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## PILOT O&M PROGRAM IN MINYA AND GHARBIYA

### PRELIMINARY ASSESSMENT REPORT

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## SECTION 1

# Introduction

This report evaluates the results of the O&M pilot program in Minya and Gharbiya governorates. It is submitted in partial fulfillment of the requirements of Task 6.1 in the equipment section work plan.

## BACKGROUND

During the past several years, the LD II-P O&M team has been developing a comprehensive maintenance program for the rural governorates designed to maintain and manage the fixed plant equipment, roads, and rolling stock funded through either LD II-P, BVS or DSF. The elements of the maintenance system have been presented to appropriate governorate personnel through training workshops and on-site technical assistance. Each of the governorates, as a pre-condition for receiving LD II-P funds, has submitted equipment and infrastructure maintenance plans based on this system.

The LD II program concentrated on the operation and maintenance of infrastructure projects and equipment in the governorates by giving first priority to the establishment of an O&M system. This system was to include buildings, tools, equipment, organization and training of technical personnel at all levels.

During the LD II-P program 870 VC maintenance workshops were constructed and outfitted with the required tools according to their assigned maintenance and repair responsibilities. In addition, 192 marakez maintenance centers (MMCs) were constructed and outfitted. At the governorate level, the main maintenance centers for heavy equipment in Minya and Red Sea governorates were upgraded and outfitted with tools and machine tools. To follow up the implementation of the maintenance system, a pilot O&M program was designed for two governorates and subsequently evaluated before being replicated in other governorates. (Annexes I and II present the S.O.W. of this pilot program.)

In March 1989, the O&M team began implementation of the pilot O&M program in Minya and Gharbiya

governorates in order to fully test the operations and maintenance program under field conditions.

## **APPROACH**

Because this task includes TA and training programs, and has time and staffing limits, the O&M section concentrated their TA efforts in one markaz from each of the two selected governorates according to the following criteria:

- Expressed desire of governorate officials to participate
- Establishment of an O&M committee at the governorate level to be responsible for follow up implementation of the O&M system at all levels
- Assured assignment of a full-time maintenance coordinator
- Geographic distribution including upper and lower Egypt

Three working teams from Chemonics were established to follow up water, road, and equipment projects. Field trips were planned to all VCs in the selected marakez at least twice a month to provide intensive TA on-site and to conduct specific technical training courses as needed. The governorate maintenance coordinator replicated the program in other marakez under supervision of Chemonics.

## **IMPLEMENTATION STEPS**

- Step 1. Selection of two governorates
- Step 2. Establishment of an O&M committee
- Step 3. Selection of pilot marakez (one from each governorate)
- Step 4. Implementation workshop
- Step 5. Establishment of an inspection and service contract with equipment dealers
- Step 6. Training programs
- Step 7. Management of maintenance workshops
- Step 8. Replication of effort in other marakez in each governorate

## Step 9. Assessment report

The program started in Gharbiya and Miriya governorates during the first half of 1989. The implementation started at both village and markaz levels. TA was mainly provided for water, roads, and equipment maintenance and repair facilities. At that time, Chemonics O&M section was responsible for this TA through task g2, LD II-P AWP, October 1988. While preparing LD II AWP II, the organizational structure of Chemonics changed, eliminating the O&M section and creating the rolling stock section (RS). During this period, Chemonics TA in the O&M pilot program was concentrated on equipment maintenance centers only, but during the first six months of 1991, USAID/LAD requested Chemonics RS to provide the O&M for all types of projects. As a result, Chemonics RS has provided TA for all projects since July 1991 under task EQ 6.

This report assesses the implementation of the O&M system on three levels (governorate, markaz, and village) in both governorates. Section 2 describes the evaluation methodology and sections 3 and 4 evaluate the system performances of each governorate's pilot project. Section 5 compares the two cases and identifies areas which require attention. Section 6 presents recommendations.

## SECTION 2

# Evaluation Methodology

As noted in section 1, the evaluation goals were to assess the (1) performance and operationalization of VC workshops and MMCs and (2) implementation of the O&M systems in both governorates at all levels. The operationalization of VC workshops and MMCs is essentially a means of preventive and corrective maintenance at the workshop or maintenance center level. The O&M system identifies the roles and responsibilities of each level, and establishes the monitoring and recording system which reflects the utilization and technical status of each project.

Evaluation questionnaires (see annex III) were completed by the governorate maintenance coordinator, maintenance engineers from different sections, and VC workshop supervisors. Results of the questionnaire yielded data on the following :

- Maintenance facilities (building and tools, manpower, spare parts stores, training, etc.)
- Roles and responsibilities
- Implementation of O&M plans
- Implementation of O&M recording and monitoring system
- Equipment utilization
- O&M management system
- Replication of O&M system in other marakez
- Sustainability of O&M system

The interviews and location visits included assessments of technical conditions, equipment, maintenance, and the operationalization statuses of VC workshops and MMCs.

Table 2.1 shows the type and number of maintenance facilities in each governorate. The evaluation team selected four marakez and one village workshop from each governorate to be visited. The Minya GMMC and the road department maintenance center at Gharbiya are also included in this evaluation.

**Table 2.1**  
**Maintenance Facilities in Minya**  
**and Gharbiya Governorates**

<b>Type of Facility</b>	<b>Minya</b>	<b>Gharbiya</b>
Village workshop (VC)	57	53
Markaz maintenance centers (MMCs):		
for water	4	8
for equipment	4	8
unified center	5	0
Governorate maintenance center (GMMC)	1	0
Governorate road maintenance center	0	1

### SECTION 3

## Gharbiya Governorate

The evaluation team visited the pilot markaz (Kafr El-Ziat) and several MMCs and VCs from a sample of other marakez in Gharbiya Governorate. The visited sites are listed in the following table.

**Table 3.1**  
**Sites Visited in Gharbiya Governorate**

Location	Sites Visited
Kafr El-Ziat Markaz	Ibiar VC MMC for equipment MMC for water Road section
Qoutour Markaz	Beltag VC MMC for equipment MMC for water
Mehalla Markaz	Mehallit Abu Ali VC MMC for equipment Road section
El-Santa Markaz	El Gaafria VC MMC for water
Road Department	Equipment MMC Road maintenance section

### FACILITIES

#### Building and Tools

Buildings for all VC workshops and MMCs for water were entirely constructed and/or modified for maintenance activities. During the pilot program period, all were outfitted with the proper hand and machine tools.

The MMCs for equipment in the road department and the Kafr El-Ziat, Qoutour, and El-Mehalla marakez sites were rehabilitated during the pilot program period and outfitted with the requisite tools and machine tools.

## **Staffing**

The staffs for all VC workshops and MMCs for both water and equipment had the requisite technical personnel according to their organizational charts, with the exception of the Qoutour road maintenance section.

## **Spare Parts Stores**

For equipment and road department maintenance centers, all spare parts stores were organized with the Cardex system. All water maintenance centers and VC workshops were organized using governmental systems and regulations.

## **Training**

VC workshop and water MMC staffs were trained through the governorate training plan, provided through LD II-P training funds. Equipment maintenance center personnel training was arranged through Chemonics, which contracted with Icon Company (dealer of John Deere, Dynapac, and Groove) for operation and maintenance training of the John Deere Loader 444C and John Deere Grader 670E. The training was implemented at the Minya Governorate GMMC and at the road department maintenance center in Gharbiya Governorate. The training program began 9 December 1990 and ended 21 February 1991.

Chemonics also contracted with Mantrac Company (Caterpillar dealer) for engineer, technician and operator training, which began at the Mantrac training center (Alexandria) on 11 August 1991 and continues to date.

The training course for equipment MMC managers (engineers) focused on the organization and management of maintenance centers. Technician and operator training covered the operation and maintenance of the Caterpillar Dozer 814B and Ingersollrand IRD40.

Training was implemented in Gharbiya and Minya governorates during November and December 1989 for technicians and operators on the maintenance of DSF equipment. This training was provided through a contract between Chemonics and the dealers (Mantrac, Pico, and Icon), and included preventive maintenance

for the Catterpillar Dozer 814B and D7E, FMCC light and medium fire fighting trucks, John Deere Loader 444C, John Deere Grader 670 A, Dynapac road roller CC21A, and the Grove mobile crane truck.

Table 3.2 summarizes the types and quantities of equipment for both governorates, and the implementation schedule for inspection. The efficacy of the training was reflected by the improved technical condition of the equipment during the evaluation period.

**Table 3.2  
Implementation Schedule for Inspection and  
P.M. Contract with DSF Equipment Dealers**

Date	Governorate	Dealer	Equipment
13-16/11/89	Minya	Mantrac	4 Bulldozers
20-21/11/89	Minya	Icon	Loader & Roller
20/11/89	Gharbiya	Mantrac	Bulldozer
21-23/11/89	Gharbiya	Pico	3 light & 3 medium fire trucks
27-30/11/89	Gharbiya	Icon	Grove, Loader, 4 Grader & 2 Roller
27-28/11/89	Minya	Pico	4 medium fire trucks

## **ROLES AND RESPONSIBILITIES**

### **Water Projects**

Village workshops are responsible for daily, weekly, and monthly preventive maintenance and current repairs. MMCs for water are responsible for biannual preventive maintenance and medium repairs. Capital repairs are the responsibility of the private sector through the MMCs for water.

### **Road Projects**

The governorate road department is responsible for asphalt road maintenance and biannual maintenance. It is also responsible for medium and capital repairs for road maintenance equipment, as well as the

supervision of the work of markaz road sections. The markaz road section is responsible for dirt road maintenance and supervising the work of village road laborers. Routine maintenance for dirt roads is the responsibility of each village.

### **Equipment**

MMCs for equipment and the road department center are responsible for all types of preventive and corrective maintenance except for capital repairs, a responsibility shared with the private sector.

## **IMPLEMENTATION OF O&M PLANS**

### **Water Projects**

The O&M plan has been 90 percent implemented at both the VC and markaz levels, particularly in the pilot markaz.

### **Road Projects**

The maintenance status of dirt roads is good. Maintenance for asphalt roads is not adequate, as it relies on external contracts or work performed by the governorate road department.

