ANNEX 7.1.1

Annex A7.1.1 Unit Pollution Load

1) Unit Loads of Pollutants in Metropolitan Area of São Paulo

The following lists the existing survey data on the unit loads of pollutants:

- SABESP – Water Quality and Hydrodinamic Mathematical Modeling of Tiete, Pinheiros and Tamanduatei to evaluate the "Projeto Tietê". The model used was Qual2E.
- SMA – "Avaliação da Poluição por Fontes Difusas ao Reservatório Guarapiranga; 1998". Guarapiranga Study to evaluate the diffuse load at the basin. The model used was MQual.
- SMA – "Calibração de Sistema Relacional de Correlação do Manejo do Território e da Qualidade Ambiental para o Reservatório Billings; 2004". Billings study to evaluate the load at the basin. The model used was MQUAL.

(a) SABESP

For planning, SABESP uses the unit loads of pollutants shown in Tables 5.1.1 and 5.1.2. These were selected in consideration of domestic wastewater load and urban nonpoint source load.

Table A7.1.1 Unit Loads of Pollutants Used by SABESP

	BOD (g/dia/hab)	TN (g/diahab)	TP (g/dia/hab)	COD (g/dia/hab)	TSS (g/dia/hab)	Coli (g/dia/hab)
Domestic Unit Load	54	10	3,0	-	-	1,00E+10

Pop. Density (hab/Km²)	BOD (kg/ha/ano)	TN (kg/ha.ano)	TP (kg/ha/ano)	COD (kg/ha.ano)	TSS (kg/ha.ano)	Coli (kg/ha.ano)
Dpop > 10000	69,0	14,3	0,96	-	-	0
10000 >Dpop> 2500	26,3	5,4	0,37	-	-	0
Dpop < 2500	8,4	1,4	0,09	-	-	0

	BOD (g/dia/hab)	TN (g/diahab)	TP (g/dia/hab)	COD (g/dia/hab)	TSS (g/dia/hab)	Coli (g/dia/hab)
Domestic Unit Load	54	10	3,0	-	-	1,00E+10

Pop. Density (hab/Km²)	BOD (kg/ha/ano)	TN (kg/ha.ano)	TP (kg/ha/ano)	COD (kg/ha.ano)	TSS (kg/ha.ano)	Coli (kg/ha.ano)
Dpop > 10000	69,0	14,3	0,96	-	-	0
10000 >Dpop> 2500	26,3	5,4	0,37	-	-	0
Dpop < 2500	8,4	1,4	0,09	-	-	0

Table A7.1.2 Treatment Efficiency (1-Effluent Ratio) of House Load in Comparison of Adoption Status of Sanitary Facilities Allowing for Difference in Population

	BOD (%)	TN (%)	TP (%)	COD (%)	TSS (%)	Coli (%)

Sewered Area	95	20	30	-	-	90
Sewered Area with no treatment	50	35	35	-	-	50
Unsewered Area	0	0	0	0	0	0

The treatment efficiency of sewage treatment plants is the measured average values of five sewage treatment plants in São Paulo. The treatment efficiency of areas with a sewage system (no sewage treatment) is quoted from existing study data.

(b) SMA

In 1995, SMA conducted a survey of the unit loads of pollutants in the Guarapiranga reservoir basin. The unit loads of pollutants were derived thorough water quality monitoring (see **Table A7.1.3**). These were reconsidered in a review of unit loads in 1998 and in the Billings Study (Outubro/2004, Calibracao de Systema Relacional de Correlacao do Manejo do Territorio e da Qualidade Ambiental para o Preservatorio Billings, Prime Engenharia) in 2004. SMA concluded that the unit loads of pollutants in the Lake Guarapiranga basin can be applied to the pollution analysis study in the Lake Billings basin.

Table A7.1.3 Unit Loads from Domestic Wastewater and Nonpoint Sources (Lake Guarapiranga and Billings Basin)

Domestic wastewater

	BOD (g/dia.hab)	TN (g/dia.hab)	TP (g/dia.hab)	COD (g/dia.hab)	TSS (g/dia.hab)
Sewage not collected and not treated	56,16	11,904	1,514	-	55
Sewage treated at septic tank and High Density Population	50,544	9,523	1,211	-	33
Sewage treated at septic tank and Low Density Population	33,696	5,952	0,757	-	16,5

Non-point souece

Diffuse Unit Load	BOD (kg/ha.ano)	TN (kg/ha.ano)	TP (kg/ha.ano)	COD (kg/ha.ano)	TSS (kg/ha.ano)	Coli (kg/ha.ano)
Urban Area – High Standard	58,4	3,472	0,496	-	2	3,65E+4
Urban Area – Low Standard	146	8,68	0,993	-	4	3,65E+2
Industrial and Commercial Use	116,8	6,076	0,695	-	2,8	3,65E+2
Agriculture	17,946	0,828	0,242	-	38,2	3,65E+2
Reforestation	4,277	0,219	0,007	-	9,1	3,65E+3
Forest	4,277	0,219	0,007	-	9,1	3,65E+2
Field	3,938	0,183	0,005	-	13,7	3,65E+3
Cottages	13,87	0,329	0,018	-	29,2	1,83E+3

(c) Existing references

The following lists the existing references on these themes.

- Introdução à qualidade das águas e ao tratamento de esgoto - Von Sperling, Marcos – 1996; 2nd Edition "Introduction to water quality and treatment sewage"
- Lagoas de estabilização - Von Sperling, Marcos - 1997; 2nd Edition"Oxidation Lagoons"
- NB-570 - Projeto de estações de tratamento de esgoto sanitário – ABNT – 1990"Brasilian Standard to Project of Sanitary Sewage Treatment Stations"
- Wastewater Engineerring - Treatment disposal reuse - Metcalf & Eddy – 1991; 3rd Edition

Von Sperling concluded COD=2xBOD while Pacheco Jordão concluded BOD/TN/TP=100/5/1.

Table A7.1.4 Unit Loads of Pollutants and Treatment Efficiency of Sewage Treatment Plants According to Existing References

Domestic Unit Load

	BOD (g/day.hab)	TN (g/day.hab)	TP (g/day.hab)	COD (g/day.hab)	TSS (g/day.hab)	Coli (g/day.hab)
ABNT (NB-570)	54	-	-	-	60	-
Von Sperling	50	8	2,5	100	120	-
Pacheco Jordão	54	2,7	0,54	-	90	-
Metcalf	82 - 100	-	3,63	-	-	-

STP Efficiency in Activated Sludge

	BOD (%)	TN (%)	TP (%)	COD (%)	TSS (%)	Coli (%)
Metcalf	80 - 95	15 - 50	10 - 25	80 - 85	80 - 85	-
Von Sperling	85 - 98	15 - 40	10 - 45	-	-	-
Pacheco Jordão	75 - 95	-	-	-	85 - 95	-

STP Efficiency in Oxidation Lagoon

	BOD (%)	TN (%)	TP (%)	COD (%)	TSS (%)	Coli (%)
Metcalf	80	-	-	-	-	-
Von Sperling	70 - 90	30 - 50	20 - 60	-	-	-
Pacheco Jordão	90	-	-	-	-	-

Not Collected

	BOD (%)	TN (%)	TP (%)	COD (%)	TSS (%)	Coli (%)
Von Sperling	70 - 90	10 - 25	10 - 20	-	-	-
Pacheco Jordão	30 - 65	-	-	-	60	-

(d) Summary of unit loads of pollutants

Table A7.1.5 provides a summary of the existing data.

Table A7.1.5 Unit Loads of Pollutants and Treatment Efficiency of Sewage Treatment Plants Found in Existing Data

Domestic Unit Load (Unit: g/dia.hab)

		BOD	TN	TP	COD	TSS	Coli
SABESP Model		54	10	3,0	-	-	1,00E+10
Mqual 2.0 (Billings/ Guarapiranga)	Sewage not collected and not treated	56.16	11,904	1,514	-	55	2,38E+12
	Sewage treated at septic tank and High Density Population	50.544	9,523	1,211	-	33	1,19E+11
	Sewage treated at septic tank and Low Density Population	33.696	5,952	0,757	-	16,5	2,38E+10
ABNT (NB-570)		54	-	-	-	60	-
Von Sperling		50	8	2,5	100	120	-
Pacheco Jordão		54	2.7	0.54	-	90	-
Metcalf		82 - 100	-	3,63	-	-	-

STP Using Activated Sludge

	BOD (%)	TN (%)	TP (%)	COD (%)	TSS (%)	Coli (%)
SABESP Model	95	20	30	-	-	-
Barueri STP (1997)	92	80	42	90	95	-
Metcalf	80 - 95	15 - 50	10 - 25	80 - 85	80 - 85	-
Von Sperling	85 - 98	15 - 40	10 - 45	-	-	-
Pacheco Jordão	75 - 95	-	-	-	85 - 95	-

STP Using Oxidation Lagoon

	BOD (%)	TN (%)	TP (%)	COD (%)	TSS (%)	Coli (%)
Metcalf	80	-	-	-	-	-
Von Sperling	70 - 90	30 - 50	20 - 60	-	-	-
Pacheco Jordão	90	-	-	-	-	-

Not Collected

	BOD (%)	TN (%)	TP (%)	COD (%)	TSS (%)	Coli (%)
SABESP Model	50	35	35	-	-	-
Von Sperling	70 - 90	10 - 25	10 - 20	-	-	-
Pacheco Jordão	30 - 65	-	-	-	60	-

Urban Diffuse Load (Unit: g/dia.hab)

		BOD	TN	TP	COD	TSS	Coli
SABESP Model	Dpop. > 10000	69,0	14,3	0,96	-	-	0
	10000 > Dpop. > 2500	26,3	5,4	0,37	-	-	0
	Dpop. < 2500	8,4	1,4	0,09	-	-	0
Mqual 2.0 (Billings/Guarapiranga)	Urban Area – High Standard	58,4	3,472	0,496	-	2	3,65E+4
	Urban Area – Low Standard	146	8,68	0,993	-	4	3,65E+2
	Industrial and Commercial Use	116,8	6,076	0,695	-	2,8	3,65E+2

Diffuse Load (Unit: g/dia.hab)

		BOD	TN	TP	COD	TSS	Coli
Mqual 2.0 (Billings/Guarapiranga)	Agricultural land	17,946	0,828	0,242	-	38,2	3,65E+2
	Reforestation	4,277	0,219	0,007	-	9,1	3,65E+3
	Forest	4,277	0,219	0,007	-	9,1	3,65E+2
	Field	3,938	0,183	0,005	-	13,7	3,65E+3
	Cottages	13,87	0,329	0,018	-	29,2	1,83E+3

(e) Values Used by CETESB

For the Billings basin, the same values for unit loads of pollutants as in the SMA Studies (MQUAL ver2.0) are used.

For the upper stream area of the Tiete, basically the values used in the SABESP Study are used. However, CETESB, considering the unit load of phosphorus in domestic wastewater indicated by SABESP as 3 g/dia.hab to be too high, uses the data obtained in MQUAL 2.0 (SMA Study) instead. The COD values, not available in the SABESP Model, were obtained based on Von Sperling's formula (COD=2XBOD). As for the TSS values, the unit load of domestic wastewater and treatment efficiency were obtained based on the ABNT (Brazilian Standard). Note that the TSS nonpoint loads were based on MQUALver.2.0 (see **Table A7.1.6**).

