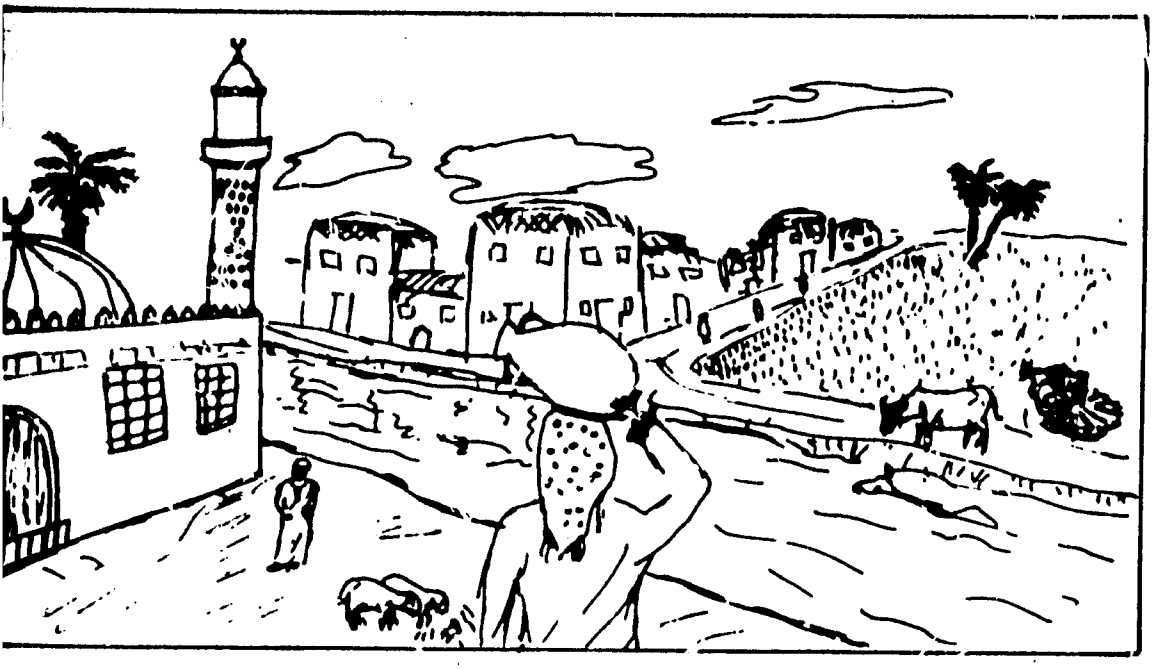
ARAB REPUBLIC OF EGYPT

MINISTRY OF LOCAL GOVERNMENT



EGYPT: BASIC VILLAGE SERVICES

FINANCIAL & TECHNICAL ASSESSMENT

AID CONTRACT NO. AID/SOD/PDC-C-0189

PREPARED BY

DEVELOPMENT ALTERNATIVES, INC.

in association with

LOUIS BERGER INTERNATIONAL, INC.

Egypt: Basic Village Services Program

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Introductions

INTRODUCTION

This report covers the findings and recommendation of a rural development team which spent most of October and November of 1979 in Egypt. The team worked under a contract between US AID Washington and The Development Alternative Inc. a consulting company in Washington D.C. The team's task was to assess and evaluate technical and management abilities existing in the Governorates (Provinces) of El Baheira, El Minya and Kena to plan and implement a series of projects in basic infrastructures within villages, funded by the United State's Government. USAID intended to know whether or not the multiple goals and objectives of the program could be expected to be fulfilled. The team has succeeded in gathering a great deal of information relative to the planning and implementation of the program. The governorates have cooperated in supplying data and arranging for visits and discussions. In addition much of the introductions and Organization of meetings were provided by Mr. Dakroury Thabet of The Organization for the Development of the Egyptian Villages (ORDEV). The progress of the work of the team were discussed in several meetings held with Mrs. Ann Fitzcharles director of the BVS program committee.

The report is divided into five chapters. Chapter one provides background and description of the program. This information is based upon the material which was provided from AID and is intended to introduce the reader to the BVS program, what has taken places so far, scope, and objective of the study. Chapter 2, 3 and 4 cover each of the governorates in detail, responding directly to the "Statement of Work" items A, B, C, D and E. Chapter 5 is intended as a summary and provided recommendations of the team to insure success of the Basic Village Services Program.

CHAPTER I

Purpose and Method of Study

Since 1975, the Government of the Arab Republic of Egypt has embarked upon an unprecedented effort to promote decentralization of the nation's administrative structure. One intent of the new effort is to encourage decentralization of the rual development process whereby Village Councils have been given direct responsibility for selecting, implementing and managing village service projects with coordination and technical support for these activities being provided by the governorate and district (Markaz) offices.

In support of the Egyptian Government's decentralization policy, a pilot program has been launched. Using provisions of US Public Law 480 under which debt service requirements for loan financed food assistance can be waived in amounts equal to local currency contributions of the recipient government for rural development projects, the Government of Egypt in conjuction with USAID is providing village development funds to the three Governorates of Sharkya, El Fayoum and Sohag. These funds are being allocated directly to the Village Councils to implement service projects chosen by the elected members.

In addition to this initial pilot effort, the USAID is exploring the feasibility of making grant funds available to three other Governorates (Beheira, Minya and Kena) for the development of basic village services such as potable water, village roads and other publicly owned infrastructure targeted on improving the quality of rural life. The goals of the new program under evaluation are three fold:-

1. To finance through grants to Village Councils provision of needed services.
2. To support the Government of Egypt's decentralization policy.

3. To assist in the development of new capacities for designing, planning and managing service systems for the rural population in Egypt.

While the Basic Village Services project for Beheira, El Minya and Kena is still in the planning stages, the general perameters of the proposed program have been formulated and agreed upon between the Ministry of Local Development and the USAID.

A. USAID and the Egyptian Government would agree to a sum of money to be allocated for basic services for the first year L.E. 11.5 Million).

B. USAID and the Egyptian Government would agree to a plan for allocating that money to several governorates. (L.E. 3.5 Million to each of three governorates in the first year).

C. This money would be allocated by the governorates to Village Councils for selected Basic Village Services projects selected from a list agreed upon by USAID and the Government of Egypt.

D. The Village Councils will hold the Basic Village Service project money in their accounts in the Village Bank. The Village Councils will be responsible for actually implementing the project. This would include selecting the Contractor for the projects by the usual system of calling for bids, supervising the progress of the project, planning for the operation and maintenance of the project and collecting service charges where appropriate (for example charges for household water connections, garbage service, etc.)

E. The governorates will be responsible for the overall coordination and planning of the Basic Village Services projects. The governorate technical staff will assist and advise the Village Councils on all technical and financial aspects of the Basic Village Services projects. The Governorate will provide the financial monitoring and accounting of the Village Council, although the Village Councils themselves will actually be responsible for spending the money.

F. At the central level, the program will be coordinated by the Ministry of Local Government.

Prior to final approval of the proposed program in Beheira, El Minya and Kena, the USAID requires information and recommendations addressed to the following:-

- A clear understanding of the Egyptian technical, administrative and managerial procedures which will permit maximum reliance upon Egyptian systems in the provision of U.S. assistance to locally implemented infrastructural projects.
- Identification those minimum additional requirements in the technical, financial and management system which may have to be added to permit start up of a U.S. assistance program to BVS.
- Identification of those areas of technical or procedural/ organizational weakness which may require long term project technical assistance to improve overall performance and achieve project objectives.

To obtain the required information, the US Agency for International Development has employed the services of Development Alternative Incorporated in association with Louis Berger International, Inc.

to prepare an evaluation of local project execution capabilities in the three Governorates with recommendations for correcting procedural and managerial weaknesses identified therein. The scope of work for this contract is targeted on the following areas:

1. Evaluation of technical capabilities of all local government personnel who will be involved directly in planning, designing and supervision of the proposed project program.

2. Description of the organizational structures and functions of all involved organizations.

3. An assessment of the ability of technical officers at each level of local government to perform basic identification of program needs, prepare cost estimates and bills of materials, make project evaluations according to objective economic criteria, perform environmental impact analyses, design let contracts for projects and evaluate tenders, supervise construction.

4. An assessment of available construction capacities within the public and private sectors.

5. Evaluation of fiscal controls and procedures used in local development project implementation.

6. Preparation of specific recommendations for correcting identified weaknesses.

The Consultant's team mobilized on October 4, 1979 and deployed, after appropriate arrangement with government officials to the three governorates for the purpose of collecting information required by the scope of work. Altogether, the team spent some 350 working man-hours in the field interviewing at the governorates, markaz and villages, inspecting documentation of previously completed projects, examining workshop and Contractor facilities, inspecting projects under Construction and those that has been completed in prior years. An examination of current procedures

for project planning and execution was performed by tracing the histories of prior projects and through extensive discussions with the officials involved.

Through examination of staffing patterns, personnel assigned to the involved organizations and past history of performance with the various categories of projects to be funded under BVS, the Consultant has made informed judgements concerning technical capabilities at all levels with related predictions of probable success for the program. Judgements of this nature are at best, conjectural, as there are infinite variable that could affect performance in any given period of time. One key variable that will affect speed and thoroughness with which all governmental elements will respond to the new requirements imposed by the BVS program is the level of other concurrent activities which will place additional demands on limited staff time. In making assessments of capabilities and needs, an effort has been made to determine the total magnitude of input requirements for both BVS and non-BVS projects to arrive at the best judgements of likely implementation periods and supplemental staff demands that BVS will place on local government project management.

In addition to determining numbers, categories and technical ability of local personnel who will be involved in various phases of BVS, the Consultant has given particular emphasis to examining the quality of the overall management and coordination system for village level projects which is currently in place or non-existent in the various governorates studied. This aspect of local development is, perhaps, the most critical to successful program execution and the realistic assessments of general capabilities.

As appropriate, specific recommendations for reducing or eliminating identified weaknesses have been provided at the conclusion of the report. The recommendations are tailored to making maximum use of existing systems and procedures with minimal changes as it is believed that forcing totally new methods, procedures and practices on the traditional way of doing business would cost valuable momentum if complete organizational and procedural retooling were made condition precedent to final program approval.

THE PROPOSED BVS PROGRAM AND PROCEDURES IN BEHEIRA AND BASIC SKILLS INVENTORY TO SUPPORT PROPOSED PROGRAM

I. The Proposed BVS Program

The Governorate of Beheira has made a detailed assessment of its village development needs and has compiled a list of five major categories of projects. These are unpaved rural roads, canal dredging, potable water systems, solar energy and bio gas projects.

A. Roads

El Beheira has presently 1,030 km of paved roads (including the Cairo-Alexandria road and roads to new irrigation projects), 1,550 km of unpaved roads, and 100 km of canal berms used as roads. Climatic conditions (winter rains) make it necessary to top all roads with a layer of graded gravel, at least 15 cm thick after rolling to assure all weather transitability. Road graders and cistern trucks are urgently required to prevent investment in unpaved roads from degrading. Unit cost estimates used in the Governorate are as follows:

a. road elevating to 50 cm above field level -- 6,500 LE/km

b. road elevating and widening to 6 m --- 7,000 LE/km

c. new access roads --- 8,500 LE/km (including 2,000 LE/km right of way)

d. lining canal sides to prevent erosion of adjacent roads --- 8 LE/m^2

Altogether 410 km of new unpaved roads are proposed for BVS funding at a cost of LE 1,688,000 plus LE 630,000 for graders and water trucks to be used in maintenance of the new roads.

B. Maintenance of Farm Canals and Drains

The following description of canal maintenance requirements in Beheira is quoted in part four of Dr. Ital Asmon's report. The Consultant has reviewed this material and found it correct.

Beside the 3200 km of main canals and drains in El-Beheira Province, which are maintained by the Ministry of Irrigation, there are about 20,000 km of farm canals and drains. The latter need an annual cleaning plus an annual grass cutting. The canals are dried in January - February and the cleaning performed by hand; the grass-cutting is carried out during the irrigation season in June-July. At present, there reportedly exist difficulties in finding labor for the comparatively difficult work of canal clearing at the current wages of about LE 1.50 per day, since local labor has alternative agricultural employment. Many canals and drains are poorly maintained owing to labor shortage. Consequently,

government officials and elected village council members place a high priority on the acquisition of implements for mechanical clearing of farm canals and drains.

Public canals and drains are maintained by the General Irrigation Company for Mechanical Clearing and by the Beheira Corporation, under contract with the Ministry of Irrigation. The former company has a covlume of operations amounting to about 20 million m^3 dredged annually in Egypt, of which 3.5 million m^3 in El-Beheira Province. The (Alexandria-based) Beheira Company has a volume of operations totalling about 5.5 million m^3 annually, mostly in Beheira Province. These companies, although in the Public Sector, apparently operate much like private profit-making enterprises. Reportedly, they work only for cash, charge high prices (0.26 LE/m^3, compared with operation, maintenance and capital costs of 0.10 LE/m^3), pay high incentive wages (on the order of 150 LE/month per operator, compared with a base salary of about 30 LE/month), keep their equipment in good condition and are able to import additional equipment as necessary. Farm canals and drains are maintained by the village level agricultural cooperatives

(which hire the labor and charge the members' accounts LE 1.5 per feddan), or by the farmers individually.

Cost of hand clearing: estimating an average of 3 m^3 daily per worker at a daily wage of LE 1.5, the cost of hand cleaning is on the order of 0.50 LE per m^3.

The public canals and drains are maintained with heavy equipment, such as the Pocling excavator with a 0.65 m^3 bucket or crawler mounted equipment. For the larger farm canals (over 2 m^2 section) the Soil Improvement Service of El Beheira has introduced eight months ago three JCB excavator/loader units, with satisfactory results. These 70 HP units currently cost about LE 18,000 each. They are 2.45 m wide, have a 5m long arms with an approximately 0.20 m^3 bucket, and can excavate to a depth of 3.5 m. For the smaller farm canals and drains, the Agrarian Reform Directorate of El Beheira has recently imported two McConnel "power arm 6" backhoe excavators. This backhoe is mounted on a 50 to 65 HP agricultural tractor and is powered by the tractor engine. Its current cost is about LE 5000 (including attachments for canal clearing, trenching and ditching). The arm is 4.2 m long (a 4.9 m long arm is available) and can reach to a depth of 1.7 m.

The "power arm" backhoes are robust all-hydraulic implements which require comparatively little maintenance; they are mounted on agricultural tractors, which have existing maintenance systems. On the other hand, the excavator/loaders require specialized maintenance; their satisfactory operation will necessitate a special maintenance workshop at the governorate level.

Of the 20,000 km of farm canals and drains in El Beheira Province, about 15,000 km can be mechanically cleaned. Estimating an average cleaning requirement of 2000 m^3 per km every 3 years implies an excavation volume of 10 million m^3 annually. Unlike hand clearing of canals, mechanical clearing can be carried out year-around. It is expected that the bulk of canal clearing will be performed by backhoes mounted on existing agricultural tractors, which at present are employed only about 4 months of the year. At the rate of 100 m^3 per day, a backhoe-equipped tractor could excavate about 15,000 m^3 if it works 6 months annually. Thus, the potential requirement for a fairly complete mechanization of farm canal maintenance in El Beheira Province amounts to over 500 machines. Consequently, deployment of 57 units, as currently proposed, will have a perceptible but only a partial effect on the problem of canal maintenance.

It is proposed that control of the implements be at the Markaz level; this is scale-appropriate for the tractor-mounted backhoes. However, ownership of tractors by local government units has often been beset by problems of ineffective management, inadequate maintenance and low profitability.

As a general comment, the Consultant supports the needs for this equipment as a recent study prepared by Louis Berger International, Inc.[1] to evaluate the technical and economic feasibility of providing canal maintenance equipment to the public sector dredging companies has shown a direct correlation between agricultural productivity and water application to cultivated areas. In light of these conclusions in the Berger report, the USAID has signed a $ 30,000,000 loan agreement with the Ministry of Irrigation (AID Loan 263-k-040) to upgrade the general maintenance of primary and secondary canals throughout Egypt. Since the tertiary and quaternary canals are not included in this program, adequate maintenance of the farm level network is deemed essential if fully productivity

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1 Canal Maintenance Project
May 1977

is to be realized. Presently, as noted, labor intensive cleaning practices are no longer adequate as the rural labor supply is becoming increasingly short due to rural-urban and inter-regional migrations. Capital intensive canal cleaning at the village level would appear to be a viable solution, provided that tools workshops and operator training complement any procurement package. Altogether 41 track type backhoes, costing 18,000 LE per unit and 16 hydraulic bucket attachments costing 5,000 LE per unit are proposed for BVS funding in Beheira.

C. Potable Water Supply

From the Asmon report and from the Consultant's field observations, it is noted that, of the 2,517,292 inhabitants of El Beheira Province (1976 census), 1,863,834 or 74% are rural dwellers. These reside in 414 villages belonging to 63 village councils, which are organized in 12 markaz's. Of the 285,737 rural families, 75,953 families or 27% do not have access to piped water. Groundwater is potable only in the southernmost corner of El Beheira Province. Thus over 79% of the water consumption depends on filtration of surface water. The

northern part of the province is served by three General Organization of Potable Water Systems (Abu Homos, Fawwa and Buseili) with a total capacity of 98,000 m^3/day. Three other systems (Shubra Khit, Mahallet Abu Ali and Kafr El Dawar), with a total capacity of 79,000 m^3/day, are presently under construction. There are also three municipal systems (Damanhour, Kafr El Dawar, Kom Hamada) with a total of 32,000 m^3/day. The rural areas of southern El Beheira are served by 80 small groundwater systems with a total capacity of about 23,000 m^3/day.

The IBRD has sponsored a detailed study of provincial water requirements in Beheira prepared by the consulting firm of Binnie & Taylor as a basis for future water supply projects in Beheira and Kafr El Sheikh. The preliminary report entitled "Provincial Water Supply in Egypt" was published in March 1979 and the final report is due in November 1979. As the Governorate expects considerable IBRD investment for potable water projects within Beheira, the program for BVS funding is a modest LE 318,000 to extend existing systems to include service to outlying attachment villages that can be reached economically through installation of branch pipelines and

installation of simple booster pumping units. For a few areas not reachable by extension of existing networks, pilot projects in solar desalination of brackish water costing a modest LE 150,000 are contemplated.

The solar desalination projects proposed are very small scale units located in the northern sector of the governorate. The targeted population live in small isolated villages without fresh water and too far away to be served by extension of existing systems. These settlements, numbering 60, are located at a distance of 3 to five kilometers from each other. The following table gives the proposed basic requirements for the solar desalination units:

* Number of Settlements	60
* House per Settlement	10
* Number of persons per house	8
* Fresh water required for house-hold facilities in liters	80
* Solar Energy desalination module type	Greenhouse
* Area of the Saline basin of the still in m^2	25
* Estimated average production of fresh water per module in liters per day	75-100

* Place of manufacturing	Egypt
* Design of the prototype	Sel & others
* Material used for the project	availabe in Egypt
* Maintenance and repair for each module	will be financed by village councils

D. Bio Gas

The final category of projects proposed in Beheira is LE 150,000 for small village level bio gas units to generate energy for lighting and cooking. Project models for these units were developed from prototype designs used in the People's Republic of China and India whereby animal and human wastes are composted to generate methane gas which in turn is distributed from small collection centers to individual households. Composted material from which methane has been extracted is then added to agricultural soil for fertilization. The basic cost of a unit is currently LE 5,000 and can be constructed from readily available local materials.

The proposed budget for BVS financing in Beheira by category is shown in the following table. Details of the proposed road and water projects are included in the Arabic language material collected by the governorate and turned over to USAID/Cairo by the Consultant.

List of Proposed BVS Projects in Beheira

Thousands of Pounds

Markaz	No.of Vill.	Population 000	Roads	Canal Maintenance	Water	Solar Energy	Bio Gas
Damanhour	6	227	224	108	20	15	15
Kafr Dawar	7	263	297	105	-	20	15
Itay Barud	8	197	139	95	40	25	15
Rashid	3	71	60	15	120	5	10
Delengat	4	124	110	54	43	10	10
Shubra Khit	4	120	124	64	20	5	15
Hosh Isa	3	55	50	28	-	5	10
Abu Homos	7	199	168	126	-	15	15
Rahmania	7	56	60	36	20	5	10
Abu Matamir	3	116	110	33	-	5	10
Mahmoudia	3	102	69	54	20	5	10
Kom Hamada	11	319	277	123	35	35	15
			1,688	841	318	150	150

II BVS Project Selection Procedures in Beheira

During May, the Governor convened a meeting of all Village Executive Council Chairmen and briefed them on the broad outlines of the program and general priorities of the Governorate described in Section I above. The Governor, then, sent a circular letter to all Village Councils which reiterated the general priorities, informed them of the funding level available to each village council area based upon a per capita distribution of the LE 3,5 million to be allocated to the Governorate and provided unit cost guidelines. Villages Councils were asked to formulate their requests and priorities from among the general guidelines and forward them with estimated costs to the Governorate. Village Executive Councils prepared the tentative list of council priorities and submitted them to the Councils for approval. The approved Village Council priority lists were sent directly to the governorate with an information copy to the markaz.

III Management, Financial and Project Monitoring Procedures for BVS Projects in Beheira Governorate

A. Coordination

Upon notification from the Interagency Committee of BVS project approval, the governorate shall follow the standard practice used previously for village level projects in Beheira. Village council and markaz chairmen are convened at a general meeting at governorate headquarters. Technical division heads (i.e. housing, roads and bridges, water and sewerage and irrigation) are also in attendance. The governor chairs the meeting and personally coordinates all phases of project planning and execution. The convocation assesses the technical requirements of all approved projects and a determination is made concerning which level of local government shall be responsible for preparing the engineering designs, bills of quantities and bid tender specifications for all approved projects. The general interest is to have the village councils prepare their own technical documentation with assistance as required from the markaz and governorate technical staffs. Village council chairmen identify their technical assistance requirements and the governor orders the appropriate technical unit at markaz or governorate to complete the technical studies for each

project by a specified deadline, usually in the shortest possible time. In instances where a designated technical unit does not have sufficient qualified personnel to accomplish its assigned technical support work, the governor obtains personnel for the tasked units from one or a combination of sources:

- mandated detail of engineers and technicians from other governorate offices
- telephoning the chairmen of central level authorities (i.e. roads and bridges, and potable water authorities) to temporarily assign engineers to work under the direction of the counterpart technical units at the governorate for a specified time to complete specified tasks.
- hiring, on a temporary basis, full time employees of Arab Contractors, Nasr Construction Company, Sami Saad Company and Hassan Heba Company. All of these Public Sector construction firms are giants in the Egyptian construction industry with over 500 to 1,000 full time professional employees, and do an annual volume of business ranging from LE 4 million to several hundred million pounds per year.