### **Equipment**

For all equipment at the visited marakez, the O&M plan has been largely implemented. Where problems do arise, it is due to the shortage of spare parts.

## **IMPLEMENTATION OF O&M RECORDING AND MONITORING SYSTEM**

The monitoring and recording system is implemented at all levels (village, markaz and governorate) for nearly all types of projects. In some cases, recording and monitoring techniques have been successfully developed, in addition to those provided by Chemonics.

Roads section records were incomplete and out of date.

## **EQUIPMENT UTILIZATION**

The total count of equipment included in governorate O&M plans is 160 pieces; the average percentage of utilization of 68.4. The utilization percentage for USAID-funded equipment (DSF and LD II-P) is 76.1 for 97 equipment pieces. Of that number, nine pieces are earth moving equipment, with a combined utilization rate of 67.5 percent (see table 3.3 and chart 3.1).

The main reason for non-utilization of heavy equipment (under repair about 19% percent of the time) is the frequent lack of spare parts, particularly for Ford and International equipment.

To upgrade equipment utilization and to assist governorate decision makers identify service delivery problems, a needs assessment study for RS equipment in Gharbiya is being conducted. Decision makers will use the information to prepare action plans for future needs. The study will be finished at the end of January 1992 and a complete report will be submitted to USAID in February.

## **O&M MANAGEMENT SYSTEM**

An O&M committee, established during the project period, meets at least once per month. Its members include the secretary general (chairman), governorate maintenance coordinator, housing, roads and village development department directors, and the headquarters garage director. Annex IV presents the decree of the governor.

The committee's responsibilities are:

- Supervising O&M plan implementation at all levels
- Reviewing and approving O&M QPRs
- Overcoming problems facing O&M plan implementation in all sectors
- Drawing up an incentive system for O&M personnel at all levels according to actual performance
- Supervising implementation of the training plan
- Supervising replication of the program in other marakez in the governorate

One of the goals of the intensive TA program was to assist the governorates in establishing maintenance workshops as investment projects with a revolving fund income. During site visits to Gharbiya Governorate, it was found that most VC maintenance workshops had begun plumbing projects as an initial step in establishing themselves as investment projects. Chemonics advisors and ORDEV representatives discussed the matter with Gharbiya Governorate's secretary general, who expressed approval of this approach. Governorate officials are currently preparing investment project regulations for all VC workshops and MMCs.

### **REPLICATION OF O&M SYSTEM IN OTHER MARAKEZ**

After intensive technical assistance was completed in the pilot markaz (Kafr El-Ziat), Chemonics advisors invited maintenance engineers of the other marakez to visits to the pilot markaz.

Subsequently, the governorate maintenance coordinator replicated the program in other marakez under Chemonics staff supervision. He submitted a monthly report on the replication efforts to the governorate O&M committee. Chemonics advisors visited all marakez and at least two VCs in each markaz to follow-up the replication program and to provide TA when needed. Evaluations of the replicated programs in Mehalla, El-Santa, and Qoutour marakez were very positive.

### **SUSTAINABILITY OF O&M SYSTEM**

The O&M system in Gharbiya Governorate is sustainable to a satisfactory degree. The potential sustainability is partly attributable to the fact that O&M and high governorate officials feel that maintenance of infrastructure projects and equipment is an essential aspect to project success and maximum usage of equipment.

Among the indicators of the sustainability of the O&M system are:

- Targeting of VC workshops and MMCs suitable for structuring as investment projects and cost recovery programs for O&M
- The formation of the O&M committee at the governorate level
- Better working relationships among all levels (village, markaz and governorate) in the organization, reflected by improved preparation of the O&M QPR.
- Training courses and OJT held by governorate maintenance coordinator and markaz engineers for the second level of O&M staff
- Success achieved in the replication of the pilot program in other marakez

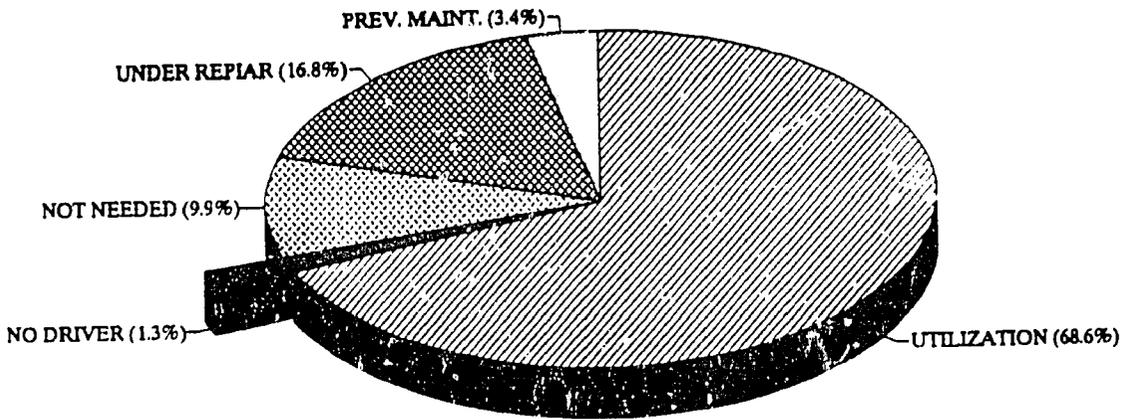
Table 3.3

## EQUIPMENT UTILIZATION ANALYSIS FOR GHARBIYA GOVERNORATE

(APRIL - JUNE 1991)

EQUIPMENT TYPE	NO OF EQ-UP.	TOTAL WORKING DAYS	UTILIZATION		REASONS OF NON UTILIZATION											
					NON - UTILIZATION								PERCENTAGE W.R.T. DOWNTIME			
					NO DRIVER		NOT NEEDED		UNDER REPAIR		PREV.MAINT.		NO DRIVER	NOT NEEDED	UNDER REPAIR	PREV. MAINT.
DAYS	%	DAYS	%	DAYS	%	DAYS	%	DAYS	%	LAYS	%					
DSP & LDM REMOVING	9	621	419	67.5	8	1.3	59	9.5	118	19.0	17	2.7	4.0	29.2	58.4	8.4
DEF & LDM W. & W. WATER	39	2691	1925	71.5	22	0.8	123	4.6	499	18.5	122	4.5	2.9	16.1	65.1	15.9
DSP & LDM SOLID-WASTE	30	2070	1338	64.6	31	3.9	86	4.2	520	25.1	45	2.2	11.1	11.7	71.0	6.1
DSP & LDM OTHERS	39	2691	2173	80.8	27	1.0	226	8.4	185	6.9	80	3.0	5.2	43.6	35.7	15.4
NON-(DEF/LDM)	43	2967	1706	57.5	10	0.3	602	20.3	533	18.0	116	3.9	0.8	47.7	42.3	9.2
TOTAL	160	11040	7561	68.5	148	1.3	1096	9.9	1855	16.8	380	3.4	4.3	31.5	53.3	10.9

**Chart 3.1**  
**Equipment Utilization Analysis for Charbiya**  
**Governorate**



## SECTION 4

# Minya Governorate

The evaluation team visited the pilot markaz (Maghagha) and several MMCs and VCs from a sample of other marakez in Minya Governorate. The visited sites are as follows.

**Table 4.1**  
**Sites Visited in Minya Governorate**

Location	Sites Visited
Maghagha Markaz	Shamm VC MMC for water MMC for equipment Road section
El-Minya Markaz	Talla VC MMC for water Road section
Malawi Markaz	Nowai VC MMC for water MMC for equipment Road section
Mattai Markaz	Bardabouha VC MMC for water MMC for equipment Road section
Minya Governorate	GMMC

## FACILITIES

### Building and Tools

All VC workshop buildings were completed and modified according to Chemonics TA. MMCs for water were completed in Maghagha, Matai, El-Edwa, Abu Korkas and Dair Mowas marakez. The buildings of these centers were completed or modified during the O&M pilot program period.

MMCs for equipment in Maghagha, Dair Mowas and Mallawi were completed or modified during the O&M pilot program period as well. The road maintenance center at Maghagha was constructed and outfitted with tools for road equipment preventive maintenance. (The MMCs at El-Edwa and Abu Korkas marakez are

used to maintain and repair water projects and equipment.)

All VC workshops and MMCs were outfitted with tools and machine tools during the O&M pilot program. For the governorate main maintenance center (GMMC), the first and second stages were constructed and outfitted with tools and machine tools according to Chemonics equipment section intensive TA. The third stage is still under construction.

### **Staffing**

During the O&M pilot program, the technical staff shortages of all VC workshops and MMCs, existing prior to the program, were addressed. Chemonics staff assisted the GMMC with its organizational structure and the selection of technical staff to be assigned to the facility.

### **Spare Parts Stores**

For equipment and water MMCs, the spare parts stores were organized according to Egyptian regulations and systems. The GMMC spare parts store is organized with the Cardex system.

There are two parts control system centers in Minya. The larger is the GMMC which handles parts for the roads directorate, city councils and fire departments. It stores parts for all equipment except fire engines, which are stored in the fire department store.

The second control center, at the governorate housing directorate (GHD) handles parts for the seven water treatment units. These parts are stored on-site to enable operators to respond quickly to service interruptions; parts transactions are reported to the GHD by city council engineering departments.

### **Training**

A portion of the LD II-P training fund was used to train technical staff at all levels for water and equipment personnel. Additionally, training was provided for the equipment maintenance center through equipment dealers. (See "Training" in section 4).

## **ROLES AND RESPONSIBILITIES**

The role of each level was not clearly identified until the rural governorates began preparing their maintenance plans for all project types. As a result of intensive on-site TA at markaz and governorate levels, the following roles were observed during the evaluation process.

### **Water Projects**

The role of the VC workshops is to provide daily, weekly, and monthly preventive maintenance, and minor repairs. The MMCs are responsible for biannual preventive maintenance and medium repairs. The GMMC, working with the private sector, is responsible for the capital repairs.

