Table 5.2.5 Break-down of Sewerage Expenses

Account	1990	1991	1992	1993	1994
Direct expenses:					
Operating expenses					
Personnel	30	34	37	40	50
Water treatment chemicals	0	0	1	0	0
Illumination and power	9	9	10	13	20
Sundry	4	7	8	13	10
Total operating expenses	43	50	56	66	80
Non-cash expenses:					
Depreciation	84	94	151	165	120
Allowance for bad debts	8	9	10	12	12
Total non-cash expenses	92	103	161	177	132
Finance charges:					
Interest expenses	138	161	116	149	124
Forex difference	43	40	37	62	61
Total finance charges	181	201	153	211	185
Total direct expenses	316	354	370	454	397
% of total expenses	82%	79%	79%	79%	84%
Allocated expenses:					
Operating expenses					
Personnel	44	60	63	72	50
Illumination and power	1	2	2	2	2
Sundry	19	23	27	34	19
Total operating expenses	64	85	92	108	71
Non-cash expenses:					
Depreciation	6	7	8	10	4
Total non-cash expenses	6	7	8	10	4
Total allocated expenses	70	92	100	118	75
% of total expenses	18%	21%	21%	21%	16%
Total expenses	386	446	470	572	472

2.1.4 Fixed Assets

Annual revaluation, performed internally using CPI, is applied to fixed assets, and depreciation is charged to income including that on appraisal increase resulting from annual revaluation. This accounting procedure is apparently in an attempt to present expenses as close to market value as possible. It is also required by the loan covenants with IBRD and ADB. A standard accounting

procedure would be to charge the depreciation on appraisal increase directly to appraisal surplus account in equity. The current procedure results in a lower ROR.

In addition to annual revaluation, it has been suggested by the COA that another one be performed by independent appraisers every five years, and this was first conducted in 1992 by an outside appraiser (Cuervo Appraisers, Inc.) on the fixed assets in existence at FYE 1991. This appraisal report and the general ledger are compared as follows (in million pesos):

As of December 31, 1991	Cost	Accum. deprec.	Net
Per appraisal report	25,496	10,286	15,210
Per general ledger	21,226	4,370	16,856
Difference	4,270	5,916	(1,646)

As shown, the cost was understated by P4,270 million or 20 percent in spite of the annual revaluation for inflation, but the accumulated depreciation was also understated by P5,916 million, possibly suggesting that the estimated useful lives used were too long and/or that the straight-line method did not reflect the actual decline in the value of the assets. The net impact was a charge of P1,646 million, directly made to equity (appraisal surplus account) in 1992. Depreciation expenses increased due to this revaluation because the base value was written up. A P623 million depreciation expense for 1993 was tentative and adjusted to P883 million in 1994. Therefore, the 1993 net income should have been P862 million instead of P1,122 million. The 1994 depreciation was P900 million.

Also in 1992, the useful lives of fixed assets were reviewed for appropriateness and revised by an ad hoc committee composed of staff from the Accounting Department and the Engineering Area with the ensuing approval by the COA. The useful lives of certain assets were shortened (for example, from 40 to 25 years for transmission and distribution mains), and depreciation was retroactively adjusted based on the new lives, which was reflected in the increase in the accumulated depreciation account in 1992 of P287 million. This retroactive adjustment is not necessarily in conformity with generally accepted accounting principles, whereby remaining book values would be depreciated over shortened remaining useful lives in future years. As a result of this accounting procedure, the net fixed assets are understated and the future depreciation expenses will be also understated as compared to those in accordance with standard accounting

principles. This means that ROR shows a somewhat better figure because of the understatement of net fixed assets.

The detail on fixed assets at FYE 1994 is as follows:

Table 5.2.6 Fixed Assets at FYE 1994

Asset Description	Life	Cost			Accumulated Depreciation		
		Original	Appraisal	Total	Original	Appraisal	Total
Water:							
Land		59	2,145	2,204			
Structures and improvements	20	165	266	431	55	134	189
Collecting and impounding res.	50	1,117	675	1,792	101	394	496
Supply mains	50	1,717	3,975	5,692	214	2,510	2,724
Distribution, res. & booster stn.	30	652	1,035	1,687	245	604	849
Buildings and improvements	40	264	531	795	71	204	275
Investigation and survey	5	2		2			
Wells and facilities	10	86	81	167	78	74	152
Water treatment equipment	10	13	214	227	10	138	148
Water treatment plant	40	368	76	444	94	59	153
Transmission & dist. mains	25	6,271	9,813	16,084	973	6,618	7,591
Water meters	5	78	211	289	80	198	278
Public faucet/sanitary facilities	10	6	6	12	3	3	6
Hydrants	15	26	15	41	11	12	23
House water service connection	15	51	30	81	14	10	24
Elect., install. & lighting system	5	19	10	29	13	9	22
Total fixed assets - water		10,893	19,081	29,974	1,961	10,967	12,928
Sewer:							
Land		206	21	227			
Structures and improvements	20	33	26	59	5	15	20
Buildings and improvements	40	19	17	36	6	7	13
Wells and facilities	10	4		4	4		4
Sewer treatment equipment	10	4	2	6	3	1	4
Transmission & discharge mains	20	1,600	167	1,767	600	51	651
Public faucet/sanitary facilities	10	35	16	51	17	8	25
Sewer treat. plant & pump. stn.	20	359	115	474	143	46	189
Manholes and accessories	15	63	18	81	12	10	22
House sewer service connection	15	62	32	94	36	19	55
Total fixed assets - sewer		2,385	416	2,801	826	158	984
General administration		283		283	177		177
Total fixed assets		13,561	19,497	33,058	2,964	11,125	14,089
Accumulated depreciation		2,964	11,125	14,089			
Net fixed assets		10,597	8,372	18,969			
Depreciation percentage		21.9%	57.1%	42.6%			

2.1.5 Accounts Receivable

MWSS recognizes delinquent or "under litigation" accounts and transfers them to other accounts. Normally they would be written off and charged to income, but at GOCCs such as MWSS a disposition of assets requires an approval from the President of the Philippines, and therefore, does not happen on a regular basis although MWSS has proposed to write off bad debt accounts that were incurred in or before 1985 and is awaiting approval. The last time such authorization was secured was in 1978, when arrears accounts being incurred in or before 1966 were written off.

