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AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

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3. COUNTRY/ENTITY: Sudan

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5. PROJECT NUMBER (7 digits): 650-0026

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7. PROJECT TITLE (Maximum 40 characters): Wadi Halfa Community Development

8. ESTIMATED FY OF PROJECT COMPLETION: FY 82

9. ESTIMATED DATE OF OBLIGATION: A. INITIAL FY 78; B. QUARTER 4 (Enter 1, 2, 3 or 4); C. FINAL FY

10. ESTIMATED COSTS ($000 OR EQUIVALENT $1 - LS.0.50

A. FUNDING SOURCE	FIRST FY B. FX	FIRST FY C. L/C	FIRST FY D. TOTAL	LIFE OF PROJECT E. FX	LIFE OF PROJECT F. L/C	LIFE OF PROJECT G. TOTAL
AID APPROPRIATED TOTAL	398		398	398		398
GRANT	(398)	( )	(398)	(398)	( )	(398)
LOAN	( )	( )	( )	( )	( )	( )
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST COUNTRY					485	485
OTHER DONOR(S)				135		
TOTALS				533	485	1,018

11. PROPOSED BUDGET APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	PRIMARY TECH. CODE D. LOAN	E. 1ST FY 78 F. GRANT	E. 1ST FY 78 G. LOAN	H. 2ND FY ___ I. GRANT	H. 2ND FY ___ J. LOAN	K. 3RD FY ___ L. GRANT	K. 3RD FY ___ M. LOAN
1) FN	B 200	210		398					
2)									
3)									
4)									
TOTALS									

A. APPROPRIATION	N. 4TH FY ___ O. GRANT	N. 4TH FY ___ P. LOAN	Q. 5TH FY ___ R. GRANT	Q. 5TH FY ___ S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
1) FN					398	
2)						
3)						
4)						
TOTALS						

12. IN DEPTH EVALUATION SCHEDULED: MM 11 YY 79

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1 (1 = NO, 2 = YES)

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE: Gordon K. Pierson

TITLE: Gordon K. Pierson
AID Representative

DATE SIGNED: MM DD YY 4/1/78

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AID 1330-4 (3-74)

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The CRS-Sponsored
Nutrition Program

Based on the findings of the recent Wadi Halfa Nutrition Survey, CRS with the concurrance of its counterpart, the Sudan Ministry of Health, has decided to initiate its program of health and nutrition education for Pre-school aged children in Halfa.

Accurate data on the size of the under-five population of WadiHalfa were not available as of this writing, however, CRS will plan for a program to reach 1000 children a month. If the under-five population proves to be larger, then the program will be expanded.

The Wadi Halfa nutrition program will be run in cooperation with the Ministry of Health and the nutrition education activities will be directly overseen by the town's public health nurse. The nurse, who has had training in MCH, will come to Khartoum for two weeks of program orientation. Additionally, the Wadi Halfa Commission is makeing arrangements with the Ministry of Education to release a Wadi Halfa teacher for the program. She will attend a four months course in nutrition education and upon completion of her training will work as a full-time assistant to the public health nurse. The Wadi Halfa Medical offices will be responsible for day to day supervision of the nurse and nutrition educator and the Nutrition Division and CRS will arrange for a Ministry of Health nutrition officer to visit Halfa at least twice a year to insure that the program is functioning properly.

In the CRS-sponsored MCH program in Wadi Halfa children and their mothers will visit the health centre once a month and the following activities will take place:

1- The child will be examined and weighed and his weight will be recorded on a master weight for age chart. This chart will record weights for all children attending the centre on that day.

By plotting the child's weight for age, the nurse determines the physical status of the child in terms of a percentage of the Harvard Standard of growth - The Harvard Standard growth curve is uperimposed on the chart's weight for age and this percentage is in turn, trasferred to an individual growth chart. The individual chart, which is kept by the child's mother, graphically allows the mother to see whether or not her child is growing properly. Additionally the charts provides space for recording immunisations and other relevant medical data and is an important medical record for the Child's pre-school years.

2- The health visitor will give private consultation to each mother and, in so doing, will inform her of the health and nutritional status of the child and what, if any, corrective action should be taken by the mother to insure that the child is growing properly.

3- The child will be immunized against infrectious diseases when immunisations are available an d will be treated for minor ailments (children who are discovered to be seriously ill will be referred to the health centre physician).

4- A group lectrur or demonstation on nutrition or a health-related subject will be given by the nutrition educator to all mothers.

5- Supplementary foods (2kilos. of NFDM and 1 kilo. of oil) will be given to the child at each clinic visit.

These foods are intended to be:

a) a corrective element of child's diet

b) a means of educating the mother about nutrition and nutritious foods.

c) an economic aid to the family.

Based on 1,000 recipeint children, the value of the food assistence that CRS will provide Wadi Halfa in one year period is US $ 57,552. Added to the program value will be clearance, inland transport and personnel costs borne by the Ministry of Health and other inputs, ~~XXXX~~ (e.g. weight scales) by CRS.

PROJECT TITLE	:	WADI HALFA COMMUNITY DEVELOPMENT
TOTAL OPG REQUEST	:	$ 398,000
PROJECT LOCATION	:	WADI HALFA, NORTHERN PROV. SUDAN.
PVO NAME AND LOCATION	:	INTERNATIONAL VOLUNTARY SERVICES, WASHINGTON DC.
CENTRAL HEADQUARTERS	:	WASHINGTON DC.
CONTACT PERSONS	:	ALAN R. WILLIAMS, IVS DIRECTOR FOR THE SUDAN, BOX 1926, KHARTOUM. JOHN T. RIGBY, EXECUTIVE DIRECTOR, I.V.S. 1717 MASSACHUSETTS AVE NW., WASHINGTON DC 20036. PHONE: (202) 387-5533 CABLES "VOLSERV" WASHINGTONDC

DATE OF SUBMISSION: APRIL 1978

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A. PROJECT PURPOSE AND DESCRIPTION

Purpose : To enhance the economic and social well-being of present and future Wadi Halfa area population, by stimulating agricultural development through irrigation systems development, crop trials and agricultural vocational training for youth, and improving health, nutrition and sanitation conditions.

End of project conditions

Each of the sub-projects described fits into and is part of the GOS development plans for the future of the area. Successful implementation of these proposals will create the conditions which are prerequisite for implementation of large scale development plans for the area. Conditions required and expected are:

1. the area will be capable of supporting a population of 30,000; the present population of 10,000 is expected to expand to 30,000 in 5-10 years;
2. new jobs will be created within and as a result of the project, and an increasing labour force will become available for job opportunities in major planned development projects;
3. in addition to those employed in and around proposed projects, a significant number of returnees will be engaged in agriculture;
4. the cost of foodstuffs will be reduced as local production eliminates the cost of transport from Khartoum;
5. the percentage of family income spent on food will diminish;
6. there will be a discernable decrease in communicable disease associated with poor sanitation;
7. there will be an identifiable decrease in verifiable malnutrition, and diminishing incidence of respiratory disease;
8. there will be sufficient volume and pressure of potable drinking water to supply the full needs of the community.

