

1.3. 経済評価

1.3.1 便益

事業便益は以下のようにまとめることができる。

倍増(77)

① 給水人口の増加

目標年次の1987年には、給水人口が44,125人になると予測される。これは現状の77%増である。

② 水圧の増加と時間給水の解消

現状の不十分な水圧が増加すると共に、“水無し地域”と時間制限給水の問題が解消される。

また従来、受水者が用意していた水槽や加圧ポンプなどは不要となるはずである。

③ 安全な水

現状では配水管が時として負圧となり、汚水を管内にひきこむ危険があるが、本事業完成後は水圧が上昇するので、このような危険の機会は大巾に減少することになる。

④ 環境改善

24時間給水の実現によって、給水区域内の生活環境は大きく改善されよう。

⑤ 雇用機会の促進

本事業の実施により、土木工事の面で市民に雇用の機会を与えることになる。

⑥ 地価の上昇

水道施設の完備によって、土地の価値が上昇する。

⑦ 火災損害の減少

本事業には、消火栓の設置および消火水量の貯水が含まれ、かつ水圧が増加するので消火活動の点から、火災時の損害を減少させるのに寄与する。

1.3.2 内部収益率

事業の経済的妥当性を判定するために投下資本と回収便益の比較検討を行った。これは数量化できるものが、できないものより必ずしも重要度が高いわけではないことを留意しておく必要がある。

ここでは数量化できる便益として、①給水量増加の便益、②水質改善の便益及び③火災損失の減少を計上した。

上記の数量化できる便益のほか、本事業の国民経済への波及効果を便益として計上した。

?? かわりは
イロコス

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本水道区の場合、LWUAの基準に従い上記3便宜の合計額の20%を本事業の国民経済への波及便益とみなした。

内部収益率の計算は次のような種々の換算計数を用いる感度解析によった。

1) 換算計数を用いない場合

2) 換算ケースA

- ・外貨……………1.25倍とする(外貨不足要因)
- ・普通入夫賃……………0.5倍とする(失業対策効果)
- ・その他の内貨……………0.95倍とする(間接税相当分の除外)

3) 換算ケースB

- ・外貨……………元の数値
- ・普通入夫賃……………ケースAと同じ
- ・その他の~~外貨~~……………ケースAと同じ

4) 換算ケースC

- ・外貨……………ケースAと同じく1.25倍
- ・普通入夫賃……………元の数値
- ・その他の内貨……………元の数値

上記のそれぞれについて内部収益率の計算結果は次のようになり、経済的に妥当である。

- 1) 換算係数を用いない場合 : 13%
- 2) 換算ケースAの場合 : 12%
- 3) " B " : 14%
- 4) " C " : 11%

表9 説明 等々

財 政 評 価 分 析 表

(第 一 期)

Ilocos

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FINANCIAL TABLE 1

Ilocos Norte WATER SUPPLY PROJECT
 PROJECT COSTS BY YEAR OF CONSTRUCTION
 (P1,000's)

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Project Components By Major Elements	Costs as of 7-1-81 By Construction Year						
	Total	1983	1984	1985	1986	1987	1988
1. Vehicles	140		140				
2. Chlorinator	120		120				
3. Stored Materials	305		305				
4. Wells & Pumps	3,573		1,363	645	1,565		
5. Meters	185		185				
6. Distribution System	4,693		2,489	1,911	293		
7. Transmission System	12,669		1,629	9,875	1,169		
8. Fire Hydrants	858		429	371	58		
9. Elevated Reservoir	2,030				2,030		
10. Ground Reservoir	3,110		351	826	1,933		
11. Valves	386		206	166	14		
12. I/G & Roofing of Ligao	393		393				
13. Break Pr. Chamber	232		155	77			
14. Service Connection	2,080		1,841	143	96		
15. Engineering	3,231	3,231					
16. Supervision	1,077		430	324	323		
17. Land	200		100	100			
18. Physical Contingency	3,529	323	1,014	1,444	748		
TOTAL, 7-1-81	38,811	3,554	11,146	15,882	8,229		
ESCALATION FACTORS		1.3225	1.5209	1.7034	1.9078		
ESCALATED COSTS	64,352	4,692	16,942	27,000	15,718		

FINANCIAL TABLE 2
 ILOCOS NORTE WATER SUPPLY PROJECT
 OPERATION AND MAINTENANCE COSTS
 (P1,000's)

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Year	Fixed, 7-1-81 Costs				Escalated Costs	
	Power	Chemicals	Others	Total	Factor ^{1/}	Amount
1981	209	76	261	546	1.000000	546
1982	209	80	292	581	1.150000	668
1983	212	92	314	618	1.322500	817
1984	253	97	382	732	1.520875	1,113
1985	309	111	495	915	1.703380	1,559
1986	368	124	625	1,117	1.907785	2,131
1987	429	133	824	1,386	2.136719	2,962
1988	429	133	824	1,386	2.680301	3,715
1989	429	133	824	1,386	2.680301	3,715
1990	429	133	824	1,386	2.948331	4,086
1991	429	133	824	1,386	3.243164	4,495
1992	429	133	824	1,386	3.567480	4,945
1993	429	133	824	1,386	3.924228	5,439
1994	429	133	824	1,386	4.316651	5,983
1995	429	133	824	1,386	4.748316	6,581
1996	429	133	824	1,386	5.223148	7,239
1997	429	133	824	1,386	5.745463	7,963
1998	429	133	824	1,386	6.320009	8,760

^{1/} Escalation currently 15 percent per year to 1984 (1981 = 1.00),
 12 percent per year between 1985 and 1989 and 10 percent per year
 in 1990 and afterwards.

FINANCIAL TABLE 3

ILOCOS NORTE WATER SUPPLY PROJECT
 LOAN DISBURSEMENTS AND DEBT SERVICE
 (P1,000's)

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Year	Disbursement <u>1/</u>		Loans Outstanding		Interest Payments		Principal Payments <u>3/</u>	Total Debt Service
	Grant	Loan	Beginning	Ending	First Year <u>2/</u>	Later Years		
1981								
1982								
1983		4,692		4,692	211			211
1984		16,942	4,692	21,634	762	422		1,184
1985		27,000	21,634	48,634	1,215	1,946		3,161
1986		15,718	48,634	64,352	707	4,376		5,083
1987			64,352	64,172		5,786	180	5,966
1988			64,172	63,342		5,756	830	6,586
1989			63,342	62,474		5,659	868	7,257
1990			62,474	60,002		5,477	2,472	7,949
1991			60,002	57,530		5,255	2,472	7,728
1992			57,530	55,058		5,033	2,472	7,505
1993			55,058	52,586		4,810	2,472	7,282
1994			52,586	50,114		4,586	2,472	7,058
1995			50,114	47,642		4,364	2,472	6,836
1996			47,642	45,170		4,142	2,472	6,614
1997			45,170	42,698		3,919	2,472	6,391
1998			42,698	40,226		3,697	2,472	6,169

1/ From Financial Table 1.