- hiring temporarily engineer professors from the universities in Alexandria and Cairo.
- letting short term contracts from among the several hundred nationwide Egyptian consulting firms.

The governor of Beheira states that, because of the favorable central location of the governorate between Cairo and Alexandria, he has no difficulty whatever in obtaining all of the technical assistance he requires to prepare documentation for specific projects. The only constraint is the availability of funds (included in the total cost estimates of all proposed BVS projects is a figure of 2½% of construction costs for temporary engineering consulting services) to be procured from the aforementioned sources of professional expertise. While temporary technical help is available in unlimited numbers, subject to the availability of funds, the governor stressed the very difficult problem of obtaining additional permanent staff from central level organizations.

In the village level project execution process, governorate and/or markaz technical units, as temporarily augmented from external sources, are instructed to go to the villages and work directly with the village councils in their preparation of the required technical documentation.

Monitoring of project progress is tight and involves all levels of local government. All markaz chairmen are required to meet every two weeks with the village council chairmen to discuss project progress, surface implementation problems and find solutions where required. The governor also meets bi-weekly with all markaz chairmen to discuss the status of each project and to find solutions to problems that require governorate level intervention.

Within 5 days prior to the end of every calendar month, each village council is required to submit a project status report to the Governorate Planning & Follow-Up Department. The report is submitted in the following format.

Table II-1

Project Status Report Currently Used in Beheira

Project Name	Total Budgeted Cost	Completion to Date		Funds Budgeted for Current Year	Actual Current Expenditures		Cost of Work Completed	
		% complete	Amount spent		%	Amount	Total	%

IV Project Implementation Capabilities at each Level of Local Government in Beheira

A. Governorate

1. Planning and Follow-up

This function, to the extent in which it is performed, is the responsibility of the Planning and Follow-up Unit and ORDEV at the Governorate level.

The Planning and Follow-up Unit consists of 16 personnel, including draftsmen and typists. The head of the Unit is a graduate of the Faculty of Arts and Science and has an institutional diploma in river transport economics. In addition, there is another university graduate in arts and sciences, one civil engineer, 3 agronomists and 4 financial analysts. None of these personnel have training or experience in project identification and planning. The only planning criteria currently used in project ranking are cost/beneficiary and numbers of people served. This information is largely furnished by the Village Councils. No objective criteria of project worth such as benefit/cost and internal rate of return analysis are presently used or understood.

As the Planning and Follow up Unit reports directly to the governor, the coordination role of this organization is important and considerable. The Unit presently collects all project progress reports submitted by the village councils and conducts periodic site visits to verify the accuracy of reported information and flags project management problems to the Governor's attention during the bi-weekly meetings of the Markaz chairmen and the monthly meetings to the village council chairmen.

Project documentation consisting of a brief description, estimated unit costs, total project cost, numbers of beneficiaries, related engineering drawings and specifications, and construction contracts were found to be intact for previously completed projects. As there is no standardization of these documents, files tend to vary in content from project to project.

Also, it should be noted that project planning is done on an ad hoc basis. At the time of project identification and selection, it is not precisely known which organization and personnel will be responsible for preparation of the technical engineering work.

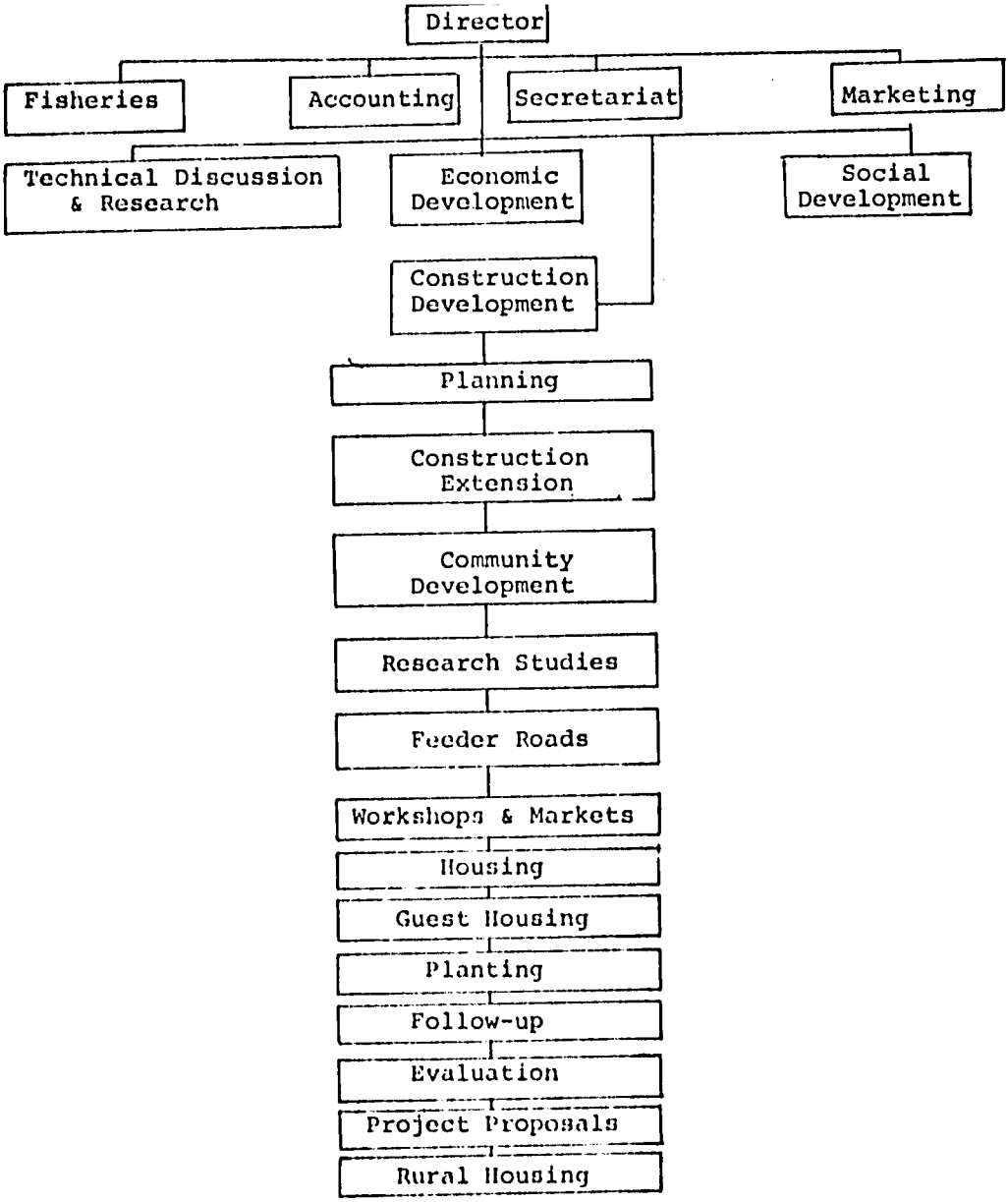
These responsibilities are clarified after project approval when the Governor examines requirements and makes assignments during the Governorate level general meeting described previously

In addition to the principal coordination monitoring role performed by the Planning and Follow up Unit, the ORDEV, at Governorate level, also makes some input to project monitoring.

Interviews with senior personnel of ORDEV at the Governorate level to ascertain their current role in planning and execution of village development projects were held by the Consultant's team.

ORDEV in Beheira is organized in the following manner:-

Organigram of ORDEV in Beheira Governorate



Since its creation in 1973, ORDEV in Beheira has concentrated most of its efforts in providing guidance and back up support to villages for their income producing projects financed by ORDEV at the central level. With respect to this category of projects, there exists at present no capacity for project evaluation and identification based upon commonly accepted criteria of market demand analysis using econometric models, benefit/cost, and internal rate of return analysis. Criteria commonly used in project selection are also cost per beneficiary at the village level and very rough estimates of annual costs and revenues. ORDEV is aware of these deficiencies and is sending one of its senior officials to participate in the AID-financed participant training programs under the auspices of the Blue Grass Consortium in Kentucky.

With respect to providing technical support to Village Councils in the execution of proposed BVS financed infrastructural projects, there is little assistance ORDEV can provide at the present time. The Construction Development section, under which this activity would fall when and, if approved, is staffed with only three engineers, one draftsman and three agronomists. Most of the services provided by

these personnel are devoted to the income producing projects and there is little if any reserve capacity for assistance in the implementation of the infrastructural projects.

ORDEV currently acts as a liaison between the villages and the various technical offices of the Governorate and will most likely be able to provide only this type of coordination assistance in the foreseeable future until the Construction Division is upgraded both in numbers and in quality of personnel. Villages will rely primarily upon backup technical assistance from the Markaz and Governorate for projects funded under the first 3.5 million LE of BVS funds.

ORDEV, in addition, prepares physical plans for the village and is able to provide some environmental impact assessments.

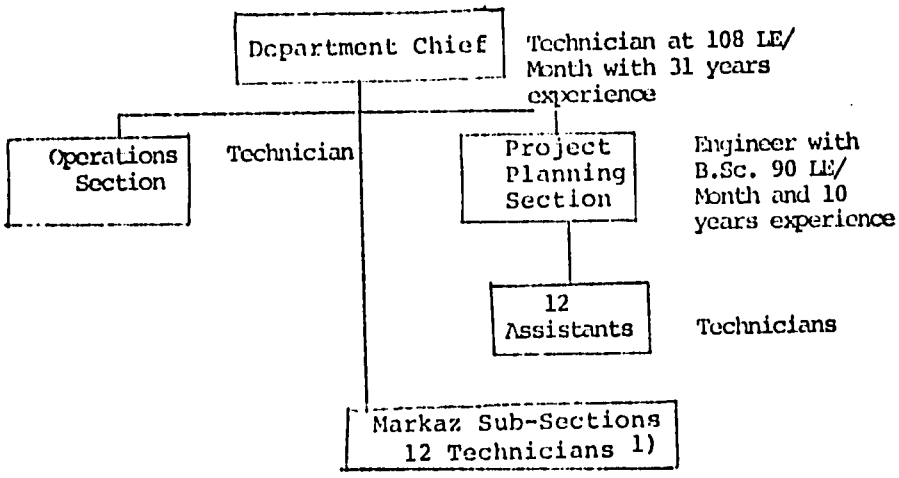
2. Technical Support

The three major organizations at the governorate level in Beheira, which will be directly involved in providing backup engineering services to the Village Councils for BVS, are the Roads and Bridges Department, the Water and Sewerage Unit of the

Housing Department, and to a lesser extent, the Irrigation Department. The Roads & Bridges Units at Governorate and Markaz are responsible for preparing designs, technical specifications, tenders documents and construction supervision and maintenance assistance to the Village Councils in execution of Road projects. The Water and Sewerage Unit shall provide similar assistance for the potable water projects. The Irrigation Department has responsibility for maintenance and operation of the major irrigation canal systems and will prepare specifications and manage procurement of the proposed canal maintenance equipment for BVS funding.

(a) Roads and Bridges Department

The Department is headed by a technician with long experience (graduated from technical high school in 1943) and assisted by a deputy with similar qualifications. The Department has only one graduate engineer (1968) heading the projects section, and remaining staff are technicians and laborers as shown in the following organigram:



22 Foremen

1,320 Laborers

During the past three years, the Roads and Bridges Department has designed, executed and supervised execution of the following projects:

1) Graduates of technical high schools

Table II-2

List of Road Projects
in Beheira
Over Last 3 Years

1. Projects Performed by Governorate Roads & Bridges Unit

Year	Type of Work	Place	Cost LE	Length	Area Covered	% Complete
1977	Pavement of City Roads	Itay El Barud	14672	4	8000 m^2	100%
	"	Kom Hamad	12000	2	4200 m^2	"
	"	Abu Homos	12003	2	4200 m^2	"
	"	El Delengat	12006	2	4060 m^2	"
	"	Edkou	4470	3	3400 m^2	"
	"	Mahmoudia	5715	2	4260 m^2	"
1978	"	Hosh Isa	28667	7	14000 m^2	"
	"	Abu Matamir	23928	5	9970 m^2	"
	"	Rahmania	19505	4	7600 m^2	"
	"	Edkou	15305	3	3830 m^2	"
	"	Mahmoudia	41000	8	16000 m^2	"
1979	4 meters of shoulders: gravel and bituminous surface		465,000	42	-	"
				84		

2. Projects Designed with Assistance from the Central Roads and Bridges Authority in Cairo and Executed by Contract Construction Supervision Provided by the Governorate Roads and Bridges Department

Year	Type of Work	Place	Cost	Length	Area Covered	% Complete
1977	Resurfacing Arab Contractors	Dessouk Shubra Khit	190.536		15 km	100%
1978	Pavement Arab Contractors	Aly Maher Road	282.265		9 km	"
1979	Construction Contr. Nile Rd. Construction Co.	Abu Matamir	107.127		1.8 km	"

3. Asphalt Roads Currently Under Construction by Contract with Supervision from the Alexandria and Beheira Roads and Bridges Departments

Year Started	Place	Cost LE 000's	Contractor	Length	Complete
July 1976	Kafr Dawar - Abou Homos	1,180	Nile Road Co.	15 km	5 km
July 1976	Damanhour - Abou Homos	1,200	"	19 km	8.5 km
Jan. 1977	Zarkun Halk El Gamal - Kafr Ramanya - Kafr Ronim	2,200	"	27 km	16.2 km
Jan. 1977	Mahmoudia- Ramanya	1,400	"	22 km	22 km
Jan. 1979	Damanhour-Mahmoudia	600	Nasr Const.Co.	18 km	1.8 km

Year Started	Place	Cost LE 000's	Contractor	Length	Complete
Jan. 1979	Damanhour - Hosiasa	800	Nasr Const.Co.	24 km	2.4 km
Jan. 1979	Kafr Dawar - Miniat El Said	1,600	Nile Co. for Desert Roads	38 km	12.9 km
Jan. 1979	Alexandria - Rashid	1,240	"	39 km	0
Jan. 1979	Damanhour - Kafr El Zayat	2,500	Sami Saad Co.	39 km	0
		12,720		241 km	68.8 km

The above roads were designed by the Central Roads and Bridges Authority in Cairo.

Table II-3 hereinafter shows a current inventory of construction and maintenance equipment belonging to the Beheira Roads and Bridges Department.

Table II-3

List of Road Construction and Maintenance Equipment in Beheira

Type Construction Equipment	No.	Operational Status %
Asphalt Mixing Plant	1	50
Asphalt Boiler	2	50
Asphalt Tank ½ ton	1	50
Asphalt Tank 3 bls	2	50
Asphalt Finisher 2.5 m	1	75
Steel Roller 2 wheels 6/8 ton	2	65
Steel Roller 3 wheels 6/8 ton	1	45
Grader Russian	2	50
Tipper Rumanian	2	50
Tipper Japanese	4	75
Water Tank 6 m^3	1	60
Tractor 65 HP	1	55
Loader 1 m^3	1	80
Road Maintenance Equipment		
Grader	1	50
Water Tank Truck	1	50
Tractor	1	50
Trailer	1	50

The Governor stated that expansion of the rural road network in Beheira is the top priority of the village councils and that special efforts are being made to address these expressed needs. This opinion was confirmed during review of the village BVS priority lists. Specifically, the Governorate is now forming its own public sector company under the jurisdiction of the Roads and Bridges Department to enhance the latter's capacity to execute new projects and maintain the existing and proposed expansion of the network.

Through a recently enacted user tax on locally registered vehicles, revenues are being collected according to the following annual tariffs permitted under law:

Taxis	:	5% of assessed *ad valorem*
Lorries	:	1 LE/Annum
Trailers	:	2 LE/Annum

Revenues collected in year 1979 amount to LE 700,000 and are expected equal this amount in year 1980 and annually thereafter. An additional LE 200,000 has been raised in 1979 through a special levy of LE 20/Feddan on prime village land. Revenues so collected are being

used to pay salaries of 34 recently recruited technicians/ equipment operators, and additional 73 laborers and 9 graduate engineers now under recruitment.

Procurement is currently under way for the following items of new equipment:-

Table II-4

Additional Road Construction Equipment Being Procured in Beheira

	Qty		Estimated L.E.
1.	1	Integrated asphalt mixing plant, output 60 t/hr., imported	200,000
2.	2	Graders	45,000
3.	1	Apparatus for spreading out asphalt, width 3 meters, with two flexible covers	90,000
4.	6	Dump trucks 15 tonsload	150,000
5.	3	Iron Crushers, 3 wheels, 12 tons	60,000
6.	1	Iron shaking crusher, 10/20 ton	45,000
7.	1	Double digging crusher	10,000
8.	1	Rubber crusher, 8 wheels	25,000
9.	1	Tractor for transporation of equipment	65,000
10.	3	Agricultural tractors 65 HP	189,000
11.	2	Lorries (wagon 1 m^3)	80,000
12.	1	Bulldozer	80,000
13.	3	Trailers, surface 2½ m^3	15,000
14.	1	Trailer with benzene tank, cap. 6000 lt.	6,000
15.	3	Asphalt sprinklers, 7 bls. on rubber wheels	14,000

16.	2	Sprinkler cistern trucks, cap. 6 m^3	34,000
17.	3	Pick up trucks, 1,5 ton	18,000
18.	2	Water machines moving on rubber wheels	2,000
19.	1	Test laboratory	5,000
20.	1	Electrical welding workshop	2,000

Equipment Related to Bridges Works

	1	Concrete mixer $\frac{1}{2}$ m^3	0,400
	1	Mechanical shaker	4,000
		Total	968,400

Maintenance of the rural road network in Beheira is inadequate at present. The high incidence of rainfall in winter together with frequent high velocity winds causes considerable bed erosion, washboarding and washouts. The Consultant travelled over some 50 kilometers of the dirt road network and observed first hand these effects of climate and inadequacy of the maintenance program. At present, close to 100% of the maintenance performed is labor intensive. One laborer can perform spot maintenance of approximately one kilometer per year. This is accomplished by hauling dirt and gravel on the backs of draft animals and filling in washouts and gullies by pick and shovel. As there is no soil compaction or grading used in this process, fills are temporary at best and usually require refilling after each rain or wind storm. The Table of Organization of the Roads and Bridges Department shows a total of 1,348 laborers and foremen distributed throughout the 12 Markaz's of the Governorate. This number is barely adequate to perform rudimentary maintenance of the existing 1,950 km of existing dirt roads, and is insufficient to prevent long term effects degradation of the existing network; this level of maintenance capacity is totally inadequate for the proposed new additions under BVS. As labor availability is rapidly declining because of recent migratory trends of the labor force, capital intensive maintenance methods would appear to be the ultimate solution to this growing problem.

The Consultant examined engineering documents prepared by the Roads and Bridges Department personnel and those prepared by temporarily recruited external engineering personnel for completed and on-going projects,and found this material to be complete and technically sound. Specifically, the following technical material was examined:

- Weights and measures
- Detailed section drawings
- Stress factors
- Bills of quantities
- Special preparation procedures (i.e. pre-cast concrete, pre-stressed concrete, etc.)
- Scheduled activity diagrams of proposed construction plans
- Bid tender documents

Current road construction capacity of the Roads and Bridges Department reported by the Governorate is 40 km of asphalted or 90 km of unpaved roads per year.

A rough calculation of total dirt road construction capacity of the Beheira Roads and Bridges Department was made from basic productivity data furnished to the Consultant. It is reported that the department can now produce 60 mt. of

earth moving per hour using a combination of labor and capital intensive methods. After procurement of the additional equipment list in Table II-4, productivity will increase to 100 mt/hour. Minimum construction time for the 400 km BVS road program, assuming all resources of the Roads and Bridges Departemnt are committed to BVS construction is therefore calculated as

400 km x 1000 meters x 0.50 m x 6 m ÷ 100 x 1.60 (specific gravity of road construction material) = 7,500 hours, or 7,500 ÷ 6 (working hours/pay) ÷ 280 (working day/year) = 4.46 years

As the majority of the Beheira Roads and Bridges Department capacity shall be assigned to some pavement of city streets and rural network maintenance during the period of BVS inplementation, it is expected that most of proposed new road construction shall be implemented by contract. This assumption was confirmed during meetings with the governor.

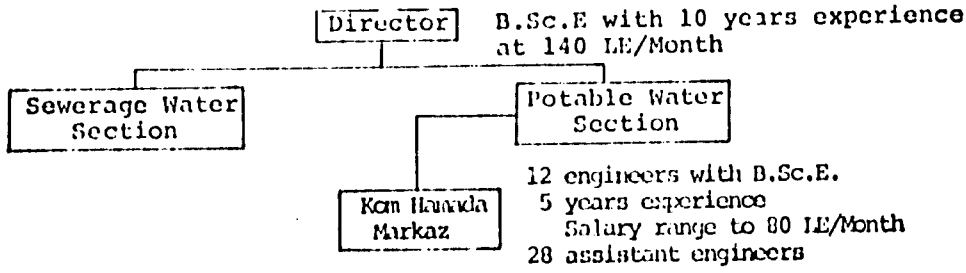
(b) The Water and Sewerage Unit , d Abou Homos Water Plant

Most of the technical design nd engineering work for village level potable water systems is prepared by the Water and Sewerage Unit, the Beheira Housing Department.

This organizational unit is presently staffed with thirteen graduate engineers who prepare designs, drawings and specifications for specific systems from standard plans and specifications prepared previously by the Central Water Authority in Cairo. The Consultant's team traced the history of several projects from inception to completion and reviewed various files, drawings, specifications and tenders. One completed project at the village of Zbeda, 12 km from Itay El Barud and 45 km from Damanhour, was inspected by the team. The engineering work was found to be complete and the completed project was of satisfactory professional quality.