B. HISTORY

On completion of the high Aswan dam in 1964, the rising waters of Lake Nubia (Lake Nasser) inundated the town and 27 neighbouring villages of Wadi Halfa. The population (approx 50,000) was resettled at Khasm el Girba,

900 miles distant in Kassala Province. The move, assisted by UNHCR, was not without its problems, notably in the reluctance of the Nubian people to leave their homelands. Due to their geographical isolation they had tended to develop an independant way of life which was uniquely their own. They had enjoyed a relatively prosperous life, being highly skilled cultivators of the silt-rich Nile banks, and producing three crops per year. There was a flourishing export trade to Egypt in Nubian dates. The rail/steamer terminal which joined Sudan with Egypt provided employment as well as revenues. Livestock was held and exported through this facility. There was a well-founded tourist industry, based on Nubian archaeology which brought in hard currency. Surplus agricultural production was shipped to market in Atbara and Khartoum as well as to the provincial capital, Dongola (by rail).

Compared to the national average of 17%, the literacy rate amont the Nubians is high, 75% male - 40% female, with nearly all children of school age attending. (The high proportion of nomadic tribes tends to keep the national average low.) There appears to be a relatively high proportion of Nubians who have gone on to further education in skilled trades and professions.

At the time of the mass move (ref. "the Nubian Exodus" by Hassan Daffalla, Khartoum University Press), 2000 residents simply refused to leave their homelands, despite the suspension of all Government services, including health, transport, education and public administration. As the water level gradually rose over the next 13 years, those remaining eked out their existence in a succession of 5 temporary settlements on the advancing lakeshore. Now that the level has approached maximum (contour 185), the present site can be regarded as final, and construction of permanent buildings has commenced.

The success of the Nubians in establishing themselves in this previously unpopulated and barren area has resulted in a radical change in Government policy. Recognising the feasibility of human existance in what was a completely arid and barren area, the GOS has appointed by Presidential Decree, a National Commission for the Reconstruction and Redevelopment of Wadi Halfa and Lake Nubia. This body is charged with the responsibility for formulation and implementation of development projects designed to utilise the natural resources of the area. All government services have been resumed, including the rail/steamer link between Halfa and Aswan, which completes the Khartoum/Cairo link.

Assisted by the Peoples Republic of China, the Dept of Fisheries has purchased 45 fishing boats and built a fish processing factory (operative late '78) which will supply frozen fish to the Khartoum market. A second commercial fish project, aimed at the export market is currently under study. Export routes are: by steamer to Egypt, rail to Port Sudan, or by air from Wadi Halfa direct (upon improvement of the air strip).

The population has re-expanded to a current 10,000. Four schools, a hospital and 4 community centres have meanwhile been built and staffed entirely on a community self-help basis The Peoples Council has organised several development activities, including the establishment of a multi-purpose cooperative society with a share capital of £30,000. GOS has now resumed responsibility for staff salaries in schools and the hospital.

The Commission's 6-year plan contains real proposals and approved budgets for development of the area, including:

i) survival agricultural scheme of 1,000 feddans;
ii) West bank irrigation scheme of 10,000 feddans;
iii) Cattle holding and shipping yards capacity 60,000 animals pa.;
iv) construction of railhead and harbour;
v) archaeological museum and hotel.

Detailed planning and research is in progress prior to implementation of these schemes.

HOWEVER, before sufficient numbers of Nubians can be reabsorbed in the area to supply the necessary labour force, sufficient potable water and fresh food must be made available to meet their needs. At present, these are barely enough to enable the present population to subsist. Apart from domestic gardens, irrigated minimally by municipal tap water, there is no production of fresh food locally. This is brought in by rail from Atbara and Khartoum and is consequently prohibitive in price, particularly to low income families. At its present volume and pressure, the town water supply is inadequate for drinking needs, let alone watering of gardens. As a result, half of the town receives little or no water through the tap. Since in the absence of irrigation cultivation is not possible, many breadwinners are forced emigrate to urban centres in order to find work and support their families.

A recent nutritional survey by IVS & CRS making use of the CRS Growth Surveillance system, showed that the under-5 population (the most vulnerable group in terms of nutrition) is in a precarious state, with 32% below the 80% standard baseline. There is a small but steady (3-5 per month) number of infant deaths through mirasmus, recorded at the hospital. Milk powder is expensive, and there is no local source of fresh milk, since there are no cattle in the area. Vitamin deficiencies are evident in children and pregnant mothers (B12, A and C).

Respiratory diseases are endemic (whooping cough, bronchitis, pneumonia) and are exacerbated by poor nutrition, again emphasised among low income families.

Despite these difficult living conditions, the very strong community spirit is well evidenced, with proven determination to restore and develop the Nubian homelands. The current proposals aim to create the conditions which will make possible the accelerated return of Nubians to the area, with consequent development and achievement of the 6-year plan targets.

This proposal consists of 6 interdependant sub-projects, each of which is described separately :

1. Expansion of municipal water supply;
2. Cooperative / Youth training farm
3. Inland irrigation
4. Sanitation project
5. Nutrition / Education / Extension
6. Integrated management services.

C. PROJECT ANALYSIS

(1) The Area and the People

The Sudan is the largest country in Africa, with land area of 967,000 square miles, equal to one-third the area of the continental United States. Population is 16 million; average density of 17 per sq. mile. Distribution is uneven, with 2 million people centred on 64,000 sq. miles at the conjunction of the Blue and White Niles. Per capita income of $270 enables classification of the Sudan as one of the 25 least developed and poorest countries in the World.

Over 90% of the population lives by subsistance agriculture. Life expectancy averages 50, and literacy rate is 17%. 20% of the land is arable and of this only 15% is actually cultivated. Mobilisation of the natural land and water resources is the first priority for future development, and massive investment in agricultural schemes is in progress, though severely constrained by poor interior infrastructure and lack of skilled personnel.

The Northern Province is largely unpopulated, with 90% of the land area consisting of arid Nubian desert. The formation of Lake Nubia has created 450 miles of lakeshore land on the Sudan side of the border, which is potentially cultivatable if the lake waters are properly utilised.

The adverse effect of the Aswan Dam on the Egyptian side, of preventing the life-giving flow of rich silt, has already been observed and has resulted in an increase in use of fertiliser. In theory anyway, the silt should enrich the lake, and result eventually in enrichment of the lakeshore land.