2/ Disbursements assumed to be equally spread during year. Charge with 50 per cent of annual interest in first year.

3/ Principal payments according to LWUA year plan.

FINANCIAL TABLE 4
 ILOCOS NORTE WATER SUPPLY PROJECT
 CASH REQUIREMENTS PER REVENUE UNIT
 (P1,000's)

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Year	Debt Service	O & M	Total Costs	Estimated Reserves <u>1/</u>	Cost With Reserves	Revenue Units <u>2/</u>	Cost Per Revenue Unit <u>3/</u>
1981		546	546		546	1,845	0.30
1982		668	668		668	2,081	0.32
1983	211	817	1,028		1,028	2,224	0.46
1984	1,184	1,113	2,297		2,297	2,412	0.95
1985	3,161	1,559	4,720		4,720	2,609	1.81
1986	5,083	2,131	7,214		7,214	3,117	2.31
1987	5,966	2,962	8,928	446	9,374	3,695	2.54
1988	6,586	3,715	10,301	515	10,816	3,695	2.93
1989	7,527	3,715	11,242	1,124	12,366	3,695	3.35
1990	7,949	4,086	12,035	1,204	13,239	3,695	3.58
1991	7,728	4,495	12,223	1,222	13,445	3,695	3.64
1992	7,505	4,945	12,450	1,245	13,695	3,695	3.71
1993	7,282	5,439	12,721	1,272	13,993	3,695	3.79
1994	7,058	5,983	13,041	1,304	14,345	3,695	3.88
1995	6,836	6,581	13,417	1,342	14,759	3,695	3.99
1996	6,614	7,239	13,853	1,385	15,238	3,695	4.12
1997	6,391	7,963	14,354	1,435	15,789	3,695	4.27
1998	6,169	8,760	14,929	1,493	16,422	3,695	4.44

1/ Reserve estimate equal to 10 per cent of total costs. (5 per cent for the first two years)

2/ Reserve units from Tables 9A, 9B and 9C.

3/ Reserve units divided into costs with reserves.

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 FINANCIAL TABLE 5 - A
 ILOCOS NORIE WATER SUPPLY PROJECT
 ABILITY TO PAY FOR WATER

Year	Ave. Monthly Family Income ^{1/}	Available 5%	Average Family Size	Household Water Use		Revenue Units Per Month ^{2/}	Max. Ability Per Rev. Unit
				lpcd	Cubic Meters/ Month		
1981	843.00	42.15	6.20	91	17	33	1.28
1982	969.45	48.47	6.19	91	17	33	1.47
1983	1,114.87	55.74	6.18	91	17	33	1.69
1984	1,282.10	64.11	6.17	91	17	33	1.94
1985	1,435.95	71.79	6.16	91	17	33	2.17
1986	1,608.27	80.41	6.15	93	17	33	2.44
1987	1,801.26	90.06	6.14	102	19	36	2.50
1988	2,017.41	100.87	6.13	102	19	36	2.80
1989	2,256.50	112.98	6.12	103	19	36	3.14
1990	2,485.45	124.27	6.11	103	19	36	3.45
1991	2,733.99	136.69	6.10	105	19	36	3.80
1992	3,007.40	150.37	6.09	104	19	36	4.18
1993	3,308.13	165.41	6.08	102	19	36	4.60

^{1/} Average monthly income escalated by 15 per cent per year to 1984, 12 per cent per year between 1985 and 1989, and 10 per cent in 1990 and afterwards.

^{2/} Assumed 1/2" service.

ILOCOS NORIE WATER SUPPLY PROJECT
ILLUSTRATIVE CASH FLOW TABLE
P1,000'S EXCEPT CHARGES PER UNIT

Year	Revenue Units 1/	Charges Per Unit	Gross Revenues	Net Revenue 2/		Basic Costs 3/	Required Reserves 4/	Total Costs 5/	Net Income	
				%	Amount				Annual	Cumulative
1981	1,845	0.80	1,476	95	1,402	546		546	856	856
1982	2,081	0.80	1,665	95	1,582	668		668	914	1,770
1983	2,222	1.20	2,666	95	2,533	1,028		1,028	1,505	3,275
1984	2,426	1.90	4,609	96	4,425	2,297		2,297	2,128	5,403
1985	2,589	2.10	5,437	96	5,220	4,720		4,720	500	5,903
1986	3,117	2.40	7,481	96	7,182	7,214		7,214	-32	5,871
1987	3,695	2.50	9,238	97	8,961	8,928		8,928	33	5,904
1988	3,695	2.80	10,346	97	10,036	10,301	517	10,818	-782	5,122
1989	3,695	3.10	11,455	97	11,111	11,242	573	11,815	-704	4,418
1990	3,695	3.45	12,748	98	12,493	12,035	1,275	13,310	-817	3,601
1991	3,695	3.80	14,041	98	13,760	12,223	1,404	13,627	133	3,734
1992	3,695	4.18	15,445	98	15,136	12,450	1,545	13,995	1,141	4,875
1993	3,695	4.60	16,997	98	16,657	12,721	1,700	14,421	2,236	7,111

1/ From Tables 9A, 9B and 9C.

2/ Gross revenues from water sales reduced by bad debt allowance.

3/ Total of project debt service, operation and maintenance costs.

4/ Ten percent of gross water sales, after completion of construction. (5 percent for the first two years)

5/ Includes the costs of replacing the first complement of project components with seven years of life expectancy.

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FINANCIAL TABLE 7
 ILOCOS NORTE WATER SUPPLY PROJECT
 ILLUSTRATIVE RATE SCHEDULE

DOMESTIC AND GOVERNMENTAL SERVICE CONNECTIONS, 1/2"

Year	First 10 m ³ <u>1/</u>	Charge for Each Added m ³ <u>2/</u>			Charge <u>3/</u> per Revenue Unit
		11-20	21-45	over 45	
1981	20.00	0.96	1.12	1.36	0.80
1982	20.00	0.96	1.12	1.36	0.80
1983	30.00	1.44	1.68	2.04	1.20
1984	47.50	2.28	2.66	3.23	1.90
1985	52.50	2.52	2.74	3.57	2.10
1986	60.00	2.88	3.36	4.08	2.40
1987	62.50	3.00	3.50	4.25	2.50
1988	70.00	3.36	3.92	4.76	2.80
1989	77.50	3.72	4.34	5.27	3.10
1990	86.25	4.14	4.83	5.87	3.45
1991	95.00	4.56	5.32	6.46	3.80
1992	104.50	5.02	5.85	7.11	4.18
1993	115.00	5.52	6.44	7.82	4.60

Note: 1/ To obtain charge per m³ for the first 10 m³ classified by connection size, multiply R.U. charge shown in 3/ above by the following connection size factors.