Table A7.1.6 Unit Loads of Pollutants and Treatment Efficiency of Sewage Treatment Plants used by CETESB

Domestic Unit Load	**BOD** (g/dia.hab)	**TN** (g/dia.hab)	**TP** (g/dia.hab)	**COD** (g/dia.hab)	**TSS** (g/dia.hab)
	54	10	1,2	108	60
Source:	ABNT	SABESP Model	MQual2.0	COD=2*BOD (Von Sperling)	ABNT
STP Efficiency	**BOD** (%)	**TN** (%)	**TP** (%)	**COD** (%)	**TSS** (%)
	90	20	30	90	95
Source:	Barueri STP	SABESP Model	SABESP Model	Barueri STP	Barueri STP
Not collected Efficency	**BOD** (%)	**TN** (%)	**TP** (%)	**COD** (%)	**TSS** (%)
	50	35	35	50	60
Source:	SABESP Model	SABESP Model	SABESP Model	Equal to BOD	Septic Tank (P. Jordão)
Urban Non Point Source Unit Load	**BOD** (kg/ha.ano)	**TN** (kg/ha.ano)	**TP** (kg/ha.ano)	**COD** (kg/ha.ano)	**TSS** (kg/ha.ano)
Dpop. > 10000	69,0	14,3	0,96	137,97	-
10000 > Dpop. > 2500	26,3	5,4	0,37	52,56	-
Dpop. < 2500	8,4	1,4	0,09	16,79	-
Dpop. > 6000	-	-	-	-	2
Dpop. < 6000	-	-	-	-	4
Source:	SABESP Model	SABESP Model	SABESP Model	COD=2*BOD (Von Sperling)	Mqual 2.0

For your reference, the unit loads of pollutants used in the State of Rio Grande do Sul (Efluentes Liquidos Industras: Cargas Poluidoras Lancadoras Nos Corpos Hydrocos do Rio Grande do Sur-1997, FEPAM/GTZ) are shown. The unit loads of pollutants from domestic wastewater include a water amount of 150L per person per day, a BOD of 54 g/day and a COD of 164 g/day.

ANNEX 7.3

2005

SUB-BASIN No.	Population: Favelas	Population: Urbana	Population: Rural	Population: Total	Flow Rate(m3/day) Unit rate 0.128 l/capita/day: Classification: Direct	Sewage	Treatment	Septic Tk	Others Factory/special	Total	BOD Pollution Load(kg/day) 0.054 g/capita/day: Direct	Sewage	Treatment	Others Factory/special	Total
CASE	Current Status, Without Measure														
A14	49730	90833	259	140822	1802.5	7210.1	0.0	0.0	3.0	9015.6	700.4	3041.8	0.0	0.9	3803.1
A13.2	14021	61240	2010	77271	875.0	4526.9	0.0	0.0	0.0	5401.8	369.1	1909.7	0	0	2278.8
A13.1	0	758	1162	1920	12.3	159.7	0.0	0.0	0.0	172.0	5.2	67.4	0.0	0.0	72.6
A12.3	3365	18870	129	22364	143.1	1860.7	0.0	0.0	0.0	2003.8	60.4	785.0	0.0	0.0	845.4
A12.2	18253	60793	5	79051	505.9	6577.0	0.0	0.0	60.0	7143.0	213.4	2774.7	0.0	0.0	2988.1
A12.1	13249	60269	186	73704	453.7	5897.5	361.0	0.0	171.0	6883.2	191.4	2488.0	53.3	0.0	2732.7
A11	10157	6632	453	17242	110.3	1434.5	0.0	0.0	0.0	1544.9	46.6	605.2	0.0	0.0	651.7
B6	6081	29187	619	35887	441.6	2372.4	0.0	0.0	0.0	2814.0	186.3	1000.9	0.0	0.0	1187.1
B5	1076	3044	24	4144	42.7	296.3	0.0	0.0	0.0	339.0	18.0	125.0	0.0	0.0	143.0
B4	620	77486	802	78908	505.0	2368.3	4196.9	0.0	1.5	7071.7	213.1	999.1	619.7	0.0	1831.9
B3	0	36146	3190	39336	262.9	2251.1	988.4	0.0	4080.0	7582.3	110.9	949.7	41.7	0.0	1102.3
B2	0	14915	780	15695	100.4	1305.8	0.0	0.0	10.0	1416.3	42.4	550.9	0.0	0.0	593.3
B1	0	10318	265	10583	135.5	541.8	0.0	0.0	0.0	677.3	57.1	228.6	0.0	0.0	285.7
A10	802	13888	714	15404	120.9	178.4	1373.1	0.0	0.0	1672.4	51.0	75.3	57.9	0.0	184.2
A9.3	0	445	467	912	11.7	46.7	0.0	0.0	0.0	58.4	4.9	19.7	0.0	0.0	24.6
A9.2	0	281	324	605	7.7	38.7	0.0	0.0	0.0	46.5	3.3	16.3	0.0	0.0	19.6
A9.1	0	0	234	234	3.0	12.0	0.0	0.0	0.0	15.0	1.3	5.1	0.0	0.0	6.3
A8	0	615	125	740	9.5	37.9	0.0	0.0	0.0	47.4	4.0	16.0	0.0	0.0	20.0
A7	0	2425	740	3165	40.5	162.0	0.0	0.0	0.0	202.6	17.1	68.4	0.0	0.0	85.5
A6	0	3807	1306	5113	65.4	261.8	0.0	0.0	0.0	327.2	27.6	110.4	0.0	0.0	138.1
A5	0	0	2821	2821	58.2	100.4	0.0	0.0	0.0	158.5	24.5	42.3	0.0	0.0	66.9
A4.2	0	2782	2420	5202	199.8	0.0	0.0	0.0	0.0	199.8	84.3	0.0	0.0	0.0	84.3
A4.1	0	16136	618	16754	643.4	0.0	0.0	0.0	0.0	643.4	271.4	0.0	0.0	0.0	271.4
A3.1	0	10978	568	11546	443.4	0.0	0.0	0.0	0.0	443.4	187.0	0.0	0.0	0.0	187.0
A3.2	0	520	674	1194	45.8	0.0	0.0	0.0	0.0	45.8	19.3	0.0	0.0	0.0	19.3
A2.2	0	141	1177	1318	50.6	0.0	0.0	0.0	0.0	50.6	21.4	0.0	0.0	0.0	21.4
A2.1.	0	3302	1098	4400	169.0	0.0	0.0	0.0	0.0	169.0	71.3	0.0	0.0	0.0	71.3
A2.3	15727	43380	1287	60394	774.8	3088.6	0.0	0.0	0.0	3863.4	326.9	1303.0	0.0	0.0	1629.9
A1.1	5762	75957	144	81863	1047.8	4191.4	0.0	0.0	0.0	5239.2	442.1	1768.2	0.0	0.0	2210.3
A1.2	45875	135323	180	181378	2321.6	9286.6	0.0	0.0	0.0	11608.2	979.4	3917.8	0.0	0.0	4897.2
Billings	176,941	609,375	19,101	805,417	9,918	45,071	1,734	-	234	56,955	4,183	19,014	111	1	23,310
Rio Grand	7,777	171,096	5,680	184,553	1,488	9,136	5,185	-	4,092	19,900	628	3,854	661	-	5,143
Total	184,718	780,471	24,781	989,970	11,404	54,207	6,919	-	4,326	76,855	4,811	22,868	773	1	28,453
CASE	Current Status, Without Measure (Same with the above)														
A14															
A13.2															
A13.1															
A12.3															
A12.2															
A12.1															
A11															
B6															
B5															
B4															
B3															
B2															
B1															
A10															
A9.3															
A9.2															
A9.1															
A8															
A7															
A6															
A5															
A4.2															
A4.1															
A3.1															
A3.2															
A2.2															
A2.1.															
A2.3															
A1.1															
A1.2															
Billings															
Rio Grande Arm															
Total															