Allowance for doubtful accounts is provided at 2 percent of gross billing every year. Because MWSS does not write off arrears accounts against the allowance on a regular basis, it just keeps increasing. The provision rate used to be 4 percent but was changed to 2 percent in 1990 according to a recommendation by the COA in 1988. This recommendation was made on the basis that the collection efficiency was better in preceding years and that the balance of allowance for doubtful accounts became more than half the accounts receivable balance then. However, the billing efficiency has recently been about 95 percent, and the allowance account appears to have been underaccrued. The Study Team has been informed that MWSS is considering increasing the provision rate from 2 percent to 5 percent but has decided to wait until the outcome of the pending request for write-off of old accounts is known.

The loan covenants with ADB stipulate that MWSS reduce its gross accounts receivable to a level not higher than the equivalent of three months billing by the end of 1993 and maintain it under that level thereafter, which MWSS has failed to satisfy so far. The loan covenants also require MWSS to write off annually its outstanding accounts deemed uncollectible, which has not been followed, either. The third covenant in relation to accounts receivable is for MWSS to strive to settle by December 31, 1992 overdue water and sewerage charges due from governments and GOCCs. As of FYE 1994, the balance due from them was estimated by the Accounting Department to be P88 million (5.7 percent of the total) and this included quite old accounts.

The aging of accounts receivable at FYE 1994 is as follows according to the Accounting

Department:

Table 5.2.7 Aging of Accounts Receivable at FYE 1994

	Domestic	Commercial	Government	Total
1994	847.1	67.5	53.0	967.6
1993	87.2	13.6	10.4	111.2
1992	68.0	5.4	4.3	77.7
1991	56.2	4.5	3.5	64.2
1990	41.2	3.3	2.6	47.1
1989	34.2	2.7	2.1	39.0
1988	30.0	2.4	1.9	34.3
1987	30.7	2.5	1.9	35.1
1986	20.1	1.6	1.3	23.0
1985	16.6	1.0	0.8	18.4
1984	6.6	0.9	0.7	8.2
1983	6.2	0.8	0.6	7.6
1982	4.0	0.8	0.6	5.4
1981	14.9	1.2	0.7	16.8
1980	13.8	1.0	0.7	15.5
1979	12.3	1.0	0.6	13.9
1978	11.3	0.9	0.5	12.7
1977	10.3	0.8	0.4	11.5
1976	9.3	0.7	0.4	10.4
1975	8.3	0.6	0.3	9.2
1974	7.3	0.6	0.2	8.1
1973	6.3	0.5	0.2	7.0
1972	5.2	0.4	0.2	5.8
1971	4.1	0.3	0.2	4.6
	1351.2	115.0	88.1	1,554.3

Note: The above total differs from the balance per the balance sheet due to notes receivable in the amount of P14 million.

2.1.6 Foreign Loans

MWSS has outstanding foreign loans with international agencies such as IBRD and ADB. There are also bilateral loans with the Japanese government (explained in 1.1.9) and the Swiss government (STCF loan for MWSP III).

Loans with IBRD and ADB are expressed in US dollars, but they are in fact denominated in multiple foreign currencies the original loan proceeds were drawn from. MWSS converts these loans to pesos at the year end as if they were denominated in US dollars but puts off the recognition of translation gain or loss due to the change in exchange rate between US dollar and

other foreign currencies until the time of loan amortization. Because of recent depreciation of US dollar against such currencies as Japanese Yen, German Mark and Swiss Franc, foreign loans may be considerably understated.

The detail of long-term foreign loans at FYE 1994 is as follows:

Table 5.2.8 Long-term Foreign Loans at FYE 1994

Loan No.	Projects	Balance (FC)	Balance (P)	S/T portion	Interest	Final due
IBRD-1615	MWSP II	$21,818	535.9	36.0	7.9%	1998
IBRD-1415	MMSSP	1,416	34.8		8.12%	1997
IBRD-1814	MMSSP	9,927	243.8	17.0	8.25%	2000
IBRD-1814	MWSP II	187	4.6	0.5	8.25%	2000
IBRD-1814	MWSP II	3,399	83.5	5.5	8.25%	2000
IBRD-1272	MMSSP	1,444	35.5		8.5%	1998
IBRD-2676	MMWDP	26,284	645.6	5.2	floating	2006
IBRD-3124	MWSP II	37,702	926.1		floating	2009
Total IBRD		$102,179	2,509.8	64.2		
ADB-190	MWSP II	$20,503	503.6	21.2	7.5%	1999
ADB-351	MWSP II	29,593	726.9	14.5	7.7%	2003
ADB-457	MMSSP	19,785	486.0	7.6	8.1%	2005
ADB-947	MWSRP II	25,458	625.3		floating	2012
ADB-645	MWSRP I	23,609	579.9	2.0	10.5%	2007
ADB-986	AWSOP	45,918	1,127.9	8.8	floating	2014
ADB-1150	MSWDP	262	6.4		floating	2017
ADB-1217	UATP	1,692	41.6		floating	2003
Total ADB		$166,821	4,097.6	54.0		
STCF	MWSP III	SF3,085.3	57.9		10.11%	
Total foreign loans			6,665.3	118.2		
Less current portion		4,814	118.2			
Net L/T foreign loans			6,547.1			

Note: Exchange rate at 12/31/1994 was P24.563 = $1.00 and P18.77 = SF1.00.
Foreign balances in thousands.