Domestic : 1.0 for 3/8"; 2.5 for 1/2"; 4.0 for 3/4"; 8 for 1"
 Commercial: 5.0 for 1/2"; 8.0 for 3/4"; 16.0 for 1"; 40.0 for 1 1/2"

2/ To obtain charge for each added m³, multiply R.U. charges shown in 3/ by the following block factors.

Domestic : 1.2 for 11-20 m³; 1.4 for 21-45 m³; 1.7 for over 45 m³
 Commercial: 2.4 for 21-45 m³; 2.8 for 45-100 m³; 2.4 for over 100 m³

FINANCIAL TABLE 8
ILOCOS NORTE WATER SUPPLY PROJECT
 GROWTH IN POPULATION, SERVICE CONNECTIONS
 AND IN DELIVERED AND PROCURED WATER

Year	Ave. Number Service Connections	Number For Service	Persons Served	Daily Use lpcd $\bar{1}$ /	Annual Water Supply (1,000 M ³)		
					Delivered	% Unacct.	Produced
1981	3,166	7.9	25,000	114	1,044	45	1,898
1982	3,598	7.8	28,000	114	1,186	43	2,081
1983	3,713	7.7	28,700	114	1,277	40	2,128
1984	4,024	7.8	31,200	114	1,388	40	2,314
1985	4,663	7.4	34,550	116	1,457	40	2,428
1986	5,419	7.2	39,200	122	1,743	37	2,767
1987	6,366	6.9	44,125	128	2,054	34	3,112
1988	6,366	6.9	44,125	128	2,054	34	3,112
1989	6,366	6.9	44,125	128	2,054	34	3,112
1990	6,366	6.9	44,125	128	2,054	34	3,112
1991	6,366	6.9	44,125	128	2,054	34	3,112
1992	6,366	6.9	44,125	128	2,054	34	3,112
1993	6,366	6.9	44,125	128	2,054	34	3,112

$\bar{1}$ / liters per capita per day.

Ilocos

FINANCIAL TABLE 9A

ILOCOS NORTE WATER SUPPLY PROJECT
CALCULATION OF REVENUE UNITS

A) AVERAGE NUMBER OF CONCESSIONAIRES

Year	Residential and Government					Commercial and Industrial					Total
	3/8"	1/2"	3/4"	1"	S-Total	1/2"	3/4"	1"	1 1/2"	S-Total	
1981	876	2,015	26	3	2,920	211	22	12	1	246	3,166
1982	940	2,161	28	3	3,132	218	23	13	2	256	3,388
1983	950	2,181	28	3	3,162	223	23	13	2	261	3,423
1984	1,097	2,525	33	4	3,659	235	25	14	2	276	3,935
1985	1,299	2,986	39	4	4,328	286	30	17	2	335	4,663
1986	1,484	3,415	45	5	4,949	401	42	24	3	470	5,419
1987	1,724	3,968	52	6	5,750	526	55	31	4	616	6,366
1988											
1989											
1990											
1991											
1992											
1993											

B) SERVICE REVENUE UNITS PER CUBIC METER

Year	Residential and Government					Commercial and Industrial					Total
	1.00	2.50	4.0	8.0	S-total	5.0	8.0	16.0	40.0	S-Total	
1981	876	5,038	104	24	6,042	1,055	176	192	40	1,463	7,505
1982	940	5,403	112	24	6,479	1,090	184	208	80	1,562	8,041
1983	950	5,453	112	24	6,539	1,115	184	208	80	1,587	8,126
1984	1,097	6,313	132	32	7,574	1,175	200	224	80	1,679	9,253
1985	1,299	7,458	156	32	8,945	1,430	240	272	80	2,022	10,967
1986	1,484	8,538	180	40	10,242	2,005	336	384	120	2,845	13,087
1987	1,724	9,920	208	48	11,900	2,630	440	496	160	3,726	15,626
1988											
1989											
1990											
1991											
1992											
1993											

FINANCIAL TABLE 9B1
ILOCOS NORTE WATER SUPPLY PROJECT
CALCULATION OF REVENUE UNITS

DOMESTIC

Year	Delivered Water (x1000 cum)	Service Connections (x 0.12)	Net	11 - 20 cum		21 - 45 cum		over 45 cum		Total CRU's
				cum	x 1.2	cum	x 1.4	cum	x 1.7	
1981	926	350	579	350	420	229	320	-	-	740
1982	1,056	376	680	376	451.2	304	425.6	-	-	876.8
1983	1,137	379	758	379	454.8	379	530.6	-	-	985.4
1984	1,235	439	796	439	526.8	357	499.8	-	-	1,026.6
1985	1,297	519	778	519	622.8	259	362.6	-	-	985.4
1986	1,551	594	957	594	712.8	363	508.2	-	-	1,221
1987	1,828	690	1,138	690	828	448	627.2	-	-	1,455.2
1988	1,828	690	1,138	690	828	448	627.2	-	-	1,455.2
1989	1,828	690	1,138	690	828	448	627.2	-	-	1,455.2
1990	1,828	690	1,138	690	828	448	627.2	-	-	1,455.2
1991	1,828	690	1,138	690	828	448	627.2	-	-	1,455.2
1992	1,828	690	1,138	690	828	448	627.2	-	-	1,455.2
1993	1,828	690	1,138	690	828	448	627.2	-	-	1,455.2

FINANCIAL TABLE 9B2
 ILOCOS NORTE WATER SUPPLY PROJECT
 CALCULATION OF WATER REVENUES UNITS

COMMERCIAL

Year	Delivered Water (x1000 cum)	Service Connections (x 0.12)	Net	11 - 45 cum		46 - 100 cum		Over 100 cum		Total CRU's
				cum	x 2.4	cum	x 2.8	cum	x 3.4	
1981	115	30	85	85	204	-	-	-	-	204
1982	131	31	100	100	240	-	-	-	-	240
1983	140	31	109	109	262	-	-	-	-	262
1984	153	33	120	116	278	4	11	-	-	289
1985	160	40	120	120	288	-	-	-	-	288
1986	192	56	136	136	326	-	-	-	-	326
1987	226	74	152	152	365	-	-	-	-	365
1988	226	74	152	152	365	-	-	-	-	365
1989	226	74	152	152	365	-	-	-	-	365
1990	226	74	152	152	365	-	-	-	-	365
1991	226	74	152	152	365	-	-	-	-	365
1992	226	74	152	152	365	-	-	-	-	365
1993	226	74	152	152	365	-	-	-	-	365

