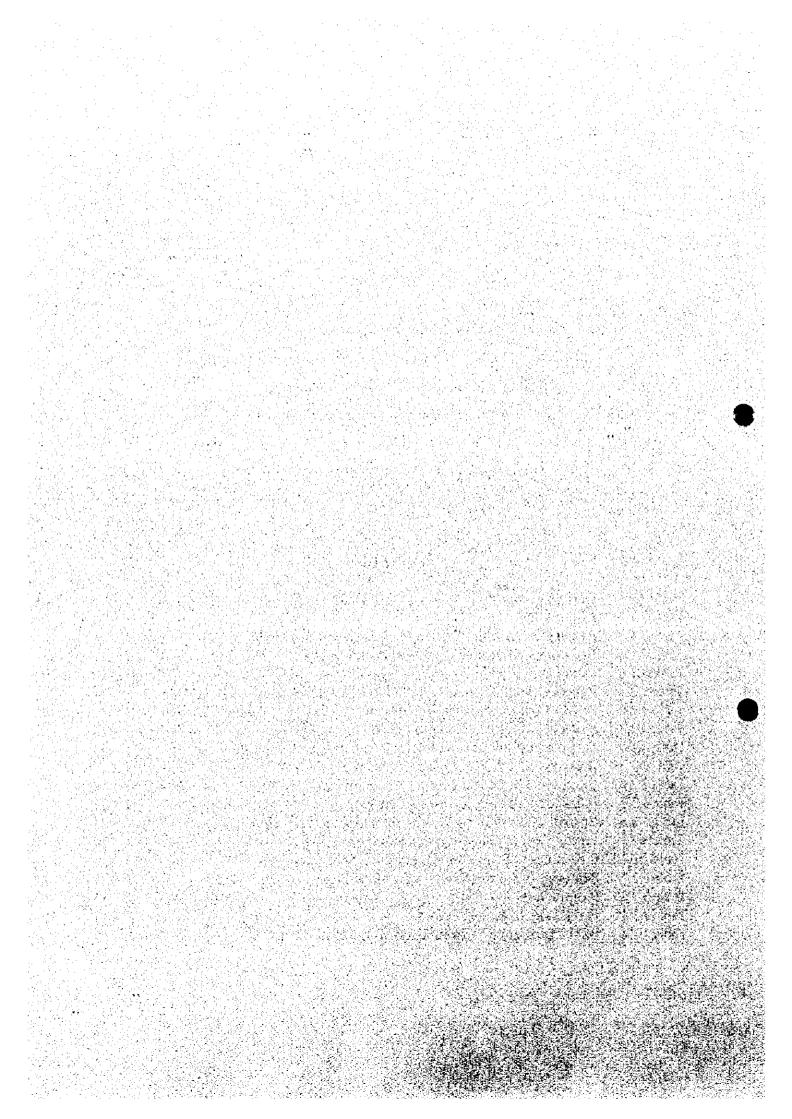
J: Cost Estimate

Table of Contents

J.1	Basis	of Cost Estimate	J.	. 1
	J.1.1	Condition of Contract for Construction	J.	. 1
	J.1.2	Basis of Cost Estimate	J	- 1
J.2	Costs	of Irrigation and Drainage Programs in the Master Plan	J ·	- 2
	J.2.1	Alternatives of Cité Agricole Area Paddy Development Scheme	J	- 2
	J.2.2	Total Irrigation and Drainage Development Program	J	- 3
	J.2.3	Prioritization of Irrigation and Drainage Development Schemes	J	- 3
J.3	Cost I	Estimate of San-Pédro Paddy Project	J	- 4
	J.3.1	Work Volume of the Project	J	- 4
	J.3.2	Project Costs	J	- 4
		List of Table		
Table	J.1.1	Unit Wages		- 5
Table	J.1.2	List of Material Cost		- 6
Table	J.1.3	Rental Costs of Construction Equipment and Machinery		- 8
Table	J.1.4	Construction Machine Operation Costs		- 9
Table	J.1.5	List of Unit Prices		- 10
Table	J.2.1	Project Cost of Alternative 1: Pump Rehabilitation		-11
Table	J.2.2	Project Cost for Alternative 2: Headworks at Cpt. Colonel		-12
Table	J.2.3	Project Cost for Alternative 3: Grand Canal		-13
Table	J.2.4	Summary of Project Cost for Total Irrigation Development		-14
Table	J.2.5	Breakdown of Project Cost of Alternative 1		- 15
Table	J.2.6	Breakdown of Project Cost for Alternative 2	J	- 18
Table	J.2.7	Breakdown of Project Cost for Alternative 3		-21
Table	J.2.8	Breakdown of Project Cost for Total Irrigation Development		-24
Table	J.2.9	Project Cost of Fahé Irrigation Scheme	J	-29
Table	J.2.10	Project Cost of Cpt. Colonel Irrigation Scheme	J	-30
Table	J.3.1	Summary of Construction Works of the Project	j	-31
Table	J.3.2	Project Costs	J	-32
Table	J.3.3	Breakdown of Project Cost	J	-33
Table	134	Bill of Quantity for Construction Works of the Project	J	-3€

1



J: COST ESTIMATE

J.1 Base of Cost Estimate

J.1.1 Condition of Contract for Construction

The construction works is to be carried out by the contractor(s) on contract basis with the Project Executing Agency. The contractor(s) shall be responsible for procurement of machinery, equipment and materials to be used for construction works and the cost of machinery and equipment shall be included in the depreciation cost.

J.1.2 Basis of Cost Estimate

(1) Unit Costs and Prices

The unit prices of wages, materials, equipment and machinery are estimated based on the current price prevailing in Côte d'Ivoire. They are shown in Table J.1.1 to J.1.5.

(2) Demarcation of Foreign Currency Portion and Local Currency Portion

Each component of the construction works is divided into foreign currency portion and local currency portion; the former price is estimated based on CIF at port of Abidjan as of February 1999 and the latter is on the market price at the proposed project site of the country.

(3) Expenses and Benefit

The expenses and benefit of contractor(s) shall be 20 % of direct construction costs.

(4) Consulting Services

The costs of detailed design and construction supervision shall be estimated at 10 % of the sum of construction costs.

(5) Physical Contingency

The physical contingency shall be 10 % of the total investment cost.

(6) Foreign exchange rate

The foreign exchange rates applied for this estimate are US\$1.00 = \$120.35\$, and FF. 1.00 = F.CFA 100.00 = \$19.56 as of April 30, 1999. Therefore, F.CFA 1.00 is equivalent to \$0.20.

- J.2 Costs of Irrigation Development Programs in the Master Plan
- J.1.1 Alternatives of Cité Agricole Area Paddy Development Scheme
- (1) Alternatives of Water Intake for Cite Agricole Paddy Development

The following alternatives are considered for the methods of intake of irrigation water:

	Alternatives	Canal Length	Intake Level Required	Protection of Right Bank	0&M
Pump Irrigation	Repair of Existing Pumps	operated by	y Electricity	No influence	- High electricity tariff
Gravity	Weir at Section 33 (1.5km south of Cpt. Colonel)	8.1km	EL.9.2m	Less upsurge during normal water stage and less influence	 High rise of weir (H=5m) Movable weir Many drainage crossing conduits required Long canal
Irrigation	San-Pedro Grand Canal From Former Industrial Water Intake on the Dam	18.2km	EL.11.3m (EL.17.5m)	No influence	Long canal with 3 irrigation areas. Close coordination with CIE.

Considering the influence of the up surge of headworks to the right bank classified forest area and previous failure of the irrigation system, it is possible to say that there are comparable. Three (3) alternative intake plans to be considered;

Alternative 1: Rehabilitation of existing pumps to be operated by electricity,

Alternative 2: Weir construction at south of Cpt. Colonel, and

Alternative 3: Rehabilitation of existing intake of San-Pédro dam and Grand Canal from the San-Pédro dam.

(2) Costs for Alternative 1 : Pump rehabilitation

Based on the prerequisite and methods mentioned in J.1.1, the Project cost is estimated as shown below and Table J.2.1 and J.2.5.

(3) Costs for Alternative 2: Headworks at Cpt. Colonel

The Project cost is estimated as shown below and Table J.2.2 and J.2.4.

(4) Costs for Alternative 3 : Grand Canal from San-Pédro Dam

The Project cost is estimated as shown below and Table J.2.3 and J.2.5.

(5) Comparison of Alternatives

Three alternatives for Rehabilitation of San-Pédro Paddy Development were compared. The values of financial and economical corresponding alternatives are as follows:

Item	Pump Rehabilitation	2. Installation of Water Intake	3. Grand Canal
EIRR	18.1 %	10.1 %	11.3 %
Construction Cost	F.CFA 3,529 mil.	F.CFA 6,704 mil.	F.CFA 6,358 mil
O/M Cost and Replacement Cost	F.CFA 169,000	F.CFA 107,000	F.CFA 98,000

From the above, as the construction cost of Alternative 1 with F.CFA 3,529 mil. (where the rehabilitation cost of the pump: F.CFA 140 mil.) is the lowest, its EIRR of 18.1 % is the highest

among the three (3) alternatives. For Alternative 2, as its construction cost of F.CFA 6,704 mil. is the highest, its EIRR of 10.1 % is found to be low. For Alternative 3, despite its long distance of Grand Canal for water conveyance, the construction is not so complexed, resulting in a rather low construction cost of F.CFA 6,358 mil. and an EIRR of 11.3 %. From the national economic viewpoint for the project implementation, Alternative 1 (pump rehabilitation) is the best opportunity for investment.

After the completion of the project facilities, for the realization of facility management by the farmers themselves, the low charge on operation and maintenance costs on the farmers will be the most important issue for a "sustainable project management". From the above table, with Alternative 1, operation and maintenance costs will be F.CFA 169,000, or about 1.7 times those of Alternative 3 as F.CFA 98,000. For making no pressure on the farmers' living conditions as well as for improving their living standards, Alternative 3 is considered as the best one.

It is impossible to realize a sustainable development and to contribute to the improvement of the farmers' living standards, if its farming plan is considered vulnerable to the change of the external conditions, even though the project shows a good economic return from the national economic viewpoint. The heavy burden of operation and maintenance costs is considered as one of the reasons why the San-Pédro Paddy Irrigation Project was failed although the pumping units were replaced by the external assistance. It is necessary to mitigate such burden of the farmers as much as possible in order to make the project bearable to the changes of external conditions such as fluctuation of rice price due to the change of future economic situations.

Considering the above contexts, the San-Pédro Paddy Project Area has been selected as the priority area for the further feasibility study, and the irrigation water for the area will be taken at the existing intake on the San-Pédro dam providing a new conveyance canal (Grand Canal) of 18.2 km for conveying the irrigation water (Alternative 3).

J.2.2 Total Irrigation and Drainage Development Program

Through the Grand Canal, the irrigable potential area of Fahé, Cpt. Colonel and Cité Agricole will be irrigated with a total irrigation area of 975 ha. The cost for the total irrigation development in the Study Area is estimated as shown in Table J.2.4 and J.2.8.

J.2.3 Prioritization of Irrigation and Drainage Development Schemes

From the evaluation of the priority projects, the lowland paddy development program is selected as the most effective and urgently required to implement. Then herein, the priority project areas of the paddy development for the feasibility study in the Study are considered among the following areas: And their construction costs excluding costs for Grand Canal are estimated as follows (Table J.2.3, J.2.9 and J.2.10):

	Irrigable Area	Beneficiaries	Construction Cost	EIRR
San-Pédro Paddy Project Area	575 ha	. 384	F.CFA 2,152 million	15.0 %
Fahé Area	300 ha	200	F.CFA 1,543 million	13.2 %
Cpt. Colonel Area	90 ha	60	F.CFA 1,083 million	6.4 %

Through the comparison of these three (3) areas based on the socio-economic circumstances, etc. for project implementation, the highest priority project site for the feasibility study has been selected accordingly.

The San-Pédro Paddy Development Area has a high IRR of 22.4 % and a highest beneficiary population of 383 families. As this area has been equipped with irrigation facilities, the rehabilitation of these facilities will offer high impacts to the project. Besides, as the farmers presently living in this area have experiences on paddy cultivation, the effectiveness from extension of farming techniques, therefore, can be expected. From these viewpoints and based on socio-economic conditions, the area of San-Pédro Paddy Development Project is evaluated as the most suitable site for priority project.

Considering the above contexts, the San-Pédro Paddy Development Project area has been selected as the priority area for the further feasibility study, and the irrigation water for the area will be taken at the existing intake on the San-Pédro dam providing a new conveyance canal (Grand Canal) of 18.2 km for conveying the irrigation water (Alternative 3). It is necessary to study on the possibility to include other programs proposed as the components of the master plan as well as the elements for the necessary irrigation facilities, reinforcement of farmers' organization and possibility of step-wise implementation of the project. Especially, it is necessary to propose the measures required for farmers' organization and agricultural extension to be considered in such step-wise implementation.

J.3 Cost Estimate of San-Pédro Paddy Project

J.3.1 Work Volume of the Project

As the result of development plan and design of irrigation and drainage in the Project Area, the scale of the irrigation and drainage facilities are summarized in Table J.3.1, and work volume of them are shown in Table J.3.4.

J.3.2 Project Cost

Based on the bill of quantity and unit cost mentioned in J.1, the project cost were estimated, and they are shown in Table J.3.2 and J.3.3. Also the annual operation and maintenance costs is estimated based on the facility repair costs and office and operators' expenses and costs for system operation as shown in Table J.3.2.

Table J.1.1 Unit Wages

	- a0e	able J. I.	Onit wages			(unite:F.CFA)
The state of the s	Description	Timies	Local	Å.	Total	Remaranes
Designation	nescubinon	Omic	Currency	144	1000	can't more
Chef de chantier	General Foreman	jour	7.920	220	8,140	
Chef d'equipe	Foreman	jour	5.610	220	5.830	
Ouvrier de coffrage	Carpenter	jour	3,300	220	3,520	
Ferrailleur	Bar Bender	jour	3,300	220	3,520	
Soudeur	Welder	jour	3,740	220	3.960	
Aide-soudeur	Welder Helper	jour	3,080	220	3,300	
Ouvrier de beton	Concrete Worker	jour	3,300	220	3,520	
Plombier	Pulmber	jour	3,300	220	3,520	
Macon	Mayson	lour	3,740	220	3,960	
Ouvrier non qualifie	Common Labor	jour	3,300	220	3.520	
Ouvrier qualifie	Skilled Labor	jour	3,740	220	3,960	
Monteur	Rigger	jour	3,300	220	3.520	
Operateur pour gros engin	Operator Heavy	iour	3,740	220	3,960	
Operateur pour engin normal Operator Normal	Operator Normal	jour -	3.630	220	3,850	
Chauffeur pour gros camion Driver Heavy	Driver Heavy	jour	3,520	220	3,740	
Chauffeur	Driver Light	noi	3.520	220	3,740	
Electricien	Electrician	jour	3,740	220	3,960	
Mecanicien	Mechanic	iour	3,740	220	3,960	
Manoeuvre	Helper	jour	1.980	220	2,200	

Note: including social insurance etc.

Source: JICA Study Team, San-Pedro, February 1999

Table J.1.2 List of Matrial Cost

(unite:F.CFA)

Designation	Description	Specification	Unite	Local Currency	Foreign Currency	Tax	Total	Remarques
Ciment	Cement	Portland TYPE-I	kg		44	5	49	
		AE	lit		1,622	178	1,800	
	Concrete Pipe	D300mm(12")	m	5,749	8,623	2,874	17,246	
		D400mm(16")	m	7,618	11,472	3,824	22,914	
		D500mm(20")	m	10,710	16,065	5,355	32,130	
		D600mm(24")	m	13,748	20,622	6,874	41,241	
		D700mm(28")	m	0	0	0		······································
	Concrete Pipe	D800mm(32")	m	20,435	30,653	10,218	61,306	
	Concrete Pipe	D900mm(32")	m	0	30,000	0		
	Concrete Pipe	D1000mm(40")	m	30,216	45,324	15,108	90,648	
	Concrete Pipe	D1100aim(44")	m	0	1,5,527	13,100	70,010	
	Concrete Pipe	D1200mm(48")	m	41,848	L *1	20,924	125,544	
	River Sand	0-5mm	m3	5,500		1,100	6,600	
	· · · · · · · · · · · · · · · · · · ·	5-25mm	m3	7,750		1,550	9,300	
	River Gravel	5-40mm	m3	7,750		1,550	9,300	
	River Gravel	<u> </u>	ļ				7,680	
Crushed Stone	Crashed Stone	5-25mm	m3	6,400		1,280		
	Rubble Stone	100~200mm	m3	6,000	 	1,200	7,200	
	Brick	200*400*150m	pc	263		53	315	
Parpaing	Concrete Block		pc		393	39	432	
Fer a beton Tors	Deformed Bar	D10-D13	tonne		330,000	36,300	366,300	
Per a beton Tors	Deformed Bar	D16-D22	tonne		354,000	38,940	392,940	
Ligature	Tie Wire(for RE BAR)	GA 16#	kg		730	80	810	
Contre-plaque	Ply Wood	1200*2400 t=12		4,500		900	5,400	
Bois	Timber & Plank	50*50mm	m3	180,000		36,000	216,000	
Bois	Timber & Plank	100*100mm	m3	180,000		36,000	216,000	
Clou	Nail	50mm	kg	825		165	990	
Clou	Nail	75mm	kg	825	j)	165	990	
Clou a beton	Concrete Nail	75mm	kg	1,800		360	2,160)
Profile en H	H-Shaped Steel	100-150mm	tonne		453,941	49,933	503,874	1
Profile en B	H-Shaped Steel	200-300mm	tonne		453,941	49,933	503,874	1
Profile en L	L-Shaped Steel	100*50*5	tonne		497,173	54,689	551,862	2
Tole d'acier	Steel Plate	1219*2438*4.5	tonne		518,789	57,067	575,856	5
Fit de fer barbele	Barbed Wire		m		65	7	7.	
Gabion metallique	Wirenet for Gabion		m2		2,432	268	2,700	ol
Water stop pour l'étanchei		largeur=150mm	m		4,054	446	4,500	
Tole galvanisce	Galvanized Sheet	1219*2438	unite		9,730	1,070	10,800	
Tutau de PVC	PVC Pipe	D=50mm	m	 	675	135	810	
Tutau de PVC	PVC Pipe	D=75mm	m	 	1,125	225	1,350	
Tutau de PVC	PVC Pipe	D=100mm	m	 	1,500	300	1,800	
Tutau de PVC	PVC Pipe	D=150mm		 	3,225		3,87	<u></u>
	PVC Pipe	D=200mm	m		4,425			
Tutau de PVC	PVC Pipe	D=300mm		 	11,625			
Tutau de PVC		D=350mm	m)	 	11,023	2,323	N/A	
Tutau de PVC	PVC Pipe	D=350mm D=400mm	m	 	12 260	2.450		
Tutau de PVC	PVC Pipe		m	 	17,250	3,450	20,70	<u> </u>
Tutau de PVC	PVC Pipe	D=450mm	m	ļ	26.500		N/A	
Tutau de PVC	PVC Pipe	D=500mm	m	ļ	26,700			
Oxygene	Oxygen	Bottle Deposit	month			255		
Oxygene	Oxygen	Gas	kg	1,95		390		
Acetylene	Athetilane	Bottle Deposit	month			255		
Acetylene	Athetilane	Gas	kg	4,42		885		
Essence	Gasoline		lit		313			
Kerosene	Kelosine		lit		130	: 26		
Gasoil	Diesel		lit	T	208	41	24	9
Holle pour moteur	Engine Oil		- lit		900		1,08	0
Baruette de soudure	Welding Lod	B-10	kg		3,975	A		
Gas du petrole liquifle	LPG Gas	1	100 lb	(1	N/A	
Tutau en acier	Steel Pipe	D=50mm	m	1	2,100	420		00