(2) Need for the Project

The present population of 10,000 in Wadi Halfa is maximal given the currently available sources of fresh food and drinking water (illustrated by health and nutrition measurements). Implementation of the proposed projects will have an immediate effect on the health and economic welfare of those present, and will eventually enable the numbers of those returning to increase rapidly, thus providing more cash into the economy, enabling implementation of large-scale development plans, thus more jobs, and general uplift in the economy and prosperity of the area, e.g. local production of fresh food will eliminate heavy transport costs and reduce the cost of foodstuffs. As more families are enabled to afford adequate diet, elimination of nutritional deficiencies can be expected and consequent reduction in associated respiratory disease. Direct economic benefit will accrue to those employed in the projects and in future large-scale projects. Widest possible spread of benefit is ensured by implementation through the multi-purpose cooperative society already in existence.

Once basic supplies of locally produced food and drinking water are assured, and irrigation systems installed, cultivation will be made possible on a much wider scale, and resettlement of the Nubian farming community will

be accelerated. 10,000 feddans of potentially arable land are under survey and are reserved for a major agricultural scheme backed by GOS. It is essential that before such major schemes are started, with very large investment budgets, crop and irrigation trials are completed which will identify that the crops planted will flourish in these previously untried conditions.

(3) The land involved in this Project

All land technically "belongs" to the Government of the Sudan, though traditional grazing and occupancy rights are in most cases recognised, e.g. at the time of the "Nubian Exodus", those affected were compensated for the loss of their lands and property. In the case of these proposals, nobody will be dispossessed of their land, since the area was previously uninhabited. Land at the new site is at the disposal of the Commission. Any individual who wishes to reside in the area may apply to the Peoples Council for a building plot, and may purchase an indefinite lease for cash. (House site in third class area £10.) Land areas have been reserved for residential, commercial and agricultural development, and detailed surveys have been carried out. The area for the agricultural activities in this proposal has been surveyed and allocated by the Commission at no cost to the project, and is part of the 1,000 feddan area set aside for the Wadi Halfa Survival Project. (See Appendix VIII.) Implementation of the project covered by this proposal, particularly the water and health components, is an essential prerequisite to commencement of the Survival Project, and agricultural activities in this project will be folded into the Survival Project.

(4) Women's Role

The following describes well the key role of women in Nubian society, particularly with respect to agriculture :

" In the absence of her husband the Nubian mother has to shoulder all the domestic responsibilities of her husband. So women cultivated the small plots of land left by their husbands, and supervised the harvest. They saw that their bins were full of wheat and that future supplies were [illegible]. They pollinated the date trees in season, and harvested and marketed their produce. Moreover they maintained and repaired their houses and looked after the livestock. Our census figures show that the inundated area had more women engaged in agriculture than men; and when we listed the date trees for compensation purposes we discovered that nearly every samad (senior cultivator in a tenancy) was female. It was also found that men scarcely knew where their own date trees stood.

Evidently Nubia had the best working women in the whole Sudan, and Nubian women play a considerable part in the social economy. They have a prominent place in Society."

-extract from "The Nubian Exodus" by Hassan Daffala, KUP 1975.

Women will be heavily involved in at least two main aspects of the project a) Cooperation/Youth Training Farm; and b) Nutrition/Education.

Thus women will be involved throughout the processes of production, instruction, marketing (via the women's section of the Cooperative Society), and introduction and preparation of any new crops or varieties resulting fro crop trials. They will also be the channel through which the nutrition education programme is conducted by CRS pre-school programme (PL480 food aid

(5) Youth Vocational Training

The agricultural training element introduced through the farm is an essential requirement for the community in order to avoid complete loss of farming skills in the rising generation. Traditionally, those skills were passed on from father to son, working together on the family plots. Supension of all farming in the community for the past 13 years has left a knowledge gap which has not been filled by any form of training to date.

(6) Crop Trials

The major agricultural schemes planned by GOS for the area will require massive investment in machinery and land preparation. It is therefore elemental that they are initiated with crops that have been proven to flouri in the prevailing conditions. There are institutions in the Sudan which hav made scientific trials in somewhat similar conditions, e.g., at Atbara. Further trials will progress from this experience, providing definitive results at the actual site. This is the best on the spot method producing definite evidence by which high yield seeds can be identified and certified allowing for variation in climate soil and water conditions locally.

Surveys indicate that the soil is only marginally suitable for agriculture, and that extensive fertilization will be required at least initiall The pilot nature of this project must be emphasized, in that it seeks to establish techniques for achieving agricultural production at eco

before, major capital sums are invested in large scale production schemes. The observed results of small scale domestic production, give good grounds for an optimistic view of the potential for economic production levels. Emphasis will be placed on identification of shallow rooted crop varieties of wheat, barley, vegetables and fodder. A variety of trees will be planted, providing water retention, wind break (anti-erosion measures), timber, fuel, shade and fruit.

Once crop trials are completed, it will be possible to apply the results to a potentially productive area of lakeshore of up to 450 miles. On this scale the Northern Province would become a major contributor to the agricultural economy of the Sudan.

(7) Technology

As is clearly illustrated in the attached article "The Agricultural Cycle" (Appendix XVI), the Nubians traditionally managed three crops annuall without the use of heavy mechanization. Ploughs and graders were simply mad and drawn by bullocks. Simple traditional methods of irrigation and water sonservation have been used for centuries with excellent results. For the purpose of this project the intention is to use as much as possible, the simple technology known to the community (see Appendix XVI, page 10). The use of tractors and deep ploughing presents special dangers of erosion, given the shallow top soil layer, and constant prevailing winds. Emphasis will also be given primarily to crops traditionally known and grown by Nubians. Only if shown to have notable economic and nutritional values will completely new crops be introduced. As stated in the soil survey (Appendix XIII), the use of fertilizers will be essential at least at first. Every attempt will be made to keep the use of this expensive commodity to a minimum, by rotational cropping. It may be possible in the future to furthe minimize or eliminate the use of commercial fertilizers through substitution e.g.,

1. The fish processing factory scheduled to begin operations in 1978 has a capacity of 70 tons per day. The feasibility of processing fish wastes into fertilizer will be investigated;
2. As animal fodder becomes established in the area, livestock will increasingly be introduced. Export holding pens with a capacity of

60,000 animals per year are planned for the future. There will therefore be an increasing amount of manure available for use as fertilizer.

Since most of the skills required for this project are available within the community, expatriate personnel will be kept at a minimum, e.g.,

1 Project Manager) - Possibly Combined
1 Water Engineer)

1 Irrigation Agronomist
1 Nutrition Educator (Provisional, may be obtainable locally)

(8) Equipment Serviceability

Servicing facilities at Wadi Halfa are embryonic. Routine vehicle maintenance and repairs can be carried out at the town Councils workshops. This capability will be supplemented by the Projects provision of tools and spares. Skill levels of local mechanics are adequate for all but major repairs. Should any such major repairs be required, then vehicles may have to be shipped to Khartoum by rail. The IVS Water Engineer will train local mechanics on maintenance of the drilling rig.