FINANCIAL TABLE 9C
SUMMARY OF REVENUE UNITS

Year	Residential and Governmental				Commercial and Industrial				Total All
	Service		Commodity Rev. Units	Total R & C	Service		Commodity Rev. Units	Total C & I	
	RU/Serv. Connection	Multiplied by 0.12			RU/Serv. Connection	Multiplied by 0.12			
1981	6,042	725	740	1,465	1,463	176	204	380	1,845
1982	6,479	777	877	1,654	1,562	187	240	427	2,081
1983	6,539	785	985	1,770	1,587	190	262	452	2,222
1984	7,574	909	1,027	1,936	1,679	201	289	490	2,426
1985	8,945	1,073	985	2,058	2,022	243	288	531	2,589
1986	10,242	1,229	1,221	2,450	2,845	341	326	667	3,117
1987	11,900	1,428	1,455	2,883	2,883	447	365	812	3,695
1988									
1989									
1990									
1991									
1992									
1993									

経 済 評 価 分 析 表

(第 一 期)

ECONOMIC TABLE 1

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ILOCOS NORTE WATER SUPPLY PROJECT
SUMMARY OF PROJECT COST

Costs as of July 1, 1981 in 1,000 Pesos

Components	Total Cost	Foreign Currency Portion	Local Currency Portion
1. Vehicles	140	70	70
2. Chlorinator	120	108	12
3. Stored Materials	305	238	67
4. Wells & Pumps	3,573	2,232	1,341
5. Meters	185	148	37
6. Distribution System	4,693	3,145	1,548
7. Transmission System	12,669	8,489	4,180
8. Fire Hydrants	858	566	292
9. Elevated Reservoir	2,030	507	1,523
10. Ground Reservoir	3,110	779	2,331
11. Valves	386	282	104
12. I/G & Roofing of Ligao	393	98	295
13. Break Pr. Chamber	232	58	174
14. Service Connection	2,080	1,602	478
15. Engineering	3,231	1,939	1,292
16. Supervision	1,077	646	431
17. Land	200	-	200

Source: From Cost Estimates

ECONOMIC TABLE 2
 ILOCOS NORTE WATER SUPPLY PROJECT
 ANNUAL DEMAND AND GROSS PRODUCTION IN 1,000 M³

I

1 Year	2 Average Connections	3 Persons Per Service Connection	4 Population Served	5 Average Water Use		7 Net Increase in Delivered Volume	8 Unaccounted Percentage	9 Annual Production
				Liters/ Capita Per Day	Water Delivered Annually			
1981	3,166	7.9	25,000	114	1,088	-	45	1,878
1982	3,598	7.8	28,000	114	1,187	-	43	2,081
1983	3,713	7.7	28,700	114	1,277	-	40	2,128
1984	4,024	7.8	31,200	114	1,388	111	40	2,314
1985	4,663	7.4	34,550	116	1,457	180	40	2,428
1986	5,419	7.2	39,200	122	1,743	466	37	2,761
1987	6,366	6.9	44,125	128	2,054	777	34	3,112
1988								
1989								
1990								
1991								
1992								
1993								

ECONOMIC TABLE 3-A.
 ILOCOS NORTE WATER SUPPLY PROJECT
 CONVERSION OF CONSTRUCTION COST TO ECONOMIC COST
 Costs as of July 1, 1981 in 1,000 Pesos

I

Component	Foreign Costs	Local Costs	Common Labor Costs	Residual Local Cost	Converted Value			Total
					Foreign x 1.25	Labor x 0.5	Residual x 0.95	
1. Vehicles	70	70	-	70	-	88	67	155
2. Chlorinator	108	12	1	11	1	135	10	146
3. Stored Material	238	67	-	67	-	298	64	362
4. Wells & Pumps	2,232	1,341	671	670	336	2,790	637	3,763
5. Meters	148	37	7	30	4	185	29	218
6. Distribution System	3,145	1,548	619	929	310	3,931	883	5,124
7. Transmission System	8,489	4,180	1,045	3,135	523	10,611	2,978	14,112
8. Fire Hydrants	566	292	117	175	59	708	166	933
9. Elevated Reservoir	507	1,523	990	533	495	634	506	1,635
10. Ground Reservoir	779	2,331	1,515	816	758	974	775	2,507
11. Valves	282	104	42	62	21	353	59	433
12. I/G & Roofing of Ligao	98	295	148	147	74	123	140	337
13. Break Pr. Chamber	58	174	113	61	57	73	58	188
14. Service Connection	1,602	478	96	382	48	2,003	363	2,414
15. Engineering	1,939	1,292	-	1,292	-	2,424	1,227	3,651
16. Supervision	646	431	-	431	-	808	409	1,217
17. Land	-	200	-	200	-	-	190	190

ECONOMIC TABLE 3-B

ILOCOS NORTE WATER SUPPLY PROJECT
 CONVERSION OF CONSTRUCTION COST TO ECONOMIC COST
 Costs as of July 1, 1981 in 1,000 Pesos

I

Ilocos

Component	Foreign Costs	Local Costs	Common Labor Costs	Residual Local Cost	Converted Value			Total
					Foreign x 1.0	Labor x 0.5	Residual x 0.95	
1. Vehicles	70	70	-	70	-	67	137	
2. Chlorinator	108	12	1	11	108	10	119	
3. Stored Material	238	67	-	67	238	64	302	
4. Wells and Pumps	2,232	1,341	671	670	2,232	637	3,205	
5. Meters	148	37	7	30	148	29	181	
6. Distribution System	3,145	1,548	619	929	3,145	883	4,338	
7. Transmission System	8,489	4,180	1,045	3,135	8,489	2,978	11,990	
8. Fire Hydrants	566	292	117	175	566	166	791	
9. Elevated Reservoirs	507	1,523	990	533	507	506	1,508	
10. Ground Reservoirs	779	2,331	1,515	816	779	775	2,312	
11. Valves	282	104	42	62	282	59	362	
12. I/G & Roofing of Ligao	98	295	348	147	98	140	312	
13. Break Pr. Chamber	58	174	113	61	58	58	173	
14. Service Connection	1,602	478	96	382	1,602	363	2,013	
15. Engineering	1,939	1,292	-	1,292	1,939	1,227	3,166	
16. Supervision	646	431	-	431	646	409	1,055	
17. Land	-	200	-	200	-	190	190	

ECONOMIC TABLE 3-C
 ILOCOS NORTE WATER SUPPLY PROJECT
 CONVERSION OF CONSTRUCTION COST TO ECONOMIC COST
 Costs as of July 1, 1981 in 1,000 Pesos