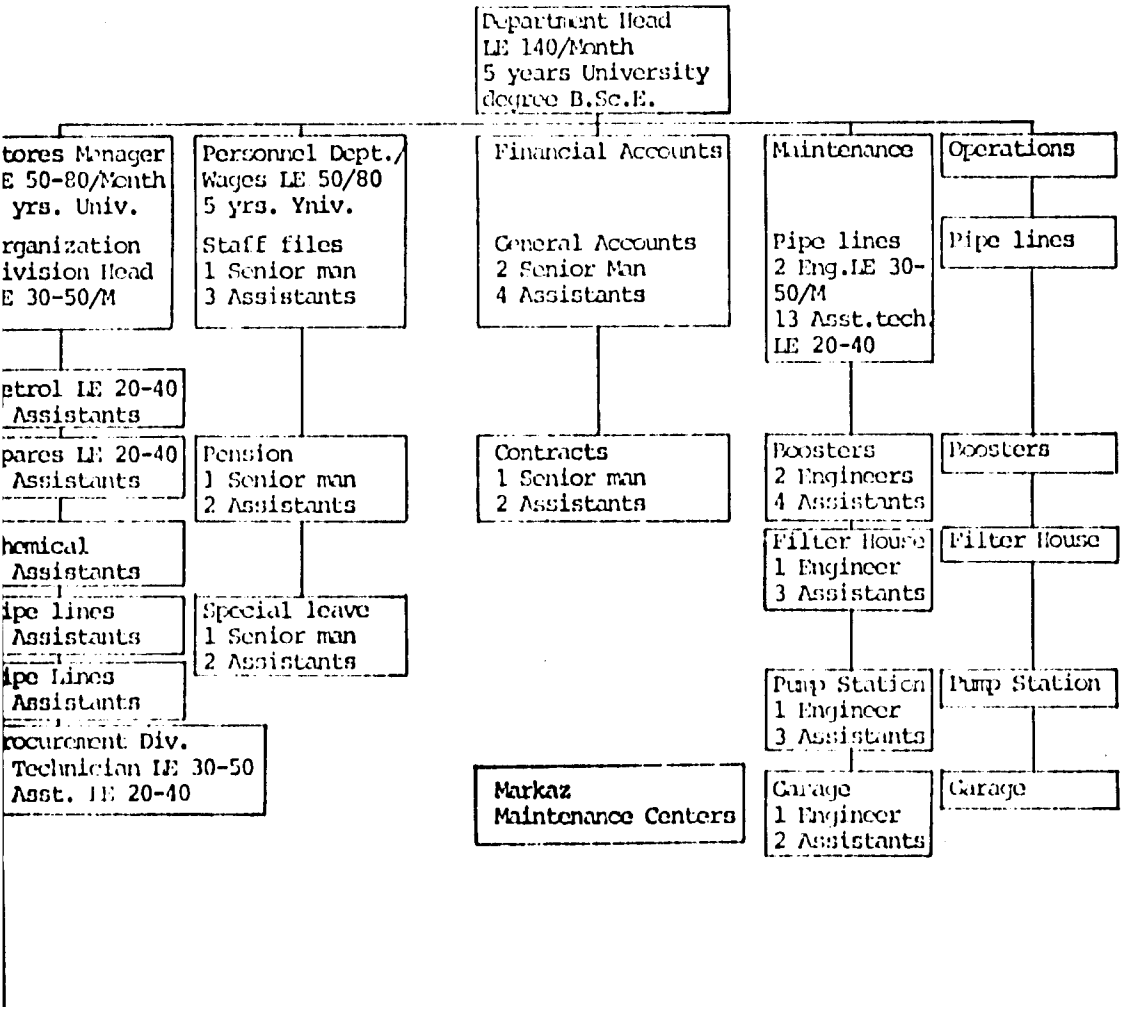
The Organization of the Utilities Department is shown below:

Organigram of the Water & Sewerage Unit of the Beheira Housing Department



This unit is responsible for water system designs and construction supervision. The Water and Sewerage Unit is currently operated and maintains 80 potable water systems in the southern sector of the Governorate.

In addition, the Abou Homos water treatment plant has extensive professional engineering capability which can and is used by the governor in potable water system design, wash construction supervision and system maintenance.



The Abou Homos Water Plant currently serves 70% of the population of Beheira.

The engineering designs and specifications prepared by the Water and Sewerage Unit and the Abou Homos Plant were reviewed by the Consultant and were found to be of adequate professional quality and completeness to provide sufficient backup technical support to Village Councils in their plans to execute the small village systems contemplated for the BVS program. As the level of funding for this activity is a modest LE 300,000, and involves mainly extension of existing networks, there is no need to recruit outside technical personnel for design and supervision of the proposed BVS water program in Beheira.

In reviewing the documentation and history of previously completed projects, the Consultant's team generally found files to be complete and well organized. The projects inspected were in good condition and operating

There presently exists considerable unused private sector water supply construction capacity within the Governorate and nearby areas. Previous invitations for bid have usually received five or six technical offers from this sector.

During discussions between the Consultant's team and engineers of the Water and Sewerage Unit and with the Abou

Homos plant management, it was learned that local contractors regularly visit the Governorate inquiring about new projects. As funding for new projects has been strictly limited in the past, contractors report that they have far more capacity than the volume of available work. The following is a partial listing of the major available private sector contractors specializing in potable water systems.

Table II-5

WATER SYSTEM CONTRACTORS CURRENTLY WORKING IN BEHEIRA

Name	Address	Size of Projects Undertaken	Remarks
1. Awad Mahmoud Kobou Den	42 Abu Rish Damanhour	LE 100,000	Specializes in tanks and pipes
2. Abd Samot El Ostr	Abu Homos Beheira	LE 100,000	Pipes only
3. Abdel Moneim Abdel Kader Ibrahim	Mazgid Wasf Tanta	LE 200,000	Pipes only
4. Samir Suiden	3 Biblos St. Alexandria	LE 200,000	Tanks, pipes
5. Ali Abdel Hamid Morsi Mesuid Tolba	Damanhour	LE 100,000	Pipes only
6. Ibrahim Mohamed Hassan	32, Abdel Halim El Mazon, Damanhour	LE 50,000	Pipes only
7. Philippe Wassef	30 Midan Ramsis Ramsis Bld., Cairo	LE 2,000,000	Offices in Cairo but works exclusively in Lower Egypt. Specializes in tanks.

Table II-5 (Cont'd)

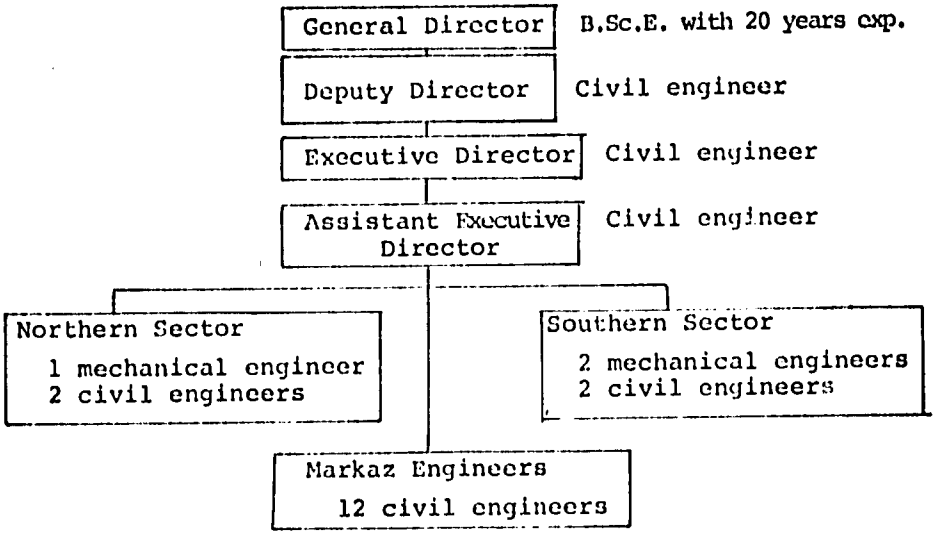
	Name	Address	Size of Projects Undertaken	Remarks
8.	Dessouki Abdel Moneim Ahmed Zoukil	Damanhour	LE 100,000	Tanks only
9.	Mahmoud Ramadan	Midan Sidi Ahmed El-Badawi Tanta	LE 100,000	Tanks and pipes
10.	Mahmoud Ahmed	Haret El Belasi Tanta	LE 50,000	Tanks only

Projects are usually completed on time and take approximately one year from date of startup to complete.

Maintenance of the existing potable water system was found to be generally adequate. In some areas, particularly in the southern part of the Governorate served by the 80 wells under the supervision of the Water and Sewerage Department, some faucets and pipes were found to be leaking.

(c) Irrigation Department

The primary task of this Department is to design and maintain the hundreds of kilometers of primary and secondary irrigation canals serving the 700,000 feddans (one tenth of the total cultivated land area in Egypt). The Department is currently understaffed and overworked in discharging its primary responsibilities. A skeletal organization of the Irrigation Department is as follows:



The role of the Department in BVS will be to prepare bid tender specifications for the proposed procurement of the canal maintenance equipment. The Department has experience in procurement of similar types of equipment and has actually procured some of the types scheduled for purchase.

As the staff of the Department is already preoccupied with its primary duties, no assistance can be provided in equipment maintenance. This will have to be performed by the Markaz and village maintenance personnel in various private sector workshops. These facilities are judged adequate for routine maintenance of engines, but specialized facilities shall be required for maintenance of the hydraulic systems and major overhauls.

B. MARKAZ

Traditionally, the Markaz administrative unit has been actively involved in the planning and execution of projects within its jurisdictional area. With the promulgation of Decree Laws 52 of 1975 and 43 of 1979, there has been a clear direction of policy toward administrative and fiscal decentralization to the village level. Beheira Governorate and village level officials have taken substantial measures to implement the provisions and spirit of the law as decentralization has proceeded at a rapid pace.

During site interviews with Markaz officials, it was observed that Markaz administrations within the Governorate have relegated some of their previously exercised responsibilities to the Village Councils. According to statements made by the officials contacted, the Markaz currently provides back-up technical support to Village Councils and monitors activity progress as required for successful project planning and execution, but does not directly supervise the councils.

In fiscal affairs, the only vestigial authority still retained by the Markaz is approval of village level contracts exceeding LE 5,000.

The role of the Markaz, then, is one of coordination provision technical support and progress monitoring. Village

Councils now enjoy the same degree of administrative autonomy within their respective jurisdictions as the governor or the head of any governmental department and are only required to keep the Markaz informed of their activities for reporting purposes. This view was substantiated during village level interviews in which village officials stated that they submitted their lists of BVS projects directly to the Governorate with an information copy to the Markaz.

Villages now have the authority to communicate directly with the Governorate on all administrative and technical matters. In Beheira, this authority is widely exercised by the Village Councils.

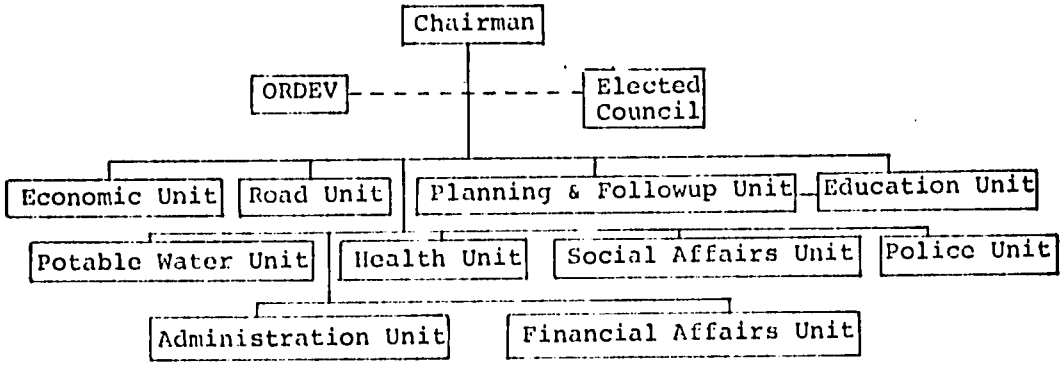
In this regard, the Markaz officials contacted categorically stated that they had no authority to alter project proposals prepared by the Village Councils.

In the area of fiscal management, Village Financial Affairs Divisions are completely autonomous from the Markaz finance units and are solely responsible for the maintenance and management of their own accounts and financial records. The Markaz no longer audits the village accounts.

With regard to provision of technical support for village projects, the Markaz is generally endowed with a higher degree of engineering and technical skills, but there is some

limitation on the degree and level of support that can be provided from the Markaz units as they are understaffed and allocate a large percentage of staff time for technical servicing of projects within the town in which the Markaz offices are located, and in Markaz area projects. Organizationally, the Markaz usually has a full range of service offices in the various infrastructural areas similar to those of the Governorate but on a smaller scale. The skeletal organization of the Markaz is shown below.

Markaz Organizational Structure



It is evident from these discussions that the villages will probably have to rely on the Governorate technical offices for some of the external technical support required for BVS funded projects. Typically, the Markaz's in Beheira have five

or six mechanical and civil engineers. In addition, there are technical personnel assigned by the Roads and Bridges Department, Water and Sewerage Unit and the Abou Homos Water Plant to provide assistance in engineering designs and maintenance. These externally provided personnel consist of the following:

Table II-6
Additional Technical Personnel at Markaz

Markaz	Roads & Bridges	Water & Sewerage	Abou Homos Plant
Rasheed	1 technician, 1 foreman, 70 laborers	-	- 1/
Kafr Dawar	1 technician, 22 foremen, 82 laborers	-	5 technicians 18 laborers
Abu Matamir	1 technician, 16 foremen, 61 laborers	-	3 technicians 2/ 21 laborers
Mahmoudia	1 technician, 10 foremen, 49 laborers	-	2 technicians 3/ 18 laborers
Abou Homos	1 technician, 21 foremen, 146 laborers	-	1 engineer 6 technicians 18 laborers
Hosh Isa	1 technician, 13 foremen, 32 laborers	-	3 technicians 2/ 21 laborers
Damanhour	1 technician, 15 foremen, 32 laborers	-	2 technicians 3/ 18 laborers

1/ Technical assistance and maintenance for water systems in Rasheed Markaz is provided by the Fawwa Water Plan in Kafr El Sheikh Governorate. As this governorate was not visited, the Consultant is unaware of the extent of water system personnel availability.

2/ Workshop at Kom El Akhdar serves the Hosh Isa and Abou Matamir Markaz's.

3/ Workshop at Damanhour serves the Damanhour and Mahmoudia Markaz's.

Additional Technical Personnel at Markaz (Cont'd)

Markaz	Roads & Bridges	Water & Sewerage	Abou Homos Plant
Shubrakhit	1 technician, 18 foremen, 135 laborers	-	3 eng., 6 tech. 4/ 55 laborers
Ramanya	1 technician, 5 foremen, 54 laborers	-	1 eng., 3 tech. 4/ 17 laborers
Itay El-Barud	1 technician, 32 foremen, 234 laborers	-	2 tech., 18 laborers
Kom Hamada	1 technician, 38 foremen, 250 laborers	10 engineers 26 technicians 243 laborers	-

Markaz Chairmen are involved extensively in project progress monitoring as they participate in governorate level meetings and hold bi-weekly meetings of Village Council Chairmen and flag implementation problems for higher level attention.

At the present time, there are no internationally accepted criteria for project ranking and evaluation such as benefit/cost and internal rate of return analysis employed by Markaz personnel in project planning.

4/ Workshop at Lacano serves the Shubrakhit and Ramanya Markaz's.

c. Survey of Village Organizational Structure and Management/Planning Capabilities in Beheira

The Consultant's team visited several village council areas in Beheira Governorate and held extensive discussions with officials of the Village Executive and Elected Councils.

There are sixty-two village council areas within the Governorate. All currently have functioning councils and operative Village Banks. The villages are divided into two basic categories according to the level of services currently available.

Category I, including 26 council areas, currently having a complete range of services consisting of education units, social affairs units, health units, agricultural and animal production units, includes the following:

El Negila
Kishn
Dawad Hosny
Nabira
Mehallet El Amir
El Kom El Akhdar
Manya
Zawiyat Bahzel
Monshaad Damisna
El Dahrya
Dest El Ashraf
Sharnub
Mehallet Pranawi
Kom Zamhran
Sheist El Anaam
Shabour
Mehallet Beishura
Saft El Hareiya
El Wafaya
Sidi Razi
El Brigaat
Tobayba
Armania
Bekla El Eneb
Aizab Beishu
Kom Sherik

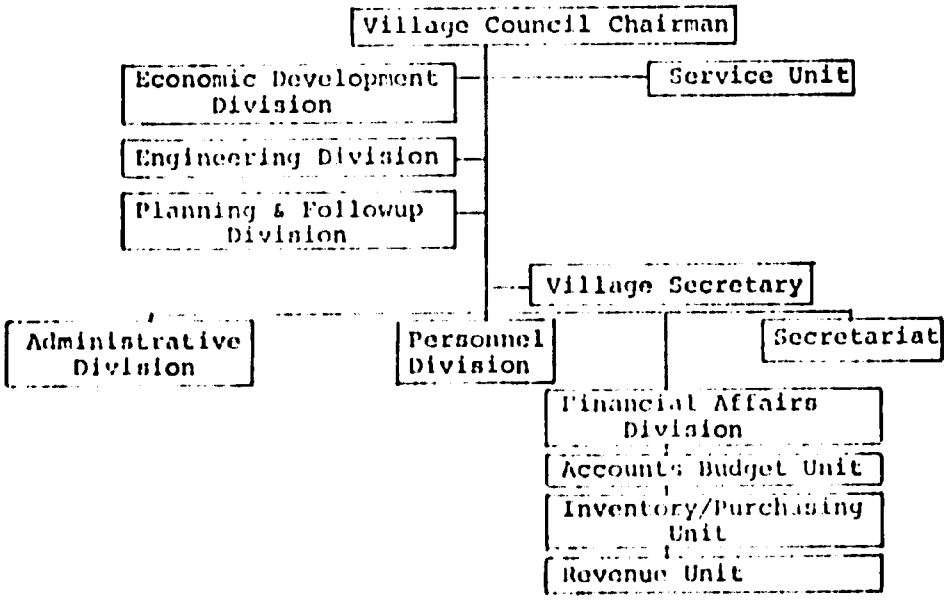
Category II, including 36 council areas, have functioning village councils but do not yet have a full range of services:

Desouynis Ondinar
Kom El Kanater
Zawiyat Sakr
Batrous
Ancarya
Dayrout
Zahran
El Sahel
Saft El Enab

Lacana	Kom El Birket	Morcos
El Omarat	Kafr Boulil	
Altoud	Al Kardoud	
El Khatartyba	Sanour	
Nadiba	Besentouai	
Samokhrad	Al Masin	
Balkatr Al Gharbiya	Menshaad Bouli	
Kom Al Farag	Edfina	
Fisheir	Warket	
Kom Baneit Abu Kir	Bouait	
Kafr Dawud	El Abaidya El Gedida	
Abu Sheikh Hof	Aridan	
Birket Rataas	Kom El Nasr	

All villages surveyed were organized in the following manner, and the Consultant's team received assurances from the Governor that villages not surveyed are also similarly organized.

ORGANIZATION OF VILLAGE EXECUTIVE COUNCIL



The duties and responsibilities of the various village organizational units are described briefly below.

Chairman: Directs the implementation of all village level projects and supervises the general planning effort. Presides over bi-weekly council meetings, arranges for technical support when required and manages the planning and technical support of projects approved by the elected village council. Approves general administrative and technical plans for proposed development projects and formally presents annual development plan to the Governorate.

Engineering Division: Issues building permits and business licenses and is responsible for maintenance of building facilities.

Economic Development Division: Develops list of proposals for income producing projects and exercises implementation authority over such projects. Maintains status records for each of the approved projects and maintains financial records for these projects. Provides for continuous evaluation of income producing projects and prepares activity progress reports.

Village Secretary: Coordinates activities of various council technical units and maintains records.

Service Unit: Prepares project designs and technical specifications. Responsible for site selection and implementation supervision of infrastructural projects. At present, villages Councils have no professional engineering personnel.

Secretariat: Schedules committee meetings, notifies members, keeps minutes of meetings and maintains current organization charts.

Financial Affairs Division: Maintains all village accounts according to legal and fiscal requirements, maintains disbursements and income records, inventories; prepares balance sheets, books and maintains village financial records. Prepares budgets.

Personnel Division: Prepares budget for salaries, administers social insurance program, maintains personnel files.

Administrative Division: Determines office space and equipment requirements, cleaning, telephone service and provides for general facilities security.

In the villages surveyed, the Consultant's team met collectively and individually with key officials of the Executive and Elected Councils. There appeared to be a close working relationship between the executive and political decision makers as both sides offered identical views and understandings

of the BVS program, funding levels available to the village council area and development priorities to be financed by BVS. Council offices were clean, orderly, and all had comprehensive wall mounted charts showing some basic economic data of the village areas, services currently provided, and listings of upcoming priorities for the coming fiscal year.

During visits to the Village Banks, the team was shown all of the major financial records, balance sheets and current status of all accounts. The banking offices were also observed to be neat, with accounting records maintained and displayed in an orderly fashion.

Detailed inquiry of the project identification and approval process was made during the interviews. The following observations resulted from the discussions.

1) Village Councils in Beheira are familiar with the BVS program. The Governorate has informed all Village Councils of the nature of the proposed AID project. In the case of Beheira, the Governor held a meeting of all Village Council Chairmen and verbally briefed them about the project. This was followed by a formal letter requesting each Council to submit a list of priority infrastructural projects and giving guidelines for unit costing. General project priorities,

established by the Governorate, included canal maintenance, road maintenance, and new construction, potable water systems and biogas facilities.

2) While the Village Councils were not given the option of selecting projects outside the general priorities parameters mandated by the Governorate, they were granted the latitude to decide which projects and the priority ranking from the general priorities they desired for their own specific area.