(9) Self motivation indicators

"The Struggle Continues" by Md. Beirham, Chairman of the Wadi Halfa Peoples Council (Appendix II) illustrates how their struggle to survive as a community for the past 13 years has drawn the people together as a mutually supportive cooperative unit. The share capital for the cooperative society (£30,000), and money contributed for the building of 4 schools and a hospital and dispensary, was collected not only from residents but also from Nubians living and working outside the community. This would appear to be good evidence of their intention to return as soon as conditions are made possible. Common adversity has strengthened communal ties, forming the operational core on which the new community will be developed. Individual initiative is not discouraged, and several people have undertaken private enterprise ventures, e.g. market shops, the hotel, tailors, etc. However the main development thrust will be implemented through and by the multi-purpose cooperative society.

When as a result of this project water is available for human consumption for irrigation and for support of animals, development in subsidiary fields will become possible, e.g. meat and dairy processing and marketing, with consequent enhancement of health and economic well-being.

(10) Local continuation

The Commission's budget for the 1000 feddan Survival Scheme has been approved, and tenders solicited for the necessary machinery (£471,000 total budget). Also appended is the development budget for the area's 6-year plan. Counterpart training for the 4 drilling rig operators appointed by the Commission should be completed in the two to three year life of the project. Given the high skill levels available in the community, it is unlikely that expatriate assistance will be required beyond that period, provided that implementation targets are met. (See below further discussion of recurrent costs.)

A series of meetings between the GOS and the Government of Egypt is in progress, with reference to the development of the cross-border area, utilization of lake water resources, riparian rights, fish harvests, and rail/steamer communications. Communiques indicate a full measure of agreement in all

continued on page 10.

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aspects. An official of the Sudanese Ministry for Irrigation has confirmed that the current proposals to take off lake water for irrigation will not make any significant difference to the amount available under the international agreement (Sudan's share 17 milliards per annum).

D. PROJECT DESIGN AND IMPLEMENTATION

(1) Expansion of Municipal Water Supply

References : Report by Chief Water Engineer, Projects Div., National Electricity & Water Corporation (Appendix X)

Report by Arther Raymond, IVS Water Engineer (Appendix XI).

Since the provision of adequate supplies of clean drinking water is the primary prerequisite for implementation of ALL other development projects in the area, this sub-project is given the highest priority.

Under the present system, the volume of water produced is less than 50% of the calculated needs of the present population. Uneven distribution pressures mean that 50% of the geographical area (communities 3, 4 and 6) receive only an intermittent trickle. It is currently expected that the population will double to 20,000 in 5 years, meaning that the water supply system without improvement could meet less than 20% of the community's needs.

Actual capacity	1140 cu metres per day
Calculated requirement now (pop. 10,000)	3000 " " " "
Calculated requirement in 5 years (pop. at least 20,000)	5100 " " " "

The project will give the water supply system a capacity of 10,000 cu metres per day, adequate for current population and for expected population expansions for the next ten years (i.e. a population of 30,000).

Present system

A lakeside diesel powered pump extracts water from the shallows and pumps to a stage reservoir 200 metres inland. The water is then boosted by motor powered pump to the sedimentation tanks and gravity fed to filtration tanks, total pumping distance 3 miles. After filtration the water is pumped up to a 70-ft. high distribution tank with a capacity of 10,000 gallons.

Problems

i) the lakeshore pump has to be moved each time the level of the lake rises or falls. Each move costs at least 20 man hours;

ii) because it is pumping from the shallows, the system becomes fouled with mud;

iii) the high level tank is of insufficient capacity. At periods of peak demand it is necessary to pump directly into the distribution system;

iv) system distribution pressure is inadequate to supply communities 3, 4 and 6;

v) auxilliary feeder mains (1/2") are inadequate to provide pressure required to individual compunds.

Project Implementation

1. Equipment & materials required

	External	Local
25 HP Petter diesel engines	2	-
5" suction pumps	2	-
Hose and fittings	2	-
Cement	10 tons	-
Pickup type vehicle	1	-
Distribution piping	30%	70%
Fuel and spares		100%
House and office fittings	10%	90%
Local labour	-	100%

2. Work plan

i) The lakeshore pump to be installed on a floating platform 30-50 metres from the waterline, with water then piped inland. This will eliminate the need for moving the pump each time the water level fluctuates, and will avoid fouling of the pumps by sand as the water will no longer be pumped from the shallows; platforms will be constructed of rail ties, available at project site, at virtually no cost;

ii) Install 8" ring main reducing to 6";

iii) Replace 1/2" feeder lines with 2" piping;

iv) Install additional filtration and pumping facility south of community 3, feeding direct into the 6" ring main (see map). This will provide high and balanced pressure throughout the system, and allow for future expansion;

v) Install new pump on floating platform south of new station.

NB Sedimentation and filter tanks for new auxilliary station (iv) are those salvaged from old station when concrete tanks are completed.

The proposed modifications to the system will give a calculated

(2) COOPERATIVE/YOUTH TRAINING FARM

50 feddans of lakeshore land have been surveyed and allocated to this project. It will be owned and operated by the Wadi Halfa Cooperative Society.

Objectives

i) to establish by testing the most productive and efficient methods of irrigation, use of fertilisers and horticulture in this previously uncultivated area; to identify and multiply high yield varieties of seeds and tree cuttings;

ii) to provide fresh fruit and vegetables to the local market at economic prices;

iii) to establish grasses and fodder crops so as to enable the re-introduction of livestock, first for farm work (bullocks); secondly for meat and dairy production; and

iv) to provide practical on-the job training for youths in irrigation methods, horticulture and arboriculture.

Personnel

1	IVS Irrigation/Agronomist	Management & Technical
1	Sudanese Horticulturist	C/Part Management & Technical
	Parents Cooperative Committee	Practical supervision & Training
250	5th & 6th form students	Cultivation & irrigation.

Materials

4" suction pumps with diesel engines	5
4" x 100 ft flexible suction hose	5
Handtools	
Seeds and cuttings	
Fertiliser	
Cement	
Stationary and office materials	
Instructional visual aids.	

Method

To the extent possible, traditional Nubian methods will be followed. The cycle begins in October, with preparation of the plots, clearance of weeds etc by hoe (kard). After 7-10 days, the plots are lightly watered preparatory to ploughing. In a further 7 days ploughing begins using a simple and shallow plough drawn by oxen. After a week's interval, sowing, in which women specialise begins. A home-made grader made of a heavy rail sleeper (ties) is used to level the soil and cover the seeds. The plot is then divided into small beds, with ridges of earth to retain the water. First irrigation takes place in December, with germination within 5 days. Fertilisation was done by

mixing the salts with irrigation water at source. Harvesting of the winter crop begins in April (for details see "The Agricultural Cycle", Appendix XVI). Since there is at present no fodder on which to feed oxen, several alternatives arise:

i) use hand labour alone for the first cycle;

ii) bring in a pair of oxen with enough feed to last through the first season.