### **Road Projects**

Each markaz has a road section and its own road maintenance equipment. These sections are responsible for dirt road improvements (grading) and for asphalt road maintenance. Routine maintenance of dirt roads is implemented by VC personnel and supervised by the markaz road section. The governorate road department is responsible for road construction, via private sector contracts and/or governorate road investment projects.

### **Equipment**

All MMCs are responsible for carrying out minor and medium repairs, and preventive maintenance (except biannual maintenance) for all of their own equipment. Capital repairs and biannual maintenance are implemented by the GMMC and/or dealers.

## **IMPLEMENTATION OF O&M PLANS**

### **Water Projects**

Since participating in the pilot program, all water maintenance facilities have substantially improved the quality and implementation rates of their O&M plans, thereby decreasing rates of equipment breakdown. Implementation rates are now in the 70-80 percent range; breakdowns are reported to be one or two percent.

## Road Projects

Road maintenance efficiency improved from the beginning of the program except in Matai Markaz where maintenance was implemented but not as scheduled nor at an acceptable level.

## Equipment

The GMMC, which has an implemented O&M plan, performs biannual maintenance and repairs that are beyond the capabilities of other MMCs for all marakez and governorate departments, particularly for DSF equipment. (The work performed by the GMMC from February 1990 to October 1991 is presented in table 4.2.)

O&M plans for Malawi, Maghagha and Matai MMCs were prepared and implemented during the pilot program, and equipment in these MMCs is now well maintained.

Table 4.2  
Work Performed by GMMC  
February 1990 - October 1991

Activity	Cars	Equipage Trucks	E. Moving Equipment	Total
Biannual Maint P3	27	91	9	127
Current Repair C	234	106	32	374
Medium M	102	61	15	178
Capital C	57	21	21	99
<b>Total</b>	<b>420</b>	<b>281</b>	<b>77</b>	<b>778</b>

## IMPLEMENTATION OF O&M RECORDING AND MONITORING SYSTEM

Of all the MMCs visited, only that of Matai had a recording system established before the program, and it was incomplete. Presently, all use recording systems recommended by Chemonics advisors and all are up to date.

Recording systems are now generally adequate at Tala and Naway VCs, and Malawi, Matai and Minya (except

for work orders) MMCs. Recording systems still need attention at Sham El-Bahriya and Bardanouh VCs.

Records are complete at the Maghagha road department; they are incomplete at Minya, Malawi and Matai.

No QPRs have been prepared by the Malawi road department. For Minya, Maghagha and Matai, QPRs for 30 June 1991 are completed; the QPRs for 30 September 1991 have not been prepared yet.

An O&M computerized system was designed to be implemented at the GMMC in Minya Governorate. This system will cover three main packages including the O&M plan and budget system, spare parts inventory control system, and the GMMC accounting system. The programming process has begun and implementation will be completed at the end of March 1992.

## **EQUIPMENT UTILIZATION**

The total equipment pieces included in O&M plans is 192, with an average utilization percentage of 67.5. USAID-funded equipment pieces (DSF + LD II) number 95 pieces; the utilization rate is 69.6 percent. Of that number (95), 20 pieces are earth moving vehicles (utilization is 53.3 percent).

The reason for non-utilization for all types of equipment is that repair and maintenance is dependent upon a chronically short supply of spare parts, especially for Ford and International equipment.

Table 4.3 and chart 4.1 detail the utilization of all types of equipment included in the governorate O&M plan. Data were collected from the second O&M QPR (April - June 1991).

## **O&M MANAGEMENT SYSTEM**

The governorate secretary general established and now heads a technical office, the responsibilities of which include:

- Supervising the preparation of the O&M annual plan, budget and data entry

- Follow-up of the O&M plan implementation at all levels
- Preparation and data analysis of O&M QPR, and its presentation to the GLDC
- Overcoming all obstacles obstructing O&M plan implementation in all sectors
- Developing incentives criteria at all levels according to actual performance rates
- Development of training plans and programs for O&M personnel and the implementation thereof
- Replicating successful O&M projects

Members of the technical office include the director general of road and transport directorate (governorate maintenance coordinator), the deputy of governorate housing and utilities directorate, and the rural development department director at the governorate.

Annex IV includes the Minya governor's decree (No. 26, 1989) for the formulation of this technical office.

## **REPLICATION OF O&M SYSTEM IN OTHER MARAKEZ**

After the completion of the pilot project in Maghagha Markaz, a workshop was held for all markaz maintenance engineers (water, road, equipment) and the governorate maintenance coordinator. Chemonics advisors explained the project in Maghagha Markaz, and field visits were made to one VC workshop, an MMC for water, and an MMC for equipment in Maghagha Markaz. The governorate maintenance coordinator conducted the replication of the pilot program in all other marakez under Chemonics staff supervision. Evaluation team observations on the replicated programs in Mallawi and Matai were very good. The evaluation of the program in Minya Markaz was fair.

## **SUSTAINABILITY OF O&M SYSTEM**

The indicators of the sustainability of the O&M system for Gharbiya Governorate (see section 3) are similar to those of Minya Governorate.

Minya has operated the GMMC as a service/investment project. The regulations for this project were established by the governorate, assisted by Chemonics equipment advisors. The gross income to date is LE 738,377 (25 February 1990 to September 1991), total expenditures, LE 407,410, making the net profit LE 330,967. VC workshops and MMCs will follow the same regulations of the GMMC with some modifications which are currently being prepared.

Maghagha MMC for equipment has met the requirements to operate it as an investment/service project, but has not yet started.

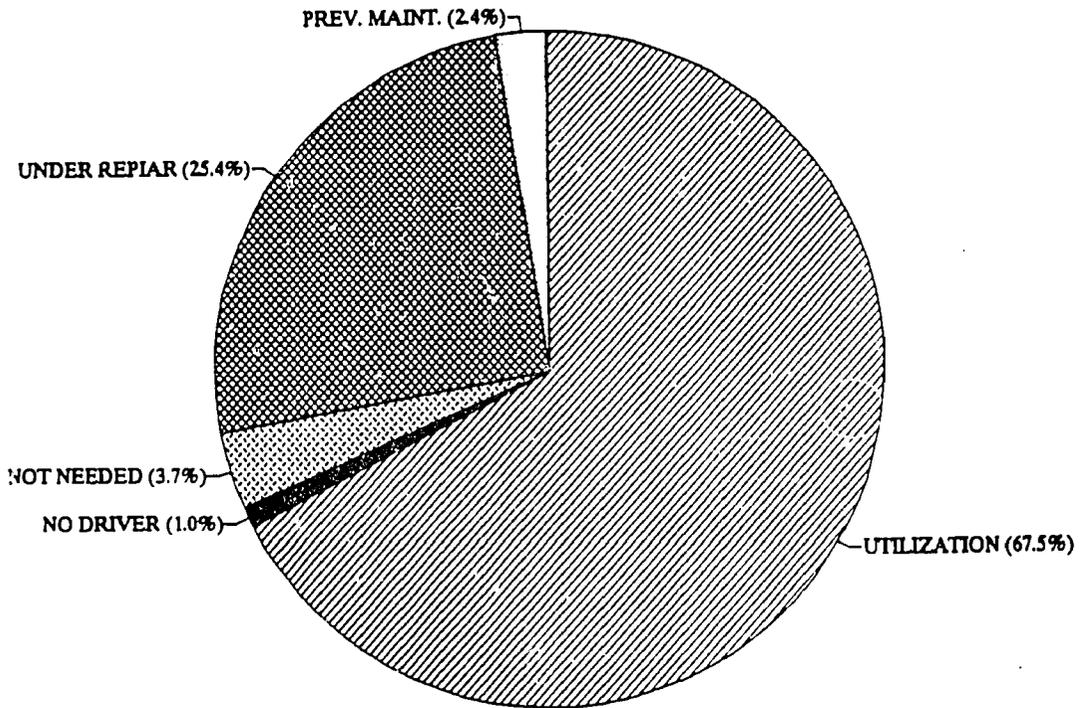
Table 4.3

## EQUIPMENT UTILIZATION ANALYSIS FOR MINYA GOVERNORATE

(APRIL - JUNE 1991)

EQUIPMENT TYPE	NO OF EQUIP.	TOTAL WORKING DAYS	UTILIZATION		REASONS OF NON UTILIZATION											
					NON - UTILIZATION								PERCENTAGE W.R.T. DOWNTIME			
			DAYS	%	NO DRIVER		NOT NEEDED		UNDER REPAIR		PREV.MAINT.		NO DRIVER	NOT NEEDED	UNDER REPAIR	PREV. MAINT.
DSE & LDH MOVING	20	1380	735	53.3	2	0.1	35	2.5	567	41.1	41	3.0	0.3	5.4	87.9	6.4
DSE & LDH W.& W.WATER	34	2346	1556	66.3	20	0.9	24	1.0	683	29.2	61	2.6	2.5	3.0	85.7	7.7
DSE & LDH SOLID-WASTE	16	1104	857	77.6	0	0.0	0	0.0	218	19.7	29	2.6	0.0	0.0	88.3	11.7
DSE & LDH OTHERS	25	1725	1404	81.4	15	0.9	70	4.1	172	10.0	64	3.7	4.7	21.8	53.6	19.9
NON-(DSE/LDH)	97	6693	4397	65.7	96	1.4	353	5.4	1720	25.7	117	1.7	4.2	15.8	74.9	5.1
TOTAL	192	13248	8949	67.5	133	1.0	492	3.7	3362	25.4	312	2.4	3.1	11.4	78.2	7.3

**Chart 4.1**  
**Equipment Utilization Analysis for Minya Governorate**



## SECTION 5

# Conclusions

During the implementation of the pilot program for operations and maintenance of infrastructure and equipment, the O&M Chemonics team encountered a number of problems which need to be addressed if the pilot program, and subsequent efforts to extend the O&M program to other governorates, are to be successful. As we expect that similar problems exist in other rural governorates, it is important to record these problems and the steps taken by governorate officials to resolve them.

The following table details implementation problems of the pilot program, TA provided by the LD II-P team, and the final determination of the problem.