3) All Village Councils were informed of the magnitude of funding that would be made available for their areas. The basis for determining how much each council area would receive was a formula which allocated a specific amount per capita of population.

4) The Village Executive Councils drew up from the Governorate level mandated guidelines a list of proposed projects for review and approval of the elected councils.

5) It appears that the elected councils generally accepted the lists as drawn up by the Village Executive Councils without change.

6) The lists of village priority projects were submitted in pro forma fashion to the Governorate by category (i.e., canal maintenance, equipment, water systems, etc.), rationale for

selection and total cost. As the Governorate furnished unit cost data in its general guidelines, no detailed cost estimates were required from the village councils. The most common criteria for selection used were numbers of beneficiaries and, in some instances, the cost/beneficiary ratio. No other evaluation criteria appeared in the submissions. The village councils stated that they had sent their approved project listings directly to the Planning and Followup Department of the Governorate with an information copy to the Markaz.

7) When questioned as to whether the Markaz might revise their project listings, both executive and elective council members responded strongly that the village councils have final authority to select their own projects from within the mandated guidelines and that the Markaz had no authority whatsoever to make any amendments.

8) When questioned further as to whether the Governor could amend their choices, both elected and appointed officials stated categorically that the Governor had no authority to make any changes in the list of projects or priorities approved by the village councils.

9) The same general comments regarding village approval autonomy within the guidelines were echoed by various officials of the Governorate.

10) Village officials stated and reiterated provisions of Law 43 of 1979 that the village has sole discretion to select its development projects and let contracts for their execution. Village officials acknowledged, however, that they would probably require technical assistance in preparing specifications and engineering designs for more sophisticated projects.

11) When questioned as to where they could obtain such assistance, the officials responded that they could request help from the Markaz and Governorate, where required. They added, however, that they preferred to design and implement their projects using their own technical resources, using standard plans and specifications prepared by the Governorate for similar projects, but admitted that they needed considerable guidance for the Markaz and Governorate technical offices in preparation of engineering and bid tender documentation. They were quick to add, however, that for income producing projects, they required no help from outside sources as they believed they were perfectly competent to plan and organize common projects such as carpet weaving, woodworking and furniture manufacture. The Consultant's team was shown numerous income producing projects of this kind and came away with the assessment that these comments are essentially correct. It should be noted that the technology, profitability, and marketing structure of traditional cottage industries cited above are well understood at the village level. For income

producing projects of a more sophisticated nature, such as tile manufacturing, considerable outside assistance in feasibility study preparation would be required.

12) Finally, the Consultant's team questioned village officials concerning available funds for maintenance. The officials responded that the Village Services Account would provide maintenance funds as required from locally generated revenues to cover these costs and they could also request funding assistance from the Governorate Service Accounts, when required. Current regulations and procedures governing the Service Account at all levels allows for use of account funds for maintenance.

As a general comment concerning project planning and administration at the village level in Beheira, it should be noted that considerable progress has been made in implementing the spirit of Law 43 of 1979. The basic nucleus of an administrative and fiscal apparatus has been formed in all villages. Village Councils appear to be well motivated and well focused on the development tasks ahead. The functional job descriptions of the various organizational units described above are, however, misleading as they reflect more a desirable level of organizational capability than that which is actually currently present. Most of the various technical units are staffed with

single individuals with somewhat limited experience. The Financial Affairs Divisions are the most capable, being staffed by relatively experienced government accounting personnel who have received continuous training and guidance from the Governorate Finance Unit in the requirements and techniques of maintaining the village accounts. The senior accountants and the manager of the Village Banks are graduates of the Faculty of Commerce with 10 to 15 years of experience. In other functional areas of the Village Councils, skills are less well developed.

The Village Councils surveyed have only three or four technicians who have on the job experience with small scale projects rather than formal engineering education. There is an abundance of agronomists working at village level (sometimes as many as 50 - 100 per council area). These personnel provide guidance and training to formers for income producing projects such as bee keeping, raising and basic agriculture. No objective planning criteria such as benefit/cost or internal rate of return analyses are used in project identification. There exists little capacity to prepare engineering work for small scale BVS type projects, such as farm to market road and potable water systems. Councils initially, will need extensive help from the markaz and governorate technical offices.

Perhaps the greatest reservoir of strength at the village level, after financial management, is in the area of project implementation and monitoring after contracts have been let and work has commenced. The proposed level of BVS financing for each village council area is sufficiently small that village councils with guidance from above should have little difficulty monitoring project performance.

In the area of routine equipment maintenance, there presently exisist at the village level at sizeable reservoir of mechanical talent such as basic engine and pump repair in both the public

and private sectors. Most of these skills have been acquired through the apprentice system whereby local youngsters receive practical on the job training at private and government operated workshops.

The major government owned workshops serving Beheira Governorate are:

1. Damanhour Training Center located in Damanhour
2. Technical Workshop for Maintenance and Repair, also in Damanhour.

3) Ministry of Agriculture Training Center in Kafr El Sheikh.

The first two of these facilities were visited. Currently there is a broad range of functions being performed such as foundry work, welding, engine repair, body work, agricultural machinery and spare parts manufacture, lathe work and blacksmithing. In addition, the Tractor and Engineering Company in Damanhour has a complete repair shop for repair and maintenance of excavation and earth moving equipment. There are also numerous private entrepreneur workshops operating all levels. The quality of maintenance skills throughout the Governorate are quite high. Most Village Council areas have from 100 to 150 privately and publicly owned farm tractors and related agricultural machinery. Many of these units were inspected and found to be in good working order. The basic problem in equipment maintenance is not the availability or quality of personnel, which is judged sufficient and competent, but the lack of adequate shop tools and equipment to perform required tasks. Tools examined were obsolete, degraded and in short supply.

V Project Personnel-Methods of Appointment and Removal

Government personnel are appointed to positions and perform throughout the civil service in the following fashion:

- University and technical school graduates are guaranteed and must accept employment with the government upon graduation from their respective institutions.
- The choice of assignments is usually arbitrary on the part of each respective government agency. They have so many to place each year and try to place them throughout the system where they can be squeezed in.
- Often there is little correlation between a person's training and the job he is ultimately required to fill.
- This explains why civil engineers are often assigned to fill posts requiring mechanical engineers and arts majors are assigned to perform planning and managerial tasks.
- Once appointed, a person cannot be arbitrarily removed for any reason whatsoever. Personnel are sometimes transferred between posts, but never dismissed.
- In theory, personnel must serve in government positions for a minimum of ten years. In practice, many disappear into the domestic market place or gravitate toward more lucrative job opportunities in the Arab world without notice or explanation.

- Retaining highly qualified technical personnel for any length of time is rendered difficult because of the low salaries paid by the government and the attraction of higher salaries offered in the private sector and abroad.

- Less qualified and less motivated personnel tend to hang on to their guaranteed low salaries paid by the government as insurance of a monthly income, but must moonlight on the outside to secure an adequate living. As they are not required to perform to retain tenure, their government office hours are usually shorter than the theoretical working day and more time is spent socializing and drinking tea than in actual job related work. As their primary source of income is from outside jobs, their real talents are displayed there rather than in government employment.

- The above are general observations, but there are many exceptions as some employees whose family situation offers additional income in Beheira are quite dedicated to their work.

- Village officials must originate from the villages in which they serve. This is a possible explanation of the higher level of motivation found among the

village councils than in other organizational sections observed.

- Officials contacted generally stated that they would be more willing to work harder and longer on their assigned government taks if their current salaries (which are low) could be doubled.

VI Analysis of BVS Program Execution Capabilities in Beheira Governorate

A. Role of the Governor

The key factor which will contribute to the ultimate success of the planned BVS program within the Government is the direct supervisory role that will be played by the Governor in directing technical planning and periodic problem solving. As the Governor has put himself personally in charge of the program, he is able to direct the input of available technical staff and insure that work is performed according to schedule. Past history of village level income producing projects clearly demonstrates that the personnel role played by the Governor has been crucial in insuring that projects are completed expeditiously and correctly. Should any lower ranking official take charge of the program, it is doubtful that appropriate coordination and follow-up of implementation activities could be maintained with the same degree of thoroughness and expeditiousness now shown. The Governor is aware of the importance of his role in village development and made the comment that these activities could not proceed effectively without his direct and personnel intervention at all levels. The consultant is in full agreement with this view.

B. Adequacy of Technical Expertise for Project Engineering Planning

Should the engineering planning for the proposed dirt road construction be left entirely to the available Roads and Bridges Department at Governorate and Markaz, it is doubtful that the necessary site surveys, materials quantification and construction supervision of the proposed 400 km for BVS could be accomplished expeditiously as there is only one graduate engineer within the department and the numerous technicians appear not to have sufficient education or experience to prepare detailed engineering drawings and specifications for the proposed work program. However, given the fact that engineers can be and have been requisitioned from outside public and private sector sources on a temporary basis and there is adequate funding provided for these services in the proposed budget, the Consultant believes that adequate engineering support will be available for the planned road program.

Concerning engineering support for the proposed canal excavation program, the Irrigation Department has long experience in writing specifications and bid tender documents for the type of equipment to be procured. It

is believed that there will be little difficulty in initiating the necessary procurement.
It should be noted in this regard that a number of units of the proposed types planned have already been procured in Beheira.

With respect to the planned water systems for BVS, 95% of the activities consist of extending existing systems by adding pipes, booster pumps and public fountains. There are currently 44 graduate engineers available from the Water and Sewerage Unit and the Abou Homos Water Plant to participate in the designs of the proposed system expansion. As the Governor has and does exercise the authority to assign engineering planning tasks to these organizations and the total project level is a modest 300,000 LE, it is believed that there will be little difficulty in completing the design work for this part of the program.

Concerning the remaining program elements: biogas and solar desalination projects, the level contemplated is a modest 150,000 LE for each and projects to be funded shall be experimental and constructed from already existing prototype designs that have been implemented

successfully in Fayoum Governorate and elsewhere in developing countries. There should be no problem with these projects in Beheira as the engineering work has been done and the current Governor has already pioneered this work when he was Governor of Fayoum.

C. Project Implementation Timing and Capabilities

For roads, 178.5 km of paved roads have been completed in Beheira with public and private sector facilities during the past three years. The ratio between paved and unpaved road capacity is 1 : 2.28 derived from past experience. Therefore, the Governorate using the Roads and Bridges Department as expanded through creation of the public sector company described earlier and a combination of private contractors should easily be able to complete 2.28 x 178.5 = 406.99 km of dirt roads within the next three years. No additional roads are currently contemplated during this period. In this regard, it should be noted that 4 major national contractors currently work in Beheira and could conceivably expand their volume of work should more funding be available through BVS. Also, many of the proposed road projects consist of putting soil and rock on existing road

beds to raise the road level 50 cm above the agricultural land. This type of work can be done by the villages themselves using labor intensive methods with draft animals for transport. In some areas visited, village councils plan to execute their road projects in this manner. For these reasons, past performance probably does not provide accurate assessment of actual capability for the proposed program. The best estimate, at this time, for completion of the proposed road program in Beheira is 18 months to three years. For water system extensions, it is expected that the design work and actual construction of the proposed level of effort can be completed within six to twelve months. There are currently 10 public and private sector contractors in Beheira looking for work. While previous program history is not extensive due to lack of funds, it is believed that the available capability is sufficient to complete the proposed small program in one year or less.

For canal maintenance, the procurement time for the proposed equipment is currently 12 months for advertisement to receipt.

Concerning the biogas and solar energy programs, local public and private sector firms are fully capable of

constructing these units from locally available materials using these already prepared prototype designs.

D. Program Management

There are currently 53 engineers and 334 technicians available to the governorate departments and local government units who will be directly involved in the BVS program. There is good and frequent communication between all responsible echelons and the Governor receives constant feedback on activity progress. Village governments in Beheira are well organized and well motivated. In light of these considerations, it is believed that the proposed program shall be managed effectively to insure reasonably timely and quality execution. Improvements could be made in the monitoring format to include information concerning actual project execution status in addition to information on project funding disbursements currently submitted. Also, project documentation could be standardized. Low morale and personnel turnover are endemic whitin the governorate technical offices. Some consideration should be given to providing cash incentives to personnel working directly with BVS to further insure that required work is completed in a timely and professional manner.

E. Financial Administration

Fiscal entities are well trained, are in place and have four years of experience in administering village level development projects. Procedures are streamlined and involved basically one echelon (the village of government for contracting, disbursements and record keeping). As the law requires that all contracts above LE 5,000 be approved by the Markaz, it would be desirable to raise the level of the Village Councils' approval authority as most proposed projects fall within the range of 10,000 to 15,000 LE.

F. Infrastructure and Equipment Maintenance

For roads, the planned expansion of the rural dirt network will fully exceed the governorate's current maintenance capacity using existing labor intensive methods. If the existing and planned network is to be maintained satisfactorily, mechanical methods are required. The Governor is proposing that, in addition to the LE 3.5 million proposed for projects, funds be made available for purchase of enough new graders, costing LE 50,000 each, and sprinkler cistern trucks, costing LE 20,000 each so that one grader and one truck can be assigned

to each Markaz. The current inventory of road maintenance equipment shown in Table II - 3 lists one grader and one tank truck on hand. In addition, two more graders and two tank trucks are now under procurement as shown in Table II-4. As there are 12 Markaz, 9 new graders and 9 additional cistern trucks will have to be procured to insure satisfactory maintenance of the existing and planned new network for BVS. Without this equipment, it is considered highly unlikely that any maintenance will be performed on the expanded network as all currently available personnel are fully occupied in performing spot maintenance on the existing network and the available labor force is dwindling day by day. Capital intensive road maintenance methods have been shown to be more economical and more efficient than labor intensive methods. There are currently adequate operators and funding at both the governorate and village levels to cover costs of operating the proposed new equipment.

For canal maintenance equipment, routine engine maintenance is and can be performed by local public and private sector workshops. As there is only one private sector distributor (Tractor and Engineering Company in

Damanhour)with workshop facilities and spare parts for the proposed hydraulic excavators, one of the Governorate workshops should be upgraded with a full complement of shops tools and spare parts to insure a sufficient full range of maintenance services for the proposed new equipment procurement package. The Governorate would like to upgrade the Damanhour Training Center for this purpose. Since the center is fully staffed with a broad range of skilled personnel, the Consultant supports this recommendation. There are some trained operators of this type of equipment currently working throughout Beheira, but it is evident that some additional operators training will be required to fully man the new machines.

For road maintenance equipment; the Roads and Bridges Department has adequate trained staff to maintain the proposed new equipment. Tools and spare parts are inadequate. The procurement should be complemented with

10,000 working hours of spare parts and maintenance can be performed at the Markaz's and Department workshops and at the upgraded Damanhour Training Center discussed above.

For water system extensions, the level of proposed program effort represents an insignificant addition to the existing systems which were found to be adequately maintained by the Water and Sewerage Unit and the Abou Homos Plant. It is believed that there will be no difficulty maintaining the proposed pipe extensions and booster pumps and both organizational units have existing good programs of preventive and overhaul maintenance of all existing networks. Taps and faucets in most areas are and will be maintained by the village councils.

For biogas and solar energy projects, the level of engineering required in the construction of these pilot projects are simple, unsophisticated and virtually maintenance free. Whatever may be required to patch mud walls and metal conduits used in the system designs are fully within the village public and private sector capabilities.

G. Project Fund Disbursement Schedule for Major Activities

Roads (in LE)

1st 3 Months A&E Preparation	2nd 3 Months Mobilization	Next 6 Months Construction	Next 6 Months Construction	Last 6 Months Completion
135,000 8%	337,600 20%	523,280 31%	523,280 31%	168,800 10%

Canal Excavation Equipment

1st 2 Months Specifications	2nd 2 Months Invitation for Bid	3rd 2 Months Bid Analysis and Award	Next 6 Months Delivery	Next 2 Months Inspection & Acceptance
0	0	0	756,900 90%	84,100 10%

Water Systems

1st 2 Months Design	Next 3 Months Mobilization	Next 3 Months Construction	Next 3 Months Construction	Last 2 Months Completion 10%
15,900 5%	68,200 20%	101,050 32.5%	101,050 32.5%	31,800

H. Project Planning and Identification Capabilities

As noted, none of the organizations involved in village development programs have any experience or knowledge of objective criteria such as discounted cash flow, benefit/cost, internal rate of return analysis for project evaluation and ranking. The Planning and Follow-up Department personnel contacted and the Governor are aware of these deficiencies and are anxious to develop these more

sophisticated capabilities in the future. While all projects proposed for BVS have obvious economic merit, the actual impact these projects will have on the regional economy of the governorate on national income has not been evaluated in the current planning and selection process. Training in the use of these concepts would be beneficial and successful.

I. PROPOSED BVS PROGRAM

The Basic Village Services program proposed for the Minya Governorate has two main components. L.E. 1,964,500 has been programmed for village drinking water projects, and L.E. 1,241,500 for village roads. It is proposed to allocate L.E. 380,000 to purchase Graders and Water trucks for road construction and maintenance, and L.E. 240,000 is expected to be allocated for procurement of trucks and tools to be used in maintenance of the water projects. These general priorities have been established by the governorate through a survey of existing potable water infrastructure and road requirements within 9 markaz and 57 village council units of the governorate.

A) Roads

With respect to proposed road projects, the current system in El Minya Governorate includes 110 km of paved roads (excluding the Cairo-Aswan link) and 1392 km of unpaved roads. Altogether 120 km of new unpaved rural roads are proposed from BVS funding. Current unit costs, calculated by the Roads and Bridges Department of El Minya Governorate are 10,000 LE/km for unpaved roads constructed to 50 cm above field level at a width of 6 meters. For asphalt roads constructed to a width of 5 meters at a thickness of 25 cm with a double asphalt layer, the current cost is 30,000 LE/km. Many rural areas of El Minya are currently without adequate intra-village council area and farm to market communications. In prior years road construction and repair have been labor intensive. Increasing trends in rural to urban and migration of the productive labor force to other countries of the Middle East have so depleted the available labor force that labor intensive construction and repair methods are no longer efficient or practical.

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Construction is currently carried out by motor graders and the use of tractor driven tank trailers of 3 to 4 m^3 capacity with pump and sprayer. The current cost of the motor graders of the type used in Minya is 50,000 LE, while the cost of the tank truck is between 15,000 and 20,000 LE. The amount of funding requested from BVS for rural road projects is 1,241,500 LE and 380,000 LE for four motor graders and 9 water trucks.

B) Potable Water Projects

Concerning the village level water requirements, the survey noted that 139,320 rural families of a total 329,269 or 42% lacked potable water. There presently exists within the governorate 216 rural water systems in various states of repair with a total delivery capacity of 147,000 m^3/day. The existing systems, two of which were examined by the Consultant's team during its field visit to El Minya are of the standard Government of Egypt design prepared by the Central Water Authority. These consist of elevated concrete storage tanks into which ground water is pumped by diesel driven units and from which water is distributed throughout the area served by means of steel and concrete pipes and drawn from public taps at various points along the network. The actual condition of the existing rural water systems in El Minya is visibly poor. Many of the taps are broken and permanently running, while some taps are missing altogether. Most of the diesel prime movers are aged and experience frequent breakdowns requiring stop gap overhaul and parts replacement. The total level of requested BVS funding for rural water systems in El Minya is 1,964,500 LE plus 240,000 LE for transport and workshop equipment.

A complete list of the proposed BVS program is shown in table below

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TABLE III - 1

Summary of Proposed BVS Program in El Minya Governorate

(in L.E. 1000)

Markaz	Village Water Projects	Village Road Projects	Markaz T O T A L
El Adwa	119.0	5.0	124.0
Beni Mazar	258.0	114.0	372.0
Maghagha	158.5	114.5	273.0
Mataee	126.0	61.0	187.0
Samaloot	261.0	216.0	477.0
El Minya	281.0	150.0	431.0
Abu Qorqas	256.0	188.0	444.0
Malawee	344.0	242.0	586.0
Deiramoos	161.0	151.0	312.0
TOTAL	1964.5	1241.5	3206.0

NOTE : The details of each markaz's projects are provided in the file that has been left with AID.

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II. BVS PROJECT SELECTION PROCEDURE IN EL MINYA

On May 14, 1979, a circular letter was sent to all Village Councils requesting them to rank in order of descending priorities their proposed BVS projects according to the governorate wide priorities of potable water systems and unpaved road. The governorate priorities were determined from an earlier survey of village needs which showed that 60% to 70% of the villages require potable water and that 30 to 40% require unpaved roads. In the same circular, villages were provided unit cost information and information concerning the level of funding that each village council area would receive. The budget formula was determined by dividing 3,000,000 LE to be allocated to the villages for BVS by the total village population of the governorate. The per capita allocation for each village was thus derived as 1.847 LE.

Concurrent with the dispatch of the circular, the BVS program priorities and general parameters were discussed in meetings of the Governorate Elected Council (in which all Village Councils are represented). The Markaz Executive Councils also held their own meetings of Village Council Chairmen to explain and discuss the BVS program.

Village Elected Councils prepared their lists of project priorities from among the general guidelines and parameters and dubmitted them to the Village Elected Councils which forwarded the village lists and costs to the Markaz Chairmen. At this point the Markaz Chairmen convened a second meeting of the Village Council Chairmen to review the village project lists to insure that the proposed projects were within the general governorate guidelines and priorities presented in the circular and as explained during previous meetings of the Governorate Elected Councils and of the Village Council Chairman at the Markaz.

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During this entire process, the ORDEV chief at Governorate attended all of the aforementioned meetings and visited village council area to insure that local officials understood and adhered to the general priorities and guidelines.

Completed lists were forwarded by the Markaz Chairmen to the General Secretary of the Governorate for final review and approval. As a rule, the Markaz and Governorate officials tended to approve all projects on the village lists that were within the general guidelines and governorate priorities.

C) BVS Project Implementation Procedures in El Minya

In keeping with the spirit and letter of Law 43 of 1979, officials of the Governorate and the Markaz's are fully committed to decentralization. Village Executive Councils have been given full authority to prepare bid tender documents for approved projects, advertise for bids, let contracts and disburse funds. The fiscal mechanism and project preparation described in the report on the Behera Governorate shall be used in the execution of projects in El Minya.

