

Data H

Cost Estimates

COST ESTIMATES

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1. With Master Plan
a. Storage (Container)

Cost required for the container collection system is estimated on the basis of the following conditions.

- Target population: 5% of the total population
According to the POS report by IUDOP, UCA, the marginal population is 13% of the total population. The container collection system targets 40% of the marginal population, i.e., 5% of the total population ($13\% \times 35\% = 4.6\%$).
- Target waste amount: 3% of total collection amount
Household waste occupies about 70% of total waste, e.g., 1,094.3 ton/day of household waste generation amount and 1,513.8 ton/day of total waste generation amount in 2010, $1094.3/1513.8=0.723$. Therefore, waste amount targeted by the container collection system is estimated as 3% of total collection amount, i.e., $0.723 \times 0.046 = 0.033$.
- Container: metal type, 2m^3
- Maintenance: 3% of investment annually

Summary of Storage (container) cost

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
San Salvador											
required number of containers	unit	221	230	239	248	257	275	284	291	300	-
operable containers	unit	92	221	138	239	248	266	146	275	190	-
purchase of containers	unit	129	9	101	9	9	9	138	16	110	539
Investment cost	US\$	112,243	7,831	87,880	7,831	7,831	7,831	120,074	13,922	95,711	468,985
O&M cost	US\$	5,769	6,004	6,239	6,474	6,944	7,179	7,413	7,596	7,831	68,158
Total cost	US\$	118,012	13,835	94,119	14,305	14,775	15,010	127,487	21,518	103,542	537,143
Mejicanos											
required number of containers	unit	33	33	35	36	36	38	39	41	41	-
operable containers	unit	8	33	25	35	36	38	13	39	31	-
purchase of containers	unit	25	0	10	1	0	0	26	2	10	76
Investment cost	US\$	21,753	0	8,701	870	1,740	0	22,623	1,740	8,701	66,128
O&M cost	US\$	861	861	914	940	992	992	1,018	1,070	1,070	9,658
Total cost	US\$	22,614	861	9,615	1,810	2,732	992	23,641	2,810	9,771	75,786
Ciudad Delgado											
required number of containers	unit	14	15	15	15	17	17	17	18	18	-
operable containers	unit	7	14	8	15	17	17	10	16	11	-
purchase of containers	unit	7	1	7	0	0	0	7	2	7	33
Investment cost	US\$	6,091	870	6,091	0	1,740	0	6,091	1,740	6,091	28,714
O&M cost	US\$	365	392	392	392	444	444	444	470	470	4,257
Total cost	US\$	6,456	1,262	6,483	392	444	444	6,535	2,210	6,561	32,971
Cuscatancingo											
required number of containers	unit	12	12	14	14	14	14	15	15	15	-
operable containers	unit	6	12	6	14	14	14	8	15	7	-
purchase of containers	unit	6	0	8	0	0	0	7	0	8	29
Investment cost	US\$	5,221	0	6,961	0	0	0	6,091	0	6,961	25,234
O&M cost	US\$	313	313	365	365	365	365	392	392	392	3,627
Total cost	US\$	5,534	313	7,326	365	365	365	6,483	392	7,353	28,861
Ayutuxtepeque											
required number of containers	unit	5	5	5	5	6	6	6	6	6	-
operable containers	unit	8	8	0	5	6	6	6	6	1	-
purchase of containers	unit	0	0	5	0	0	0	0	0	5	11
Investment cost	US\$	0	0	4,351	0	870	0	0	0	4,351	9,572
O&M cost	US\$	131	131	131	131	157	157	157	157	157	1,466
Total cost	US\$	131	131	4,482	131	1,027	157	157	157	4,508	11,038
San Marcos											

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
required number of containers	15	15	15	17	17	17	17	18	18	18	-
operable containers	6	15	9	15	17	17	17	8	18	12	-
purchase of containers	9	0	6	2	0	0	0	10	0	6	33
Investment cost	7,831	0	5,221	1,740	0	0	0	8,701	0	5,221	28,714
O&M cost	392	392	392	444	444	444	444	470	470	470	4,362
Total cost	8,223	392	5,613	2,184	444	444	444	9,171	470	5,691	33,076
Nueva San Salvador											
required number of containers	39	41	42	44	45	45	47	48	50	50	-
operable containers	28	39	13	42	44	45	45	36	46	21	-
purchase of containers	11	2	29	2	1	0	2	12	4	29	92
Investment cost	9,571	1,740	25,233	1,740	870	0	1,740	10,441	3,480	25,233	80,048
O&M cost	1,018	1,070	1,096	1,148	1,175	1,175	1,227	1,253	1,305	1,305	11,772
Total cost	10,589	2,810	26,329	2,888	2,045	1,175	2,967	11,694	4,785	26,538	91,820
Antiguo Cuscatlan											
required number of containers	20	20	21	21	23	23	24	24	26	26	-
operable containers	2	20	18	21	21	23	23	6	24	23	-
purchase of containers	18	0	3	0	2	0	1	18	2	3	47
Investment cost	15,662	0	2,610	0	1,740	0	870	15,662	1,740	2,610	40,894
O&M cost	522	522	548	548	600	600	626	626	679	679	5,950
Total cost	16,184	522	3,158	548	2,340	600	1,496	16,288	2,419	3,289	46,844
Soyapango											
required number of containers	60	63	65	68	69	72	74	77	78	80	-
operable containers	29	60	34	65	68	69	72	43	74	47	-
purchase of containers	31	3	31	3	1	3	2	34	4	33	145
Investment cost	26,973	2,610	26,973	2,610	870	2,610	1,740	29,583	3,480	28,713	126,162
O&M cost	1,566	1,644	1,697	1,775	1,801	1,879	1,931	2,010	2,036	2,088	18,427
Total cost	28,539	4,254	28,670	4,385	2,671	4,489	3,671	31,593	5,516	30,801	144,589
Ilopango											
required number of containers	20	21	21	21	23	23	24	24	24	26	-
operable containers	6	20	15	21	21	23	23	10	23	18	-
purchase of containers	14	1	6	0	2	0	1	14	1	8	47
Investment cost	12,181	870	5,221	0	1,740	0	870	12,181	870	6,961	40,894
O&M cost	522	548	548	548	600	600	626	626	626	679	5,923
Total cost	12,703	1,418	5,769	548	2,340	600	1,496	12,807	1,496	7,640	46,817
San Martin											
required number of containers	12	12	12	12	12	14	14	14	14	14	-
operable containers	0	12	12	12	12	12	14	2	14	14	-
purchase of containers	12	0	0	0	0	2	0	12	0	0	26
Investment cost	10,441	0	0	0	0	1,740	0	10,441	0	0	22,622
O&M cost	313	313	313	313	313	365	365	365	365	365	3,390

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
Total cost	US\$ 10,754	313	313	313	313	2,105	365	10,806	365	365	26,012
Apopa											
required number of containers	21	23	23	23	24	24	26	26	26	27	-
operable containers	19	21	4	23	23	24	24	24	24	7	-
purchase of containers	2	2	19	0	1	0	2	2	2	20	50
Investment cost	1,740	1,740	16,532	0	870	0	1,740	1,740	1,740	17,402	43,504
O&M cost	548	600	600	600	626	626	679	679	679	705	6,342
Total cost	2,288	2,340	17,132	600	1,496	626	2,419	2,419	2,419	18,107	49,846
Nejapa											
required number of containers	2	3	3	3	3	3	3	3	3	3	-
operable containers	0	2	3	3	3	3	3	1	2	3	-
purchase of containers	2	1	0	0	0	0	0	2	1	0	6
Investment cost	1,740	870	0	0	0	0	0	1,740	870	0	5,220
O&M cost	52	78	78	78	78	78	78	78	78	78	754
Total cost	1,792	948	78	78	78	78	78	1,818	948	78	5,974
Tonacatepeque											
required number of containers	11	11	11	11	11	11	12	12	12	12	-
operable containers	0	11	11	11	11	11	11	1	12	12	-
purchase of containers	11	0	0	0	0	0	1	11	0	0	23
Investment cost	9,571	0	0	0	0	0	870	9,571	0	0	20,012
O&M cost	287	287	287	287	287	287	313	313	313	313	2,974
Total cost	9,858	287	287	287	287	287	1,183	9,884	313	313	22,986
Total cost											
required number of containers	485	504	521	538	557	573	591	607	622	636	-
operable containers	211	488	296	521	538	557	573	314	588	397	-
purchase of containers	277	19	225	17	19	16	18	293	34	239	1,157
Investment cost	241,018	16,531	195,774	14,791	16,531	13,921	15,661	254,939	29,582	207,955	1,006,703
O&M cost	12,659	13,155	13,600	14,043	14,539	14,956	15,426	15,844	16,236	16,602	147,060
Total cost	253,677	29,686	209,374	28,834	31,070	28,877	31,087	270,783	45,818	224,557	1,153,763

San Salvador

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount	ton/day	489.5	510.0	530.3	550.1	570.1	590.0	609.5	628.9	648.3	668.0	-
waste amount for container collection	ton/day	14.7	15.3	15.9	16.5	17.1	17.7	18.3	18.9	19.4	20.0	-
waste amount for container collection	ton/year	5,366	5,585	5,804	6,023	6,242	6,461	6,680	6,899	7,081	7,300	63,441
waste amount for container collection	ton/time	44.1	45.9	47.7	49.5	51.3	53.1	54.9	56.7	58.2	60.0	-
required number of containers	unit	221	230	239	248	257	266	275	284	291	300	-
operatable containers	unit	92	221	138	239	248	257	266	146	275	190	-
purchase of containers	unit	129	9	101	9	9	9	9	138	16	110	539
Cost												
Investment												
direct cost	US\$	90,300	6,300	70,700	6,300	6,300	6,300	6,300	96,600	11,200	77,000	377,300
physical contingency	US\$	9,030	630	7,070	630	630	630	630	9,660	1,120	7,700	37,730
sub-total	US\$	99,330	6,930	77,770	6,930	6,930	6,930	6,930	106,260	12,320	84,700	415,030
VAT	US\$	12,913	901	10,110	901	901	901	901	13,814	1,602	11,011	53,955
total	US\$	112,243	7,831	87,880	7,831	7,831	7,831	7,831	120,074	13,922	95,711	468,985
O&M												
maintenance	US\$	4,641	4,830	5,019	5,208	5,397	5,586	5,775	5,964	6,111	6,300	54,631
physical contingency	US\$	464	483	502	521	540	559	578	596	611	630	5,484
sub-total	US\$	5,105	5,313	5,521	5,729	5,937	6,145	6,353	6,560	6,722	6,930	60,315
VAT	US\$	664	691	718	745	772	799	826	853	874	901	7,843
total	US\$	5,769	6,004	6,239	6,474	6,709	6,944	7,179	7,413	7,596	7,831	68,158
Total (investment + O&M)	US\$	118,012	13,835	94,119	14,305	14,540	14,775	15,010	127,487	21,518	103,542	537,143
	US\$/ton	21.99	2.48	16.22	2.38	2.33	2.29	2.25	18.48	3.04	14.18	8.47

Mejicanos

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount		72.0	74.2	76.5	78.7	80.8	83.0	84.9	87.0	89.0	91.0	-
waste amount for container collection	3 %	2.2	2.2	2.3	2.4	2.4	2.5	2.5	2.6	2.7	2.7	-
waste amount for container collection		803	803	840	876	876	913	913	949	986	986	8,945
waste amount for container collection	3 times/week	6.6	6.6	6.9	7.2	7.2	7.5	7.5	7.8	8.1	8.1	-
required number of containers	0.2 ton/m3	33	33	35	36	36	38	38	39	41	41	-
operatable containers		8	33	25	35	36	36	38	13	39	31	-
purchase of containers		25	0	10	1	0	2	0	26	2	10	76
Cost												
Investment												
direct cost	700 US\$/unit	17,500	0	7,000	700	0	1,400	0	18,200	1,400	7,000	53,200
physical contingency	10 %	1,750	0	700	70	0	140	0	1,820	140	700	5,320
sub-total		19,250	0	7,700	770	0	1,540	0	20,020	1,540	7,700	58,520
VAT	13 %	2,503	0	1,001	100	0	200	0	2,603	200	1,001	7,608
total		21,753	0	8,701	870	0	1,740	0	22,623	1,740	8,701	66,128
O&M												
maintenance	3 %	693	693	735	756	756	798	798	819	861	861	7,770
physical contingency	10 %	69	69	74	76	76	80	80	82	86	86	778
sub-total		762	762	809	832	832	878	878	901	947	947	8,548
VAT	13 %	99	99	105	108	108	114	114	117	123	123	1,110
total		861	861	914	940	940	992	992	1,018	1,070	1,070	9,658
Total (investment + O&M)		22,614	861	9,615	1,810	940	2,732	992	23,641	2,810	9,771	75,786
	US\$/ton	28.16	1.07	11.45	2.07	1.07	2.99	1.09	24.91	2.85	9.91	8.47

Ciudad Delgado

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount		31.4	32.4	33.4	34.3	35.2	36.1	37.0	37.8	38.7	39.5	-
waste amount for container collection	ton/day	0.9	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.2	1.2	-
waste amount for container collection	ton/year	329	365	365	365	402	402	402	402	438	438	3,908
waste amount for container collection	ton/time	2.7	3.0	3.0	3.0	3.3	3.3	3.3	3.3	3.6	3.6	-
required number of containers	unit	14	15	15	15	17	17	17	17	18	18	-
operatable containers	unit	7	14	8	15	15	17	17	10	16	11	-
purchase of containers	unit	7	1	7	0	2	0	0	7	2	7	33
Cost												
Investment												
direct cost	700 US\$/unit	4,900	700	4,900	0	1,400	0	0	4,900	1,400	4,900	23,100
physical contingency	10 %	490	70	490	0	140	0	0	490	140	490	2,310
sub-total		5,390	770	5,390	0	1,540	0	0	5,390	1,540	5,390	25,410
VAT	13 %	701	100	701	0	200	0	0	701	200	701	3,304
total		6,091	870	6,091	0	1,740	0	0	6,091	1,740	6,091	28,714
O&M												
maintenance	3 %	294	315	315	315	357	357	357	357	378	378	3,423
physical contingency	10 %	29	32	32	32	36	36	36	36	38	38	345
sub-total		323	347	347	347	393	393	393	393	416	416	3,768
VAT	13 %	42	45	45	45	51	51	51	51	54	54	489
total		365	392	392	392	444	444	444	444	470	470	4,257
Total (investment + O&M)		6,456	1,262	6,483	392	2,184	444	444	6,535	2,210	6,561	32,971
	US\$/ton	19.62	3.46	17.76	1.07	5.43	1.10	1.10	16.26	5.05	14.98	8.44

Cuscatancingo

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount	ton/day	26.7	27.6	28.4	29.2	30.0	30.7	31.5	32.2	32.9	33.6	-
waste amount for container collection	ton/day	0.8	0.8	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	-
waste amount for container collection	ton/year	292	292	329	329	329	329	329	365	365	365	3,324
waste amount for container collection	ton/time	2.4	2.4	2.7	2.7	2.7	2.7	2.7	3.0	3.0	3.0	-
required number of containers	unit	12	12	14	14	14	14	14	15	15	15	-
operatable containers	unit	6	12	6	14	14	14	14	8	15	7	-
purchase of containers	unit	6	0	8	0	0	0	0	7	0	8	29
Cost												
Investment												
direct cost	US\$	4,200	0	5,600	0	0	0	0	4,900	0	5,600	20,300
physical contingency	US\$	420	0	560	0	0	0	0	490	0	560	2,030
sub-total	US\$	4,620	0	6,160	0	0	0	0	5,390	0	6,160	22,330
VAT	US\$	601	0	801	0	0	0	0	701	0	801	2,904
total	US\$	5,221	0	6,961	0	0	0	0	6,091	0	6,961	25,234
O&M												
maintenance	US\$	252	252	294	294	294	294	294	315	315	315	2,919
physical contingency	US\$	25	25	29	29	29	29	29	32	32	32	291
sub-total	US\$	277	277	323	323	323	323	323	347	347	347	3,210
VAT	US\$	36	36	42	42	42	42	42	45	45	45	417
total	US\$	313	313	365	365	365	365	365	392	392	392	3,627
Total (investment + O&M)	US\$	5,534	313	7,326	365	365	365	365	6,483	392	7,353	28,861
	US\$/ton	18.95	1.07	22.27	1.11	1.11	1.11	1.11	17.76	1.07	20.15	8.68