**Table 5.1**  
**Pilot Program Implementation**  
**Problems and Solutions**

### Facilities

Problems	TA Provided by LD II-P Team	Conclusion & Results
Poor building layouts for some VC workshops	Recommended layout changes including the removal of partitions, additions of walls, etc.	Modifications were completed in VC workshops and MMCs in both governorates
Unsatisfactory building layouts	Changes in layout and building rehabilitation were suggested	Changes were made where needed
Poor locations of equipment MMCs	Recommended sites were selected for Kafr El-Ziat, Tanta, and Mehalla in Gharbiya Governorate and Mallawi, Maghagha, Abu Korkas and Dair Mowas in Minya Governorate.	Several marakez have taken steps to follow suggestions. It took years for all to take action.
Poor designs and layouts for Minya GMMC, Tanta MMC for equipment, and for Gharbiya road dept.MC for equipment.	Recommended design and layouts were suggested,	New constructions were completed in both sites

**Table 5.1  
Pilot Program Implementation  
Problems and Solutions  
(continued)**

**Tool and Machine Tools**

<b>Problems</b>	<b>TA Provided by LD II-P Team</b>	<b>Conclusion &amp; Results</b>
VC workshops are missing some important tools.	Officials in the two governorates advised to buy tools using BVS 10% maintenance fund.	This was being done.
MMC's for equipment had insufficient tools and MMC tools.	Officials were advised to obtain tools and MC tools using LD II-P third and fourth year funds.	This was being done.
Minya GMMC and Tanta MMC for equipment are new facilities.	Recommended tools and M/C tools were provided for both facilities to be obtained using LD II-P third and fourth year funds.	This was being done.

**Personnel**

<b>Problems</b>	<b>TA Provided by LD II-P Team</b>	<b>Conclusion &amp; Results</b>
Some VC workshops and MMCs have personnel shortages.	V/C & marakez chiefs, gov. maintenance coordinator, village development director, and secretary general to shift personnel from other sections and to employ new technicians if possible.	This was being done.
Most workshops lack skilled technicians.	Project personnel have designed a series of technical training work-shops for gov. personnel. Gova have been advised to include O&M training in their training block grant requests. Training courses implemented by DSF equipment dealers on job training.	This was being done.
The wages paid to O&M workers are very low.	Recommendations was given to both governorates to use certain V/C workshop and MMCs as investment/service projects.	Five Minya VC workshops, Maghagha MMC for equipment, Minya GMMC and seven VC workshops in Gharbiya followed recommendation.

**Management**

<b>Problems</b>	<b>TA Provided by LD II-P Team</b>	<b>Conclusion &amp; Results</b>
Lack of maintenance awareness continues among governorate decision makers.	Seminars for officials and workshops in the pilot governorates for village and markaz officials.	There is tangible maintenance awareness in both governorates. An O&M committee was formed in both.
Poor supervision continues to be a problem.	Supervisors are being included in the technical training workshops and maintenance workers are included in the advance seminar training program.	The high percentage of equipment technical conditions is an indicator that there is progress.
Decisions are frequently made very slow, delaying actions needed to implement O&M programs e.g. transfer of funds for rehabilitation of maintenance centers.	Governorate officials should facilitate the decision making process.	Facilitating decision is accelerating decision making.

**Table 5.1  
Pilot Program Implementation  
Problems and Solutions  
(continued)**

**Spare Parts and  
Supplies**

<b>Problems</b>	<b>TA Provided by LD II-P Team</b>	<b>Conclusion &amp; Results</b>
Lack of parts (particularly imported) results in long periods for repair	Inspection and service contracts with dealers are being encouraged to help identify which imported parts are needed for rolling stock. Workshops are planned for AWP II to assist the governorate spend their Bab II funds more efficiently	Little of the LD II-P Bab II fund was returned to MOF, increasing the percentage of equipment technical conditions.
The governorate does not have efficient inventory systems.	Cardex systems of spare parts, parts control systems, and inventory control systems should be installed.	Cardex and parts control systems were being installed in the two governorates, while an inventory control system will be installed in Minya during the extended period of the pilot program.

**Transportation**

<b>Problems</b>	<b>TA Provided by LD II-P Team</b>	<b>Conclusion &amp; Results</b>
Lack of vehicles is a problem in some areas.	The team suggested that they can buy motor cycles for the VC workshops, and buy and outfit small pick-up trucks for MMC crews from BVS 10% maintenance fund. Also there was a recommendation in the LD II-P fourth year that trucks for each governorate be used for the transportation of the governorate maintenance coordinator and village development director.	This has been done in most areas.

**Finance and Budget**

<b>Problems</b>	<b>TA Provided by LD II-P Team</b>	<b>Conclusion &amp; Results</b>
The distribution of Bab II funds by the MOF is usually delayed by several months after the start of the GOE FY.	The only LD II role is to alert USAID and the Amana to the problem.	LD II-P Bab II funds for 91/92 distributed to all governorates in November 1991.
Shortage in the allocated Bab II fund.	Operate VC workshops and MMCs as investment/service projects.	Some areas have acted on this recommendation as mentioned before.

## SECTION 6

# Recommendations

The following recommendations are made as a result of this preliminary evaluation.

- Continue the O&M pilot program in Minya and Gharbiya governorates for three months (ending in March 1992). The program should focus specifically on (1) completion of the RS needs assessment study in Gharbiya Governorate, (2) completion of the O&M computerized system and inventory control system in Minya Governorate, and (3) intensive TA to those marakez in need of further specific training (equipment MMC management, increased equipment utilization, VC management, and intensive road maintenance TA). A final evaluation is scheduled for March 1992.
- Present this report to governorate O&M coordinators during their monthly meeting. The presentation should include field visits to the two pilot projects.
- Governorate maintenance coordinators should implement orientation programs for VC chairmen and technical personnel, covering the roles and responsibilities of the different types of VC workshops (water, roads, wastewater, equipment, building, etc).
- Replicate this pilot O&M system in two other governorates immediately. Table 6.1 indicates the O&M program development for those two governorates.
- O&M committee should be formed at the governorate level and headed by the secretary general.
- Marakez should assist VCs with maintenance and repairs which are beyond the capabilities of the VCs.
- Provide orientation covering the O&M system and preparation of the O&M QPR to markaz chiefs.

- Construct a technical library in the GMMC containing all Chemonics O&M deliverables and copies of the operation and maintenance manuals, parts manuals, and workshop manuals.
- Concentrate on technical training for O&M personnel particularly in the areas of OJT and alteration training by using LD II-P training fund and/or LD II-P Bab II fund.
- Encourage other governorates to operate MMCs and VC workshops as investment/service projects. This will aid cost recovery schemes, as it has in some facilities in Minya and Gharbiya governorates.
- Establish service contracts with DSF equipment dealers and encourage them to maintain 75 percent or more of spare parts inventories at all times. Also, encourage those dealers to provide maintenance and repairs which are beyond the capabilities of the MMCs and VC workshops. Maintenance and repair implementation will be useful as OJT for engineers and technicians .

**Table 6.1**  
**O&M Program Development Timeline**  
**December 1991-July 1992**

Governorate	Activity*	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL
Minya and Gharbiya	Intensive Technical Assistance	xxxxxx	xxxxxx	xxxxxx					
	Evaluation				xxxxxx				
Sohag and Beheira	Selection	xxxxxx							
	Intensive Technical Assistance		xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	
	Report								xxxxxx

\* Three O&M engineers (one each for water, roads and equipment sectors) will visit each governorate four days per month.

## ANNEXES

## ANNEX I

### O&M PILOT PROGRAM IMPLEMENTATION

#### I. Purpose

- A. Assist markaz and village O&M personnel in the function of maintenance centers and workshops. An intensive training program will be initiated for O&M personnel at all levels.
- B. Upgrade governorate personnel capabilities with regard to O&M system for road, water and rolling stock through intensive on-site TA. Demonstrate that managers and technicians can successfully repair and maintain an infrastructure project and equipment according to the responsibilities identified in each level in the O&M plan.

#### II. Expected Output

- A. Identification of major constraints to effective maintenance in the rural areas.
- B. Strengthening of the markaz role in O&M system implementation (PM<sup>3</sup> and up to medium repair).
- C. Strengthening of the preventive maintenance concept at the VC and markaz levels.
- D. Upgrading of O&M staff technical skills through specific training programs.
- E. Identification of markaz, governorate and dealer roles in maintenance and repair of DSF equipment.
- F. Assessment report including plan of action that can be used by governorate personnel to implement the maintenance program.
- G. Specific strategy for O&M systems to be replicated in other marakez and in other governorates.

#### III. Strategy

Because this task includes TA and training programs, and because of limits in time and staff, the O&M section is concentrating their TA efforts in two selected governorates according to specific criteria.

After the selection of these two governorates, Chemonics O&M team will select one markaz in each governorate to implement specific tasks with all its VCs. Upon completion of the tasks, an assessment report will be prepared stressing

the lessons learned. This is estimated to be a 9-month effort for infrastructure project implementation addressing maintenance needs for heavy equipment and rolling stock since no such provisions for this equipment were made when it was originally supplied.

#### IV. Implementation Steps

##### A. Select two governorates

1. Preparation of an initial list of priority governorates according to the following criteria.
  - a. expressed desire on the part of governorate officials to participate.
  - b. establishment on an O&M committee at the governorate level to be responsible for follow up implementation of the O&M system at all levels.
  - c. assured assignment of a full-time maintenance coordinator.
  - d. geographic distribution including upper and lower Egypt.
2. Visits to governorates to verify criteria and agreement to participate.
3. Final selection and informing selected governorates.

