-	0.99	0.22		85.00		9.49	6.75	
Average	#DIV/0!	#DIV/0!	1.06	0.22	#DIV/0!	82.67	#DIV/0!	9.96	7.08	22.00
1999/1/11		0.29	0.99	0.24	19.7	76.00		11.60	6.95	
1999/1/18		2.41	1.14	0.25	25.9	50.00		11.42	7.11	
1999/1/25		0.70	0.85	0.22	20.9	63.00		15.11	6.41	
Average	#DIV/0!	1.13	0.99	0.24	22.19	63.00	#DIV/0!	12.71	6.82	#DIV/0!
1999/2/8		AP	1.28	0.25		AP		12.30	AP	160.00
1999/2/22		1.00	2.98	0.22	21.8	33.00		11.95	7.01	
Average	#DIV/0!	1.00	2.13	0.24	21.80	33.00	#DIV/0!	12.13	7.01	160.00
1999/3/1		0.40	1.48	0.25	20.1	67.00		13.36	6.51	160.00
1999/3/8		0.20	0.92	0.25	19.5	48.00		11.60	6.81	
1999/3/15		0.60	1.41	0.20	12.3	544.00		2338.70	6.91	
1999/3/22		0.20	1.97	0.21	19.5	52.00		12.48	6.77	
Average	#DIV/0!	0.35	1.45	0.23	17.83	177.75	#DIV/0!	594.04	6.75	160.00
1999/4/5		0.80	1.97	0.21	21.2	44.00		12.05	7.57	51.00
1999/4/12		0.40	1.34	0.18	20.1	66.00		10.63	7.57	
1999/4/19		0.89	2.04	0.31	21.5	163.00		11.69	8.96	
1999/4/26		AP	0.85	0.21		73.00		11.34	7.97	
Average	#DIV/0!	0.70	1.55	0.23	20.92	86.50	#DIV/0!	11.43	8.02	51.00
1999/5/3		0.40	1.34	0.26	20.1	78.00		10.98	8.30	160.00
1999/5/24		0.80	1.97	0.23	21.2	69.00		15.05	9.40	
Average	#DIV/0!	0.60	1.66	0.25	20.64	73.50	#DIV/0!	13.02	8.85	160.00
1999/6/7		1.00	1.34	0.25	21.8	73.00		16.11	9.80	> 16.00
1999/6/14		1.20	1.62	0.22	22.4	87.00		13.63	9.90	
1999/6/21		0.50	0.99	0.18	20.4	45.00		19.30	9.40	
Average	#DIV/0!	0.90	1.32	0.22	21.51	68.33	#DIV/0!	16.35	9.70	16.00
1999/7/5		1.39	1.13	0.22	22.9	116.00		12.72	9.38	51.00
1999/7/26		0.60	1.13	0.17	20.6	78.00		12.90	9.78	
Average	#DIV/0!	1.00	1.13	0.20	21.79	97.00	#DIV/0!	12.81	9.58	51.00
1999/8/16		1.10	1.12	0.22	22.1	171.00		15.55	10.58	22.00
1999/8/30		AP	0.91	0.20		83.00		13.96	8.69	
Average	#DIV/0!	1.10	1.02	0.21	22.09	127.00	#DIV/0!	14.76	9.64	22.00
1999/9/13		0.78	0.63	0.28	21.2	46.00		10.07	8.10	> 16.00
Average	#DIV/0!	0.78	0.63	0.28	21.16	46.00	#DIV/0!	10.07	8.10	16.00
1999/10/4		1.84	1.47	0.20	24.2	165.00		11.17	10.29	160.00
1999/10/25		1.10	1.19	0.17	22.1	51.00		12.76	8.37	
Average	#DIV/0!	1.47	1.33	0.19	23.16	108.00	#DIV/0!	11.97	9.33	160.00
1999/11/3		1.40	1.19	0.18	23.0	84.00		12.06	8.47	160.00
1999/11/22		1.50	1.75	0.19	23.3	76.00		14.18	8.07	
Average	#DIV/0!	1.45	1.47	0.19	23.11	80.00	#DIV/0!	13.12	8.27	160.00
1999/12/6		1.69	1.75	0.27	23.8	103.00		16.31	7.47	160.00
1999/12/13		1.09	1.47	0.18	22.1	56.00		43.82	7.57	
1999/12/20		0.88	1.75	0.29	21.5	107.00		16.07	7.26	
Average	#DIV/0!	1.22	1.66	0.25	22.44	88.67	#DIV/0!	25.40	7.43	160.00