Assistance in the preparation of engineering designs and specifications is provided to the Village Councils by the Roads and Bridges and Mechanical Units of the Markaz and Governorate. Village Councils shall make the final selection of contractors and disburse funds against payment invoices from the Village Service Account in the Village Banks. Funds earmarked for BVS projects in a particular Village Council area will be transferred from the Central Bank through the Governorate to the Village Banks.

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IV. PROJECT IMPLEMENTATION CAPABILITIES AT EACH LEVEL OF LOCAL GOVERNMENT IN EL MINYA

A) Governorate Level :

a. Project Planning and Evaluation

The responsibility for planning and evaluation rests with the ORDEV and the Planning and Follow-up Department. The basic organization of these two units in El Minya is similar in composition and quality to those in Behera. Planning criteria used in preparing guidelines to villages are population served and least cost beneficiary. No other criteria such as benefit/cost or internal rate of return analysis are presently used or understood.

General Governorate priorities such as roads and water systems are determined from surveys of village council areas and discussions with local officials. Project documentation on file in the Governorate contains simple proforma information such as brief project description, i.e. construction of 5 km of unpaved road in Village Council area "X", cost per kilometer, numbers of people, used cost/beneficiary and engineering designs. There is no attempt to rank order projects according to objective quantification of economic merit. Present personnel in both ORDEV and the Planning and Follow-up Department are bright and trainable in the use of the more sophisticated criteria. ORDEV also prepares physical plans of all villages and assesses environmental impact of projects.

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b. Technical and Engineering Support of Approved Village Level Projects

Basic responsibility for providing technical assistance in the preparation of drawings, bills of quantities and bid specifications for approved BVS projects is shared by the Roads and Bridges Department and the Mechanical Division of the Governorate Housing Department.

(1) The Roads and Bridges Department

The Roads and Bridges Department at Governorate and through its extended sub-units at the Markaz prepares all designs and technical specifications for village level roads according to adopted standard plans and specifications used throughout Egypt. These standards have been developed by the Central Roads and Bridges Authority in Cairo. Major maintenance of completed roads is performed by the Roads and Bridges Unit at the Markaz level with minor maintenance performed by laborers assigned to the village council areas(1).

Organizationally, the Roads and Bridges Unit is established in the following format :

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(1) 1,300 laborers also on permanent roles of the roads and bridges unit. Laborers are assigned to the village council areas to fill in holes and perform minor routine repair and unpaved roads. Salaries of these employees are paid from the village budgets.

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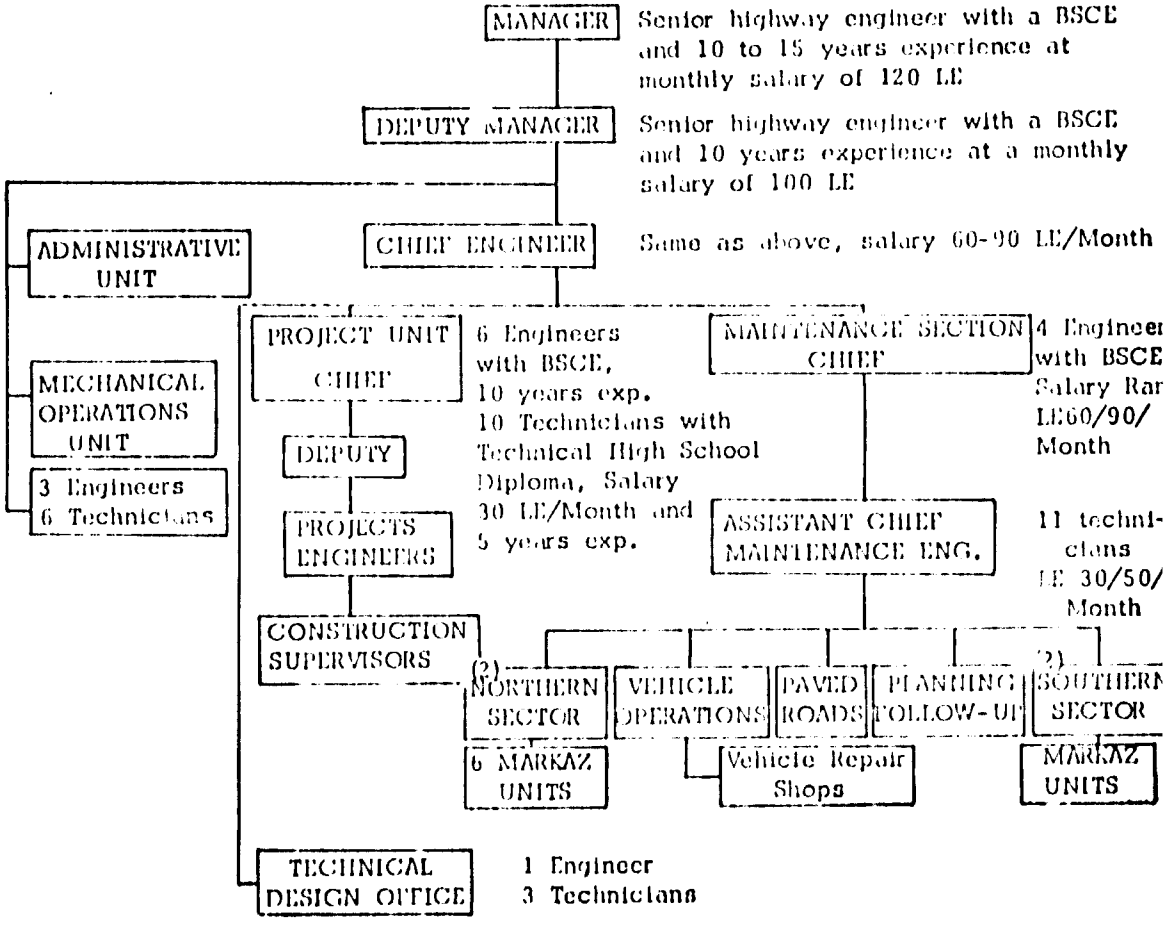
Organization of the Roads and Bridges Department



(2) Responsible for road maintenance in 5 northern markaz and 4 southern markaz.

During field visits to El Minya, the Consultant had discussions with managerial and technical personnel of the Roads and Bridges Department and examined engineering designs and specifications of previous projects undertaken by the Department. The quality of the engineering design work prepared for these projects was of adequate professional caliber and well organized. Personnel interviewed were well informed and gave in-depth technical answers to the questions posed.

Over the past five years, the Roads and Bridges Department has designed and completed 34 road projects throughout the Governorate. The list of these completed projects is in Table III-2 below :

TABLE III-2

History of Previous Road Construction in El Minya

YEAR	PLANNED (KM)	COMPLETED (EST.) (KM)	AMOUNT IN LE 000's
1979	161	120	1,585
1978	37	37	368
1977	38	38	380
1976	35	35	350
1975	20	20	197
	291	250	2,880

The two limiting factors observed are equipment availability for both construction and maintenance and labor needs. Table III-3 below shows a list of currently available Roads and Bridges

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Department equipment. As most is aged and frequently down for maintenance and repair, a large part of the planned new construction work will have to be implemented by contract.

TABLE III-3

List of Current Roads and Bridges Department Equipment in El Minya (1)

TYPE	NUMBER OF UNITS
Motorcycles	14
Pickups	3
Trailers	10
Trucks	1
Dump Trucks	4
Water Tanks	11
Track Tractors	2
Wheeled Tractors	13
Asphalt Tanks	1
Boilers (Asphalt)	2
Mixers (Asphalt)	2
Rollers	3
Scrappers	1
Bulldozers	3 (2)
Graders	5

(1) All units have 40 60 60% serviceability

(2) One new and two under complete overhaul

In the Markaz's where agricultural production is high, there is presently an extensive rural feeder road network. There has been a strong push in recent years for mechanical maintenance of the

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network. Insight into the reasons for this approach was obtained from the explanation that labor is in generally short supply throughout the year because of :

- extensive labor intensive farming practices
- rural-urban migration
- growing tendency toward schooling for children (particularly sons)
- labor migration to neighboring Arab countries lured by high wages and other attractive benefits.

The current consequence of these trends is that Village Councils have indicated a need for mechanization of road maintenance to keep the limited available labor force on the land. Almost all proposed BVS road projects shall be put up for bid to private contractors who have the equipment, technical skills and labor force required.

There are 17 roads and bridges contractors who have worked and are currently working on projects in El Minya. These contractors have more capacity than current and projected requirements for road construction, and it is believed by the Roads and Bridges Department and several contractors interviewed that the level of proposed BVS activity can be absorbed by the locally available construction industry without difficulty. As needed, the Roads and Bridges Department at the Markaz Governorates will supplement the private sector with equipment inputs to the extent of its limited availability. A list of roads and bridges contractors currently working in El Minya is shown in Table III-4.

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TABLE III-4

Roads and Bridges Contractors Working in El Minya

NAME	STATUS (PUBLIC OR PRIVATE	ANNUAL VOLUME OF BUSINESS IN LE 000's
El Nil Road Const. Co.	Public	800
Helwan Contracting Co.	Private	500
Hassan Mohamed Hassan & El Manairi	"	500
Abdel Aziz Mohamedine Ali	"	500
Camal Abdel Rahman El Magdi	"	500
Regay Abdel Malik	"	500
Tamir Salim Mikhail	"	300
Ally Youssef Darwish	"	300
Vagi Abdel Farl Abdel Chant	"	300
Mohamed Mohamed Said Habibi	"	300
Mohamed Hamid Ali	"	200
Motobali Mohamed Nasr	"	200
Youssef Nashim Hendy	"	200
Ali Mohamed Ali El Din	"	100
Sabet Fam Soliman	"	100
Mahmoud Abdel Azim	"	50
Maurice Dantel Cris	"	50

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The major area of deficiency noted by the Consultant's team is in the area of equipment for road maintenance. The Roads and Bridges Department as shown in the organigram, presently has a sub-department for road maintenance in each of the nine Markaz's. The sub-departments appear to be adequately staffed for the requirements of the BVS program, but lack sufficient equipment particularly in 4 of the Markaz's. The five motor graders belonging to the Roads and Bridges Department are currently deployed to five of the Markaz sub-departments, and there is an urgent requirement for four additional machines so that each Markaz will have at its disposal a grader department to adequately maintain the existing and planned new roads. In addition, nine water trucks (one per Markaz) is required to complete the maintenance equipment package.

In discussions with Governorate Roads and Bridges Department personnel, it was determined that the department shall prepare complete engineering designs and specifications for all projects submitted in the village priority lists and provide technical supervision of the construction. Once completed, the maintenance sub-departments will maintain the network as the Village Councils do not currently have sufficient expertise personnel and equipment to carry out these functions.

(2) Mechanical Division of the Department of Housing

Design and construction supervision of the proposed village potable water systems for BVS will be under the jurisdiction of the Mechanical Department. The principal offices of the

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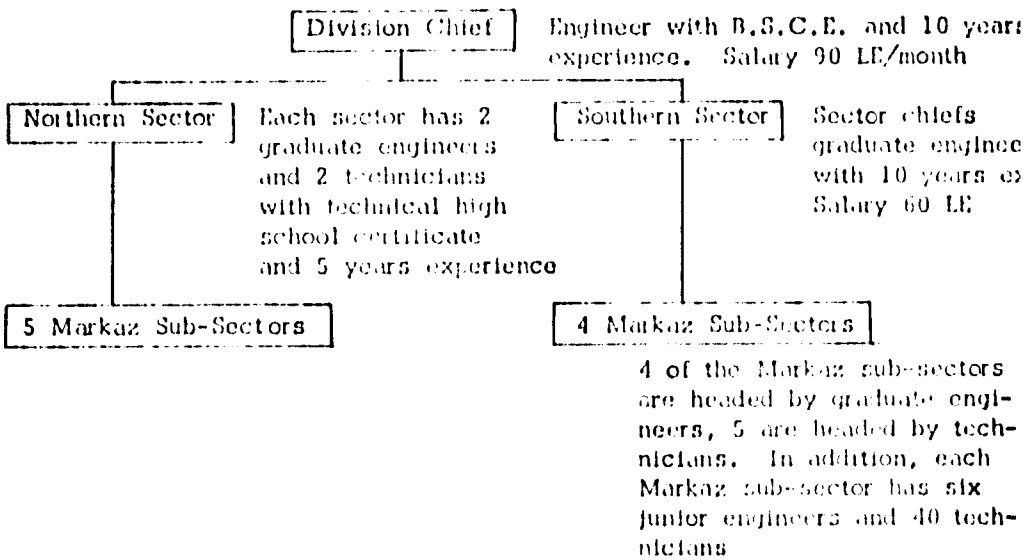
department are located within the Governorate compound with subsector offices in each of the Markaz's. All engineering designs are prepared by the Governorate level office with responsibility for maintenance relegated to the Markaz offices and Village Councils. The Organigram of the Mechanical Division is shown below :

Mechanical Division in El Minya



The Mechanical Division prepares all engineering designs and specifications for the proposed villages water systems from standard plans prepared by the Central Potable Water Authority in Cairo and the Markaz sub-sectors are responsible for their maintenance. There is a mechanic assigned to each of the villages, but the level of training and experience of the village level mechanics is judged inadequate.

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The Consultant reviewed the designs and specifications of previously completed water projects in addition to inspecting several projects in the field. As with the Roads and Bridges Department, the quality of the designs and construction of the previously completed water projects implemented by the Mechanical Division is adequate to the needs of proposed projects under the BVS program.

Two areas of deficiency were noted: village water systems are not currently satisfactorily maintained, and the Markaz sub-sector workshops lack even the most basic tools and transport equipment for carrying out field maintenance. Most of the maintenance of the diesel prime movers for pumps is contracted out locally under the supervision of the Markaz sub-departments. Taps and pipelines are generally not maintained at all.

The maintenance issue was discussed with senior officials of the Mechanical Division. The officials contacted are aware of the problem and proposed a plan for remedial action. It was noted that previous systems had been designed with too few public taps and, as a consequence, too many people now crowd around existing taps with full buckets causing damage to tap stems and valves. In addition, the Director commented that the village level mechanics have insufficient training in basic plumbing to be of value in maintaining the water works.

It was also noted that plumbing skills are in short supply due to the growing demand for such skills in other areas of Egypt where salaries and benefits are more attractive. Markaz sub-sectors have sufficient skilled personnel but lack the tools and transport for regular inspection and routine maintenance of the prime movers.

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To correct these deficiencies, the Mechanical Division shall incorporate in plans for future projects provisions for increasing the number of available taps, the outlets shall be fitted with automatic spring operated faucets of sturdy construction to minimize water wastage and overwatering of crops and the village level mechanics shall be given training in basic plumbing at the two new Ministry of Development and New Communities technical training centers at Minya Dawa and at Fallaw. Costs of the training shall be borne by the Government and the proposed self-closing faucets shall be procured locally. Tools and mobile workshops are proposed for BVS Facility to enable the sub-sectors to provide regular maintenance of the electric prime movers that will replace existing diesel engines and be installed at new sites. A letter of intent concerning this plan was prepared and given to the ORDEV representative and Consultant Team during the visit to be followed by a detailed plan which will be sent to ORDEV in Cairo in the near future.

Once contracts are let by the Village Councils for the new BVS Projects, the Mechanical Division sub-sectors at the Markaz level will provide construction supervision and maintain prime movers through a regular system of inspection and spot repair as needed. They will also monitor the work of the village level mechanics/plumbers to insure regular maintenance of taps and lines.

Apart from the need for upgrading general plumbing skills which the Mechanical Division hopes to accomplish through :

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- training at governorate workshops
- training at the two new training centers at Minya and Mallawi
- on-the-job training at project sites

The Consultant believes that positive steps are being taken to support to Village Councils in the implementation of the proposed water projects and, with the implementation of the proposed design changes, provision of shop and transport equipment, training of village level mechanics and regular inspection by the Markaz, maintenance of the new systems may be better than in the past.

Over the past five years, some 39 water supply projects have been implemented in El Minya under the direct supervision of the Mechanical Division (see Table III-5). Private and Public Sector construction capacity in the Governorate is more than adequate to handle the proposed level of BVS financing as there are 25 contractors specializing in water system construction currently working within the Governorate (see Table III-6).

TABLE III-5

List of Previous Village Level Water Projects Completed in El Minya

YEAR	NUMBER OF PROJECTS	GROSS VALUE IN LE 000's
1979	5	13
1978	10	125
1977	9	113
1976	4	32
1975	11	116
	39	399

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Table III - 6

Water Project Contractors in El Minya

Especialty and the name	Annual Volume of Business
1. Pipeline	
Mahmoud Saber Saad	250,000
Ahmed Esmail Dasoughi	20,000
Abdul Aziz Abdul Jarad	50,000
2. Wells	
Nassef Beyaree & Kamel Maslahee	700,000
Abdul Hadi Mohamed Sadaree	20,000
Hejko Engineering Company	100,000
3. General Construction for Pumphouse	
Abdul Rahab Hamed	1,000,000
Saad Ghandeel	50,000
Naser Constructi a Company	Large
Hejko Construction Company	Large
4. Wells, Pumphouse, Pipeline	
Kamel Abdul Rahman	100,000
Hamdi Mohamed Saleh	250,000
Esmail Mohamed Daher	50,000
5. Engine or Electrical Unit, Pumps	
Mohamed Mahmoud Salama	200,000
Anwar Ghods Beharee	1,000,000
Mechanical Company	200,000
Haj Hussein Gaber & Sons	100,000

Eteo Egyptian Engineering Co.	100,000
Middle East Electrical Works Co.	100,000
Technical and Engineering Contractors	100,000

B) Markaz Level

Unlike the situation in Behera, the Markaz plays a pivotal role in the planning and implementation of the BVS program in El Minya. This observation is based on several fundamental differences in administrative and technical capacities and traditions between the two governorates. In Behera, the Village Councils are generally well organized and have had several years of experience in numerous planning and implementing village level income producing projects. As the process of administrative decentralization to village level in Behera has been underway since 1975, the role of the Markaz as a planning, administrative and coordinating unit for village development activities has gradually eroded with the growing organizational strength of the Village Councils. During visits to Behera, it was observed that Markaz level technical departments did not generally show sufficient staffing for technical assistance to both Markaz and Village level projects. In Behera, there is far more direct communication between Village Council and Governorate both in planning and coordinating inputs of technical support to village level projects. The Markaz function in this instance has receded to one of providing some technical coordination and liaison services to villages and project activity monitoring. As efforts to promote decentralization of administrative and fiscal authority to the village level have been initiated more recently in El Minya, the Village Councils there were observed to be less sure of their roles and responsibilities and less well organized than in Behera. Consequently, the Markaz Chairmen, administrative and technical departments in Minya are more involved in providing day-to-day guidance and coordination of village level project and fiscal management. This general observation should not be construed, however, to suggest management of village affairs by the Markaz as all Markaz officials contacted confirmed in their responses to specific questions the authority of the villages to

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select and administer their own development activities. In no instances, was it observed that Markaz officials altered or modified village decisions or usurped village authority and prerogatives under the law. As reported, Village Councils frequently ask the Markaz for guidance in project planning, contract administration and fiscal management as the village officials appear to recognize their current limitations and seem to need and appreciate the technical and administrative assistance provided to them by the various Markaz organizational departments. The relationship is similar to that of a parent guiding a child in the initial awkward attempts to walk. While there is frequent guidance in planning and administration of projects from the Markaz to the village, villages, with this assistance, do exercise their prerogative of tendering, contract award and funding disbursements as prescribed under the law. Markaz administrative departments are making a conscious effort to promote organizational capabilities at the village level by providing on-the-job training to village administrative and financial personnel during this transitional period between a highly centralized administration and the intended decentralized village level responsibilities and capabilities planned for the future.

As a coordinating and supporting entity, the Markaz's in El Minya are able to provide the back-up administrative and technical support required by the Village Councils in their initial attempts at self-government. Tupically, the Markaz in El Minya is organized in the following format:

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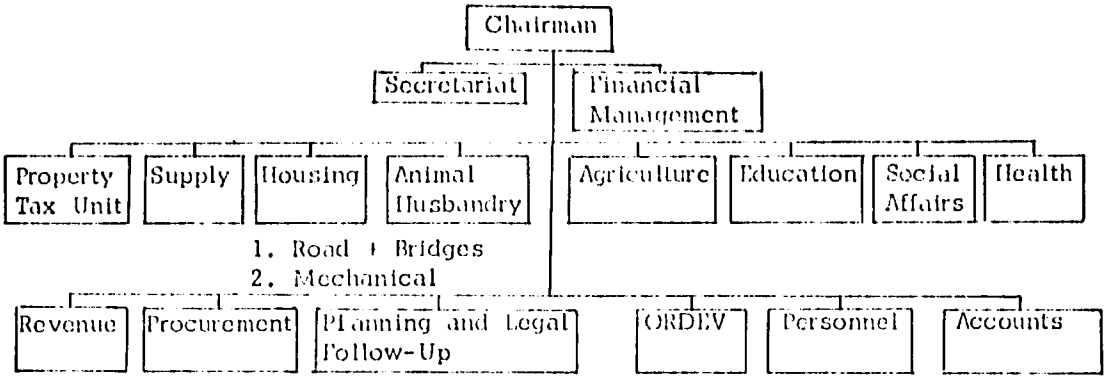

The most important Markaz organizational units directly involved in assisting Village Councils with BVS projects are the following : the Chairman who insures that village officials understand the intent and planning parameters of the program; the Housing Units whose Roads and Bridges and Mechanical Sections, noted earlier, prepare technical designs and specifications and supervise construction and maintenance of approved Village Council projects; and the Finance Departments who train and guide the Councils in fiscal administration and service fund account management.

As noted, each Housing Unit, has a Roads and Bridges Maintenance Section and Mechanical Division Sub-sector which provide engineering design and maintenance services for roads and water systems. Technical staff of the Housing Unit at the Markaz of Beni Mazar are divided into two sections. Each has the following staff components, which is fairly typical of the other Markaz's visited.