It is felt that such a basic policy decision should be made in discussion with those who will do the actual farming work, and for this reason the decision is still open.

Installation of the pumps will be carried out by the IVS water Engineer, working with the irrigation/agronomist and horticulturist. The farm will be divided into three sections;

i) horticultural experiments involving tests of different kinds of fruit and date trees;

ii) winter rotations, eg wheat, barley sugar cane;

iii) winter vegetables, eg onions, beets, cabbages, peas, beans, potatoes and salads.

Shade and timber trees will be planted around the periphery as a windbreak. Emphasis will be on producing high yield varieties of traditionally known crops, with the intention of verifying the most economic and efficient methods of irrigation and cultivation. Introduction of new crops will at first play a minor role.

It is not intended to initiate a sophisticated new research station, but rather to verify practically and quickly those varieties which will flourish in these so far unproven conditions, in order that full scale production may be accelerated. The Irrigation/agronomist will work closely with his counterpart horticulturist in initiating and supervising crop trials, keeping detailed records. After identification and testing of most productive varieties, a seed multiplication and distribution system will be introduced throughout the community. Marketing of produce will be done through the cooperative society, using the technical services of the on-post Cooperatives Inspector (Town Council). Seeds and cuttings will be purchased from the GOS AG R&D Station at Atbara which is the nearest AG station to Wadi Halfa and where cultivation conditions are most nearly similar.

Youth Training

This will take the form of non-formal practical training, with the boys and girls working alongside their parents as they did before the flood. Theoretical training will be minimal, with slide and film shows and some group discussion periods.

The two sections of the farm (lakeshore and inland irrigated) will total 100 feddans and will absorb 250 youths on a 2-year part-time course. Students will be allocated small individual student plots in which to grow their own vegetables. This, as well as demonstrating capability will provide an incentive to produce.

IVS will procure and ship all non-indigenous materials and equipment for the project utilising their technical assistance agreement with GOS which provides for duty free import of all required materials. Regular progress reports and accounts will be furnished to donors, using the evaluation criteria laid down in the logframe analysis.

Since the designated area is relatively level, sloping gradually down to the lake, there is no requirement for large scale land clearance and levelling, which would require heavy earth moving equipment. The shallow topsoil layer holds dangers of wind erosion should it be ploughed too deeply. Therefore traditional hand tools and methods will be used throughout. The Council owned cement mixer will be available for lining of canals required to prevent heavy water losses through seepage.

Spread Effect

As this project is designed to work with and through the elected Peoples Council, the Wadi Halfa Cooperative Society and community schools, maximum possible spread of economic benefit is assured. A table showing the relationship between external donors and host organisations is at Appendix VII. As there is almost unlimited lakeshore land available, replication by other groups is possible and will be encouraged. As noted earlier, the project is part of the area designated for the 1000 feddan survival agricultural scheme and is complementary to that project. Techniques learnt will be applied to the larger scheme and to the 10,000 feddan West Bank scheme which is planned to follow. Offshoot activities such as fruit and vegetable packing and marketing, transport,

animal husbandry, dairy and meat processing and marketing will arise from this project, offering employment and incomes to others not directly employed in project implementation, as well as stimulating the activities of the existing multi-purpose cooperative.

(3) INLAND IRRIGATION AND SANITATION PROJECT

Introduction

This project is part of, and complimentary to, the Cooperative/Youth Training Farm, with a similar area of 50 feddans initially. According to a soil survey (Appendix XIII), the soil at this site is marginally better in quality than that at the lakeshore. Cultivation at this site north of the town (see map) will have the added advantage of forming a windbreak between the desert and the lakeshore cultivation area. The two cultivation areas will come under common management and control, with comparative crop trials taking place simultaneously.

Appendix XII contains a report by the GOS Public Electricity and Water Corporation on results of their geologic and hydrogeologic investigation of the Wadi Halfa Region, which concludes as follows:

1. "the probability of sandstone beds saturation by water through the process of infiltration from the lake is very high"
2. "the Nubian sandstone formation is in direct contact with the waters of the lake"
3. "most of the aquafer in the northern part of the area may be saturated with waters from the lake";
4. "IT IS HEREBY RECOMMENDED that hydro physical methods be used to confirm these points".

Should the survey findings prove out by drilling, and water is found in sufficient quantity at recoverable depths, the area of potentially arable land will be vastly increased. 50 feddans north of the town have been surveyed and allocated to the project as part of the Cooperative/Youth farm project. This is part of a 1000 feddan area earmarked for cultivation by borehole irrigation.

Method

A Dando 400 type mobile percussion drilling rig is adequate for a drilling programme of this scope. (200-500 ft. through sand, soil and soft sandstone.) This type of rig is economical and simple to operate. The 4 trainee drillers

appointed should be capable of learning to operate and maintain the rig within the life of this project. The rig will come under the direct supervision and control of the IVS Water Engineer, who will also be responsible for the training.

Up to 5 boreholes will be required to irrigate the 50 feddan area. Each will be fitted with a diesel powered suction pump. As there is a constant prevailing wind at Wadi Halfa, one hole will be fitted with an experimental windmill powered pump. Should this prove efficient, future expansion of the project will be affected at considerable less expense and a saving of fuel.

(4) SANITATION

The present system of human waste disposal by the "bucket system" is unwholesom and dangerous to health, especially since flies abound in the area. It has proved almost impossible to recruit labour to carry out the demeaning task of disposal. It is not economically feasible to install individual water closets even if sufficient means of water supply were available, which it is not.

Individual householders can and do minimise health risks by high standard of hygiene and maintainance of household latrines. The greatest risk is incurred from those facilities located in places of public congregation, e.g., schools, hospital, railway station, steamer terminal, and the market place. These are heavily used and difficult to maintain to a high standard of cleanliness. It is therefore proposed that the Dando rig purchased for water drillin be also used to drill a series of "long drop" latrines in all public places listed below. Each will be topped by a simple cement slab with "footprints", and fitted with a wooden lid. Latrine structure will be of mud-brick, and wit corrugated iron roof. A tap will provide water for personal hygiene. The town Council will undertake construction and maintenance of these simple structures, totalling 48.

In order to ensure that the maximum possible health benefit is derived by the community by use of the public latrines, a program of public education wil be devised. Three channels of communication are immediately apparent, and will be utilized:

i) information disseminiated through the CRS Nutrition/Education sub-ptoject;
ii) dissemination thru the People's Council to community leaders;
iii) information to the general public thru posters placed in all public places.

This process of health education will be implemented in cooperation with the Senior Medical Officer and the Public Health Officer in Wadi Halfa.