2.1.7 Accrued Expenses

Before 1994, accrued expenses was set up based on the budgeted amounts. The amount of accrual was estimated by the MWSS operating units subject to the approval by the FCBD for fund availability. There was usually underspending of budget (since it cannot be overspent) and the operating units tried to use up the remainder of the budget, there tended to be overestimation

of the amount. This resulted in the reversal of accrued expenses in the following year, meaning cut-off errors. Accrued expenses except those for interest and forex differences resulted as follows for the review period (in million pesos):

Year	Accrual	Paid	Reversed
1990	45	25	20
1991	43	21	22
1992	90	36	54
1993	65	34	31
1994	41	41	0

For the 1994 accrual, MWSS changed its practice in setting up accrued expenses, and now puts off the finalization of the amount for three months into the following year. Therefore, there is no cut-off problem any longer.

2.1.8 OECF Equity

In addition to the aforementioned foreign loans, there is a loan from the Japanese Government through the Overseas Economic Cooperation Fund (OECF) to the GOP, started in 1991 for AWSOP, which the GOP in turn passes on to MWSS as equity contributions. These accumulated to $228 million (approximately P52 million) at FYE 1994 out of the commitment amount of $10,560 million (approximately P2,500 million).

2.1.9 Analysis of Operating Revenues

(1) Water Service Charge

The following table shows an analysis of the water service charge as compared to the level of MWSS operations:

Table 5.2.9 Analysis of Water Service Charge

Description	1990	1991	1992	1993	1994
Water produced (mcm)	909.1	900.1	851.6	932.8	1,009.5
Water billed (mcm)	384.7	386.5	383.6	397.1	413.8
NRW rate	57.7%	57.1%	55.0%	57.4%	59.0%
No. of water service connections	667,818	709,767	746,051	788,423	816,935
Revenue (P million)	1,975.0	2,406.0	2,616.9	2,901.0	3,081.4
Ave. rev. per production (pesos/m^3)	2.17	2.67	3.07	3.11	3.05
Ave. rev. per billing (pesos/m^3)	5.13	6.23	6.82	7.31	7.45
Ave. tariff (pesos/m^3)	4.61	5.26	6.24	6.43	6.43
Ave. revenue per connection (pesos)	2,957	3,390	3,508	3,679	3,772

The water service charge is levied based on consumption volume. The average revenue per cubic meter of water billed increased from P5.13 (1990) to P7.45 (1994). These figures differ from the official average rates MWSS uses for reporting purposes (P6.43) mostly due to CERA (currency exchange rate adjustments). On the other hand, the average revenue per cubic meter of water produced actually declined in 1994 due to the deteriorating NRW rate. As a matter of fact, the NRW rate was the worst in 1994 of the entire review period despite all the attention it is getting.

(2) Sewerage Service Charge

The following table shows an analysis of the sewerage service charge in comparison with the water service charge:

Table 5.2.10 Analysis of Sewerage Service Charge

Description	1991	1990	1992	1993	1994
Water service charge (P million)	2,406.0	1,975.0	2,616.9	2,901.0	3,081.4
Sewer service charge (P million)	226.8	197.6	271.4	290.7	307.3
Assumed water service charge	453.6	395.2	542.8	581.4	614.6
Computed coverage rate	18.9%	20.0%	20.7%	20.0%	19.9%
No. of sewer connections	91,140	89,740	92,695	90,015	91,159
Ave. sewer charge per connection	2,488	2,202	2,928	3,229	3,368

Assumed water service charge represents what is subject to the sewer service charge that is levied at 50 percent of the water service charge. The ratio of the latter for the sewered customers

to all water customers stayed around 20 percent for the review period as shown in the table. This rate is higher than the theoretical rate calculated based on the water coverage of 60 percent and the sewerage coverage of 9 percent. The theoretical rate should be around 15 percent. The reason that the computed rate is higher is probably because the sewered customers tend to be bigger consumers of water than average. Actually the average sewer charge per connection was almost equal to the average water charge for the review period.

2.1.10 Analysis of Expenses

Expenses can be analyzed in terms of expense factor such as personnel, material and other, and in terms of functions such as water supply, water treatment and customer services.

(1) Factor Analysis

Comparative break-down of expenses by factor is shown in the following table:

Table 5.2.11 Comparative Expenses by Factor

Expense Factor	1990	1991	1992	1993	1994
Personnel:					
Salaries & wages	224	286	281	345	358
Other	283	283	285	344	467
Total personnel	507	569	566	689	825
Materials:					
Chemicals	64	83	102	85	79
Supplies and materials	27	23	22	25	35
Gasoline and oil	5	7	8	8	6
Total materials	96	113	132	118	120
Other operating:					
Illumination/power	124	152	151	154	198
Repair & maintenance	12	10	12	20	36
Other	148	159	209	230	233
Total other operating	284	321	372	404	467
Non-cash:					
Depreciation	342	375	623	623	901
Provision for bad debts	47	58	63	70	74
Amortization	3	3	3	3	3
Total non-cash	392	436	689	696	978
Finance charges:					
Interest expenses	514	611	433	589	682
Forex difference	216	234	199	214	366
Total Finance charge	730	845	632	803	1,048
Total expenses	2,009	2,283	2,391	2,716	3,438

The increase in expenses for the review period was attributable to personnel (22%), depreciation (39%), finance charges (22%) and other (17%). They grew at an average annual rate of 12 percent, 27 percent, 9 percent and 11 percent, respectively.

(2) Functional Analysis

Comparative break-down of expenses by function is shown in the following table:

Table 5.2.12 Comparative Expenses by Function

Function	1990	1991	1992	1993	1994
Source of Supply	154	174	169	159	296
Purification and treatment	160	195	205	175	216
Distribution	703	810	868	965	1,286
Sewerage	386	445	470	566	472
Customer services	311	343	381	400	517
Administration	244	260	247	368	390
Finance	40	43	40	52	74
Construction	12	13	12	31	187
Total expenses	2,009	2,283	2,391	2,716	3,438

MWSS categorizes expenses based on activities; namely, source of supply (code 100), purification and treatment (200), distribution (300), sewerage (400), customer services (500), administration (600), finance (700) and construction (800).

All MWSS Areas have supporting functions such as DA's office, expenses of which are charged to A/C 600- administration. Construction Area expenses are either capitalized for foreign assisted projects and major locally funded projects or expensed for minor locally funded projects. Part of expenses in customer service (500), administration (600), finance (700) and construction (800) is allocated to sewerage (400) as explained earlier.