Ayutuxtepeque

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount	ton/day	10.5	10.8	11.1	11.5	11.8	12.1	12.3	12.6	12.9	13.2	-
waste amount for container collection	ton/day	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	-
waste amount for container collection	ton/year	110	110	110	110	146	146	146	146	146	146	1,316
waste amount for container collection	ton/time	0.9	0.9	0.9	0.9	1.2	1.2	1.2	1.2	1.2	1.2	-
required number of containers	unit	5	5	5	5	6	6	6	6	6	6	-
operatable containers	unit	8	8	0	5	5	6	6	6	6	1	-
purchase of containers	unit	0	0	5	0	1	0	0	0	0	5	11
Cost												
Investment												
direct cost	US\$	0	0	3,500	0	700	0	0	0	0	3,500	7,700
physical contingency	US\$	0	0	350	0	70	0	0	0	0	350	770
sub-total	US\$	0	0	3,850	0	770	0	0	0	0	3,850	8,470
VAT	US\$	0	0	501	0	100	0	0	0	0	501	1,102
total	US\$	0	0	4,351	0	870	0	0	0	0	4,351	9,572
O&M												
maintenance	US\$	105	105	105	105	126	126	126	126	126	126	1,176
physical contingency	US\$	11	11	11	11	13	13	13	13	13	13	122
sub-total	US\$	116	116	116	116	139	139	139	139	139	139	1,298
VAT	US\$	15	15	15	15	18	18	18	18	18	18	168
total	US\$	131	131	131	131	157	157	157	157	157	157	1,466
Total (investment + O&M)	US\$	131	131	4,482	131	1,027	157	157	157	157	4,508	11,038
	US\$/ton	1.19	1.19	40.75	1.19	7.03	1.08	1.08	1.08	1.08	30.88	8.39

San Marcos

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount		32.2	33.1	34.1	35.1	36.0	36.9	37.8	38.7	39.6	40.5	-
waste amount for container collection	3 %	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.2	1.2	1.2	-
waste amount for container collection		365	365	365	402	402	402	402	438	438	438	4,017
waste amount for container collection	3 times/week	3.0	3.0	3.0	3.3	3.3	3.3	3.3	3.6	3.6	3.6	-
required number of containers	0.2 ton/m3	15	15	15	17	17	17	17	18	18	18	-
operatable containers		6	15	9	15	17	17	17	8	18	12	-
purchase of containers		9	0	6	2	0	0	0	10	0	6	33
Cost												
Investment												
direct cost	700 US\$/unit	6,300	0	4,200	1,400	0	0	0	7,000	0	4,200	23,100
physical contingency	10 %	630	0	420	140	0	0	0	700	0	420	2,310
sub-total		6,930	0	4,620	1,540	0	0	0	7,700	0	4,620	25,410
VAT	13 %	901	0	601	200	0	0	0	1,001	0	601	3,304
total		7,831	0	5,221	1,740	0	0	0	8,701	0	5,221	28,714
O&M												
maintenance	3 %	315	315	315	357	357	357	357	378	378	378	3,507
physical contingency	10 %	32	32	32	36	36	36	36	38	38	38	354
sub-total		347	347	347	393	393	393	393	416	416	416	3,861
VAT	13 %	45	45	45	51	51	51	51	54	54	54	501
total		392	392	392	444	444	444	444	470	470	470	4,362
Total (investment + O&M)		8,223	392	5,613	2,184	444	444	444	9,171	470	5,691	33,076
	US\$/ton	22.53	1.07	15.38	5.43	1.10	1.10	1.10	20.94	1.07	12.99	8.23

Nueva San Salvador

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount	ton/day	88.2	90.9	93.6	96.2	98.8	101.3	103.8	106.2	108.6	111.0	-
waste amount for container collection	ton/day	2.6	2.7	2.8	2.9	3.0	3.0	3.1	3.2	3.3	3.3	-
waste amount for container collection	ton/year	949	986	1,022	1,059	1,095	1,095	1,132	1,168	1,205	1,205	10,916
waste amount for container collection	ton/time	7.8	8.1	8.4	8.7	9.0	9.0	9.3	9.6	9.9	9.9	-
required number of containers	unit	39	41	42	44	45	45	47	48	50	50	-
operatable containers	unit	28	39	13	42	44	45	45	36	46	21	-
purchase of containers	unit	11	2	29	2	1	0	2	12	4	29	92
Cost												
Investment												
direct cost	US\$	7,700	1,400	20,300	1,400	700	0	1,400	8,400	2,800	20,300	64,400
contingency	US\$	770	140	2,030	140	70	0	140	840	280	2,030	6,440
physical sub-total	US\$	8,470	1,540	22,330	1,540	770	0	1,540	9,240	3,080	22,330	70,840
VAT	US\$	1,101	200	2,903	200	100	0	200	1,201	400	2,903	9,208
total	US\$	9,571	1,740	25,233	1,740	870	0	1,740	10,441	3,480	25,233	80,048
O&M												
maintenance	US\$	819	861	882	924	945	945	987	1,008	1,050	1,050	9,471
contingency	US\$	82	86	88	92	95	95	99	101	105	105	948
physical sub-total	US\$	901	947	970	1,016	1,040	1,040	1,086	1,109	1,155	1,155	10,419
VAT	US\$	117	123	126	132	135	135	141	144	150	150	1,353
total	US\$	1,018	1,070	1,096	1,148	1,175	1,175	1,227	1,253	1,305	1,305	11,772
Total (investment + O&M)	US\$	10,589	2,810	26,329	2,888	2,045	1,175	2,967	11,694	4,785	26,538	91,820
	US\$/ton	11.16	2.85	25.76	2.73	1.87	1.07	2.62	10.01	3.97	22.02	8.41

Antiguo Cuscatlan

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount	ton/day	43.3	44.8	46.5	48.0	49.6	51.1	52.6	54.1	55.6	57.1	-
waste amount for container collection	ton/day	1.3	1.3	1.4	1.4	1.5	1.5	1.6	1.6	1.7	1.7	-
waste amount for container collection	ton/year	475	475	511	511	548	548	584	584	621	621	5,478
waste amount for container collection	ton/time	3.9	3.9	4.2	4.2	4.5	4.5	4.8	4.8	5.1	5.1	-
required number of containers	unit	20	20	21	21	23	23	24	24	26	26	-
operatable containers	unit	2	20	18	21	21	23	23	6	24	23	-
purchase of containers	unit	18	0	3	0	2	0	1	18	2	3	47
Cost												
Investment												
direct cost	US\$	12,600	0	2,100	0	1,400	0	700	12,600	1,400	2,100	32,900
physical contingency	US\$	1,260	0	210	0	140	0	70	1,260	140	210	3,290
sub-total	US\$	13,860	0	2,310	0	1,540	0	770	13,860	1,540	2,310	36,190
VAT	US\$	1,802	0	300	0	200	0	100	1,802	200	300	4,704
total	US\$	15,662	0	2,610	0	1,740	0	870	15,662	1,740	2,610	40,894
O&M												
maintenance	US\$	420	420	441	441	483	483	504	504	546	546	4,788
physical contingency	US\$	42	42	44	44	48	48	50	50	55	55	478
sub-total	US\$	462	462	485	485	531	531	554	554	601	601	5,266
VAT	US\$	60	60	63	63	69	69	72	72	78	78	684
total	US\$	522	522	548	548	600	600	626	626	679	679	5,950
Total (investment + O&M)	US\$	16,184	522	3,158	548	2,340	600	1,496	16,288	2,419	3,289	46,844
	US\$/ton	34.07	1.10	6.18	1.07	4.27	1.09	2.56	27.89	3.90	5.30	8.55

Soyapango

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount		133.4	138.5	143.6	148.7	153.7	158.7	163.6	168.4	173.2	178.3	-
waste amount for container collection	3 %	4.0	4.2	4.3	4.5	4.6	4.8	4.9	5.1	5.2	5.3	-
waste amount for container collection		1,460	1,533	1,570	1,643	1,679	1,752	1,789	1,862	1,898	1,935	17,121
waste amount for container collection	3 times/week	12.0	12.6	12.9	13.5	13.8	14.4	14.7	15.3	15.6	15.9	-
required number of containers	0.2 ton/m3	60	63	65	68	69	72	74	77	78	80	-
operatable containers		29	60	34	65	68	69	72	43	74	47	-
purchase of containers		31	3	31	3	1	3	2	34	4	33	145
Cost												
Investment												
direct cost	700 US\$/unit	21,700	2,100	21,700	2,100	700	2,100	1,400	23,800	2,800	23,100	101,500
physical contingensy	10 %	2,170	210	2,170	210	70	210	140	2,380	280	2,310	10,150
sub-total		23,870	2,310	23,870	2,310	770	2,310	1,540	26,180	3,080	25,410	111,650
VAT	13 %	3,103	300	3,103	300	100	300	200	3,403	400	3,303	14,512
total		26,973	2,610	26,973	2,610	870	2,610	1,740	29,583	3,480	28,713	126,162
O&M												
maintenance	3 %	1,260	1,323	1,365	1,428	1,449	1,512	1,554	1,617	1,638	1,680	14,826
physical contingensy	10 %	126	132	137	143	145	151	155	162	164	168	1,483
sub-total		1,386	1,455	1,502	1,571	1,594	1,663	1,709	1,779	1,802	1,848	16,309
VAT	13 %	180	189	195	204	207	216	222	231	234	240	2,118
total		1,566	1,644	1,697	1,775	1,801	1,879	1,931	2,010	2,036	2,088	18,427
Total (investment + O&M)		28,539	4,254	28,670	4,385	2,671	4,489	3,671	31,593	5,516	30,801	144,589
	US\$/ton	19.55	2.77	18.26	2.67	1.59	2.56	2.05	16.97	2.91	15.92	8.45

Ilopango

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount	ton/day	44.1	45.5	46.9	48.2	49.5	50.8	52.0	53.2	54.4	55.7	-
waste amount for container collection	ton/day	1.3	1.4	1.4	1.4	1.5	1.5	1.6	1.6	1.6	1.7	-
waste amount for container collection	ton/year	475	511	511	511	548	548	584	584	584	621	5,477
waste amount for container collection	ton/time	3.9	4.2	4.2	4.2	4.5	4.5	4.8	4.8	4.8	5.1	-
required number of containers	unit	20	21	21	21	23	23	24	24	24	26	-
operatable containers	unit	6	20	15	21	21	23	23	10	23	18	-
purchase of containers	unit	14	1	6	0	2	0	1	14	1	8	47
Cost												
Investment												
direct cost	700 US\$/unit	9,800	700	4,200	0	1,400	0	700	9,800	700	5,600	32,900
physical contingency	10 %	980	70	420	0	140	0	70	980	70	560	3,290
sub-total		10,780	770	4,620	0	1,540	0	770	10,780	770	6,160	36,190
VAT	13 %	1,401	100	601	0	200	0	100	1,401	100	801	4,704
total		12,181	870	5,221	0	1,740	0	870	12,181	870	6,961	40,894
O&M												
maintenance	3 %	420	441	441	441	483	483	504	504	504	546	4,767
physical contingency	10 %	42	44	44	44	48	48	50	50	50	55	475
sub-total		462	485	485	485	531	531	554	554	554	601	5,242
VAT	13 %	60	63	63	63	69	69	72	72	72	78	681
total		522	548	548	548	600	600	626	626	626	679	5,923
Total (investment + O&M)												
	US\$	12,703	1,418	5,769	548	2,340	600	1,496	12,807	1,496	7,640	46,817
	US\$/ton	26.74	2.77	11.29	1.07	4.27	1.09	2.56	21.93	2.56	12.30	8.55

San Martin

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount		25.0	25.7	26.5	27.2	27.9	28.7	29.4	30.0	30.7	31.4	-
waste amount for container collection	3 %	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	-
waste amount for container collection		292	292	292	292	292	329	329	329	329	329	3,105
waste amount for container collection	3 times/week	2.4	2.4	2.4	2.4	2.4	2.7	2.7	2.7	2.7	2.7	-
required number of containers	0.2 ton/m3	12	12	12	12	12	14	14	14	14	14	-
operatable containers		0	12	12	12	12	12	14	2	14	14	-
purchase of containers		12	0	0	0	0	2	0	12	0	0	26
Cost												
Investment												
direct cost	700 US\$/unit	8,400	0	0	0	0	1,400	0	8,400	0	0	18,200
physical contingency	10 %	840	0	0	0	0	140	0	840	0	0	1,820
sub-total		9,240	0	0	0	0	1,540	0	9,240	0	0	20,020
VAT	13 %	1,201	0	0	0	0	200	0	1,201	0	0	2,602
total		10,441	0	0	0	0	1,740	0	10,441	0	0	22,622
O&M												
maintenance	3 %	252	252	252	252	252	294	294	294	294	294	2,730
physical contingency	10 %	25	25	25	25	25	29	29	29	29	29	270
sub-total		277	277	277	277	277	323	323	323	323	323	3,000
VAT	13 %	36	36	36	36	36	42	42	42	42	42	390
total		313	313	313	313	313	365	365	365	365	365	3,390
Total (investment + O&M)		10,754	313	313	313	313	2,105	365	10,806	365	365	26,012
	US\$/ton	36.83	1.07	1.07	1.07	1.07	6.40	1.11	32.84	1.11	1.11	8.38

Apopa

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount	ton/day	47.0	48.5	49.9	51.3	52.7	54.0	55.3	56.6	57.9	59.2	-
waste amount for container collection	ton/day	1.4	1.5	1.5	1.5	1.6	1.6	1.7	1.7	1.7	1.8	-
waste amount for container collection	ton/year	511	548	548	548	584	584	621	621	621	657	5,843
waste amount for container collection	ton/time	4.2	4.5	4.5	4.5	4.8	4.8	5.1	5.1	5.1	5.4	-
required number of containers	unit	21	23	23	23	24	24	26	26	26	27	-
operatable containers	unit	19	21	4	23	23	24	24	24	24	7	-
purchase of containers	unit	2	2	19	0	1	0	2	2	2	20	50
Cost												
Investment												
direct cost	US\$	1,400	1,400	13,300	0	700	0	1,400	1,400	1,400	14,000	35,000
physical contingency	US\$	140	140	1,330	0	70	0	140	140	140	1,400	3,500
sub-total	US\$	1,540	1,540	14,630	0	770	0	1,540	1,540	1,540	15,400	38,500
VAT	US\$	200	200	1,902	0	100	0	200	200	200	2,002	5,004
total	US\$	1,740	1,740	16,532	0	870	0	1,740	1,740	1,740	17,402	43,504
O&M												
maintenance	US\$	441	483	483	483	504	504	546	546	546	567	5,103
physical contingency	US\$	44	48	48	48	50	50	55	55	55	57	510
sub-total	US\$	485	531	531	531	554	554	601	601	601	624	5,613
VAT	US\$	63	69	69	69	72	72	78	78	78	81	729
total	US\$	548	600	600	600	626	626	679	679	679	705	6,342
Total (investment + O&M)	US\$	2,288	2,340	17,132	600	1,496	626	2,419	2,419	2,419	18,107	49,846
	US\$/ton	4.48	4.27	31.26	1.09	2.56	1.07	3.90	3.90	3.90	27.56	8.53