Table.1-8 Water Quality and Runoff Load of Rivers (Arrolo Diluvio)

Arroio Diluvio (St.87450100,Ipiranga)

Sampling Date	Concentration (mg/L)							Load(ton/day)					
	BOD	TN	NO ₃ -N	TP	COD	SS	Discharge(m ³ /s)	BOD	TN	NO ₃ -N	TP	COD	SS
4/1/96	170.0	18.64	0.20	14.15	310.0	86	0.61	9.0	1.0	0.01	0.7	16.3	4.5
29/4/96	38.0	24.53	0.17	6.54	55.4	32	0.68	2.2	1.4	0.01	0.4	3.3	1.9
25/7/96	10.0	9.72	0.69	1.59	57.0	15	0.71	0.6	0.6	0.04	0.1	3.5	0.9
15/10/96	20.0	6.10	3.14	1.3	34.0	59	7.71	13.3	4.1	2.09	0.9	22.6	39.3
26/12/96		13.56	0.15	4.96	62.0	34	0.86		1.0	0.01	0.4	4.6	2.5
28/1/97	18.0	13.92	0.08	4.45	226.6	38	0.86	1.3	1.0	0.01	0.3	16.8	2.8
2/4/97	82.0	22.13	0.07	2.97	141.0	55	0.90	6.4	1.7	0.01	0.2	11.0	4.3
28/7/97	10.0	7.87	0.44	3.22	44.0	10	0.96	0.8	0.7	0.04	0.3	3.6	0.8
16/10/97	12.0	3.52	0.34	1.93	63.0	28	5.59	5.8	1.7	0.16	0.9	30.4	13.5
13/1/98	16.0	3.96	0.11	1.98	103.7	22	1.26	1.7	0.4	0.01	0.2	11.3	2.4
16/4/98	11.5	8.03	1.02	3.36	42.7	23	1.99	2.0	1.4	0.18	0.6	7.3	4.0
28/7/98	6.0	6.50	2.31	2.21	30.7	26	1.57	0.8	0.9	0.31	0.3	4.2	3.5
20/10/98	48.0	13.13	0.07	7.87	96.5	65	1.32	5.5	1.5	0.01	0.9	11.0	7.4
								0.0	0.0	0.00	0.0	0.0	0.0
								0.0	0.0	0.00	0.0	0.0	0.0
								0.0	0.0	0.00	0.0	0.0	0.0
								0.0	0.0	0.00	0.0	0.0	0.0
								0.0	0.0	0.00	0.0	0.0	0.0
								0.0	0.0	0.00	0.0	0.0	0.0
								0.0	0.0	0.00	0.0	0.0	0.0

Source: JICA/CPRM/UNISINOS

Table.1-9 Water Quality and Runoff Load of Rivers (Arroio Salso)

Arroio Salso (St.Ponte da Guabiroba)