The following table summarizes the relationship between where expenses were incurred and where they are charged functionally:

Table 5.2.13 Expenses Distribution Table

Function	Source of Supply	Purification	Distribution	Sewerage	Customer Services	Admin.	Finance	Construction
MWSS Area	(100)	(200)	(300)	(400)	(500)	(600)	(700)	(800)
Admin./ SDA						F		
Engineering						F		
Construction						P		P
Operation	P	P	P	P		P		
Cust. Service					P	P		
Finance						P	P	
Administration						F		

Notes: F denotes a full charge. P denotes a partial charge.

For FY 1994, expenses were accounted for by source of supply (9%), purification (6%), distribution (38%), sewerage (14%), customer services (15%), administration (11%), finance (2%) and construction (5%). Construction expenses grew considerably mainly because the allocation of finance charges to this function started in FY 1993. Excluding depreciation and finance charges, the biggest growth was achieved by the finance function (an annual rate of 17%), followed by the administration function (16%) and the customer services function (14%). On the same basis, the latter accounted for most of the total (32%), then the distribution (23%) and the administration function (18%). The relative magnitude of the administration function should be noted here.

On an all inclusive basis, the water revenue is composed of water expenses functionally as follows:

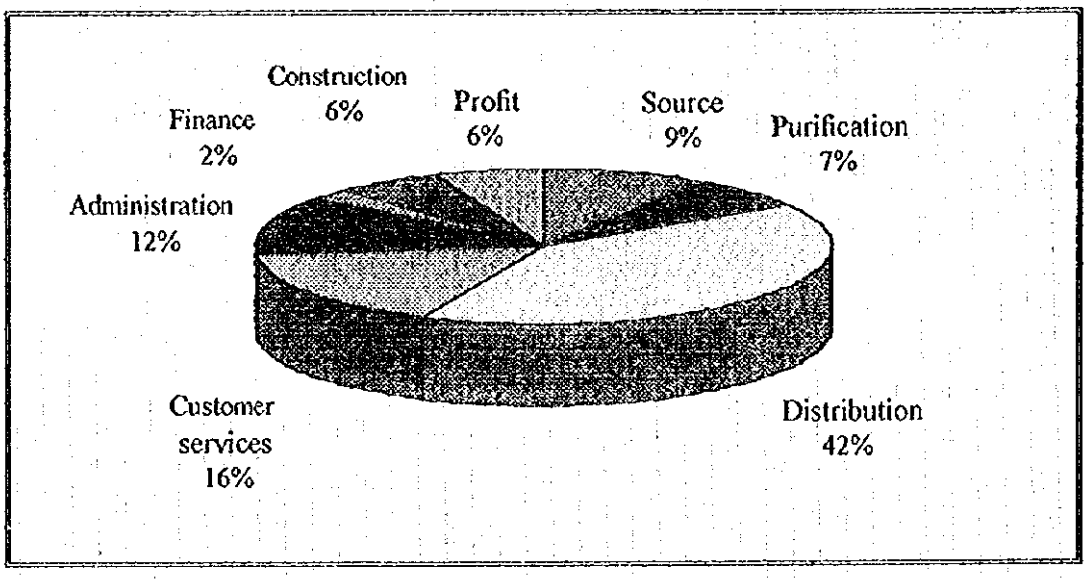

Figure 5.2.1 Composition of Water Revenue

Finally, the 1994 expenses are broken down by factor and function as follows:

Table 5.2.14 Detail Expenses by Category and Function for FY 1994

Functio / Factor	Source (100)	Purif. (200)	Dist. (300)	Sewerage (400)	Cust. Serv. (500)	Admin. (600)	Finance (700)	Const. (800)	Total
Personnel:									
Salaries & wages	6	8	65	68	120	60	24	7	358
Other	9	13	99	33	192	78	32	11	467
Total personnel	15	21	164	101	312	138	56	18	825
Materials:									
Chemicals	4	73	2						79
Supplies/materials		1	9	4	14	6	1		35
Gasoline & oil			2	1	2	1			6
Total materials	4	74	13	5	16	7	1		120
Other operating:									
Illumination/power	1	18	143	22	3	11			198
Repair & maint.	1		14	2		19			36
Other	1	1	9	22	83	99	17	1	233
Total other op.	3	19	166	46	86	129	17	1	467
Non-cash									
Depreciation	112	41	574	123	32	19			901
Prov. for bad debts				12	62				74
Amortization	3								3
Total non-cash	115	41	574	135	94	19			978
Finance charge:									
Interest expenses	94	39	204	124	4	58		159	682
Forex difference	65	22	165	61	5	39		9	366
Total finance charge	159	60	369	185	9	97		168	1,048
Total expenses	296	216	1,286	472	517	390	74	187	3,438

(3) Interest

Interest is capitalized during construction and expensed after completion of projects. Interest payments are analyzed as follows for the review period:

Table 5.2.15 Analysis of Interest

	1990	1991	1992	1993	1994
Interest:					
Expensed	514	611	433	589	682
Capitalized	209	352	666	545	453
Total	723	963	1,099	1,134	1,135
Average loan balance	6,458	7,967	8,629	9,305	9,127
Effective interest rate (%)	11.2	12.1	12.7	12.2	12.4
Interest capitalized (%)	28.9	36.6	60.6	48.1	39.9

The effective interest rate was constant at around 12 percent per year. The percentage of capitalized interest varied rather considerably reflecting the various stages of capital projects.

2.1.11 Dividends

There is a thought that it does not make sense for a GOCC like MWSS to pay dividends to the GOP since the government needs to contribute capital back to such a GOCC anyway for operating or investing purposes, so the effect of the dividends would be negated. This was the way until November 1993, when RA 7656 was enacted, which requires GOCCs to pay at least 50 percent of net income as dividends. This appears to be a move by the GOP to more strictly apply the concept of "full cost recovery" to GOCCs and to help replenish its depleting financial capacity.