I

Component	Foreign Costs	Local Costs	Common Labor Costs	Residual Local Cost	Converted Value			Total
					Foreign x 1.25	Labor x 1.0	Residual x 1.0	
1. Vehicles	70	70	-	70	88	-	70	158
2. Chlorinator	108	12	1	11	135	1	11	147
3. Stored Materials	238	67	-	67	298	-	67	365
4. Wells and Pumps	2,232	1,341	671	670	2,790	671	670	4,131
5. Meters	148	37	7	30	185	7	30	222
6. Distribution System	3,145	1,548	619	929	3,931	619	929	5,479
7. Transmission System	8,489	4,180	1,045	3,135	10,611	1,045	3,135	14,791
8. Fire Hydrants	566	292	117	175	708	117	175	1,000
9. Elevated Reservoir	507	1,523	990	533	634	990	533	2,157
10. Ground Reservoir	779	2,331	1,515	816	974	1,515	816	3,305
11. Valves	282	104	42	62	353	42	62	457
12. I/G & Roofing of Ligao	98	295	148	147	123	148	147	418
13. Break Pr. Chamber	58	174	113	61	73	113	61	247
14. Service Connector	1,602	478	96	382	2,003	96	382	2,481
15. Engineering	1,939	1,292	-	1,292	2,424	-	1,292	3,716
16. Supervision	646	431	-	431	808	-	431	1,239
17. Land	-	200	-	200	-	-	200	200

ECONOMIC TABLE 4-0

ILOCOS NORTE WATER SUPPLY PROJECT
ECONOMIC COSTS DISTRIBUTED TO YEARS
 ₱ x 1,000

Value without CONVERSION

Components	Total	1983	1984	1985	1986	1987	1988
1. Vehicles	140		140				
2. Chlorinator	120		120				
3. Stored Materials	305		305				
4. Wells and Pump	3,573		1,363	645	1,565		
5. Meters	185		185				
6. Distribution System	4,693		2,489	1,911	293		
7. Transmission System	12,669		1,625	9,875	1,169		
8. Fire Hydrants	858		429	371	58		
9. Elevated Reservoir	2,030				2,030		
10. Ground Reservoir	3,110		351	826	1,933		
11. Valves	386		206	166	14		
12. I/G & Roofing of Ligao	393		393				
13. Break Pr. Chamber	232		155	77			
14. Service Connection	2,080		1,843	143	96		
15. Engineering	3,231	3,231					
16. Supervision	1,077		430	324	323		
17. Land	200		100	100			
18.							
Total	35,282	3,231	10,132	14,438	7,481		

ECONOMIC TABLE 4-A

ILOCOS NORTE WATER SUPPLY PROJECT
ECONOMIC COSTS DISTRIBUTED TO YEARS
P x 1,000

Value with CONVERSION A

Components	Total	1983	1984	1985	1986	1987	1988
1. Vehicles	155		155				
2. Chlorinator	146		146				
3. Stored Material	362		362				
4. Wells and Pumps	3,763		1,436	679	1,648		
5. Meters	218		218				
6. Distribution System	5,124		2,718	2,086	320		
7. Transmission System	14,112		1,810	11,000	1,302		
8. Fire Hydrants	933		467	403	63		
9. Elevated Reservoir	1,635				1,635		
10. Ground Reservoir	2,507		283	666	1,558		
11. Valves	433		231	186	16		
12. I/G & Roofing of Ligao	337		337				
13. Break Pr. Chamber	188		126	62			
14. Service Connection	2,414		2,137	166	111		
15. Engineering	3,651	3,651					
16. Supervision	1,217		486	366	365		
17. Land	190		95	95			
18.							
Total	37,385	3,651	11,007	15,709	7,018		

ECONOMIC TABLE 4-B

ILOCOS NORTE WATER SUPPLY PROJECT
ECONOMIC COSTS DISTRIBUTED TO YEARS
P x 1,000

Value with CONVERSION B

Components	Total	1983	1984	1985	1986	1987	1988
1. Vehicles	137		137				
2. Chlorinator	119		119				
3. Stored Materials	302		302				
4. Wells and Pumps	3,205		1,223	578	1,404		
5. Meters	181		181				
6. Distribution System	4,338		2,301	1,766	271		
7. Transmission System	11,990		1,538	9,346	1,106		
8. Fire Hydrants	791		396	342	53		
9. Elevated Reservoir	1,508				1,508		
10. Ground Reservoir	2,312		261	614	1,437		
11. Valves	362		193	156	13		
12. I/G & Roofing of Ligap	312		312				
13. Break Pr. Chamber	173		116	57			
14. Service Connection	2,013		1,782	138	93		
15. Engineering	3,166	3,166					
16. Supervision	1,055		421	317	317		
17. Land	190		95	95			
18.							
Total	32,154	3,166	9,377	13,409	6,202		

ECONOMIC TABLE 4-C

ILOCOS NORTE WATER SUPPLY PROJECT
ECONOMIC COSTS DISTRIBUTED TO YEARS
P x 1,000

Value with CONVERSION C

Components	Total	1983	1984	1985	1986	1987	1988
1. Vehicles	158		158				
2. Chlorinator	147		147				
3. Stored Materials	365		365				
4. Wells and Pumps	4,131		1,576	746	1,809		
5. Meters	222		222				
6. Distribution System	5,479		2,906	2,231	342		
7. Transmission System	14,791		1,897	11,529	1,365		
8. Fire Hydrants	1,000		500	432	68		
9. Elevated Reservoir	2,157				2,157		
10. Ground Reservoir	3,305		373	878	2,054		
11. Valves	457		244	196	17		
12. I/G & Roofing of Ligao	418		418				
13. Break Pr. Chamber	247		165	82			
14. Service Connection	2,481		2,196	171	114		
15. Engineering	3,716	3,716					
16. Supervision	1,239		495	373	371		
17. Land	200		100	100			
18.							
Total	40,513	3,716	11,762	16,738	8,297		

ECONOMIC TABLE 5

ILOCOS NORTE WATER SUPPLY PROJECT
OPERATION AND MAINTENANCE EXPENSES
 Costs as of July 1, 1981 in 1,000 Pesos

Year	Power	Chemicals	Others	Total	Net Costs
1981	209	76	261	546	
1982	209	80	292	581	
1983	212	92	314	618	37
1984	253	97	382	732	151
1985	309	111	495	915	334
1986	368	124	625	1,117	536
1987	429	133	824	1,386	805
1988	429	133	824	1,386	805
1989	429	133	824	1,386	805
1990	429	133	824	1,386	805
1991	429	133	824	1,386	805
1992	429	133	824	1,386	805
1993	429	133	824	1,386	805

Base Year = 1983

ECONOMIC TABLE 6-0

ILOCOS NORTE WATER SUPPLY PROJECT
LIFE EXPECTANCY AND REPLACEMENT SCHEDULES
P x 1,000

Value without CONVERSION

Components	Life Expectancy of Components				
	7 Years	15 Years	50 Years	Infinite	Total
1. Vehicles	140				140
2. Chlorinator	120				120
3. Stored Material	305				305
4. Wells and Pumps		3,573			3,573
5. Meters		185			185
6. Distribution			4,693		4,693
7. Transmission			12,669		12,669
8. Fire Hydrants			858		858
9. Reservoir			5,140		5,140
10. Valves			386		386
11. I/G & Roofing Ligao, B.P.C.			625		625
12. Service Connection			2,080		2,080
13. Land				200	200