Sampling Date	Concentration (mg/L)							Load(ton/day)					
	BOD	TN	NO ₃ -N	TP	COD	SS	Discharge (m ³ /s)	BOD	TN	NO ₃ -N	TP	COD	SS
22/1/96	7.0	4.82	<0.04	2.31	22.4	36	0.26	0.2	0.1	0.0	0.1	0.5	0.81
13/2/96	3.0	1.03	0.11	0.63	25.0	34	0.21	0.1	0.0	0.0	0.0	0.5	0.62
18/3/96	14.4	0.71	0.10	4.6	41.2	31	0.21	0.3	0.0	0.0	0.1	0.7	0.56
8/4/96	9.3	12.01	0.09	0.72	46.0	32	0.22	0.2	0.2	0.0	0.0	0.9	0.61
13/5/96	16.0	13.33	0.06	9.51	61.0	31	0.22	0.3	0.3	0.0	0.2	1.2	0.59
10/6/96	17.4	8.10	<0.04	8.08	44.0	27	0.22	0.3	0.2	0.0	0.2	0.8	0.51
15/7/96	11.0	9.47	0.08	3.63	48.0	30	0.24	0.2	0.2	0.0	0.1	1.0	0.62
12/8/96	16.0	7.91	0.14	3.48	55.0	28	0.25	0.3	0.2	0.0	0.1	1.2	0.60
10/9/96	5.6	2.43	0.36	1.06	39.0	30	0.26	0.1	0.1	0.0	0.0	0.9	0.67
16/10/96	2.4	1.28	0.79	0.89	31.0	26	0.43	0.1	0.0	0.0	0.0	1.2	0.97
25/11/96	10.0	10.76	0.10	4.84	47.0	30	0.29	0.3	0.3	0.0	0.1	1.2	0.75
23/12/96	9.0	9.47	0.10	4.08	44.0	26	0.29	0.2	0.2	0.0	0.1	1.1	0.65
16/1/97	21.3	17.27	0.13	16.28	67.0	25	0.29	0.5	0.4	0.0	0.4	1.7	0.63
25/2/97	17.0	11.29	0.15	3.16	67.0	29	2.57	3.8	2.5	0.0	0.7	14.9	6.44
31/3/97	28.0	16.86	0.14	10.21	68.0	28	0.31	0.7	0.5	0.0	0.3	1.8	0.75
23/4/97	21.0	11.22	0.30	6.8	70.0	26	0.33	0.6	0.3	0.0	0.2	2.0	0.74
26/5/97	16.4	24.92	0.10	8.56	54.0	29	0.31	0.4	0.7	0.0	0.2	1.4	0.78
24/6/97	4.6	2.61	0.60	0.99	37.0	29	0.48	0.2	0.1	0.0	0.0	1.5	1.20
22/7/97	2.3	3.20	1.85	0.71	59.0	38	0.45	0.1	0.1	0.1	0.0	2.3	1.48
26/8/97	6.9	2.09	0.77	0.89	37.0	33	0.42	0.3	0.1	0.0	0.0	1.3	1.20
16/9/97	7.9	1.90	0.64	1.3	42.0	31	0.38	0.3	0.1	0.0	0.0	1.4	1.02
21/10/97	4.4	3.31	0.42	1.56	35.6	32	0.38	0.1	0.1	0.0	0.1	1.2	1.05
17/11/97	3.0	1.98	0.57	1.15	28.7	34	0.39	0.1	0.1	0.0	0.0	1.0	1.15
17/12/97	16.0	7.72	1.20	2.65	30.0	31	0.39	0.5	0.3	0.0	0.1	1.0	1.04
20/1/98	4.8	4.02	<0.04	2.01	37.6	32	0.41	0.2	0.1	0.0	0.1	1.3	1.13
9/2/98	3.0	2.05	0.81	1	34.0	31	0.47	0.1	0.1	0.0	0.0	1.4	1.26
17/3/98	3.2	3.53	1.84	1.29	40.4	36	0.45	0.1	0.1	0.1	0.1	1.6	1.40
14/4/98	4.6	3.10	0.76	1.32	47.4	31	0.62	0.2	0.2	0.0	0.1	2.5	1.66
18/5/98	2.4	-	ND	0.83	25.4	30	0.74	0.2	#VALUE!	#VALUE!	0.1	1.6	1.92
6/7/98	4.8	1.47	0.08	1.38	28.7	30	0.46	0.2	0.1	0.0	0.1	1.1	1.19
27/7/98	2.7	3.16	2.10	1.18	31.0	32	0.5	0.1	0.1	0.1	0.1	1.3	1.38
24/8/98	15.6	5.35	1.67	1.73	31.2	32	0.48	0.6	0.2	0.1	0.1	1.3	1.33
22/9/98	3.4	4.52	2.95	0.99	28.9	33	0.51	0.1	0.2	0.1	0.0	1.3	1.45
14/10/98	18.0	3.58	0.18	2.04	37.9	30	0.5	0.8	0.2	0.0	0.1	1.6	1.30
23/11/98	22.0	9.90	0.44	6.6	40.0	30	0.5	1.0	0.4	0.0	0.3	1.7	1.30