Materials Required

Item	External Donor	Locally Supplied
Dando 400 Mobile Drilling Rig	1	
4" Diesel Powered Pumps	5	
4" x 100 mtrs. Flexible Hose	5	
Windmill Pump	1	
4 wheel drive Pick-up Vehicle	1	
Fuel and Running Costs 2 years		
Cement	10 tons	
Local Labour		100%

NB. Fallback Position

Despite the optimistic forecast of the hydrogeological survey, any drilli programme carries the risk of dry holes when actual test drilling is carried out. There is a risk that water may not be found in sufficient volume on the designated site. Should this be the case, the pumps purchased for this purpos will be used to expand the lakeshore area by 50 feddans. The rig will be used for further water exploration on alternative sites along the lake where the geological structure is favourable. It will also be used to expand the sanitation scheme to cope with the needs of the expanding population.

(5) CRS NUTRITION PROGRAMME

Based on the findings of the recent Wadi Halfa Nutrition survey, CRS wit the concurrence of the counterpart, the Sudan Ministry of Health, has decided to initiate its programme of health and nutrition education for pre-school children in Halfa.

Accurate data on the size of the under-5 population of Halfa was not available as of this writing;however,CRS will plan for a programme to reach 1,000 children per month. If the under-5 population proves to be larger, then the programme will be expanded.

The Wadi Halfa nutrition programme will be run in cooperation with the Ministry of Health and the nutrition education activities will be directly overseen by the town's public health nurse. The nurse, who has had training i MCH, will come to Khartoum for 2 weeks of programme orientation. Additionally the Wadi Halfa Commission is making arrangements with the Ministry of Educati to release a Wadi Halfa teacher for the programme. She will attend a four mon course in nutrition education and on completion of her training will work as full-time assistant to the public health nurse. The Wadi Halfa Medical Office will be responsible for the day-to-day supervision of the nurse and nutrition educator, and the Nutrition Division and CRS will arrange for a Ministry of Health Nutrition Officer to visit Halfa at least twice a year to ensure that the programme is properly functioning.

In the CRS sponsored MCH programme in Wadi Halfa,children and their mothers will visit the center at least once a month and the following activit will take place:

1. The child will be examined and weighed and his weight will be recorded on a master chart, weight for age. This chart will record weights for all children attending the center on a particular day by plotting

child's weight for age, the nurse determines the physical status of the child in terms of the percentage of the Harvard standard of growth. The Harvard growth curve is superimposed on the chart's weight for age grid and this percentage is in turn transferred to the individual growth chart. The individual chart, which is kept by the child's mother, graphically allows the mother to see whether or not her child is growing properly. Additionally, the chart provides space for recording immunizations and other relevant medical data and is an important record for the child's pre-school years.

2. The Health Visitor will give private consultation to each mother, and in doing so, will inform her of the health and nutritional status of the child, and what, if any, corrective action should be taken by the mother to ensure that the child is growing properly.

3. The child will be immunized against infectious diseases when vaccines are available, and it will be treated for minor ailments (children discovered to be seriously ill will be transferred to the health center physician).

4. A group lecture or demonstration on nutrition, or a health related subject will be given by the nutrition educator to all mothers.

5. Supplementary foods (2 kilos of NFDM and 1 kilo of oil will be given to the child at each clinic visit. These foods are intended to be:

a) a corrective element of the child's diet;
b) a means of educating the mother about nutrition and nutritious foods;
c) an economic aid to the family.

Based on 1,000 children, the value of the food assistance that CRS will provide to Wadi Halfa in a one-year period is US $57,552. Added to the programme value will be clearance, inland transport and personnel costs borne by the Ministry of Health, and other inputs (e.g. weight scales) by CRS.

6. INTEGRATED MANAGEMENT SERVICES

It is firm IVS policy to utilize the skills of local personnel wherever possible, in preference to expatriates. Given the above average level of education and skill among the Nubian people, local inputs are expected to be the major part of the project. Expatriate assistance is limited in the first stage to a maximum of three specialists at Wadi Halfa. Should it prove necessary, as the project developes, further expatriate specialists may be recruited.

If project goals are to be met, and lessons learned used to the best effec then a competent management and evaluation service is essential. It is logical that management of external inputs should be closely coordinated with and should supplement local inputs and management, therefore:

In Khartoum IVS

IVS Country Director will be allocated office space and services in the office of the Commissioner for Development of Wadi Halfa, having a counterpart relationship with the Commissioner. He will:

i) coordinate and administrate external donor finances;
ii) maintain accounts and records;
iii) execute local and overseas purchase and supply;
iv) execute customs clearance and dispatch to Wadi Halfa;
v) liaise witl GOS Ministries;
vi) prepare evaluation and progress reports for donors;
vii) participate in future programme development and planning;
viii) evaluate need and prepare submissions for further funding.

Experience has shown that execution of the above listed duties in Khartoum can be extremely time consuming, particularly when due consideration is given to the difficulties encountered in dealing with the vast beaurocracy in GOS. The civil service can be said to be undermanned, and is faced with a proliferation of aid agencies as well as bilateral missions.

It is therefore essential that sufficient resources are made available for efficient management in Khartoum, so that the operational ends in Wadi Halfa are not handicapped.

Initially, IVS Country Director will be responsible, utilizing the services of a locally recruited Assistant Manager. The remaining 67% of the IVS Directors time (24 man months) will be paid for by IVS, for the purpose of carrying out his duties other than the Wadi Halfa project.

Should it prove essential in practice, IVS is prepared to recruit an expatriate Assistant Manager.

In Wadi Halfa

IVS Project Manager will be a qualified Water Engineer. He will work in the premises of the Town Council, using office facilities. He will:

i) maintain local accounts and records;
ii) coordinate external inputs;
iii) liaise with local authorities;
iv) train local personnel;
v) be directly responsible for operation of drilling rig;
vi) provide regular progress reports.

E. EVALUATION PLAN

Assuming project effective date to be July 1st, 1978 - that is, availability of funds as of that date to enable procurement necessary for project and employment of project personnel - it is planned that the first comprehensive evaluation will be conducted in November 1979. This will be approximat one year after actual project operations subsequent to procurement and key personnel availability. (See "Schedule of Actions Required".)

The comprehensive evaluation proceedings in 1979 will be the responsibil of the Project Manager, in consultation with project participants (Sudanese and CRS), AID, and other donors. It is proposed that the evaluation be conducted on site at Wadi Halfa following generally the style of a P.A.R., adjusted as appropriate to enable active participation of the GOS and Wadi Halfa community participants.

Since this is a 3-year project, and in the light of the nature and magnitude of the outputs, it is not contemplated that the first comprehensive evaluation will reflect measureable progress towards achievement of the Purpose Indicators. However, the November 1979 evaluation will look beyond review of putputs and include review both of Output and Purpose assumptions to determine the integrity and realism of the initial project design as set out in the logframe.