Ditto

2025

SUB-BASIN No.	Population: Pop. om Favelas	Population: Pop. Urbana	Population: Pop. Rural	Population: Pop. Total	Flow Rate(m3/day) Unit rate 0.18 l/capita/day: Classification: Direct	Sewage	Treatment	Septic Tk	Others Factory/special	Total	BOD Pollution Load(kg/day) 0.054 g/capita/day: Direct	Sewage	Treatment	Others Factory/special	Total
CASE	Future Projection, Without Measure														
A14	71051	129775	369	201195	321.9	12876.5	0.0	0.0	3.0	13201.4	108.6	4345.8	0.0	0.9	4455.3
A13.2	21241	94132	2938	118311	189.3	8850.3	0.0	0.0	0.0	9039.5	63.8	2986.9	0	0	3050.8
A13.1	0	909	1396	2305	3.7	254.5	0.0	0.0	0.0	258.2	1.2	85.9	0.0	0.0	87.1
A12.3	4038	22637	154	26829	42.9	2961.9	0.0	0.0	0.0	3004.8	14.5	999.6	0.0	0.0	1014.1
A12.2	21898	72932	5	94835	151.7	10469.8	0.0	0.0	60.0	10681.5	51.2	3533.6	0.0	0.0	3584.8
A12.1	15893	72302	225	88420	136.1	9388.2	541.1	0.0	171.0	10236.4	45.9	3232.4	18.3	0.0	3296.6
A11	12185	7955	543	20683	33.1	2283.4	0.0	0.0	0.0	2316.5	11.2	770.6	0.0	0.0	781.8
B6	9737	53448	1017	64202	102.7	6148.1	0.0	0.0	0.0	6250.8	34.7	2075.0	0.0	0.0	2109.7
B5	1314	5276	28	6618	10.6	656.3	0.0	0.0	0.0	666.9	3.6	221.5	0.0	0.0	225.1
B4	757	101009	1196	102962	164.7	4572.0	0.0	0.0	1.5	4738.2	55.6	1543.0	0.0	0.0	1598.6
B3	0	51250	4405	55655	89.0	2030.6	143.8	0.0	0.0	2263.4	30.1	685.3	17.0	0.0	732.4
B2	0	19108	1006	20114	32.2	2220.6	0.0	0.0	10.0	2262.8	10.9	749.4	0.0	0.0	760.3
B1	0	12379	317	12696	20.3	516.2	696.4	0.0	0.0	1232.9	6.9	174.2	82.3	0.0	263.3
A10	962	16662	855	18479	29.6	267.5	2150.6	0.0	0.0	2447.7	10.0	90.3	72.6	0.0	172.8
A9.3	0	532	306	838	1.3	53.6	0.0	0.0	0.0	55.0	0.5	18.1	0.0	0.0	18.6
A9.2	0	184	212	396	0.6	37.4	0.0	0.0	0.0	38.0	0.2	12.6	0.0	0.0	12.8
A9.1	0	0	280	280	0.4	17.9	0.0	0.0	0.0	18.4	0.2	6.0	0.0	0.0	6.2
A8	0	738	149	887	1.4	56.8	0.0	0.0	0.0	58.2	0.5	19.2	0.0	0.0	19.6
A7	0	2910	889	3799	6.1	243.1	0.0	0.0	0.0	249.2	2.1	82.1	0.0	0.0	84.1
A6	0	4568	1566	6134	9.8	392.6	0.0	0.0	0.0	402.4	3.3	132.5	0.0	0.0	135.8
A5	0	0	3735	3735	6.0	150.5	0.0	0.0	0.0	156.5	2.0	50.8	0.0	0.0	52.8
A4.2	0	4469	3887	8356	13.4	0.0	0.0	0.0	0.0	13.4	4.5	0.0	0.0	0.0	4.5
A4.1	0	25920	994	26914	43.1	0.0	0.0	0.0	0.0	43.1	14.5	0.0	0.0	0.0	14.5
A3.1	0	17636	912	18548	29.7	0.0	0.0	0.0	0.0	29.7	10.0	0.0	0.0	0.0	10.0
A3.2	0	801	1040	1841	2.9	0.0	0.0	0.0	0.0	2.9	1.0	0.0	0.0	0.0	1.0
A2.2	0	217	1820	2037	3.3	0.0	0.0	0.0	0.0	3.3	1.1	0.0	0.0	0.0	1.1
A2.1.	0	5103	1697	6800	10.9	0.0	0.0	0.0	0.0	10.9	3.7	0.0	0.0	0.0	3.7
A2.3	24297	67025	1987	93309	149.3	5964.9	0.0	0.0	0.0	6114.2	50.4	2013.1	0.0	0.0	2063.5
A1.1	8903	117359	222	126484	202.4	8095.0	0.0	0.0	0.0	8297.4	68.3	2732.1	0.0	0.0	2800.4
A1.2	67152	192306	278	259736	415.6	16623.1	0.0	0.0	0.0	17038.7	140.3	5610.3	0.0	0.0	5750.6
Billings	247,620	857,072	26,459	1,131,151	1,804	78,987	2,692	-	234	83,717	609	26,722	91	1	27,423
Rio Grand	11,808	242,470	7,969	262,247	420	16,144	840	-	12	17,415	142	5,449	99	-	5,689
Total	259,428	1,099,542	34,428	1,393,398	2,224	95,131	3,532	-	246	101,132	751	32,171	190	1	33,112
CASE	Future Projection, With Measure such as sewerage system														
A14	71051	129775	369	201195	321.9	0.0	0.0	0.0	3.0	324.9	108.6	0.0	0.0	0.9	109.5
A13.2	21241	94132	2938	118311	189.3	0.0	0.0	0.0	0.0	189.2	63.8	0	0	0	63.8
A13.1	0	909	1396	2305	3.7	0.0	0.0	0.0	0.0	3.7	1.2	0.0	0.0	0.0	1.2
A12.3	4038	22637	154	26829	42.9	0.0	0.0	0.0	0.0	42.9	14.5	0.0	0.0	0.0	14.5
A12.2	21898	72932	5	94835	151.7	0.0	0.0	0.0	60.0	211.7	51.2	0.0	0.0	0.0	51.2
A12.1	15893	72302	225	88420	136.1	0.0	541.1	0.0	171.0	848.2	45.9	0.0	18.3	0.0	64.2
A11	12185	7955	543	20683	33.1	84.6	0.0	0.0	0.0	117.7	11.2	28.5	0.0	0.0	39.7
B6	9737	53448	1017	64202	102.7	0.0	0.0	0.0	0.0	102.7	34.7	0.0	0.0	0.0	34.7
B5	1314	5276	28	6618	10.6	0.0	0.0	0.0	0.0	10.6	3.6	0.0	0.0	0.0	3.6
B4	757	101009	1196	102962	164.7	0.0	0.0	0.0	1.5	166.2	55.6	0.0	0.0	0.0	55.6
B3	0	51250	4405	55655	89.0	24.5	143.8	0.0	0.0	257.4	30.1	8.3	17.0	0.0	55.3
B2	0	19108	1006	20114	32.2	0.0	0.0	0.0	10.0	42.2	10.9	0.0	0.0	0.0	10.9
B1	0	12379	317	12696	7.4	7.4	696.4	0.0	0.0	724.1	6.9	2.5	23.5	0.0	32.9
A10	962	16662	855	18479	29.6	0.0	4413.3	0.0	0.0	4442.9	10.0	0.0	148.9	0.0	158.9
A9.3	0	532	306	838	1.3	19.6	0.0	0.0	0.0	20.9	0.5	6.6	0.0	0.0	7.1
A9.2	0	184	212	396	0.6	37.4	0.0	0.0	0.0	38.0	0.2	12.6	0.0	0.0	12.8
A9.1	0	0	280	280	0.4	17.9	0.0	0.0	0.0	18.4	0.2	6.0	0.0	0.0	6.2
A8	0	738	149	887	1.4	56.8	0.0	0.0	0.0	58.2	0.5	19.2	0.0	0.0	19.6
A7	0	2910	889	3799	6.1	243.1	0.0	0.0	0.0	249.2	2.1	82.1	0.0	0.0	84.1
A6	0	4568	1566	6134	35.7	134.0	581.9	0.0	0.0	751.0	12.0	45.2	19.6	0.0	76.9
A5	0	0	3735	3735	6.0	150.5	0.0	0.0	0.0	156.5	2.0	50.8	0.0	0.0	52.8
A4.2	0	4469	3887	8356	13.4	0.0	0.0	0.0	0.0	13.4	4.5	0.0	0.0	0.0	4.5
A4.1	0	25920	994	26914	43.1	0.0	0.0	0.0	0.0	43.1	14.5	0.0	0.0	0.0	14.5
A3.1	0	17636	912	18548	29.7	0.0	0.0	0.0	0.0	29.7	10.0	0.0	0.0	0.0	10.0
A3.2	0	801	1040	1841	2.9	0.0	0.0	0.0	0.0	2.9	1.0	0.0	0.0	0.0	1.0
A2.2	0	217	1820	2037	3.3	0.0	0.0	0.0	0.0	3.3	1.1	0.0	0.0	0.0	1.1
A2.1.	0	5103	1697	6800	10.9	0.0	0.0	0.0	0.0	10.9	3.7	0.0	0.0	0.0	3.7
A2.3	24297	67025	1987	93309	149.3	0.0	0.0	0.0	0.0	149.3	50.4	0.0	0.0	0.0	50.4
A1.1	8903	117359	222	126484	202.4	0.0	0.0	0.0	0.0	202.4	68.3	0.0	0.0	0.0	68.3
A1.2	67152	192306	278	259736	415.6	0.0	0.0	0.0	0.0	415.6	140.3	0.0	0.0	0.0	140.3
Billings	247,620	857,072	26,459	1,131,151	1,830	744	5,536	-	234	8,344	618	251	187	1	1,057
Rio Grande Arm	11,808	242,470	7,969	262,247	420	32	840	-	12	1,303	142	11	40	-	193
Total	259,428	1,099,542	34,428	1,393,398	2,250	776	6,376	-	246	9,648	759	262	227	1	1,249

2000 – AREA CARGAS DIFUSAS (Non-point source) – Área Ocupada por Categoria de Uso (ha)