ROADS & BRIDGES	MECHANICAL
2 Civil Engineers	4 Mechanical Engineers
3 Technicians	5 Mechanical Technicians
	5 Electrical Technicians

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As the planned BVS program for Beni Mazar is extensive, the Markaz Chairman recently made an assessment of his technical support requirements and concluded that two additional technical staff would be required and forwarded his request to the Governorate. One additional civil engineer has already been deployed to the Markaz Housing Unit and arrangements are being made for the assignment of another t technician. This type of request and response between governmental levels in El Minya is indicative of the working linkages between various local governmental institutions and the back-up support and flexibility which decentralization allows when put into practice.

Each Roads and Bridges Department has a section for the maintenance of 150 to 200 km of road, except for Mallawi which has two sections to maintain the 220 km within that particular Markaz. All maintenance sections have adequate buildings and some tools but graders and water trucks, as noted, are required to upgrade the capability of all Markaz to assure maintenance of the proposed new BVS funded roads.

The Mechanical Sections appear to have sufficient staffing to design and provide construction, supervise the planned BVS funded water program, but require shop tools.

The Markaz Chairman and Planning and Follow-up Departments satisfactorily communicate planning guidelines and priorities to the Village Councils and insure that the general guidelines issued by the Governorate are followed, but currently have no capability in project planning criteria such as ranking of projects according to benefit/cost, internal rate of return and other objective measures of project worth. It is believed, however, that Markaz planning officials could be trained in the use of these techniques and could be encouraged to use such

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measures in project planning with the establishment of adequate data collection of basic village level economic and project costing information which is presently not available or recorded to any substantial degree.

As Village Councils do not yet have functioning Financial Affairs Divisions, the Markaz Finance Department in these areas administer village accounts and countersign funding disbursements authorized by the Village Executive Council Chairmen. The Finance Departments of the Markaz were found to be well staffed with trained and qualified accountants and were making progress in training of established Village Financial Affairs Division personnel and in setting up new divisions where none exists.

C) Village Level

Altogether, there are 57 Village Council areas in El Minya Governorate. These are listed below :

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The Village Council organizational structure within the Governorate is similar to that of Behera.

All areas have functioning Executive and Elected Councils and Village Banks. Although the managerial and some fiscal elements required for successful implementation of the BVS program are currently in place, it is noted that the organizational capabilities at the village level within the Governorate appear to be less well developed than in Behera. Offices visited are run down, floors in many offices visited are strewn with cattle and donkey feces and records are maintained in disorderly fashion. During visits to Village Banks, it was observed that records, while available, contained erasures, ledgers were not stamped and signed by responsible authorities as required by GOE fiscal regulations.

In one council area, a previously completed water system was inspected. At the time of inspection, the diesel prime mover was being repaired by the Markaz Mechanical Section and many of the fountains were broken. As the broken taps cost about LE 1.50 and require nothing more complicated than an adjustable wrench to replace, the team asked the Village Council Chairman how long the taps had been out of order and why they had not been repaired. The Chairman said that they had not been working for the past 15 years and that there was no point in replacing the broken outlets "as they would probably be broken again within a couple of days of replacement and the village had no funds to make the necessary repairs". The Chairman also said that no one had instructed him to have the taps fixed.

Although the Village Council Service Account showed a current balance of 4,000 LE in revenues from income producing Projects, the Village Council Chairman seemed to be unaware that the Council had authority under the law to use some of these funds to repair the water system, if it so desired.

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Contrary to some of these less positive observations, Village Councils demonstrated awareness of the BVS program as they acknowledged receipt of program guidance from the Governorate and the Markaz and had already prepared and submitted their lists of priority projects. Village officials also showed understanding of their authority to select, approve and administer projects within their respective areas without having to seek approval from higher echelons. They acknowledged, however, that they required technical assistance from the Markaz.

As the Village Councils visited did not yet have functioning Financial Affairs Divisions, all disbursements from local accounts in these particular villages are made on the signature of the Elected Council Chairmen after countersignature of the Markaz Finance Department head.

There is presently very little technical capability within the Village Council areas. Many Village Councils have one or two technicians (technical high school graduates) with limited practical experience.

Mechanics assigned by the Mechanical Division to maintain water systems lack training in basic plumbing and the road personnel assigned by the Roads and Bridges Department at Governorate and Markaz are usually unskilled and semi-skilled laborers.

Under present conditions of organization and staffing, the majority of the Villages in El Minya will require extensive assistance from the Markaz in the preparation of engineering drawings and specifications for approved projects and will require assistance from the Governorate technical departments for project implementation supervision. It is

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also considered probable that technical personnel of the Markaz shall have to provide to the Village Council in the bid evaluation process.

Noting that several Village Councils visited in El Minya demonstrated relatively low administrative capabilities, the team asked Markaz officials contacted to explain the criteria for selecting Village Executive Council officials and to indicate what steps could be taken to replace officials whose performance was inadequate.

General qualifications for selection include :

- number of years in government service
- number of years of service in one of the specialties of the Council (i.e. education, social affairs, finance, etc.)

It was noted that well motivated but under trained officials receive on-the-job training from the Markaz and/or the National School of Administration. In instances where both the level of ability and motivation of officials is considered inadequate, they can be transferred to less critical positions within the local government structure.

VI. ANALYSIS OF BVS PROGRAM EXECUTION CAPABILITIES IN EL MINYA GOVERNORATE

In general, the proposed BVS program consists of projects with which the governorate departments and local contractors are thoroughly familiar as they have had extensive experience with similar projects over the past several years.

The potable water projects proposed have four basic components :

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1. Well digging
2. Pump housing and storage towers
3. Pipes, valves and taps
4. Pumps, prime movers, switch boxes and transformers

These systems are designed from externally prepared standards which are adapted to specific work site locations with minor modifications to suit local conditions. For this reason, the actual engineering design work required is minor, consisting mainly of surveying network layouts and calculating lengths and diameters of pipes, pump capacities and horse-power requirements, and cement sand and reinforcing rod quantities needed for buildings and towers. As standard plans are used, most of the unit quantity and cost calculations have already been done and only require simple multiplication to arrive at total quantities to be procured. Currently, as shown in the preceding skills inventory, the Mechanical Division organization in the Governorate and the Markaz's, have 9 graduate engineers and seven technicians who will be available to work almost exclusively on BVS projects as there is little available funding outside of BVS for additional projects. From 1975 to 1979, the Division as designed and supervised the execution of some 39 small village water projects of the types proposed, totalling some 400,000 LE in cost. There are currently 25 private sector water contractors working within the Governorate, who are judged to have greater capacity that could be previously utilized because of limited funds available for water projects in El Minya. In addition, it is expected that contracts for the proposed new projects will be let for components (i.e. water towers, well digging and pipe laying, etc.) rather than for individual projects. This will mean that all 82 well required for the BVS program will be combined into a single tender. The same procedure is expected for the other components of the water projects, thus greatly simplifying project

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preparation tasks and reducing personnel time for engineering, specifications writing and tendering. It is also expected that all equipment and material procurement for the projects, including motors, pumps and construction materials will be detailed out with preparation of a common bill of materials for all projects. Procurement will be made on a governorate-wide basis to supply all program needs for the planned BVS water activities.

In light of all of the above considerations, the Consultant believes that El Minya has adequate and sufficient professional staff within the various levels to design, tender and supervise the planned BVS drinking water within 12 to 18 months of approval.

With respect to the endemic maintenance problem, discussed earlier, we believe that contemplated upgrading of the maintenance capabilities through addition of more public fountains of the self-closing type, training of village level plumbers, and equipping the Markaz maintenance centers with shop tools and mobile repair will, if implemented, largely solve previous prime mover and pipeline maintenance difficulties. In this regard, it would also be highly desirable that Village Council Chairman use village level Service Account funds for maintenance of taps and outlets. Continuous inspection and follow-up to insure that this is done is also important.

For roads, that the large majority of the proposed program consists of making substantial improvements to already existing road links. These include construction of bridges where none exist, improving foundations, raising the bed level above the agricultural land, compacting and grading. This work is also prepared from standard designs with essentially no new engineering technology required. In the previous five years, the Roads

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and Bridges Department with contractor assistance has successfully completed some 230 km of roads with bridges of the type to be done under BVS. Over 100 km of this number have already been completed in the 1979 program. There are presently 17 private engineers and 11 technicians of the Department at the Governorate and Markaz levels who will be making inputs to the BVS program. In addition, the Governorate shall be executing some 163 km of village dirt roads, funded from other sources, during the BVS execution period.

While it is conceivable that the 17 road contractors currently working in El Minya will be able to expand their activities to cover both the planned BVS and governorate road program for 1980, this would require that they execute a total of 263 km (120 for BVS and 163 from other funding sources). Past history of performance shows that the maximum work completed in any one year (1979) is some 100 km. In light of past performance, it is conceivable that the total planned program, including BVS and other roads could take $2\frac{1}{2}$ years to complete. At this stage of the analysis, it is considered likely that external engineering support, hired on a temporary basis from outside sources (universities, local consulting firms, construction companies), will be needed for design work and supervision, if this time table is to be accelerated.

In the area of road Maintenance, the 1,392 kilometers of existing dirt roads fully absorb the maintenance capacity of the 1300 laborers assigned to the Roads and Bridges Department Markaz units. One laborer, as in Behera, can perform routine spot maintenance such as filling in holes and gullies of one kilometer/year. This type of work is, at best, expedient, and does not address the long term problem of

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keeping the network in good general repair. As the supply of labor is short and getting shorter, capital intensive methods will be needed to insure adequate maintenance of the existing network and all maintenance of the planned BVS expansion. Without inputs of equipment, it is unlikely that any maintenance of the proposed road infrastructure will be performed. The Consultant fully supports the Governorate's request for the nine graders and cistern trucks to be deployed to the Markaz's. Operators for this equipment are presently available and the departments can be maintained by the Markaz maintenance centers with an appropriate infusion of required shop tools and equipment. Preparation of specifications and tender documents for the required road maintenance and shop equipment should pose no problem as Roads and Bridges personnel have previous experience in these matters.

The most important aspect of the Governorate's real capacity for BVS program execution is not so much the numbers and technical ability of available professional staff but integrated coordination and management of all of the various inputs and procedures that are required. Unless all responsible are acutely aware of their assigned tasks and responsibilities and given specific deadlines for completion, it is considered highly unlikely that the program will proceed expeditiously as departments will have to contend with conflicting priorities and may be inclined to devote time and energy to activities they consider important from the narrow perspective of their departmental concerns.

As was noted in Behera, the Governor personally and systematically provides the necessary supervision and coordination of village level project activities. In El Minya, there is no single individual currently performing this function. During the two separate visits of the Consultant's team to the Governorate, the Governor was not present. It was learned

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from discussions with key officials that the day-to-day administration of the Governorate is left to the General Secretary, who in addition to having overall coordination responsibilities for projects also supervises all functions currently performed by this level of administration. In the opinion of the Consultant, the General Secretary is too preoccupied with other administrative matters to devote sufficient time and attention to BVS and the Governor is either unavailable or unable to involve himself in the level of detail required for effective program management. None of the other personnel contacted have the personal prestige, authority or overview required for this very important function. It was noted there is currently no regular follow-up and project monitoring system to determine activity progress and solve identified problems.

Present capabilities for project evaluation at all levels of government, as noted are generally weak to non-existent. Objective criteria for project ranking and evaluation are presently not used. Personnel of the Planning and Follow-up Department are aware of these deficiencies and are willing to receive training in the use of these techniques and standardization of feasibility documentation. The Consultant believes that existing personnel who would be assigned to do this work are trainable and that the institutionalizing of this process could be accomplished through outside technical assistance from an established consulting firm. Louis Berger International, Inc. has already had considerable success in training engineers of the Ministry of Irrigation in the techniques of feasibility study preparation. Development Alternatives, Inc. has also provided extensive training of local government staffs in feasibility study preparation throughout the developing world. While the level of Consultant training offered to ministerial and other personnel was more sophisticated than would be practical or desirable at the various levels of local government in Egypt, a more simplified training program stresssing

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basic methods of benefit and cost quantification, discounted cash flow analysis and calculation of the benefit/cost ratio of proposed village level projects could be successfully provided at the local level and produce measurable improvements in the quality of project evaluation and selection upon completion. Planning personnel at the local government level appear eager to learn and use new techniques in their work.

CHAPTER IV

Proposed BVS Program in Kena and Basic Skills Inventory to Support Proposed Program

I Proposed Program

A. Potable Water:

According to statistics compiled in 1976, some 264,328 rural families within the Governorate, 57% are currently without piped potable water. Of the families receiving piped water, many have unreliable supply because the systems serving them are overloaded because of inadequacies in the numbers and condition of available wells, pumping equipment and storage tanks. In many areas, new wells fitted with pumping equipment have to be added to existing networks to satisfy existing systems demands.

Another problem facing Kena is difficulty in finding suitable ground water sources and water of satisfactory quality. At present there are no maps of the groundwater table and no available water quality analyses.

In recognition of the critical need to extend potable water supply throughout the rural areas, the Governorate has developed a list of projects for BVS funding totallying LE 2.3 million which, when completed, will satisfy some 26% of the rural water needs.

Details of the program, which were provided by Governorate officials, have been left with US AID/Cairo and include the following basic information:

1. Project location (markaz, village and attachment)
2. Description of engineering needs (ie pipes, pumps, wells, pump housing, motor, etc.)
3. Number of people expected to benefit from the project.
4. Approximate cost of the proposed work based upon estimated unit costs provided in Table IV-1

TABLE IV-1

UNIT COSTS USED IN DETERMINATION OF PROJECT COSTS

		COST LE
1.	Sinking a deep well, with steel casing 10" diameter, up to 65 meter deep	4000.
2.	Supply and installation of electric borehole pump, and accessories	6000.
3.	Supply and installation of power transformer	2000.
4.	Construction of a pump room and control panel	3000.
5.	Supply and Installation of cables and accessories connectors between the motor, the control panel, and the transformer	5000.

		COST LE
6.	Supply and installation of one km of pipes	5000.
7.	Contingencies normally 10% of costs.	

The water projects proposed consist of 128 separate systems. Many are of simple type requiring replacement of existing diesel engines with electrical units. However many of the projects require more engineering and geological investigations than similar programs in El Minya or El Beheira mainly due to the less certain ground water situation of the Kena governorate.

The request have been made to map the ground water availability and quality but much of such information is not expected to be available in time for BVS planning. Accordingly the technical staff will be required to examine each separate project carefully to establish feasibility of proposed engineering work before expenditures of funds.

8. Roads:

The proposed BVS program for road work includes 29.6 km of new dirt road construction plus rehabilitation of 127 km of existing rural roads. This level of effort

represents 22% of the total dirt road network in Kena.

The road projects proposed are typical of village road links throughout Egypt, consisting of bed elevation, grading and surface compaction. The majority of projects cover short distances, covering 1 km or less. There are relatively few bridges required. Details of the projects are included in the material left with US AID/Cairo. Basic information contained therein includes:

1. Project location
2. Lengths and widths
3. Cost estimates by project

C. Canal Maintenance:

Included in the BVS proposed package is a program for cleaning and dredging of tertiary and quaternary irrigation canals. These canals require regular attention. In the past, this task, which is outside the regular maintenance work of the Ministry of Irrigation, has been performed by labor supplied by various villages and has been done manually. The neglect of this job due to unavailability of labor services has caused

shortage of irrigation water and loss of crops. It is now proposed to perform the cleaning of such canals by mechanical arms attached to tractors. A common equipment of this kind used in Egypt is McConnel Power Arm 5 which is priced at about LE 5000.- each. It is proposed that two power arms be assigned to each markaz to perform regular maintenance work of these canals. The purchase price of the equipment and cost of training operators has been estimated at LE 200,000. Presumably, the maintenance and operation costs are to be borne by various local government entities.

TABLE IV-2

Overall Funding Requirement for

Projects to be Executed under BVS Program

No.	Name of Markaz	Dirt Roads in the Villages	Drinking Water in the Villages	Canal Maintenance	Remarks
1	Abu Tesht	82,000	227,500	200,000	
2	Farshoot	144,300	407,000		
3	Nag Hamadi				
4	Deshna	99,100	264,000		
5	Kena	179,600	312,000		
6	Gheft				
7	Ghoos	179,600	391,000		
8	Naghada				
9	Luxor	123,100	280,000		
10	Armant	73,500	106,000		
11	Esna	93,600	320,000		
	Total	974,800	2,307,500	200,000	

It is significant to note that the proposed OVS program described above had not been clearly formulated at the time of the Consultant's visit to Kena. The visit, itself, was a catalyst for clarifying both the nature and scope of the effort to be undertaken. Project proposals from the village councils reflected general wishes of the local population, but, as there were no priority or funding guidelines provided by the Governorate, village lists tended to be conflicting and disorganized.

A circular was forwarded to all village councils on 3/9/1979 requesting them to set up their own priorities in the area of basic village infrastructure development. The circular presented only a guideline for basic unit costs of rehabilitation of village roads (LE 4000/km), establishment of new dirt roads (LE 7000/km), and the cost of an electric unit, i.e. motor and connection to replace old diesel engines used to pump water (LE 15000/unit). The village council's replies to this circular were received from all councils by the Governorate and subsequently by various technical departments (roads and water) before May 10th 1979. No evaluation or analysis was carried

out on these replies. It was during the mission's visit that these responses were discussed and examined and found to be at variance with each other and with existing estimates on costs. It was requested that an examination of each case be made by the Roads and Bricks Department and Water and Sewerage Unit focusing on:

1. Feasibility of proposed work
2. Estimation of approximate costs using departments' current data

It was decided to use simple per capita allocation for BVS financing of projects to be applied uniformly. Together with village replies, the general distribution of BVS projects in the governorate began to emerge.

To assist the Consultant's team make sure order out of what been heretofore a Chaotic planning process, the Housing Department arranged for analysis of all proposed potable water projects. The costing of these proposed projects are based upon data collected for an IBRD study of rural and urban drinking water needs of the Kano governorate. The estimates are specific taking

into consideration the requirements for expansion of capacities of existing systems as well as extension of the lines. The cost estimates are still rough, but are far more reliable, reflecting actual needs, than the village generated cost data. For example, the drinking water project for the village council area of Abu Shoosha was estimated to cost LE 177.000 by the Council. This estimate was subsequently revised to LE 72000. The latter set of estimates prepared during the Consultants' visit were almost consistently lower and in more detail.

The final selection of OVS road projects, also during the Consultant's visit, were based upon replies received from various councils. The head of the Roads and Bridges Department for Kena incorporated all such requests and arrived at a global cost figure. In doing so, he eliminated all major works that are currently handed under the governorate budget and limited the OVS projects to those dirt roads seving villages and attachments.

II <u>OVS Project Implementation Procedures in Kena</u>:

As with the disorganized planning process, the Consultant also observed personnel at all levels had no clear idea of implementation and fiscal procedures to be used in village level projects, prior to the Consultant's visit. Some thought the funds would be given directly to the Governorate, others thought the Markaz's would receive the money. Almost no one understood that OVS is supposed to be a village level program selected and administered by the village councils. As with planning, the Consultant was required to instruct governorate officials in the methods and procedures to be used in OVS implementation. During the visit, a detailed explanation was provided of the procedures required by law and currently followed in Beheira for village level projects. The officials said they were unaware of these, but indicated a willingness to follow the system described in the Chapter II report on Beheira.

III Project Implementation Capabilities at each Level of Local Government in Kena

A. Governorate Level

1. Planning and Follow-up:

As noted above, there is little evidence of planning and none of follow-up currently undertaken within the Governorate. This function is theoretically the responsibility of the Office of Planning and Follow-up, organized into planning, follow-up and monitoring and statistics units. The head of the Office is an agronomist recently transferred from a city management positions in one of the Markaz's. He is unfamiliar with even rudimentary requirements of BVS type planning and his assistant, who has some experience, lacks technical education. Within the Office, there is an additional agronomist with college level training and some 15 clerks, draftsmen and tea servers. None of these personnel have had any experience with project planning and activity progress monitoring.

2. Technical Support:

All phases of technical management from engineering and specifications preparation to construction supervision for BVS projects in Kena shall be managed by

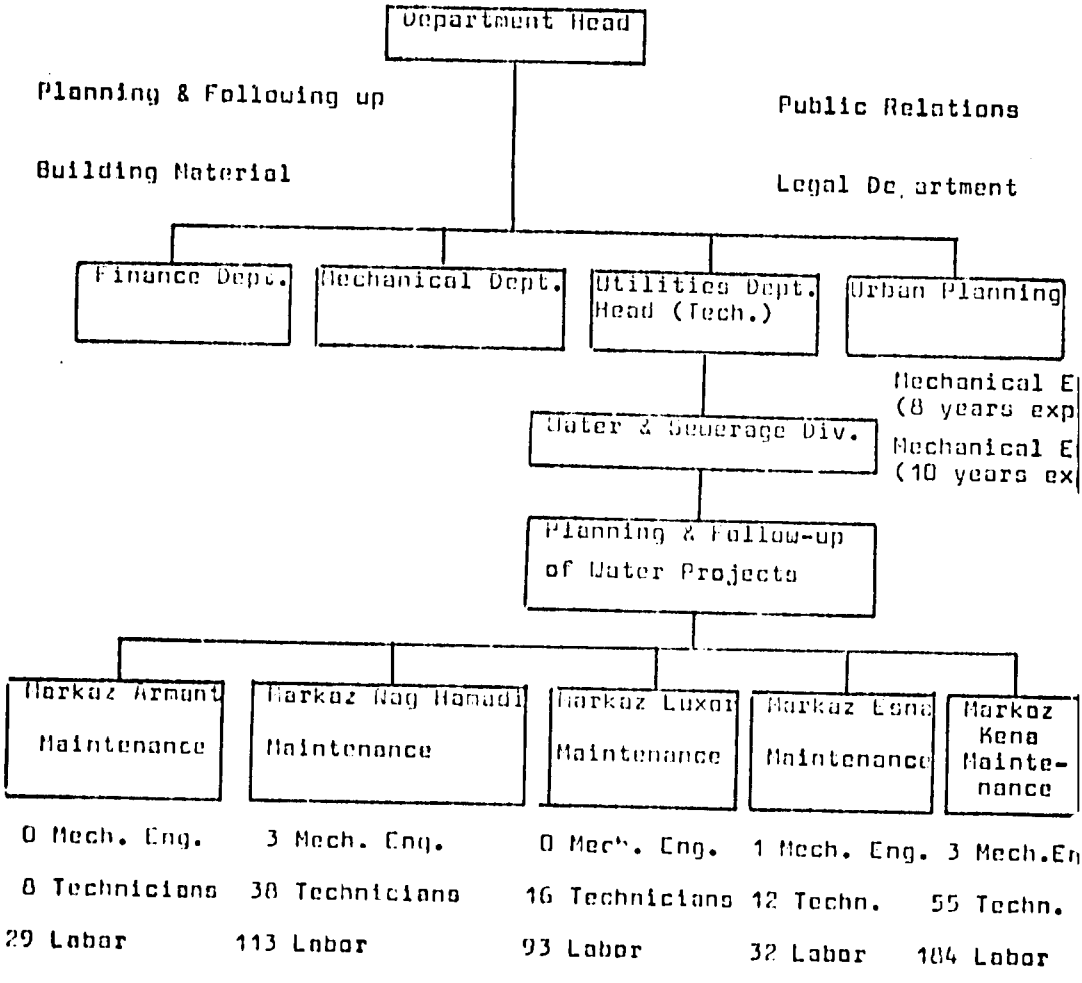
the Roads and Bridges Department, the Utilities Department of the Housing Directorate and the Irrigation Department. The extent and quality of technical expertise in Kena is more limited and less adequate that in either Beheira or El Minya.