7 Year Items	Years of Installation					Years of Replacement				
	1984					1991	1998	2005	2012	
1. Vehicles	1984					1991	1998	2005	2012	
2. Chlorinator	1984					1991	1998	2005	2012	
3. Stored Material	1984					1991	1998	2005	2012	

15 Year Items	Years of Installation					Years of Replacement				
	1984	1985	1986			1999	2000	2001		
1. Wells and Pumps	1984					1999	2000	2001		
2. Meters	1984					1999				

ECONOMIC TABLE 6-A

ILOCOS NORTE WATER SUPPLY PROJECT
LIFE EXPECTANCY AND REPLACEMENT SCHEDULES

P x 1,000

Value with CONVERSION A

Components	Life Expectancy of Components				
	7 Years	15 Years	50 Years	Infinite	Total
1. Vehicles	155				155
2. Chlorinators	146				146
3. Stored Materials	362				362
4. Wells and Pumps		3,763			3,763
5. Meters		218			218
6. Distribution			5,124		5,124
7. Transmission			14,112		14,112
8. Fire Hydrants			933		933
9. Reservoir			4,142		4,142
10. Valves			433		433
11. I/G & Roofing of Ligao & B.P.C.			525		525
12. Service Connection			2,414		2,414
13. Land				190	190

7 Year Items	Years of Installation					Years of Replacement				
	1984					1991	1998	2005	2012	
1. Vehicles	1984					1991	1998	2005	2012	
2. Chlorinators	1984					1991	1998	2005	2012	
3. Stored Materials	1984					1991	1998	2005	2012	

15 Year Items	Years of Installation					Years of Replacement				
	1984	1985	1986			1999	2000	2001		
1. Wells and Pumps	1984					1999	2000	2001		
2. Meters	1984					1999				

ECONOMIC TABLE 6-B

ILOCOS NORTE WATER SUPPLY PROJECT
LIFE EXPECTANCY AND REPLACEMENT SCHEDULES
P x 1,000

Value with CONVERSION B

Components	Life Expectancy of Components				
	7 Years	15 Years	50 Years	Infinite	Total
1. Vehicles	137				137
2. Chlorinator	119				119
3. Stored Materials	302				302
4. Wells and Pumps		3,205			3,205
5. Meters		181			181
6. Distribution			4,338		4,338
7. Transmission			11,990		11,990
8. Fire Hydrants			791		791
9. Reservoir			3,820		3,820
10. Valves			362		362
11. I/G & Roofing of Ligao, B.P.C.			485		485
12. Service Connection			2,013		2,013
13. Land				190	190

7 Year Items	Years of Installation				Years of Replacement			
	1984				1991	1998	2005	2012
1. Vehicles	1984				1991	1998	2005	2012
2. Chlorinator	1984				1991	1998	2005	2012
3. Stored Materials	1984				1991	1998	2005	2012

15 Year Items	Years of Installation				Years of Replacement			
	1984	1985	1986		1999	2000	2001	
1. Wells and Pumps	1984				1999			
2. Meters	1984				1999			

ECONOMIC TABLE 6-C
 ILOCOS NORTE WATER SUPPLY PROJECT
 LIFE EXPECTANCY AND REPLACEMENT SCHEDULES
 P x 1,000

Value with CONVERSION C

Components	Life Expectancy of Components				
	7 Years	15 Years	50 Years	Infinite	Total
1. Vehicles	158				158
2. Chlorinators	147				147
3. Stored Materials	365				365
4. Wells and Pumps		4,131			4,131
5. Meters		222			222
6. Distribution			5,479		5,479
7. Transmission			14,791		14,791
8. Fire Hydrants			1,000		1,000
9. Reservoir			5,462		5,462
10. Valves			457		457
11. I/G & Roofing Ligao, B.P.C.			665		665
12. Service Connection			2,481		2,481
13. Land				200	200

7 Year Items	Years of Installation				Years of Replacement				
	1984				1991	1998	2005	2012	
1. Vehicles	1984				1991	1998	2005	2012	
2. Chlorinator	1984				1991	1998	2005	2012	
3. Stored Materials	1984				1991	1998	2005	2012	

15 Year Items	Years of Installation				Years of Replacement				
	1984	1985	1986		1999	2000	2001		
1. Wells and Pumps	1984				1999	2000	2001		
2. Meters	1984				1999				

ECONOMIC TABLE 7-0
ILOCOS NORTE WATER SUPPLY PROJECT
 CALCULATION OF SALVAGE VALUES
 P x 1,000

Value without CONVERSION

Components	Base Year Value	Percentage of Base Year Value	31st Year Salvage Base Year Values
Infinite Life, Year Purchased			
1984	100	75%	75
1985	100	75%	75
50 Year Life, Year Constructed			
1 1984	7,489	42%	3,145
2 1985	13,369	44%	5,882
3 1986	5,593	46%	2,573
15 Year Life, Year of Replacement			
1 1999	1,548	7%	108
2 2000	645	13%	84
3 2001	1,565	20%	313
7 Year Life, Years of Final Replacement			
1 2012	565	86%	486
Total	30,974		12,741

ECONOMIC TABLE 7-A
 ILOCOS NORTE WATER SUPPLY PROJECT
 CALCULATION OF SALVAGE VALUES
 P x 1,000

Value with CONVERSION A

Components	Base Year Value	Percentage of Base Year Value	31st Year Salvage Base Year Values
Infinite Life, Year Purchased			
1984	95	75%	71
1985	95	75%	71
50 Year Life, Year Constructed			
1 1984	8,109	42%	3,406
2 1985	14,569	44%	6,410
3 1986	5,005	46%	2,302
15 Year Life, Year of Replacement			
1 1999	1,654	7%	116
2 2000	679	13%	88
3 2001	1,648	20%	330
7 Year Life, Years of Final Replacement			
1 2012	663	86%	570
Total	32,517		13,364

ECONOMIC TABLE 7-B
 ILOCOS NORTE WATER SUPPLY PROJECT
 CALCULATION OF SALVAGE VALUES
 P x 1,000

Value with CONVERSION B

Components	Base Year Value	Percentage of Base Year Value	31st Year Salvage Base Year Values
Infinite Life, Year Purchased			
1984	95	75%	71
1985	95	75%	71
50 Year Life, Year Constructed			
1 1984	6,899	42%	2,898
2 1985	12,419	44%	5,464
3 1986	4,481	46%	2,061
15 Year Life, Year of Replacement			
1 1999	1,404	7%	98
2 2000	578	13%	75
3 2001	1,404	20%	281
7 Year Life, Years of Final Replacement			
1 2005	558	86%	480
Total	27,933		11,499