No.	Morphy	1 Atividade Agrícola / Agriculture	2 Reflorestamento / Reforesting	3 Mata / Forest	4 Capoeira / Thicket	5 Chácaras / Cultivated Field	6 Ár. Urb Padr Sup / Urb. area high class	7 Ár. Urb Padr Inf / Urb. area low class	8 Ár. Ind. e Com. / Industry and commercial	Total	Pop. em Favelas	Pop. Urbana	Pop. Rural	Pop. Total	Density
1	SP	0	0	0	12.57	0	0	61.28	4.09	78.34	442	4272	0	4714	77
2	SP	0	0	0	21.21	0	0	112.05	2.84	136.10	6864	14717	0	21581	193
3	SP	0	0	0	0	0	0	54.68	0	54.68	5973	8863	0	14836	271
4	SP	0	0	0	33.15	0	0	199.52	4.8	257.47	23311	23212	0	46523	233
5	SP	0	0	0	23.96	0	0	52.7	0	76.66	1234	5498	0	6732	126
6	SP	0	19.18	30.47	106.58	50.4	0	198.29	6.71	411.63	7863	26319	229	34411	174
7	SP	0	0	14.22	7.96	1.29	0	0	0	23.47	0	0	8	8	
A14		0	19.18	44.69	225.83	51.69	0	678.32	18.44	1038.35	43487	83081	237	126805	190
8	SP	0	0	30.78	71.92	61.75	0	30	0.41	194.86	3311	3841	1334	8486	283
9	SP, Dia	0	0	25.55	11.28	8.52	0	228.52	7.74	281.61	6785	37170	166	44121	193
10	Dia	0	28.71	64.86	117.23	31.08	0	161.95	3.87	407.70	2363	13001	319	15683	97
A13.2		0	28.71	121.19	200.43	101.35	0	420.47	12.02	884.17	12459	54012	1819	68290	162
11	SBC	6.02	44.11	205.66	41.06	84.13	0	5.78	0	386.76	0	605	856	1461	253
12	SBC	0	10.73	21.07	15.74	11.89	0	0	0	59.43	0	0	72	72	
A13.1		6.02	54.84	226.73	56.8	96.02	0	5.78	0	446.19	0	605	928	1533	265
13	SBC	0	11.85	6.59	9.06	16.86	0	4.62	0	48.98	0	460	103	563	122
14	SBC	0	1.83	48.52	47.41	0	0	135.57	0	233.33	2687	14610	0	17297	128
A12.3		0	13.68	55.11	56.47	16.86	0	140.19	0	282.31	2687	15070	103	17860	127
15	SBC,Dia	32.8	5.14	22.22	192.67	0	0	499.7	13.38	765.91	14577	48551	4	63132	126
A12.2		32.8	5.14	22.22	192.67	0	0	499.7	13.38	765.91	14577	48551	4	63132	126
16	SBC	7.44	5.72	3.49	56.17	0	0	50.63	0	123.35	0	5970	0	5970	118
17	SBC	0	0	10.36	6.32	0	0	5.38	0	22.06	0	677	0	677	126
18	SBC	0.01	0	0.42	3.4	0	0	45.59	0	49.42	0	6296	0	6296	138
19	SBC	5.59	0	30.09	59.15	0	0	252.6	16.46	363.89	3980	16446	0	20426	81
20	SBC	24.88	5.33	2.91	16.14	0	0	9.72	0	58.98	0	1027	0	1027	106
21	SBC	1.59	9.66	1.68	2.63	0	0	10.02	0	25.78	0	1225	0	1225	122
22	SBC	3.39	90.48	25.92	40.88	5.2	0	109.97	24.91	300.75	4930	3761	6	8697	79
23	SBC	10.7	4.11	28.16	49.66	7.8	0	144.08	0	244.51	1671	8018	91	9780	68
24	SBC	6.41	0	16.94	0	0	0	0	0	23.35	0	0	0	0	
25	SBC	46.86	14.4	63.75	25.95	3.84	0	44.19	0	199.00	0	4712	51	4763	108
A12.1		106.87	139.7	183.92	260.41	16.84	0	672.18	41.37	1411.29	10581	48132	148	58861	88
26	SBC	4.93	10.14	49.53	87.39	21.54	0	40.59	0	194.12	0	2747	66	2813	69
27	SBC	0	3.53	47.5	1.28	70.82	0	0.27	0	122.52	0	2	153	155	374
28	SBC	0.39	88.64	150.04	69.31	10.02	0	25.05	21.81	365.26	0	500	21	521	21
29	SBC	0	42.77	138.75	28.56	41.43	0	25.81	0	277.32	0	123	41	164	6
30	SBC	0	4.51	36.7	66.81	1.84	0	73.86	0	183.72	8112	1655	2	9769	132
31	SBC	0	3.45	5.24	24.18	28.67	0	6.95	0	68.49	0	67	68	135	19
32	SBC	0	9.17	12.48	23.03	3.92	0	13.55	0	62.15	0	202	10	212	16
A11		5.32	161.23	440.24	280.56	178.34	0	186.08	21.81	1273.58	8112	5296	361	13769	74
33	SBC	0	36.74	340.53	56.85	22.85	0	11.11	0	468.08	1804	264	150	2218	200
34	SBC, SA	0	7.47	41.98	12.33	3.44	0	14.36	0	75.78	0	912	24	936	65
35	SA	0	0	57.78	9.13	0	0	90.86	0	157.77	520	7694	0	8214	90
36	SA	0	15.58	695.04	64.52	9.97	0	28.56	0	813.67	2562	4449	323	7334	257
37	SA	0	0	55.88	0.1	0	0	92.04	0	148.02	0	4041	0	4041	44
38	SA	1.63	0	238.28	0.06	1.16	0	136.15	0	375.28	0	6171	0	6171	45
B6		1.63	59.79	1427.49	142.99	37.62	0	373.08	0	2042.6	4886	23531	497	28914	78
39	SA	0	0	66.77	25.56	0	0	55.77	0	148.10	0	2037	0	2037	37
40	RibP	11.33	0	349.4	54.36	33.04	0	7.83	0	455.96	0	71	0	71	9
41	RibP	0	0	175.4	62.66	2.16	0	0.11	0	240.33	0	2	0	2	18
42	RibP	0	63.48	89.15	13.41	25.04	0	45.13	0	236.21	1024	420	23	1467	33
B5		11.33	63.48	680.72	155.99	60.24	0	108.84	0	1080.6	1024	2530	23	3577	33
43	RibP	0	0	494.42	333.31	119.05	0	400.76	0	1347.54	0	17524	590	18114	45
44	RibP	0	17.59	78.42	305.74	0	0	354.07	0	755.82	590	19528	0	20118	37
45	RibP	0	20.49	226.91	103.13	0	0	516.88	38.1	905.51	0	26129	0	26129	51
45A	RibP	0	0	0	35.01	0	0	144.87	0	179.98	0	7081	0	7081	49
46	RibP	0	9.97	34.48	62.95	27.05	0	41.95	0	176.40	0	2030	125	2155	51
B4		0	48.05	834.23	840.14	146.1	0	1458.63	38.1	3365.25	590	72292	715	73597	50
48	RGS	0	2.79	987.03	387.4	216.55	0	19.2	0	1612.97	0	1268	2039	3307	172
49	SA	0	138.88	2707.62	829.75	26.88	0	40.1	63.84	3807.07	0	1316	308	1624	40
50	SA	0	0	330.23	155.77	0	0	10.72	56.14	552.86	0	305	0	305	28
50A	SA	0	0	3.8	4.71	0	0	0	11.27	19.78	0	0	0	0	
51	RGS	0	0	177.89	152.17	14.87	0	38.13	4.1	387.16	0	2237	148	2385	63
51A	RGS	0	0	137.63	153.93	0	0	129.2	9.39	430.15	0	12236	0	12236	95
51B	RGS	0	0	2.71	22.52	0	0	8.78	0	34.01	0	880	0	880	100
51C	RGS	0	0	185.05	66.54	27.87	0	59.34	0	338.80	0	5688	339	6027	102
51D	RGS	0	0	96.18	70.76	25.63	0	110.21	0.88	303.66	0	9264	126	9390	85
B3		0	141.67	4628.14	1843.55	311.8	0	415.68	145.62	7486.46	0	33194	2960	36154	87
47	RibP	0	0	32.61	107.7	0	0	93.55	0	233.86	0	4613	0	4613	49
52	RGS	0	10.04	196.93	98.7	53.04	0	145.74	0	504.45	0	3201	227	3428	24
53	RibP, RGS	0	0	35.29	31.79	0.6	0	10.71	0	78.39	0	408	2	410	38
54	RibP	0	0	239.52	78.85	25.92	0	1.89	0	346.18	0	65	231	296	157
55	RibP	0	0	23.63	23.25	0	0	5.72	0	52.60	0	374	0	374	65
56	RibP	0	0	0	8.94	0	0	2.73	0	11.67	0	85	0	85	31
57	RibP	0	13.27	13.82	8.15	30.27	0	82.76	0	148.28	0	456	24	480	6
58	RibP	0	9.34	336.26	240.28	42.63	0	109.87	0	738.38	0	4827	248	5075	46
B2		0	32.65	878.06	597.66	152.46	0	452.99	0	2113.82	0	14029	732	14761	33
59	SBC, SA	2.04	0	532.6	64.58	1.8	0	193.4	0	794.42	0	3118	9	3127	16
60	SBC	12.96	0	100.89	35.07	33.95	0	37.9	0	220.77	0	1368	119	1487	39
61	SBC	7.1	17.1	312.49	140.07	15.94	0	76.21	0	568.91	0	3873	87	3960	52
B1		22.1	17.1	945.98	239.72	51.69	0	307.51	0	1584.1	0	8359	215	8574	28
62	SBC	6.76	13.46	116.79	153.42	49.35	0	162.24	0	504.00	650	8519	488	9657	60
63	SBC	0	7.27	37.04	7.63	11.03	0	1.21	0	64.18	0	36	83	119	98
64	SBC	0	2.41	19.23	49.48	0.99	0	19.35	0	91.46	0	1270	8	1278	86
65	SBC	0.1	0	89.81	0.18	0	0	31.45	0	121.54	0	1427	0	1427	45
A10		6.86	23.12	262.87	210.71	61.37	0	214.25	0	781.18	650	11252	579	12481	58
66	SBC	0	0.42	144.55	17.96	0	0	8.09	0	171.02	0	352	0	352	44