##### B. Site visit to the selected governorates to discuss the establishment of the O&M Committee and outlining of responsibilities. The proposed members of this committee are:

- secretary general as the head of the committee
- governorate maintenance coordinator
- housing, roads and village development department directors
- headquarters garage director
- other members to assist the committee

This committee will meet at least once per month and is responsible for:

- supervising O&M plan implementation at all levels
- reviewing and approving O&M QPR
- overcoming problems facing O&M plan implementation in all sectors
- drawing up an intensive system for O&M personnel at all levels according to actual performance
- supervising implementation of the training plan
- supervising replication of the program in other marakez in the governorate

- C. Visit the selected governorates and carry out site visits to a number of the marakez in order to select one markaz per governorate to provide on-site TA in the O&M system.
- D. Carry out monthly site visits to all VCs in the selected markaz and MMCs (water, city garage and road sections), providing on-site TA in preventive maintenance and functions of the maintenance workshop, the markaz role, the monitoring and recording system, and the implementation of the maintenance plan.
- E. Assist markaz personnel in the assessment of the local private sector and dealer roles in order to identify their capabilities, involvement in an O&M system, and procedures to carry out O&M activities which are beyond markaz capabilities.
- F. If a maintenance center is still under construction at the governorate level, TA will be provided in the field of construction supervision, engineering, modification of design to meet O&M system requirements, outfitting of the maintenance center, project commissioning, and the modification of existing maintenance facilities (old buildings), if needed.
- G. Implementation Workshop

A one-day workshop will be organized by Chemonics and markaz officials, in coordination with USAID and ORDEV/Cairo, to be held at the markaz level each month. It will be attended by the governorate maintenance coordinator, governorate village development director, markaz chief, markaz maintenance coordinator, water MMC director, road section director, city garage director, all VC chairman, and all VC workshop supervisors.

An effort will be made to assure participation and input of the attendees in discussions of the daily work of maintenance personnel in the field. The output will be detailed solutions for technical, financial, and administrative problems. Action needed and level of responsibilities will be identified.

A meeting will be held with the O&M Committee at the governorate level to present the results and recommendations of the markaz workshop in order to assist in solving problems and determining action steps.

- H. To bring all DSF equipment back into operating condition, Chemonics O&M team will assist governorate and markaz personnel in establishing an inspection and service contract for equipment available at all levels throughout the governorate with the dealers in order to identify all spare parts and required budget. This will be done through direct contact between the governorate and dealers under the supervision of Chemonics in order to facilitate the coordination and cooperation between both.

## I. Training Programs

In order to upgrade the O&M staff capabilities at all levels and to create an awareness of the preventive maintenance concept, the following training courses are suggested:

1. O&M of water projects for operators
2. O&M of water projects for technicians
3. O&M of water network for plumbers
4. repair and calibration of water meters
5. maintenance of road projects for technicians
6. operation and daily maintenance of equipment for operators
7. periodic preventive maintenance of equipment for technicians
8. maintenance and repair of tires and batteries for technicians

All of the above training courses will be carried out by a local training institute under Chemonics' supervision, except the training courses for DSF equipment (numbers 6 and 7) which will be carried out through a training contract with the dealers.

## J. Replication Effort in Other Marakez

### 1. TA Stage

A one day meeting will be held with all markaz chiefs in the third month of the TA stage. The meeting will be led by the type two team from the LD II-P project and the O&M committee; the secretary general will attend. The purpose of the meeting will be to explain the O&M program and to encourage markaz chiefs in the non-targeted marakez to take steps to begin the maintenance program in their markaz. Specific topics will include posting of PM charts at each water pumping station, preparation of an inventory of equipment, maintenance records, PM schedules for markaz staff, and management of MMCs and VCWs. The O&M team at LD II-P will prepare briefing materials related to the establishment of effective maintenance programs. After this meeting the Chemonics O&M team will invite O&M officials in other marakez to join them during their visits to the target markaz (officials from one markaz will be selected to join Chemonics team on each site visit).

### 2. Intensive TA Stage

A second one-day workshop will be held with all markaz chiefs to enable them to report back on their efforts and to ask any questions they may have. The markaz chief of the targeted markaz will make a presentation concerning the efforts made in his markaz. LD II advisors will report back to the group concerning the heavy equipment maintenance program. Chemonics O&M team will visit at least two villages in each of other marakez to provide intensive

TA to these villages and assist the markaz O&M officials. The advisors will try to identify any markaz that is experiencing special problems in implementing the program.

3. Follow up Stage

O&M advisors will visit those marakez which were identified as having special problems. Training programs directed toward solving specific problems should be considered during this visit. The visits will take place during first month of this stage. The weak marakez along with a sample of the better marakez will be visited during the third or fourth month of this stage to assess progress. If problems persist, a meeting will be held with the O&M committee to advise them of steps they need to take to resolve the problems.

The targeted markaz should also be visited during this second follow-up visit to determine if the results achieved during intensive TA are being sustained. The type two team should carry out this second visit.

- K. An assessment report will be prepared at the end of the 9-month period stressing the lessons learned, presenting input from governorate personnel and recommendations for the strategy needed to replicate this effort in other governorates.

**ANNEX II**  
**SCOPE OF WORK**  
**EVALUATION OF THE PILOT O&M PROGRAM**  
**(MINYA AND GHARBIYA GOVERNORATES)**

Nearly LE 8 million was provided to local governments in rural Egypt during the 1980s under USAID decentralization sector programs (the BVS, DSF, and LD II-P Projects) to plan and implement locally chosen infrastructure.

Funding has been allocated to potable water supply, road construction and paving, wastewater conveyance and treatment, public buildings, and rolling stock.

Evaluation of these programs have drawn attention to the need for institutionalizing efficient systems and procedures for the maintenance of these investments. In the mid-1980s, efforts in this direction were incorporated into the technical assistance contract for the BVS and subsequently the LD II-P Project.

These efforts were only moderately successful in most instances; one of the reasons was the large scale of the project, covering 22 governorates, 900 village council units, and nearly 40 million beneficiaries. Consequently, in 1989, the TA contractor decided to try a highly intensive program of TA and technical training in O&M on a limited scale. The pilot O&M program was conducted from 1989 to 1990 mainly in one markaz (including all VC units) in each of two governorates, with gradual replication to other marakez in these governorates.

The objectives of the pilot program were:

- Proper utilization and operation of VC workshops and MMC's
- Strengthening the markaz role in O &M system implementation
- Strengthening preventive maintenance concept
- Upgrading technical skills of O&M staff through training programs
- Identification of the role of village, markaz, and governorate maintenance workshops, and the private sector including dealers' roles in the maintenance and repair of equipment and infrastructure
- Evaluation report including the development of a specific strategy replicating O&M systems in other governorates

The two governorates were chosen according to the following criteria:

- Expressed desire on the part of governorate officials to participate in the pilot program

- Establishment of an O&M Committee at the governorate level to be responsible for implementation of the O&M system at all levels
- Availability of a full-time maintenance coordinator
- Geographic distribution including upper and lower Egypt

Minya and Gharbiya governorates were selected. Maghagha markaz and Kafr El-Ziat markaz were selected within the respective governorates to implement these tasks in all its VCs.

Now that the O&M pilot program has been implemented in two governorates (Minya and Gharbiya) since March 1989, evaluation of it is necessary to analyze the usefulness of the program emphasizing the lessons learned in order to use them in the replication programs in other governorates.

A team consisting of O&M advisors from relevant sections of the TA contractor's organization (water, roads, and rolling stock) will visit the two pilot governorates. The method of evaluation will include the administration and analysis of a questionnaire, and observations covering the following dimensions of the O&M program:

- maintenance facilities
- capabilities (role of different levels)
- recording and monitoring system
- equipment utilization
- service contracts
- sustainability of service delivery
- private sector participation

The team will visit the selected marakez in the two governorates and examine the replication in other marakez during the month of February to administer the questionnaire which will elicit information on the above mentioned topics. The team will also examine the use of monitoring and recording system forms to evaluate equipment utilization rates and estimate the sustainability of service provision under these conditions.

At the end of each visit the questionnaire will be tabulated, and observations noted and presented in a written report of the findings.

The deliverable of this task will be a written evaluation report on the O&M pilot program based on the observation of all conditions in Minya and Gharbiya governorates where the pilot program was implemented and the results of the questionnaire.

This report should include the findings and results of the questionnaire, conclusions, and recommendations.

Target date for this report is 31 March 1992.

ANNEX III

QUESTIONNAIRE OF THE PILOT O&M PROGRAM  
EVALUATION

Governorate: \_\_\_\_\_ Markaz: \_\_\_\_\_ Village: \_\_\_\_\_

1. Role of Different Levels:

A. Number and Type of Equipment:

Type									Total
No.									

b. Manpower:

Type							Engineer	Total
No.								

C. Role of MC Before Pilot Program:

P1  C

P2  M

P3  K

D. Role of MC After Pilot Program:

P1  C

P2  M

P3  K

**E. Implemented Maintenance and Repair:**

Type of Project	Before Pilot Program during 1989							After Pilot Program during 1991									
	No.	Maintenance			Repair			No.	Maintenance			Repair					
		P1	P2	P3	C	M	K		P1	P2	P3	C	M	K			
<b>Total</b>																	

What is the annual average of equipment break down, before and after the program?

Before \_\_\_\_\_

After \_\_\_\_\_

**2. Maintenance Facilities:**

**A. Maintenance Center Organization:**

- Are the maintenance workshops enough to carry out the above mentioned role?

Yes

No

If No., Describe the reasons:

-----  
 -----  
 -----

- Are there any modifications to the building:

Yes

No

If Yes attach a layout with complete dimensions and answer the following questions:

- Define the technical sections which added or modified

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 -----  
 -----

- What is the period of Implementation for the modifications. \_\_\_\_\_ month.

- Describe the problems faced if any.

-----  
 -----  
 -----

- Is there enough area for maneuverability inside the building.

Yes  No

If No, what are the problems

-----  
 -----  
 -----

**B. Tools and Machine Tools:**

- Were there any shortages of tools and MC tools at the beginning of the pilot program?

Yes  No

- If Yes, who prepare the list and its technical specifications?

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

- Did Chemonics office review the needed tools and MC tools, specifications, and tender documents?

Yes  No

If No, who reviewed it?

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- Did Chemonics review the tender evaluation documents for tools and MC tools?

Yes  No

If No, who reviewed them?

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---

- Are there any tools and special tools for biannual maintenance and medium repair for the heavy equipment financed by USAID?

Yes  No

- If Yes, attach a list of what is available?

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- If No., why? Why were these not purchased?

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**C. Manpower:**

- Where there any shortage in the manpower before the beginning of the pilot program?