As an additional general comment, it is noted that many of the technical staff personnel contacted are aged technical assistants with an adequate motivation and poor interdepartmental coordination. Decisions tend to be based more on political exigencies than on technical realities. The description below is a brief survey of the existing staffing and capabilities.

a) Housing Directorate:

This office also is responsible for rural and urban drinking water and, as such, is the crucial organization in the Kena EWS program, consisting of a sizable water project components. The organigram of the Directorate as well as the number of personnel and their qualifications is presented below:

HOUSING DIRECTORATE ORGANIGRAM



The water and Sewerage Division of the Utilities Department within the Housing Directorate consists of a division head with no university degree but with a long experience, and two qualified engineers with limited experience.

The division also has 7 engineers, 129 technicians and 452 labors performing maintenance work in 5 markaz units. The utilities department has been in charge of all drinking water-project identification, preparation, execution and operation.

During the past two years, the Utilities Department in Kena has implemented 13 small water projects, totallying LE 287,600.
These are listed in Table IV-3 bellow:

Table IV-3

Water Projects Completed in El Minya in last Two Years

Type	Amount LE
Network expansion	40,000
Well digging	24,000
Replacement and reconstruction of wells	12,000
Completion of Tramsa project	14,000
Network expansion	10,000
Network expansion	50,000
Replacement and renewal of wells	25,000
Expansion of wells and pumping units	15,000
El Elikat Project (Markaz Kous)	13,000
Well digging and pump unit purchase	25,000
Purchase of two vehicles	12,000

Cont. Table IV-3

Type	Amount LE
Expansion and network maintenance	23,500
Pump unit purchase	6,000
Network maintenance	
Purchase of spare parts and pipes	2,500
Network maintenance, including equipment and pipes	5,000
Purchase of tools	3,000
Purchase of spare parts and maintenance of diesel engines	7,500
LE	287,500

When compared with the 128 separate projects costing LE 2.3 million proposed for OVS, the level of previous effort is decidedly small.

There exists a sizeable reservoir of contractor capability available to the Governorate for water system construction. As these contractors shown in the Table below have more capacity than available funds in the past, it is expected that most of the proposed OVS projects will be implemented by contract and that there is sufficient contractor capability in Kena.

Interviews with some of the contractors fully support this conclusion.

Table IV-4

List of Contractors Specializing in Water Systems in Kena Governorate

No.	Name	Type	Project Size Undertaken in LE
1	Arab Contractors	Public Sector	No limit
2	Egyptian Construction Co.	Public Sector	No limit
3	Industrial and Engineering Project Co.	Public Sector	No limit
4	Zafhlool Fouad and Mohamed Abd El Mageed	Private Sector	500,000
5	Abd Alla Khalaf	Private Sector	500,000
6	Mohamed Abd El Naby Youssef	Private Sector	200,000
7	Hassan Osman	Private Sector	200,000
8	Thabet Gragyous	Private Sector	200,000
9	Abd El Aziz Abd El Gawad	Private Sector	200,000
10	Fayez Tanyous	Private Sector	200,000

Maintenance facilities and available tools belonging to the Utilities Division at Markaz are primitive and degraded. Tools and mobile workshops are urgently needed for maintenance of the proposed new BVS water projects. The numbers and quality of Department personnel

addigned to maintenance of water systems are considered adequate for periodic maintenance of the proposed new projects.

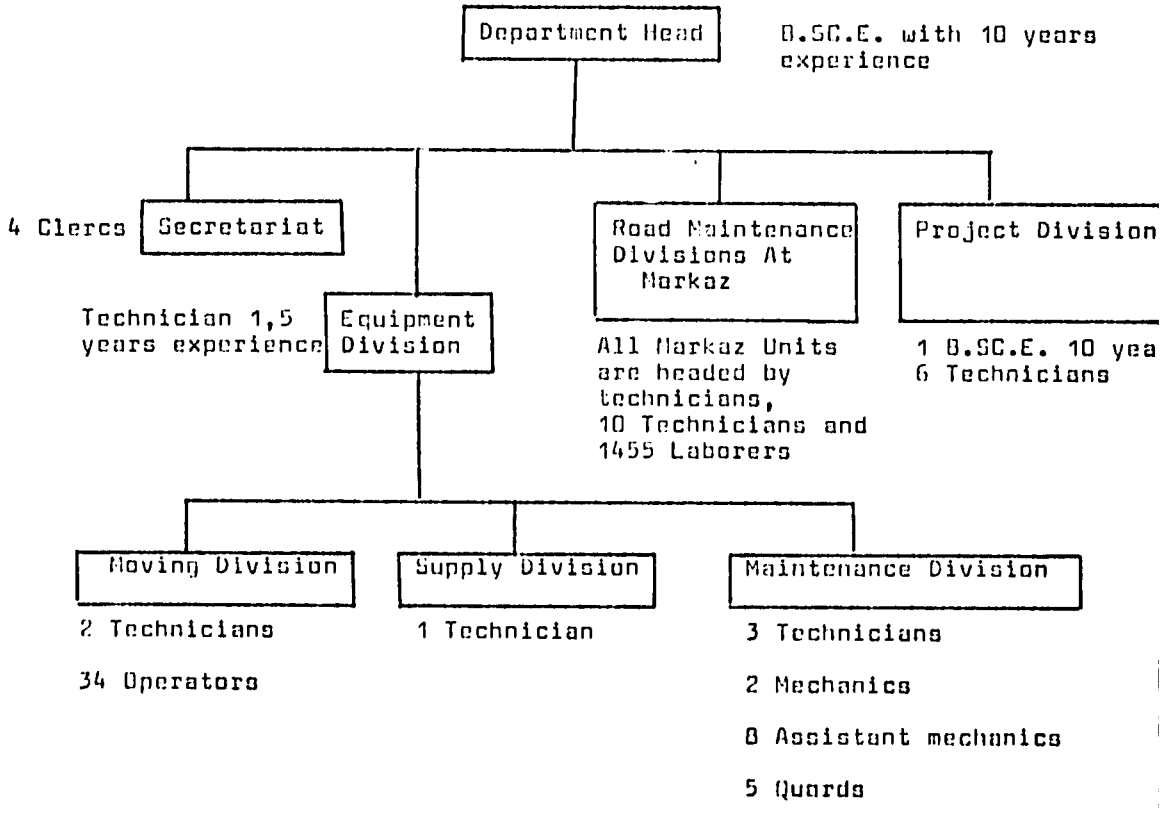
b) Roads and Bridges Department.

This unit is responsible for engineering design, specifications and construction management of the proposed BVS road program. At present, the Department has only three qualified engineers. The Department head, an engineer, has 10 years experience. The three engineers are assited by 22 technicians and 1,570 laborers, of which only 42 can be classified as skilled. The personnel of the Department have thus far identified village level road needs and priorities with little or no consuotation with the village councils. The projects proposed are standard dirt roads which can be prepared according to standard plans prepared by the Central Roads and Bridges Authority in Cairo.

The previous level of road construction effort in Kena has consisted of shoulder preparation and some upgrading of road beds usinq draft animals and labor intensive methods, one million six hundred thousand pounds were budgeted in 1979 with a proposed LE 2.5 million for 1980 in addition to BVS.

Altogether there are 712 km of rural dirt roads in Kena which are currently poorly maintained as the labor force belonging to the Department is madequately managed and the Department has little serviceable road construction and maintenance equipment. The organization chart of the Department is shown below:

Organization of the Kena Roads and Bridges Department



The following is a list of Roads and Bridges contractors currently working in Kena:

Table IV-5

Roads and Bridges Contractors Working in Kena

Name	Type
Arab Constractors	Public Sector
Nile Co. for Roads and Bridges	Public Sector
Nile Co. for Construction	Public Sector
Abou El Magd Ibrahim	Private Sector
Yehya Ibrahim Ahmed	Private Sector
Mohamed Abd El Latif	Private Sector
Sayeed Mohamed Ali	Private Sector
Gad El Karim Abd El Rady	Private Sector

Interviews with available road contractors indicated that they would have no difficulty in completing the modest program proposed of 30 km new construction and 127 km upgrading of existing roads.

c) Irrigation Department

This organization shall be responsible for specifications and tendering of the proposed canal maintenance equipment. As the Department is seriously

understaffed with only three engineers for the entire Governorate, little assistance can be provided in the management of the equipment. This responsibility will be under the jurisdiction of the Markaz's whose engineers and work shops will provide routine maintenance with major overhauls being performed at a governorate level workshop to be upgarded. The Department has adequate capacity and talent to prepare the procurement specifications.

B. Markaz Level:

The majority of Markaz level technical capabilities and operations in support of OVS in Kena are limited to infrastructural maintenance . All available technical staff, in addition those assigned by the Governorate Roads and Bridges and Utilities Departments, come under the general supervision of the Engineering Departments. The organizational structure of Kena Markazs in typical of the Markaz Armant presented on the following page.

A summary of the technical staff currently available to each Markaz is provided in Table IV-5.

Markazs have workshops for both roads and utilities departments but they are poorly equipped and badly managed. There is little available transport and maintenance equipment.

KENA GOVERNORATE

LOCAL COUNCIL FOR MARKAZ ARMANT

ORGANIZATION CHART

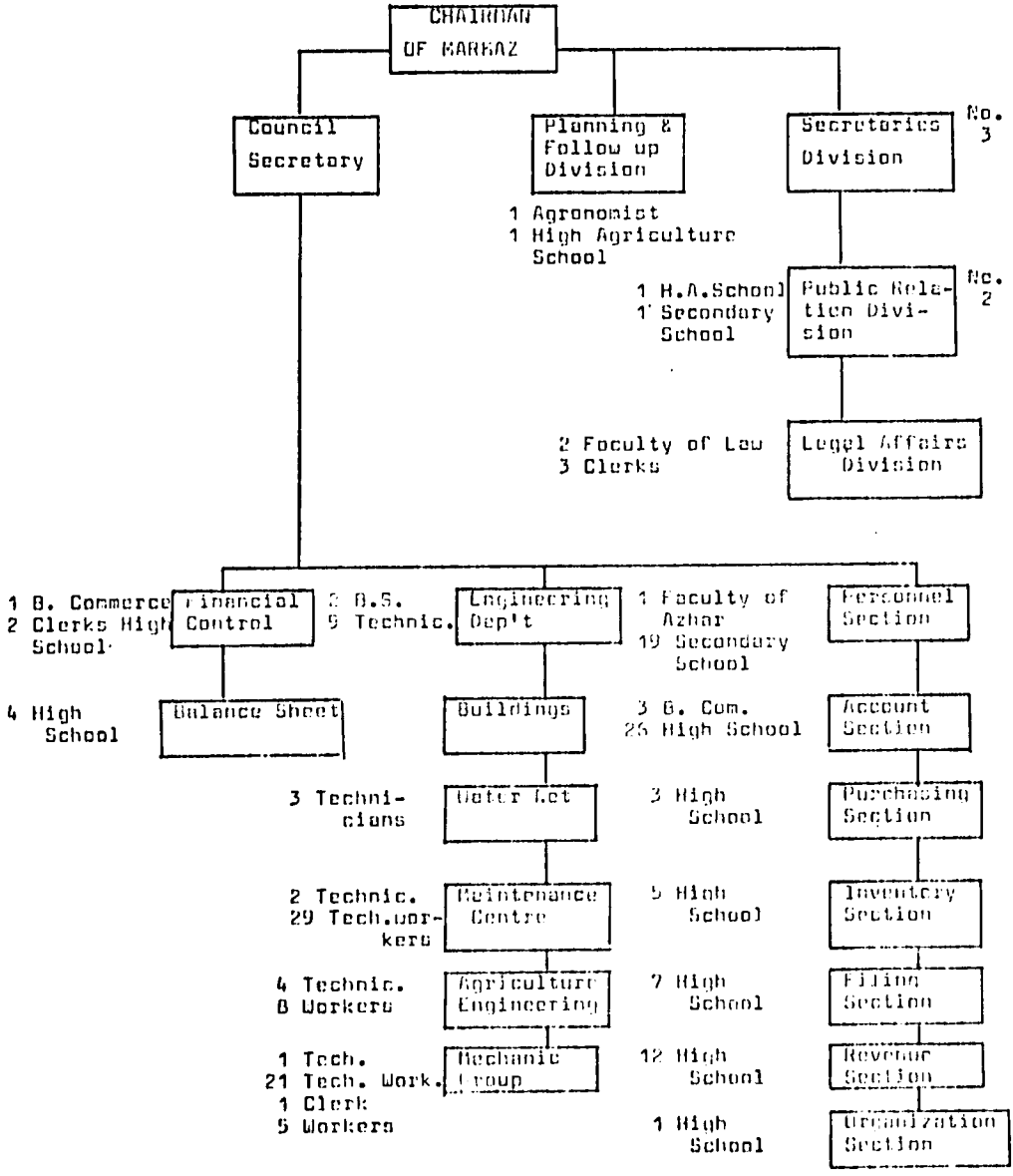


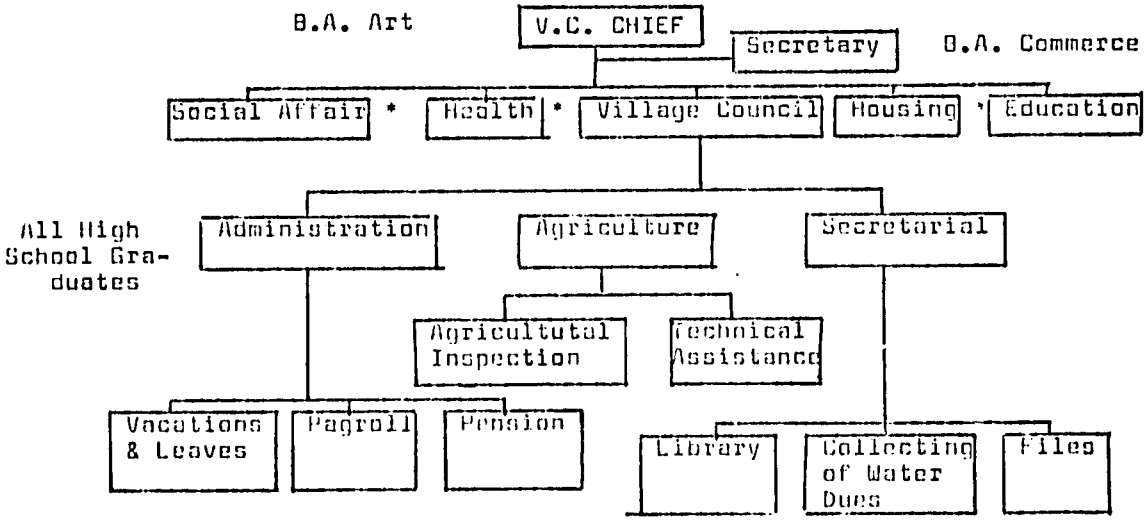
Table IV-5

MARKAZ LEVEL TECHNICAL STAFF IN KENA

COUNCIL	NO. OF ENGINEERS	NO. OF TECHNICIANS (High Tech. School)	TECHNICAL WORKERS
Abu Tesht	3	29	81
Naga Hamady	4	93	46
Farshoot	3	32	29
Deshna	4	40	34
Koos	4	51	73
Keft		46	40
Nakada	1	46	40
El-Okaor	4	90	143
Armant	2	39	39
Esna	3	64	117
Total	28	538	642

C. Village Level

In general there is very little of technical ability at the village level. The chairman of the executive council is usually agricultural engineer, a few are aware of the economics of their villages including sources of funds and fiscal requirements; but that is an exception to the rule. Most have not ever handled sums such as may be granted them under the BVS program. There are some educated people with college degrees in the elected councils, but they are not expected to be involved in BVS as their time is countted to management of increase producing projects. A well organized village council of the Governorate of Kena is structured as follows:



These are appointed officials at Markaz level that attend only periodically. All others are high School graduates.

It should be noted that approximately ½ (half) of the villages in Kena do not have functionning village banks and keep their accounts at the nearest branch of Banque Misr.

IV ANALYSIS OF BVS PROGRAM EXECUTIVE CAPABILITIES IN BENA GOVERNORATE

The most critical deficiency in ability to successfully execute the planned BVS program is the virtual absence of any organized management and coordination structure. The Governor is pre-occupied with political activities and appears unable to become involved in details of activity scheduling and progress monitoring. There are currently no other officers or offices performing this function. Overcoming this lack of management attention to project planning and executive detail is considered the most serious impediment to a successful program.

At this point, it is not clear which officials or organization will be able to assume this important coordination and management overview of the program.

Technically, the proposed level of program activity is considered feasible using existing technical staff, available contractors and externally procured consulting services. Below is an analysis of requirements by functional area.

For Water Projects, it is the Consultant's judgement that the Utilities Department will encounter difficulty desi-

gning and executing the proposed level of activity without substantial outside assistance in the preparation of engineering designs, specifications, tender documents and construction supervision. They shall be attempting to implement some 120 separate projects spread throughout the Governorate, which is substantially greater than has ever been undertaken in the past. It should be noted, however, that some 60% of the proposed program funding is for procurement of pumps, pipes and electric motors. If procurements are handled on a governorate wide basis in single contracts for similar commodities rather than on a project by project basis, the level of effort required can be considerably reduced and more limited technical staff time can be devoted to design, specifications preparation and supervision. The Department will require assistance from externally supplied engineers, and will need reliable means of transport for supervision of this extensive project area.

Maintenance of the water systems has, in the past, been sporadic and incomplete. This responsibility is currently vested in the Markaz Utilities Department units and funded through the Governorate Housing Directorate budget (Bud Thany).

An examination of the amounts allocated during the past three years, LE 400/year indicates that this is more symbolic than real or adequate. Directorate officials contacted indicated that they usually had to reprogram funds from other budget line items to cover their real maintenance needs, amounting to some LE 3,000 per year to cover minimum requirements. They further indicated that their needs after implementation of planned water projects under BVS might come to LE 5,000/year. The Consultant believes that LE 8,000/year is the more realistic figure.

In addition to funding constraints, the Markaz Utilities Department units are severely hampered by lack of adequate transport and basic shop tools to carry out their assigned responsibilities for maintenance of the water systems. An appropriate solution to this problem would be provision of 4 wheel drive pickup trucks and tools for mobile workshops. The trucks would also serve as basic transport construction supervision personnel during the project implementation stage.

Finally water quality surveys will be needed in each of the proposed project area to determine the most suitable locations for wells and pumping stations.

For Roads, it currently takes about one man-week per kilometer to prepare necessary engineering drawings and specifications for road projects of the type to be funded under BVS. As there are 19 engineers and technicians available to the Roads and Bridges Department, or 988 man-weeks per year, to design and write specifications for some 157 man-weeks required for the program, the level of technical support available should be adequate.

However, it is noted that the level of skills and motivation of the Department are visibly lacking and that LE 1.6 million in 1979 and LE 2.5 million in 1980 for road construction from GOE resources are currently planned for the next two years. For this reason, it is doubtful that the Roads and Bridges Department will be able to plan and execute the BVS program without outside assistance.

Maintenance of the existing and expanded road network will not be performed, if responsibility is left to the winds of fate and at the discretion of the understaffed and poorly equiped maintenance units of the Markaz's. As with the other governorates surveyed, the Roads and Bridges Department of Kena should move from current inefficient labor intensive to mechanical methods of network maintenance. Equipment, consisting of graders and cistern

sprayer trucks should be provided and deployed to each of Markaz's for this purpose. In Kena, presently, there are 34 trained equipment operators with little equipment to operate. Twenty of this number could be usefully employed, if detailed to the Markaz's to operate the graders and cistern trucks recommend for procurement to solve the maintenance deficiencies. Maintenance of the proposed equipment can be accomplished at a centrally located work shop upgraded through provision of modern shop tools and equipment. As elsewhere, they presently exist within both the private and public sectors sufficient numbers of experienced mechanics to provide basic vehicle and equipment maintenance.

For Canal Maintenance, there should be no difficulty in management of the proposed equipment procurement, but training of the required 20 operators is essential for effective equipment utilization.

CHAPTER V

Conclusions and Recommendations

This chapter outlines the Consultant's general conclusions based upon actual field studies and analyses presented earlier and offers a series of recommendations designed to enhance the possibilities of a successful BVS programs in the three governorates. Success is defined in this instance as timely implementation of the needed infrastructure proposed and strengthening the local institutions that will be directly involved in all phases of project activity. The general conclusions summarized below are provided to allow the client to make sound judgments concerning the future scope and direction of the Basic Village Services effort. Conclusions and recommendations have been systematically prepared as a result of Consultant's extensive experience in rural development around the world and in Egypt in particular. The specific recommendations are provided to insure overall program viability and success in achieving program objectives as defined in Chapter I.