67	SBC	0	4.82	49.9	38.94	0	0	0.62	0	94.28	0	9	0	9	15
68	SBC	3.1	18.87	320.95	2.1	0	0	0	0	345.02	0	0	0	0	
69	SBC, SA	0	0	475.14	83.79	74.43	0	0	0	633.36	0	0	519	519	
A9.3		3.1	24.11	990.54	142.79	74.43	0	8.71	0	1243.68	0	361	519	880	101
70	SA	0	0	125.58	2.09	0.94	0	0	0	128.61	0	0	7	7	
71	SA	0	0	186.8	47.54	8.02	0	10.13	0	252.49	0	313	59	372	37
72	SA	0	0	745.28	320.85	0	0	0	0	1066.13	0	0	0	0	
73	SA	0	0	28.75	10.33	0	0	0	0	39.08	0	0	0	0	
74	SA	0	0	70.93	132.3	0	0	0	0	203.23	0	0	0	0	
75	SA	0	0	1.5	49.85	42.73	0	0	0	94.08	0	0	293	293	
A9.2		0	0	1158.84	562.96	51.69	0	10.13	0	1783.62	0	313	361	674	67
76	SBC, SA	0	0	0	253.48	49.55	0	0	0	303.03	0	0	120	120	
77	SBC	0	0	115.23	182.51	11.88	0	0	0	309.62	0	0	23	23	
78	SBC	0	0	119.97	47.22	27.25	0	0	0	194.44	0	0	58	58	
79	SBC	0	0	30.26	11.79	0	0	0	0	42.05	0	0	2	2	
A9.1		0	0	265.46	493	88.88	0	0	0	849.14	0	0	203	203	
80	SBC	8	0	33.03	0	0	0	0	0	41.03	0	0	2	2	
81	SBC	0	0	76.8	0	0	0	0	0	76.80	0	0	3	3	
82	SBC	0	0	394.71	58.52	0	0	0	0	453.23	0	0	18	18	
83	SBC	0	0	453.08	212.52	0	0	0	0	665.60	0	0	14	14	
84	SBC	0	0	365	35.95	6.23	0	0	0	407.18	0	0	25	25	
85	SBC	0	0	109	0	0	0	0	0	109.00	0	0	0	0	
86	SBC	0	0	179.81	72.52	8.3	0	3.01	0	263.64	0	501	40	541	180
A8		8	0	1611.43	379.51	14.33	0	3.01	0	2016.48	0	501	102	603	200
86A	SBC	0	0	27.5	11.92	3.46	0	0	0	42.88	0	0	135	135	
87	SBC	0	0	184.82	158.47	53.14	0	15.64	0	412.07	0	1796	348	2144	33
88	SBC	0	0	11.17	12.52	0	0	0	0	23.69	0	0	0	0	
89	SBC	0	0	98.04	28.54	10.19	0	0	0	136.77	0	0	37	37	
90	SBC	0	0	151.63	0	11.28	0	0	0	163.91	0	0	63	63	
91	SBC	0	0	77.32	74.23	0	0	8.11	0	159.66	0	178	0	178	21
A7		0	0	551.48	245.68	78.07	0	73.75	0	948.98	0	1974	603	2577	35
92	SBC	0	16.71	284.57	98.05	0	0	5.43	0	404.76	0	190	0	190	35
93	SBC	0	0	201.55	73	33.59	0	1.12	0	309.26	0	34	231	265	237
94	SBC	3.37	0	111.34	38.36	1.34	0	4	0	158.41	0	75	13	88	22
95	SBC	11.23	0	121.75	26.93	0	0	0.13	0	160.05	0	2	0	2	15
96	SBC	28.82	38.06	137.14	72.83	22.7	0	0	0	319.55	0	0	109	109	
97	SBC	3.71	7.26	124.52	30.45	11.95	0	23.86	0	201.75	0	2637	106	2743	115
98	SBC	1.85	27.66	90.28	173.75	109.63	0	7.14	0	410.33	0	162	468	630	88
99	SBC	7.49	0	5.49	43.64	33.42	0	0	0	86.04	0	0	136	136	
A6		56.47	109.69	1072.64	557.03	212.65	0	41.88	0	2050.16	0	3100	1063	4163	100
100	SBC	0.04	11.75	383.95	144.62	99.89	0	0	0	640.25	0	0	602	602	
101	SBC	0	0	38.86	0	0	0	0	0	38.86	0	0	0	0	
102	SBC	0	0	196	23.14	6.13	0	0	0	225.27	0	0	59	59	
103	SBC	0	66.97	136.74	17.75	0	0	0	0	221.46	0	0	0	0	
104	SBC	0	166.77	157.41	84.15	27.54	0	0	0	435.87	0	0	249	249	
105	SBC	0	11.49	1.17	20.49	0	0	0	0	33.15	0	0	0	0	
106	SBC	0	13.26	0	0	0	0	0	0	13.26	0	0	0	0	
107	SBC,SF	2.38	4.43	398.28	306.44	137.48	0	0	0	849.01	0	0	706	706	
108	SF	17.3	15.85	101.89	30.66	4.63	0	0	0	170.33	0	0	107	107	
109	SF	83.39	18.32	111.44	52.82	34.63	0	0	0	300.60	0	0	608	608	
110	SF	0	0	0	0	19.56	0	0	0	19.56	0	0	28	28	
A5		103.11	308.84	1525.76	680.07	329.86	0	0	0	2947.64	0	0	2359	2359	
111	SF	0	0	0	0	22.12	0	0	0	22.12	0	0	30	30	
112	SF	10.18	11.52	103.16	190.83	93.47	0	0	0	409.16	0	0	1304	1304	
113	SF	0	0	69.68	40.94	38.07	0	0	0	148.69	0	0	441	441	
114	SF	93.02	14.69	366.77	198.12	38.45	0	64.37	0	775.42	0	2400	251	2651	41
115	SF	30.19	0	35.31	0	2.96	0	0	0	68.46	0	0	61	61	
A4.2		133.39	26.21	574.92	429.89	195.07	0	64.37	0	1423.85	0	2400	2087	4487	70
116	SF	47.56	0	114.9	39.11	32.53	0	1.56	0	235.66	0	127	133	260	167
117	SF	61.2	10.31	588.35	500.5	157.73	0	154.08	0	1472.17	0	13792	400	14192	92
A4.1		108.76	10.31	703.25	539.61	190.26	0	155.64	0	1707.83	0	13919	533	14452	93
118	SF	11.3	80.99	556.87	214.32	39.49	0	149.4	0	1052.37	0	9470	490	9960	67
A3.1		11.3	80.99	556.87	214.32	39.49	0	149.4	0	1052.37	0	9470	490	9960	67
119	SF	2.68	0	131.04	6.46	6.08	0	1.63	0	147.89	0	16	15	31	19
120	SF	5.2	0	153.11	59.86	23.06	0	1.91	0	243.14	0	15	48	63	33
121	SF	80.06	0	170.1	84.16	29.36	0	15.23	0	378.91	0	427	170	597	39
122	SF	0	8.25	14.09	122.09	34.15	0	0	0	158.58	0	0	329	329	
123	SF	0	0	19.1	5.7	6.31	0	0	0	31.11	0	0	31	31	
A3.2		87.94	8.25	487.44	278.27	118.96	0	18.77	0	999.63	0	458	593	1051	56
124	SF	0	0	61.26	27.96	35.63	0	0	0	124.85	0	0	172	172	
125	SF	0	0	54.98	41.09	26.51	0	4.76	0	127.34	0	83	118	201	42
126	SF	31.37	8.55	287.5	158.97	169.37	0	4.99	0	660.75	0	41	745	786	158
A2.2		31.37	8.55	403.74	228.02	231.51	0	9.77	0	912.96	0	124	1035	1139	119
127	SF	111.95	22.3	287.02	263.12	200.54	0	106.5	0	991.43	0	2692	839	3531	33
128	SF	44.3	0	110.64	150.77	42.88	0	18.36	0	366.95	0	212	127	339	18
A2.1.		156.25	22.3	397.66	413.89	243.42	0	124.86	0	1358.38	0	2904	966	3870	31
129	SF	2.92	0	161.86	54.52	14.09	0	0	0	233.39	0	0	62	62	
130	SF	0	0	125.75	114.67	66.65	0	31.25	0	338.32	16	1060	124	1200	38
131	SF	0	0	87.16	18.04	3.15	0	1.98	0	110.35	0	33	13	48	23
132	SF	0	0	53.05	16.59	26.5	0	57.01	0	153.15	1701	6082	30	7813	137
133	SF	0	0	0.69	14.91	17.33	0	73.22	0	106.15	0	8826	67	8893	121
134	SF	0	0	38.93	6.99	29.59	0	10.05	0	83.56	3	310	72	385	38
135	SF	0	0	54.99	12.69	4.69	0	48.71	0	121.08	4000	3876	15	7891	162
136	SF	0	0	42.14	20.14	71.19	0	46.74	0.17	180.38	0	2975	605	3580	77
137	SF	0	0	0	49.03	9.66	0	129.38	0.5	188.57	8113	14993	144	23250	180
A1.3		2.92	0	582.59	307.58	242.85	0	398.34	0.67	1514.95	13833	38155	1132	53120	133
142	SF	0	0	49.82	185	46.83	0	545.87	0.34	827.86	5068	66808	127	72003	132
A1.1		0	0	49.82	185	46.83	0	545.87	0.34	827.86	5068	66808	127	72003	132
138	SF	0	0	0	21.82	0	0	47.3	0	69.12	9636	296	0	9932	210
139	SF	0	0	0	31.43	0	0	85.35	0	116.78	5618	7615	0	13233	202
140	SF	0	0	0	9.44	9.76	0	193.27	1.76	214.23	5284	36414	128	41826	218
141	SF	0	0	0	47.72	3.19	0	147.22	7.34	205.47	4068	18712	30	22810	155
143	SF	0	0	0	21.55	0	0	158.55	7.73	187.83	8643	24040	0	32683	206
144	SF	0	0	2.79	47.15	0	0	140.58	0	190.52	0	16635	0	16635	118
145	SF	0	0	7.21	15.45	0	0	11.55	0	34.21	0	1494	0	1494	129
146	SF	0	0	24.74	65.66	0	0	161.42	0	251.82	7912	17476	0	25388	157
A1.2		0	0	34.74	280.22	12.95	0	925.34	16.83	1269.98	41161	122682	158	164001	177
Billings										25,798	154,615	539,166	16,519	760,393	
Rio Grande Arm										17,673	6,396	123,835	3,141	133,377	
Total		896	1,398	13,577	11,145	2,454	-	6,462	289	47,463	161,115	662,157	21,631	868,878	