In May 1993, before the enactment of RA 7656, the MWSS Board voluntarily declared a P50 million cash dividend on 1992 income of P1,194 million (4.2 percent) "in recognition of the need to give to the National Government a return on its paid-in capital at MWSS."

For the 1993 income, RA 7656 was overridden by EO 209, which reduced the dividend rates for MWSS and other GOCCs from 50 percent to 20 percent whereby "the liquidity, retained earnings position and medium-term plans and programs of these GOCCs were considered in the determination of the reasonable dividend rates of such GOCCs on their 1993 net earnings in order to support the viability and mandate of the GOCCs." Accordingly, MWSS paid P224 million as dividends in early 1995 for FY 1993.

As a general rule, a cash dividend is required, but GOCCs may declare stock dividends provided that authorized capitalization has not been fully paid up. This was what NAPOCOR did for its 1994 earnings whereby a stock dividend worth P3.73 billion was approved by the DOF and passed by its board of directors.

2.1.12 Taxes

RA 6234 basically exempted MWSS from all sorts of taxes, but EO 93 and ensuing resolution No.14-89 issued by the Fiscal Incentives Review Board restored this exemption privilege with withholding tax on its interest income and customs duties on its commercially-funded importation. Therefore, starting 1991 MWSS has been paying customs duties which has been wholly subsidized by the GOP and tax on interest income (20%) which has been withheld at source. Starting 1993 MWSS has been paying real estate taxes, which is a local tax and not financially significant.

MWSS is still not subject to taxes on income (normally 35%).

2.1.13 1995 Results of Operations

The following table compares the results of operations for the first six months of 1995 to the previous year's actual and to the 1995 budget. The 1994 budget and actual are also included in the table.

Table 5.2.16 1995 Operational Results for the First Six Months

Description	1995 1st half actual	1994 1st half actual	1995 budget	1994 budget	1994 actual
Water production (mcm)	458.8	493.5	967.3	930.9	1,009.5
Revenue water (mcm)	208.4	206.4	459.4	437.5	413.8
NRW rate (%)	54.6	58.2	52.5	53.0	59.0
Service connections:					
Water	831,902	800,602	860,462	848,423	816,935
Sewer	91,430	90,044	92,514	92,015	91,159
Personnel:					
Regular	4,726	4,580	4,800	4,909	4,615
Casual	2,980	3,319	3,168	4,602	3,180
Total	7,706	7,899	7,968	9,511	7,795
Revenues (P mil.):					
Operating revenue	1,840	1,889	4,222	4,273	3,774
Interest income	108	145	550	250	331
Ave. water rev. per m^3 (P)	7.19	7.46	7.53	8.04	7.45
Expenses:					
Operating expenses	792	639	1,657	1,793	1,413
Depreciation	509	467	940	695	900
Financial charges	537	580	1,117	1,011	1,048
Net income	110	348	967	931	667

As compared to the budget and the previous year's actual, the 1995 results so far are characterized by the following:

- In spite of a better NRW rate, the volume billed was almost the same as the actual for the first half of 1994.
- The average unit revenue deteriorated due to lower CERA charge and a change in the customer consumption mix, i.e., business customers' weight reduction.
- Operating expenses increased mainly due to a salary revision.
- Almost all of net income came from interest income.
- ROR (ADB covenant) requirement will be very difficult to meet.

2.1.14 Comparison with Other Water Utilities

(1) Source of Information and Utilities Compared

A book titled "Water Utilities Data Book for the Asian and Pacific Region" (ADB Data Book), published by ADB is used for this comparative analysis. The ADB Data Book covers 38 water utilities in 23 developing countries in the region.

Although 38 utilities in the region were surveyed, the Study Team decided to compare MWSS with 9 water utilities in Bangkok, Beijing, Bombay, Hong Kong, Jakarta, Kuala Lumpur, Seoul, Singapore and Taipei because of their similarities to Manila in the size of services and their being a principal city for the country. See Data Report for the data to support the following discussions.

(2) People Served

Seoul is the largest serving more than 10 million people. MWSS comes in third next to Hong Kong. Beijing is closely behind. All but Kuala Lumpur serve more than 3 million people.

(3) Annual Revenue

This is decided by the combination of water volume billed and tariff level which to a certain degree reflects the price of things in a country. The largest is Hong Kong, and MWSS is the seventh at about one-fifth of Hong Kong.

(4) Unit Production Cost

This is the annual operating and maintenance cost (excluding depreciation and finance charges) divided by the total annual water production. Of the 10 utilities, the unit production cost varies from about $ 0.027 per cubic meter (in Kuala Lumpur) to about $0.32 per cubic meter (in Hong Kong). Three more industrialized cities, namely Hong Kong, Singapore and Seoul, have unit costs over $0.10 per cubic meter. MWSS's $0.037 per cubic meter is about the average for the 10 utilities.

Production cost is mostly local cost, and accordingly, is dependent on the price of things for the country. In order to neutralize such influence, it may be appropriate to apply the GNP per capita as the denominator to production cost. Using Bangkok as a base at 100, all the more developed cities (Hong Kong, Kuala Lumpur, Seoul, Singapore and Taipei) show a figure of less than 100.

MWSS is 106, joining the developing countries, all over 100. This means that developing countries are spending more money producing water than developed countries.

It should be noted that what comprises production costs may be different from utility to utility due to accounting principles used and possible subsidies from the government. Therefore, these ratios are only indicative, not conclusive.

(5) Operating Ratio

This is the annual operating cost divided by the total annual billing and indicates the extent to which tariffs set by the utilities cover the variable cost of providing water. Better operating ratios result from higher revenue or lower cost or a combination of both. 39 percent for MWSS is one of the best. It should be noted, however, that a good operating ratio is a two-edged sword in that low figures may result from efficient operations or from negligence in regular maintenance. For MWSS it may be the latter case rather than the former.

(6) Composition of Operating Expenses

The ADB Data Book provides information on how operating expenses are made up of power, personnel and other expenses based on the financial information supplied by the water utilities.