A second comprehensive evaluation will be scheduled approximately one year after the first (approximately November 1980), at which time there should be ample basis for determining progress towards achievement of project purpose, with reference to the Purpose Indicators.

In addition to financial reporting as required under the grant documents, IVS proposes to submit to USAID narrative reports at six monthly intervals. These reports themselves will be evaluative in the sense that they will review principal project activities and progress.

The responsibility for securing base line data required for on-going and end of project evaluation will rest with the IVS Field Director for the Sudan. IVS/Washington will provide assistance to IVS/Sudan, as appropriate, for project evaluation purposes. A time chart is appended with the Log Frame.

F. COST BENEFIT ANALYSIS AND RECURRENT COSTS

The funds requested from AID ($398,000) will have a direct beneficial effect on the current population of 10,000 in Wadi Halfa, or approximately $40 per person. Since the project purpose related to the capacity of Wadi Halfa to absorb and meet the basic human needs of a population increasing to 30,000, the AID contribution will amount to some $13.00 per person benefitted. The global budget over the three year life of the project (approximately $1,000,000), which includes contributions of the Government of the Sudan and all external donors, amounts to a $100 cost per beneficiary based on current population, and $33 per beneficiary based on the population growth to 30,000.

IVS estimates that the project to be funded by the requested AID grant will result in no recurrent costs to the Government of the Sudan to the community institutions in and serving Wadi Halfa which are not self-financed as a result of project activities or otherwise budgeted:

1. Municipal water supply scheme

This sub-project adds 2 diesel engines to the existing system, which will consume approximately £760 per annum in diesel fuel, working 48 hours per week. However, once a balanced water supply is operating to each community, the Council proposes to introduce a water rate, chargeable to each household at a standard rate.

2. Cooperative/youth training farm

Recurrent costs in fuel and spares to run the vehicle and irrigation pumps amount to approximately $10,000 per annum. At EOP, there will be sufficient production of fruit and vegetables for sales to cover recurrent costs for the future.

3. Sanitation scheme

Recurrent costs consist of labour charges to clean and maintain latrines. This is covered by the Town Council from its Public Health budget.

4. Drilling rig

At EOP, the rig will be used for further water drilling for the purpose of expansion of cultivated areas. Recurrent costs are within the 6-year development plan budget.

5. Each of the project agricultural areas are within, and will become part of, the Survival Agricultural Scheme and will be absorbed by this project, the budgets of which include recurrent costs.

G. ENVIRONMENTAL IMPACT

IVS has submitted separately to USAID/Khartoum a paper requesting, and supporting, a negative determination on environmental impact.

H. Budget and Financial Analysis

The budget is designed to call for careful management of resources, at minimal possible cost. 10% inflation and contingency factor is included. Given the often unpredictable nature of inflation, and its impact on world and local prices, a careful monitoring of project expenditures will be required. A further submission for supplementary funds may be required as the project developes, and will be made providing that progress and results justify it.

H. BUDGET & FINANCIAL ANALYSIS

1. Municipal Water Supply

	P. Mths.	IVS	AID	Other PVO	Local
a) Personnel					
IVS Water Engineer	12		$ 16,000		
C/Part Water Engineer	24				7,500
Skilled labour	400				50,000
b) Training					
Workshops & practical			3,000		
c) Commodities					
4 wheel drive pickup x 1			15,000		
25HP Petter engines x 2			8,000		
5" suction pumps x 2			6,400		
Cement - 10 tons			3,000		
5" suction hose x 200 ft			2,100		
5" flange connections x 6			2,100		
Asbestos pips 1 1/2" x 80,000 mtrs					
" " 2" x 2,000 "					
" " 4" x 15,000 "					
" " 6" x 4,000 "					
" " 8" x 3,000 "					
Galv. tees 1 1/2" x 300					
Plug valves 1/2" x 9,000					
" " 1 1/2" x 300					
Rail ties/binding materials					
Galv union tees 1 1/2 x 1/2 9,000					
Galv plain sockets 1 1/2 600					
Detachable joint 4" 3,750					
" " 6" 1,000					
" " 8" 750			70,000		340,000
d) Other costs					
Fuel and spares			5,000		5,000
Transport			10,000		
Sub total			140,600		402,500
10% contingency			14,060		
Total request			154,660		

2. COOPERATIVE/YOUTH TRAINING FARM

	P. Mths.	IVS	AID	Other PVO	Local
a) Personnel					
IVS Irrigation/agronomist	24		30,000		
C/Part horticulturist	24				15,000
Ag. Officer	.6				4,000
b) Training					
250 trainees			7,000		
Visual aids			3,000		
c) Commodities					
4 wheel drive pickup x 1			15,000		
fuel & spares			5,000		2,000
6" diesel pumps 50HP x 2			33,000		
fuel & spares 2 years			3,000		
4" suction hose 500 ft			5,000		
Handtools			2,000		
Cement - 10 tons			5,000		
Fertiliser			8,000		
Seeds and cuttings			5,000		
Office and stationary			1,000		
Furniture & domestic equipment			6,000		
d) Other costs					
Transport & travel			5,000		
Sub total			133,000		
Less grant from CAN EMB			14,000		
" " " Australian Emb.			1,000		
			118,000		
10% contingency			11,800		
Total request			129,800		21,000

3. INLAND IRRIGATION AND SANITATION BY BOREHOLE

	F.Mts	IVS	AID	CRS	Local
a) Personnel					
IVS Water engineer	6		8,000		
C/Part Water Engineer	12				7,500
Ag Officer	6				4,000
Drivers x 2	48				5,000
Trainee drillers x 4	96				10,000
b) Training				2,000	
c) Commodities					
✓Windmill x 1			10,000		
Dando 400 drilling rig				40,000	
4" diesel pumps x 5				33,500	
4" piping 1000 mtrs				5,000	5,000
Cement - 10 tons				3,000	
4 wheel drive pickup				15,000	
✓5 ton lorry			20,000		
Fuel & spares rig & vehicles				10,000	
✓Full set tools			1,000		
Latrine buildings					8,000
Sub total			39,000	108,500	39,500
10% contingency			3,900	10,850	
Total request			$42,900	119,350	39,500

5. INTEGRATED MANAGEMENT SERVICES

	P. Mths.	IVS	AID	Other PVO	Local
a) Personnel					
IVS Khartoum Director	12		20,000		
IVS W. Halfa P. Manager	12		12,000		
b) Training					
c) Commodities					
1 x 12 kva generator			10,000		
Fuel & generator spares			2,000		
Household equipment			10,000		
Adm. supp. Equipment.			2,000		
d) Other costs					
Travel & communications			8,000		
Housing x 2 x 2 years					12,000
Sub total			64,000		
10% contingency			6,400		
Total request			70,400		12,000