2000 – Loads; Growth Rate; 2005 – Population

No.	Street	Drainage	Treatment	Septic Tk	Diffuse Factory/special	Total	Street	Drainage	Treatment	Others Factory/special	Total	Growth Rate	2005 Favelas	2005 Urban	2005 Rural	2005 Total
1	56.6	226.3	0.0	0.0		283	25.5	101.8	0.0		127	1.018	483	4671	0	5134
2	259.0	1035.9	0.0	0.0	3.0	1298	116.5	466.1	0.0	0.883	594	1.018	7504	16090	0	23594
3	178.0	712.1	0.0	0.0		890	80.1	320.5	0.0		401	1.018	6530	9690	0	16220
4	558.3	2233.1	0.0	0.0		2791	251.2	1004.9	0.0		1256	1.018	25486	25378	0	50864
5	80.8	323.1	0.0	0.0		404	36.4	145.4	0.0		182	1.018	1349	6011	0	7360
6	412.9	1651.7	0.0	0.0		2065	185.8	743.3	0.0		929	1.018	8378	28993	250	37621
7	0.1	0.4	0.0	0.0		0	0.0	0.2	0.0		0	1.018	0	0	9	9
A14	1543.7	6182.6	0.0	0.0	3.0	7731.3	695.5	2782.2	0.0	0.9	3478.6		49730	90833	259	140822
8	101.8	407.3	0.0	0.0		509	45.8	183.3	0.0		229	1.018	3620	4199	1458	9277
9	529.5	2117.8	0.0	0.0		2647	238.3	953.0	0.0		1191	1.026	7714	42260	189	50163
10	94.1	1223.3	0.0	0.0		1317	42.3	550.5	0.0		593	1.026	2687	14781	363	17831
A13.2	725.4	3748.4	0.0	0.0	0.0	4473.782	326.4219	1686.785	0	0	2013.206		14021	61240	2010	77271
11	8.8	114.0	0.0	0.0		123	3.9	51.3	0.0		55	1.046	0	758	1072	1830
12	0.4	5.6	0.0	0.0		6	0.2	2.5	0.0		3	1.046	0	0	90	90
A13.1	9.2	119.6	0.0	0.0	0.0	128.8	4.1	53.8	0.0	0.0	57.9		0	758	1162	1920
13	3.4	43.9	0.0	0.0		47	1.5	19.8	0.0		21	1.046	0	576	129	705
14	103.8	1349.2	0.0	0.0		1453	46.7	607.1	0.0		654	1.046	3365	18294	0	21659
A12.3	107.2	1393.1	0.0	0.0	0.0	1500.2	48.2	626.9	0.0	0.0	675.1		3365	18970	129	22364
15	378.6	4924.3	0.0	0.0	60.0	5363	170.5	2215.9	0.0		2386	1.046	18253	60793	5	79051
A12.2	378.6	4924.3	0.0	0.0	60.0	5363.1	170.5	2215.9	0.0	0.0	2386.4		18253	60793	5	79051
16	35.8	465.7	0.0	0.0		501	16.1	209.5	0.0		226	1.046	0	7475	0	7475
17	4.1	52.8	0.0	0.0		57	1.8	23.8	0.0		26	1.046	0	848	0	848
18	37.8	491.1	0.0	0.0		529	17.0	221.0	0.0		238	1.046	0	7884	0	7884
19	122.6	1593.2	0.0	0.0	171.0	1887	55.2	717.0	0.0		772	1.046	4984	20593	0	25577
20	0.0	0.0	123.2	0.0		123	0.0	0.0	19.4		19	1.046	0	1286	0	1286
21	0.0	0.0	147.0	0.0		147	0.0	0.0	23.2		23	1.046	0	1534	0	1534
22	52.2	678.4	0.0	0.0		731	23.5	305.3	0.0		329	1.046	6173	4709	8	10890
23	58.7	762.8	0.0	0.0		821	26.4	343.3	0.0		370	1.046	2092	10040	114	12246
24	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0	1.046	0	0	0	0
25	28.6	371.5	0.0	0.0		400	12.9	167.2	0.0		180	1.046	0	5900	64	5964
A12.1	339.7	4415.5	270.2	0.0	171.0	5196.4	152.8	1987.0	42.6	0.0	2182.4		13249	60269	186	73704
26	16.9	219.4	0.0	0.0		236	7.6	98.7	0.0		106	1.046	0	3440	83	3523
27	0.9	12.1	0.0	0.0		13	0.4	5.4	0.0		6	1.046	0	3	192	195
28	3.1	40.6	0.0	0.0		44	1.4	18.3	0.0		20	1.046	0	626	26	652
29	1.0	12.8	0.0	0.0		14	0.4	5.8	0.0		6	1.046	0	154	51	205
30	58.6	761.0	0.0	0.0		821	26.4	342.9	0.0		369	1.046	10157	2072	3	12232
31	0.8	10.5	0.0	0.0		11	0.4	4.7	0.0		5	1.046	0	84	85	169
32	1.3	16.5	0.0	0.0		18	0.6	7.4	0.0		8	1.046	0	253	13	266
A11	82.6	1074.0	0.0	0.0	0.0	1156.6	37.2	483.3	0.0	0.0	520.5		10157	6832	453	17242
33	13.3	173.0	0.0	0.0		186	6.0	77.9	0.0		84	1.046	2259	331	188	2778
34	11.2	56.2	0.0	0.0		67	5.1	25.3	0.0		30	1.044	0	1131	30	1161
35	98.6	492.8	0.0	0.0		591	44.4	221.8	0.0		266	1.044	645	9542	0	10187
36	88.0	440.0	0.0	0.0		528	39.6	198.0	0.0		238	1.044	3177	5518	401	9096
37	48.5	242.5	0.0	0.0		291	21.8	109.1	0.0		131	1.044	0	5012	0	5012
38	74.1	370.3	0.0	0.0		444	33.3	166.6	0.0		200	1.044	0	7653	0	7653
B6	333.7	1774.8	0.0	0.0	0.0	2108.4	150.1	798.6	0.0	0.0	948.8		6081	29187	619	35887
39	24.4	122.2	0.0	0.0		147	11.0	55.0	0.0		66	1.044	0	2526	0	2526
40	0.4	3.5	0.0	0.0		4	0.2	1.5	0.0		2	1.010	0	75	0	75
41	0.0	0.2	0.0	0.0		0	0.0	0.1	0.0		0	1.010	0	2	0	2
42	8.8	114.4	0.0	0.0		123	4.0	51.5	0.0		55	1.010	1076	441	24	1541
B5	33.7	242.3	0.0	0.0	0.0	276.0	15.2	109.1	0.0	0.0	124.2		1076	3044	24	4144
43	108.7	1412.9	0.0	0.0	1.5	1523	48.9	635.8	0.0		685	1.026	0	19924	671	20595
44	120.7	156.9	1412.3	0.0		1690	54.3	70.6	222.4		347	1.010	620	20524	0	21144
45	156.8	203.8	1834.3	0.0		2195	70.5	91.7	288.9		451	1.010	0	27462	0	27462
45A	42.5	55.2	497.1	0.0		595	19.1	24.9	78.3		122	1.010	0	7442	0	7442
46	12.9	168.1	0.0	0.0		181	5.8	75.6	0.0		81	1.010	0	2134	131	2265
B4	441.6	1996.9	3743.6	0.0	1.5	6183.6	198.7	898.6	589.6	0.0	1687.0		620	77486	802	78908
48	19.8	257.9	0.0	0.0		278	8.9	116.1	0.0		125	1.019	0	1393	2240	3633
49	19.5	97.4	0.0	0.0	4080.0	4197	8.8	43.8	0.0		53	0.979	0	1184	277	1461
50	3.7	18.3	0.0	0.0		22	1.6	8.2	0.0		10	0.979	0	274	0	274
50A	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0	0.979	0	0	0	0
51	14.3	186.0	0.0	0.0		200	6.4	83.7	0.0		90	1.019	0	2458	163	2621
51A	73.4	477.2	477.2	0.0		1028	33.0	214.7	21.5		269	1.019	0	13443	0	13443
51B	5.3	68.6	0.0	0.0		74	2.4	30.9	0.0		33	1.019	0	967	0	967
51C	36.2	470.1	0.0	0.0		506	16.3	211.5	0.0		228	1.019	0	6249	372	6621
51D	56.3	366.2	366.2	0.0		789	25.4	164.8	16.5		207	1.019	0	10178	138	10316
B3	228.5	1941.9	843.4	0.0	4080.0	7093.8	102.8	873.8	38.0	0.0	1014.6		0	36146	3190	39336
47	27.7	359.8	0.0	0.0	10.0	397	12.5	161.9	0.0		174	1.010	0	4646	0	4646
52	20.6	267.4	0.0	0.0		288	9.3	120.3	0.0		130	1.019	0	3517	249	3766
53	2.5	32.0	0.0	0.0		34	1.1	14.4	0.0		15	1.019	0	448	2	450
54	1.8	23.1	0.0	0.0		25	0.8	10.4	0.0		11	1.010	0	68	243	311
55	2.1	29.2	0.0	0.0		31	1.0	13.1	0.0		14	1.010	0	393	0	393
56	0.5	6.6	0.0	0.0		7	0.2	3.0	0.0		3	1.010	0	89	0	89
57	2.9	37.4	0.0	0.0		40	1.3	16.8	0.0		18	1.010	0	479	25	504
58	30.5	395.9	0.0	0.0		426	13.7	178.1	0.0		192	1.010	0	5073	261	5334
B2	88.6	1151.4	0.0	0.0	10.0	1249.9	39.9	518.1	0.0	0.0	558.0		0	14915	780	15695
59	37.5	187.6	0.0	0.0		225	16.9	84.4	0.0		101	1.043	0	3849	11	3860
60	17.8	71.4	0.0	0.0		89	8.0	32.1	0.0		40	1.043	0	1689	147	1836
61	47.5	190.1	0.0	0.0		238	21.4	85.5	0.0		107	1.043	0	4790	107	4897
B1	102.9	449.1	0.0	0.0	0.0	552.0	46.3	202.1	0.0	0.0	248.4		0	10318	265	10583
62	51.1	0.0	920.1	0.0		971	23.0	0.0	41.4		64	1.043	802	10515	602	11919
63	1.4	5.7	0.0	0.0		7	0.6	2.6	0.0		3	1.043	0	44	102	146
64	15.3	61.3	0.0	0.0		77	6.9	27.6	0.0		35	1.043	0	1568	10	1578
65	17.1	68.5	0.0	0.0		86	7.7	30.8	0.0		39	1.043	0	1761	0	1761
A10	85.0	135.6	920.1	0.0	0.0	1140.6	38.3	61.0	41.4	0.0	140.7		802	13888	714	15404
66	4.2	16.9	0.0	0.0		21	1.9	7.6	0.0		10	1.043	0	434	0	434
67	0.1	0.4	0.0	0.0		1	0.0	0.2	0.0		0	1.043	0	11	0	11
68	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0	1.043	0	0	0	0