Table J.1.2 List of Matrial Cost

(unite:F.CFA)

		T						unite F.CFA)
Designation	Description	Specification	Unite	Local Currency	Foreign Currency	Tax	Total	Remarques
Tutau en acier	Steel Pipe	D=100mm	m		5,550	1,110	6,660	
Tutau en acier	Steel Pipe	D=150mm	m		10,125	2,025	12,150	<u> </u>
Tutau en acier	Steel Pipe	D=200mm	nı		16,275	3,255	19,530	
Tutau en acier	Steel Pipe	D=300mm	m		29,550	5,910	35,460	
Tutau en acier	Steel Pipe	D-400mm	m		41,925	8,985	53,910	
Tutau en acier	Steel Pipe	D=500mm	m	-	61,350	12,870	77,220	
Tutau en acier	Steel Pipe	D=600mm	m		87,300	17,460	104,760	
l'utau en fonte	Cast Iron Pipe	D=400mm	m		53,475	10,695	64,170	
Lutau en fonte	Cast Iron Pipe	D=500mm	m	1	69,600	13,920	83,520	
Tutau en fonte	Cast Iron Pipe	D=600mm	m		91,875	18,375	110,250	
Tutau en fonte	Cast Iron Pipe	D=700mm	m		119,925	23,985	143,910	
Tuyau annele en acier	Corrugated Steel Pipe	D=200mm	ri)		19,125	3,825	22,950	
Tuyau annele en acier	Corrugated Steel Pipe	D=300mm	m		38,325	7,665	45,990	
Tuyau annele en acier	Corrugated Steel Pipe	D=400mm	m	<u> </u>	58,425	11,685	70,110	
Tuyau annele en acier	Corrugated Steel Pipe	D=500mm	m	1	83,250	16,650	99,900	
Tuyau annele en acier	Corrugated Steel Pipe	D=600mm	nı.		112,425	22,485	134,910	
Tuyau annele en acier	Corrugated Steel Pipe	D=1000mm	m	<u> </u>	212,100	42,420	254,520	
Tuyau annele en acier	Corrugated Steel Pipe	D=1100mm	m	<u> </u>	241,425	48,285	289,710	1
Tuyau annele en acier	Corrugated Steel Pipe	D=1200mm	m		269,250	53,850	323,100	
Tuyau annele en acier	Corrugated Steel Pipe	D=1300mm	m		301,350	60,270	361,620	1
Tuyau annele en acier	Corrugated Steel Pipe	D=1400mm	m		331,425	66,285	397,710	
Tuyau annele en acier	Corrugated Steel Pipe	D=1500mm	m		362,475	72,495	434,970	
Soupage a papilion	Butterfly Valve	D=400mm	serie	1	1,299,675	259,935	1,559,610	
Soupage a papilion	Butterfly Valve	D=500mm	serie		1,899,525	379,905	2,279,430	T
Soupage a papilion	Butterfly Valve	D=600mm	serie		2,399,400	479,880	2,879,280	
Irrigation Gate	Irrigation Gate	0.3x0.4	serie		31,500	6,300	37,800	Ì
Irrigation Gate	Irrigation Gate	0.5x0.5	serie		39,750	7,950	47,700	
Irrigation Gate	Irrigation Gate	0.6x0.5	serie		42,000	8,400	50,400	
Irrigation Gate	Irrigation Gate	0.8x0.5	serie		47,250	9,450	56,700	}

Source: JICA Study Team, San-Pedro, February 1999

Table 3.1.3 Rental Costs of Construction Equipment and Machinery

(unite:F.CFA)

Designation	Description	Specification	Unite	Carren	Cucrent	Tax	Total	Remarques
Balls manage on the party party of	Hackbon	O 15m3 class	beure		18.378	2.022	20,400	
	Hackboo	0.7m3	heure		29,405	3,235	32.640	
	Facilian	1 0m3	hanse		33.694	3.706	37,400	
Perie mecanique a gouer retourne	CoulerCrahe	Chon class	hynn		27,117	2,983	30,100	
Care and chemilies	CowletCrane	30:00	heure		40.721	4,479	45,200	
Orde sur chemines	Charlet Crape	Ston	heure		12.973	1,427	14,400	
Grac automobile	Truck Crane	10-15ton	heure		25,946	2.854	28,800	
Grue automobile	Truck Crane	20ton	heure		26,081	2,869	28,950	
Chargeur sur oneu	Wheel Loader	2.1-2.3m3 class	heure		14,703	1.617	16,320	
Bulldozor	Bulldozer	1 Iton	heure		21.405	2,355	23.760	
Bulldozor	Bulldozer	21ton	heure		24,432	2,688	27.120	
Camion a benne baseulante	Dump Truck	6ton	heure		10,360]	1.140	11,500	
Camion a benne baseulante	Dump Truck	1 ton	heure		979.11	1.284	12,960	
Pick up	Pick up	ton	heure		2,378	262	2.640	
Camion	Cargo Truck	lten	heure		13,514	1,486	15,000	
Camion a grue	Unic Crane	lOton	heure		556'61	2,195	22,150	
Camion a grue	Unic Crane	4ton	pente		13,874	1.526	15,400	
Camion citeme	Water Tunk Lorry	10k)	heure		3.027	333	3,360	
Camion remordue	Trailler Truck	30ton	heure		17.730	1,950	19,680	
Centrale a beton	Batching Plant	0.5m3/batch	pente		39,550	4,350	43,900	
Betonnlere sur camion	Truck-Miner Car	3.0m3	heure		10,090	1,110	11,200	
Pompe a beton sur camion	Concrete Pump Car	20m3/hour	heure		12,162	1,338	13,500	
	Crushing Plant	10m3/hour	heure		22,613	2,487	25.100	
Classificateur des pierres concassees	Classifical Plant	20m3/hour	heure		31,622	3,478	35.100	
Betonniere	Pot Mixer	0.1m3	heure		1,802	1981	2,000	
Betonniere	Pot Mixer	0.2m3	heure .		1,117	123	1.240	
Groupe electrogene	Generator	Skva	joor		811	68	8	
Groupe electrogene	Generator	35kva	jour		2.523	277	2,800	
Groupe electrogene	Cenerator	125kva	Jour J		180.18	3.419]	34,500	
Groupe electrogene	Generator	150kva)our		36,937	4.063	41,000	
Pompe immergee	Submergible Pump	D75mm)our		2.703	297	986	
Pompe immergee	Submergible Pump	D100mm)our		4,054	446	4,500	
Pompe immergee de sable	Submergible Sand Pump	D75mm	ioni		4,054	446	4.500	
	Submergible Sand Pump	D100mm)our		4,955	545	5.500	
	Welder		JOOL		1.351	149	1.500	
Machine a cintrer	RE-Bar Bending Machine		heure		2,252	248	2,500	
Cisaille fer a beton	RE-Bar Cutting Machine		heure		252.5	288	2.500!	
Niveleuse	Motor Grader	GD 37	heure		21.622	2,378	24,000	
Rouleau vibrant	Vibration Roller	0.8-1.1ton	heure		2,865	315	3,180,58	3,180,583/0.2=2915
Rouleau pneumatique	Tire Roller	8-16ton	houre		15,829	1,241	17.570	
Compacteur a plaque	Compactor	60-100kg	Jour.		1,838	202	2,040	
Dame	Compactor	Iton	beare		2.865	315	3,1%0	
esseur a air	Compressor	5m3	heure		1,514	166	0,0%0	
lle	Tractor Shove	2.2m3 class	heure -		18,946	2.084	21,030	
	Concrete Breaker	20kg-class	ioni		1,297	143	1,440	
cton	Giant Breaker	1,300kg class	jonc		6.396	704	7,1001	
					1 034	112	1000	

Table J.1.4 Construction Machine Operation Costs

		· · · · · · · · · · · · · · · · · · ·						Unit:F.CFA
Code	Description	Specification	Unit	Local	Foreign	Tax	Total	Remarks
				Currency	Currency			
501	Bulldozer	15ton	hr	1,047	25,453	3,214	29,714	29,714
505	Bulldozer	21ton	þr	1,047	30,375	3.921	35,343	35,343
503	Backhoe	0.7m3	hr	1,047	33,052	4,015	38,114	38,114
S04	Tamper	60-100kg	day	0	3,550	541	4.091	4,091
202	Vibration Roller	0.8-1.1ton	hr	748	3,031	392	4,171	4,171
206	Dump Truck	10ton	h	581	14,463	1,869	16,913	16,913
507	507. Pot Mixer	0.5m3	hr	0	39,550	4,350	43,900	43.900
208	Generator	35kva	day	0	9,226	1,599	10.825	10,825
509	Truck Crane	4.8-4.9ton	μ	1,047	14,219	1,734	17,000	17,000
\$10	Truck Crane	10-15ton	μ	935	27,716	3,258	31,909	31,909
511	Motor Grader	3.1m	hr	1.047	23,560	2.822	27,429	27,429
512	Tire Roller	8-20ton	hr	726	18,104	2,234	21,064	21,064
513	Water Tunk Lorry	2800-6500L	hi	726	4,837	734	6,296	6,297
514	Bulldozer	3ton	hr	1,047	22,554	2,643	26,243	26,244
515	Submergible Pump	D100mm, 10m	day		4.054	446	4.500	