CONSOLIDATED BUDGET

	P. Mths.	AID	CRS/ Other	Local
Personnel	688	86,000		112,500
Training		13,000	2,000	
Commodities		234,600	121,500	355,000
Other costs		28,000		17,000
Contingency		36,160	10,850	
Totals	688	$397,760	134,350	484,500
External total		532,110		
Plus internal total		484,500		
Grand total project cost		$1,016,610		

NB 1. Management cost is 15.7% of external cost
Management cost is 8.2% of total cost

NB 2. CRS nutrition project is valued at $ 57,552 per annum for LOP 3 years total $ 172,656, donation in kind

NB 3. LS. 1,000 Sudanese = US $2.00

WADI HALFA COMMUNITY DEVELOPMENT PROJECT
SCHEDULE OF ACTIONS REQUIRED

SUBPROJECT & ACTIVITY (N3 = Management Services)	1978 JFMAMJJASOND	1979 JFMAMJJASOND	1980 JFMAMJJASOND	1981 JFMAMJ
1. Municipal Water Supply				
- Engineer on site		E	E	
- Procurement (MS)		V	V	
- Instal filter & sedimentation tanks		A	A	
- Instal ringmain & feeder lines		L	L	
- Build floating platform, instal pumps		U	U	
- Test & adjust systems		A	A	
		T	T	
2. Cooperative/Youth Training Farm		I	I	
- Procurement (MS)		O	O	
- Irrigation Agronomist on site		N	N	
- Recruit, brief local labour				
- GOS Horticulturist on site		E	E	
- Initial canals installed,		V	V	
ground prepared		A	A	
- Water pumps installed	X	L	L	
- Cropping		U	U	
- Youth Training		A	A	
		T	T	
3. Inland Irrigation		I	I	
- Procurement (MS)		O	O	
- Water Engineer on site		N	N	
- Drilling				
- Recruit & brief local labour		E	E	
- Installation of pumps		Schedule dependant on drilling		
- Cropping		and wells proving out		
		V	A	
4. Sanitation Project		A		
- Drill Holes		L	L	
- Construct latrines		U	U	
		A	A	
5. Nutrition/Education/Extension		T	T	
- Pub.Health Nurse Training		I	I	
- Health Ed. Asst. training		O	O	
- CRS MCH Programme		N	N	
- Nutrition Survey		X	X	
6. Management Services				
- Khartoum Project Mgr				
- Wadi Halfa Proj. Mgr				

Notes : - Time chart assumes AID funds available 1st July 1978 to commence necessary procurement

- Several activities (Khartoum Project Manager and the nutrition personnel training) pre-date project effective from 1st July 1978.

PROJECT DES
LOGICAL

Project Title & Number : Wadi Halfa Community Dev. 650-0026

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS
A-1 Goal: To improve economic and social conditions contributing to the overall development of Sudan Sub-goal: To create conditions which will accelerate the development and reconstruction of Wadi Halfa	A-2 (1) Sudan self-sufficient in food production. (2) Nutrition levels and health conditions for general population meet minimum standards set by WHO. (3) Land and water resources of Northern Province used to achieve self-sufficienty in basic foodstuffs and export income
B-1 Purpose: To enhance the economic and social well-being of present and future Wadi Halfa area population by stimulating agricultural development through irrigation systems development, crop trials and youth agricultural vocational traning; and improving health/nutrition & sanitation conditions.	B-2 (1) Ability of Wadi Halfa area to absorb anticipated increase in population, ie 20,000 in next 10 years (2) Number of new jobs created within & as a result of project activity. (3) Reduction in cost of foodstuffs through increased local production. (4) Number of newly returned population engaged in agriculture (5) Decrease in communicable diseases associated with poor sanitation, i.e. water and vector diseases. (6) Decrease in percentage of family income used for food purchases. (7) Decrease in identifiable malnutrition & diminishing incidence of respiratory disease (8) Adequate potable drining water supply for 30,000 people
C-1 Outputs: (1) Lakeshore irrigation system (2) Inland borehole pump irrigation system (3) Youth Agricultural Vocational Training Farm programme (4) Crop trial data in fodderes, fruit and fodder production, & trees (5) Expanded potable municipal water system (6) Sanitation facilities (7) Nutrition education & pre-school child feeding programme	C-2 (1) 5-4" pumps & canal systems irrigating 50 feddans lakeshore land (2) 5-4" pumps fitted to boreholes sufficient to irrigate 50 feddans (3) 250 students trained in vocational agriculture per year (4) Most productive methods of irrigation, fertilisation & seed/crops production identified & tested (5) Expand municipal potable water supply to 4100 cu metres/day with constant pressure throughout system (6) 48 public latrines available in Wadi Halfa schools, hospitals, market area and public buildings. (7A) 2/3 mothers with children 0-5 yrs participating in formal health/nutrition education programme (7B) 2/3 of total under 5 years of age population enrolled in MOH/CRS operated nutrition programme
D-1 Inputs : IVS & other donors contributions (1) 6FT IVS/CRS technicians & staff (2) Commodities: pumps, cement, hose, pipe, drilling rig, handtools, fitting	D-2 (see budget & financial analysis)

IGN SUMMARY
FRAMEWORK

. Life of Project:
From FY _____ to FY 6
Total U.S. Funding _____
Date Prepared: _____

MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
A-3 (1) Revenue records (2) Nutrition/health studies (3) Trade statistics (4) Balance of Payments statistics	A-4 (1) Continued Government of Sudan efforts to improve the living conditions and well-being of its population (2) Continued availability of GOS financial & technical support.
B-3 (1) Records of IEWC (2) Records of Cooperative/Youth Training Centre (3) Rail freight & river freight records (4) Market observation (5) MCH, hospital records (6) Local government records on employment and taxation (7) Sanitation facilities count (8) Grain production survey/records (9) Census/registration records	B-4 (1) Installations required to expand the municipal water supply will be completed by IEWC (2) Wadi Halfa applications to NCDR for use of lands will be approved (3) Aspirations as shown by their return to their homelands (4) GOS will continue to consider development & reconstruction of Wadi Halfa as a national priority & continue NCDR mandate & financing (5) NCDR will implement its plans for development (6) Wadi Halfa Town Council & Cooperatives continue reconstruction efforts (7) Wadi Halfa population willing to adopt new crop varieties production & actively participate in agri. & health/nutrition programmes.
C-3 (1) Project records & evaluation reports (2) MCH, hospital records (3) Cooperative's records (4) Minutes of Town Council meetings and reports (5) Observation (6) Surveys and studies	C-4 (1) Underground water will be found for bore-hole exploitation (2) Local youth are interested in agricultural vocational training (3) Cooperative society continues to function & be involved in local development projects (4) Baseline studies accurately reflect socio-economic situation and needs (5) Town Council will undertake construction of latrine building structures (6) GOS personnel required to implement project will be assigned
D-3 IVS, CRS personnel and financial records related to project	D-4 (1) AID will support project costs of $398,000 (2) IVS and CRS headquarters s[illegible]