It is noteworthy that MWSS does not spend too much in power expenses as compared to the other utilities probably because of the geography MWSS enjoys enabling it to transmit the majority of water by gravity. The high percentage for personnel expense is explained by the relatively large number of employees MWSS has, which is supported by the next analysis.

(7) Staff per 1,000 Connections

This is another measurement of the efficiency of a water utility. Among the 10 utilities, MWSS ranks eighth at 12.8 staff per 1,000 service connections. It should be noted that this indicator is affected by whether construction workers are included in the headcount or not. Nevertheless, MWSS's figure still appears to be very high.

(8) Accounts Receivable

MWSS's 4.0 months worth of billing per the ADB Data Book (in reality it is 5) as the balance of accounts receivable is the worst of the 9 utilities. However, this is caused mainly by MWSS's inability to timely write off delinquent receivables rather than by its designed collection cycle, which appears not to be too long.

(9) Non-revenue Water Rate

Once again, MWSS's 58 percent is the worst of the 10 utilities MWSS is actually the third worst of all 38 utilities surveyed in the ADB Data Book.

2.2 Tariff

2.2.1 Review on Current Tariff

(1) Tariff Structure

The current tariff used by MWSS consists of the following items:

Water service

- Water service charge
- CERA
- Maintenance service charge
- Private metering charge
- Metering charge

Sewerage service

- Sewer service charge
- Environmental charge
- Desludging charge

a) Water Service Charge

Customers are charged on the consumption volume of water based on the economic activity within their premises as follows:

Customer Group	Description
Residential	Water service sales to residence, including apartments and living quarters (Residential A) and small stores (Residential B).
Commercial	Water service sales to premises selling goods and/or services, including government buildings, offices or premises and entities provided with water for resale
Industrial	Water service sales to premises engaged in manufacturing of goods

The current charge rate is as follows:

Table 5.2.17 Water Service Tariff

	Residential	
Monthly Consumption	Residential A	Residential B
0-10 m^3	P28.00 per SC	P33.50 per SC
10-20 m^3	P3.40 per m^3	P4.10 per m^3
20-30 m^3	P4.15 per m^3	P4.65 per m^3
30-40 m^3	P5.20 per m^3	P5.40 per m^3
40-50 m^3	P6.00 per m^3	P6.10 per m^3
50-60 m^3	P6.55 per m^3	P6.65 per m^3
60-80 m^3	P7.25 per m^3	P7.45 per m^3
80-100 m^3	P7.90 per m^3	P8.00 per m^3
Over 100 m^3	P8.45 per m^3	P8.55 per m^3
	Business	
Monthly Consumption	Commercial	Industrial
0-25 m^3	P226.25 per SC	P246.25 per SC
1,000 m^3	P9.05 per m^3	P9.85 per m^3
Over 1,000 m^3	P9.50 per m^3	P11.55 per m^3

Note: SC denotes service connections.

For residential customers, the first 10 cubic meters is at a fixed rate regardless of actual consumption; the difference between residential A and residential B is only nominal; some grading is noticeable but not significant.

For business customers, the basic consumption volume (25 cubic meters a month) is almost meaningless, the difference between commercial and industrial is noticeable; grading is almost nonexistent.

According to the Corplan estimate, the weighted average water service charge per cubic meter and the average monthly consumption are as follows:

Customer Class	Average Water Charge	Average Consumption
Residential	P4.56	33 m^3
Commercial	P9.25	193 m^3
Industrial	P10.86	292 m^3
Overall	P6.43	-

It is further estimated that there are 8.1 people per service connection. On the other hand, according to the 1993 NSO statistics, there were 8,333.7 million residents for 1,644 thousand households in the NCR. This translates to 5.07 people per household. All of this means that a service connection supplies the needs of 1.60 household on average.

b) CERA

Currency Exchange Rate Adjustment (CERA) is to offset the impacts on the water tariff of the change in forex rate in light of the fact that MWSS borrows and repays loans and pays interest in a significant amount in foreign currencies.

CERA is calculated per cubic meter of water consumed for the month and added to the basic charge using the following formula:

CERA = (Current exchange rate - Base exchange rate) x Foreign disbursements per m^3,

where the base exchange rate is P18.00 to US$1.00, the average exchange rate of the base year of the current tariff formulation, i.e., 1984.

For December 1994, for example, the average exchange rate was P24.0398 to $1.00 and the foreign disbursement per cubic meter for the year 1993 was $0.1448 (total $57.523 million debt service payments for 397.11 million cubic meters of water billed). Therefore, CERA of P0.8749 per cubic meter of water consumed was added to the charge to customers. It should be noted that CERA currently only takes care of the forex fluctuation between peso and US dollar.

c) Maintenance Service Charge

MWSS imposes on water service customers a maintenance service charge for service connection pipes based upon the size. The monthly charge ranges between P1.50 to P50.00, but as compared to water service charge, it is very insignificant.

d) Private Meter Charge

Private meter charge applies when there is a mother meter for the building which is divided to several private meters. This is a nominal charge.

e) Metering Charge

It is currently applied monthly to some customers in the Cavite Province who cannot afford to pay for the water meter at the time of service connection.

f) Sewer Service Charge

The customers who are connected to MWSS's sewerage system pay a sewer service charge at 50 percent of the water service charge including CERA.

g) Environmental Charge

MWSS imposes on all water customers this surcharge equal to 10 percent of the water service charge including CERA. This was first introduced in 1988 in order to cover the cost of periodical desludging of septic tanks owned by MWSS water customers. This scheduled service itself is provided to the served customer free of charge.

h) Desludging Charge

When a customer needs desludging of his septic tank in addition to scheduled desludging, he is charged for the desludging service at the rate of P100.00 for every 11.4 cubic meters of sludge.

For FY 1994, the total revenue consisted of water service including CERA (83.0%), sewer service (8.3%), environmental (8.3%) and other charges (0.4%).