Source: JICA Study Team, San-Pedro, February 1999

Table J.1.5 List of Unit Prices

Unit F.CFA

Currency									Unit F.CFA
Doctor D	No.	Description	Specification	Unit	1.ocal	Foreign	Tax	Total	Remarks
Doctor D			Ł		Currency	Currency		i	ì
Surface soil connoting Bubbloore 21 ton Bubbl	101	Rush Cutting	utter machine	m2		3		9	— - ব
103 Stungping and Sturps evelusion Bull-locer 12 101 131 135 135 135 202 202 103 Clearing Bull-locer 21 101 102 131 132 131 129 219 106 last d'ordring Bull-locer 21 101 102 131 132 131 129 219 100						(8)	26		
Dots Clearing Bullsborer 21 ton m2 71 889 24 220 220 220 200	1								
105 Clearing Bulldozer 21 ten ha 7000 1830 300 22,000 220,									
Total Tota			Bulldozer 21 ton						
100 Institution Institut	105	Clearing		m2		235	31	279	279
107 Excharics Labor m3 2,970 0 198 3,168 3,168 108	106		Bulldozer 21 ton	ha	7.000	189,000	24.000	220,000	220,000
109 Excarátion Bullásvez 21 ton m3 15 344 57 5056 5066									
100 Excassion									
110 Backfill	L								
111 Rect full Balskore 15 fon m3 225 1,220 174 1,719 7,700 112 Back full Back Nee 9 7 m m3 500 1,545 217 2,267 2,262 113 Embandment Cabor m3 1,055 95 81 1,332 1,323 114 Correction Compacter m3 10,555 95 81 1,332 1,323 115 Backing Balskore 17 ton m3 17 339 44 395 395 116 Stope Fankling Labor m2 561 0 36 600 600 117 Stope Fankling Labor m2 248 1,058 142 1,418 1,418 118 Remeator of Surptions Scal Dump Trock 10ton, 2km m3 35 277 120 1,418 1,418 118 Remeator of Surptions Scal Dump Trock 10ton, 2km m3 35 277 120 1,418 1,418 118 Remeator of Surptions Scal Dump Trock 10ton, 2km m3 35 277 120 1,418 1,418 120 Reinforced Concrete 4x-240 kg/fcm2 m3 15,442 1,558 4,895 41,925 41,935 201 Reinforced Concrete 4x-240 kg/fcm2 m3 18,700 21,500 5,112 45,118 45,118 202 Pain Concrete 4x-240 kg/fcm2 m3 18,700 21,500 5,112 45,118 45,118 203 Pain Concrete 4x-240 kg/fcm2 m3 12,500 3,120 4,615 3,930 35,300 204 Concrete 4x-240 kg/fcm2 m3 12,500 3,120 4,615 3,365 3,365 205 Concrete 4x-240 kg/fcm2 m3 12,500 3,120 4,615 3,365 3,365 206 Concrete 4x-240 kg/fcm2 m3 12,500 3,120 4,615 3,365 3,365 207 Reinforcing Bar 1,500 kg/fcm2 m3 12,500 3,120 4,615 3,365 3,365 208 Reinforcing Bar 1,500 kg/fcm2 m3 12,500 3,120 4,615 3,365 3,365 209 Reinforcing Bar 1,500 kg/fcm2 m3 12,500 3,500 3,500 3,500 200 Reinforcing Bar 1,500 kg/fcm2 m3 12,500 3,500 3,500 3,500 201 Reinforcing Bar 1,500 kg/fcm2 m3 12,500 3,500 3,500 3,500 203 Reinforcing Bar 1,500 kg/fcm2 m3 12,500 3,500 3,500 3,500 204 Reinforcing Bar 1,500 kg/fcm2 m3 12,500 3,500 3,500 207 Reinforcing Bar 1,500 kg/fcm2 m3 12,500 3,50									
111 Backfall Bultboret 15 ton m3 225 1,320 174 1,719 7,719 1,719	110	Backfill	Labor	m3	1,480		111	1,687	1,687
112 Back fell	111	Backfill	Bulldozer 15 ton	m3	225	1,320	174	1.719	1.719
133			Rack hoe 0.7 m3		500				
111									
Barking									
116 Slope Finishing									
115 Slope Finishing Matchine m2 248 1,058 142 1,448 1,448 1,448 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1,448 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448	115		Bulldezer 21 ton	m3		339		395]	395
115 Slope Finishing Matchine m2 248 1,058 142 1,448 1,448 1,448 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1,448 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448 1 1,448	116	Stope Finishing	Labor	m2	564	0	36	600	600
18			Machine			058			
201 Reinforced Concrete ck=240kg/fcm2 m3 15,442 21,558 4,895 41,925 44,925 202 Reinforced Concrete ck=210kg/fcm2 m3 18,700 21,306 5,142 45,218 45,2									
202 Reinforced Concrete ck=210 kg/fcm2 m3 18,770 21,306 5,142 45,218 45,218 45,218 203 Plain Cenerate ck=180 kg/fcm2 m3 12,519 21,165 4,642 38,386 38,386 205 Concrete ck=210 kg/fcm2 m3 12,519 21,165 4,642 38,386 38,386 205 Concrete ck=210 kg/fcm2 m3 12,613 20,100 45,29 37,242 37,242 37,242 206 Concrete ck=180 kg/fcm2 m3 12,816 17,666 4,300 34,812 34,812 207 Reinforcing Bar 14mm ton 54,933 339,900 40,957 435,790	110	Kemoral of Surplus Son	round from Total, 2km	1113		721	120	1,003	1,085
202 Reinforced Concrete ck=210 kg/fcm2 m3 18,770 21,306 5,142 45,218 45,218 45,218 203 Plain Cenerate ck=180 kg/fcm2 m3 12,519 21,165 4,642 38,386 38,386 205 Concrete ck=210 kg/fcm2 m3 12,519 21,165 4,642 38,386 38,386 205 Concrete ck=210 kg/fcm2 m3 12,613 20,100 45,29 37,242 37,242 37,242 206 Concrete ck=180 kg/fcm2 m3 12,816 17,666 4,300 34,812 34,812 207 Reinforcing Bar 14mm ton 54,933 339,900 40,957 435,790	 								0
Data Concrete Ck=180 kgfcm2 m3 16,141 18,401 4,645 39,190 39,190 201 Concrete Ck=240 kgfcm2 m3 12,579 21,165 4,642 38,386 38,386 205 Concrete Ck=180 kgfcm2 m3 12,613 20,100 4,529 37,242								41,925	41,925
Data Concrete Ck=180 kgfcm2 m3 16,141 18,401 4,645 39,190 39,190 201 Concrete Ck=240 kgfcm2 m3 12,579 21,165 4,642 38,386 38,386 205 Concrete Ck=180 kgfcm2 m3 12,613 20,100 4,529 37,242	202	Reinforced Concrete	ck=210 kgf/cm2	m3	18,770	21,306	5,142	45.218	45,218
Del								39 190	
205 Concrete Ck=210 kg/km2						21 165		18 284	
206 Concrete Ck-180 kg/km2 m3 12,816 17,696 4,300 34,8312 34,832 207 Reinforcing Bar 13mm ton 54,931 339,900 40,957 435,790 435,790 208 Reinforcing Bar 16.25mm ton 46,341 364,620 43,056 454,018 454,018 209 Weeden Form Canal Work m2 3,393 0 220 3,613 3,613 3,613 2110 Weeden Form Small Structure m2 3,524 0 2311 3,755 3,755 211 Base Gravel Laber, t=20cm m3 9,125 4,610 2,195 16,130 16,130 16,130 212 Sand Bed m3 7,683 96 1,328 9,107 9,107 9,107 301 Concrete Pipe D=300mm m 7,354 10,807 3,234 21,395 21,395 302 Concrete Pipe D=600mm m 33,607 50,420 15,924 99,951 47,556 303 Concrete Pipe D=1,000mm m 33,607 50,420 15,924 99,951 99,951 305 Mortar 13 m3 8,967 23,300 3,952 35,463 35,463 306 Wire Cylinder m3 8,967 28,304 4,594 42,565 42,565 307 Sluice Gate (Metal) 0 3 m x 0.4m Unit 10,469 41,738 8,155 60,362 60,362 308 309 Sluice Gate (Metal) 0.5m x 0.5m Unit 19,777 38,824 15,485 124,086 124,086 400 Grading for Read without soil dressing m2 16 165 20 201 201 402 Subgrade Course m7 20,500 200 201 201 402 Subgrade Course m6 M1 M1 M1 M2 M3 M3 M3 M3 M3 M3 M3						20102	7,012	30,380	20,360
Description			ck=210 kg//cm2	·					37,242
208 Reinforcing Bar 16-25mm ton 46,341 364,620 43,056 454,018 454,018 209 Weoden Form Canal Work m2 3,324 0 220 3,613 3,613 3,611 2110 Weoden Form Small Structure m2 3,524 0 2311 3,755 3,755 211 Base Gravel Labor, 1=20cm m3 9,325 4,610 2,195 16,130 16,130 1212 Sand Bed m3 7,683 96 1,328 9,107 9,107 9,107 3,011 212 Sand Bed m3 7,683 96 1,328 9,107 9,107 9,107 3,011 3,007 3,244 21,395 21,395 302 Concrete Pipe D=500mm m 7,354 10,807 3,234 21,395 21,395 302 Concrete Pipe D=500mm m 15,858 24,262 7,436 447,556 47,556 47,556 303 Concrete Pipe D=1,000mm m 33,607 59,420 15,924 99,951 99,951 304 Wet Missony m2 13,3607 59,420 15,924 99,951 99,951 304 Wet Missony m2 13,382 4,102 1,977 21,461 21,461 305 Mortar 1:3 m3 8,191 23,320 3,952 35,463 35,463 306 Wire Cylinder m3 9,667 28,304 4,994 42,565 42,565 307 Stuice Gate (Metal) 0.3 m x 0.4m Unit 10,409 41,388 8,155 60,362 60,36				m;3	12,836	17,696			
209 Weoden Form Caral Work m2 3,393 0 220 3,613 3,613	207	Reinforcing Bar		ton	54,933		40,957	435,790	435,790
209 Weoden Form Caral Work m2 3,393 0 220 3,613 3,613	203		16-25mm	ton	46,341	364,620	43.056		454.018
210 Wooden Form Small Structure m2 3,524 0 231 3,755 3,755 211 Base Gravel Labor, 1=20cm m3 7,683 966 1,328 9,107 9,107					3 393				
211 Base Gravet									3,013
212 Sand Bed									
O O O O O O O O O O			Labor, t=20cm						(6,130
302 Concrete Pipe D=600mm m 15,858 24,262 7,436 47,555 47,555 303 Concrete Pipe D=1,000mm m 33,607 59,420 15,924 59,951 99,951 304 Wet Masonry m2 15,382 4,102 1,977 21,461 21,461 305 Mortar 1:3 m3 8,191 23,320 3,952 35,463 35,463 306 Wire Cylinder m3 9,667 28,304 4,594 42,565 42,565 307 Sluice Gate (Metal) 0.3 m x 0.4m Unit 10,469 41,738 8,155 60,362 60,362 308 Sluice Gate (Metal) 0.5 m x 0.5m Unit 15,987 53,400 10,552 79,939 79,939 309 Sluice Gate (Metal) 0.6 m x 0.5m Unit 19,777 88,824 15,485 124,086 124,086 403 Gravel Pavement 1=15cm m2 205 140 31 376 376 403 Gravel Pavement 1=15cm m2 1,039 75 213 1,327 1,327 404 Farm Land Consolidation Bulldozer 16 ton ha 193,367 1,447,944 190,516 1331,827 1,331,827 405 Timbering kaum3 1,226 1,076 203 2,505 2,505 406 Scaffolding Maken 2 1,170 0 74 1,244 1,244 1,244 407 Water Stop m	212	Sand Bed		m3	7,683	96	1,328	9,107	9,107
302 Concrete Pipe D=600mm m 15,858 24,262 7,436 47,555 47,555 303 Concrete Pipe D=1,000mm m 33,607 59,420 15,924 59,951 99,951 304 Wet Masonry m2 15,382 4,102 1,977 21,461 21,461 305 Mortar 1:3 m3 8,191 23,320 3,952 35,463 35,463 306 Wire Cylinder m3 9,667 28,304 4,594 42,565 42,565 307 Sluice Gate (Metal) 0.3 m x 0.4m Unit 10,469 41,738 8,155 60,362 60,362 308 Sluice Gate (Metal) 0.5 m x 0.5m Unit 15,987 53,400 10,552 79,939 79,939 309 Sluice Gate (Metal) 0.6 m x 0.5m Unit 19,777 88,824 15,485 124,086 124,086 403 Gravel Pavement 1=15cm m2 205 140 31 376 376 403 Gravel Pavement 1=15cm m2 1,039 75 213 1,327 1,327 404 Farm Land Consolidation Bulldozer 16 ton ha 193,367 1,447,944 190,516 1331,827 1,331,827 405 Timbering kaum3 1,226 1,076 203 2,505 2,505 406 Scaffolding Maken 2 1,170 0 74 1,244 1,244 1,244 407 Water Stop m									0
302 Concrete Pipe D=600mm m 15,858 24,262 7,436 47,555 47,555 303 Concrete Pipe D=1,000mm m 33,607 50,420 15,924 59,951 99,951 304 Wet Miscorry m2 15,382 4,102 1,977 21,461 21,461 305 Mortar 1:3 m3 8,191 23,320 3,952 35,463 35,463 306 Wire Cylinder m3 9,667 28,304 4,594 42,565 42,565 307 Sluice Gate (Metal) 0.3m x 0.4m Unit 10,469 41,738 8,155 60,362 60,362 308 Sluice Gate (Metal) 0.5m x 0.5m Unit 15,987 53,400 10,552 79,939 79,939 309 Sluice Gate (Metal) 0.6m x 0.5m Unit 17,450 77,199 13,554 108,203 108,203 310 Sluice Gate (Metal) 0.8m x 0.5m Unit 19,777 88,824 15,485 124,086 124,086 403 Gravel Pavement t=15cm m2 205 140 31 376 376 403 Gravel Pavement t=15cm m2 205 140 31 376 376 403 Gravel Pavement t=15cm m2 1,039 75 213 1,327 1,327 1,327 405 Timbering kuum3 1,226 1,076 203 2,505 2,505 406 Scaffolding kaken2 1,170 0 74 1,244 1,244 407 Water Stop m 76 430 53 5559 559 408 Expansion Joint m2 644 6,999 1,443 9,086 9,086 400 Sheet Pile Type II, L=6.0m sheet 4,905 0 321 5,226 5,226 401 Farm Land Preparation Bulldozer 15 ton ha 50,791 733,409 96,454 900,654 900,654 401 Farm Land Preparation Bulldozer 15 ton ha 50,791 733,409 96,454 900,654 900,654 401 Farm Land Preparation Bulldozer 15 ton ha 50,791 733,409 96,454 900,654 900,654 401 Farm Land Preparation Bulldozer 15 ton ha 50,791 733,409 96,454 900,654 900,654 401 Farm Land Preparation Bulldozer 15 ton ha 50,791 733,409 96,454 900,654 900,654 401 Farm Land Preparation Bulldozer 15 ton ha 50,791 733,409 96,454 900,654 900,654 401 Farm Land Preparation Bulldozer 15 ton ha 50,791 733,409 96,454 900,654 900,654 401 Farm Land Preparation Bulldozer 1	301	Concrete Pipe	D=300mm	m	7,354	10,807	3,234	21.395	21,395
303 Concrete Pipe D=1,000mm m 33,607 50,420 15,924 99,951 99,951 304 Wet Miscorry m2 15,382 4,102 1,977 21,461 21,461 305 Mortar 1:3 m3 8,191 23,320 3,952 35,463 35,463 306 Wire Cylinder m3 9,667 28,304 4,594 42,565 42,565 307 Sluice Gate (Metal) 0.3m x 0.4m Unit 10,469 41,738 8,155 60,362 60,362 308 Sluice Gate (Metal) 0.5m x 0.5m Unit 15,987 53,400 10,552 79,939 79,939 309 Sluice Gate (Metal) 0.6m x 0.5m Unit 17,450 77,199 13,554 108,203 108,203 310 Sluice Gate (Metal) 0.8m x 0.5m Unit 19,777 88,824 15,485 124,086 124,086 401 Grading for Read without soil dressing m2 16 165 20 201 201 402 Subgrade Course m2 205 140 31 376 376 403 Gravel Pavement t=15cm m2 1,019 75 213 1,327 1,327 404 Farm Land Consolidation Bulldozer 16 ton ha 193,367 1,447,944 190,516 1,831,827 1,831,827 405 Timbering kuum3 1,226 1,076 203 2,505 2,505 406 Scaffolding kakena 1,170 0 74 1,244 1,244 407 Water Stop m 76 430 53 5559 559 408 Expansion Joint m2 644 6,999 1,449 9,086 9,086 409 Sheet Pile Type II, L=6.0m sheet 4,905 0 321 5,226 5,226 410 Farm Land Preparation Bulldozer 15 ton ha 51,576 1,496,305 193,153 1,741,034 401 Wire Net for concrete lining m2 308 1,903 229 2,440 2,440 602 Soil Dressing for Road with soil dressing m2 19 224 28 271 604 Butterfly Valve D=600mm set 17,874 2,421,283 483,565 2,922,722 2,922,722 505 50			D=600mm	m					
304 Wet Masonry		Consists Dina				50.430		00.051	00.051
305 Mortar 1:3 m3 8,191 23,320 3,952 35,463 35,463 36,463 306 Wire Cylinder m3 9,667 28,304 4,594 42,565 42,565 42,565 307 Sluice Gate (Metal) 0.3 m x 0.4 m Unit 10,469 41,738 8,155 60,362 6			D-1,000han						99,931
Mile Cylinder							1,977	21,461	21,461
Solution Solution	305		1:3	[m3		23,320		35,463	
State Gate Metal 0.3 m x 0.4 m Unit 10,469 41,738 8,155 60,362 60,362 308 State Gate (Metal 0.5 m x 0.5 m Unit 15,937 53,400 10,552 79,939 79,939 309 State Gate (Metal 0.6 m x 0.5 m Unit 17,450 77,199 13,554 108,203 108,203 310 State Gate (Metal 0.8 m x 0.5 m Unit 19,777 88,824 15,485 124,086 124,	306	Wire Cylinder		m3	9,667	28,304	4,594	42,565	42,565
Stuice Gate (Metal)	307		0.3m x 0.4m	Unit	10.469	41.738			60 362
Stuice Gate (Metal)		Stuice Gate (Metal)				53.400			70.030
310 Stuice Gate (Metal) 0.8m x 0.5m Unit 19,777 88,824 15,485 124,086 124,086 0.0						33,100			17,739
401 Grading for Road without soil dressing m2 16 165 20 201 201 201 402 Subgrade Course m2 205 140 31 376 376 376 403 Gravel Pavement t=15cm m2 1,039 75 213 1,327 1,327 404 Farm Land Consolidation Bulldozer 16 ton ha 193,367 1,447,944 190,516 1,831,827 1,831,827 405 Timbering kuum3 1,226 1,076 203 2,505 2,505 406 Scaffolding kakeun2 1,170 0 74 1,244 1,244 407 Water Stop m 76 430 53 559 559 408 Expansion Joint m2 644 6,999 1,443 9,086 9,086 409 Sheet Pile Type II, L=6.0m sheet 4,905 0 321 5,226 5,226 410 Farm Land Preparation Bulldozer 15 ton ha 50,791 753,409 96,454 900,654 900,654 411 Wire Net for concrete lining m2 308 1,903 229 2,440 2,440 602 Soil Dressing for Road with soil dressing m2 19 224 28 271 604 Butterfly Valve D=600mm m 2,242 90,183 18,013 110,438 606 Pump Operation D100mm, 10m day 2,244 13,280 2,177 17,701			***				5,334		108,203
402 Subgrade Course m2 205 140 31 376 376 403 Gravel Pavement t=15cm m2 1,039 75 213 1,327 1,327 404 Farm Land Consolidation Bulldozer 16 ton ha 193,367 1,447,944 190,516 1,831,827 1,831,827 405 Timbering kuum3 1,226 1,076 203 2,505 2,505 406 Scaffolding kukem2 1,170 0 74 1,244 1,244 407 Water Stop m 76 430 53 559 559 408 Expansion Joint m2 644 6,999 1,443 9,086 9,086 409 Sheet Pile Type II, L=6 0m sheet 4,905 0 321 5,226 5,226 410 Farm Land Preparation Bulldozer 15 ton ha 50,791 753,409 96,454 900,654 900,654 411 Wire Net <	310	Storce Gate (Metal)	U.8M X U.5M	Unit	19,777	88,824	15,485	124,086	124,086
402 Subgrade Course m2 205 140 31 376 376 403 Gravel Pavement t=15cm m2 1,039 75 213 1,327 1,327 404 Farm Land Consolidation Bulldozer 16 ton ha 193,367 1,447,944 190,516 1,831,827 1,831,827 405 Timbering kuum3 1,226 1,076 203 2,505 2,505 406 Scaffolding kukem2 1,170 0 74 1,244 1,244 407 Water Stop m 76 430 53 559 559 408 Expansion Joint m2 644 6,999 1,443 9,086 9,086 409 Sheet Pile Type II, L=6 0m sheet 4,905 0 321 5,226 5,226 410 Farm Land Preparation Bulldozer 15 ton ha 50,791 753,409 96,454 900,654 900,654 411 Wire Net <	L.	1		<u> </u>	<u> </u>	<u> </u>			0
402 Subgrade Course m2 205 140 31 376 376 403 Gravel Pavement t=15cm m2 1,039 75 213 1,327 1,327 404 Farm Land Consolidation Bulldozer 16 ton ha 193,367 1,447,944 190,516 1,831,827 1,831,827 405 Timbering kuum3 1,226 1,076 203 2,505 2,505 406 Scaffolding kukem2 1,170 0 74 1,244 1,244 407 Water Stop m 76 430 53 559 559 408 Expansion Joint m2 644 6,999 1,443 9,086 9,086 409 Sheet Pile Type II, L=6 0m sheet 4,905 0 321 5,226 5,226 410 Farm Land Preparation Bulldozer 15 ton ha 50,791 753,409 96,454 900,654 900,654 411 Wire Net <	401	Grading for Road	without soil dressing	m2	16	165	20	201	201
403 Gravel Pavement t=15cm m2 1,039 75 213 1,327 1,327 404 Farm Land Consolidation Bulldozer 16 ton ha 193,367 1,447,944 190,516 1,831,827 1,831,827 405 Timbering kuum3 1,226 1,076 203 2,505 2,505 406 Scaffolding kakem2 1,170 0 74 1,244 1,244 407 Water Stop m 76 430 53 559 559 408 Expansion Joint m2 644 6,999 1,443 9,086 9,086 409 Sheet Pile Type II, L=60m sheet 4,905 0 321 5,226 5,226 410 Farm Land Preparation Bulldozer 15 ton ha 50,791 753,409 96,454 900,654 900,654 411 Wire Net for concrete lining m2 308 1,903 229 2,440 2,440 601		Subgrade Course							
404 Farm Land Consolidation Bulldozer 16 ton ha 193,367 1,447,944 190,516 1,831,827 1,831,827 405 Timbering kuum3 1,226 1,076 203 2,505 2,505 406 Scaffolding kakem2 1,170 0 74 1,244 1,244 407 Water Stop m 76 430 53 559 559 408 Expansion Joint m2 644 6,999 1,443 9,086 9,086 409 Sheet Pile Type II, L=60m sheet 4,905 0 321 5,226 5,226 410 Farm Land Preparation Bulldozer I5 ton ha 50,791 753,409 96,454 900,654 900,654 411 Wire Net for concrete lining m2 308 1,903 229 2,440 2,440 601 Clear reclamation ha 51,576 1,496,305 193,153 1,741,034 1,741,034 1,741,034 1,			t=15cm		1 010	75			
405 Timbering Ruum3 1,226 1,076 203 2,505 2,505 406 Scaffolding Rakein2 1,170 0 74 1,244 1,244 407 Water Stop m 76 430 53 559 559 559 408 Expansion Joint m2 644 6,999 1,443 9,086 9,086 409 Sheet Pile Type II, L=6.0m sheet 4,905 0 321 5,226 5,226 410 Farm Land Preparation Bulldozer 15 ton ha 50,791 753,409 96,454 900,654 900,654 411 Wire Net for concrete lining m2 308 1,903 229 2,440 2,440 601 Clear reclamation ha 51,576 1,496,305 193,153 1,741,034 602 Soil Dressing for Road m3 57 1,588 200 1,845 603 Grading for Road with soil dressing m2 19 224 28 271 604 Butterfly Valve D=600mm set 17,874 2,421,283 483,565 2,922,722 2,922,722 605 Steel Pige D=600mm m 2,242 90,183 18,013 110,438 606 Pump Operation D100mm, 10m day 2,244 13,280 2,177 17,701									
August A			Buildozer 16 ton						
Mater Stop Mat									
407 Water Stop m 76 430 53 559 559 408 Expansion Joint m2 644 6,999 1,443 9,086 9,086 409 Sheet Pile Type II, L=60m sheet 4,905 0 321 5,226 5,226 410 Farm Land Preparation Bulldozer I5 ton ha 50,791 753,409 96,454 900,654 900,654 411 Wire Net for concrete lining m2 308 1,903 229 2,440 2,440 601 Clear reclamation ha 51,576 1,496,305 193,153 1,741,034 602 Soil Dressing for Road m3 57 1,588 200 1,845 603 Grading for Road with soil dressing m2 19 224 28 271 604 Butterfly Valve D=600mm set 17,874 2,421,283 483,565 2,922,722 2,922,722 2,922,722 2,922,722 2,922,722 <	406	Scaffolding		kakein2	1,170	0	74	1,244	1,244
408 Expansion Joint m2 644 6,999 1,443 9,086 9,086 409 Sheet Pile Type II, L=6.0m sheet 4,905 0 321 5,226 5,226 410 Farm Land Preparation Bulldozer IS ton ha 50,791 753,409 96,454 900,654 900,654 411 Wire Net for concrete lining m2 308 1,903 229 2,440 2,440 601 Clear reclamation ha 51,576 1,496,305 193,153 1,741,034 602 Soil Dressing for Road m3 57 1,588 200 1,845 603 Grading for Road with soil dressing m2 19 224 28 271 604 Butterfly Valve D=600mm set 17,874 2,421,283 483,565 2,922,722 2,922,722 2,922,722 2,922,722 2,922,722 2,922,722 2,922,722 2,922,722 2,922,722 2,922,722 2,922,722 2,922,722 <	407		1	m	76	430			
409 Sheet Pile Type II, L=6 0m sheet 4,905 0 321 5,226 5,226 410 Farm Land Preparation Bulldozer I5 ton ha 50,791 753,409 96,454 900,654 900,654 411 Wire Net for concrete lining m2 308 1,903 229 2,440 2,440 601 Clear reclamation ha 51,576 1,496,305 193,153 1,741,034 602 Soil Dressing for Road m3 57 1,588 200 1,845 603 Grading for Road with soil dressing m2 19 224 28 271 604 Butterfly Valve D=600mm set 17,874 2,421,283 483,565 2,922,722 2,922,722 2,922,722 605 Steel Pige D=600mm m 2,242 90,183 18,013 110,338 606 Pump Operation D100mm, 10m day 2,244 13,280 2,177 17,701			 						
410 Farm Land Preparation Bulldozer 15 ton ha 50,791 753,409 96,454 900,654 900,654 411 Wire Net for concrete lining m2 308 1,903 229 2,440 2,440 601 Clear reclamation ha 51,576 1,496,305 193,153 1,741,034 602 Soil Dressing for Road m3 57 1,588 200 1,845 603 Grading for Road with soil dressing m2 19 224 28 271 604 Butterfly Valve D=600mm set 17,874 2,421,283 483,565 2,922,722 2,922,722 605 Steel Pipe D=600mm m 2,242 90,183 18,013 110,438 606 Pump Operation D100mm, 10m day 2,244 13,280 2,177 17,701			Type H C-40						
411 Wire Net for concrete lining m2 308 1,903 229 2,440 2,440 601 Clear reclamation ha 51,576 1,496,305 193,153 1,741,034 602 Soil Dressing for Road m3 57 1,588 200 1,845 603 Grading for Road with soil dressing m2 19 224 28 271 604 Butterfly Valve D-600mm set 17,874 2,421,283 483,565 2,922,722 2,922,722 605 Steel Pipe D-600mm m 2,242 90,183 18,013 110,438 606 Pump Operation D100mm, 10m day 2,244 13,280 2,177 17,701									
601 Clear reclamation ha 51,576 1,496,305 193,153 1,741,034 602 Soil Dressing for Road m3 57 1,588 200 1,845 603 Grading for Road with soil dressing m2 19 224 28 271 604 Butterfly Valve D-600mm set 17,874 2,421,283 483,565 2,922,722 2,922,722 605 Steel Pipe D-600mm m 2,242 90,183 18,013 110,438 606 Pump Operation D100mm, 10m day 2,244 13,280 2,177 17,701					<u></u>				
601 Clear reclamation ha \$1,576 1,496,305 193,153 1,741,034 602 Soil Dressing for Road m3 57 1,588 200 1,845 603 Grading for Road with soil dressing m2 19 224 28 271 604 Butterfly Valve D=600mm set 17,874 2,421,283 483,565 2,922,722 2,922,722 605 Steel Fige D=600mm m 2,242 90,183 18,013 110,438 606 Pump Operation D100mm, 10m day 2,244 13,280 2,177 17,701	411	Wire Net	for concrete lining	m2	308] 1,903	229	2,440	2,440
602 Soil Dressing for Road m3 57 1,588 200 1,845 603 Grading for Road with soil dressing m2 19 224 28 271 604 Butterfly Valve D=600mm set 17,874 2,421,283 483,565 2,922,722 2,922,722 605 Steel Pipe D=600mm m 2,242 90,183 18,013 110,438 606 Pump Operation D100mm, 10m day 2,244 13,280 2,177 17,701					1 11 1	1	11		1
602 Soil Dressing for Road m3 57 1,588 200 1,845 603 Grading for Road with soil dressing m2 19 224 28 271 604 Butterfly Valve D=600mm set 17,874 2,421,283 483,565 2,922,722 2,922,722 605 Steel Pipe D=600mm m 2,242 90,183 18,013 110,438 606 Pump Operation D100mm, 10m day 2,244 13,280 2,177 17,701	601	Clear reclamation		ha	\$1.576	1,496 305	103 153		: .
603 Grading for Road with soil dressing m2 19 224 28 271 604 Butterfly Valve D=600mm set 17,874 2,421,283 483,565 2,922,722 2,922,722 605 Steel Pipe D=600mm m 2,242 90,183 18,013 110,438 606 Pump Operation D100mm, 10m day 2,244 13,280 2,177 17,701			 						
604 Butterfly Valve D=600mm set 17,874 2,421,283 483,565 2,922,722 2,922,722 605 Steel Pige D=600mm m 2,242 90,183 18,013 110,438 606 Pump Operation D100mm, 10m day 2,244 13,280 2,177 17,701									
605 Steel Pipe D=600mm m 2,242 90,183 18,013 110,438 606 Pump Operation D100mm, 10m day 2,244 13,280 2,177 17,701				m2					
605 Steel Pipe D=600mm m 2,242 90,183 18,013 110,438 606 Pump Operation D100mm, 10m day 2,244 13,280 2,177 17,701		Butterfly Valve		set				2,922,722	2,922,722
606 Pump Operation D100mm, 10m day 2,244 13,280 2,177 17,701	605	Steel Pipe	D=600mm	m					
607 Installation and demorition of pump nos. 14,456 34,979 5,058 54,492									
1057 Instatistion and occurrence of posity 1005. 14,930 24,777 2,028 34,492		Installation and demorition of nume		+					
	007	instantation and octroration of pump	ļ	1105.	19,430	24,719	3,038	34,492	 -
	L		L	.1	.l	<u> </u>	<u> </u>	<u> </u>	<u> </u>