ECONOMIC TABLE 7-C
ILOCOS NORTE WATER SUPPLY PROJECT
 CALCULATION OF SALVAGE VALUES
 P x 1,000

Value with CONVERSION C

Components	Base Year Value	Percentage of Base Year Value	31st Year Salvage Base Year Values
Infinite Life, Year Purchased			
1984	100	75%	75
1985	100	75%	75
50 Year Life, Year Constructed			
1 1984	8,699	42%	3,654
2 1985	15,519	44%	6,828
3 1986	6,117	46%	2,814
15 Year Life, Year of Replacement			
1 1999	1,798	7%	126
2 2000	746	13%	97
3 2001	1,809	20%	362
7 Year Life, Years of Final Replacement			
1 2005	670	86%	576
Total	35,558		14,607

ECONOMIC TABLE 8-0
 ILOCOS NORTE WATER SUPPLY PROJECT
 SUMMARY OF ALL PROJECT COSTS
 Costs as of July 1, 1981 in 1,000 Pesos

Value without CONVERSION

Year	Cost of Facilities	Net O & M	Replace-ment Costs	Total	Salvage	Net Cost
1982						
1983	3,231	37		3,268		
1984	10,132	151		10,283		
1985	14,438	334		14,772		
1986	7,481	536		8,017		
1987		805		805		
1988		805		805		
1989		805		805		
1990		805		805		
1991		805	565	1,370		
1992		805		805		
1993		805		805		
1994		805		805		
1995		805		805		
1996		805		805		
1997		805		805		
1998		805	565	1,370		
1999		805	1,548	2,353		
2000		805	645	1,450		
2001		805	1,565	2,370		
2002		805		805		
2003		805		805		
2004		805		805		
2005		805	565	1,370		
2006		805		805		
2007		805		805		
2008		805		805		
2009		805		805		
2010		805		805		
2011		805		805		
2012		805	565	1,370		
Total	35,282	21,988	6,018	63,288	(12,741)	50,547

ECONOMIC TABLE 8-A
 ILOCOS NORTE WATER SUPPLY PROJECT
 SUMMARY OF ALL PROJECT COSTS
 Costs as of July 1, 1981 in 1,000 Pesos

Value with CONVERSION A

Year	Cost of Facilities	Net O & M	Replacement Costs	Total	Salvage	Net Cost
1982						
1983	3,651	37		3,688		
1984	11,007	151		11,158		
1985	15,709	334		16,043		
1986	7,018	536		7,554		
1987		805		805		
1988		805		805		
1989		805		805		
1990		805		805		
1991		805	663	1,468		
1992		805		805		
1993		805		805		
1994		805		805		
1995		805		805		
1996		805		805		
1997		805		805		
1998		805	663	1,468		
1999		805	1,654	2,459		
2000		805	679	1,484		
2001		805	1,648	2,453		
2002		805		805		
2003		805		805		
2004		805		805		
2005		805	663	1,468		
2006		805		805		
2007		805		805		
2008		805		805		
2009		805		805		
2010		805		805		
2011		805		805		
2012		805	663	1,468		
Total	37,385	21,988	6,633	66,006	(13,364)	52,642

ECONOMIC TABLE 8-B
 ILOCOS NORTE WATER SUPPLY PROJECT
 SUMMARY OF ALL PROJECT COSTS
 Costs as of July 1, 1981 in 1,000 Pesos

Value with CONVERSION B

Year	Cost of Facilities	Net O & M	Replace-ment Costs	Total	Salvage	Net Cost
1982						
1983	3,166	37		3,203		
1984	9,377	151		9,528		
1985	13,409	334		13,743		
1986	6,202	536		6,738		
1987		805		805		
1988		805		805		
1989		805		805		
1990		805		805		
1991		805	558	1,363		
1992		805		805		
1993		805		805		
1994		805		805		
1995		805		805		
1996		805		805		
1997		805		805		
1998		805	558	1,363		
1999		805	1,404	2,209		
2000		805	578	1,383		
2001		805	1,404	2,209		
2002		805		805		
2003		805		805		
2004		805		805		
2005		805	558	1,363		
2006		805		805		
2007		805		805		
2008		805		805		
2009		805		805		
2010		805		805		
2011		805		805		
2012		805	558	1,363		
Total	32,154	21,988	5,618	59,760	(11,499)	48,261

ECONOMIC TABLE 8-C
 ILOCOS NORTE WATER SUPPLY PROJECT
 SUMMARY OF ALL PROJECT COSTS
 Costs as of July 1, 1981 in 1,000 Pesos

Value with CONVERSION C

Year	Cost of Facilities	Net O & M	Replace-ment Costs	Total	Salvage	Net Cost
1982						
1983	3,716	37		3,753		
1984	11,762	151		11,913		
1985	16,738	334		17,072		
1986	8,297	536		8,833		
1987		805		805		
1988		805		805		
1989		805		805		
1990		805		805		
1991		805	670	1,475		
1992		805		805		
1993		805		805		
1994		805		805		
1995		805		805		
1996		805		805		
1997		805		805		
1998		805	670	1,475		
1999		805	1,941	2,746		
2000		805	746	1,551		
2001		805	1,809	2,614		
2002		805		805		
2003		805		805		
2004		805		805		
2005		805	670	1,475		
2006		805		805		
2007		805		805		
2008		805		805		
2009		805		805		
2010		805		805		
2011		805		805		
2012		805	670	1,475		
Total	40,513	21,988	7,176	69,677	(14,607)	55,070

ECONOMIC TABLE 9
 ILOCOS NORTE WATER SUPPLY PROJECT
 BENEFITS AT 1981 PRICES
 (P x 1,000)

I

Year	Volume	Qualitative	Fire Loss Reduction	Total	National Interest Adjustment
1982					
1983					
1984	411	472	111	994	1,193
1985	666	945	147	1,758	2,110
1986	1,724	1,417	184	3,225	3,870
1987	2,875	1,417	231	4,523	5,428
1988	2,875	1,417	231	4,523	5,428
1989	2,875	1,417	231	4,523	5,428
1990	2,875	1,417	231	4,523	5,428
1991	2,875	1,417	231	4,523	5,428
1992	2,875	1,417	231	4,523	5,428
1993	2,875	1,417	231	4,523	5,428
1994	2,875	1,417	231	4,523	5,428
1995	2,875	1,417	231	4,523	5,428
1996	2,875	1,417	231	4,523	5,428
1997	2,875	1,417	231	4,523	5,428
1998	2,875	1,417	231	4,523	5,428
1999	2,875	1,417	231	4,523	5,428
2000	2,875	1,417	231	4,523	5,428
2001	2,875	1,417	231	4,523	5,428
2002	2,875	1,417	231	4,523	5,428
2003	2,875	1,417	231	4,523	5,428
2004	2,875	1,417	231	4,523	5,428
2005	2,875	1,417	231	4,523	5,428
2006	2,875	1,417	231	4,523	5,428
2007	2,875	1,417	231	4,523	5,428
2008	2,875	1,417	231	4,523	5,428
2009	2,875	1,417	231	4,523	5,428
2010	2,875	1,417	231	4,523	5,428
2011	2,875	1,417	231	4,523	5,428
2012	2,875	1,417	231	4,523	5,428
Total	77,551	39,676	6,448	123,575	148,301