0.44

Source:JICA/CPRM/UNISINOS

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Table-2 Runoff Load of Inflowing Rivers

Table.2-1 Discharge (1996-97)

Table 2-2 BOD Load (1996-97)

Table.2-3 TN Load (1996-97)

Table.2-4 TP Load (1996-97)

Runoff Load of Inflowing Rivers

Table2.1 Discharge

Discharge (m ³ /s)									
Month	Jacui	Taquari	Cai	Sinos	Gravatai	Camaqua	Sao Goncalo	G80	Litoral
Jan-96	1486.8	1609.4	166.2	80.2	13.0	828.6	118.4	10.7	17.5
Feb-96	1293.0	1394.3	285.5	153.7	23.3	462.7	141.6	7.8	16.2
Mar-96	247.9	380.1	115.0	62.8	14.1	155.2	269.0	9.4	22.0
Apr-96	1166.5	807.7	126.0	74.9	16.8	509.3	1989.2	7.8	14.5
May-96	117.4	139.0	42.6	22.1	5.7	95.9	225.7	6.2	16.8
Jun-96	498.2	753.1	100.7	68.3	12.1	215.3	207.9	19.2	50.5
Jul-96	263.9	693.3	108.5	88.9	13.5	105.1	206.1	22.9	82.3
Aug-96	390.4	573.4	89.6	68.3	17.2	219.0	203.9	13.5	29.6
Sep-96	455.4	798.3	122.4	122.3	24.0	171.0	299.5	19.3	50.3
Oct-96	651.7	858.7	162.9	146.7	30.3	254.4	224.2	14.2	25.5
Nov-96	312.6	579.9	105.6	110.4	23.1	130.3	156.4	9.6	19.1
Dec-96	308.1	339.5	74.4	63.8	18.5	107.4	159.9	18.4	52.7
Jan-97	297.0	245.3	68.0	51.5	15.6	104.4	156.6	13.6	36.9
Feb-97	1172.3	1128.4	163.9	149.2	27.6	1191.9	1658.3	11.9	19.4
Mar-97	530.0	352.7	80.8	93.5	17.2	104.4	232.0	9.5	23.8
Apr-97	303.9	299.7	45.2	32.7	8.6	104.7	171.4	9.0	20.7
May-97	659.9	286.7	51.6	32.5	8.9	502.9	253.3	5.8	6.8
Jun-97	1071.6	725.1	93.7	92.2	20.5	459.1	774.9	19.1	46.2
Jul-97	696.0	540.1	104.9	122.0	22.3	281.9	249.7	7.9	9.7
Aug-97	904.4	1905.9	253.8	185.9	32.2	237.9	573.8	16.6	34.5
Sep-97	335.5	226.6	104.9	90.2	21.8	241.0	1021.8	14.9	43.6
Oct-97	2482.9	1940.9	241.8	260.3	34.2	1082.9	892.1	23.5	51.5
Nov-97	2012.2	1753.4	220.4	221.8	30.1	933.1	1468.5	12.9	26.0
Dec-97	1529.2	644.6	123.7	107.4	24.2	1044.3	1296.4	16.9	30.9
Average:	799.5	790.7	127.2	104.2	19.8	397.6	539.6	13.4	31.1