Source: HCA Study Team, San-Pedro, February 1999

Table J.2.1 Project Cost Alternative 1 : Pump Rehabilitation

١. **Investment Costs**

Unit: 1,000 F.CFA

				Citt. 1,000	or.care
Item	Local	Foreign	Non Taxed	Toyoo	Takal
	Currency	Currency	Amount	Taxes	Total
Irrigation and Drainage Facilities	754,388	1,618,334	2,372,722	300,888	2,673,610
Preparatory Work	165,919	41,480	207,399	25,693	233,092
Irrigation Facilities	314,724	621,548	936,272	119,505	1,055,777
Drainage Facilities	54,487	158,409	212,896	26,686	239,582
Farm Land Preparation	47,256	573,617	620,873	75,205	696,078
Farm Road Works	39,204	71,105	110,309	14,874	125,183
Flood Protection Dike	7,078	59,328	66,406	7,874	74,280
Pump Rehabilitation	52,654	74,580	127,234	12,784	140,018
Project Office	73,066	18,267	91,333	18,267	109,600
Detailed Design and Supervision	24,306	218,749	243,055	24,306	267,361
Consulting Services	24,306	218,749	243,055	24,306	267,361
Project Administration and	194,444	19 7 1 1	242.055	24.206	265.261
Supporting Services	124,444	48,611	243,055	24,306	267,361
Project Executing Unit	194,444	48,611	243,055	24,306	267,361
Sub-Total	973,138	1,885,694	2,858,832	349,500	3,208,332
Contingencies	97,314	188,569	285,883	34,950	320,833
l Grand-total	1,070,452	2,074,263	3,144,715	384,450	3,529,165

Operation and Maintenance Cost 11.

Unit: 1,000 F CEA/year

				Ome Good	r.crayce
Item	Local	Foreign	Non Taxed	Taxes	Total
	Currency	Currency	Amount		
Irrigation Facilities	4,721	9,324	14,045	1,792	15,837
Drainage Facilities	818	2,376	3,194	400	3,594
Road	588	1,067	1,655	223	1,878
Flood Protection Dike	106	890	996	118	1,114
P.S Operation	11,046	16,568	27,614	5,523	33,137
P.S Maintenance	2,965	26,680	29,645	2,964	32,609
II Total	20,244	56,905	77,149	11,020	88,169
			•	, ,	·

Replacement Cost (Life span 25 years) Unit: 1,000 F.CFA Ш

Item	Local	Foreign	Non Taxed	Т	т1
reciii	Currency	Currency	Amount	Taxes	Total
Drainage Gate, etc.	22,400	100,800	123,200	16,800	140,000
Pump	0	262,500	262,500	26,250	288,750
III Total	22,400	363,300	385,700	4,3050	428,750

Table J.2.2 Project Cost Alternative 2: Headworks at Cpt. Colonel

1. **Investment Costs**

Unit: 1,000 F.CFA

Itom	Local	Foreign	Non Taxed	Taxes	Total
Item	Currency	Currency	Amount		TOLOI
Irrigation and Drainage Facilities	1,448,157	3,088,279	4,536,436	543,011	5,079,447
Preparatory Work	323,098	80,775	403,873	47,704	451,577
Irrigation Facilities	314,724	621,548	936,272	119,505	1,055,777
Drainage Facilities	54,487	158,409	212,896	26,686	239,582
Farm Land Preparation	47,256	573,617	620,873	75,205	696,078
Farm Road Works	39,204	71,105	110,309	14,874	125,183
Flood Protection Dike	7,078	59,328	66,406	7,874	74,280
Grand Canal	303,261	430,146	733,407	83,050	816,457
Inspection Road Works	49,628	35,531	85,159	13,963	99,122
Headworks	233,855	1,039,553	1,273,408	135,883	1,409,291
Temporary Works					
Project Office	73,066	18,267	91,333	18,267	109,600
Compensation Fees	2,500	0	2,500	0	2,500
Detailed Design and Supervision	46,154	415,387	461,541	46,154	507,695
Consulting Services	46,154	415,387	461,541	46,154	507,695
Project Administration and Supporting Services	369,233	92,308	461,541	46,154	507,695
Project Executing Unit	369,233	92,308	461,541	46,154	507,695
Sub-Totai	1,863,544	3,595,974	5,459,518	635,319	6,094,837
Contingencies	186,354		545,951	63,531	609,482
l Grand-total	2,049,898	3,955,571	6,005,469	698,850	6,704,319

Operation and maintenance costs for irrigation and drainage facilities Unit: 1,000 F.CFA/year H

Item	Local	Foreign	Non Taxed	Taxes	Total
	Currency	Currency	Amount		: .
Irrigation Facilities	4,721	9,324	14,045	1,792	15,837
Drainage Facilities	318	2,376	3,194	400	3,594
Road	588	1,067	1,655	223	1,878
Flood Protection Dike	106	890	996	118	1,114
Grand Canal	4,549	6,452	11,001	1,246	12,247
Inspection Road	745	533	1,278	209	1,487
Head Works	2,252	12,770	15,022	1,618	16,640
II Total	13,779	33,412	47,191	5,606	52,797

III Replacement Cost (Headworks Facilities: Life span 10years, Gate: Life span 25 years) Unit: 1,000 F.CFA

		the second second	~		
Item	Local	Foreign	Non Taxed	Taxes	Total
	Currency	Currency	Amount		
Drainage Gate, etc.	22,400	100,800	123,200	16,800	140,000
Head Works Facilities	0	13,600	13,600	1,400	15,000
III Total	22,400	114,400	136,800	18,200	155,000

Table J.2.3 Project Cost Alternative 3 : Grand Canal

I. Investment Costs

Unit: 1,000 F.CFA

				Omt. 1,000	
Item	Local	Foreign	Non Taxed	Taxes	Total
ite	Currency	Currency	Amount	Taxes	TOLAI
Irrigation and Drainage Facilities	1,613,371	2,672,660	4,286,031	531,340	4,817,371
Preparatory Work	304,887	76,222	381,109	46,643	427,752
Irrigation Facilities	314,724	621,548	936,272	119,505	1,055,777
Drainage Facilities	54,487	158,409	212,896	26,686	239,582
Farm Land Preparation	47,256	573,617	620,873	75,205	696,078
Farm Road Works	39,204	71,105	110,309	14,874	125,183
Flood Protection Dike	7,078	59,328	66,406	7,874	74,280
Grand Canal	653,241	978,176	1,631,417	185,830	1,817,247
Inspection Road Works	103,667	39,432	143,099	25,013	168,112
Intake Facilities	10,691	42,702	53,393	7,272	60,665
Temporary Works	2,570	33,854	36,424	4,171	40,595
Project Office	73,066	18,267	91,333	18,267	109,600
Compensation Fees	2,500	0	2,500	0	2,500
Detailed Design and Supervision	43,772	393,943	437,715	43,772	481,487
Consulting Services	43,772	393,943	437,715	43,772	481,487
Project Administration and	350,172	87,543	437,715	43,772	481,487
Supporting Services					
Project Executing Unit	350,172		I	L	l
Sub-Total	2,007,315		5,161,461	618,884	5,780,345
Contingencies	200,732	315,415	516,147	61,888	578,035
I Grand-total	2,208,047	3,469,561	5,677,608	680,772	6,358,380

II. Operation and Maintenance Cost

Unit: 1,000 F.CFA/year

Item	Local	Foreign	Non Taxed	Taxes	Total
	Currency	Currency	Amount		
Irrigation Facilities	4,721	9,324	14,045	1,792	15,837
Drainage Facilities	818	2,376	3,194	400	3,594
Road	588	1,067	1,655	223	1,878
Flood Protection Dike	106	890	996	118	1,114
Grand Canal	9,799	14,673	24,472	2,787	27,259
Inspection Road	1,555	592	2,147	375	2,522
Intake Facilities	160	641	801	109	910
H Total	17,747	29,563	47,310	5,804	53,114

III Replacement Cost (Life span 25 years) Unit: 1,000 F.CFA

ltem	Local	Foreign	Non Taxed	Taxes	Total
	Currency	Currency	Amount		
Drainage Gate, etc.	22,400	100,800	123,200	16,800	140,000
Intake Gate, etc.	4,840	27,410	32,250	4,760	37,010
III Total	27,240	128,210	155,450	21,560	177,010

Table J.2.4 Project Cost for Total Irrigation Development Project

1. Investment Costs

Unit: 1,000 F.CFA

	Local	Foreign	Non Taxed		
Item	Currency	Currency	Amount	Taxes	Total
Irrigation and Drainage Facilities	1,990,983	3,955,952	5,946,935	724,410	6,671,345
Preparatory Work	425,680	106,420	532,100	64,195	596,295
Irrigation Facilities	314,724	621,548	936,272	119,505	1,055,777
Drainage Facilities	54,487	158,409	212,896	26,686	239,582
Farm Land Preparation	47,256	573,617	620,873	75,205	696,078
Farm Road Works	39,204	71,105	110,309	14,874	125,183
Flood Protection Dike	7,078	59,328	66,406	7,874	74,280
Grand Canal	653,241	978,176	1,631,417	185,830	1,817,247
Inspection Road Works	103,667	39,432	143,099	25,013	168,112
Intake Facilities	10,691	42,702	53,393	7,272	60,665
Temporary Works	2,570				40,595
Colonel Area	59,007			40,431	388,138
Fahe Area	197,812	964,394	1,162,206	135,087	1,297,293
Project Office	73,066	18,267	91,333	18,267	109,600
Compensation Fees	2,500		2,500	0	2,500
Detailed Design and Supervision	60,626	545,633	606,259	60,626	666,885
Consulting Services	60,626	545,633	606,259	60,626	666,885
Project Administration and Supporting Services	485,007	<u> </u>	<u> </u>		
Project Executing Unit	485,007	121,252	606,259	60,626	
Sub-Total	2,536,616	4,622,837	7,159,453	845,662	8,005,115
Contingencies	253,662	L	715,946	84,566	800,512
l Grand-total	2,790,278	5,085,121	7,875,399	930,228	8,805,627

II Operation and maintenance costs for irrigation and drainage facilities Unit: 1,000 F.CFA/year

Item	Local	Foreign	Non Taxed	Taxes	Total
	Currency	Currency	Amount		
Irrigation Facilities	4,721	9,324	14,045	1,792	15,837
Drainage Facilities	818	2,376	3,194	400	3,594
Road	588	1,067	1,655	223	1,878
Flood Protection Dike	106	890	996	118	1,114
Colonel Area	519	1,968	2,487	292	2,779
Fahe Area	1,746	6,592	8,338	979	9,317
Grand Canal	9,799	14,673	24,472	2,787	27,259
Inspection Road	1,555	592	2,147	375	2,522
Intake Facilities	160	641	801	109	910
II Total	20,012	38,123	58,135	7,075	65,210

III Replacement Cost
(Life span 10years, Gate: Life span 25 years)
Unit: 1,000 F.CFA

Item	Local	Foreign	Non Taxed	Taxes	Total
Rem			Amount		Total
Drainage Gate, etc.	22,400	100,800	123,200	16,800	140,000
Intake Gate, etc.	4,840	27,410	32,250	4,760	37,010
III Total	27,240	128,210	155,450	21,560	177,010

Breakdown of Project Cost for Iternative 1 (1/3) (M/P-R) (with tax) Table J.2.5

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IF.CFA=

244,144,000 2,190,900,000 4438,180,000 Remarks 632,372,000 423,405,000 1,055,777,000 0.20 Unit:F.CFA 115,362,000 12,768,000 239.582,000 696,078,000 100,236,000 125,183,000 74,280,000 233,092,000 Total 71.281,000 48,224,000 119,505,000 13,127,000 13,559,000 26,686,000 75.205.000 :4,874,000 7.874,000 270,000 25.693.000 1.892.000 11,712,000 ă 80.917.000 245,397,000 621,548,000 2,827,000 10,050,000 58,228,000 41.480,000 573,617,000 59,328,000 462,749,000 1,484,007,000 376,151,000 77,492,000 71,105,000 Foreign Currency Cost 24,743,000 29,744,000 54,487,000 314,724,000 8,049,000 165,919,000 184,940,000 47,256,000 30,296,000 39,204,000 7.078,000 Ситепсу Local Total Unit Price Foreign Currency Currency Local L.S. Cnit L.S. L.S. Ľ.S L.S. N. Š ĽS. Ċ, %01 Specification 10.4km 5.7km 3.4km 575ha 7.5km Irrigation and Drainage Facilities Sub-total (A-Construction Cost) Primary Drainage Canal Secondary Drainage Canal Sub-total Farm Land Preparation Description Flood Protection Dike Flood Protection Gate Irrigation Facilities Drainage Facilities Secondary Canal Sub-total Preparatory Work Secondary Road Primary Canal Primary Road A. Cite Agricole Area Road Works Pump Rehabilitaion Sub-total Š