I. General Conclusions

A) The Need :

Actual inspection of existing village services throughout the three governorates related to availability of potable water, roads and properly functioning irrigation canals has clearly established the need to upgrade, expand and provide regular maintenance of the systems in place. The actual numbers of beneficiaries of the proposed program are very large while the proposed dollar value per beneficiary is quite low. The proposed services are indeed basic to improving the quality of rural life and are considered the highest priorities of the target population. Considering the high percentage of rural

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inhabitants without potable water, adequate farm to market communications and fully functional irrigation systems, the proposed level of effort will improve the quality of life in a permanent way.

B) Feasibility :

The BVS program proposed for Beheira, El Minya and Kena Governorates are all feasible, commonly done throughout Egypt, simple and basic to village needs and capabilities. As the projects are local in content and application, they are not expected to challenge existing mores and practives or have adverse environmental effects. It is fully expected that local village inhabitants will cooperate in all phases of execution and afterwards and generally accept and use the benefits of the completed effort. Required material for implementation is either available locally or expected to be purchased from sources inside Egypt with minimal delay and difficulty. Certain equipments may have to be purchased abroad but they are all standard production line items for which the US market is a suitable source of procurement. The ability to design and implement the projects is readily available in kind if not in numbers required and efficient organization.

C) Intangible Benefits :

Besides supplying needed infrastructure, the proposed program, if implemented properly, will serve the very real purpose of involving local executive and political decision makers in the development process. By providing the means and the organizational framework for local problem solving, it is expected that

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village officials will acquire both the motivation and the skill to help their constituents help themselves in their pursuits of a better life. This type of experience through doing is expected to have a positive carryover effect for future problem solving.

D) Mobilization and Implementation :

Efforts in support of BVS, so far, have resulted in a general awareness on the part of governorate and some village officials of program implementation and funding procedures. The program for each governorate has been discussed in considerable detail and finalized. The general description for each area is contained within the body of this report and the details have been provided in files to the USAID for future translation and tabularization as may be required.

Although a lot of groundwork for the proposed program has been laid, there still remains much to be accomplished in the areas of project management organization, activity coordination and the development of the planning skills required for future programs and for protection of investments through regular maintenance once projects have been completed.

In the context of these general conclusions, the Consultant has presented below a list of specific recommendations considered the minimum improvements and assistance required to insure overall success of the program in attainment of its broadest objectives.

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II. Consultant's Recommendations

A) Training and Technical Assistance

The level of proposed BVS funding for the three Governorates offers a unique opportunity for institutionalizing a common approach to planning and management of village level development, which could be replicated on a national scale at a later date.

As institutional development and standardization of the development process involving many disparate governmental agencies and organizations requires a commonality of approach, a recognized consultant or consortium of consultants should be engaged to work in the three Governorates during the proposed BVS implementation period. The presence of the consultants will provide a focus for standardization of planning and project execution and serve as a catalyst for timely project execution.

The consultant's personnel would be divided into three resident field teams, whose composition would vary according to the needs of each governorate as identified earlier in this report. For Kena, the team would be composed of an expatriate development economist, an expatriate civil engineer and two Egyptian engineers. For Beheira and El Minya, the teams could be smaller, consisting of an expatriate development economist and two Egyptian engineers for each. Each team would work under the general supervision of the governor and closely with the Planning and Follow-up Departments. An expatriate team leader/coordinator and equipment specialist would be assigned to coordinate the

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activities of the teams and provide technical assistance for workshops and equipment maintenance in all three governorates. The consultants would provide the following services :

1) expedite coordination of the technical and management inputs to the BVS program ;
2) assist in reviewing engineering design work and provide supplementary input as required ;
3) assist in the preparation of project bid tender specifications and insure compatability of procurement procedures with the US market and AID regulations for all equipment to be procured in the United States;
4) assist in institutionalizing standard documentation for project identification and execution (described in B below);
5) assist the governorates establish efficient workshop layouts and equipment maintenance procedures including those for preventive maintenance and overhaul of proposed new and existing equipment;
6) assist in preparing environmental impact statements for approved BVS projects;
7) monitor all phases of program execution, including but not limited to, bid tendering, specifications, contracting, awards, project implementation and funding disbursements and furnish periodic reports of same to the Governors, ORDEV and the USAID;
8) establish a data bank at governorate level consisting of basic local economic and project cost data for use in future planning;

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9) provide training to the Planning and Follow-up staffs in simple techniques of project evaluation and monitoring and use of concepts for standardized planning and management control of projects;

10) prepare ground water quality analyses in Kena Governorate.

With respect to training, it is anticipated that the focus of the effort would be on developing capable Planning and Follow-up units at the governorate level. The intent in the early stages would be to develop a nucleus of planners at this level which could serve as a springboard for further training of planners at the Markaz and, later, at the village. The emphasis of the training would be to develop planners and provide training of trainers for the future.

Training would consist of formal lectures, seminars and guidance in practical on-the-job experience. The content of the training would include instruction in cost and benefit quantification, methods of equilibrium pricing, discounted cash flow analysis, calculation of benefit cost ratios and financial and economic internal rates of return and, for income producing projects, methods of demand forecasting using simple regression models. Training would also include methods of assessing and preparing environmental impact statements. Each Governorate Planning and Follow-up Department would be provided with a Texas Instruments Model 58 programmable calculator, costing about $ 80 US and Business Decisions Module costing $ 35 US. With this equipment, which is quite simple to use and maintain,

the governorate planners will be able to perform quickly and simply all of the mathematical calculations required for project analysis and demand forecasting.

The basic texts to be used in the training which will be left behind as ready reference material are the World Bank Manual on Economic Development Projects and the IBRD Economic Analysis of Agricultural Projects. Both of these texts have been used successfully by the Consultant in previous training programs in Egypt.

Following, formal lectures and seminars to explain use of this material and the programmable calculators, the training teams would have trainees prepare evaluations of the all proposed BVS projects under the guidance of team members as a practical learn-by- doing training exercise.

Concurrent with the training programs, the team would collect, collate and assemble for filing basic socio-economic data and project unit cost information to be used in analysis of future projects. These data would be organized in an easily retrievable manner according to subject headings in metal filing cabinets together with detailed written instructions for periodic update of the collected material. Training in data collection methods and statistical sampling would also be provided as part of the program.

With respect to workshop layouts and procedures, the teams would physically inspect each publicly-owned facility in the

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Government, recommend a layout plan and develop comprehensive manuals for preventive maintenance scheduling for the types of equipment to be procured and workshop procedures to be followed.

A very important task of the consulting teams will be to standardize project documentation to develop a degree of uniformity in project activity tasking and reporting. In this regard, the Consultant recommends that standard document formats be used throughout. These formats, appearing in B below would be institutionalized by the follow-on consulting teams. Planning and Follow-up Department personnel would be guided in completing these recommended forms for all projects currently proposed for BVS funding.

A rough cost estimate of the recommended follow-on consulting services is broken out as follows :

Foreign Currency		
Team leader/coordinator 12 mm x $ 6,000	= $	72,000
3 development economists 36 mm x 6,000	= $	216,000
4 project engineers 6 mm x 6,000	= $	36,000
1 ground water hydraulogist 3 mm x 6,000	= $	18,000
1 equipment specialist 6 mm x 5,000	= $	30,000
International travel 6 round trips @ $ 1,400	= $	8,400
Excess baggage 1200 lbs @ $ 2.50	= $	3,000
Equipment and training materials	= $	1,000
	$	384,400

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Local Currency		
6 Egyptian engineers 72 mm @ 500 LE/mm	LE	36,000
Expatriate per diems :		
Team leader and equipment specialist 540 days @ 25 LE/day 1/	LE	12,960
Others 1,350 days at 15 LE/day 2/	LE	21,150
One project vehicle (purchase)	LE	4,500
Communications and miscellaneous 12 months @ 500 LE/month 3/	LE	6,000
	LE	81,610

1/ Team leader and equipment specialist would be travelling among each of the three governorates.

2/ Other expatriates would be based in the governorates.

3/ The Governorates would furnish office space and local transportation to expatriates and Egyptian team members based in the field.

B) Program Documentation Communication Flows and Permanent Records

Recommended program documentation which should be standardized in each of the three governorates consist of a Project Identification Form (I), and Activity Assignment Form (II) and a Project Monitoring Form.

In the initial project identification and evaluation stage, Village Councils would complete items 1 through 5 of Form I and forward them to the Markaz Chairman for review and signature. Subsequently, they would be sent to the governorate Planning and Follow-up Division for preparation of items 6 through 11 and then to the Governor for final review and endorsement. This document, when completed would provide the basis for rank

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ordering of project priorities according to economic merit. Final selection of projects originating from the village level would be made from those which show the highest benefits to the regional economy, have lowest cost/beneficiary and benefit the largest number of people.

Following this phase of project identification, the Governor in general meetings of the Village Council Chairmen, technical division chiefs, and Markaz Chairmen would assign all required executive activity tasks to appropriate agencies and complete Form II (items 1 through 4) to serve as a basic tasking order. As activity managers proceed through the various steps from engineering designs to tender awards, they would fill in items 5 through 12 and this form together with Form I would become a permanent part of the project file.

Project Monitoring and Follow-up Forms (number III) would be prepared monthly by the Village Councils and forwarded to the Markaz and to the governorate Planning and Follow-up Division for review and signature. Monthly, the Governor would convene meetings of the Village Council Chairmen to review implementation status and assign actions for accelerating progress as required. Form III, when completed after the monthly meetings would also become a permanent part of the project file.

It is proposed that complete files of all projects be maintained at the Village, Markaz and Governorate. These files identified by project name and number would contain the following :

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- Form I
- Form II
- Form III
- Environmental Impact Statement
- Engineering Drawings
- Bid Tender Specifications
- Invitation for Bid Notice
- Actual Bid Tenders Submitted
- Notification of Award
- Copy of Awarded Contract
- Copies of Monthly and Annual Audit Reports
- Copy of Final Project Acceptance Notification

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PROJECT IDENTIFICATION FORM

I

BRIEF DESCRIPTION OF PROJECT	PROJECT Identification Number	Name of Village	Name of Market	Numbers of Beneficiaries	Initial Cost Estimate	Cost/ Beneficiary	Benefits	Benefits/ Beneficiary	Present value of Benefits	Present value of cost	Benefit/ cost ratio	Internal rate of return	Remarks

Prepared By: Village Executive Council Chairman (signature)
Governorate Planning and Follow-up Unit (signature)

Reviewed By: Village Elected Council Chairman

ACTIVITY ASSIGNMENT FORM II

Name of Project	Project ID Number	Location	Organization responsible for Engineering Docs. and Specifications	Date Responsibility Assigned	Due date for completion	Date actually completed	Due date for Insurance of Invitation for bid	IFB issued on	Bids due on	Due date for completion of evaluation	Evaluation completed on	Date of tender award	Mobilization award

Signed:

Governor _____
Responsible Technical Department Chief _____
Village Executive Council Chairman _____

Planning and Follow-up Department _____

PROJECT MONITORING AND FOLLOW-UP FORM III

Name of Project	Project Identification number	Total Budgeted Cost	Contractor	Date of Mobilization	Cumulative Disbursements to date	Disbursement during current month	% of work completed to date	% of work completed during current month	Planned completion to date %	Planned completion during current month %	Reason for Delays (if appropriate)	Action Assigned to accelerate project (what and Agency responsible

Signed:

Governor _____
Responsible Technical Division Chief _____
Markaz Chairman _____
Village Executive Council Chairman _____

Planning and Follow-up
Department Chief _____

C) Fiscal Procedures and Authorities

The fiscal procedures and level of decision-making authority for village level projects as described in Chapter II for Beheira should be used in all of the governorates as they are workable, simple and further the Government of Egypt's policy of fiscal and administrative decentralization.

The only current requirement that should be modified is the limitation on the Village Council's contract approval authority. At present this limitation is set at LE 5,000. As most projects fall within the range of seven or eight thousand to 15,000 LE, it is recommended that Village Councils be authorized to approve contracts up to 20,000 LE. In this respect, it is believed that the exercise of obligation authority is inherent in the process of strengthening Village administrations since Village Council Chairmen cannot fully exercise their intended responsibilities unless given the full legal base to do so.

D) Coordination and Management

It has been observed that where village level planning and project execution management requirement are brought regularly to the attention of a senior official with authority to command and direct required activities (namely the governor in the case of Beheira), projects are implemented more expeditiously with greater quality than in instances where this is not done. Consequently, it is strongly recommended that the Governors of El Minya and Kena assume the same kind of periodic management role in projects currently performed in Beheira by

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Governor Deboos. Without this degree of personal interest and follow-up by a senior official with the stature and command presence of a governor or, at least general secretary, it is doubtful that consulting services and recommended program documentation will have much impact on the manner in which projects are executed. Improving governor level attention to village project planning and execution will not hinder performance of village councils but will insure that all required inputs are made in a timely manner.

E) Equipment

The following items are recommended for immediate procurement to support the proposed BVS program :

TABLE V-1

Recommended Equipment Procurement

Item	Qnty.	Beheira	Minya	Kena	Purpose
1) Crawler Excavator w/hydraulic, back hoe attachment and ½ cu yd. bucket.		41	-	-	Canal maintenanc
2) Back hoe excavator arms w/ 0.20 m^3 bucket capacity.		16	-	20	Canal maintenanc
3) Truck, Pickup, 4x4, 1T		-	4	5	For mobile workshops and project construction supervision to maintain water systems.
4) Truck, Flat-bed, Cargo, 29000 GVW		2	-	-	Transport of canal maintenance equipment.
5) Wheel Tractor Scrapers, 9 cy struck		9	4	10	For road maintenance.
6) Cistern Sprayer Truck with 5 m^3 Tank Capacity.		9	9	10	For road maintenance.

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F) Shop Tools

All governorates lack adequate shop tools for maintenance of the recommended equipment procurement package. It is proposed to fully equip one workshop in each governorate with a complement of shop tools to allow for regular maintenance of all of the new and existing equipment. In Beheira, the tools would be allocated to the Damanhour Training Center, which would have sufficient equipment after allocation to maintain the canal excavating equipment, graders and water trucks. The shops to receive equipment in Minya and Kena have not yet been designated. The recommended list of tools for each governorate is presented in Table V-2 below :

G) Spare Parts

Sufficient spare parts for 10,000 hours of operation should be provided with each item of equipment purchased. The approximate cost of these spares is 6% of the equipment's CIF value.

H) Operator Training

Additional trained operators are required for the new canal excavation equipment proposed for Beheira and Kena. Altogether, training of some 71 operators shall be required. Presently, the Egyptian Dredging Company at 88 Kasr El Aini in Cairo and the General Irrigation Company for Mechanical Excavation at Delta Barrages trains operators for their own equipment and have indicated a willingness to the Consultant to train governorate level operators for BVS financed equipment. The Governors of Beheira and Kena showed their requests for training with list of trainees to Eng. Ahmed Gaber Barakat, Chairman of the Egyptian Dredging Company.

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TABLE V-2

Shop Support and Field Maintenance Equipment

	Item	Behedra	Minya	Kena
1)	Air compressor 85 c.f.m.	1	1	1
	Valve refacing machine	1	1	1
	Valve seat grinding set	1	1	1
2)	Automatic welding machine	1	1	1
3)	Portable jet-steam cleaner and pressure washer	1	1	1
4)	Tire demounter	1	1	1
5)	Battery charger 8 to 24 volt	1	1	1
6)	Brake drum lathe for drums up to 30" diam.	1	1	1
7)	Hydraulic in-line tester	1	-	-
8)	Hydraulic gear and bearing puller, capacity 17.5 tons	1	1	1
9)	Transmission repair stand	1	1	1
10)	Universal motor repair stand	1	1	1
11)	Lubrication unit stationary, electric drive	1	1	1
12)	Portable sprocket puller and installer for track type tractor with attachment, capacity 40 tons	1	-	-
13)	Hydraulic engine cylinder sleeve puller and installer, capacity 12.5 tons	1	1	1
14)	Universal fuel injector tester and pump calibrating stand for diesel engine, 2 to 12 cylinder engine	1	1	1

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Shop Support . . . (Cont'd)

	Item	Beheira	Minya	Kena
15)	Fuel pump tester for diesel engine	1	1	1
16)	Water pump tester for diesel and gasoline engine	1	1	1
17)	Torque wrench, $\frac{1}{2}$ inch square drive	1	1	1
18)	Torque wrench, $\frac{3}{4}$ inch square drive	1	1	1
19)	Air impact wrench $\frac{1}{2}$ inch square drive with impact socket set and 50 ft air hoses with each wrench	1	1	1
20)	Air impact wrench $\frac{3}{4}$ inch square drive with impact socket set	1	1	1
21)	Shop master tool set for general automotive service and tool chest	1	1	1
22)	Mechanic general purpose tool set, chest	1	1	1
23)	Heavy duty socket wrench set $\frac{3}{4}$ inch square drive and box	1	1	1
24)	Hand hoist ratchet-action type, cap 1.5T with 10 ft lift	1	1	1
25)	Ignition timing light	1	1	1
26)	Swivel grip oil filter wrench	1	1	1
27)	Ring compressor piston engine rebuild	1	1	1
28)	Ring spreader piston engine rebuild, 2-5 "	1	1	1

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Shop Support . . . (Cont'd)

	Item	Beheira	Minya	Kona
29)	Giant adjustable wrench 24 inches long, jaw capacity 1-3/8 to 2-15/16inches	1	1	1
30)	Giant adjustable wrench 36 inches long, jaw capacity 2-25/16 to 4-3/4 inches	1	1	1
31)	Heavy duty surface grinder disc minimum 7 inch diameter with 100 coarse grit and 100 fine grit disc with each grind	1	1	1
32)	Electric drill $\frac{1}{4}$ inch with 2 sets drills in 64ths and index case with each drill	1	1	1
33)	Electric drill $\frac{1}{2}$ inch with 2 sets drills in 64ths, index case with each drill	1	1	1
34)	Electric drill $\frac{3}{4}$ inch with 2 sets drills in 64ths, index case with each drill	4	3	7
35)	Easy tool socket wrench 7/16 straight, retap 1/8 inch	8	8	16
36)	Wire metal spraying machine single head type for crankshaft rebuild with two tons wire	1	1	1
37)	Cylinder honing machine for vehicle hydraulic brake repair with 3 sets of stone for each machine	1	1	1

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Shop Support . . . (Cont'd)

	Item	Beheira	Minya	Kena
38)	Portable cylinder boring machine for cylinder 2 to 5 inches diameter	1	1	1
39)	Connection rod honing machine	1	1	1
40)	Heavy duty hydraulic cylinder honing machine for cylinders 3-6 inches diameter, 48 inches long, with 4 extra sets of stone, expanding type honer	1	1	1
41)	Ridge reamer engine cylinder for 2-5 inch diameter cylinder	1	1	1
42)	Fluid lubricant gun with hydraulic coupler	1	1	1
43)	Electric welders 400 amp with electric drive skid mounted with leads 100 ft	1	1	1
44)	Dynamometer engine tester 60-250 HP, single head unit	1	1	1
45)	Bench grinder min. 6 inch diam. grinding wheels 60 and 36 grit, 3 each extra 60 and 36 grit grinding wheels with each	1	1	1
46)	Heavy duty hook spanner wrench	1	1	1
47)	Power hacksaw minimum 10 inch	1	1	1
48)	Gear cutting machine with attachment	1	1	1
49)	Motorite for diesel and gasoline engines compression tester with adapters	1	1	1
50)	Radial drill press with 72-inch arm	1	1	1

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1) Village Budgets and Maintenance

To correct the endemic problem of inadequate infrastructural maintenance at the village level, the Consultant recommends that each of the three governorates make a greater effort to explain regulations governing use of the Service Accounts. As noted earlier in this report, many villages have accumulated sizeable balances in their accounts accruing from income producing projects. Village officials tend to believe that these funds must be used on the same projects which generated the revenues or on similar projects. Few village leaders understand their authority to use these funds for any and all purposes serving the public good. A considerable amount of infrastructural maintenance failures could be corrected through management attention and modest expenditures at the village level. These amounts, in most instances, would not exceed ten or twenty pounds to weld a leaking pipe, replace a tap or rewind an electric motor and would be sufficient to prevent major breakdowns from developing.

The Consultant proposes that each governor issue the following instructions to all village council chairmen :

To : _____(name)_____

Chairman of : (name of village)

You are hereby advised of your responsibility to insure that village infrastructure such as water systems, roads, electric networks and public buildings are kept in good working order and clean. This means that you will have to establish a program to inspect all of the infrastructure within your village council area on a periodic basis. It is desired

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that this be done once a month. When, in the course of your inspections, you observe that water pipes are leaking, pumps are not operating, buildings need painting, roads are developing holes, etc., you must take immediate action to correct the problem. You can either use personnel and equipment belonging to your council area to undertake this work or you can hire private individuals and companies within your area to do this work for you. In instances where you require funds to pay for the maintenance services, you are authorized under the law to disburse funds from the village Service Account (Bab 3) for this purpose. In the event that an item of maintenance exceeds your available funds, you should request additional funding from the Governorate Service Account. As guidance in assisting you carry out these instructions, you are requested to complete the following form and send it to the Planning and Follow-up Department of the Governorate every month.

VILLAGE INFRASTRUCTURAL MAINTENANCE REPORT

Month _____

List of Infrastructure	Inspected*	Describe problem, if any	Describe measures taken to correct problem	Funds Spent
A) Roads				

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Village Infrastructural Maintenance Report (Cont'd)

List of Infrastructure	Inspected (*)	Describe problem, if any	Describe measures taken to correct problem	Funds Spent
B) Water Works				
C) Buildings				
D) Electric Networks				
E) Other				

(*) Put an "X" next to each infrastructural item inspected during month.

Singed: (village council chairman) Date: _____

The Planning and Follow-up Departments should review reports from each village on a monthly basis. Reports from village councils showing no activity should be examined in greater detail with a site visit to the village council.