2823.0

Table2.2 BOD Load

BOD Load (ton/day)									
Month	Jacui	Taquari	Cai	Sinos	Gravatai	Camaqua	Sao Goncalo	G80	Litoral
Jan-96	140.0	243.9	19.5	31.1	8.7	73.5	24.7	14.9	26.4
Feb-96	123.5	197.0	32.4	62.2	12.6	42.9	29.0	11.5	25.9
Mar-96	24.9	41.7	14.3	21.8	9.8	15.8	51.0	14.2	35.5
Apr-96	111.7	102.4	15.6	26.6	10.7	47.4	298.1	10.6	19.8
May-96	12.3	12.2	5.9	6.2	6.2	10.4	43.7	9.4	26.2
Jun-96	49.0	99.8	12.6	25.1	8.9	21.6	40.6	34.1	103.5
Jul-96	26.7	85.0	13.5	33.6	9.5	11.2	40.3	47.9	180.5
Aug-96	38.9	70.2	11.5	24.2	10.6	22.0	39.9	20.3	49.3
Sep-96	45.1	103.4	15.2	47.6	12.8	17.4	56.1	33.0	97.7
Oct-96	63.8	108.6	19.6	59.1	14.4	25.1	43.4	20.9	43.7
Nov-96	31.5	68.9	13.4	41.9	12.6	13.6	31.6	13.8	29.5
Dec-96	31.1	35.8	9.8	21.9	11.2	11.5	32.2	36.8	120.7
Jan-97	30.0	24.8	9.0	16.9	10.3	11.2	41.3	21.7	64.1
Feb-97	112.8	152.0	19.8	59.5	13.8	104.3	261.2	16.6	29.3
Mar-97	52.0	38.5	10.4	34.9	10.8	11.2	39.7	16.0	44.7
Apr-97	30.6	31.2	6.3	9.9	7.7	11.2	36.5	13.6	33.3
May-97	64.1	29.7	7.0	9.8	7.8	45.3	53.8	7.4	6.9
Jun-97	103.0	90.1	11.9	35.6	11.5	42.9	141.6	32.3	90.9
Jul-97	68.2	64.0	13.2	47.1	12.4	27.1	34.9	10.2	11.5
Aug-97	87.7	297.5	29.1	77.6	14.9	23.6	80.9	25.7	61.5
Sep-97	33.8	21.9	13.3	33.0	12.3	23.8	157.4	25.1	79.3
Oct-97	232.9	286.9	27.8	117.3	15.3	96.1	145.2	40.1	107.6
Nov-97	190.6	256.5	25.7	96.0	14.4	83.9	223.8	19.5	44.1
Dec-97	144.6	83.1	15.2	42.6	12.2	89.7	241.9	25.9	57.5
Average:	77.0	106.1	15.5	40.9	11.3	36.8	91.2	21.7	57.9

458.4

Table2.3 TN Load

TN Load (ton/day)									
Month	Jacui	Taquari	Cai	Sinos	Gravatai	Camaqua	Sao Goncalo	G80	Litoral
Jan-96	217.7	97.7	11.9	9.8	5.9	40.6	8.6	7.4	15.0
Feb-96	182.7	81.9	21.2	14.4	8.7	19.7	10.4	6.5	15.2
Mar-96	31.4	19.8	7.6	9.7	6.6	4.9	20.4	8.0	20.6
Apr-96	163.8	45.0	8.4	10.6	7.3	21.3	167.2	5.6	10.7
May-96	13.4	6.5	2.4	6.3	4.1	2.5	17.0	5.8	15.1
Jun-96	66.0	42.8	6.6	9.6	6.0	7.1	15.6	20.1	66.8
Jul-96	32.7	38.0	7.1	10.9	6.4	2.8	15.5	31.4	119.1
Aug-96	50.0	31.4	5.7	10.0	7.2	7.2	15.3	10.8	29.0
Sep-96	59.2	44.9	8.1	13.0	8.8	5.3	22.9	18.9	61.4
Oct-96	87.1	47.8	11.2	14.0	10.0	8.8	16.9	10.6	26.2
Nov-96	39.0	31.3	6.8	12.5	8.7	3.7	11.6	7.4	17.0
Dec-96	38.2	17.3	4.5	9.9	7.6	2.9	11.8	23.4	81.8
Jan-97	36.9	12.3	4.1	9.1	7.0	2.8	10.6	12.4	38.3
Feb-97	162.9	64.8	11.2	14.3	9.5	60.0	107.0	8.1	16.5
Mar-97	70.3	18.3	5.1	11.5	7.3	2.8	18.9	9.7	28.0
Apr-97	37.8	15.2	2.6	7.5	5.1	2.8	13.8	7.8	19.3
May-97	89.9	14.5	3.0	7.5	5.2	23.7	12.3	3.8	3.2
Jun-97	149.3	40.0	6.0	10.9	7.8	19.0	79.0	18.2	57.4
Jul-97	92.5	29.1	6.8	13.1	8.5	10.9	23.1	4.9	5.8
Aug-97	123.3	117.3	18.7	15.6	10.3	8.0	45.1	13.5	37.2
Sep-97	41.8	11.1	6.8	11.5	8.4	8.3	103.0	14.8	48.3
Oct-97	365.8	116.5	17.7	17.7	10.7	52.1	83.0	22.3	70.3
Nov-97	289.8	104.7	15.8	16.8	10.0	43.2	118.5	10.4	26.3
Dec-97	221.5	36.1	8.3	11.7	8.4	56.7	93.0	13.2	35.9
	111.0	45.2	8.7	11.6	7.7	17.4	43.4	12.3	36.0