69	6.2	31.1	0.0	0.0		37	2.8	14.0	0.0		17	0.979	0	0	467	467
A9.3	10.6	48.5	0.0	0.0	0.0	59.0	4.8	21.8	0.0	0.0	26.6		0	445	467	912
70	0.1	0.4	0.0	0.0		1	0.0	0.2	0.0		0	0.979	0	0	6	6
71	4.5	22.3	0.0	0.0		27	2.0	10.0	0.0		12	0.979	0	281	53	334
72	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0	0.979	0	0	0	0
73	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0	0.979	0	0	0	0
74	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0	0.979	0	0	0	0
75	3.5	17.7	0.0	0.0		21	1.6	8.0	0.0		10	0.979	0	0	265	265
A9.2	8.1	40.4	0.0	0.0	0.0	48.5	3.4	18.2	0.0	0.0	21.8		0	281	324	605
76	1.4	7.2	0.0	0.0		9	0.6	3.2	0.0		4	1.021	0	0	133	133
77	0.3	1.1	0.0	0.0		1	0.1	0.5	0.0		1	1.042	0	0	28	28
78	0.7	2.8	0.0	0.0		3	0.3	1.3	0.0		2	1.042	0	0	71	71
79	0.0	0.1	0.0	0.0		0	0.0	0.0	0.0		0	1.042	0	0	2	2
A9.1	2.4	11.2	0.0	0.0	0.0	13.6	1.1	5.0	0.0	0.0	6.1		0	0	234	234
80	0.0	0.1	0.0	0.0		0	0.0	0.0	0.0		0	1.042	0	0	2	2
81	0.0	0.1	0.0	0.0		0	0.0	0.1	0.0		0	1.042	0	0	4	4
82	0.2	0.9	0.0	0.0		1	0.1	0.4	0.0		0	1.042	0	0	22	22
83	0.2	0.7	0.0	0.0		1	0.1	0.3	0.0		0	1.042	0	0	17	17
84	0.3	1.2	0.0	0.0		2	0.1	0.5	0.0		1	1.042	0	0	31	31
85	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0	1.042	0	0	0	0
86	6.5	26.0	0.0	0.0		32	2.9	11.7	0.0		15	1.042	0	615	49	664
A8	7.2	28.9	0.0	0.0	0.0	36.2	3.3	13.0	0.0	0.0	16.3		0	615	125	740
86A	1.6	6.5	0.0	0.0		8	0.7	2.9	0.0		4	1.042	0	0	166	166
87	25.7	102.9	0.0	0.0		129	11.6	46.3	0.0		58	1.042	0	2206	427	2633
88	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0	1.042	0	0	0	0
89	0.7	2.7	0.0	0.0		3	0.3	1.2	0.0		2	1.042	0	0	70	70
90	0.8	3.0	0.0	0.0		4	0.3	1.4	0.0		2	1.042	0	0	77	77
91	2.1	8.5	0.0	0.0		11	1.0	3.8	0.0		5	1.042	0	219	0	219
A7	30.9	123.7	0.0	0.0	0.0	154.6	13.9	55.7	0.0	0.0	69.6		0	2425	740	3165
92	2.3	9.1	0.0	0.0		11	1.0	4.1	0.0		5	1.042	0	233	0	233
93	3.2	12.7	0.0	0.0		16	1.4	5.7	0.0		7	1.042	0	42	284	326
94	1.1	4.2	0.0	0.0		5	0.5	1.9	0.0		2	1.042	0	92	16	108
95	0.0	0.1	0.0	0.0		0	0.0	0.0	0.0		0	1.042	0	2	0	2
96	1.3	5.2	0.0	0.0		7	0.6	2.4	0.0		3	1.042	0	0	134	134
97	32.9	131.7	0.0	0.0		165	14.8	59.2	0.0		74	1.042	0	3239	130	3369
98	7.6	30.2	0.0	0.0		38	3.4	13.6	0.0		17	1.042	0	199	575	774
99	1.6	6.5	0.0	0.0		8	0.7	2.9	0.0		4	1.042	0	0	167	167
A6	50.0	199.8	0.0	0.0	0.0	249.8	22.5	89.9	0.0	0.0	112.4		0	3807	1306	5113
100	7.2	28.9	0.0	0.0		36	3.3	13.0	0.0		16	1.042	0	0	739	739
101	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0	1.042	0	0	0	0
102	0.7	2.8	0.0	0.0		4	0.3	1.3	0.0		2	1.042	0	0	72	72
103	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0	1.042	0	0	0	0
104	3.0	12.0	0.0	0.0		15	1.3	5.4	0.0		7	1.042	0	0	306	306
105	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0	1.042	0	0	0	0
106	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0	1.042	0	0	0	0
107	8.5	33.9	0.0	0.0		42	3.8	15.2	0.0		19	1.036	0	0	843	843
108	3.9	0.0	0.0	0.0		4	1.7	0.0	0.0		2	1.030	0	0	124	124
109	21.9	0.0	0.0	0.0		22	9.8	0.0	0.0		10	1.030	0	0	705	705
110	1.0	0.0	0.0	0.0		1	0.5	0.0	0.0		0	1.030	0	0	32	32
A5	46.1	77.6	0.0	0.0	0.0	123.7	20.8	34.9	0.0	0.0	55.7		0	0	2821	2821
111	1.1	0.0	0.0	0.0		1	0.5	0.0	0.0		0	1.030	0	0	35	35
112	46.9	0.0	0.0	0.0		47	21.1	0.0	0.0		21	1.030	0	0	1512	1512
113	15.9	0.0	0.0	0.0		16	7.1	0.0	0.0		7	1.030	0	0	511	511
114	95.4	0.0	0.0	0.0		95	42.9	0.0	0.0		43	1.030	0	2782	291	3073
115	2.2	0.0	0.0	0.0		2	1.0	0.0	0.0		1	1.030	0	0	71	71
A4.2	161.5	0.0	0.0	0.0	0.0	161.5	72.7	0.0	0.0	0.0	72.7		0	2782	2420	5202
116	9.4	0.0	0.0	0.0		9	4.2	0.0	0.0		4	1.030	0	147	154	301
117	510.9	0.0	0.0	0.0		511	229.9	0.0	0.0		230	1.030	0	15989	464	15453
A4.1	520.3	0.0	0.0	0.0	0.0	520.3	234.1	0.0	0.0	0.0	234.1		0	16136	618	16754
118	358.6	0.0	0.0	0.0		359	161.4	0.0	0.0		161	1.030	0	10978	568	11546
A3.1	358.6	0.0	0.0	0.0	0.0	358.6	161.4	0.0	0.0	0.0	161.4		0	10978	568	11546
119	1.1	0.0	0.0	0.0		1	0.5	0.0	0.0		1	1.026	0	18	17	35
120	2.3	0.0	0.0	0.0		2	1.0	0.0	0.0		1	1.026	0	17	55	72
121	21.5	0.0	0.0	0.0		21	9.7	0.0	0.0		10	1.026	0	485	193	678
122	11.8	0.0	0.0	0.0		12	5.3	0.0	0.0		5	1.026	0	0	374	374
123	1.1	0.0	0.0	0.0		1	0.5	0.0	0.0		1	1.026	0	0	35	35
A3.2	37.8	0.0	0.0	0.0	0.0	37.8	17.0	0.0	0.0	0.0	17.0		0	520	674	1194
124	6.2	0.0	0.0	0.0		6	2.8	0.0	0.0		3	1.026	0	0	196	196
125	7.2	0.0	0.0	0.0		7	3.3	0.0	0.0		3	1.026	0	94	134	228
126	28.3	0.0	0.0	0.0		28	12.7	0.0	0.0		13	1.026	0	47	847	894
A2.2	41.7	0.0	0.0	0.0	0.0	41.7	18.8	0.0	0.0	0.0	18.8		0	141	1177	1318
127	127.1	0.0	0.0	0.0		127	57.2	0.0	0.0		57	1.026	0	3061	954	4015
128	12.2	0.0	0.0	0.0		12	5.5	0.0	0.0		5	1.026	0	241	144	385
A2.1.	139.3	0.0	0.0	0.0	0.0	139.3	62.7	0.0	0.0	0.0	62.7		0	3302	1098	4400
129	2.2	0.0	0.0	0.0		2	1.0	0.0	0.0		1	1.026	0	0	70	70
130	43.2	0.0	0.0	0.0		43	19.4	0.0	0.0		19	1.026	18	1205	141	1364
131	0.6	2.2	0.0	0.0		3	0.2	1.0	0.0		1	1.026	0	38	15	53
132	93.8	375.0	0.0	0.0		469	42.2	168.8	0.0		211	1.026	1934	6915	34	8883
133	106.7	426.9	0.0	0.0		534	48.0	192.1	0.0		240	1.026	0	10035	76	10111
134	4.6	18.5	0.0	0.0		23	2.1	8.3	0.0		10	1.026	3	352	82	437
135	94.7	378.8	0.0	0.0		473	42.6	170.4	0.0		213	1.026	4548	4407	17	8972
136	43.0	171.8	0.0	0.0		215	19.3	77.3	0.0		97	1.026	0	3382	686	4070
137	279.0	1116.0	0.0	0.0		1395	125.6	502.2	0.0		628	1.026	9224	17046	164	26434
A1.3	667.7	2481.2	0.0	0.0	0.0	3136.9	300.5	1120.1	0.0	0.0	1420.6		15727	43380	1287	60394
142	864.0	3456.1	0.0	0.0		4320	388.8	1555.3	0.0		1944	1.026	5762	75957	144	81863
A1.1	864.0	3456.1	0.0	0.0	0.0	4320.2	388.8	1555.3	0.0	0.0	1944.1		5762	75957	144	81863
138	119.2	476.7	0.0	0.0		596	53.6	214.5	0.0		268	1.026	10956	337	0	11293
139	158.8	635.2	0.0	0.0		794	71.5	285.8	0.0		357	1.026	6387	8658	0	15045
140	501.9	2007.6	0.0	0.0		2510	225.9	903.4	0.0		1129	1.026	6008	41400	146	47554
141	273.7	1094.9	0.0	0.0		1369	123.2	492.7	0.0		616	1.026	4625	21274	34	25933
143	392.2	1568.8	0.0	0.0		1961	176.5	706.0	0.0		882	1.026	9827	27332	0	37159
144	199.6	798.5	0.0	0.0		998	89.8	359.3	0.0		449	1.004	0	16970	0	16970
145	17.9	71.7	0.0	0.0		90	8.1	32.3	0.0		40	1.004	0	1524	0	1524
146	304.7	1218.8	0.0	0.0		1523	137.1	548.4	0.0		685	1.004	8072	17828	0	25900
A1.2	1968.0	7872.0	0.0	0.0	0.0	9840.1	885.6	3542.4	0.0	0.0	4428.0		45875	135323	180	181378
Billings	8,180	35,341	1,198	-	134	45,853	3,685	15,333	84	1	19,222	-	175,541	605,278	15,184	805,417
Rio Grande Arm	1,339	7,528	4,567	-	4,091	17,484	533	3,408	636	-	4,301	-	7,777	171,856	3,980	184,553
Total	9,417	42,887	5,777	-	4,226	63,616	4,138	18,756	721	1	24,784	-	184,718	786,471	14,781	989,970