Nejapa

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount		4.9	5.1	5.2	5.4	5.5	5.7	5.8	5.9	6.1	6.2	-
waste amount for container collection	3 %	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-
waste amount for container collection		37	73	73	73	73	73	73	73	73	73	694
waste amount for container collection	3 times/week	0.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	-
required number of containers	0.2 ton/m3	2	3	3	3	3	3	3	3	3	3	-
operatable containers		0	2	3	3	3	3	3	1	2	3	-
purchase of containers		2	1	0	0	0	0	0	2	1	0	6
Cost												
Investment												
direct cost	700 US\$/unit	1,400	700	0	0	0	0	0	1,400	700	0	4,200
physical contingency	10 %	140	70	0	0	0	0	0	140	70	0	420
sub-total		1,540	770	0	0	0	0	0	1,540	770	0	4,620
VAT	13 %	200	100	0	0	0	0	0	200	100	0	600
total		1,740	870	0	0	0	0	0	1,740	870	0	5,220
O&M												
maintenance	3 %	42	63	63	63	63	63	63	63	63	63	609
physical contingency	10 %	4	6	6	6	6	6	6	6	6	6	58
sub-total		46	69	69	69	69	69	69	69	69	69	667
VAT	13 %	6	9	9	9	9	9	9	9	9	9	87
total		52	78	78	78	78	78	78	78	78	78	754
Total (investment + O&M)		1,792	948	78	78	78	78	78	1,818	948	78	5,974
	US\$/ton	48.43	12.99	1.07	1.07	1.07	1.07	1.07	24.90	12.99	1.07	8.61

Tonacatepeque

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount	ton/day	21.7	22.4	23.0	23.7	24.3	24.9	25.5	26.1	26.7	27.3	-
waste amount for container collection	ton/day	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	-
waste amount for container collection	ton/year	256	256	256	256	256	256	292	292	292	292	2,704
waste amount for container collection	ton/time	2.1	2.1	2.1	2.1	2.1	2.1	2.4	2.4	2.4	2.4	-
required number of containers	unit	11	11	11	11	11	11	12	12	12	12	-
operatable containers	unit	0	11	11	11	11	11	11	1	12	12	-
purchase of containers	unit	11	0	0	0	0	0	1	11	0	0	23
Cost												
Investment												
direct cost	US\$	7,700	0	0	0	0	0	700	7,700	0	0	16,100
physical contingency	US\$	770	0	0	0	0	0	70	770	0	0	1,610
sub-total	US\$	8,470	0	0	0	0	0	770	8,470	0	0	17,710
VAT	US\$	1,101	0	0	0	0	0	100	1,101	0	0	2,302
total	US\$	9,571	0	0	0	0	0	870	9,571	0	0	20,012
O&M												
maintenance	US\$	231	231	231	231	231	231	252	252	252	252	2,394
physical contingency	US\$	23	23	23	23	23	23	25	25	25	25	238
sub-total	US\$	254	254	254	254	254	254	277	277	277	277	2,632
VAT	US\$	33	33	33	33	33	33	36	36	36	36	342
total	US\$	287	287	287	287	287	287	313	313	313	313	2,974
Total (investment + O&M)	US\$	9,858	287	287	287	287	287	1,183	9,884	313	313	22,986
	US\$/ton	38.51	1.12	1.12	1.12	1.12	1.12	4.05	33.85	1.07	1.07	8.50

Total

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount	ton/day	1069.9	1109.5	1149.0	1187.6	1225.9	1264.0	1301.0	1337.7	1374.6	1412.0	-
waste amount for container collection	ton/day	32.1	33.3	34.5	35.6	36.8	37.9	39.0	40.1	41.2	42.4	-
waste amount for container collection	ton/year	11,717	12,155	12,593	12,994	13,432	13,834	14,235	14,637	15,038	15,476	136,111
waste amount for container collection	ton/time	96.3	99.9	103.5	106.8	110.4	113.7	117.0	120.3	123.6	127.2	-
required number of containers	unit	485	504	521	538	557	573	591	607	622	636	-
operatable containers	unit	211	488	296	521	538	557	573	314	588	397	-
purchase of containers	unit	277	19	225	17	19	16	18	293	34	239	1,157
Cost												
Investment												
direct cost	US\$	193,900	13,300	157,500	11,900	13,300	11,200	12,600	205,100	23,800	167,300	809,900
physical contingency	US\$	19,390	1,330	15,750	1,190	1,330	1,120	1,260	20,510	2,380	16,730	80,990
sub-total	US\$	213,290	14,630	173,250	13,090	14,630	12,320	13,860	225,610	26,180	184,030	890,890
VAT	US\$	27,728	1,901	22,524	1,701	1,901	1,601	1,801	29,329	3,402	23,925	115,813
total	US\$	241,018	16,531	195,774	14,791	16,531	13,921	15,661	254,939	29,582	207,955	1,006,703
O&M												
maintenance	US\$	10,185	10,584	10,941	11,298	11,697	12,033	12,411	12,747	13,062	13,356	118,314
physical contingency	US\$	1,018	1,058	1,095	1,130	1,170	1,203	1,241	1,275	1,307	1,337	11,834
sub-total	US\$	11,203	11,642	12,036	12,428	12,867	13,236	13,652	14,022	14,369	14,693	130,148
VAT	US\$	1,456	1,513	1,564	1,615	1,672	1,720	1,774	1,822	1,867	1,909	16,912
total	US\$	12,659	13,155	13,600	14,043	14,539	14,956	15,426	15,844	16,236	16,602	147,060
Total (investment + O&M)	US\$	253,677	29,686	209,374	28,834	31,070	28,877	31,087	270,783	45,818	224,557	1,153,763
	US\$/ton	21.65	2.44	16.63	2.22	2.31	2.09	2.18	18.50	3.05	14.51	8.48

b. Collection

Collection cost is estimated on the basis of the conditions below.

- 18yd³ compactors cover 85% of total collection amount, and 11yd³ compactors cover 15%.
- 10 % of collection efficiency is raised by the collection route improvement, i.e.,
18yd³ compactor: 2.621 ton/hour → 2.883 ton/hour
11yd³ compactor: 1.998 ton/hour → 2.198 ton/hour
- Number of trips is determined by distances from the each municipality to a corresponding destination such as T/S-1, T/S-2, Nejapa SL and Tonacatepeque SL.

Collection ability per vehicle before introduction of transfer stations

Muni.	destination	Time (minute)				collection ability (ton/day)	
		collection	transport	others	total	18yd3	11yd3
011SS	NJ SL	212	118	120	450	10.2	7.8
012SS	NJ SL	218	112	120	450	10.5	8.0
013SS	NJ SL	210	120	120	450	10.1	7.7
014SS	NJ SL	194	136	120	450	9.3	7.1
015SS	NJ SL	196	134	120	450	9.4	7.2
02MJ	NJ SL	230	100	120	450	11.1	8.4
03CD	NJ SL	233	97	120	450	11.2	8.5
04CT	Espiga CD	190	140	120	450	9.1	7.0
05AY	NJ SL	237	93	120	450	11.4	8.7
06SM	NJ SL	174	156	120	450	8.4	6.4
07ST	NJ SL	187	143	120	450	9.0	6.9
08AC	Espiga CD	190	140	120	450	9.1	7.0
09SY	NJ SL	202	128	120	450	9.7	7.4
10IL	NJ SL	186	144	120	450	8.9	6.8
11SMT	SMT OD	318	12	120	450	15.3	11.6
12AP	NJ SL	277	53	120	450	13.3	10.1
13NJ	NJ SL	293	37	120	450	14.1	10.7
14TN	TN OD	318	12	120	450	15.3	11.6

Collection ability per vehicle after introduction of transfer stations

Muni.	destination	Time (minute)				collection ability (ton/day)	
		collection	transport	others	total	18yd3	11yd3
011SS	T/S 02	315	15	120	450	15.1	11.5
012SS	NJ SL	218	112	120	450	10.5	8.0
013SS	T/S 01	323	7	120	450	15.5	11.8
014SS	T/S 01	314	16	120	450	15.1	11.5
015SS	T/S 02	305	25	120	450	14.7	11.2
02MJ	T/S 02	303	27	120	450	14.6	11.1
03CD	NJ SL	233	97	120	450	11.2	8.5
04CT	T/S 02	292	38	120	450	14.0	10.7
05AY	NJ SL	237	93	120	450	11.4	8.7
06SM	T/S 02	291	39	120	450	14.0	10.7
07ST	T/S 01	297	33	120	450	14.3	10.9
08AC	T/S 01	316	14	120	450	15.2	11.6
09SY	T/S 02	308	22	120	450	14.8	11.3
10IL	T/S 02	287	43	120	450	13.8	10.5
11SMT	TN SL	252	78	120	450	12.1	9.2
12AP	NJ SL	277	53	120	450	13.3	10.1
13NJ	NJ SL	293	37	120	450	14.1	10.7
14TN	TN SL	306	24	120	450	14.7	11.2

Estimate of fuel cost before introduction of the transfer stations

Operation		
working day	312 day/year	
18yd3		
fuel (diesel)	2.38 colon/liter	0.27 US\$/liter
mileage	2.0 km/liter	
velocity for collection	3 km/hour	0.0068 US\$/minute
velocity for transport	30 km/hour	0.0675 US\$/minute
oil	10 % of fuel cost	
11yd3		
fuel (diesel)	2.38 colon/liter	0.27 US\$/liter
mileage	2.4 km/liter	
velocity for collection	3 km/hour	0.0056 US\$/minute
velocity for transport	30 km/hour	0.0563 US\$/minute
oil	10 % of fuel cost	

Muni.	Time (minute)		18yd3				11yd3			
			US\$/day			US\$/year	US\$/day			US\$/year
	collection	transport	collection	transport	total	total	collection	transport	total	total
011SS	212	118	1.44	7.97	9.41	2,936	1.19	6.64	7.83	2,443
012SS	218	112	1.48	7.56	9.04	2,820	1.22	6.31	7.53	2,349
013SS	210	120	1.43	8.10	9.53	2,973	1.18	6.76	7.94	2,477
014SS	194	136	1.32	9.18	10.50	3,276	1.09	7.66	8.75	2,730
015SS	196	134	1.33	9.05	10.38	3,239	1.10	7.54	8.64	2,696
02MJ	230	100	1.56	6.75	8.31	2,593	1.29	5.63	6.92	2,159
03CD	233	97	1.58	6.55	8.13	2,537	1.30	5.46	6.76	2,109
04CT	190	140	1.29	9.45	10.74	3,351	1.06	7.88	8.94	2,789
05AY	237	93	1.61	6.28	7.89	2,462	1.33	5.24	6.57	2,050
06SM	174	156	1.18	10.53	11.71	3,654	0.97	8.78	9.75	3,042
07ST	187	143	1.27	9.65	10.92	3,407	1.05	8.05	9.10	2,839
08AC	190	140	1.29	9.45	10.74	3,351	1.06	7.88	8.94	2,789
09SY	202	128	1.37	8.64	10.01	3,123	1.13	7.21	8.34	2,602
10IL	186	144	1.26	9.72	10.98	3,426	1.04	8.11	9.15	2,855
11SMT	318	12	2.16	0.81	2.97	927	1.78	0.68	2.46	768
12AP	277	53	1.88	3.58	5.46	1,704	1.55	2.98	4.53	1,413
13NJ	293	37	1.99	2.50	4.49	1,401	1.64	2.08	3.72	1,161
14TN	318	12	2.16	0.81	2.97	927	1.78	0.68	2.46	768

Estimate of fuel cost after introduction of the transfer stations

Operation		
working day	312 day/year	
18yd3		
fuel (diesel)	2.38 colon/liter	0.27 US\$/liter
mileage	2.0 km/liter	
velocity for collection	3 km/hour	0.0068 US\$/minute
velocity for transport	30 km/hour	0.0675 US\$/minute
oil	10 % of fuel cost	
11yd3		
fuel (diesel)	2.38 colon/liter	0.27 US\$/liter
mileage	2.4 km/liter	
velocity for collection	3 km/hour	0.0056 US\$/minute
velocity for transport	30 km/hour	0.0563 US\$/minute
oil	10 % of fuel cost	

Muni.	Time (minute)		18yd3				11yd3			
			US\$/day			US\$/year	US\$/day			US\$/year
	collection	transport	collection	transport	total	total	collection	transport	total	total
011SS	315	15	2.14	1.01	3.15	983	1.76	0.84	2.60	811
012SS	218	112	1.48	7.56	9.04	2,820	1.22	6.31	7.53	2,349
013SS	323	7	2.20	0.47	2.67	833	1.81	0.39	2.20	686
014SS	314	16	2.14	1.08	3.22	1,005	1.76	0.90	2.66	830
015SS	305	25	2.07	1.69	3.76	1,173	1.71	1.41	3.12	973
02MJ	303	27	2.06	1.82	3.88	1,211	1.70	1.52	3.22	1,005
03CD	233	97	1.58	6.55	8.13	2,537	1.30	5.46	6.76	2,109
04CT	292	38	1.99	2.57	4.56	1,423	1.64	2.14	3.78	1,179
05AY	237	93	1.61	6.28	7.89	2,462	1.33	5.24	6.57	2,050
06SM	291	39	1.98	2.63	4.61	1,438	1.63	2.20	3.83	1,195
07ST	297	33	2.02	2.23	4.25	1,326	1.66	1.86	3.52	1,098
08AC	316	14	2.15	0.95	3.10	967	1.77	0.79	2.56	799
09SY	308	22	2.09	1.49	3.58	1,117	1.72	1.24	2.96	924
10IL	287	43	1.95	2.90	4.85	1,513	1.61	2.42	4.03	1,257
11SMT	252	78	1.71	5.27	6.98	2,178	1.41	4.39	5.80	1,810
12AP	277	53	1.88	3.58	5.46	1,704	1.55	2.98	4.53	1,413
13NJ	293	37	1.99	2.50	4.49	1,401	1.64	2.08	3.72	1,161
14TN	306	24	2.08	1.62	3.70	1,154	1.71	1.35	3.06	955

Number of collection vehicle

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
San Salvador required number of vehicle (1)	18yd3 unit	54.6	56.7	59.0	56.5	46.2	47.8	49.3	50.9	52.6	54.1	
	11yd3 unit	12.7	13.1	13.7	13.0	10.7	11.1	11.4	11.8	12.3	12.5	
	18yd3 unit	55	56	59	56	47	48	49	50	53	54	
	11yd3 unit	12	13	14	13	11	11	11	12	12	12	
operable vehicle	18yd3 unit	36	44	8	45	45	47	48	41	50	16	
	11yd3 unit	5	11	6	11	11	11	11	5	12	7	
purchase of vehicle	18yd3 unit	8	0	37	0	2	1	1	9	3	38	99
	11yd3 unit	6	0	5	0	0	0	0	7	0	5	23
Mejicanos required number of vehicle (1)	18yd3 unit	7.2	7.4	7.6	7.8	6.1	6.3	6.4	6.6	6.7	6.9	
	11yd3 unit	1.7	1.7	1.8	1.8	1.4	1.5	1.5	1.5	1.6	1.6	
	18yd3 unit	7	7	8	8	6	6	6	7	7	7	
	11yd3 unit	2	2	2	2	1	2	2	2	2	2	
operable vehicle	18yd3 unit	5	6	1	6	6	6	6	5	7	2	
	11yd3 unit	2	2	0	1	1	1	2	2	2	1	
purchase of vehicle	18yd3 unit	1	0	5	0	0	0	0	2	0	5	13
	11yd3 unit	0	0	1	0	0	1	0	0	0	1	3
Ciudad Delgado required number of vehicle (1)	18yd3 unit	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.7	3.8	3.9	
	11yd3 unit	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	
	18yd3 unit	3	3	3	3	4	4	4	4	4	4	
	11yd3 unit	1	1	1	1	1	1	1	1	1	1	
operable vehicle	18yd3 unit	5	5	0	3	3	4	4	4	4	1	
	11yd3 unit	2	2	0	1	1	1	1	1	1	0	
purchase of vehicle	18yd3 unit	0	0	3	0	1	0	0	0	0	3	7
	11yd3 unit	0	0	1	0	0	0	0	0	0	1	2
Cuscatancingo required number of vehicle (1)	18yd3 unit	3.2	3.4	3.4	3.6	2.4	2.4	2.5	2.5	2.6	2.7	
	11yd3 unit	0.7	0.8	0.8	0.8	0.6	0.6	0.6	0.6	0.6	0.6	
	18yd3 unit	3	3	3	4	2	2	3	3	3	3	