ECONOMIC TABLE 10-0
ILOCOS NORTE WATER SUPPLY PROJECT
INTERNAL RATE OF RETURN COMPUTATION

I

Cost Value without CONVERSION

Year	Total Cost	Total Benefit	Net Benefit	Present Net Benefit
1982				
1983	3,268	-	-3,268	-3,268
1984	10,283	1,193	-9,090	-8,079
1985	14,772	2,110	-12,662	-10,002
1986	8,017	3,870	-4,147	-2,912
1987	805	5,428	4,623	2,885
1988	805	5,428	4,623	2,564
1989	805	5,428	4,623	2,279
1990	805	5,428	4,623	2,025
1991	1,370	5,428	4,058	1,580
1992	805	5,428	4,623	1,600
1993	805	5,428	4,623	1,422
1994	805	5,428	4,623	1,264
1995	805	5,428	4,623	1,123
1996	805	5,428	4,623	998
1997	805	5,428	4,623	887
1998	1,370	5,428	4,058	692
1999	2,353	5,428	3,075	466
2000	1,450	5,428	3,978	536
2001	2,370	5,428	3,058	366
2002	805	5,428	4,623	492
2003	805	5,428	4,623	437
2004	805	5,428	4,623	389
2005	1,370	5,428	4,058	303
2006	805	5,428	4,623	307
2007	805	5,428	4,623	273
2008	805	5,428	4,623	243
2009	805	5,428	4,623	216
2010	805	5,428	4,623	192
2011	805	5,428	4,623	170
2012	1,370	5,428	16,799*	550*
Salvage (-)	12,741			
Total	50,547	148,301	97,754	-2

Rate of Return = 0.13

ECONOMIC TABLE 10-A
 ILOCOS NORTE WATER SUPPLY PROJECT
 INTERNAL RATE OF RETURN COMPUTATION

Cost Value with CONVERSION A

Year	Total Cost	Total Benefit	Net Benefit	Present Benefit
1982				
1983	3,688	-	-3,688	-3,688
1984	11,158	1,193	-9,965	-8,929
1985	16,043	2,110	-13,933	-11,186
1986	7,554	3,870	-3,684	-2,650
1987	805	5,428	4,623	2,980
1988	805	5,428	4,623	2,670
1989	805	5,428	4,623	2,392
1990	805	5,428	4,623	2,144
1991	1,468	5,428	3,960	1,645
1992	805	5,428	4,623	1,721
1993	805	5,428	4,623	1,542
1994	805	5,428	4,623	1,382
1995	805	5,428	4,623	1,238
1996	805	5,428	4,623	1,109
1997	805	5,428	4,623	994
1998	1,468	5,428	3,960	763
1999	2,459	5,428	3,969	513
2000	1,484	5,428	3,944	610
2001	2,453	5,428	2,975	412
2002	805	5,428	4,623	574
2003	805	5,428	4,623	514
2004	805	5,428	4,623	461
2005	1,468	5,428	3,960	354
2006	805	5,428	4,623	370
2007	805	5,428	4,623	332
2008	805	5,428	4,623	297
2009	805	5,428	4,623	266
2010	805	5,428	4,623	239
2011	805	5,428	4,623	214
2012	1,468	5,428	17,324*	718*
Salvage(-)	13,364			
Total	52,642	148,301	95,659	1

* Values include salvage.

Rate of Return = 0.12

ECONOMIC TABLE 10-B

ILOCOS NORTE WATER SUPPLY PROJECT
INTERNAL RATE OF RETURN COMPUTATION

Cost Value with CONVERSION B

Year	Total Cost	Total Benefit	Net Benefit	Present Benefit
1982				
1983	3,203	-	-3,203	-3,203
1984	9,528	1,193	-8,335	-7,322
1985	13,743	2,110	-11,633	-8,978
1986	6,738	3,870	-2,868	-1,944
1987	805	5,428	4,623	2,753
1988	805	5,428	4,623	2,419
1989	805	5,428	4,623	2,125
1990	805	5,428	4,623	1,867
1991	1,363	5,428	4,065	1,442
1992	805	5,428	4,623	1,441
1993	805	5,428	4,623	1,266
1994	805	5,428	4,623	1,112
1995	805	5,428	4,623	977
1996	805	5,428	4,623	858
1997	805	5,428	4,623	754
1998	1,363	5,428	4,065	582
1999	2,209	5,428	3,219	405
2000	1,383	5,428	4,045	447
2001	2,209	5,428	3,219	313
2002	805	5,428	4,623	394
2003	805	5,428	4,623	346
2004	805	5,428	4,623	304
2005	1,363	5,428	4,065	235
2006	805	5,428	4,623	235
2007	805	5,428	4,623	206
2008	805	5,428	4,623	181
2009	805	5,428	4,623	159
2010	805	5,428	4,623	140
2011	805	5,428	4,623	123
2012	1,363	5,428	15,564*	363*
Salvage(-)	11,499			
Total	48,261	148,301	100,040	0

* Values include salvage.

Rate of Return = 0.14

ECONOMIC TABLE 10-C

ILOCOS NORTE WATER SUPPLY PROJECT
INTERNAL RATE OF RETURN COMPUTATION

Cost Value with CONVERSION C

Year	Total Cost	Total Benefit	Net Benefit	Present Benefit
1982				
1983	3,753	-	-3,753	-3,753
1984	11,913	1,193	-10,720	-9,694
1985	17,072	2,110	-14,962	-12,235
1986	8,833	3,870	-4,963	-3,670
1987	805	5,428	4,623	3,091
1988	805	5,428	4,623	2,796
1989	805	5,428	4,623	2,528
1990	805	5,428	4,623	2,286
1991	1,475	5,428	3,953	1,768
1992	805	5,428	4,623	1,869
1993	805	5,428	4,623	1,690
1994	805	5,428	4,623	1,529
1995	805	5,428	4,623	1,382
1996	805	5,428	4,623	1,250
1997	805	5,428	4,623	1,130
1998	1,475	5,428	3,953	874
1999	2,746	5,428	2,682	536
2000	1,551	5,428	3,877	701
2001	2,614	5,428	2,814	460
2002	805	5,428	4,623	684
2003	805	5,428	4,623	618
2004	805	5,428	4,623	559
2005	1,475	5,428	3,953	432
2006	805	5,428	4,623	457
2007	805	5,428	4,623	413
2008	805	5,428	4,623	374
2009	805	5,428	4,623	338
2010	805	5,428	4,623	306
2011	805	5,428	4,623	276
2012	1,475	5,428	18,560*	1,003*
Salvage(-)	14,607			
Total	55,070	148,301	93,231	-2

* Values include salvage.

Rate of Return = 0.11