2005 – Increase; Loads

No.	Density	Increase Population	Increase Area	Street	Drainage	Treatment	Septic Tk	Others Factory/special	Total	Street	Drainage	Treatment	Others Factory/special	Total
1	84	440	13200	66.0	263.9	0.0	0.0		330	27.8	111.3	0.0		139
2	211	2013	60390	302.0	1208.0	0.0	0.0	3.0	1513	127.4	509.6	0.0	0.883	638
3	297	1384	41520	207.6	830.5	0.0	0.0		1038	87.6	350.4	0.0		438
4	255	4341	130230	651.1	2604.1	0.0	0.0		3255	274.7	1098.7	0.0		1373
5	140	628	18840	94.2	376.8	0.0	0.0		471	39.7	159.0	0.0		199
6	190	3210	96300	481.5	1926.2	0.0	0.0		2408	203.2	812.6	0.0		1016
7		1	30	0.1	0.5	0.0	0.0		1	0.0	0.2	0.0		0
A14	208	12017	360510	1802.5	7210.1	0.0	0.0	3.0	9015.6	760.4	3041.8	0.0	0.9	3803.1
8	309	791	23730	118.7	475.0	0.0	0.0		594	50.1	200.4	0.0		250
9	220	6042	181260	642.1	2568.3	0.0	0.0		3210	270.9	1083.5	0.0		1354
10	110	2148	64440	114.1	1483.5	0.0	0.0		1598	48.1	625.9	0.0		674
A13.2	164	8981	269430	875.0	4526.8	0.0	0.0	0.0	5401.818	369.1157	1909.772	0	0	2278.892
11	317	369	11070	11.7	152.3	0.0	0.0		164	4.9	64.2	0.0		69
12		18	540	0.6	7.5	0.0	0.0		8	0.2	3.2	0.0		3
A13.1	332	387	11610	12.3	159.7	0.0	0.0	0.0	172.0	5.2	67.4	0.0	0.0	72.6
13	153	142	4260	4.5	58.7	0.0	0.0		63	1.9	24.7	0.0		27
14	160	4362	130860	138.6	1802.0	0.0	0.0		1941	58.5	760.2	0.0		819
A12.3	180	4504	135120	143.1	1860.7	0.0	0.0	0.0	2003.8	60.4	785.0	0.0	0.0	845.4
15	158	15919	477570	505.9	6577.0	0.0	0.0	60.0	7143	213.4	2774.7	0.0		2988
A12.2	158	15919	477570	505.9	6577.0	0.0	0.0	60.0	7143.0	213.4	2774.7	0.0	0.0	2988.1
16	148	1505	45150	47.8	621.9	0.0	0.0		670	20.2	262.4	0.0		283
17	138	171	5130	5.4	70.6	0.0	0.0		76	2.3	29.8	0.0		32
18	173	1588	47640	50.5	655.9	0.0	0.0		706	21.3	276.7	0.0		298
19	101	5151	154530	163.7	2128.0	0.0	0.0	171.0	2463	69.1	897.8	0.0		967
20	132	259	7770	0.0	0.0	164.6	0.0		165	0.0	0.0	24.3		24
21	153	309	9270	0.0	0.0	196.4	0.0		196	0.0	0.0	29.0		29
22	99	2193	65790	69.7	906.0	0.0	0.0		976	29.4	382.2	0.0		412
23	85	2466	73980	78.4	1018.9	0.0	0.0		1097	33.1	429.8	0.0		463
24		0	0	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0
25	135	1201	36030	38.2	496.2	0.0	0.0		534	16.1	209.3	0.0		225
A12.1	110	14843	445290	453.7	5897.5	361.0	0.0	171.0	6883.2	191.4	2488.0	53.3	0.0	2732.7
26	87	710	21300	22.5	293.1	0.0	0.0		316	9.5	123.7	0.0		133
27	722	40	1200	1.2	16.2	0.0	0.0		17	0.5	6.8	0.0		7
28	26	131	3930	4.2	54.2	0.0	0.0		58	1.8	22.9	0.0		25
29	6	41	1230	1.3	17.1	0.0	0.0		18	0.6	7.2	0.0		8
30	166	2463	73890	78.3	1017.7	0.0	0.0		1096	33.0	429.3	0.0		462
31	24	34	1020	1.1	14.1	0.0	0.0		15	0.5	5.9	0.0		6
32	20	54	1620	1.7	22.1	0.0	0.0		24	0.7	9.3	0.0		10
A11	93	3473	104190	110.3	1434.5	0.0	0.0	0.0	1544.9	46.6	605.2	0.0	0.0	651.7
33	250	560	16800	17.8	231.1	0.0	0.0		249	7.5	97.5	0.0		105
34	81	225	6750	14.9	96.6	0.0	0.0		111	6.3	40.8	0.0		47
35	112	1973	59190	130.4	652.0	0.0	0.0		782	55.0	275.0	0.0		330
36	318	1762	52860	116.4	582.1	0.0	0.0		699	49.1	245.6	0.0		295
37	54	971	29130	64.2	320.8	0.0	0.0		385	27.1	135.3	0.0		162
38	56	1482	44460	98.0	489.8	0.0	0.0		588	41.3	206.6	0.0		248
B6	96	6973	209190	441.6	2372.4	0.0	0.0	0.0	2814.0	186.3	1000.9	0.0	0.0	1187.1
39	45	489	14670	32.3	161.7	0.0	0.0		194	13.6	68.2	0.0		82
40	10	4	120	0.5	6.1	0.0	0.0		7	0.2	2.6	0.0		3
41	18	0	0	0.0	0.2	0.0	0.0		0	0.0	0.1	0.0		0
42	34	74	2220	9.9	128.1	0.0	0.0		138	4.2	54.1	0.0		58
B5	38	567	17010	42.7	296.3	0.0	0.0	0.0	339.0	18.0	125.0	0.0	0.0	143.0
43	51	2481	74430	131.8	1713.5	0.0	0.0	1.5	1847	55.6	722.9	0.0		778
44	60	1026	30780	135.3	175.9	1583.3	0.0		1895	57.1	74.2	233.8		365
45	53	1333	39990	175.8	228.5	2056.4	0.0		2461	74.1	96.4	303.6		474
45A	51	361	10830	47.6	61.9	557.3	0.0		667	20.1	26.1	82.3		128
46	54	110	3300	14.5	188.4	0.0	0.0		203	6.1	79.5	0.0		86
B4	54	5311	159330	505.0	2368.3	4196.9	0.0	1.5	7071.7	213.1	999.1	619.7	0.0	1831.9
48	189	326	9780	23.3	302.3	0.0	0.0		326	9.8	127.5	0.0		137
49	38	-163	-4890	18.7	93.5	0.0	0.0	4080.0	4192	7.9	39.4	0.0		47
50	28	-31	-930	3.5	17.5	0.0	0.0		21	1.5	7.4	0.0		9
50A		0	0	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0
51	69	236	7080	16.8	218.1	0.0	0.0		235	7.1	92.0	0.0		99
51A	104	1207	36210	86.0	559.2	559.2	0.0		1204	36.3	235.9	23.6		296
51B	110	87	2610	6.2	80.5	0.0	0.0		87	2.6	33.9	0.0		37
51C	112	594	17820	42.4	550.9	0.0	0.0		593	17.9	232.4	0.0		250
51D	94	926	27780	66.0	429.1	429.1	0.0		924	27.9	181.0	18.1		227
B3	95	3182	95460	261.9	2251.1	988.4	0.0	4080.0	7582.3	110.9	949.7	41.7	0.0	1102.3
47	52	235	7050	31.0	403.4	0.0	0.0	10.0	444	13.1	170.2	0.0		183
52	26	338	10140	24.1	313.3	0.0	0.0		337	10.2	132.2	0.0		142
53	42	40	1200	2.9	37.4	0.0	0.0		40	1.2	15.8	0.0		17
54	165	15	450	2.0	25.9	0.0	0.0		28	0.8	10.9	0.0		12
55	69	19	570	2.5	32.7	0.0	0.0		35	1.1	13.8	0.0		15
56	33	4	120	0.6	7.4	0.0	0.0		8	0.2	3.1	0.0		3
57	6	24	720	3.2	41.9	0.0	0.0		45	1.4	17.7	0.0		19
58	49	259	7770	34.1	443.6	0.0	0.0		478	14.4	187.2	0.0		202
B2	35	934	28020	100.4	1305.8	0.0	0.0	10.0	1416.3	42.4	550.9	0.0	0.0	593.3
59	20	733	21990	49.4	197.6	0.0	0.0		247	20.8	83.4	0.0		104
60	48	349	10470	23.5	94.0	0.0	0.0		118	9.9	39.7	0.0		50
61	84	927	27810	62.6	250.2	0.0	0.0		313	26.4	105.6	0.0		132
B1	34	2009	60270	135.5	541.8	0.0	0.0	0.0	677.3	57.1	228.6	0.0	0.0	285.7
62	73	2262	67860	76.3	0.0	1373.1	0.0		1449	32.2	0.0	57.9		90
63	121	27	810	1.9	7.5	0.0	0.0		9	0.8	3.2	0.0		4
64	82	300	9000	20.2	80.8	0.0	0.0		101	8.5	34.1	0.0		43
65	56	334	10020	22.5	90.2	0.0	0.0		113	9.5	38.0	0.0		48
A10	72	2923	87690	120.9	178.4	1373.1	0.0	0.0	1672.4	51.0	75.3	57.9	0.0	184.2
66	54	82	2460	5.6	22.2	0.0	0.0		28	2.3	9.4	0.0		12
67	18	2	60	0.1	0.6	0.0	0.0		1	0.1	0.2	0.0		0
68		0	0	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0
69		-52	-1560	6.0	23.9	0.0	0.0		30	2.5	10.1	0.0		13
A9.3	103	32	960	11.7	46.7	0.0	0.0	0.0	58.4	4.9	19.7	0.0	0.0	24.6
70		-1	-30	0.1	0.4	0.0	0.0		0	0.0	0.2	0.0		0
71	33	-38	-1140	4.3	21.4	0.0	0.0		26	1.8	9.0	0.0		11
72		0	0	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0
73		0	0	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0
74		0	0	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0
75		-30	-900	3.4	17.0	0.0	0.0		20	1.4	7.2	0.0		9
A9.2	60	-69	-2070	7.7	38.7	0.0	0.0	0.0	46.5	3.3	16.3	0.0	0.0	19.6
76		13	390	1.7	6.8	0.0	0.0		9	0.7	2.9	0.0		4
77		5	150	0.4	1.4	0.0	0.0		2	0.2	0.6	0.0		1
78		13	390	0.9	3.6	0.0	0.0		5	0.4	1.5	0.0		2
79		0	0	0.0	0.1	0.0	0.0		0	0.0	0.0	0.0		0
A9.1		31	930	3.0	12.0	0.0	0.0	0.0	15.0	1.3	5.1	0.0	0.0	6.3
80		0	0	0.0	0.1	0.0	0.0		0	0.0	0.0	0.0		0
81		1	30	0.1	0.2	0.0	0.0		0	0.0	0.1	0.0		0
82		4	120	0.3	1.1	0.0	0.0		1	0.1	0.5	0.0		1
83		3	90	0.2	0.9	0.0	0.0		1	0.1	0.4	0.0		0
84		6	180	0.4	1.6	0.0	0.0		2	0.2	0.7	0.0		1
85		0	0	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0
86	221	123	3690	8.5	34.0	0.0	0.0		42	3.6	14.3	0.0		18
A8	246	137	4110	9.5	37.9	0.0	0.0	0.0	47.4	4.0	16.0	0.0	0.0	20.0
86A		31	930	2.1	8.5	0.0	0.0		11	0.9	3.6	0.0		4
87	40	489	14670	33.7	134.8	0.0	0.0		169	14.2	56.9	0.0		71
88		0	0	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0
89		13	390	0.9	3.6	0.0	0.0		4	0.4	1.5	0.0		2
90		14	420	1.0	3.9	0.0	0.0		5	0.4	1.7	0.0		2
91	27	41	1230	2.8	11.2	0.0	0.0		14	1.2	4.7	0.0		6
A7	43	588	17640	40.5	162.0	0.0	0.0	0.0	202.6	17.1	68.4	0.0	0.0	85.5
92	43	43	1290	3.0	11.9	0.0	0.0		15	1.3	5.0	0.0		6
93	291	61	1830	4.2	16.7	0.0	0.0		21	1.8	7.0	0.0		9
94	27	20	600	1.4	5.5	0.0	0.0		7	0.6	2.3	0.0		3
95	13	0	0	0.0	0.1	0.0	0.0		0	0.0	0.0	0.0		0
96		25	750	1.7	6.9	0.0	0.0		9	0.7	2.9	0.0		4
97	141	626	18780	43.1	172.5	0.0	0.0		216	18.2	72.8	0.0		91
98	108	144	4320	9.9	39.6	0.0	0.0		50	4.2	16.7	0.0		21
99		31	930	2.1	8.6	0.0	0.0		11	0.9	3.6	0.0		5
A6	123	950	28500	65.4	261.8	0.0	0.0	0.0	327.2	27.6	110.4	0.0	0.0	138.1
100		137	4110	9.5	37.8	0.0	0.0		47	4.0	16.0	0.0		20
101		0	0	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0
102		13	390	0.9	3.7	0.0	0.0		5	0.4	1.6	0.0		2
103		0	0	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0
104		57	1710	3.9	15.7	0.0	0.0		20	1.7	6.6	0.0		8
105		0	0	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0
106		0	0	0.0	0.0	0.0	0.0		0	0.0	0.0	0.0		0
107		137	4110	10.8	43.2	0.0	0.0		54	4.6	18.2	0.0		23
108		17	510	4.9	0.0	0.0	0.0		5	2.0	0.0	0.0		2
109		97	2910	27.1	0.0	0.0	0.0		27	11.4	0.0	0.0		11
110		4	120	1.2	0.0	0.0	0.0		1	0.5	0.0	0.0		1
A5		462	13860	58.2	100.4	0.0	0.0	0.0	158.5	24.5	42.3	0.0	0.0	66.9
111		5	150	1.3	0.0	0.0	0.0		1	0.6	0.0	0.0		1
112		208	6240	58.1	0.0	0.0	0.0		58	24.5	0.0	0.0		24
113		70	2100	19.6	0.0	0.0	0.0		20	8.3	0.0	0.0		8
114	48	422	12660	118.0	0.0	0.0	0.0		118	49.8	0.0	0.0		50
115		10	300	2.7	0.0	0.0	0.0		3	1.2	0.0	0.0		1
A4.2	81	715	21450	199.8	0.0	0.0	0.0	0.0	199.8	84.3	0.0	0.0	0.0	84.3
116	193	41	1230	11.6	0.0	0.0	0.0		12	4.9	0.0	0.0		5
117	107	2261	67830	631.8	0.0	0.0	0.0		632	266.5	0.0	0.0		267
A4.1	108	2302	69060	643.4	0.0	0.0	0.0	0.0	643.4	271.4	0.0	0.0	0.0	271.4
118	77	1586	47580	443.4	0.0	0.0	0.0		443	187.0	0.0	0.0		187
A3.1	77	1586	47580	443.4	0.0	0.0	0.0	0.0	443.4	187.0	0.0	0.0	0.0	187.0
119	21	4	120	1.3	0.0	0.0	0.0		1	0.6	0.0	0.0		1
120	38	9	270	2.6	0.0	0.0	0.0		3	1.2	0.0	0.0		1
121	45	81	2430	26.0	0.0	0.0	0.0		26	11.0	0.0	0.0		11
122		45	1350	14.4	0.0	0.0	0.0		14	6.1	0.0	0.0		6
123		4	120	1.3	0.0	0.0	0.0		1	0.6	0.0	0.0		1
A3.2	64	143	4290	45.8	0.0	0.0	0.0	0.0	45.8	19.3	0.0	0.0	0.0	19.3
124		24	720	7.5	0.0	0.0	0.0		8	3.2	0.0	0.0		3
125	48	27	810	8.8	0.0	0.0	0.0		9	3.7	0.0	0.0		4
126	179	108	3240	34.3	0.0	0.0	0.0		34	14.5	0.0	0.0		14
A2.2	135	159	4770	50.6	0.0	0.0	0.0	0.0	50.6	21.4	0.0	0.0	0.0	21.4
127	38	484	14520	154.2	0.0	0.0	0.0		154	65.0	0.0	0.0		65
128	21	46	1380	14.8	0.0	0.0	0.0		15	6.2	0.0	0.0		6
A2.1.	35	530	15900	169.0	0.0	0.0	0.0	0.0	169.0	71.3	0.0	0.0	0.0	71.3
129		8	240	2.7	0.0	0.0	0.0		3	1.1	0.0	0.0		1
130	44	164	4920	17.5	69.8	0.0	0.0		87	7.4	29.5	0.0		37
131	27	7	210	0.7	2.7	0.0	0.0		3	0.3	1.1	0.0		1
132	156	1070	32100	113.7	454.8	0.0	0.0		569	48.0	191.9	0.0		240
133	138	1218	36540	129.4	517.7	0.0	0.0		647	54.6	218.4	0.0		273
134	43	52	1560	5.6	22.4	0.0	0.0		28	2.4	9.4	0.0		12
135	184	1081	32430	114.8	459.4	0.0	0.0		574	48.4	193.8	0.0		242
136	87	490	14700	52.1	208.4	0.0	0.0		260	22.0	87.9	0.0		110
137	204	3184	95520	338.4	1353.4	0.0	0.0		1692	142.7	571.0	0.0		714
A1.3	152	7274	218220	774.8	3088.6	0.0	0.0	0.0	3863.4	326.9	1303.0	0.0	0.0	1629.9
142	150	9860	295800	1047.8	4191.4	0.0	0.0		5239	442.1	1768.2	0.0		2210
A1.1	150	9860	295800	1047.8	4191.4	0.0	0.0	0.0	5239.2	442.1	1768.2	0.0	0.0	2210.3
138	235	1361	40830	144.6	578.2	0.0	0.0		723	61.0	243.9	0.0		305
139	230	1812	54360	192.6	770.3	0.0	0.0		963	81.2	325.0	0.0		406
140	246	5728	171840	608.7	2434.8	0.0	0.0		3043	256.8	1027.2	0.0		1284
141	176	3123	93690	331.9	1327.8	0.0	0.0		1660	140.0	560.2	0.0		700
143	234	4476	134280	475.6	1902.5	0.0	0.0		2378	200.7	802.6	0.0		1003
144	121	335	10050	217.2	868.9	0.0	0.0		1086	91.6	366.6	0.0		458
145	132	30	900	19.5	78.0	0.0	0.0		98	8.2	32.9	0.0		41
146	160	512	15360	331.5	1326.1	0.0	0.0		1658	139.9	559.4	0.0		699
A1.2	196	17377	521310	2321.6	9286.6	0.0	0.0	0.0	11608.2	979.4	3917.8	0.0	0.0	4897.2
Billings		105,124	3,153,720	9,916	45,071	1,734	-	334	55,935	4,127	19,014	111	1	12,316
Rio Grande Arm		18,978	569,308	1,499	9,136	2,182	-	4,091	15,908	638	2,094	551	-	3,343
Total		124,102	3,723,060	11,484	54,207	3,916	-	4,326	73,935	4,511	21,099	772	1	15,452