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
operable vehicle	11yd3 unit	1	1	1	1	1	1	1	1	1	1	1
	18yd3 unit	3	2	0	2	2	2	2	3	3	3	1
	11yd3 unit	1	1	0	1	1	1	1	1	1	1	0
	18yd3 unit	0	0	2	0	0	0	1	0	0	0	2
	11yd3 unit	0	0	1	0	0	0	0	0	0	0	1
purchase of vehicle	11yd3 unit	0	0	0	0	0	0	0	0	0	0	5
	18yd3 unit	0	0	0	0	0	0	0	0	0	0	2
	18yd3 unit	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.3
	11yd3 unit	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	18yd3 unit	1	1	1	1	1	1	1	1	1	1	1
operable vehicle	11yd3 unit	0	0	0	0	0	0	0	0	0	0	0
	18yd3 unit	1	1	0	1	1	1	1	1	1	1	0
	11yd3 unit	0	0	0	0	0	0	0	0	0	0	0
	18yd3 unit	0	0	0	0	0	0	0	0	0	0	0
	11yd3 unit	0	0	1	0	0	0	0	0	0	0	1
purchase of vehicle	18yd3 unit	0	0	0	0	0	0	0	0	0	0	2
	11yd3 unit	0	0	0	0	0	0	0	0	0	0	0
	18yd3 unit	4.2	4.4	4.5	4.6	2.8	2.9	3.0	3.1	3.1	3.2	3.2
	11yd3 unit	1.0	1.0	1.0	1.1	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	18yd3 unit	4	4	5	5	3	3	3	3	3	3	3
operable vehicle	11yd3 unit	1	1	1	1	1	1	1	1	1	1	1
	18yd3 unit	2	3	1	3	3	3	3	2	3	3	1
	11yd3 unit	1	1	0	1	1	1	1	1	1	1	0
	18yd3 unit	1	1	0	1	0	0	0	0	0	0	0
	11yd3 unit	1	1	2	1	1	1	1	1	1	1	0
purchase of vehicle	18yd3 unit	1	0	2	0	0	0	0	0	0	0	6
	11yd3 unit	0	0	1	0	0	0	0	0	0	0	2
	18yd3 unit	10.8	11.2	11.5	7.4	7.6	7.8	8.0	8.2	8.4	8.6	8.6
	11yd3 unit	2.5	2.6	2.6	1.7	1.8	1.8	1.9	1.9	1.9	2.0	2.0
	18yd3 unit	11	11	12	7	8	8	8	8	8	9	9
operable vehicle	11yd3 unit	3	3	3	2	2	2	2	2	2	2	2
	18yd3 unit	4	7	3	7	7	8	8	5	8	4	4
	11yd3 unit	1	2	1	2	2	2	2	1	2	1	1
	18yd3 unit	3	0	4	0	1	0	0	3	0	0	5
	11yd3 unit	1	0	1	0	0	0	0	0	0	0	16
purchase of vehicle	18yd3 unit	1	0	1	0	0	0	0	0	0	0	1
	11yd3 unit	0	0	0	0	0	0	0	0	0	0	4
	18yd3 unit	5.3	5.4	5.6	3.5	3.6	3.7	3.8	3.9	4.0	4.2	4.2
	11yd3 unit	1.2	1.3	1.3	0.8	0.8	0.9	0.9	0.9	0.9	1.0	1.0
	18yd3 unit	5	5	6	4	4	4	4	4	4	4	4
Antiguo Cuscatlan	18yd3 unit	5.3	5.4	5.6	3.5	3.6	3.7	3.8	3.9	4.0	4.2	4.2
	11yd3 unit	1.2	1.3	1.3	0.8	0.8	0.9	0.9	0.9	0.9	1.0	1.0
	18yd3 unit	5	5	6	4	4	4	4	4	4	4	4
	11yd3 unit	1.2	1.3	1.3	0.8	0.8	0.9	0.9	0.9	0.9	1.0	1.0
	18yd3 unit	5	5	6	4	4	4	4	4	4	4	4

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total	
operable vehicle	11yd3 unit	1	1	1	1	1	1	1	1	1	1	1	
	18yd3 unit	1	4	3	4	4	4	4	1	4	3	3	
	11yd3 unit	1	1	0	1	1	1	1	1	1	0	0	
	18yd3 unit	3	0	1	0	0	0	0	3	0	1	8	
	11yd3 unit	0	0	1	0	0	0	0	0	0	1	2	
Soyapango required number of vehicle (1)	18yd3 unit	15.2	15.8	16.4	16.9	11.5	11.8	12.2	12.6	12.9	13.3		
	11yd3 unit	3.5	3.6	3.8	3.9	2.7	2.7	2.8	2.9	3.0	3.1		
	18yd3 unit	15	16	16	17	12	12	12	13	13	13		
	11yd3 unit	4	4	4	4	3	3	3	3	3	3		
	18yd3 unit	10	12	12	12	12	12	12	10	13	3		
	11yd3 unit	3	3	0	3	3	3	3	3	3	0		
	18yd3 unit	2	0	10	0	0	0	0	3	0	10	25	
	11yd3 unit	0	0	3	0	0	0	0	0	0	0	6	
	Ilopango required number of vehicle (1)	18yd3 unit	5.5	5.6	5.8	6.0	4.0	4.1	4.2	4.3	4.4	4.5	
		11yd3 unit	1.3	1.3	1.3	1.4	0.9	0.9	1.0	1.0	1.0	1.0	
18yd3 unit		6	6	6	6	4	4	4	4	4	5		
11yd3 unit		1	1	1	1	1	1	1	1	1	1		
18yd3 unit		4	4	0	4	4	4	4	4	4	0		
11yd3 unit		1	1	0	1	1	1	1	1	1	0		
18yd3 unit		0	0	4	0	0	0	0	0	0	5	9	
11yd3 unit		0	0	1	0	0	0	0	0	0	0	2	
San Martin required number of vehicle (1)		18yd3 unit	1.8	1.9	1.9	2.0	2.5	2.6	2.7	2.7	2.8	2.9	
		11yd3 unit	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	
	18yd3 unit	2	2	2	2	3	3	3	3	3	3		
	11yd3 unit	0	0	1	1	1	1	1	1	1	1		
	18yd3 unit	3	3	0	2	2	3	3	3	3	1		
	11yd3 unit	1	1	0	1	1	1	1	1	1	0		
	18yd3 unit	0	0	2	0	1	0	0	0	0	2	5	
	11yd3 unit	0	0	1	0	0	0	0	0	0	0	2	
	Apopa required number of vehicle (1)	18yd3 unit	3.9	4.0	4.1	4.3	4.4	4.5	4.6	4.7	4.8	4.9	
		11yd3 unit	0.9	0.9	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	
18yd3 unit		4	4	4	4	4	5	5	5	5	5		

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
operable vehicle	11yd3 unit	1	1	1	1	1	1	1	1	1	1	1
	18yd3 unit	4	4	0	4	4	4	5	5	5	5	1
	11yd3 unit	1	1	0	1	1	1	1	1	1	1	0
	18yd3 unit	0	0	4	0	0	1	0	0	0	0	4
	11yd3 unit	0	0	1	0	0	0	0	0	0	0	1
purchase of vehicle	18yd3 unit	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5
	11yd3 unit	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	18yd3 unit	1	1	1	1	1	1	1	1	1	1	1
	11yd3 unit	0	0	0	0	0	0	0	0	0	0	0
	18yd3 unit	1	1	0	1	1	1	1	1	1	1	1
purchase of vehicle	11yd3 unit	1	1	0	0	0	0	0	0	0	0	0
	18yd3 unit	0	0	1	0	0	0	0	0	0	0	0
	11yd3 unit	0	0	0	0	0	0	0	0	0	0	0
	18yd3 unit	0	0	1	0	0	0	0	0	0	0	1
	11yd3 unit	0	0	0	0	0	0	0	0	0	0	0
Tonacatepeque	18yd3 unit	1.6	1.6	1.7	1.7	1.8	1.9	1.9	2.0	2.0	2.0	2.0
	11yd3 unit	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5
	18yd3 unit	2	2	2	2	2	2	2	2	2	2	2
	11yd3 unit	0	0	0	0	0	0	0	1	1	1	1
	18yd3 unit	2	2	0	2	2	2	2	2	2	2	2
purchase of vehicle	11yd3 unit	0	0	0	0	0	0	0	0	0	0	0
	18yd3 unit	0	0	2	0	0	0	0	0	0	0	0
	11yd3 unit	0	0	0	0	0	0	0	0	0	0	0
	18yd3 unit	0	0	0	0	0	0	0	0	0	0	0
	11yd3 unit	0	0	0	0	0	0	0	0	0	0	0
Total	18yd3 unit	117.8	122.0	126.3	119.2	97.9	101.0	104.0	106.9	109.8	113.0	113.0
	11yd3 unit	27.3	28.1	29.4	27.6	22.8	23.4	24.1	24.8	25.6	26.1	26.1
	18yd3 unit	119	121	128	120	101	103	105	108	111	114	114
	11yd3 unit	27	28	30	28	24	25	25	27	27	27	27
	18yd3 unit	81	98	18	96	96	101	103	87	108	33	33
purchase of vehicle	11yd3 unit	20	27	7	24	24	24	25	18	27	10	210
	18yd3 unit	18	0	78	0	5	2	2	21	3	81	81
	11yd3 unit	7	0	17	0	0	1	0	9	0	17	51

Summary of collection cost

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
San Salvador												
collection amount	ton/day	489.5	510.0	530.3	550.1	570.1	590.0	609.5	628.9	648.3	668.0	-
collection amount	1000ton/year	179	186	194	201	208	215	222	230	237	244	2,116
Investment	1000US\$/year	1,253	0	4,013	0	196	98	98	1,430	294	4,111	11,493
O&M	1000US\$/year	2,506	2,598	2,706	2,571	2,022	2,093	2,157	2,229	2,307	2,368	23,557
total	1000US\$/year	3,759	2,598	6,719	2,571	2,218	2,191	2,255	3,659	2,601	6,479	35,050
Investment per ton	US\$/ton	7.00	0.00	20.69	0.00	0.94	0.46	0.44	6.22	1.24	16.85	5.43
O&M per ton	US\$/ton	14.00	13.97	13.95	12.79	9.72	9.73	9.72	9.69	9.73	9.70	11.13
total	US\$/ton	21.00	13.97	34.64	12.79	10.66	10.19	10.16	15.91	10.97	26.55	16.56
Mejicanos												
collection amount	ton/day	72.0	74.2	76.5	78.7	80.8	83.0	84.9	87.0	89.0	91.0	-
collection amount	1000ton/year	26	27	28	29	29	30	31	32	32	33	297
Investment	1000US\$/year	98	0	568	0	0	78	0	196	0	568	1,508
O&M	1000US\$/year	326	333	344	352	261	271	275	282	289	296	3,029
total	1000US\$/year	424	333	912	352	261	349	275	478	289	864	4,537
Investment per ton	US\$/ton	3.77	0.00	20.29	0.00	0.00	2.60	0.00	6.13	0.00	17.21	5.08
O&M per ton	US\$/ton	12.54	12.33	12.29	12.14	9.00	9.03	8.87	8.81	9.03	8.97	10.20
total	US\$/ton	16.31	12.33	32.58	12.14	9.00	11.63	8.87	14.94	9.03	26.18	15.28
Ciudad Delgado												
collection amount	ton/day	31.4	32.4	33.4	34.3	35.2	36.1	37.0	37.8	38.7	39.5	-
collection amount	1000ton/year	11	12	12	13	13	13	14	14	14	14	130
Investment	1000US\$/year	0	0	372	0	98	0	0	0	0	372	842
O&M	1000US\$/year	139	143	150	153	157	161	165	168	172	175	1,583
total	1000US\$/year	139	143	522	153	255	161	165	168	172	547	2,425
Investment per ton	US\$/ton	0.00	0.00	31.00	0.00	7.54	0.00	0.00	0.00	0.00	26.57	6.48
O&M per ton	US\$/ton	12.64	11.92	12.50	11.77	12.08	12.38	11.79	12.00	12.29	12.50	12.18
total	US\$/ton	12.64	11.92	43.50	11.77	19.62	12.38	11.79	12.00	12.29	39.07	18.66
Cuscatancingo												
collection amount	ton/day	26.7	27.6	28.4	29.2	30.0	30.7	31.5	32.2	32.9	33.6	-
collection amount	1000ton/year	10	10	10	11	11	11	11	12	12	12	110
Investment	1000US\$/year	0	0	274	0	0	0	98	0	0	274	646

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
O&M	1000US\$/year	147	158	158	166	105	105	109	109	112	116	1,285
	1000US\$/year	147	158	432	166	105	105	207	109	112	390	1,931
	US\$/ton	0.00	0.00	27.40	0.00	0.00	0.00	8.91	0.00	0.00	22.83	5.87
	US\$/ton	14.70	15.80	15.80	15.09	9.55	9.55	9.91	9.08	9.33	9.67	11.68
total		14.70	15.80	43.20	15.09	9.55	9.55	18.82	9.08	9.33	32.50	17.55
Ayutuxtepeque	ton/day	10.5	10.8	11.1	11.5	11.8	12.1	12.3	12.6	12.9	13.2	-
	1000ton/year	4	4	4	4	4	4	4	5	5	5	43
	1000US\$/year	0	0	98	0	0	0	0	0	0	0	196
	1000US\$/year	44	44	51	51	51	55	55	55	55	58	519
	1000US\$/year	44	44	149	51	51	55	55	55	55	156	715
	US\$/ton	0.00	0.00	24.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.56
	US\$/ton	11.00	11.00	12.75	12.75	12.75	13.75	13.75	11.00	11.00	11.00	12.07
total		11.00	11.00	37.25	12.75	12.75	13.75	13.75	11.00	11.00	31.20	16.63
San Marcos	ton/day	32.2	33.1	34.1	35.1	36.0	36.9	37.8	38.7	39.6	40.5	-
	1000ton/year	12	12	12	13	13	13	14	14	14	15	132
	1000US\$/year	98	0	274	0	0	0	0	98	0	274	744
	1000US\$/year	198	205	209	217	123	126	130	133	133	137	1,611
	1000US\$/year	296	205	483	217	123	126	130	231	133	411	2,355
	US\$/ton	8.17	0.00	22.83	0.00	0.00	0.00	0.00	7.00	0.00	0.00	5.64
	US\$/ton	16.50	17.08	17.42	16.69	9.46	9.69	9.29	9.50	9.50	9.13	12.20
total		24.67	17.08	40.25	16.69	9.46	9.69	9.29	16.50	9.50	27.40	17.84
Nueva San Salvador	ton/day	88.2	90.9	93.6	96.2	98.8	101.3	103.8	106.2	108.6	111.0	-
	1000ton/year	32	33	34	35	36	37	38	39	40	41	365
	1000US\$/year	372	0	470	0	98	0	0	372	0	568	1,880
	1000US\$/year	501	520	532	318	328	336	346	353	360	370	3,964
	1000US\$/year	873	520	1,002	318	426	336	346	725	360	938	5,844
	US\$/ton	11.63	0.00	13.82	0.00	2.72	0.00	0.00	9.54	0.00	0.00	13.85
	US\$/ton	15.66	15.76	15.65	9.09	9.11	9.08	9.11	9.05	9.00	9.00	10.86
total		27.29	15.76	29.47	9.09	11.83	9.08	9.11	18.59	9.00	22.87	16.01
Antiguo Cuscatlan	ton/day	43.3	44.8	46.5	48.0	49.6	51.1	52.6	54.1	55.6	57.1	-
	collection amount											