Yes  No

- If Yes, What was needed?

Type									Total
No.									

- How did you make up for this shortage?

- By transfer No. \_\_\_\_\_ Trades \_\_\_\_\_
- By hiring No \_\_\_\_\_ Trades \_\_\_\_\_
- By contracting No \_\_\_\_\_ Trades \_\_\_\_\_

- Is these still a shortage in the manpower?

Yes  No

- If yes, give the number \_\_\_\_\_, trade \_\_\_\_\_

- Were any training programs implemented to upgrade manpower capabilities?

Yes  No

- If Yes, describe the training programs and the number of trainee in each.

o By Chemonics: No. \_\_\_\_\_ Trade: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

o By Dealers: No. \_\_\_\_\_ Trade: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

o By Governorate: No. \_\_\_\_\_ Trade: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

- If No, describe the reasons were used and define the needed training courses?

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**D. Organization and Management:**

- Was there an organization chart for the center before the pilot program?

Yes  No

- If No, do you have an organization chart now?

Yes  No

- If Yes, who designed it? Attach copy

Chemonics: \_\_\_\_\_  
Governorate: \_\_\_\_\_

- If No, give the reasons:

-----  
-----  
-----

- Was there a maintenance committee at the governorate and markaz levels before the program?

Yes  No

- If No, does it exist now?

Yes  No

- If Yes, list its members.

-----  
-----  
-----

- If No, give the reasons.

-----  
-----  
-----

- Describe the role of the markaz service to Village Councils.

-----  
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-----

- What regulations the center management before the program?

Government  Services Investment

- What is the center management regulation now?

Governmental  Services Investment

**E. Finance:**

- Were funds needed for modification, rehabilitation or construction of the maintenance center available?

Yes  No

- If Yes, state the sources.

-----  
 -----  
 -----

- If No, how did you got the needed fund?

-----  
 -----  
 -----

- How much funding was needed for construction, tools and MC tools?

Construction LE: \_\_\_\_\_  
 Tools MC Tools LE: \_\_\_\_\_

- Do you need extra funds?

Yes  No

- If yes, for what purpose?

-----  
 -----  
 -----

- If Yes, state the needed amount

LE \_\_\_\_\_ For \_\_\_\_\_  
 LE \_\_\_\_\_ For \_\_\_\_\_

44

- What are the present financial regulations of the center?

Governmental  Investment

Service Investment

Attach a copy.

-----  
-----  
-----

**3. Recording and Monitoring System:**

- a. Was the recording system suitable before the program?

Yes  No

- If Yes, what was the system?

-----  
-----  
-----

- What is the working system now?

-----  
-----  
-----

- Is this system suitable for the center?

Yes  No

- If No, why is this system not suitable?

-----  
-----  
-----

- Do you prepare the QPR on time?

Yes  No

- If No, why?

-----  
-----  
-----

- Does the QPR solve the problems which are face in the maintenance and repair of equipment?

Yes

No

- o If No, why?

-----  
-----  
-----

**4. Maintenance Responsibilities (Role of Levels):**

**A. Equipment Utilization:**

- Did you use the equipment in the job for which it was designed?

Yes

No

- If no, why?

-----  
-----  
-----

- Did you follow the O&M plan which you issued at the beginning of the year?

Yes

No

- If no, why?

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-----  
-----

- Did you register the utilization of all equipment day by day in the log books?

Yes

No

- If no, why?

-----  
-----  
-----

- Do you have any inoperable equipment?

Yes  No

- If Yes, why did you not dispose of this equipment?

-----  
-----  
-----

5. **Role of Private Sector:**

A. **Service Contracts:**

- Did you sign any inspection and service contract with the equipment dealers before the program?

Yes  No

- If No, why?

-----  
-----  
-----

- Did you participate in any of the inspection and service contracts demonstration that were held in the governorate during November 1989?

Yes  No

- If Yes, Did you find that the equipment needed these contracts?

Yes  No

- If No, why?

-----  
-----  
-----

- Did you sign any service contracts with the equipment dealers after that?

Yes  No

- If No, why?

-----  
 -----  
 -----

- How many technicians and operators attend the inspection and service contract demonstrations that were held in November 1989?

\_\_\_\_\_ Technicians  
 \_\_\_\_\_ Operators

**b. Capability of Private Sector:**

- Are there any private sector workshops nearby?

Yes  No

- If Yes, what are these contracts, and what percentage of total MC costs do they represent?

-----  
 -----  
 -----

- Are there any problems in dealing with these private sector workshops?

Yes  No

- If Yes, identify these problems.

-----  
 -----  
 -----

**6. Sustainability of Service Delivery:**

- Approximately, what was the percentage of breakdowns of the equipment before and after the program?

Before \_\_\_\_\_ % After \_\_\_\_\_ %

- Are there any problems in delivery of equipment service?

Yes  No

6

## ANNEX IV

### GOVERNORS DIRECTIVES ON O&M COMMITTEE

Gharbiya Governorate  
Rural Development Department

#### A Memorandum for Presentation to the Governor (Infrastructure Project)

Please be kindly notified that a joint meeting was held at the Secretary General's office on 12/2/1989 as regards the operation and maintenance of the governorate's infrastructure projects and was attended by Chemonics consultants.

During the meeting the forming a subcommittee for O&M affairs at the governorate level, to be subordinated to the GLDC was discussed. It was agreed that it should be composed as follows:

First Under-Secretary and Secretary General as Chairman and membership of:

Engineer/Director General of the Roads Directorate  
Engineer/Deputy of the Housing Directorate  
Engineer/Director of Rural Development Department  
Engineer/Maintenance General Coordinator

The following personnel will assist the committee in its work.

Governorate Water Maintenance Engineer - Housing Directorate  
Governorate Roads Maintenance Engineer - Roads Directorate  
Mechanical Drive Engineer at the Governorate  
Governorate Computer Division Chief

The committee is entitled to seek the help of whom it needs to perform its tasks.

The committee and its assistants are competent in what follows:

1. Supervising the preparation of O&M annual plan and budget, and the related computer data entry.
2. Follow up implementation of O&M plans at all levels.
3. Preparation of O&M QPR's and its data analysis, and their presentation to GLDC on the specified dates.
4. Elimination of all obstacles obstructing plan implementation in all sectors.

5. Draw up criteria and basis of incentives and rewards distribution among O&M personnel at all levels according to actual performance rates. (standards)
6. Forming training plans and programs for O&M personnel and following up their implementation.
7. Successful O&M experiences implemented in one markaz to be passed onto the other governorate marakez.
8. All future entrusted responsibilities in the O&M field.

The committee will meet once every month and according to work requirements and conditions.

This is submitted to your excellency for approval on forming the above mentioned committee.

Please accept my best regards.

Department Director  
Engineer/Hamed Amer  
12/2/89

Approved by the Governor  
14/2/89

General Department of  
Legal Affairs

Decision o. 26 of 1989  
Regarding Forming O&M Technical Office

Following being informed of Law No. 43 of 1979 regarding Local Administration System and its executive regulation amended by Law No. 145 of 1978 concerning the government civil personnel system and its executive regulation amended by law No. 115 of 1983. And what was raised during the joint meeting with Chemonics consultants dated 7/12/1989.

Decided

Article 1: To establish an operation and maintenance technical office headquartered in the governorate building and subordinated to the governorate Secretary General, with the membership of:

1. Engineer/Director General of Road and Transport Directorate and Maintenance General Coordinator at the Governorate.
2. Engineer/Deputy of Housing and Utilities Directorate at the governorate.
3. Engineer/Rural Development Department Director at the governorate.

Article 2: The following personnel will assist in performing the office's work:

1. Engineer/Ahmed Gama Toony, at the Road and Transport Directorate, to be responsible on full time basis for Road projects and Heavy Equipment Maintenance.
2. Engineer/Mohamed Fayez Taha Othman, Chief of Maintenance Division at the Housing Directorate, to be responsible for Water Projects Maintenance.
3. Engineer/Saad Makhlof, Chief of Governorate Main Maintenance Center.
4. Engineer/Abdel Hady Mohamed Hassan, Governorate Vehicles Department Director, to be responsible for equipment maintenance at the governorate headquarters and marakez garages.
5. Engineer/Ragaie Mohamed Khalil, Chief of Village Development Department Computer Division at the governorate.

The office and assistants will be competent in the following:

1. Supervising the preparation O&M annual plan and budget and the related computer data entry.
2. Follow up O&M plan implementation at all levels.
3. Preparation of O&M QPR: and its data analysis and their presentation to the GLDC on the specified dates.
4. Overcoming all obstacles obstructing plan implementation in all sectors.
5. Draw up incentives and rewards distribution criteria and basis among O&M personnel at all levels according to actual performance rates (standards).
6. Laying down training plans and programs for O&M personnel and following up their implementation.
7. Successful O&M experiences implemented in one markaz to be passed onto the other governorate marakez.
8. All future entrusted responsibilities in O&M field.

Article 3: The office should meet in full membership at least once monthly.

Article 4: All concerned authorities should implement this decision as soon as it is issued and perform its tasks accordingly.

Governor of Minya  
General/Abdel Tawab Rashwan

ANNEX V

SAMPLE EVALUATION QUESTIONNAIRE RESULTS

QUESTIONNAIRE OF THE PILOT O&M PROGRAM  
EVALUATION

Governorate: Gharbiya Markaz: Kafr El Ziat Village: \_\_\_\_\_  
Equipment

1. Role of Different Levels:

A. Number and Type of Equipment:

Type	H Equipment	Pickup	Tractors	D.truck	Se.truck	W.S.truck	Motocycle	✓	✓	To
No.	2	9	12	8	5	2	2		13	---

b. Manpower:

Type	Mech	Welder	Tech	Forger	Tyr rep	Adm	Supervisor	Engineer	Total
No.	8	1	4	1	2	5		1	22

C. Role of MC Before Pilot Program:

P1  C

P2  M

P3  K

D. Role of MC After Pilot Program:

P1  C

P2  M

P3  K  + with p.s

E. Implemented Maintenance and Repair:

Type of Project	Before Pilot Program during 1989						After Pilot Program during 1991							
	No.	Maintenance			Repair			No.	Maintenance			Repair		
		P1	P2	P3	C	M	K		P1	P2	P3	C	M	K
H. Equipment	2		10		8		2	40	18	2	6	-	-	
w. & w.w truck	7		40		20		7	250	60	8	15	3	1	
pick up & truck	17		130		60		17	600	160	20	40	2	1	
Tractors	12		90		28		12	400	110	16	28	4	2	
Motor cycle	2		5		4		2	45	10	2	4			
Trailer	13		-		10		13	-	-	-	15			
Total	53		275		130		53	1335	385	48	108	9	4	

What is the annual average of equipment break down before and after the program?