Table J.2.5 Breakdown of Project Cost for Iternative 1 (2/3)

	:	Table	Table J.2.5		akdown	of Project	1500 F	Breakdown of Project Cost for itemative 1 (2/3)	(c/z) - a		Unit:F.CFA	
						Unit Price			Cost			
Ž	Description	Specification	Ş	Unit	Local	Foreign	Total	Local	Foreign	Tex	Tota!	Remarks
<u>.</u>			· /	,	Сиптепсу	Currency		Ситепсу	Currency			
A C	B. Grand Canal						ļ					
- - -	Grand Canal-A	8.1km	-	r.s.							5 6	
π 2		5.6km	-	L.S.							0	
		3.7km		L.S.							5 6	
B-4		0.8km	1	L.S.							>	
						1						Û x
	Sub-total	8.1km						0	0		>	
C. Ins	C. Inspection Road			1							3	
<u>ن</u>	Inspection Road-A	8.6km	1	L.S.							S	
S		5.6km	1	L.S.								
3	2	3.7km		L.S.							5	
<u>₹</u>		0.3km	-	L.S.							>	
										1	Č	0*
	Sub-total	8.6km						>			,	
								000.00	V00 003 VL	10 764 000	140 018 000	X28 004 000
<u>-</u>	Pump Rehabilitaion	incl. Elec. Line	-	L.S.				27.654.000	/4,580,000	12.704.000	000000000	CYK
D.2	Temporary Works	Intake Facilitic	-	L.S.							>	
L								000 000		O(N) 3C0 75C	000 810 023 6 000 330 336	
	Total (A,B,C,D Construction Cost)	÷						515,405,000	000.185,855.1	770,7420,000	20001110000	
			1					72 066 000	000 296 81	18 267 000	109,600,000	
프 -	Project Office		-					222,020,0	22.2			
								000 885 754	1 618 334 000	300 888 000	2673.610.000	¥534,722,000
	Total (Construction Cost)							000°00°	2000-00-00-00-00-00-00-00-00-00-00-00-00	2000000		
			1									
				١								

Table J.2.5 Breakdown of Project Cost for Iternative 1 (3/3)

		Remarks															¥705.833,000										
Unit:F.CFA		Total						2,673,610,000	267,361,000		267,361,000	0	3,208,332,000		320,833,000		3.529,165.000							-			
		Tex						300,888,000	24,306,000		24.306,000		349,500,000	3,208,332,000	34,950,000	320,833,000	384,450,000	%11		3,529,165,000						-	
	Cost	Foreign Currency				•		1,618,334,000	218,749,000		48,611,000		1.885.694,000		188,569,000		2,074,263,000	%65	%99	3,144,715,000 3,529,165,000	,						
		Local Currency						754,388,000	24,306,000		194,444,000		973.138.000		97,314,000		1,070,452,000	30%	34%	=∄+ î					 _		
		Total																									
•	Unit Price	Foreign Currency																									
		Local Currency																									
		Unit	L.S.	L.S.	L.S.	L,S,			L.S.	F.S.	L.S.	'S'7			L.S.												
		Q.Q			I	1			1	Ī	1	1			-												
		Specification							10%		10%	Sha			10%												
		Description	Post-Harvest Facilities	New Settlement Area	Village Water Supply	Village Public Facilities	:	Total of Construction Works	Consulting Service	Supporting Services	Administration Cost	Compensation of Tree Crop	Total (1-1 - 1-9)		Physical Contingency		Grand Total (Project Cost)				:						
		Ś	1-2	I-3	4-1	I-5			1 - 6	1-7	<u>*-</u>	6-1			1-10												

Breakdown of Project Cost for Alternative 2 (1/3) (with tax) Grand Canal 8.1km Table J.2.6

F.CFA=

X438,180,000 Remarks 100,236,000 0.20 Unit:F.CFA 1,055,777,000 696,078,000 244,144,000 2,190,900,000 451,577,000 115,362,000 12,768,000 74,280,000 423,405,000 124,220,000 239,582,000 12,179,000 Total 71.281,000 48,224,000 119,505,000 1,892,000 75,205,000 14,874,000 11.712,000 7,874,000 13,559,000 26,686,000 47,704,000 13,127,000 Ĩξ 10,050,000 1,484,007,000 59.328,000 376,151,000 621,548,000 77,492,000 573,617,000 2.827.000 71,105,000 80,775,000 245,397,000 80,917,000 158,409,000 Foreign Currency Ços: 184,940,000 129,784,000 8,049,000 859,000 30,296,000 24,743,000 29,744,000 462,749,000 47,256,000 7.078.000 325,098,000 314,724,000 54,487,000 39,204,000 Currency Local Local Total Foreign Unit Price Currency Currency Local Chit Ľ.S. L.S. L.S. ĽS: Ľ. rs. L.S. Ş. O %01 Specification 10.4km 15.7km 7.5km 3.4km 575ha Irrigation and Drainage Facilities Sub-total (A-Construction Cost) Primary Drainage Canal Secondary Drainage Canal Sub-total Farm Land Preparation Flood Protection Gate Description Flood Protection Dike Irrigation Facilities Drainage Facilities Primary Canal Secondary Canal Preparatory Work Secondary Road Road Works Primary Road Cite Agricole Area Sub-total Sub-total Headworks Š.

Table J.2.6 Breakdown of Project Cost for Alternative 2 (2/3)

											Cours CFA	
						Unit Price			Cost			
Š	Description	Specification	Q'Q	Unit	Local	Foreign	Total	Local	Foreign	Tax	Total	Remarks
					Currency	Currency		Currency	Currency			
B. Ç	B. Grand Canal											
B-1	Grand Canal-A	8.1km	_	L.S.				303,261,000	430,146,000	000'050'58	816,457,000	
B-2	Grand Canal-B1	5.6km		L.S.							0	
B.33	Grand Canal-B2	3.7km		L.S.							0	
B.4.	Grand Canal-C	0.8km		L.S.							0	
							-					
	Sub-total	8.1km						303,261,000	430,146,000	83.050.000	816,457,000	¥163,291,000
	:											
S. Lis	C. Inspection Road											
<u>;</u>	Inspection Road-A	8.6km	-	L.S.				49,628,000	35,531,000	13,963,000	99,122,000	
C-5	Inspection Road-B1	5.6km		L.S.							0	
ပိ	Inspection Road-B2	3.7km		L.S.		ļ	-	l			0	
ე 4.	Inspection Road-C	0.3km	-	L.S.							0	
	Sub-total	8.6km						49,628,000	35,531,000	13,963,000	99,122,000	¥19,824,000
D.1	Head Works	H=3m	-	L.S.		<u> </u>		233,855,000	1,039,553,000	135.883,000	1,409,291,000	¥281,858,000
D.2	Temporary, Works	Intake Facilitie	1	L.S.							0	0.4
	Total (A,B,C,D Construction Cost)	(1:						1,049,493,000 2,989,237,000	2,989,237,000	477,040,000	4,515,770,000	
F-1	Project Office		1	L.S.				73.066.000	18,267,000	18,267,000	109,600,000	
	Total (Construction Cost)							1,445,657,000 3,088,279,000	3,088,279,000	543,011,000	5.076,947,000	5.076,947,000 ¥1,015,389,000

Table J.2.6 Breakdown of Project Cost for Alternative 2 (3/3)

		Remarks		1																		¥1,340,864,000									
Unit.F.CFA		Total							5.076.947.000	1000 JOS 2003	207,695,000		000 307 803	207.695,000	000	2,500,000	000	6,094,837,000	~	609.482.000		6,704,319,000									
		[ax						- 1	543,011,000		46.154,000			46,154,000			6	635,319,000	6,094,837,000	63,531,000	609,482,000	000'058'869	10%		6,704,319,000		*				
(> > \ v \ v \	Cost	Forcign	Ситепсу						3.088.279.000		415.387.000			92,308,000				1,863,544,000 3,595,974,000		359.597,000		3,955,571,000		%99	6,005,469,000 6,704,319,000						
Breakdowii ol rioject Cost ioi Aiteinative z (3/3)		Local	Currency						1.445,657,000		46,154,000			369,233,000		2,500,000		1,863,544,000		186,354,000		2,049,898,000	31%	34%	=-J+^1						
1000		Total																													
0 r 10	Unit Price	L	Currency																												
מאסטאפו		Local	Currency																												
		Unit		L.S.	L.S.	L.S.	L.S.				L.S.	L.S.		L.S.		L.S.				L.S.									<u> </u>		
l able J.Z.o		Š		1	1	[1									1															
I ADIE		Specification									10%			10%		Sha				10%											
		Description		Post-Harvest Facilities	New Settlement Area	Village Water Supply	Village Public Facilities		Total of Construction Works		Consulting Service	Supporting Services		Administration Cost		Compensation of Tree Crop		Fotal (I-1 - 1-9)	11 11 11 11	Physical Contingency		Grand Total (Project Cost)			1					:	
		S.		1-2	1-3	4	1-5				9-1	1.7		8-1		6-1				1-10											

Breakdown of Project Area for Alternative 3 (1/3) (with tax) Grand Canal 18.2km Table J.2.7

F.CFA=

¥438,180,000 Remarks 632,372,000 124,220,000 0.20 Unit:F.CFA 427,752,000 1,055,777,000 115,362,000 000'8'00'969 12,179,000 100,236,000 125,183,000 244,144,000 2,190,900,000 12,758,000 74,280,000 Total 13,127,000 71,281,000 1,892,000 1,712,000 7,874,000 46,643,000 119,505,000 26,686,000 75,205,000 14,874,000 3 77,492,000 2,827,000 10,050,000 58,228,000 59.328.000 462,749,000 1,484,007,000 71,105,000 376,151,000 158,409,000 573,617,000 76,222,000 245,397,000 621,548,000 Foreign Currency Cost 314,724,000 24,743,000 29,744,000 54,487,000 8,049,000 304.887.000 184,940,000 47,256,000 30,296,000 7,078,000 39,204,000 Currency Local Total Foreign Unit Price Currency Currency | દુ Cont L.S. ĽS. ĽS. L.S. ĽŠ L.S. Ľ. ĽS. ĽS ĽS: Š 10% Specification 10.4km 3.4km 5.7km 7.5km 575ha Irrigation and Drainage Facilities Sub-total (A-Construction Cost) Primary Drainage Canal Secondary Drainage Canal Sub-total Description Farm Land Preparation Flood Protection Dike Flood Protection Gate Irrigation Facilities Drainage Facilities Primary Canal Secondary Canal Sub-total Preparatory Work Secondary Road Road Works Primary Road A. Cite Agricole Area Sub-total Grand Canal ź.

Table J.2.7 Breakdown of Project Area for Alternative 3 (2/3)

	-	Кетаткѕ						¥363,449,000								000 669 887		V12 122 000	412,155,000	10,117,000					₹962.974,000					
Unit:F.CFA		Total	816,457,000	661,067,000	270 675 000	69 048 000		1,817,247,000			99,122,000	40.333.000	000 805 90	000,000,0	7,147,000	1000 011 071	1001	000 377 07	00000000	40.595,000	444 420 000 4 277 519 000	2001/101/17	109 600,000		4.814.871.000				†	
		Tax	83.050.000	000787.79	28 146 000	000 278 9	2021	185,830,000			13 963 000	000 090 9	0.000 4000	7.40.000	345,000	000 210 30	000,510,52	000	7,272,000	4,1/1,000	000 000 775	700,000	000 292 81		531 340 000	2000				
ive 5 (4/5)	Cost	Foreign Currency	430 146 000	359 677 000	000 370 031	37 455 000	27,45,000	978 176,000			25 521 000	000 000 0	7.200,000	1,499,000	122,000	000	39,432,000		42,702,000	33,854,000	AAA 121 002 0	732,918,000 2,578,171,000	000 696 81	2001	2 672 660 000	200100077077				
Breakdown of Project Area for Alternative 3 (4/3)		Local	202 261 000	723 652 000	000,000,000	91,581,000	74./40.000	653 241 000			000 907 00	000,000,000	000,686,16	20.763.000	1,683,000		103,667,000		10,691,000	2,570,000	000000000000000000000000000000000000000	1,232,918,000	72 044 000	22,000,007	1 610 071 000	1,010,01				
ct Area		Total																												
ot Proje	Unit Price	Foreign	1	1	1	1	1			†	†																			
akdown		Local		1																										
8		Chit	;	,	L.S.	L.S.	L.S.					L.S.	L.S.	L.S.	L.S.				L.S.	L.S.				L.S.						
Table J.2.7		Š		^		-~	_								1															
Table		Specification		8.1km	5.6km	3.7km	0.8km		18.2km			8.6km	5.6km	3.7km	0.3km		18.2km			Intake Facilitie		(:			
		Description	B. Grand Canal			2			Sub-total		C. Inspection Road	Road-A	1	2	2		Sub-total		Intake Facilities	Temporary Works		Total (A.B.C.D Construction Cost)		Project Office		Total (Construction Cost)		-		
		Š.	B. Gra	B-1.	B-2	B-3	8-4				C. Insp	<u>်</u>	7. 0	3	7 4				D.1	D.2				E-1				L		

Table J.2.7 Breakdown of Project Area for Alternative 3 (3/3)

		Remarks															¥1,271,676,000								
UniteF.CFA		Total					 4.814.871.000		481,487,000		481,487,000	2,500,000	 5,780,345,000		578,035,000		6.358,380,000						 		
		Tax					531,340,000		43,772,000		43,772,000		618,884,000	5.780,345,000	61,888,000	578,035,000	680,772,000	11%		5.677,608,000 6.358,380,000					
(^;^\ ^ DAII	Cost	Foreign Currency					1,610,871,000 2,672,660,000	- 1	393,943,000		87,543,000		3,154,146,000		315,415,000		3,469,561,000			5,677,608,000					
breakdown of Project Area for Alternative 5 (5/5)		Local					1,610,871,000		43,772,000		350,172,000	2,500,000	2,007,315,000		200,732,000		2,208,047,000	35%	39%	L +F=					
だ と に と に に に に に に に に に に に に に に に に		Total																							
5 5 5	Unit Price	Foreign Currency																							
akdowii		Local																							
		Chit	L.S.	r.S.	L.S.	r.s.			L.S.	L.S.	'S'7	L.S.			L.S.								}		
able J.Z./		Š		_	1	1			1	1	Į	-													
apie		Specification							%01		10%	5ha			10%										
		Description	Post-Harvest Facilities	New Settlement Area	Village Water Supply	Village Public Facilities	Total of Construction Works		Consulting Service	 Supporting Services	Administration Cost	Compensation of Tree Crop	Total (1-1 - 1-9)		Physical Contingency		Grand Total (Project Cost)								
		ŏ Z	<u>۲-</u>	<u></u>	4	<u>.</u> -			9-1	1-7	20	6-1			01-										

Breakdown of Total Irrigation Development in the Study Area (1/5)
(with tax) Grand Canal 18.2km Table J.2.8

		Remarks																							¥458,180,000					
Unit:F.CFA	., .,	Total			596.295.0001			632,372,000	423,405,000	1,055,777,000	+		115,362,000	124,220,000	239,582,000	696,078,000		12,768,000	12,179,000	100,236,000	125,183,000		74,280,000		2,190,900,000					
		Tax			64,195,000			71,281,000	48,224,000	119,505,000			13,127,000	13,559,000	26,686,000	75,205,000		1.892.000	1.270.000	11,712,000	14.874,000		7.874,000		244,144,000	{-			1	
	Cost	Foreign	Currency		106,420,000			376,151,000	245,397,000	621,548,000			77.492.000	80,917,000	158,409,000	573.617.000		2,827,000	10,050,000	58,228,000	71,105,000		59.328,000		462,749,000 1,484,007,000					
		Local	Currency		425,680,000			184,940,000	129,784,000	314,724,000			24,743,000	29,744,000	54,487,000	47,256,000		8,049,000	859,000	30,296,000	39,204,000		7.078.000		462,749,000					
		Total																												
	Unit Price	Foreign	Currency																											
		Local	Currency																											
		- Chit			L.S.			L.S.	L.S.			-	L.S.	L.S.		 L.S.		P.S.	r.s.	r.s.			L.S.							
		Ž,	,		1			-	1				1	1		1		1	1	1			-							
		Specification			10%			5.7km	7.5km				3.4km	10.4km		575ha														
		Description		Irrigation and Drainage Facilities	Preparatory Work	A. Cite Agricole Area	Irrigation Facilities	Primary-Canal	I.			Drainage Facilities	Janal	Secondary Drainage Canal	Sub-total	Farm Land Preparation	Road Works	Primary Road	Secondary Road	Flood Protection Gate	Sub-total	The second secon	Flood Protection Dike	and the second second second	Sub-total (A-Construction Cost)		11 To 12 To			
		Š		Ξ		A. Cite	ci	2.1	2.2			<u>ښ</u>	3.1	3.2		4	s,	5.1	5.2	5.3			.9							

Breakdown of Total Irrigation Development in the Study Area (2/5) Table J.2.8

		Remarks							VYX 240 (VVV)	4505,444X,VVV						¥35.622.000	¥12,133,000	¥8,119,000									
Unit:F.CFA		Total			816,457,000	661,067,000	270,675,000	69,048,000	000 170 100	000,747,718,1	000 501 00	29,144,000	40,533,000	26,508,000	2,149,000	168,112,000	60,665,000	40,595,000		101,260,000							
ca (4/0)		Tax		4	83,050,000	67,787,000	28,146,000	6.847.000		185,850,000	000 000	15.905.000	6,460,000	4.246,000	344,000	25,013,000	7,272,000	4,171,000		11,443,000							
own of Total Imgation Development in the Study Area (2/3)	Cost	Foreign	Currency		430,146,000	359,627,000	150,948,000	37.455.000	000 221 020	978,176,000	000	000.155.55	2,280,000	1,499,000	122,000	39,432,000	42,702,000	33,854,000		76,556,000							
		Local	Currency		303,261,000	233,653,000	91.581.000	24,746,000	000	653,241,000	000	49.628.000	31,593,000	20,763,000	1.683.000	103,667,000	10,691,000	2.570,000		13,261,000							
ו עפעמ אמיי		Total													į							•					
ırıganor	Unit Price	Foreign	Currency																								
7 - Otal		Local	Currency	7.																							
Kdown		Chit			L.S.	L.S.	L.S.	L.S.				L.S.	L.S.	L.S.	L.S.		L.S.	L.S.					 				
Бгеако		Š						1				1							_	_							
lable J.Z.8		Specification			8.1km	5.6km	3.7km	0.8km		18.2km		8.6km	5.6km	3.7km	0.3km	18.2km		Intake Facilitie									
		Description		B. Grand Canal	Grand Canal-A	Grand Canal-B1	Grand Canal-B2	Grand Canal-C		Sub-total	C. Inspection Road	Inspection Road-A	Inspection Road-B1	Inspection Road-B2	Inspection Road-C	Sub-total	Intake Facilities	Temporary Works		Sub-total							
		ģ		B. Gran	₩-1.	2; 8 2;	E3.	B.4.			C. Insp	<u>:</u>	3	3	? 4		<u></u>	D.2									