293.1

Table2.4 TP Load

TP Load (ton/day)									
Month	Jacui	Taquari	Cai	Sinos	Gravatai	Camaqua	Sao Goncalo	G80	Litoral
Jan-96	32.8	17.4	2.0	3.9	0.6	19.2	1.0	2.4	4.8
Feb-96	25.7	12.1	3.8	8.0	0.9	9.6	1.4	2.0	4.6
Mar-96	3.6	1.5	1.1	2.5	0.7	2.5	3.3	2.5	6.4
Apr-96	22.8	5.0	1.2	3.1	0.8	10.4	30.0	1.9	3.8
May-96	1.3	0.3	0.2	0.6	0.5	1.3	2.7	1.8	4.7
Jun-96	8.3	5.6	0.9	3.0	0.6	3.6	2.4	5.4	17.0
Jul-96	3.6	3.9	1.0	4.1	0.7	1.5	2.4	7.8	29.0
Aug-96	5.9	3.3	0.7	2.8	0.7	3.7	2.3	3.4	8.7
Sep-96	7.2	5.4	1.1	6.0	0.9	2.8	3.8	5.3	16.4
Oct-96	11.0	5.2	1.7	7.6	1.0	4.5	2.7	3.3	7.6
Nov-96	4.3	2.9	0.9	5.1	0.9	2.0	1.6	2.4	5.4
Dec-96	4.2	1.2	0.5	2.4	0.8	1.5	1.7	5.8	19.0
Jan-97	4.1	0.8	0.5	1.8	0.7	1.5	4.7	3.7	11.2
Feb-97	22.2	8.4	1.7	7.6	0.9	28.3	27.9	2.7	5.4
Mar-97	8.8	1.4	0.6	4.2	0.8	1.5	2.7	2.8	7.5
Apr-97	4.2	1.0	0.3	1.0	0.6	1.5	2.0	2.4	6.0
May-97	11.9	1.0	0.3	1.0	0.6	11.3	3.4	1.3	1.5
Jun-97	20.5	4.2	0.8	4.5	0.8	9.3	9.2	5.1	15.2
Jul-97	11.6	2.8	0.9	5.8	0.9	5.4	3.9	1.7	2.3
Aug-97	16.2	23.0	3.2	10.3	1.0	4.1	7.4	4.1	10.6
Sep-97	4.6	0.6	0.9	3.9	0.9	4.2	13.2	4.3	13.6
Oct-97	55.3	19.1	3.0	16.8	1.0	24.8	14.1	6.0	17.5
Nov-97	42.0	16.7	2.6	13.2	1.0	20.7	21.8	3.2	7.7
Dec-97	32.8	4.4	1.2	5.5	0.8	26.3	17.4	3.9	9.7
	15.2	6.1	1.3	5.2	0.8	8.4	7.6	3.6	9.8

58.0