Before 55 After 25

2. Maintenance Facilities:

A. Maintenance Centre Organization:

- Are the maintenance workshops enough to carry out the above mentioned role?

Yes

No

If No., Describe the reasons:

They need Electrician, Training,

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- Are there any modifications to the building:

Yes

No

If Yes attach a layout with complete dimensions and answer the following questions:

- Define the technical sections which added or modified

Engineering Section + Garage in  
maneuver

- What is the period of Implementation for the modifications. 3 month.

- Describe the problems faced if any.

lack of one space

- Is there enough area for maneuverability inside the building.

Yes

No

If No, what are the problems

Limited space

#### B. Tools and Machine Tools:

- Were there any shortages of tools and MC tools at the beginning of the pilot program?

Yes

No

- If Yes, who prepare the list and its technical specifications?

garage director + G.M. coordinator  
\_\_\_\_\_  
\_\_\_\_\_

- Did Chemonics office review the needed tools and MC tools, specifications, and tender documents?

Yes  No

If No, who reviewed it?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- Did Chemonics review the tender evaluation documents for tools and MC tools?

Yes  No

If No, who reviewed them?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- Are there any tools and special tools for biannual maintenance and medium repair for the heavy equipment financed by USAID?

Yes  No

- If Yes, attach a list of what is available?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- If No., why? Why were these not purchased?

There is not allocated fund

**C. Manpower:**

- Where there any shortage in the manpower before the beginning of the pilot program?

Yes  No

- If Yes, What was needed?

Type								Total
No.								

- How did you make up for this shortage?

- By transfer No. \_\_\_\_\_ Trades \_\_\_\_\_
- By hiring No. \_\_\_\_\_ Trades \_\_\_\_\_
- By contracting No. \_\_\_\_\_ Trades \_\_\_\_\_

- Is there still a shortage in the manpower?

Yes  No

- If yes, give the number 4, trade } Electrician  
painter  
Body repair  
Battery charge

- Were any training programs implemented to upgrade manpower capabilities?

Yes  No

- If Yes, describe the training programs and the number of trainee in each.



- Was there a maintenance committee at the governorate and markaz levels before the program?

Yes  No

- If No, does it exist now?

Yes  No

- If Yes, list its members.

Sec general vd. director M. Coordinator  
Equipment engineer

- If No, give the reasons.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

- Describe the role of the markaz service to Village Councils.

no  
 \_\_\_\_\_  
 \_\_\_\_\_

- What regulations the center management before the program?

Government  Services Investment

- What is the centre management regulation now?

Governmental  Services Investment

**E. Finance:**

- Were funds needed for modification, rehabilitation or construction of the maintenance centre available?

Yes  No

- If Yes, state the sources.

LDI

- If No, how did you get the needed fund?

\_\_\_\_\_

- How much funding was needed for construction, tools and MC tools?

Construction LE: 14000  
Tools MC Tools LE: 15000

- Do you need extra funds?

Yes  No

- If yes, for what purpose?

Completion

- If Yes, state the needed amount

LE 30000 For completion  
LE \_\_\_\_\_ For \_\_\_\_\_

- What are the present financial regulations of the centre?

Governmental

Investment

Service Investment

Attach a copy.

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### 3. Recording and Monitoring System:

- a. Was the recording system suitable before the program?

Yes

No

- If Yes, what was the system?

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- What is the working system now?

---

*Chronicles System*

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- Is this system suitable for the centre?

Yes

No

- If No, why is this system not suitable?

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---

- Do you prepare the QPR on time?

Yes  No

- If No, why?

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---

- Does the QPR solve the problems which are face in the maintenance and repair of equipment?

Yes  No

- o If No, why?

---

---

---

#### 4. Maintenance Responsibilities (Role of Levels):

##### A. Equipment Utilization:

- Did you use the equipment in the job for which it was designed?

Yes  No

- If no, why?

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- Did you follow the O&M plan which you issued at the beginning of the year?

Yes  70% No

- If no, why?

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- Did you register the utilization of all equipment day by day in the log books?

Yes  No

- If no, why?

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---

- Do you have any inoperable equipment?

Yes  No

- If Yes, why did you not dispose of this equipment?

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5. Role of Private Sector:

A. Service Contracts:

- Did you sign any inspection and service contract with the equipment dealers before the program?

Yes  No

- If No, why?

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*Shortage of funds*

- Did you participate in any of the inspection and service contracts demonstration that were held in the governorate during November 1989?

Yes  No

- If Yes. Did you find that the equipment needed these contracts?

Yes  No

- If No, why?

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- Did you sign any service contracts with the equipment dealers after that?

Yes  No

- If No, why?

---

*shortage of funds*

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- How many technicians and operators attend the inspection and service contract demonstrations that were held in November 1989?

\_\_\_\_\_ Technicians  
\_\_\_\_\_ Operators

**B. Capability of Private Sector:**

- Are there any private sector workshops nearby?

Yes  No

- If yes, what are the maintenance and repair capabilities of these workshops for the equipment?

-----  
----- *R and M repair* -----  
-----

- Do you have any contracts with these private workshops?

Yes  No

- If yes, what are these contracts, and what percentage of total MC costs do they represent?

-----  
-----  
-----

- Are there any problems in dealing with these private sector workshops?

Yes  No

- If yes, identify these problems.

-----  
-----  
-----

**6. Sustainability of Service Delivery:**

- Approximately, what was the percentage of breakdowns of the equipment before and after the program?

Before 55 % After 25 %

- Are there any problems in delivery of equipment service?

Yes  No

65

## QUESTIONNAIRE OF THE PILOT O&M PROGRAM EVALUATION

Governorate: Minya Markaz: Maqhaqha Village: Sham El

bahariya  
view

### 1. Role of Different Levels:

#### A. Number and Type of Equipment:

Type	Diesel	Elec	Tank	Rope	Road	Richy	Tractor	Total
No.	4	8	4	6	13	1	1	

#### b. Manpower:

Type	Suprv	Tech	Mec	Explo	Stork	Tyre	Engineer	Total
No.	1	3	1	3	1	1	3	14

#### C. Role of MC Before Pilot Program:

P1  C

P2  M

P3  K

#### D. Role of MC After Pilot Program:

P1  C

P2  M

P3  K

### E. Implemented Maintenance and Repair:

Type of Project	Before Pilot Program during 1989						After Pilot Program during 1991							
	No.	Maintenance			Repair			No.	Maintenance			Repair		
		P1	P2	P3	C	M	K		P1	P2	P3	C	M	K
Diesel pump	4		30		12		4	18	48		8			
Elec. pump	8		70		6		8	35	90		8			
water tank	4		48		-		4	-	48		-			
pipe line	30		6		10		46	-	10		15			
pick up + track	1		8		2		2	80	18		4			
Road	13		-		-		13	-	10		-			
<b>Total</b>			162		30			615	224		35			

What is the annual average of equipment break down, before and after the program?

Before 40%

After 5%

#### 2. Maintenance Facilities:

##### A. Maintenance Centre Organization:

- Are the maintenance workshops enough to carry out the above mentioned role?

Yes

No

If No., Describe the reasons:

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- Are there any modifications to the building:

Yes  No

If Yes attach a layout with complete dimensions and answer the following questions:

- Define the technical sections which added or modified

V.C workshop

- What is the period of Implementation for the modifications. 4 month. day

- Describe the problems faced if any.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- Is there enough area for manoverability inside the building.

Yes  No

If No, what are the problems

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

#### B. Tools and Machine Tools:

- Were there any shortages of tools and MC tools at the beginning of the pilot program?

Yes  No

- If Yes, who prepare the list and its technical specifications?

\_\_\_\_\_ ~~Water M. C.~~ \_\_\_\_\_

- Did Chemonics office review the needed tools and MC tools, specifications, and tender documents?

Yes  No

If No, who reviewed it?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- Did Chemonics review the tender evaluation documents for tools and MC tools?

Yes  No

If No, who reviewed them?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- Are there any tools and special tools for biannual maintenance and medium repair for the heavy equipment financed by USAID?

Yes  No

- If Yes, attach a list of what is available?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- If No., why? Why were these not purchased?

not needed

**C. Manpower:**

- Where there any shortage in the manpower before the beginning of the pilot program?

Yes  No

- If Yes, What was needed?

Type	road							Total
No.	3							3

- How did you make up for this shortage?

- By transfer No. 3 Trades Labour
- By hiring No.      Trades
- By contracting No.      Trades

- Is there still a shortage in the manpower?

Yes  No

- If yes, give the number 1, trade Electr.

- Were any training programs implemented to upgrade manpower capabilities?

Yes  No

- If Yes, describe the training programs and the number of trainees in each.



- Was there a maintenance committee at the governorate and markaz levels before the program?

Yes  No

- If No, does it exist now?

Yes  No

- If Yes, list its members.

M. Coordinator v. d. director - water MC

- If No, give the reasons.

\_\_\_\_\_  
\_\_\_\_\_

- Describe the role of the markaz service to Village Councils.

P3, M, K Training

- What regulations the center management before the program?

Government  Services Investment

- What is the centre management regulation now?

Governmental  Services Investment

12

**E. Finance:**

- Were funds needed for modification, rehabilitation or construction of the maintenance centre available?

Yes  No

- If Yes, state the sources.

10% of B.V.S of A fund

- If No, how did you get the needed fund?

\_\_\_\_\_  
\_\_\_\_\_

- How much funding was needed for construction, tools and MC tools?