Table J.2.8 Breakdown of Total Irrigation Development in the Study Area (3/5)

					Unit Price			Cost			
Description	Specification	ý,ŏ	Cair	Local	Foreign	Total	Local	Foreign	Tax	Total	Remarks
				Currency	Currency		Currency	Currency			
			-								
	1.8km	-	L.S.				29,448,000	28,090,000	6,255,000	63.793.000	
	1.8km	Π	r.S.				678,000	1,112,000	182,000	1.972.000	
8	5,4km	-	L.S.				3,538,000	1.102.000	378,000	5,018,000	
	Gate	-	L.S.				512,000	1,929,000	378,000	2,819,000	
							34,176,000	32,233,000	7,193,000	73,602,000	
Primary Drainage Canal 2	2.3km	1	L.S.				1.836.000	51.435.000	6,507,000	59,778,000	į
	3.6km	=	L.S.				1,469,000	41,148,000	5,206,000	47.823.000	
Sub-total							3.305,000	92.583,000	11,713,000	107,601,000	
	90ha		L.S.				20.884.000	156,378,000	20,576,000	197.838.000	
Road Works											
	4.5km		L.S.				518,000	6,053,000	765,000	7,336,000	:
	1.8km	<u> </u>	L.S.				124,000	1.453.000	184,000	1.761.000	
							642,000	7,506,000	949,000	9.097.000	
Sub-total (E-Construction Cost)							59,007,000	288,700,000	40.431.000	588,158,000	
6-											

Breakdown of Total Irrigation Development in the Study Area (4/5) Table J.2.8

		Remarks																	-						¥1,333,769,000			
Unit:F.CFA		Total				212,698,000	10.025.000	16,729,000	9,397,000	248,849,000		199,260,000	159,408,000	358,668,000	659,458,000		24,450,000	5.868,000	30,318,000		1,297,293,000	5,962,950,000	-,-	109,600,000	6,668,845,000			
		Tax				20.		1,259,000	1,261,000	24,297,000		21,690,000	17.352,000	39,042,000	68.586.000		2.550,000	612,000	3,162,000		135,087,000	641,948,000		18,267,000	724,410,000			
•	Cost	Foreign	Currency			93,659,000	5,743,000	3.675,000	6.430,000	109,507,000		171,450,000	137,160,000	308,610,000	521,260,000		20,175,000	4,842,000	25,017,000		964,394,000	3.831,265,000		18.267,000	3,955,952,000			
		Local	Currency			98,182,000	3,362,000	11.795.000	1,706,000	115,045,000		6,120,000	4,896,000	11,016,000	69.612,000		1,725,000	414,000	2,139,000		197,812,000	1,489,737,000		73,066,000	1,988,483,000 3,955,952,000			
		Total																		1								
•	Unit Price	Foreign	Currency																									
		Local	Currency																									
		Unit				.s.	L.S.	.S.1	'S'7			r.S.	L.S.		L.S.		r.s.	L.S.		-				L.S.				
		Ş; O				Ī	_		1			1	1		_		Į	Ī						1				
		Specification	·			6.0km	6.0km	18.0km	Gate			7.5km	12.0km		300ha		15.0km	6.0km										
		Description		Area	Irrigation Facilities	Primary Canal	Secondary Canal	Tertiary Canal	Other Facilities	[Sub-total	Drainage Facilities	Primary Drainage Canal	Secondary Drainage Canal	Sub-total	Farm Land Consolidation	Road Works	Primary Road	Secondary Road	Sub-total		Sub-total (F-Construction Cost)	Total (A-F Construction Cost)		Project Office	Total (Construction Cost)			
		No.		F. Fahe Area	F-1.						F-2.				F-3.	F-4.								G-1.				

Breakdown of Total Irrigation Development in the Study Area (5/5) Table J.2.8

		Remarks																			¥1,761,125,000								
Unit:F.CFA	-	Total					000 508 877 7		666 8XS 000				666.885.000		2.500,000		8,005,115,000		800,512,000		8,805,627,000						~ -	-	
() () S		Tax						00001444	000 424 090				60,626,000			L	845,662,000	30	84,566,000	800,512,000	930,228,000	ll		7.875.399,000 8.805,627,000					
Dreakgowil of Joral inigation Development in the others	Cost	Foreign Currency						2,955,952,000	675 633 000				121,252,000				4,622,837,000		462,284,000		5,085,121,000	%85	E						
		Local					000 000 1100 1	1.988,485,000	000 707 07	2000			485,007,000		2,500,000		2,536,616,000		253.662.000		2,790,278,000	32%	35%	L +F=					
))		Total					į																						
i gario	Unit Price	Foreign Currency																											
י ייטוסיי		Local																											
3000		Cair.	L.S.	L.S.	L.S.	L.S.				L'S	9		9		L.S.		Ì		LS										
0 0 g		٥,۵	-	1	ı	ı				-	-	-	-		-														
able 5.2.0		Specification								10%			7001		Sha			ŀ	10%										
<u> </u>		Description	Post-Harvest Facilities	New Settlement Area	Village Water Supply	Village Public Facilities		Total of Construction Works		Consulting Service		Supporting Services	A deministration of the second	Mainistration Cost	Commencation of Tree Crop	do con to monate di constanti	VI 1 1 17 17 17 17 17 17 17 17 17 17 17 17	10tal (1-1 - 1-3)	Dhysical Contingency	Constant of the state of the st	Grand Total (Project Cost)	(months) mot prints							
		Š.	1.2	<u></u>	4-1	I-5				9 <u>-</u> 1		2	3	Q-1	0				01-1				G .						

Table J.2.9 Project Cost for Fahé Irrigaion Development Scheme

١. **Investment Costs**

Unit: 1,000 F.CFA

				011111. 1,000	
Item	Local	Foreign	Non Taxed	Taxes	Total
itelii	Currency	Currency	Amount	14762	10(a)
Irrigation and Drainage Facilities	415,741	1,122,462	1,538,203	190,622	1,728,825
Preparatory Work	102,673	25,668	128,341	18,634	146,975
Grand Canal	24,746	37,455	62,201	6,847	69,048
Inspection Road Works	1,683	122	1,805	344	2,149
Intake Facilities	10,691	42,702	53,393	7,272	60,665
Temporary Works	2,570	33,854	36,424	4,171	40,595
Fahe Area	197,812	964,394	1,162,206	135,087	1,297,293
Project Office	73,066	18,267	91,333	18,267	109,600
Compensation Fees	2,500	0	2,500	0	2,500
Detailed Design and Supervision	15,694	141,245	156,939	15,694	172,633
Consulting Services	15,694	141,245	156,939	15,694	172,633
Project Administration and Supporting Services	125,551	31,388	156,939	15,694	172,633
Project Executing Unit	125,551	31,388	156,939	15,694	172,633
Sub-Total	556,986	1,295,095	1,852,081	222,010	2,074,091
Contingencies	55,699	129,509	185,208	22,201	207,409
Grand-total	612,685	1,424,604	2,037,289	244,211	2,281,500

Operation and maintenance costs for irrigation and drainage facilities Unit: 1,000 F.CFA/year H

Item	Local	Foreign	Non Taxed	Taxes	Total
	Currency	Currency	Amount		
Fahe Area	1,746	6,592	8,338	979	9,317
Grand Canal	371	562	933	103	1,036
Inspection Road	25	2	27	5	32
Intake Facilities	160	641	801	109	910
II-1 Total	2,302	7,797	10,099	1,196	11,295

III Replacement Cost (Life span 10years, Gate: Life span 25 years) Unit: 1,000 F.CFA

Item	Local	Foreign	Non Taxed	Taxes	Total
	Currency	Currency	Amount		
Intake Gate, etc.	4,840	27,410	32,250	4,760	37,010
III Total	4,840	27,410	32,250	4,760	37,010

Table J.2.10 Project Cost of Cpt. Colonel Area

I. **Investment Costs**

Unit: 1,000 F.CFA

	Local	Foreign	Non Taxed	-	
Item	Currency	Currency	Amount	Taxes	Total
Irrigation and Drainage Facilities	663,331	963,324	1,626,655	200,541	1,827,196
Preparatory Work	111,478	27,870	139,348	16,570	155,918
Grand Canal	349,980	548,030	898,010	102,780	1,000,790
Inspection Road Works	54,039	3,901	57,940	11,050	68,990
Intake Facilities	10,691	42,702	53,393	7,272	60,665
Temporary Works	2,570	33,854	36,424	4,171	40,595
Colonel Area	59,007	288,700	347,707	40,431	388,138
Project Office	73,066	18,267	91,333	18,267	109,600
Compensation Fees	2,500	0	2,500	0	2,500
Detailed Design and Supervision	16,611	149,498	166,109	16,611	182,720
Consulting Services	16,611	149,498	166,109	16,611	182,720
Project Administration and Supporting Services	132,887	33,222	166,109	16,611	182,720
Project Executing Unit	132,887	33,222	166,109	16,611	182,720
Sub-Total	812,829	1,146,044	1,958,873	233,763	2,192,636
Contingencies	81,283	114,604	195,887	23,376	219,263
I Grand-total	894,112	1,260,648	2,154,760	257,139	2,411,899

Operation and Maintenance Cost H.

Unit: 1,000 F.CFA/year

Item	Local	Foreign	Non Taxed	Taxes	Total
	Currency	Currency	Amount		
Colonel Area	519	1,968	2,487	292	2,779
Grand Canal	5,250	8,220	13,470	1,542	15,012
Inspection Road	810	59	869	166	1,035
Intake Facilities	160	641	801	109	910
II-1 Total	6,739	10,888	17,627	2,109	19,736

Replacement Cost (Life span 25 years) Unit: 1,000 F.CFA Ш

Item	Local	Foreign	Non Taxed	Taxes	Total
	Currency	Currency	Amount		•
Intake Gate, etc.	4,840	27,410	32,250	4,760	37,010
III Total	4,840	27,410	32,250	4,760	37,010

Table J.3.1 Irrigation and Drainage Facilities for Priority Project Area

 Irrigation Ca 	Irrigation Canal and Structure	ပ္												
					Primary Cana	Canal				Secondary Cana	Canal			
	_				West	East	THE RESERVE THE PROPERTY OF THE PERSON NAMED IN COLUMN 1 IS NOT TH	West	Central	East	South	North	***************************************	
			Grand	Primary		Primary		Secondary S	secondary S	Š	condary	Secondary		Grand
Description	Specification	Cnit	Canal	Canal	Canal	Canal	Total	Canal	Canal	Canal	Canal	Canal	lota 2	i otai
Canal Length		E	18,200	1,400	2,800	1,500	5,700	1,700	2,000	1,300	1,400	001.	000.	51.400
Intake Works		sou	1.0		0		C C	i i		000		1,00	7	21 700
Canal Lining	Concrete	٤	18,200	1,400	2,800	1,500	.√00 .√00	00/.1	7,000	1,500	204,1	701.1	3	201
Related Structure	U -			···		(ų	ć	,	Ç.	٧	7	0 07
Diversion		Soc	0.0	0.7	0.01	0.0	0.0	0 0) c	0 ¢) c) (7 6) () () (
Spilway		nos	3.0	0.0	0.4	0.7	0.	7 .	2	 	>) -	>	> <
Cross Drain	Box Culvert	sou	13.0	1.0	3.0	1	0.4						₹	> <
Cross Drain	Pipe Culvert	sou	16.0		3.0	3.0	0.9	1.0	7.0	7.0	>	0.))	0.8 0.8
Siphon		1105	9.5											
2. Dramage Car	Drainage Canal and Structure	e)												
					Seco	Secondary Drainage	age							
			Primary	West	Central	East	North		Grand					
		1	Drainage Oran	Secondary	Secondary		Secondary	Let C	Total					
Cescription	Specification		, 400		7001	7 000	1 150	05001	13.650					
Canal Length		E	3	7.000	1,700		2	007.01	2000					
Kelated Structure								,	•					
Cross Drain	Sluce Gate	nos	1.0			•	0.	5 6) (
Cross Drain	Box Culvert	nos		2.0	2.0	3.0		7:0	7.0					
3. Project Road								4. Fап	Farm Land Reclamation	clamation	ļ			
													Chit	
Ç.			Primary	Secondary Inspection	Inspection	24.0	T. 40.1	C	Decorimina	Specifi-	.t.	1 Block Q	Quantity (1 0 ha)	Total (574 \$ ba)
Describuon	Specification	3	NOGE		Road	Cincia	1000	ı.					-	2 4 6 2
Road Length		٤	22,500	21,100	3,100		46,700		TOU!		EL .	24.0	? .	0.4/0
Flood Control Dike	ike	nos				4.0	4.0	•		Wth Road	E	840.4	55.0	20,117
Related Structure	6)	nos						_	rrigation Ditch		E	1,259.2	9.10	29,663
Cross Drain		nos	2.0	2.0			4.0		Drainage Ditch		٤	1.394.1	58.1	55,571
Cross Drain	Flap Gate	nos	0.1			0.4	8.0	٠ ١	Fertiary Drainage		Ε	840.4	35.0	20,117

Table J.3.2 Project Costs

1. Investment Costs

(Unit: 1,000 F.CFA)

[T		·		0001.0111
	Local	Foreign	Non Taxed		
Item	Currency	Currency	Amount	Taxes	Total
I-1 Irrigation and Drainage Facilities	1,613,371	2,672,660	4,286,031	531,340	4,817,371
Preparatory Works	301,887	76,222	381,109	46,643	427,752
Irrigation Facilities	314,724	621,548		119,505	1,055,777
Drainage Facilities	54,487	158,409		26,686	239,582
Farm Land Preparation	47,256	573,617		75,205	696,078
Farm Road Works	39,204			14,874	125,183
Flood Protection Dike	7,078	59,328		7,874	74,280
Grand Canal	653,241	978,176		185,830	1,817,247
Inspection Roads	103,667			25,013	168,112
Intake Facilities	10,691			7,272	60,665
Temporary Works	2,570			4,171	40,595
Project Office	73,066			18,267	109,600
Compensation Fees	2,500	0		0	2,500
I-2 Post-harvest Facilities	59,076			15,208	158,717
Store House	45,818			11,455	126,000
Dry Yard	11,622			3,344	28,217
Office	1,636			409	4,500
I-3 Land Development for New	25 5 43				
Settlement Area	35,742	16,002	51,744	8,820	60,654
Land Grading	294	7,938	8,232	1,008	9,240
Road Works	35,448			7,812	51,324
1-4 Village Water Supply	7,157	15,598		2,420	25,175
Existing Housing Area	1,973			980	10,775
New Housing Area	5,184			1,440	14,400
I-5 Village Public Facilities	22,000	33,000		5,500	60,500
Primary School	20,909			5,227	57,500
Dispensary	1,091			273	3,000
I-6 Detailed Design and Supervision	46,544			46,544	511,983
Consulting Services	46,544			46,544	511,983
1-7 Project Administration and	272.700				
Supporting Services	373,759	95,370	469,129	47,234	516,363
Project Executing Unit	372,641	93,160	465,801	46,580	512,381
Extension Services	118			12	130
Training	1,000	_		642	3,852
Total	2,157,649	<u> </u>	-	657,066	6,150,673
Physical contingencies	215,765			65,706	615,067
Grand Total	2,373,414			722,772	6,765,740
L	1 -, -, -, -, -, -, -, -, -, -, -, -, -,	1 2,007,007	ODECATOR		0,703,740

II. Annual Operation and Maintenance Costs for Irrigation and Drainage Facilities

(Unit: 1,000 F.CFA

			(vinc 1,00	WF.CFA)
Local Currency	Foreign Currency	Non Taxed Amount	Taxes	Total
11,831	19,707	31,538	3,871	35,408
32,612	850	33,462	1.631	35,092
12,600	0	12,600	630	13,230
8,640	0	8,640	432	9,072
5,000	0	5,000	250	5,250
4,248	850	5,098	212	5,310
2,124	0	2,124	106	2,230
44,443	20,557	65,000	5,501	70,501
	11,831 32,612 12,600 8,640 5,000 4,248 2,124	Currency Currency 11,831 19,707 32,612 850 12,600 0 8,640 0 5,000 0 4,248 850 2,124 0	Currency Currency Amount 11,831 19,707 31,538 32,612 850 33,462 12,600 0 12,600 8,640 0 8,640 5,000 0 5,000 4,248 850 5,098 2,124 0 2,124	Local Currency Foreign Currency Non Taxed Amount Taxes 11,831 19,707 31,538 3,871 32,612 850 33,462 1,631 12,600 0 12,600 630 8,640 0 8,640 432 5,000 0 5,000 250 4,248 850 5,098 212 2,124 0 2,124 106

Breakdown of Rehabilitation of San-Pédro Paddy Development Project (1/3) Table J.3.3

		Remarks																						¥438,180,000				
0.20 Unit:F.CFA		Total		000000000000000000000000000000000000000	427.752.000			652,572,000	423,405,000	1,055,777,000		115,362,000	124,220,000	239,582,000	:	696.078.000		12,768,000	12,179,000	100.236.000	125,183,000		74,280,000	2,190,900,000				
F.CFA=		Tex		0000	46,643,000			71.281.000	48,224,000	119,505,000		13,127,000	13,559,000	26,686,000		75.205.000		1,892,000	1.270,000	11,712,000	14.874,000		7.874,000	244.144,000				
	Cost	Foreign	Currency		76,222,000			376,151,000	245,397,000	621.548.000		77,492,000	80,917,000	158,409,000		573,617,000		2.827.000	10,050,000	58,228,000	71,105,000		59,328,000	1,484,007,000			,	
2		Local	Сипсису		304,887,000			184,940,000	129,784,000	314,724,000		24,743,000	29,744,000	54,487,000		47,256,000		8.049,000	859,000	30,296,000	39,204,000		7,078,000	462,749,000				
; }		Total																										
5	Unit Price	Foreign	Currency																									
		Local	Currency																									
		Chit			L.S.			L.S.	L.S.			L.S.	r.s.			L.S.		L.S.	L.S.	L.S.			L.S.					
o de		Q'ty			7			-	1			1	ı			1		{		1								
		Specification			10%			5.7km	7.5km			3.4km	10.4km			575ha												
able 5.5.5		Description		Irrigation and Drainage Facilities	Preparatory Work	A. Cite Agricole Area	Irrigation Facilities	Primary Canal		Sub-total	Dramage Facilities	Primary Drainage Canal	Secondary Drainage Canal	Sub-total		Farm Land Preparation	Road Works	Primary Road	Secondary Road	Flood Protection Gate	Sub-total	444	Flood Protection Dike	Sub-total (A-Construction Cost)				
		s S		1-1	٠,	A. Cite	2.	2.1	2.2		3.	3.1	3.2			4.	5.	1.5	5.2	5.3			6.					