(2) History of Recent Water Tariff Revisions

The water tariff has been revised since 1980 as follows:

- P0.25 increase effective May, 1980 (from average P0.87 to P1.12, 28.7% increase)
- P0.25 increase effective July, 1981 (from P1.12 to P1.37, 22.3%)
- P0.045 monthly increase from April, 1983 to July, 1984 (from P1.37 to P2.05, 49.6%)
- P0.105 monthly increase from July, 1984 to April, 1986 with P0.02 decrease effective May, 1985 due to decline in oil price (from P2.05 to P4.23, 206.3 %)
- Restructuring in April, 1986 of water tariff resulting in an increase from P4.23 to P4.33

- P0.40 increase spread over 5 months starting February, 1990 (from P4.33 to P4.73, 9.2%)
- 3 percent monthly increase from January, 1991 to May, 1991 (from P4.73 to P5.41, 14.4%)
- P0.20 monthly increase from January, 1992 to April, 1992, then P0.15 increase in May, 1992 (from P5.41 to P6.43, 18.9%)

These revisions are illustrated in the following graph:

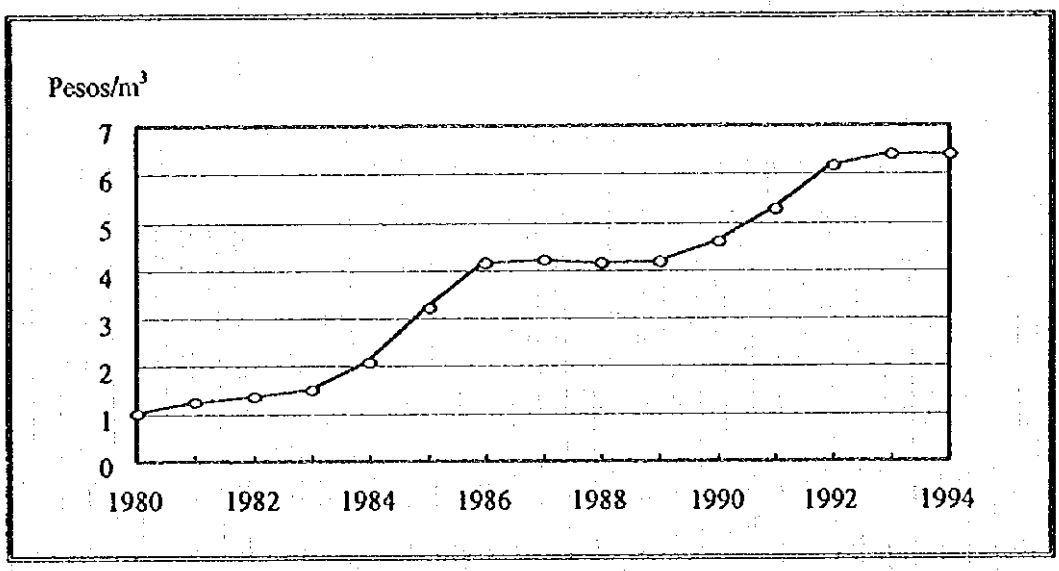

Figure 5.2.2 Average Water Tariff

2.2.2 Survey on Tariff of Water Utilities in Asia

In the following survey on water tariffs, the ADB Data Book referred to in Section 1.1.14 has been used as a source of information. Once again, the water utilities of Bangkok, Beijing, Bombay, Hong Kong, Jakarta, Kuala Lumpur, Seoul, Singapore and Taipei have been selected for specific comparison with MWSS.

See Data Report for detailed indicators used in the following discussion.

(1) Basis of Service Charge

24 of 38 surveyed utilities charge customers based upon the metered usage volume through house connections. Two use flat rate payments regardless of actual water consumption. Two receive payments through property tax. Nine do it with a combination of these three methods. One utility does not receive anything. It is noted that in practice, many of those utilities with metered connections resort to flat rate charges due to non-functioning meters.

10 selected water utilities all charge the customers based upon the metered usage.

(2) Classification of Customers

It is a common practice to classify customers on a certain criterion and charge them differently. Two typical criteria are the activities of customers and the size of service pipe. Some water utilities do not classify customers at all. Of 38 surveyed utilities 31 including MWSS use the activities of customers as the basis while three use the size of service pipe and four do not classify customers. Generally speaking, developed countries tend to use the size of the pipe much more often than developing countries reflecting diversified use of water. Interestingly, the Cebu water utility uses the size of pipe as the basis of charge.

(3) Tariff Structure for Domestic Customers

These may be grouped into two types: the graded tariff structure, where unit rates for consumption become progressively higher, and the fixed tariff structure, where the unit rate remains constant. Of 35 tariff structures reviewed (the remaining three do no use water tariff.), 20 are of the graded tariff type including MWSS, and 15 are of the fixed tariff type including Beijing and Bombay.

(4) Demand Management

The ADB Data Book concludes that demand management (defined as penalties assessed for consumption over 20 cubic meters per month per connection) is clearly evident in Singapore, Hong Kong, Jakarta and Kuala Lumpur. It does not consider MWSS to have this feature even at the level of 30 cubic meters per month.

(5) Cross Subsidy

Normally industrial customers are charged more than domestic customers. The ADB Data Book uses the ratio of industrial water to domestic water at 30 cubic meters per month to show how this is being done. The result ranges between 1.48 (Bangkok) and 28.00 (Bombay). MWSS has one of the higher ratios at 2.86.

(6) Cost of Water for Domestic Use

Per capita water consumption varies rather significantly for the utilities surveyed, but assuming 20 cubic meters per month is taken as a reasonable consumption for most households, then the monthly household cost ranges between $0.20 (Bombay) and $8.76 (Hong Kong). In dollar terms, water in Manila is fairly inexpensive ($2.32), but this obviously needs to be considered in comparison with customers' income level.

(7) Overall Average Tariff

Overall average tariff per cubic meter of water is calculated by the ADB Data Book. Effectively, this is the weighted average of the cost of domestic water and industrial water. It ranges between $0.030 (Beijing) and $0.442 (Singapore), but except for Beijing and Bombay, 8 other utilities are within the narrow range between $0.230 and $0.442. MWSS is at $0.232.