Construction LE: 20000  
Tools MC Tools LE: 5500

- Do you need extra funds?

Yes  No

- If yes, for what purpose?

Arb welder

- If Yes, state the needed amount

LE 500 For Tools  
LE \_\_\_\_\_ For \_\_\_\_\_

- What are the present financial regulations of the centre?

Governmental  Investment

Service Investment

Attach a copy.

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### 3. Recording and Monitoring System:

- a. Was the recording system suitable before the program?

Yes  No

- If Yes, what was the system?

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- What is the working system now?

*chemerica*

- Is this system suitable for the centre?

Yes  No

- If No, why is this system not suitable?

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44

- Do you prepare the QPR on time?

Yes  No

- If No, why?

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- Does the QPR solve the problems which are face in the maintenance and repair of equipment?

Yes  No

- o If No, why?

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---

---

4. Maintenance Responsibilities (Role of Levels):

A. **Equipment Utilization:**

- Did you use the equipment in the job for which it was designed?

Yes  No

- If no, why?

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---

- Did you follow the O&M plan which you issued at the beginning of the year?

Yes  No

Λ

- If no, why?

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---

- Did you register the utilization of all equipment day by day in the log books?

Yes  No

- If no, why?

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---

- Do you have any inoperable equipment?

Yes  No

- If Yes, why did you not dispose of this equipment?

---

---

---

5. Role of Private Sector:

A. Service Contracts:

- Did you sign any inspection and service contract with the equipment dealers before the program?

Yes  No

- If No, why?

*not needed*

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- Did you participate in any of the inspection and service contracts demonstration that were held in the governorate during November 1989?

Yes  No

- If Yes. Did you find that the equipment needed these contracts?

Yes  No

- If No, why?

\_\_\_\_\_ *not needed* \_\_\_\_\_  
\_\_\_\_\_

- Did you sign any service contracts with the equipment dealers after that?

Yes  No

- If No, why?

\_\_\_\_\_ *not needed* \_\_\_\_\_  
\_\_\_\_\_

- How many technicians and operators attend the inspection and service contract demonstrations that were held in November 1989?

\_\_\_\_\_ Technicians  
\_\_\_\_\_ Operators

**B. Capability of Private Sector:**

- Are there any private sector workshops nearby?

Yes  No

- If yes, what are the maintenance and repair capabilities of these workshops for the equipment?

-----  
M. repair  
-----

- Do you have any contracts with these private workshops?

Yes  No

- If yes, what are these contracts, and what percentage of total MC costs do they represent?

-----  
-----  
-----

- Are there any problems in dealing with these private sector workshops?

Yes  No

- If yes, identify these problems.

-----  
-----  
-----

**6. Sustainability of Service Delivery:**

- Approximately, what was the percentage of breakdowns of the equipment before and after the program?

Before 40 % After 5 %

- Are there any problems in delivery of equipment service?

Yes  No

1

## QUESTIONNAIRE OF THE PILOT O&M PROGRAM EVALUATION

Governorate: Minya Markaz: Maghagha Village: \_\_\_\_\_

### 1. Role of Different Levels: Water M.M.C

#### A. Number and Type of Equipment:

Type	Diesel	Gloc	Pipe	Compost	pickup	Tankes		Total
No.	20	32	210	2	2	17		

#### b. Manpower:

Type	Ham	Elect	Stork.	pipe	adm	Carpenter	Engineer	Total
No.	2	2	2	5	16	1	1	29

#### C. Role of MC Before Pilot Program:

P1  C

P2  M

P3  K

#### D. Role of MC After Pilot Program:

P1  C

P2  M

P3  K  + P.S

E. Implemented Maintenance and Repair:

Type of Project	Before Pilot Program during 1989							After Pilot Program during 1991						
	No.	Maintenance			Repair			No.	Maintenance			Repair		
		P1	P2	P3	C	M	K		P1	P2	P3	C	M	K
Diesel pump	18	-	48	-	36	2	1	20	-	-	32	-	3	2
Elect pump	30	-	90	-	44	4	2	32	-	-	50	-	5	3
pipe line	180	-	-	-	-	-	-	210	-	-	-	-	-	-
pick up +	2	-	24	-	4	-	-	2	80	20	4	5	1	-
Compect unit	2	-	10	-	3	-	-	2	-	24	4	5	-	-
Tanks	17	-	-	-	-	-	-	17	-	100	-	-	-	-
Total	-	-	72	-	87	6	3	-	80	20	70	10	9	5

What is the annual average of equipment break down, before and after the program?

Before 50%

After 20%

2. Maintenance Facilities:

A. Maintenance Centre Organization:

- Are the maintenance workshops enough to carry out the above mentioned role?

Yes

No

If No., Describe the reasons:

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- Are there any modifications to the building:

Yes

No

If Yes attach a layout with complete dimensions and answer the following questions:

- Define the technical sections which added or modified

\_\_\_\_\_  
Engineering Section  
\_\_\_\_\_

- What is the period of Implementation for the modifications. 4 month.

- Describe the problems faced if any.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- Is there enough area for manoverability inside the building.

Yes

No

If No, what are the problems

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

#### B. Tools and Machine Tools:

- Were there any shortages of tools and MC tools at the beginning of the pilot program?

Yes

No

- If Yes, who prepare the list and its technical specifications?

\_\_\_\_\_ *governorate and* \_\_\_\_\_  
\_\_\_\_\_ *water P.C* \_\_\_\_\_  
\_\_\_\_\_

- Did Chemonics office review the needed tools and MC tools, specifications, and tender documents?

Yes  No

If No, who reviewed it?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- Did Chemonics review the tender evaluation documents for tools and MC tools?

Yes  No

If No, who reviewed them?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- Are there any tools and special tools for biannual maintenance and medium repair for the heavy equipment financed by USAID?

Yes  No

- If Yes, attach a list of what is available?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

*Handwritten mark*

- If No., why? Why were these not purchased?

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**C. Manpower:**

- Where there any shortage in the manpower before the beginning of the pilot program?

Yes  No

- If Yes, What was needed?

Type	Welder	Operator						Total
No.	1	1						2

- How did you make up for this shortage?

- By transfer No. \_\_\_\_\_ Trades \_\_\_\_\_
- By hiring No. \_\_\_\_\_ Trades \_\_\_\_\_
- By contracting No. \_\_\_\_\_ Trades \_\_\_\_\_

- Is there still a shortage in the manpower?

Yes  No

- If yes, give the number 2, trade Technical

- Were any training programs implemented to upgrade manpower capabilities?

Yes  No

- If Yes, describe the training programs and the number of trainee in each.



- Was there a maintenance committee at the governorate and markaz levels before the program?

Yes  No

- If No, does it exist now?

Yes  No

- If Yes, list its members.

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---

- If No, give the reasons.

---

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---

- Describe the role of the markaz service to Village Councils.

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P3 - M - Training

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- What regulations the center management before the program?

Government  Services Investment

- What is the centre management regulation now?

Governmental  Services Investment

95

**E. Finance:**

- Were funds needed for modification, rehabilitation or construction of the maintenance centre available?

Yes  No

- If Yes, state the sources.

\_\_\_\_\_ *LDT* \_\_\_\_\_  
\_\_\_\_\_

- If No, how did you get the needed fund?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- How much funding was needed for construction, tools and MC tools?

Construction LE: 30516  
Tools MC Tools LE: 13000

- Do you need extra funds?

Yes  No

- If yes, for what purpose?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- If Yes, state the needed amount

LE \_\_\_\_\_ For \_\_\_\_\_  
LE \_\_\_\_\_ For \_\_\_\_\_

*9/1*

- What are the present financial regulations of the centre?

Governmental

Investment

Service Investment

Attach a copy.

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---

### 3. Recording and Monitoring System:

- a. Was the recording system suitable before the program?

Yes

No

- If Yes, what was the system?

---

---

---

- What is the working system now?

---

*Chemonics*

---

- Is this system suitable for the centre?

Yes

No

- If No, why is this system not suitable?

---

---

---

- Do you prepare the QPR on time?

Yes  No

- If No, why?

---

---

---

- Does the QPR solve the problems which are face in the maintenance and repair of equipment?

Yes  No

- If No, why?

---

---

---

4. Maintenance Responsibilities (Role of Levels):

A. **Equipment Utilization:**

- Did you use the equipment in the job for which it was designed?

Yes  No

- If no, why?

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---

- Did you follow the O&M plan which you issued at the beginning of the year?

Yes  No

- If no, why?

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---

- Did you register the utilization of all equipment day by day in the log books?

Yes  No

- If no, why?

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- Do you have any inoperable equipment?

Yes  No

- If Yes, why did you not dispose of this equipment?

---

*on going*

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5. Role of Private Sector:

A. Service Contracts:

- Did you sign any inspection and service contract with the equipment dealers before the program?

Yes  No

- If No, why?

---

*Not needed*

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---

- Did you participate in any of the inspection and service contracts demonstration that were held in the governorate during November 1989?

Yes  No

- If Yes. Did you find that the equipment needed these contracts?

Yes  No

- If No, why?

\_\_\_\_\_ *not needed* \_\_\_\_\_  
\_\_\_\_\_

- Did you sign any service contracts with the equipment dealers after that?

Yes  No

- If No, why?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- How many technicians and operators attend the inspection and service contract demonstrations that were held in November 1989?

\_\_\_\_\_ Technicians  
\_\_\_\_\_ Operators

**B. Capability of Private Sector:**

- Are there any private sector workshops nearby?

Yes  No

- If yes, what are the maintenance and repair capabilities of these workshops for the equipment?

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----- ~~Major~~ Capital repair -----  
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- Do you have any contracts with these private workshops?

Yes  No

- If yes, what are these contracts, and what percentage of total MC costs do they represent?

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- Are there any problems in dealing with these private sector workshops?

Yes  No

- If yes, identify these problems.

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**Sustainability of Service Delivery:**

- Approximately, what was the percentage of breakdowns of the equipment before and after the program?

Before 50 % After 20 %

- Are there any problems in delivery of equipment service?

Yes  No