Breakdown of Rehabilitation of San-Pédro Paddy Development Project (2/3) Table J.3.3

						Unit Price			Cost			ć
Ž	Description	Specification	Č.	Cnit	Local	Foreign	Total	Local	Foreign	Tax	go	Kemarks
			,		Currency	Currency		Currency	Currency			
R Gro	R Grand Canal									000000000000000000000000000000000000000	000 454 000	
	Grand Canal-A	8.1km	=	L.S.				303,261,000	430,146,000	85.050,000	816.437.000	
	To Joseph Charles	S 6km	†-	٠. -				233,653,000	359,627,000	67,787,000	661,067,000	
7 0	Grand Caran-51	3 71-m	†	3				91,581,000	150,948,000	28,146,000	270,675,000	
B-5.	Grand Canal-62	5.7AII	†					24,746,000	37,455,000	6,847,000	69,048,000	
B-4	Grand Canal-C	U.SKIII	1	.c.2								
			1			1		653 241 000	000 921 826	185.830.000	1.817,247,000	¥363,449,000;
	Sub-total	18.2km						20011-000				
						+						
C. Ins	C. Inspection Road							000 000	25.501.000	000 270 21	000 122 000	
 ပ	Inspection Road-A	8.6km		L.S.				49,628,000	000,150,00	200,000,0	AO 222 000	
[3	Inspection Road-B1	5.6km		L.S.				31,595,000	2,280,000	0.400.000	200 000 000	
	Josephion Road-B2	3.7km	F	L.S.				20,763,000	1,499,000	4,246,000	26,508,000	
3 3	Inspection Road-C	0.3km	-	L.S.				1.683,000	122,000	344,000	2,149,000	
	a-may manadeur											
	S.18-1019	18.2km						103,667,000	39,432,000	25,013,000	168,112,000	¥33,622,000
	1000											
] :	7		†	2				10,691,000	42,702,000	7,272,000	60,665,000	¥12,133,000
	intake Facilities	late to Donilitie	Ŧ	\ -				2.570,000	33.854.000	4,171,000	40,595,000	¥8,119,000
27.2	Temporary works	ווומשב ב מכוווור	1	1								
			†					1,232,918,000	2.578,171,000	466,430,000	4.277.519,000	
	Total (A.B.C.D Collett dealer)		†									
<u>고</u>	Project Office		F	L.S.				73,066,000	18.267.000	18,267,000	109,600,000	
								000	000 000 000	000 000 123	000 128 718 9	000 570 CAON
	Total (Construction Cost)							1,610,871,000	1,610,871,000 2,672,660,000	351,340,000	000,170,410,4	47024117000
L												
]							

Table J.3.3 Breakdown of Rehabilitation of San-Pédro Paddy Development Project (3/3)

	Remarks		000	000	000	000	000	000	000	20	00	00		100		6,765,740,000 #1,353,148,000						 		
	Total		158,717,000	60,564,000	25.175,000	60.500.000	5,119,827,000	511.983.000	3,982,000	512,381,000	2,500,000	6,150,673,000		615.067.000										
	Tax		15,208,000	8.820,000	2,420,000	5,500,000	563,288,000	46.544,000	654,000	46.580,000		657,066,000	6,150,673,000	65,706,000	615,067,000	722,772,000	11%		6,765,740,000					
Cost	Foreign	Currency	84,433,000	16,002,000	15,598,000	33,000,000	2,821,693,000	418,895,000	2,210,000	93,160,000		3,335,958,000		333,596,000		3.669,554,000	24%	61%	6.042,968,000 6,765,740,000					
	Local	Currency	59,076,000	35,742,000	7.157,000	22,000,000	1,734,846,000 2,821,693,000	46,544,000	1,118,000	372,641,000	2,500,000	2,157,649,000 3,335,958,000		215,765,000		2,373,414,000 3,669,554,000	35%	36%	L +F=					
	Total																							İ
Unit Price	Foreign	Currency																						
	Local	Currency																						
	Chit		L.S.	L.S.	L.S.	L.S.		L.S.	L.S.	L.S.	r.s.			L.S.		ļ								
	Ć.				_			6 1	1	1	1			-										
	Specification							 10%		10%	Sha			10%										
	Description	•	Post-Harvest Facilities	New Settlement Area	Village Water Supply	Village Public Facilities	Total of Construction Works	Consulting Service	Supporting Services	Administration Cost	Compensation of Tree Crop	Total (1-1 - 1-9)		Physical Contingency		Grand Total (Project Cost)								
	ò Z		1-2	<u>:</u>	4.	5-1		φ <u>-</u>	1-7	S-1	6-1			1-10										1

Table J.3.4 Bill of Quantity of the Project (1/8)

	lities and Valve I Specification	Calculation	Q'ty	Unit	Remarks
ntake Facitilitie			1		- Comara
arth Work	·		 		
excavation	Backhoe	(17.4+11.4)/2*3.0*22.0	950.4		<u> </u>
Acavamon		(9.4+4)/2*2.7*22.0	398.0		
		(22.6+12.6)/2*5.0*10.0	880.0		
		(10.6+4.0)/2*3.3*10.0	240.9		
		Total	2,469.3	m3	
- 		10.001	2,407.5	(11)	
Backfill	1.abor	1.7*3.1*(9+18+4)	-163.4		
Jackiiii	1.0001	Total	2,305.9	m3	+
		l	2,503.7	1113	
3ox Culvert	2.5x1.0		+		·
Concrete	ck=210kg/cm2	(1.6*3.1-1.0*2.5)*(9+18+4)	76.3		
bliciete	CK-ZIUKg/CHIZ	1.0*2.5*0.3	0.8		
		2.0*1.6*1.0	3.2		-
		(3.7*2.2-3.1*1.6)*2.0	6.4	· · · · · · · · · · · · · · · · · · ·	-
	 	Total	86.6	m3	
		Total	30.0	1113	
Concrete	ck=180kg/cm2	3.3*(9+18+4)*0.1	10.2		+
Concrete	CK-TOURGICITE	2.2*1.0*0.1	0.2		+
	1	Total	10.5	m3	
	 	Totat	10.5	111.3	
Reiforcing Bar	D16	100kg/m3	8.7	ton	
Kenoreing Dar	1710	TOORBING	0.7	- ton	-
Wooden Form		(1+1+2.5)*(9+18+3.7)	138.2		
Wooden Form	<u> </u>	(1.6+1.6)*(9+18+4)	99.2		
		1.6*3.1+1*2.5	7.5	**	
	 	1.6*(1+1+2)	6.4		-∤
		2.2*2.0*2	8.8		
		Total	260.0	m2	
	-	Total	200.0	1712	
Water Stop	 		16.4	m	-
Steel Pipe	D=600mm	9.5*2	19.0	m	
sicci i ipc	10.00011101	9.5 2	17.0		
Intake Gate	1.5x1.5m		2.0	set	
make Oate	11.584.518		2.0	301	
Valve Box	 	-			
Concrete	ck=210kg/cm2	(4.9*2.6-2*2*2)*2.3	10.9		
Concrete	CK 210kg/cm2	2*2*0.2	0.8		
		Total	11.7	m3	
	_	10(a)	11.7	1113	
Concrete	ck=180kg/cm2	5.1*2.8*0.1	1.4	m3	
Concrete	CK TOOKS/CIIIZ	5.1 2.0 0.1	1.4	. 111.5	
Reinforcing Ba	D16	80kg/cm2	0.9	ton	
Kennorchig Da	1.	JANGICUIL .		1011	
Wooden Form	 	2*4*1.8+2*4*2	30.4	·	
WOODEN FORM		(2.6*2+4.9*2)*2.3	34.5		
	+	2*2	4.0		
		Total			
-			68.9	m2	
Crows	1-20		. 22	3	
Gravel	t=20cm	5.1*2.8*0.2	2.9	m3	
Butterfly Valve			1		+
mutativ Valua	: iD=600mm	1	2.0	set	. 1

Table J.3.4 Bill of Quantity of the Project (3/8)

(3) Primary Roads for Grand Canal 1) Primary Road for GC-A

Description	Specification	unit	Q'ty	Remarks
Length	biside the canal	m	4,970	70
Length		m	3,600	
Total Length		m	8,570	
Bush Cutting		m2	28,800	
Grading	3.6km	m2	21,600	
Excavation	Bulldozer	m3	8,640	
Banking	Bulldozer	m3	8,640	
Gravel Pavement	W=4.5m, t=15cm	m2	38,565	
Inspection Roads		m	3,100	11
	Length Length Total Length Bush Cutting Grading Excavation Banking Gravel Pavement	Length biside the canal Length Total Length Bush Cutting Grading 3.6km Excavation Bulldozer Banking Bulldozer Gravel Pavement W=4.5m, t=15cm	Length biside the canal m Length m Total Length m Bush Cutting m2 Grading 3.6km m2 Excavation Bulldozer m3 Banking Bulldozer m3 Gravel Pavement W=4.5m, t=15cm m2	Length biside the canal m 4,970 Length m 3,600 Total Length m 8,570 Bush Cutting m2 28,800 Grading 3.6km m2 21,600 Excavation Bulldozer m3 8,640 Banking Bulldozer m3 8,640 Gravel Pavement W=4.5m, t=15cm m2 38,565

2) Primary Road for GC-B1

No.	Description	Specification	unit	Q'ty	Remarks
	Length		m	5,600	
	Gravel Pavement	W=4.5m, t=15cm	m2	25,335	

3) Primary Road for GC-B2

No.	Description	Specification	unit	Q'ty	Remarks
	Length		m	3,700	
	Gravel Pavement	W=4.5m, t=15cm	m2	16,650	

4) Primary Road for GC-C

No.	Description	Specification	unit	Q'ty	Remarks
	Length		m	300	
	Gravel Pavement	W=4.5m, t=15cm	m2	1,350	

Table J.3.4 Bill of Quantity of the Project (4/9)

	(4) Irrigation Canal and Structure (1/2)	Canal	and Struc	ture (1/2,										W. O Dames of Comment	Town Comment				
						Primary Cana	izi						* 1500.00	CSI F FILLS	ry Canal	176774	30 00000		
Description	Specification Unit	Cnit)ત	PC-1 (0-400)	0)	၁ _၈	PC-2 (400-1400)	(O)		ďM	WPC-1 (0-700)		WPC	WPC-2 (700-1800)		١	WPC-2 (1800-2800)	- -	200
			Unit O'ty	Volume	Total	المارد في	Volume	l'otal		Unit O'ty	Volume	lotal	Unit O'ty	Volume		Chit Car	Volume	- हा हा हा हा हा	lotal
Primary Canal		m		400.0	400.0		1,000.0	1.000.0	1,400.0		100.0	700.0		1,100.0	1,100.0		0.000.0	1,000.0	2.800.0
Earth Work					l					-	300	300			0000	< <	. 000		100000
Bush Cutting	Labor	m2	19.2	400.0			1.000.0	14.800.0	22,480.0	0.6	700.0	6,300.0	0.4	1.100.0	4.400.0	2.0	1,000.01	200	2007
Surface Stripping	30cm	m3	5.4	400.0	2,160.0		1,000.0	1.800.0	3.960.0	2.0	700.0	1.400.0	0.	1.100.0	1,100.0	0.0	0.00	0.0	0.00
Excavation	Backhoc	m3	2.5	400.0	1		0.000.1	2,500.0	3,500.0	0.0	700.0	0.0	0.0	1,100.0	0.0	6:1	1.000.0	- 1	0 0 0 0 0 0
Embankment	L=2.0km	m3	17.2	400.0		24.0	1,000.0	24.010.0	30,870.0	20.0	700.0	13,965.0	17.9		19,635.0	0:0	1,000.0		33,600.0
Slope Finishing	Labor	m2	4.7	400.0	l		1,000.0	12,100.0	13,980.0	7.9	700.0	5,530.0	10.0	1,100.0	11.000.0	0.0	0.000.0	0.0	16.530.0
Canal Lining																		-	
Concrete	ck=210kg/cm2	2 m3	0.1	400.0		0.1	1,000.0	9.95	79.2	0.1	700.0	39.6	0.1	1.100.0	62.2	0.1	1,000.0	56.6	1.00
Wooden Form		m2	9.0	400.0		9.0	1.000.0	565.6	791.8	9.0	700.0	395.9	0.6	1,100.0	622.2	9.0	0.000.1	565.6	1.583.7
Expansion Joint		m2	0.1	400.0		0.1	1.000.0	62.8	0.88	0.1	700.0	44.0	0.1	1,100.0	69.1	0	1.000.0	62.8	1.76.0
Gravel		m3	0.0	400.0		0.0	1.000.0	0.0	0.0	0.0	700.0	0.0	0.0	1.100.0	0.0	0.0	1.000.0	0.0	0.0
Wire Net	010	m2	9.0	400.0	226.2	9.0	1,000.0	565.6	791.8	9.0	700.0	395.9	9.0	1,100.0	622.2	9:0	1,000.0	565.6	1,583.7
Related Structure		<u> </u>					ļ				-						-		
Diversion		nos		3.0	3.0		4.0	4.0	7.0		1.0	1.0		3.0	3.0		6.0	6.0	10.0
Foundation Stone	Gravei	E C	1.8	3.0		8:	0.4	7.2	12.6	1.8	1.0	1.8	1.8	3.0	5.4	1.8	6.0	10.83	18.0
Embankment	Sand Material	Τ.	0.5	3.0		0.5	4.0	2.0	3.5	0.5	1.0	0.5	0.5	3.0	1.5	0.5	6.0	3.0	5.0
Concrete	ck=210kg/cm2	2 m3	6.6	3.0	29.6	6.6	4.0	39.5	69.2	6.6	1.0	6.6	6.6	3.0	29.6	6.6	6.0	59.3	8.8
Reinforcing Bar	D13		0.7	3.0		0.7	4.0	2.8	4.8	0.7	1.0	0.7	0.7	3.0	2.1	0.7	6.0	4	6.9
Wooden Form		m ₂	62.3	3.0	187.0	62.3	4.0	249.3	436.2	62.3	1.0	62.3	62.3	3.0	187.0	62.3	6.0	373.9	623.2
Concrete Pipe	D=400mm	ε	9.0	3.0			4.0	24.0	42.0	0.0	1.0	0.9	0.9	3.0	18.0	6.0	6.0	36.0	0.00
Spillway		nos.					1.0	1.0	0.1		1.0	1.0		2.0	2.0		1.0	0.1	1.0
Concrete	ck=210kg/cm2		72.0	0.0	0.0	72.0	1.0	72.0	72.0	72.0	1.0	72.0	72.0	2.0	144.0	72.0	0.1	72.0	238.0
Reinforcing Bar	DI3		5.0	0.0		5.0	0.1	5.0	S.0	5.0	1.0	5.0	5.0	2.0	10.1	5.0	1.0	5.0	20.7
Cross Drain	Box culvert	nos.	-				0.1	1.0	0:1	\mid	1.0	1.0		1.0	1.0		1.0	1.0	3.0
Excavation	Foundation	. m3	84.0	0.0	0.0	84.0	1.0	84.0	84.0	84.0	1.0	84.0	84.0	1.0	84.0	84.0	0.1	84.0	252.0
Embankment	Sand Material	-	84.0	0.0	0.0	84.0	1.0	84.0]	84.0	84.0	1.0	84.0	84.0	1.0	84.0	% 0.	0:	Σ. Ο.	252.0
Concrete	ck=210kg/cm2	2 m3	21.0	0.0	0.0	21.0	1.0	21.0	21.0	21.0	1.0	21.0	21.0	1.0	21.0	23.0	0.1	21.0	63.0
Reinforcing Bar	D16		5.(0.0		1.5	1.0	1.5	1.5	1.5	1.0	1.5	1.5	1.0	1.5		1.0	3.5	;;
Wooden Form		m ₂	126.0	0.0	0.0	126.0	1.0	126.0	126.0	126.0	1.0	126.0	126.0	1.0	126.0	126.0	1.0	126.0:	378.0
Primary Road					•								-						
Gravel Pavement	W=4.5m	m2	4.5	400.0	1.800.0	4.5	1.000.0	4.500.0	6,300.0										
Bridge		1	-									-					1	-	,
Pipe Culvert	D=1000mm	sct									0.	0.1							2
Pipe Culvert	D=600mm	sct												0:	0:	1	0.	0.	2.0
		-										1							Ī
Sub-total	, :																	1	

Table J.3.4 Bill of Quantity of the Project (5/8)