(8) Relative Cost of Water

Lacking data on household income or GRDP for the selected cities, GNP per capita for the nation is used to measure the relative cost of water. It is obvious that city residents earn considerably more than the nation's average, but it is hoped that the ratio of income of the residents of the selected cities to the nation's average does not vary too significantly from nation to nation.

The ratio for Bangkok being 100, it ranges between 19 (Hong Kong and Taipei) and 410 (Jakarta). MWSS's is the second highest at 216. The indication here is MWSS customers are paying relatively high prices for water services as compared to their counterparts in Asian countries.

Chapter 4.

Financing Scheme and Financial Projections

Chapter 4. Financing Plan and Financial Projections

4.2 Financial Projections

4.2.1 Service Assumptions and Economic Projections

Various service-related parameters have already been provided in this report. They are summarized in the following table:

Table 5.4.1 Service-related Parameters

Parameters	1995	2000	2005	2010	2015
Total MSA population ('000)	10,786	12,152	13,384	14,595	15,728
Service coverage (%)	60.0	70.0	81.0	86.0	90.0
Total MWSS customers ('000)	6,472	8,506	10,841	12,552	14,155
Persons / household	8.1	8.0	7.0	6.0	5.0
No. of service connections ('000)	799	1,063	1,549	2,092	2,831
Billed water (mld)	1,253	1,779	2,276	2,719	3,212
NRW rate (%)	54.9	48.7	42.5	36.2	30
Water production requirement (mld)	2,778	3,469	3,957	4,262	4,588
A/R balance (months)	5.0	4.0	3.0	3.0	3.0
Bad debts rate (%)	5.0	4.0	3.0	3.0	3.0

The next table shows economic parameters developed in the forecast of the macro economy:

Table 5.4.2 Economic Parameters

Parameters	1995	2000	2005	2010	2015
Inflation rate (%)	8.0	6.0	4.0	4.0	4.0
Forex rate (peso/US$)	25.5	29.1	30.3	30.3	30.3
GDP per capita (pesos)	53,500	62,300	72,800	86,700	104,200
Domestic loan interest rate (%)	12.0	9.0	6.0	6.0	6.0
Foreign loan interest rate (%)	9.6	7.2	4.8	4.8	4.8
Bank deposit interest rate (%)	10.0	7.5	5.0	5.0	5.0

The interest rates are expected to be as follows:

- The domestic loan interest rate - 150 percent of the inflation rate
- The foreign loan interest rate - 80 percent of the domestic rate

- The bank deposit interest rate - 125 percent of the inflation rate

4.2.2 Accounting Assumptions

(1) Revenues

a) Water service revenues and environmental charge

- Calculated separately for residential, commercial and industrial
- Billed water is per the demand projection by the Study Team.
- Water tariff is per the Study Team recommendation effective January 1996.
- Water tariff will be adjusted every year for the increase in inflation and 50 percent of the increase in GRDP per capita for NCR.

b) Other operating revenues

- Will increase together with the increase in the number of water service connections and inflation.

c) Interest income

- 90 percent of the beginning cash balance will earn interest.
- Will be subject to the 20 percent withholding income tax.

(2) Expenses

a) Personnel

- The number of personnel is per the headcount projection by the Study Team.
- The average salary will go up in accordance with the increase in GRDP per capita.

b) Water treatment chemicals

- The consumption volume will be according to the projected production.
- The unit cost will go up along with inflation.

c) Power and illumination

- The consumption will be in accordance with the projected production.
- The unit cost will go up along with the increase in GRDP per capita and inflation.

d) Other direct expenses

- 60 percent to increase at the inflation rate (fixed cost)
- 20 percent to increase keeping pace with the increase in the number of the water service connections (variable cost related to service)
- 10 percent to increase along with the increase in water production (variable cost related to water production)
- 10 percent to increase in accordance with personnel expenses (variable cost related to personnel)

e) Depreciation

- Calculated on the average cost of the assets for the year, assumed to be the average between the beginning and the ending balances for the year.
- The current estimated useful lives will remain intact.
- The straight-line method will be used with 5 percent residual value.
- An average useful life of 32 years is used in calculating depreciation.

f) Allowance for bad debts

- Will be based upon the gross billing and the projected bad debts rate.

g) Interest expenses

- Will be in accordance with the projected interest rates, the amortization schedule of the loans and the expected project expenditures.

h) Foreign exchange difference

- For existing IBRD and ADB loans, 20 percent depreciation in the value of US dollar is assumed against other foreign currencies.
- For new loans starting after 1995, no depreciation of the US dollar will be assumed.

i) Income tax

- Not considered.

j) Allocation of overhead expenses between water and sewerage

- Will be based upon the operating revenue, i.e., 10 to 3.

(3) Assets

a) Fixed assets and construction in progress

- Annual revaluation will be made for inflation.
- No impact from the adjustments to the market cost to be conducted every five years will be considered.
- Will be in accordance with the expenditure projection by the Study Team.

b) Other asset accounts

- Will remain constant at the 1994 level.

(4) Liabilities

a) Loans

- The master plan projectes will be financed 75 percent by foreign loans, 20 percent by domestic loans and 5 percent by ICG
- Repayments and interest payments will be calculated based upon the average forex rate.
- The year-end balance will be restated for the year-end forex rate.
- Short-term borrowing will be made so that a minimum cash balance of P3,000 million for water and P1,000 for sewer/sanction will be maintained.

b) Accounts payable

- Will have the same relationship with total operating expenses excluding personnel as FY 1994.

c) Other liability accounts

- Will remain constant at the 1994 level.

(5) Equity

a) Capital stock

- Will increase for the OECF equity and the future stock dividends at 50 percent of the previous year's net income (water only).
- The authorized capital will be increased as needed.

b) Donated surplus

- Will remain constant at the 1994 level.

c) Government subsidy

- Not considered.

d) Appraisal surplus

- Will increase for the annual revaluation and decrease for the depreciation thereof.

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