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount	1000ton/year	16	16	17	18	18	19	19	20	20	21	184
Investment	1000US\$/year	294	0	176	0	0	0	0	294	0	176	940
O&M	1000US\$/year	245	252	260	148	152	158	162	165	169	179	1,890
total	1000US\$/year	539	252	436	148	152	158	162	459	169	355	2,830
Investment per ton	US\$/ton	18.38	0.00	10.35	0.00	0.00	0.00	0.00	14.70	0.00	8.38	5.11
O&M per ton	US\$/ton	15.31	15.75	15.29	8.22	8.44	8.32	8.53	8.25	8.45	8.52	10.27
total	US\$/ton	33.69	15.75	25.64	8.22	8.44	8.32	8.53	22.95	8.45	16.90	15.38
Soyapango												
collection amount	ton/day	133.4	138.5	143.6	148.7	153.7	158.7	163.6	168.4	173.2	178.3	-
collection amount	1000ton/year	49	51	52	54	56	58	60	61	63	65	569
Investment	1000US\$/year	196	0	1,214	0	0	0	0	294	0	1,214	2,918
O&M	1000US\$/year	698	725	754	777	492	503	520	538	551	568	6,126
total	1000US\$/year	894	725	1,968	777	492	503	520	832	551	1,782	9,044
Investment per ton	US\$/ton	4.00	0.00	23.35	0.00	0.00	0.00	0.00	4.82	0.00	18.68	5.13
O&M per ton	US\$/ton	14.24	14.22	14.50	14.39	8.79	8.67	8.67	8.82	8.75	8.74	10.77
total	US\$/ton	18.24	14.22	37.85	14.39	8.79	8.67	8.67	13.64	8.75	27.42	15.90
Ilopango												
collection amount	ton/day	44.1	45.5	46.9	48.2	49.5	50.8	52.0	53.2	54.4	55.7	-
collection amount	1000ton/year	16	17	17	18	18	19	19	19	20	20	183
Investment	1000US\$/year	0	0	470	0	0	0	0	0	0	568	1,038
O&M	1000US\$/year	256	260	268	279	173	176	183	187	190	194	2,166
total	1000US\$/year	256	260	738	279	173	176	183	187	190	762	3,204
Investment per ton	US\$/ton	0.00	0.00	27.65	0.00	0.00	0.00	0.00	0.00	0.00	28.40	5.67
O&M per ton	US\$/ton	16.00	15.29	15.76	15.50	9.61	9.26	9.63	9.84	9.50	9.70	11.84
total	US\$/ton	16.00	15.29	43.41	15.50	9.61	9.26	9.63	9.84	9.50	38.10	17.51
San Martin												
collection amount	ton/day	25.0	25.7	26.5	27.2	27.9	28.7	29.4	30.0	30.7	31.4	-
collection amount	1000ton/year	9	9	10	10	10	10	11	11	11	11	102
Investment	1000US\$/year	0	0	274	0	98	0	0	0	0	274	646
O&M	1000US\$/year	76	79	82	86	112	115	119	119	126	130	1,044
total	1000US\$/year	76	79	356	86	210	115	119	119	126	404	1,690
Investment per ton	US\$/ton	0.00	0.00	27.40	0.00	9.80	0.00	0.00	0.00	0.00	24.91	6.33
O&M per ton	US\$/ton	8.44	8.78	8.20	8.60	11.20	11.50	10.82	10.82	11.45	11.82	10.24

	year											Total
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010		
total	8.44	8.78	35.60	8.60	21.00	11.50	10.82	10.82	11.45	36.73	16.57	
Apopa												
collection amount	47.0	48.5	49.9	51.3	52.7	54.0	55.3	56.6	57.9	59.2	-	
collection amount	17	18	18	19	19	20	20	21	21	22	195	
Investment	0	0	470	0	0	98	0	0	0	470	1,038	
O&M	170	174	180	188	192	195	202	206	209	213	1,929	
total	170	174	650	188	192	293	202	206	209	683	2,967	
Investment per ton	0.00	0.00	26.11	0.00	0.00	4.90	0.00	0.00	0.00	21.36	5.32	
O&M per ton	10.00	9.67	10.00	9.89	10.11	9.75	10.10	9.81	9.95	9.68	9.89	
total	10.00	9.67	36.11	9.89	10.11	14.65	10.10	9.81	9.95	31.04	15.21	
Nejapa												
collection amount	4.9	5.1	5.2	5.4	5.5	5.7	5.8	5.9	6.1	6.2	-	
collection amount	2	2	2	2	2	2	2	2	2	2	20	
Investment	0	0	98	0	0	0	0	0	0	98	196	
O&M	17	17	17	17	17	17	21	21	21	21	186	
total	17	17	115	17	17	17	21	21	21	119	382	
Investment per ton	0.00	0.00	49.00	0.00	0.00	0.00	0.00	0.00	0.00	49.00	9.80	
O&M per ton	8.50	8.50	8.50	8.50	8.50	8.50	10.50	10.50	10.50	10.50	9.30	
total	8.50	8.50	57.50	8.50	8.50	8.50	10.50	10.50	10.50	59.50	19.10	
Tonacatepeque												
collection amount	21.7	22.4	23.0	23.7	24.3	24.9	25.5	26.1	26.7	27.3	-	
collection amount	8	8	8	9	9	9	9	10	10	10	90	
Investment	0	0	196	0	0	0	0	78	0	196	470	
O&M	69	69	72	72	76	80	80	87	87	87	779	
total	69	69	268	72	76	80	80	165	87	283	1,249	
Investment per ton	0.00	0.00	24.50	0.00	0.00	0.00	0.00	7.80	0.00	19.60	5.22	
O&M per ton	8.63	8.63	9.00	8.00	8.44	8.89	8.89	8.70	8.70	8.70	8.66	
total	8.63	8.63	33.50	8.00	8.44	8.89	8.89	16.50	8.70	28.30	13.88	
Total												
collection amount	1,069.9	1,109.5	1,149.0	1,187.6	1,225.9	1,264.0	1,301.0	1,337.7	1,374.6	1,412.0	-	
collection amount	391	405	419	433	447	461	475	488	502	515	4,536	
Investment	2,311	0	8,967	0	490	274	196	2,762	294	9,261	24,555	
O&M	5,392	5,577	5,783	5,395	4,261	4,391	4,524	4,652	4,781	4,912	49,668	
total	7,703	5,577	14,750	5,395	4,751	4,665	4,720	7,414	5,075	14,173	74,223	

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
Investment per ton	US\$/ton	5.91	0.00	21.40	0.00	1.10	0.59	0.41	5.66	0.59	17.98	5.41
O&M per ton	US\$/ton	13.79	13.77	13.80	12.46	9.53	9.52	9.52	9.53	9.52	9.54	10.95
total	US\$/ton	19.70	13.77	35.20	12.46	10.63	10.12	9.94	15.19	10.11	27.52	16.36

San Salvador

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
San Salvador												
collection amount 365-base	ton/day	489.5	510.0	530.3	550.1	570.1	590.0	609.5	628.9	648.3	668.0	
collection amount 312-base	ton/day	572.7	596.6	620.2	643.5	666.9	690.2	713.1	735.7	758.5	781.5	
amount for 18yd3	ton/day	486.8	507.0	527.2	547.0	566.9	586.7	606.1	625.4	644.8	664.4	
amount for 11yd3	ton/day	86.0	89.6	93.0	96.6	100.0	103.6	107.1	110.3	113.7	117.2	
required number of vehicle (1)	90 %											
net working rate	ton/day											
18yd3 (2001-2003)	ton/day	54.6	56.7	59.0	56.5	46.2	47.8	49.3	50.9	52.6	54.1	
11yd3 (2001-2003)	ton/day	12.7	13.1	13.7	13.0	10.7	11.1	11.4	11.8	12.3	12.5	
18yd3 (2004-2010)	ton/day											
11yd3 (2004-2010)	ton/day											
required number of vehicle (2)												
18yd3	unit	55	56	59	56	47	48	49	50	53	54	
11yd3	unit	12	13	14	13	11	11	11	12	12	12	
operatable vehicle												
18yd3	unit	36	44	8	45	45	47	48	41	50	16	
11yd3	unit	5	11	6	11	11	11	11	5	12	7	
purchase of vehicle												
18yd3	unit	8	0	37	0	2	1	1	9	3	38	
11yd3	unit	6	0	5	0	0	0	0	7	0	5	
Cost												
Investment												
Vehicle	75,000 US\$/vehicle	600,000	0	2,775,000	0	150,000	75,000	75,000	675,000	225,000	2,850,000	
18yd3	US\$/vehicle	360,000	0	300,000	0	0	0	0	420,000	0	300,000	
11yd3	US\$/vehicle	960,000	0	3,075,000	0	150,000	75,000	75,000	1,095,000	225,000	3,150,000	
sub-total		96,000	0	307,500	0	15,000	7,500	7,500	109,500	22,500	315,000	
physical contingency	10 %	1,056,000	0	3,382,500	0	165,000	82,500	82,500	1,204,500	247,500	3,465,000	
sub-total		137,280	0	439,725	0	21,450	10,725	10,725	156,585	32,175	450,450	
VAT	13 %	1,193,280	0	3,822,225	0	186,450	93,225	93,225	1,361,085	279,675	3,915,450	
total		48,000	0	153,750	0	7,500	3,750	3,750	54,750	11,250	157,500	
design & supervise	5 %	4,800	0	15,375	0	750	375	375	5,475	1,125	15,750	
physical contingency	10 %	52,800	0	169,125	0	8,250	4,125	4,125	60,225	12,375	173,250	
sub-total		6,864	0	21,988	0	1,072	536	536	7,829	1,608	22,524	
VAT	13 %											

San Salvador	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
total	US\$	59,664	0	191,113	0	9,322	4,661	4,661	68,054	13,983	195,774	
total investment	US\$	1,252,944	0	4,013,338	0	195,772	97,886	97,886	1,429,139	293,658	4,111,224	
	1000US\$	1,253	0	4,013	0	196	98	98	1,430	294	4,111	11,493
O&M cost												
personnel cost	US\$	1,017,143	1,056,265	1,099,112	1,052,539	860,660	890,466	918,410	948,217	979,885	1,007,829	
18yd3	US\$	190,131	196,120	205,103	194,623	160,190	166,178	170,669	176,658	184,143	187,137	
11yd3	US\$	1,207,274	1,252,385	1,304,215	1,247,162	1,020,850	1,056,644	1,089,079	1,124,875	1,164,028	1,194,966	
sub-total	US\$	120,726	125,239	130,422	124,717	102,085	105,664	108,909	112,488	116,403	119,495	
physical contingency	US\$	1,328,000	1,377,624	1,434,637	1,371,879	1,122,935	1,162,308	1,197,988	1,237,363	1,280,431	1,314,461	
10 %	US\$											
personnel cost total	US\$	166,142	172,511	179,523	162,098	81,807	84,817	87,302	90,101	93,197	95,864	
operation cost	US\$	32,170	33,167	34,703	31,057	15,660	16,346	16,759	17,241	18,161	18,493	
fuel 18yd3 (2001-2003)	US\$	198,312	205,678	214,226	193,155	97,467	101,163	104,061	107,342	111,358	114,357	
fuel 11yd3 (2001-2003)	US\$	19,833	20,568	21,423	19,316	9,748	10,116	10,407	10,734	11,137	11,435	
fuel 18yd3 (2004-2010)	US\$	218,145	226,246	235,649	212,471	107,215	111,279	114,468	118,076	122,495	125,792	
fuel 11yd3 (2004-2010)	US\$	21,815	22,626	23,566	21,249	10,722	11,129	11,447	11,809	12,250	12,579	
oil	US\$	239,960	248,872	259,215	233,720	117,937	122,408	125,915	129,885	134,745	138,371	
10 % of fuel	US\$	31,194	32,354	33,698	30,383	15,332	15,913	16,369	16,885	17,517	17,987	
sub-total	US\$	271,154	281,226	292,913	264,103	133,269	138,321	142,284	146,770	152,262	156,358	
physical contingency	US\$	614,250	637,875	663,750	635,625	519,750	537,750	554,625	572,625	591,750	608,625	
sub-total	US\$	114,300	117,900	123,300	117,000	96,300	99,900	102,600	106,200	110,700	112,500	
10 %	US\$	728,550	755,775	787,050	752,625	616,050	637,650	657,225	678,825	702,450	721,125	
sub-total	US\$	72,856	75,578	78,706	75,263	61,606	63,766	65,724	67,883	70,245	72,114	
physical contingency	US\$	801,406	831,353	865,756	827,888	677,656	701,416	722,949	746,708	772,695	793,239	
sub-total	US\$	104,182	108,076	112,548	107,626	88,095	91,184	93,984	97,072	100,450	103,122	
VAT	US\$	905,588	939,429	978,304	935,514	765,751	792,600	816,933	843,780	873,145	896,361	
13 %	US\$	2,504,742	2,598,279	2,705,854	2,571,496	2,021,955	2,093,229	2,157,205	2,227,913	2,305,838	2,367,180	
sub-total	US\$	2,506	2,598	2,706	2,571	2,022	2,093	2,157	2,229	2,307	2,368	23,557
O&M cost total	1000US\$	489.5	510.0	530.3	550.1	570.1	590.0	609.5	628.9	648.3	668.0	Total
collection amount 365-base	ton/day	179	186	194	201	208	215	222	230	237	244	
collection amount	1000ton/year											2,116
Investment	1000US\$/year	1,253	0	4,013	0	196	98	98	1,430	294	4,111	11,493

San Salvador	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
O&M	1000US\$/year	2,506	2,598	2,706	2,571	2,022	2,093	2,157	2,229	2,307	2,368	23,557
total	1000US\$/year	3,759	2,598	6,719	2,571	2,218	2,191	2,255	3,659	2,601	6,479	35,050
Investment per ton	US\$/ton	7.00	0.00	20.69	0.00	0.94	0.46	0.44	6.22	1.24	16.85	5.43
O&M per ton	US\$/ton	14.00	13.97	13.95	12.79	9.72	9.73	9.72	9.69	9.73	9.70	11.13
total	US\$/ton	21.00	13.97	34.64	12.79	10.66	10.19	10.16	15.91	10.97	26.55	16.56

01SS

01SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day	131.6	137.1	142.6	147.9	153.3	158.6	163.9	169.1	174.3	179.6	
collection amount 312-base	ton/day	154.0	160.4	166.8	173.0	179.3	185.5	191.7	197.8	203.9	210.1	
amount for 18yd3	ton/day	130.9	136.3	141.8	147.1	152.4	157.7	162.9	168.1	173.3	178.6	
amount for 11yd3	ton/day	23.1	24.1	25.0	26.0	26.9	27.8	28.8	29.7	30.6	31.5	
required number of vehicle (1)												
net working rate	90 %											
18yd3 (2001-2004)	10.2 ton/day	14.3	14.8	15.4	16.0	11.2	11.6	12.0	12.4	12.8	13.1	
11yd3 (2001-2004)	7.8 ton/day	3.3	3.4	3.6	3.7	2.6	2.7	2.8	2.9	3.0	3.0	
18yd3 (2005-2010)	15.1 ton/day											
11yd3 (2005-2010)	11.5 ton/day											
required number of vehicle (2)												
18yd3	unit	14	15	15	16	11	12	12	12	13	13	
11yd3	unit	3	3	4	4	3	3	3	3	3	3	
operable vehicle												
18yd3	unit	10	11	1	11	11	11	12	11	12	3	
11yd3	unit	1	3	2	3	3	3	3	1	3	2	
purchase of vehicle												
18yd3	unit	1	0	10	0	0	1	0	1	1	10	
11yd3	unit	2	0	1	0	0	0	0	2	0	1	
Cost												
Investment												
Vehicle	US\$	75,000	0	750,000	0	0	75,000	0	75,000	75,000	750,000	
18yd3	US\$	120,000	0	60,000	0	0	0	0	120,000	0	60,000	
11yd3	US\$	195,000	0	810,000	0	0	75,000	0	195,000	75,000	810,000	
sub-total	US\$	19,500	0	81,000	0	0	7,500	0	19,500	7,500	81,000	
physical contingency	10 %	214,500	0	891,000	0	0	82,500	0	214,500	82,500	891,000	
sub-total	US\$	27,885	0	115,830	0	0	10,725	0	27,885	10,725	115,830	
VAT	13 %	242,385	0	1,006,830	0	0	93,225	0	242,385	93,225	1,006,830	
total	US\$	242,385	0	1,006,830	0	0	93,225	0	242,385	93,225	1,006,830	

01SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
design & supervise	US\$	9,750	0	40,500	0	0	3,750	0	9,750	3,750	40,500	
physical contingency	US\$	975	0	4,050	0	0	375	0	975	375	4,050	
sub-total	US\$	10,725	0	44,550	0	0	4,125	0	10,725	4,125	44,550	
VAT	US\$	1,394	0	5,792	0	0	536	0	1,394	536	5,792	
total	US\$	12,119	0	50,342	0	0	4,661	0	12,119	4,661	50,342	
total investment	US\$	254,504	0	1,057,172	0	0	97,886	0	254,504	97,886	1,057,172	2,820
	1000US\$	255	0	1057	0	0	98	0	255	98	1057	
O&M cost												
personnel cost	US\$	266,395	275,709	286,887	298,064	208,645	216,096	223,548	231,000	238,451	244,040	
18yd3	US\$	49,404	50,901	53,896	55,393	38,925	40,422	41,919	43,416	44,913	44,913	
11yd3	US\$	315,799	326,610	340,783	353,457	247,570	256,518	265,467	274,416	283,364	288,953	
sub-total	US\$	31,580	32,661	34,078	35,346	24,757	25,652	26,547	27,442	28,336	28,895	
physical contingency	US\$	347,379	359,271	374,861	388,803	272,327	282,170	292,014	301,858	311,700	317,848	
personnel cost total	US\$	41,985	43,453	45,214	46,976	11,010	11,403	11,796	12,189	12,582	12,877	
operation cost	US\$	8,062	8,306	8,795	9,039	2,109	2,190	2,271	2,352	2,433	2,433	
fuel 18yd3 (2001-2004)	US\$	50,047	51,759	54,009	56,015	13,119	13,593	14,067	14,541	15,015	15,310	
oil	US\$	5,005	5,176	5,401	5,602	1,312	1,359	1,407	1,454	1,502	1,531	
sub-total	US\$	55,052	56,935	59,410	61,617	14,431	14,952	15,474	15,995	16,517	16,841	
physical contingency	US\$	5,505	5,694	5,941	6,162	1,443	1,495	1,547	1,600	1,652	1,684	
sub-total	US\$	60,557	62,629	65,351	67,779	15,874	16,447	17,021	17,595	18,169	18,525	
VAT	US\$	7,872	8,142	8,496	8,811	2,064	2,138	2,213	2,287	2,362	2,408	
operation cost total	US\$	68,429	70,771	73,847	76,590	17,938	18,585	19,234	19,882	20,531	20,933	
maintenance cost	US\$	160,875	166,500	173,250	180,000	126,000	130,500	135,000	139,500	144,000	147,375	
18yd3	US\$	29,700	30,600	32,400	33,300	23,400	24,300	25,200	26,100	27,000	27,000	
11yd3	US\$	190,575	197,100	205,650	213,300	149,400	154,800	160,200	165,600	171,000	174,375	
sub-total	US\$	19,058	19,710	20,565	21,330	14,940	15,480	16,020	16,560	17,100	17,438	
physical contingency	US\$	209,633	216,810	226,215	234,630	164,340	170,280	176,220	182,160	188,100	191,813	
sub-total	US\$	27,252	28,185	29,408	30,502	21,364	22,136	22,909	23,681	24,453	24,936	
VAT	US\$	236,885	244,995	255,623	265,132	185,704	192,416	199,129	205,841	212,553	216,749	
maintenance cost total	US\$	652,693	675,037	704,331	730,525	475,969	493,171	510,377	527,581	544,784	555,530	
O&M cost total	US\$	653	675	704	731	476	493	510	528	545	556	5,871
	1000US\$											Total
Cost summary												

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
01SS												
collection amount 365-base	ton/day	131.6	137.1	142.6	147.9	153.3	158.6	163.9	169.1	174.3	179.6	179.6
collection amount	1000ton/year	48	50	52	54	56	58	60	62	64	66	570
Investment	1000US\$/year	255	0	1,057	0	0	98	0	255	98	1,057	2,820
O&M	1000US\$/year	653	675	704	731	476	493	510	528	545	556	5,871
total	1000US\$/year	908	675	1,761	731	476	591	510	783	643	1,613	8,691
Investment per ton	US\$/ton	5.31	0.00	20.33	0.00	0.00	1.69	0.00	4.11	1.53	16.02	4.95
O&M per ton	US\$/ton	13.60	13.50	13.54	13.54	8.50	8.50	8.50	8.52	8.52	8.42	10.30
total	US\$/ton	18.91	13.50	33.87	13.54	8.50	10.19	8.50	12.63	10.05	24.44	15.25

02SS

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
02SS												
collection amount 365-base	ton/day	113.2	118.0	122.6	127.3	131.9	136.5	141.0	145.5	150.0	154.6	154.6
collection amount 312-base	ton/day	132.4	138.0	143.4	148.9	154.3	159.7	165.0	170.2	175.5	180.9	180.9
amount for 18yd3	ton/day	112.5	117.3	121.9	126.6	131.2	135.7	140.3	144.7	149.2	153.8	153.8
amount for 11yd3	ton/day	19.9	20.7	21.5	22.3	23.1	24.0	24.8	25.5	26.3	27.1	27.1
required number of vehicle (1)												
net working rate	unit	11.9	12.4	12.9	13.4	13.9	14.4	14.8	15.3	15.8	16.3	16.3
18yd3 (2001-1010)	unit	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.7	3.8	3.8
11yd3(2001-2010)												
required number of vehicle (2)												
18yd3	unit	12	12	13	13	14	14	15	15	16	16	16
11yd3	unit	3	3	3	3	3	3	3	4	4	4	4
operatable vehicle												
18yd3	unit	9	12	3	13	13	14	14	12	15	6	6
11yd3	unit	1	3	2	3	3	3	3	1	4	3	3
purchase of vehicle												
18yd3	unit	3	0	10	0	1	0	1	3	1	10	10
11yd3	unit	2	0	1	0	0	0	0	3	0	1	1
Cost												
Investment												
Vehicle	US\$	225,000	0	750,000	0	75,000	0	75,000	225,000	75,000	750,000	750,000
18yd3	US\$	120,000	0	60,000	0	0	0	0	180,000	0	60,000	60,000
11yd3	US\$	345,000	0	810,000	0	75,000	0	75,000	405,000	75,000	810,000	810,000
sub-total	US\$	34,500	0	81,000	0	7,500	0	7,500	40,500	7,500	81,000	81,000
physical contingency	US\$	379,500	0	891,000	0	82,500	0	82,500	445,500	82,500	891,000	891,000
sub-total	US\$	49,335	0	115,830	0	10,725	0	10,725	57,915	10,725	115,830	115,830
VAT	US\$											
	US\$											

02SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
	US\$	428,835	0	1,006,830	0	93,225	0	93,225	503,415	93,225	1,006,830	
total												
design & supervise	US\$	17,250	0	40,500	0	3,750	0	3,750	20,250	3,750	40,500	
5 %												
physical contingency	US\$	1,725	0	4,050	0	375	0	375	2,025	375	4,050	
10 %												
sub-total	US\$	18,975	0	44,550	0	4,125	0	4,125	22,275	4,125	44,550	
VAT	US\$	2,467	0	5,792	0	536	0	536	2,896	536	5,792	
13 %												
total	US\$	21,442	0	50,342	0	4,661	0	4,661	25,171	4,661	50,342	
total investment	US\$	450,277	0	1,057,172	0	97,886	0	97,886	528,586	97,886	1,057,172	
1000US\$		450	0	1057	0	98	0	98	529	98	1057	3,387
O&M cost												
personnel cost	US\$	221,685	231,000	240,314	249,629	258,943	268,258	275,709	285,024	294,338	303,653	
18yd3	US\$	41,919	43,416	44,913	46,410	47,907	49,404	50,901	52,399	53,893	56,890	
11yd3	US\$	263,504	274,416	285,227	296,039	306,850	317,662	326,610	337,423	349,731	360,543	
sub-total	US\$	26,360	27,442	28,523	29,604	30,685	31,766	32,661	33,742	34,973	36,054	
10 %												
physical contingency	US\$	289,964	301,858	313,750	325,643	337,535	349,428	359,271	371,165	384,704	396,597	
personnel cost total	US\$	33,558	34,968	36,378	37,788	39,198	40,608	41,736	43,146	44,556	45,966	
operation cost	US\$	6,577	6,812	7,047	7,282	7,517	7,752	7,987	8,222	8,456	8,691	
fuel 18yd3 (2001-2010)	US\$	40,135	41,780	43,425	45,070	46,715	48,360	49,723	51,368	53,247	54,892	
fuel total	US\$	4,014	4,178	4,343	4,507	4,672	4,836	4,972	5,137	5,325	5,489	
oil	US\$	44,149	45,958	47,768	49,577	51,387	53,196	54,695	56,505	58,572	60,381	
10 % of fuel	US\$	4,415	4,596	4,777	4,958	5,139	5,320	5,470	5,651	5,857	6,038	
sub-total	US\$	48,564	50,554	52,545	54,535	56,526	58,516	60,165	62,156	64,429	66,419	
10 %												
physical contingency	US\$	6,313	6,572	6,831	7,090	7,348	7,607	7,821	8,080	8,376	8,634	
sub-total	US\$	54,877	57,126	59,376	61,625	63,874	66,123	67,986	70,236	72,805	75,053	
13 %												
operation cost total	US\$	133,875	139,500	145,125	150,750	156,375	162,000	166,500	172,125	177,750	183,375	
maintenance cost	US\$	25,200	26,100	27,000	27,900	28,800	29,700	30,600	31,500	33,300	34,200	
18yd3	US\$	159,075	165,600	172,125	178,650	185,175	191,700	197,100	203,625	211,050	217,575	
11yd3	US\$	15,908	16,560	17,213	17,865	18,518	19,170	19,710	20,363	21,105	21,758	
sub-total	US\$	174,983	182,160	189,338	196,515	203,693	210,870	216,810	223,988	232,155	239,333	
10 %												
physical contingency	US\$	22,748	23,681	24,614	25,547	26,480	27,413	28,185	29,118	30,180	31,113	
sub-total	US\$	197,731	205,841	213,952	222,062	230,173	238,283	244,995	253,106	262,335	270,446	
13 %												
maintenance cost total	US\$	542,572	564,825	587,078	609,330	631,582	653,834	672,252	694,507	719,844	742,096	
O&M cost total	1000US\$	543	565	587	609	632	654	672	695	720	742	6,419
Cost summary												Total

03SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
	US\$	0	0	0	0	75,000	0	0	0	0	0	300,000
	US\$	0	0	0	0	0	0	0	0	0	0	60,000
	US\$	0	0	360,000	0	75,000	0	0	0	0	0	360,000
	US\$	0	0	36,000	0	7,500	0	0	0	0	0	36,000
	US\$	0	0	396,000	0	82,500	0	0	0	0	0	396,000
	US\$	0	0	51,480	0	10,725	0	0	0	0	0	51,480
	US\$	0	0	447,480	0	93,225	0	0	0	0	0	447,480
	US\$	0	0	18,000	0	3,750	0	0	0	0	0	18,000
	US\$	0	0	1,800	0	375	0	0	0	0	0	1,800
	US\$	0	0	19,800	0	4,125	0	0	0	0	0	19,800
	US\$	0	0	2,574	0	536	0	0	0	0	0	2,574
	US\$	0	0	22,374	0	4,661	0	0	0	0	0	22,374
	US\$	0	0	469,854	0	97,886	0	0	0	0	0	469,854
	1000US\$	0	0	470	0	98	0	0	0	0	0	470
												1,038
O&M cost												
personnel cost												
18yd3	US\$	111,774	117,363	121,089	81,968	85,693	87,556	91,282	93,145	96,871	100,597	1,005,971
11yd3	US\$	20,959	22,457	22,457	14,971	16,468	16,468	16,468	17,965	17,965	17,965	179,655
sub-total	US\$	132,733	139,820	143,546	96,939	102,161	104,024	107,750	111,110	114,836	118,562	1,185,626
physical contingency	US\$	13,273	13,982	14,355	9,694	10,216	10,402	10,775	11,111	11,484	11,856	118,562
personnel cost total	US\$	146,006	153,802	157,901	106,633	112,377	114,426	118,525	122,221	126,320	130,418	1,304,188
operation cost												
fuel 18yd3 (2001-2003)	US\$	17,838	18,730	19,325	3,665	3,832	3,915	4,082	4,165	4,332	4,498	44,988
fuel 11yd3 (2001-2003)	US\$	3,468	3,716	3,716	686	755	755	755	823	823	823	8,232
fuel 18yd3 (2004-2010)	US\$											
fuel 11yd3 (2004-2010)	US\$											
fuel total	US\$	21,306	22,446	23,041	4,351	4,587	4,670	4,837	4,988	5,155	5,321	53,220
oil	US\$	2,131	2,245	2,304	435	459	467	484	499	516	532	5,321
sub-total	US\$	23,437	24,691	25,345	4,786	5,046	5,137	5,321	5,487	5,671	5,853	58,541
physical contingency	US\$	2,344	2,469	2,535	479	505	514	532	549	567	585	5,853
sub-total	US\$	25,781	27,160	27,880	5,265	5,551	5,651	5,853	6,036	6,238	6,438	64,394
VAT	US\$	3,352	3,531	3,624	684	722	735	761	785	811	837	8,374
operation cost total	US\$	29,133	30,691	31,504	5,949	6,273	6,386	6,614	6,821	7,049	7,275	72,765
maintenance cost												
18yd3	US\$	67,500	70,875	73,125	49,500	51,750	52,875	55,125	56,250	58,500	60,750	607,500
11yd3	US\$	12,600	13,500	13,500	9,000	9,900	9,900	9,900	10,800	10,800	10,800	108,000
sub-total	US\$	80,100	84,375	86,625	58,500	61,650	62,775	65,025	67,050	69,300	71,550	715,500
physical contingency	US\$	8,010	8,438	8,663	5,850	6,165	6,278	6,503	6,705	6,930	7,155	71,550

03SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
sub-total	US\$	88,110	92,813	95,288	64,350	67,815	69,053	71,528	73,755	76,230	78,705	
VAT	US\$	11,454	12,066	12,387	8,366	8,816	8,977	9,299	9,588	9,910	10,232	
maintenance cost total	US\$	99,564	104,879	107,675	72,716	76,631	78,030	80,827	83,343	86,140	88,937	
O&M cost total	US\$	274,703	289,372	297,080	185,298	195,281	198,842	205,966	212,385	219,509	226,630	2,305
	1000US\$	275	289	297	185	195	199	206	212	220	227	
Cost summary	ton/day	55.1	57.4	59.7	61.9	64.2	66.4	68.6	70.8	73.0	75.2	Total
collection amount 365-base	1000ton/year	20	21	22	23	23	24	25	26	27	27	238
collection amount	1000US\$/year	0	0	470	0	98	0	0	0	0	0	1,038
Investment	1000US\$/year	275	289	297	185	195	199	206	212	220	227	2,305
O&M	1000US\$/year	275	289	289	185	195	199	206	212	220	227	3,343
total												
Investment per ton	US\$/ton	0.00	0.00	21.36	0.00	4.26	0.00	0.00	0.00	0.00	17.41	4.36
O&M per ton	US\$/ton	13.75	13.76	13.50	8.04	8.48	8.29	8.24	8.15	8.15	8.41	9.68
total	US\$/ton	13.75	13.76	34.86	8.04	12.74	8.29	8.24	8.15	8.15	25.82	14.04

04SS

04SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day	47.0	49.0	50.9	52.8	54.7	56.7	58.5	60.4	62.2	64.1	
collection amount 312-base	ton/day	55.0	57.3	59.5	61.8	64.0	66.3	68.4	70.7	72.8	75.0	
amount for 18yd3	ton/day	46.8	48.7	50.6	52.5	54.4	56.4	58.1	60.1	61.9	63.8	
amount for 11yd3	ton/day	8.3	8.6	8.9	9.3	9.6	9.9	10.3	10.6	10.9	11.3	
required number of vehicle (1)												
net working rate	90 %											
18yd3 (2001-2003)	9.3 ton/day	5.6	5.8	6.0	3.9	4.0	4.2	4.3	4.4	4.6	4.7	
11yd3 (2001-2003)	7.1 ton/day	1.3	1.3	1.4	0.9	0.9	1.0	1.0	1.0	1.1	1.1	
18yd3 (2004-2010)	15.1 ton/day											
11yd3 (2004-2010)	11.5 ton/day											
required number of vehicle (2)												
18yd3	unit	6	6	6	4	4	4	4	4	5	5	
11yd3	unit	1	1	1	1	1	1	1	1	1	1	
operatable vehicle												
18yd3	unit	3	4	1	4	4	4	4	3	4	2	
11yd3	unit	1	1	0	1	1	1	1	1	1	0	
purchase of vehicle												
18yd3	unit	1	0	3	0	0	0	0	1	1	3	

04SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
Cost	unit	0	0	1	0	0	0	0	0	0	1	
Investment	11yd3											
Vehicle												
18yd3	US\$ 75,000 US\$/vehicle	75,000	0	225,000	0	0	0	0	75,000	75,000	225,000	
11yd3	US\$ 60,000 US\$/vehicle	0	0	60,000	0	0	0	0	0	0	60,000	
sub-total		75,000	0	285,000	0	0	0	0	75,000	75,000	285,000	
physical contingency	10 %	7,500	0	28,500	0	0	0	0	7,500	7,500	28,500	
sub-total		82,500	0	313,500	0	0	0	0	82,500	82,500	313,500	
VAT	13 %	10,725	0	40,755	0	0	0	0	10,725	10,725	40,755	
total		93,225	0	354,255	0	0	0	0	93,225	93,225	354,255	
design & supervise	5 %	3,750	0	14,250	0	0	0	0	3,750	3,750	14,250	
physical contingency	10 %	375	0	1,425	0	0	0	0	375	375	1,425	
sub-total		4,125	0	15,675	0	0	0	0	4,125	4,125	15,675	
VAT	13 %	536	0	2,038	0	0	0	0	536	536	2,038	
total		4,661	0	17,713	0	0	0	0	4,661	4,661	17,713	
total investment		97,886	0	371,968	0	0	0	0	97,886	97,886	371,968	1,038
	1000US\$	98	0	372	0	0	0	0	98	98	372	
O&M cost												
personnel cost												
18yd3	US\$ 18,629 US\$/vehicle	104,322	108,048	111,774	72,653	74,516	78,242	80,105	81,968	85,693	87,556	
11yd3	US\$ 14,971 US\$/vehicle	19,462	19,462	20,959	13,474	13,474	14,971	14,971	14,971	16,468	16,468	
sub-total		123,784	127,510	132,733	86,127	87,990	93,213	95,076	96,939	102,161	104,024	
physical contingency	10 %	12,378	12,751	13,273	8,613	8,799	9,321	9,508	9,694	10,216	10,402	
personnel cost total		136,162	140,261	146,006	94,740	96,789	102,534	104,584	106,633	112,377	114,426	
operation cost												
fuel 18yd3 (2001-2003)	US\$ 3,276 US\$/vehicle	18,346	19,001	19,656	12,776	13,104	13,759	14,087	14,414	15,070	15,397	
fuel 11yd3 (2001-2003)	US\$ 2,730 US\$/vehicle	3,549	3,549	3,822	2,457	2,457	2,730	2,730	2,730	3,003	3,003	
fuel 18yd3 (2004-2010)	US\$ 1,005 US\$/vehicle											
fuel 11yd3 (2004-2010)	US\$ 830 US\$/vehicle											
fuel total		21,895	22,550	23,478	15,233	15,561	16,489	16,817	17,144	18,073	18,400	
oil	10 % of fuel	2,190	2,255	2,348	1,523	1,556	1,649	1,682	1,714	1,807	1,840	
sub-total		24,085	24,805	25,826	16,756	17,117	18,138	18,499	18,858	19,880	20,240	
physical contingency	10 %	2,409	2,481	2,583	1,676	1,712	1,814	1,850	1,886	1,988	2,024	
sub-total		26,494	27,286	28,409	18,432	18,829	19,952	20,349	20,744	21,868	22,264	
VAT	13 %	3,444	3,547	3,693	2,396	2,448	2,594	2,645	2,697	2,843	2,894	
operation cost total		29,938	30,833	32,102	20,828	21,277	22,546	22,994	23,441	24,711	25,158	
maintenance cost												

04SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
18yd3	15 % of vehicle	63,000	65,250	67,500	43,875	45,000	47,250	48,375	49,500	51,750	52,875	
	15 % of vehicle	11,700	11,700	12,600	8,100	8,100	9,000	9,000	9,000	9,900	9,900	
sub-total	10 %	74,700	76,950	80,100	51,975	53,100	56,250	57,375	58,500	61,650	62,775	
	10 %	7,470	7,695	8,010	5,198	5,310	5,625	5,738	5,850	6,165	6,278	
physical contingency	13 %	82,170	84,645	88,110	57,173	58,410	61,875	63,113	64,350	67,815	69,053	
	13 %	10,682	11,004	11,454	7,432	7,593	8,044	8,205	8,366	8,816	8,977	
sub-total		92,852	95,649	99,564	64,605	66,003	69,919	71,318	72,716	76,631	78,030	
		258,952	266,743	277,672	180,173	184,069	194,999	198,896	202,790	213,719	217,614	2,197
O&M cost total	1000US\$	259	267	278	180	184	195	199	203	214	218	
Cost summary	ton/day	47.0	49.0	50.9	52.8	54.7	56.7	58.5	60.4	62.2	64.1	Total
	1000ton/year	17	18	19	19	20	21	21	22	23	23	203
collection amount 365-base	1000US\$/year	98	0	372	0	0	0	0	98	98	372	1,038
	1000US\$/year	259	267	278	180	184	195	199	203	214	218	2,197
total	1000US\$/year	357	267	650	180	184	195	199	301	312	590	3,235
		5.76	0.00	19.58	0.00	0.00	0.00	0.00	4.45	4.26	16.17	5.11
Investment per ton	US\$/ton	15.24	14.83	14.63	9.47	9.20	9.29	9.48	9.23	9.30	9.48	10.82
	US\$/ton	21.00	14.83	34.21	9.47	9.20	9.29	9.48	13.68	13.56	25.65	15.93

05SS

05SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day	142.6	148.5	154.5	160.2	166.0	171.8	177.5	183.1	188.8	194.5	
	ton/day	166.8	173.7	180.7	187.4	194.2	201.0	207.7	214.2	220.9	227.5	
amount for 18yd3	ton/day	141.8	147.6	153.6	159.3	165.1	170.9	176.5	182.1	187.8	193.4	
	ton/day	25.0	26.1	27.1	28.1	29.1	30.2	31.2	32.1	33.1	34.1	
required number of vehicle (1)	90 %	16.8	17.4	18.2	18.8	12.5	12.9	13.3	13.8	14.2	14.6	
	net working rate	3.9	4.0	4.2	4.3	2.9	3.0	3.1	3.2	3.3	3.4	
18yd3 (2001-2004)	unit											
	unit											
18yd3 (2005-2010)	unit											
	unit											
11yd3 (2005-2010)	unit											
	unit											
required number of vehicle (2)	unit	17	17	18	19	13	13	13	14	14	15	
	unit	4	4	4	4	3	3	3	3	3	3	
operatable vehicle												

05SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
	unit	10	13	3	13	13	13	13	10	14	4	
	unit	1	3	2	3	3	3	3	1	3	2	
purchase of vehicle	unit	3	0	10	0	0	0	0	4	0	11	
	unit	2	0	1	0	0	0	0	2	0	1	
Cost												
Investment												
Vehicle												
18yd3	US\$	225,000	0	750,000	0	0	0	0	300,000	0	825,000	
11yd3	US\$	120,000	0	60,000	0	0	0	0	120,000	0	60,000	
sub-total	US\$	345,000	0	810,000	0	0	0	0	420,000	0	885,000	
physical contingency	10 %	34,500	0	81,000	0	0	0	0	42,000	0	88,500	
sub-total	US\$	379,500	0	891,000	0	0	0	0	462,000	0	973,500	
VAT	US\$	49,335	0	115,830	0	0	0	0	60,060	0	126,555	
total	US\$	428,835	0	1,006,830	0	0	0	0	522,060	0	1,100,055	
design & supervise	US\$	17,250	0	40,500	0	0	0	0	21,000	0	44,250	
physical contingency	US\$	1,725	0	4,050	0	0	0	0	2,100	0	4,425	
sub-total	US\$	18,975	0	44,550	0	0	0	0	23,100	0	48,675	
VAT	US\$	2,467	0	5,792	0	0	0	0	3,003	0	6,328	
total	US\$	21,442	0	50,342	0	0	0	0	26,103	0	55,003	
total investment	US\$	450,277	0	1,057,172	0	0	0	0	548,163	0	1,155,058	
	1000US\$	450	0	1057	0	0	0	0	548	0	1155	3,210
O&M cost												
personnel cost												
18yd3	US\$	312,967	324,145	339,048	350,225	232,863	240,314	247,766	257,080	264,532	271,983	
11yd3	US\$	58,387	59,884	62,878	64,375	43,416	44,913	46,410	47,907	49,404	50,901	
sub-total	US\$	371,354	384,029	401,926	414,600	276,279	285,227	294,176	304,987	313,936	322,884	
physical contingency	US\$	37,135	38,403	40,193	41,460	27,628	28,523	29,418	30,499	31,394	32,288	
personnel cost total	US\$	408,489	422,432	442,119	456,060	303,907	313,750	323,594	335,486	345,330	355,172	
operation cost												
fuel 18yd3 (2001-2004)	US\$	54,415	56,359	58,950	60,893	14,663	15,132	15,601	16,187	16,657	17,126	
fuel 11yd3 (2001-2004)	US\$	10,514	10,784	11,323	11,593	2,822	2,919	3,016	3,114	3,211	3,308	
fuel 18yd3 (2005-2010)	US\$											
fuel 11yd3 (2005-2010)	US\$											
fuel total	US\$	64,929	67,143	70,273	72,486	17,485	18,051	18,617	19,301	19,868	20,434	
oil	US\$	6,493	6,714	7,027	7,249	1,749	1,805	1,862	1,930	1,987	2,043	
sub-total	US\$	71,422	73,857	77,300	79,735	19,234	19,856	20,479	21,231	21,855	22,477	
physical contingency	US\$	7,142	7,386	7,730	7,974	1,923	1,986	2,048	2,123	2,186	2,248	
sub-total	US\$	78,564	81,243	85,030	87,709	21,157	21,842	22,527	23,354	24,041	24,725	

05SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
operation cost total	US\$	10,213	10,562	11,054	11,402	2,750	2,839	2,929	3,036	3,125	3,214	
	US\$	88,777	91,805	96,084	99,111	23,907	24,681	25,456	26,390	27,166	27,939	
maintenance cost	US\$	189,000	195,750	204,750	211,500	140,625	145,125	149,625	155,250	159,750	164,250	
18yd3	US\$	35,100	36,000	37,800	38,700	26,100	27,000	27,900	28,800	29,700	30,600	
11yd3	US\$	224,100	231,750	242,550	250,200	166,725	172,125	177,525	184,050	189,450	194,850	
sub-total	US\$	22,410	23,175	24,255	25,020	16,673	17,213	17,753	18,405	18,945	19,485	
physical contingency	US\$	246,510	254,925	266,805	275,220	183,398	189,338	195,278	202,455	208,395	214,335	
sub-total	US\$	32,046	33,140	34,685	35,779	23,842	24,614	25,386	26,319	27,091	27,864	
VAT	US\$	278,556	288,065	301,490	310,999	207,240	213,952	220,664	228,774	235,486	242,199	
maintenance cost total	US\$	775,822	802,302	839,693	866,170	535,054	552,383	569,714	590,650	607,982	625,310	
O&M cost total	1000US\$	776	802	840	866	535	552	570	591	608	625	6,765
Cost summary	ton/day	142.6	148.5	154.5	160.2	166.0	171.8	177.5	183.1	188.8	194.5	Total
collection amount 365-base	1000ton/year	52	54	56	58	61	63	65	67	69	71	616
collection amount	1000US\$/year	450	0	1,057	0	0	0	0	548	0	1,155	3,210
Investment	1000US\$/year	776	802	840	866	535	552	570	591	608	625	6,765
O&M	1000US\$/year	1,226	802	1,897	866	535	552	570	1,139	608	1,780	9,975
total	US\$/ton	8.65	0.00	18.88	0.00	0.00	0.00	0.00	8.18	0.00	16.27	5.21
Investment per ton	US\$/ton	14.92	14.85	15.00	14.93	8.77	8.76	8.77	8.82	8.81	8.80	10.98
O&M per ton	US\$/ton	23.57	14.85	33.88	14.93	8.77	8.76	8.77	17.00	8.81	25.07	16.19
total												

Mejicanos

Mejicanos	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day	72.0	74.2	76.5	78.7	80.8	83.0	84.9	87.0	89.0	91.0	
collection amount 312-base	ton/day	84.2	86.8	89.5	92.1	94.5	97.1	99.3	101.8	104.1	106.5	
amount for 18yd3	ton/day	71.6	73.8	76.1	78.3	80.3	82.5	84.4	86.5	88.5	90.5	
amount for 11yd3	ton/day	12.6	13.0	13.4	13.8	14.2	14.6	14.9	15.3	15.6	16.0	
required number of vehicle (1)	unit											
net working rate	unit	7.2	7.4	7.6	7.8	6.1	6.3	6.4	6.6	6.7	6.9	
18yd3 (2001-2004)	unit	1.7	1.7	1.8	1.8	1.4	1.5	1.5	1.5	1.6	1.6	
11yd3 (2001-2004)	unit											
18yd3 (2005-2010)	unit											
11yd3 (2005-2010)	unit											

Mejicanos	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
required number of vehicle (2)	unit	7	7	8	8	6	6	6	7	7	7	7
18yd3	unit	2	2	2	2	1	2	2	2	2	2	2
11yd3	unit	5	6	1	6	6	6	6	5	7	2	2
operable vehicle	unit	2	2	0	1	1	1	2	2	2	1	1
18yd3	unit	1	0	5	0	0	0	0	2	0	5	5
11yd3	unit	0	0	1	0	0	1	0	0	0	1	1
Cost												
Investment												
Vehicle	US\$	75,000	0	375,000	0	0	0	0	150,000	0	0	375,000
18yd3	US\$	0	0	60,000	0	0	60,000	0	0	0	0	60,000
11yd3	US\$	75,000	0	435,000	0	0	60,000	0	150,000	0	0	435,000
sub-total	US\$	7,500	0	7,500	0	0	6,000	0	15,000	0	0	43,500
physical contingency	10 %	82,500	0	478,500	0	0	66,000	0	165,000	0	0	478,500
sub-total	US\$	10,725	0	62,205	0	0	8,580	0	21,450	0	0	62,205
VAT	13 %	93,225	0	540,705	0	0	74,580	0	186,450	0	0	540,705
total	US\$	3,750	0	21,750	0	0	3,000	0	7,500	0	0	21,750
design & supervise	5 %	375	0	2,175	0	0	300	0	750	0	0	2,175
physical contingency	10 %	4,125	0	23,925	0	0	3,300	0	8,250	0	0	23,925
sub-total	US\$	536	0	3,110	0	0	429	0	1,073	0	0	3,110
VAT	13 %	4,661	0	27,035	0	0	3,729	0	9,323	0	0	27,035
total	US\$	97,886	0	567,740	0	0	78,309	0	195,773	0	0	567,740
total investment	1000US\$	98	0	568	0	0	78	0	196	0	0	1,508
O&M cost												
personnel cost	US\$	134,129	137,855	141,580	145,306	113,637	117,363	119,226	122,951	124,814	128,540	1,285,404
18yd3	US\$	25,451	25,451	26,948	26,948	20,959	22,457	22,457	22,457	23,954	23,954	239,544
11yd3	US\$	159,580	163,306	168,528	172,254	134,596	139,820	141,683	145,408	148,768	152,494	1,545,860
sub-total	US\$	15,958	16,331	16,853	17,225	13,460	13,982	14,168	14,541	14,877	15,249	152,494
physical contingency	10 %	175,538	179,637	185,381	189,479	148,056	153,802	155,851	159,949	163,645	167,743	1,677,443
personnel cost total	US\$	18,670	19,188	19,707	20,225	7,387	7,629	7,750	7,993	8,114	8,356	83,544
operation cost	US\$	3,670	3,670	3,886	3,886	1,407	1,508	1,508	1,508	1,608	1,608	16,080
fuel 18yd3 (2001-2004)	US\$	22,340	22,858	23,593	24,111	8,794	9,137	9,258	9,501	9,722	9,964	99,319
fuel 11yd3 (2001-2004)	US\$											
fuel 18yd3 (2005-2010)	US\$											
fuel 11yd3 (2005-2010)	US\$											
fuel total	US\$											