	(4) Irrigat	ion Canal	(4) Irrigation Canal and Structure (2/2)	ture (2/2)								1000	April 1	South County on Const	Jane J.	Arres	North Secondary Capal	anal
	East	East Frimary Canal	ัสกล	West 3	West Secondary Canal	Canal	Central	Central Secondary Canal	Callai	Cast o	Cast Secondary Canal	41141	S munos	1	, Camar		(W) 1 (W)	
Description	da 💮	EPC-1 (0-1500)	(00	SM	WSC-1 (0-1700)	(00	ప	CSC-1 (0-2000)		Š	ESC-1 (0-1300)		200	SSC-1 (0-1+00)	(g)	iev.		
	Unit O'ty	Volume	Total	Unit Q'ty	Volume	Total	Unit O'ty	Volume	_	Unit O'ty	Volume		Unit Onv	Volume		Chit C'tv	Volume	otal
Primary Canal		1,500.0	1,500.0		1,700.0	1,700.0		2,000.0	2,000.0		1.300.0	1,300.0		1,400.0	1.400.0	-	1,100.0	1.100.0
Earth Work			:			l I									!	_		
Bush Cutting	9.0	1.500.0	13,500.0	6.4	1,700.0	8,330.0	5.7	2,000.0	11,400.0	0.0	1.300.0	0.0	4.5	1.400.0	<u>چ</u>	8.0	1.100.0	8.200.0
Surface Stripping	2.5	1.500.0	3,750.0	8.0	1,700.0	1.360.0	1.1	2,000.0	2,200.0	0.0	1.300.0	0.0	0.0	1.400.0		0.0	1,100.0	0.0
Excavation	0.0	1,500.0	1.	0.0	1,700.0	0.0	0.0	2,000.0	0.0	0.0	1.300.0	0.0	0.0	1,400.0			1,100.0	4,620.0
Embankment	18.8	1.500.0	28.14	11.9	1.700.0	20.230.0	2.9	2,000.0	15.820.0	7.0	1,300.0	9,100.0	4.1	1.400.0			1,100.0	0.0
Slope Finishing	7.1	1.500.0	1	8.5	1,700.0	9.860.0	4.7	2,000.0	9,400.0	8.0	1,300.0	1.040.0	1.1	1.400.0	1,540.0	0.0	1,100.0	0.0
Canal Lining																		
Concrete	0.1	1,500.0	848	0.1	1,700.0	96.2	0.1	2,000.0	113.1	0.1	1,300.0	73.5	0.1	1,400.0	İ	0.1	1.100.0	62.2
Wooden Form	9.0	1.500.0	848.4	9.0	1,700.0	961.5	9.0	2.000.0	1,131,2	9.0	1.300.0	735.3	0.6	1,400.0		0.0	1.100.0	633.2
Expansion Joint	0.1	1,500.0	94.3	0.1	1,700.0	106.8	0.1	2,000.0	125.7	0.1	1,300.0	81.7	0.1	1,400.0	-	0.1	 0.03 1	\$
Gravel	0.0	1.500.0	0.0	0.0	1,700.0	0.0	0.0	2,000.0	0.0	0.0	1,300.0	0.0	0.0	1.400.0	0.0	0.0	1,100.0	0.0
Wire Net	9.0	1,500.0	848.4	9.0	1.700.0	961.5	9.0	2.000.0	1,131.2	9.0	1.300.0	735.3	9.0	1,400.0		0.6	1,100.01	622.2
Related Structure																		
Diversion		0.9	0.9		5.0	5.0		3.0	3.0		3.0	3.0		3.0			2.01	7.0
Foundation Stone	:×:	0.0	10.8	8.1	9.0	9.0	 %:	3.0	1°,	1.8	3.0	5.4	%.	3.0		0.0	2.0	3
Embankment	0.5	0.0	3.0	0.5	5.0	2.5	0.5	3.0	1.5	0.5	3.0	1.5	0.5	3.0		0.0	2.0	9. 0.0
Concrete	6.6	0.0	593	6.6	5.0	4.04	6.6	3.0	29.6	6.6	3.0	29.6	6.6	3.0	2	6.6	2.01	8.61
Reinforcing Bar	0.7	0.9	4.1	0.7	5.0	3.5	0.7	3.0	2.1	0.7	3.0	2.1	0.7	3.0	2.1	0.7	2.0	7,
Wooden Form	62.3	0.9	373.9	62.3	5.0	311.6	62.3	3.0	187.0	62.3	3.0	187.0	62.3	3.0	187.0	62.3	2.01	124.6
Concrete Pipe	9	0.9	36.0	0.9	5.0	30.0	6.0	3.0	18.0	0.9	3.0	18.0	0.9	3.0	18.0	6.0	2.0	12.0
Spillway		2.0	2.0		2.0	2.0		1.0	1.0		2.0	2.0		1.0			1.0	1.0
Concrete	72.0	2.0	144.0	72.0	2.0	144.0	72.0	1.0	72.0	72.0	2.0	1.44.0	72.0	1.0	72.0	72.0	1.0	72.0
Reinforcing Bar	5.0	2.0	. 10.1	5.0	2.0	10.1	5.0	1.0	5.0	5.0	2.0	10.1	5.0	1.0	5.0	5.0	0.1	0.0
Cross Drain																-		
Excavation	84.0	0.0	0.0	84.0	0.0	0.0	84.0	0.0	0.0	2.0	0.0	0.0	84.0	0.0		84.01	0.0	0.0
Embankment	84.0	0.0	0.0	0.4%	0.0	0.0	84.0	0.0	0.0	0.18 7.20	0.0	0.0	84.0	0.0		84.0	0.0	0.0
Concrete	21.0	0.0	0.0	21.0	0.0	0.0	21.0	0.0	0.0	21.0	0.0	0.0	21.0	0.0		21.0	0.0	0.0
Reinforcing Bar	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0		1.5	0.0	0.0
Wooden Form	126.0	0.0	0.0	126.0	0.0	0.0	126.0	0.0	0.0	126.0	0.0	0.0	126.0	0.0	0.0	126.0	0.0	0.0
Primary Road																		
Gravel Pavement	4.5	1,500.0	6,750.0						1	4.5	700.01	3,150.0					~	
Bridge																		
Pipe Culvert											-							
Pipe Culvert	1.0	3	3.0	0:	0:	1:0	9.	2.0	2.0	0.1	2.0	2.0	0.	0,1	0.1	<u></u>	0.7	0.
										†	- -					-1-		
Nub-total													-				,	

Table J.3.4 Bill of Quantity of the Project (6/8)

(5) Dramage Canal and Structure	ai ano Structure									West So	West Secondary Drainage	Sinage
					Frimar	Primary Drainage Canal	Canal			30 303 14		
Decrintion	Specification Unit	Unit		PD-1 (0-1700)	(1	PΩ	PD-2 (1700-3400)	(0)	Grand	S	CSD-1 (0-7000)	6
		,	Unit O't	Volume	Total	Unit O'ty Volume	Volume	Total	Total	Unit Q'ty Volume	Volume	Total
Length		E	2		1.700			1,700	3,400.0			2,600
Earth Work											- 1	0 000
Excavation	Backhoe	m3	0.6	1,700.0	1,700.0 15,300.0	6.5	1,700.0	11,050.0 26,350.0	26,350.0	2.5	7,000.0	2.000
Related Structure												(
Cross Drain	Box Culvert Nos				1.0			1.0	2.0			7.7
Cross State	Foundation	33	380.0	1.0	380.0	238.0	1.0	238.0	618.0	144.8	2.0	289.6
Excavation	1	•	2000	2	0.085	١	0.1	238.0	618.0	144.8	2.0	289.6
Embankment		Ê	200.0		2.00			30%		0.85	2.0	115.9
Concrete	ck=210kg/cm	m3	126.9	1.0	126.9	5.0/	?:	0.07	1.76			, 01
Reinforcing Bar		۳.	11.4	1.0	11.4	6.3	1.0	6.3		1	0.7	10.4
Wooden Form		m 2	491.4	1.0	491.4	327.6	1.0	327.6	8.	219.0	2.0	457.9
Sluice Gate	2500x3000	Nos	3.0	1.0	3.0				3.0			
Sub-total												
	,											

ription Specification Unit Q'ty Volume Total Unit Q'ty Volume T rik m 1,700 6,630.0 3.6 4,800.0 17,700 rich Backhoe m3 3.9 1,700.0 6,630.0 3.6 4,800.0 17,700 rich Backhoe m3 3.9 1,700.0 6,630.0 3.6 4,800.0 17,700 rich Backhoe m3 128.8 2.0 250.6 4,800.0 17,700 rich Foundation m3 128.8 2.0 257.6 128.0 3.0 rine ck=210kg/cm m3 25.4 2.0 257.6 128.0 3.0 ring Bar t 2.3 2.0 4.6 4.5 3.0 ring Bar m2 118.4 2.0 236.9 156.8 3.0 ring Bar 2500x3000 Nos 18.4 3.0 3.0				Central S	econdary	Central Secondary Drainage	East Sec	East Secondary Drainage	rainage	North Sc	North Secondary Drainage	Drainage
rik m Unit Q'ty Volume Total Unit Q'ty Volume T rik m 3.9 1,700.0 6,630.0 3.6 4,800.0 17,700 ion Backhoe m3 3.9 1,700.0 6,630.0 3.6 4,800.0 17,700 ion Box Culvert Nos 2.0 257.6 128.0 3.0 ion Foundation m3 25.4 2.0 257.6 128.0 3.0 en ck=210kg/cm m3 25.4 2.0 56.8 50.4 3.0 en ck=210kg/cm m2 118.4 2.0 236.9 156.8 3.0 en 2500x3000 Nos 18.4 2.0 236.9 156.8 3.0	Decomption	Specification	Linit		D-1 (0-180	9	ES	D-1 (0-480	(Q)	Z	NSD-1 (0-1150)	50)
ion Backhoe m3 3.9 1,700.0 6,630.0 3.6 4,800.0 17, tructure Box Culvert Nos 2.0 257.6 128.0 5.0 ion Foundation m3 128.8 2.0 257.6 128.0 5.0 ion ch=210kg/cm m3 25.4 2.0 257.6 128.0 5.0 ion ch=210kg/cm m3 25.4 2.0 257.6 128.0 5.0 ion sug Bar t 2.3 2.0 4.6 4.5 3.0 ion bate 2500x3000 Nos 2.0 236.9 156.8 3.0 ion bate 2500x3000 Nos	nandinead		}	Unit	Volume	Total	Unit O'ty	Volume	Total	Unit O'ty	Unit O'ty Volume	Total
rk. Backhoe m3 3.9 1,700.0 6,630.0 3.6 4,800.0 17.700.0 ion Backhoe m3 3.9 1,700.0 6,630.0 3.6 4,800.0 17.700.0 innent Box Cullvert Nos 2.0 257.6 128.0 3.0 ion Foundation m3 128.8 2.0 257.6 128.0 3.0 e. ck=210kg/cm m3 25.4 2.0 50.8 50.4 3.0 sing Bar t 2.3 2.0 4.6 4.5 3.0 form: m2 118.4 2.0 236.9 156.8 3.0 ate 2500x3000 Nos 1 2.3 236.9 156.8 3.0	Length		٤			1,700			4,800			1,150.0
ion Backhoe m3 3.9 1,700.0 6,630.0 3.6 4,800.0 17,800.0	Earth Work										- 1	
tructure 2.0 ain Box Culvert Nos 2.0 257.6 128.0 5.0 ion Foundation m3 128.8 2.0 257.6 128.0 5.0 iment Sand Material m3 25.4 2.0 257.6 128.0 5.0 e. ck=210kg/cm m3 25.4 2.0 50.8 50.4 5.0 sing Bar t 2.3 2.0 4.6 4.5 5.0 i Form m2 118.4 2.0 236.9 156.8 5.0 sate 2500x3000 Nos 1 2.0 236.9 156.8 5.0	Excavation	Backhoe	m3	3.9	1,700.0		3.6	4,800.0	17,280.0	19.8	- 1	1,150.0 22,770.0
ain Box Culvert Nos 2.0 257.6 128.0 5.0 ion Foundation m3 128.8 2.0 257.6 128.0 5.0 inent Sand Material m3 128.8 2.0 257.6 128.0 5.0 e. ck=210kg/cm m3 25.4 2.0 50.8 50.4 5.0 sing Bar t 2.3 2.0 4.6 4.5 5.0 Form: m2 118.4 2.0 236.9 156.8 5.0 stee: 2500x3000: Nos 1 2.0 236.9 156.8 3.0	Related Structure											
ion Foundation m3 128.8 2.0 257.6 128.0 3.0 iment Sand Material m3 128.8 2.0 257.6 128.0 3.0 en ck=210kg/cm m3 25.4 2.0 50.8 50.4 3.0 sing Bar t 2.3 2.0 4.6 4.5 3.0 Form m2 118.4 2.0 236.9 156.8 3.0 atte 2500x3000 Nos 3.0 3.0	Cross Drain	Box Culvert	S S S			2.0			3.0	ļ		0.1
inent Sand Material m3 128.8 2.0 257.6 128.0 3.0 e ck=210kg/cm m3 25.4 2.0 50.8 50.4 3.0 sing Bar t 2.3 2.0 4.6 4.5 3.0 r Form m2 118.4 2.0 236.9 156.8 3.0 atte 2500x3000 Nos 10.0 236.9 156.8 3.0	Excavation	Foundation	m3	128.8	2.0	257.6		3.0	384.0	128.0	1.0	128.0
e ck=210kg/cm m3 25.4 2.0 50.8 50.4 3.0 50.8 50.4 3.0 50.8 50.4 5.0 5.0 50.8 50.4 5.0 5.0 50.8 50.4 5.0 5.0 50.8 50.4 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Emhankment	2	'n		2.0	257.6		3.0	384.0	128.0	1.0	128.0
bing Bar t 2.3 2.0 4.6 4.5 3.0 4.6 Form:	Concepte	α 3/03	É		2.0	50.8		3.0	151.2	50.4	1.0	50.4
Form: 2500x3000 Nos 118.4 2.0 236.9 156.8 3.0	Deinfarding Par	, in A		23	2.0	4.6		3.0	13.6	4.5	1.0	4.5
sate 2500x3000 Nos	Weilliololing Dat		Ç	118.4	20	236.9	Į,	3.0	470.4	156.8	1.0	156.8
5ate 2500x3000	wooden romi	_ †	3	1			l			-	-	-
Culturated	Sluice Gate	000	Nos							?	?]	:
C.1. + +0.4.	1											
300-101al	Sub-total											

Table J.3.4 Bill of Quantity of the Project (7/8)

																,		Total				11,952.0	5,976.0	23,831.0	7,251.2
																Dike ח	SSD4		150	3.0		3,000.0	1,500.0	6.825.0	1,980.0
£	3		Total	8.0	1,120.0	1,120.0	216.0	19.4	1,080.0	8.0						Flood Protection Dike	CSD4(3)		150	2.5		2,700.0	1,350.0	5,400.0	1,650.0
Flood Ston Cate	dos n		Nos T		8.0	8.0	8.0	8.0	8.0	8.0						Flood			200	2.5		3,600.0	1,800.0	7,200.0	2,200.0
ĺ	DOI J		Unit O'ty		140.0	140.0	27.0	2.4	135.0	0.1							CSD4(1) (170	1.9		2,652.0	1,326.0	4,406.0	1,421.2
נווני שמ		Unit		Nos	m3	m3	m3	1	m3	Nos							Chit		E	E		m2	E)	m3	m2
Care ones		Specification Unit		Box Culvert	Foundation	Sand Material	ck=210kg/cm			1000×1000					n Dike		Specification Unit CSD4(1) CSD4(2)	ļ				Labor	30cm	L=2.0km	Labor
(7) Flood Protection Gate under the Road		Description		Cross Drain	Excavation	Embankment	Concrete	Reinforcing Bar	Wooden Form	Flap Gate		Sub-total			(8) Flood Protection Dike		Description		Length	Hight	Earth Work	Bush Cutting	Surface Stripping	Embankment	Slope Finishing
	Existing-W		3.0			3.0	4.0	4.0	4.5	3.0	3.0	4.5	5.0	3.0		Canal O'ty.		Total	23.270			19.640		3.100	
_	G.Area	_	6.300								_				-	rigation	0		300						
Agricole /	Gravel- C		4.5					-								nchided in Ir		Grand Canal	9.300						
et Area (Cit	Area (m2) G	V=6.0m)	8 400	3		000.9	000'9	1.760	4.800	1,200	4,000	4,400	4,400	4,800	37,360	ork c O'ry are	i de la como	Gra	8.570		/. Primary	2 800		3,100	
Paddy Proje	Width (m) /	(Gravel Pavement Road: W=6.0m)	6.0	;	ŀ	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	0.4		w date speed w	the company of the	Primary C.	3 700		Secondary C. W. Primary	7.500			
n San Pedre	Length (m	Gravel Pave	1 400			1 \$00	1 500	440	1.200	300	1,000	1,100	1,100	1,200	9.340	Topopos pac	שונה אכבסווקה	Area	1 400		Area	Īς			
(6) Road Length in San Pedro Paddy Project Area (Cite Agricole Area)	Road Type	Primary Road		Cast Ivoac	Connedom, Dond	North-1 Road	C.T. A	CT-B-2	CT-C-2	North-1 1 Road	North-2 Road	Central Road	South-1 Road	South-2 Road	Total	Washington and saccedant south works O'ty are included in Irrigation	vote: Other primary	Lenoth	Deimany Road	anony (million)		Secondary Road	Secondary More	Increation Road	and in indicadent

Table J.3.4 Bill of Quantity of the Project (8/8)

(9) On-Farm Works

26.733 ha

(9) On-Farm Work	1.5			20.733	
			1 Blo	ock (26.73	3ha)
Description	Specification	Unit			
,		!	Unit Q'ty	Volume	Total
Land Reclamation			1	24.0	24.0
Tertiary Canal	with Road	m		840.4	
Embankment	Backhoc	m3	2.5	840.4	2,059.0
Turnout		Nos		4.0	
Concrete	ck≕210kg/cm	m3	1.0	4.0	3.9
Wooden Form	Labor	m2	6.4	4.0	25.6
Concrete Pipe	D=300mm	m	6.0	4.0	24.0
Sluice Gate	300x300	Nos	1.0	4.0	4.0
Stop Gate		Nos		1.0	
Concrete		m4	0.5	1.0	
Wooden Form		m2	3.2	1.0	3.2
Sluice Gate	300x300	Nos	1.0	1.0	
Irrigation Ditch		m		1,239.2	
Embankment	Backhoe	m3	2.1	1,239.2	2,614.7
Tractor Passage				80.0	
Concrete Pipe	D=300mm	m	4.0	80.0	
Drainage Ditch		m		1,394.1	
Excavation	Backhoe	m3	0.5	1,394.1	697.1
Embankment	Backhoe	m3	0.4		
Tertiary Drainage		m		840.4	<u> </u>
Excavation	Backhoe	m3			
Embankment	Backhoe	m3	0.3	840.4	226.9
Sub-total		-			

Note: Stop Gate, Irrigation Ditch, Drainage Dictch and Tertiary Drainage are done by farmers.