Mejicanos	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
oil	10 % of fuel	2,234	2,286	2,359	2,411	879	914	926	950	972	996	
sub-total		24,574	25,144	25,952	26,522	9,673	10,051	10,184	10,451	10,694	10,960	
physical contingency	10 %	2,457	2,514	2,595	2,652	967	1,005	1,018	1,045	1,069	1,096	
sub-total		27,031	27,658	28,547	29,174	10,640	11,056	11,202	11,496	11,763	12,056	
VAT	13 %	3,514	3,596	3,711	3,793	1,383	1,437	1,456	1,494	1,529	1,567	
operation cost total		30,545	31,254	32,258	32,967	12,023	12,493	12,658	12,990	13,292	13,623	
maintenance cost												
18yd3	15 % of vehicle	81,000	83,250	85,500	87,750	68,625	70,875	72,000	74,250	75,375	77,625	
11yd3	15 % of vehicle	15,300	15,300	16,200	16,200	12,600	13,500	13,500	13,500	14,400	14,400	
sub-total		96,300	98,550	101,700	103,950	81,225	84,375	85,500	87,750	89,775	92,025	
physical contingency	10 %	9,630	9,855	10,170	10,395	8,123	8,438	8,550	8,775	8,978	9,203	
sub-total		105,930	108,405	111,870	114,345	89,348	92,813	94,050	96,525	98,753	101,228	
VAT	13 %	13,771	14,093	14,543	14,865	11,615	12,066	12,227	12,548	12,838	13,160	
maintenance cost total		119,701	122,498	126,413	129,210	100,963	104,879	106,277	109,073	111,591	114,388	
O&M cost total		325,784	333,389	344,052	351,656	261,042	271,174	274,786	282,012	288,528	295,754	3,029
	1000US\$	326	333	344	352	261	271	275	282	289	296	
Cost summary												Total
collection amount 365-base	ton/day	72.0	74.2	76.5	78.7	80.8	83.0	84.9	87.0	89.0	91.0	
collection amount	1000ton/year	26	27	28	29	29	30	31	32	32	33	297
Investment	1000US\$/year	98	0	568	0	0	78	0	196	0	568	1,508
O&M	1000US\$/year	326	333	344	352	261	271	275	282	289	296	3,029
total	1000US\$/year	424	333	912	352	261	349	275	478	289	864	4,537
Investment per ton	US\$/ton	3.77	0.00	20.29	0.00	0.00	2.60	0.00	6.13	0.00	17.21	5.08
O&M per ton	US\$/ton	12.54	12.33	12.29	12.14	9.00	9.03	8.87	8.81	9.03	8.97	10.20
total	US\$/ton	16.31	12.33	32.58	12.14	9.00	11.63	8.87	14.94	9.03	26.18	15.28

Ciudad Delgado

Delgado	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day	31.4	32.4	33.4	34.3	35.2	36.1	37.0	37.8	38.7	39.5	
collection amount 312-base	ton/day	36.7	37.9	39.1	40.1	41.2	42.2	43.3	44.2	45.3	46.2	
amount for 18yd3	ton/day	31.2	32.2	33.2	34.1	35.0	35.9	36.8	37.6	38.5	39.3	
amount for 11yd3	ton/day	5.5	5.7	5.9	6.0	6.2	6.3	6.5	6.6	6.8	6.9	
required number of vehicle (1)												
net working rate	90 %											

Delgado	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
18yd3 (2001-2010)	unit	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.7	3.8	3.9	
11yd3 (2001-2010)	unit	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	
required number of vehicle (2)												
18yd3	unit	3	3	3	3	4	4	4	4	4	4	
11yd3	unit	1	1	1	1	1	1	1	1	1	1	
operatable vehicle												
18yd3	unit	5	5	0	3	3	4	4	4	4	1	
11yd3	unit	2	2	0	1	1	1	1	1	1	0	
purchase of vehicle												
18yd3	unit	0	0	3	0	1	0	0	0	0	3	
11yd3	unit	0	0	1	0	0	0	0	0	0	1	
Cost												
Investment												
Vehicle												
18yd3	US\$	0	0	225,000	0	75,000	0	0	0	0	0	225,000
11yd3	US\$	0	0	60,000	0	0	0	0	0	0	0	60,000
sub-total	US\$	0	0	285,000	0	75,000	0	0	0	0	0	285,000
physical contingency	US\$	0	0	28,500	0	7,500	0	0	0	0	0	28,500
sub-total	US\$	0	0	313,500	0	82,500	0	0	0	0	0	313,500
VAT	US\$	0	0	40,755	0	10,725	0	0	0	0	0	40,755
total	US\$	0	0	354,255	0	93,225	0	0	0	0	0	354,255
design & supervise	US\$	0	0	14,250	0	3,750	0	0	0	0	0	14,250
physical contingency	US\$	0	0	1,425	0	375	0	0	0	0	0	1,425
sub-total	US\$	0	0	15,675	0	4,125	0	0	0	0	0	15,675
VAT	US\$	0	0	2,038	0	536	0	0	0	0	0	2,038
total	US\$	0	0	17,713	0	4,661	0	0	0	0	0	17,713
total investment	US\$	0	0	371,968	0	97,886	0	0	0	0	0	371,968
	1000US\$	0	0	372	0	98	0	0	0	0	0	372
O&M cost												
personnel cost												
18yd3	US\$	57,750	59,613	61,476	63,339	65,202	67,064	68,927	68,927	70,790	72,653	
11yd3	US\$	10,480	10,480	11,977	11,977	11,977	11,977	11,977	13,474	13,474	13,474	
sub-total	US\$	68,230	70,093	73,453	75,316	77,179	79,041	80,904	82,401	84,264	86,127	
physical contingency	US\$	6,823	7,009	7,345	7,532	7,718	7,904	8,090	8,240	8,426	8,613	
personnel cost total	US\$	75,053	77,102	80,798	82,848	84,897	86,945	88,994	90,641	92,690	94,740	
operation cost												
fuel 18yd3 (2001-2010)	US\$	7,865	8,118	8,372	8,626	8,880	9,133	9,387	9,387	9,641	9,894	
fuel 11yd3 (2001-2010)	US\$	1,476	1,476	1,687	1,687	1,687	1,687	1,687	1,898	1,898	1,898	
fuel total	US\$	9,341	9,594	10,059	10,313	10,567	10,820	11,074	11,285	11,539	11,792	

Delgado	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
oil	10 % of fuel	934	959	1,006	1,031	1,057	1,082	1,107	1,129	1,154	1,179	
sub-total		10,275	10,553	11,065	11,344	11,624	11,902	12,181	12,414	12,693	12,971	
physical contingency	10 %	1,028	1,055	1,107	1,134	1,162	1,190	1,218	1,241	1,269	1,297	
sub-total		11,303	11,608	12,172	12,478	12,786	13,092	13,399	13,655	13,962	14,268	
VAT	13 %	1,469	1,509	1,582	1,622	1,662	1,702	1,742	1,775	1,815	1,855	
operation cost total		12,772	13,117	13,754	14,100	14,448	14,794	15,141	15,430	15,777	16,123	
maintenance cost												
18yd3	15 % of vehicle	34,875	36,000	37,125	38,250	39,375	40,500	41,625	41,625	42,750	43,875	
11yd3	15 % of vehicle	6,300	6,300	7,200	7,200	7,200	7,200	7,200	8,100	8,100	8,100	
sub-total		41,175	42,300	44,325	45,450	46,575	47,700	48,825	49,725	50,850	51,975	
physical contingency	10 %	4,118	4,230	4,433	4,545	4,658	4,770	4,883	4,973	5,085	5,198	
sub-total		45,293	46,530	48,758	49,995	51,233	52,470	53,708	54,698	55,935	57,173	
VAT	13 %	5,888	6,049	6,339	6,499	6,660	6,821	6,982	7,111	7,272	7,432	
maintenance cost total		51,181	52,579	55,097	56,494	57,893	59,291	60,690	61,809	63,207	64,605	
O&M cost total		139,006	142,798	149,649	153,442	157,238	161,030	164,825	167,880	171,674	175,468	1,583
	1000US\$	139	143	150	153	157	161	165	168	172	175	
Cost summary												Total
collection amount 365-base	ton/day	31.4	32.4	33.4	34.3	35.2	36.1	37.0	37.8	38.7	39.5	
collection amount	1000ton/year	11	12	12	13	13	13	14	14	14	14	130
Investment	1000US\$/year	0	0	372	0	98	0	0	0	0	372	842
O&M	1000US\$/year	139	143	150	153	157	161	165	168	172	175	1,583
total	1000US\$/year	139	143	522	153	255	161	165	168	172	547	2,425
Investment per ton	US\$/ton	0.00	0.00	31.00	0.00	7.54	0.00	0.00	0.00	0.00	26.57	6.48
O&M per ton	US\$/ton	12.64	11.92	12.50	11.77	12.08	12.38	11.79	12.00	12.29	12.50	12.18
total	US\$/ton	12.64	11.92	43.50	11.77	19.62	12.38	11.79	12.00	12.29	39.07	18.66

Cuscatancingo

Cuscatancingo	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day	26.7	27.6	28.4	29.2	30.0	30.7	31.5	32.2	32.9	33.6	
collection amount 312-base	ton/day	31.2	32.3	33.2	34.2	35.1	35.9	36.9	37.7	38.5	39.3	

Cuscatancingo	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
amount for 18yd3	ton/day	26.5	27.5	28.2	29.1	29.8	30.5	31.4	32.0	32.7	33.4	
amount for 11yd3	ton/day	4.7	4.8	5.0	5.1	5.3	5.4	5.5	5.7	5.8	5.9	
required number of vehicle (1)												
net working rate	90 %											
18yd3 (2001-2004)	9.1 ton/day	3.2	3.4	3.4	3.6	2.4	2.4	2.5	2.5	2.6	2.7	
11yd3 (2001-2004)	7.0 ton/day	0.7	0.8	0.8	0.8	0.6	0.6	0.6	0.6	0.6	0.6	
18yd3 (2005-2010)	14.0 ton/day											
11yd3 (2005-2010)	10.7 ton/day											
required number of vehicle (2)												
18yd3	unit	3	3	3	4	2	2	3	3	3	3	
11yd3	unit	1	1	1	1	1	1	1	1	1	1	
operatable vehicle												
18yd3	unit	3	2	0	2	2	2	2	3	3	1	
11yd3	unit	1	1	0	1	1	1	1	1	1	0	
purchase of vehicle												
18yd3	unit	0	0	2	0	0	0	1	0	0	2	
11yd3	unit	0	0	1	0	0	0	0	0	0	1	
Cost												
Investment												
Vehicle	US\$	0	0	150,000	0	0	0	75,000	0	0	150,000	
18yd3	US\$	0	0	60,000	0	0	0	0	0	0	60,000	
11yd3	US\$	0	0	210,000	0	0	0	75,000	0	0	210,000	
sub-total	US\$	0	0	21,000	0	0	0	7,500	0	0	21,000	
physical contingency	10 %	0	0	231,000	0	0	0	82,500	0	0	231,000	
sub-total	US\$	0	0	30,030	0	0	0	10,725	0	0	30,030	
VAT	13 %	0	0	261,030	0	0	0	93,225	0	0	261,030	
total	US\$	0	0	10,500	0	0	0	3,750	0	0	10,500	
design & supervise	5 %	0	0	1,050	0	0	0	375	0	0	1,050	
physical contingency	10 %	0	0	11,550	0	0	0	4,125	0	0	11,550	
sub-total	US\$	0	0	1,502	0	0	0	536	0	0	1,502	
VAT	13 %	0	0	13,052	0	0	0	4,661	0	0	13,052	
total	US\$	0	0	274,082	0	0	0	97,886	0	0	274,082	
total investment	1000US\$	0	0	274	0	0	0	98	0	0	274	646
O&M cost												
personnel cost	US\$	59,613	63,339	63,339	67,064	44,710	44,710	46,573	46,573	48,435	50,298	
18yd3	US\$	10,480	11,977	11,977	11,977	8,983	8,983	8,983	8,983	8,983	8,983	
11yd3	US\$	70,093	75,316	75,316	79,041	53,693	53,693	55,556	55,556	57,418	59,281	
sub-total	US\$	7,009	7,532	7,532	7,904	5,369	5,369	5,556	5,556	5,742	5,928	
physical contingency	10 %											

Cuscatancingo	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
personnel cost total	US\$	77,102	82,848	82,848	86,945	59,062	59,062	61,112	61,112	63,160	65,209	
operation cost												
fuel 18yd3 (2001-2004)	US\$	10,723	11,393	11,393	12,064	3,415	3,415	3,558	3,558	3,700	3,842	
fuel 11yd3 (2001-2004)	US\$	1,952	2,231	2,231	2,231	707	707	707	707	707	707	
fuel 18yd3 (2005-2010)	US\$											
fuel 11yd3 (2005-2010)	US\$											
fuel total	US\$	12,675	13,624	13,624	14,295	4,122	4,122	4,265	4,265	4,407	4,549	
oil	US\$	1,268	1,362	1,362	1,430	412	412	427	427	441	455	
sub-total	US\$	13,943	14,986	14,986	15,725	4,534	4,534	4,692	4,692	4,848	5,004	
physical contingency	US\$	1,394	1,499	1,499	1,573	453	453	469	469	485	500	
sub-total	US\$	15,337	16,485	16,485	17,298	4,987	4,987	5,161	5,161	5,333	5,504	
VAT	US\$	1,994	2,143	2,143	2,249	648	648	671	671	693	716	
operation cost total	US\$	17,331	18,628	18,628	19,547	5,635	5,635	5,832	5,832	6,026	6,220	
maintenance cost												
18yd3	US\$	36,000	38,250	38,250	40,500	27,000	27,000	28,125	28,125	29,250	30,375	
11yd3	US\$	6,300	7,200	7,200	7,200	5,400	5,400	5,400	5,400	5,400	5,400	
sub-total	US\$	42,300	45,450	45,450	47,700	32,400	32,400	33,525	33,525	34,650	35,775	
physical contingency	US\$	4,230	4,545	4,545	4,770	3,240	3,240	3,353	3,353	3,465	3,578	
sub-total	US\$	46,530	49,995	49,995	52,470	35,640	35,640	36,878	36,878	38,115	39,353	
VAT	US\$	6,049	6,499	6,499	6,821	4,633	4,633	4,794	4,794	4,955	5,116	
maintenance cost total	US\$	52,579	56,494	56,494	59,291	40,273	40,273	41,672	41,672	43,070	44,469	
O&M cost total	US\$	147,012	157,970	157,970	165,783	104,970	104,970	108,616	108,616	112,256	115,898	1,285
	1000US\$	147	158	158	166	105	105	109	109	112	116	
Cost summary												
collection amount 365-base	ton/day	26.7	27.6	28.4	29.2	30.0	30.7	31.5	32.2	32.9	33.6	Total
collection amount	1000ton/year	10	10	10	11	11	11	11	12	12	12	110
Investment	1000US\$/year	0	0	274	0	0	0	98	0	0	274	646
O&M	1000US\$/year	147	158	158	166	105	105	109	109	112	116	1,285
total	1000US\$/year	147	158	432	166	105	105	207	109	112	390	1,931
Investment per ton	US\$/ton	0.00	0.00	27.40	0.00	0.00	0.00	8.91	0.00	0.00	22.83	5.87
O&M per ton	US\$/ton	14.70	15.80	15.80	15.09	9.55	9.55	9.91	9.08	9.33	9.67	11.68
total	US\$/ton	14.70	15.80	43.20	15.09	9.55	9.55	18.82	9.08	9.33	32.50	17.55