PN-ACQ-615

An Organizational Analysis of the National Organization for Potable Water and Sanitary Drainage (NOPWASD)

Final Report

Prepared for the United States Agency for International Development
under Contract #HNE-C-00-96-90027-00

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January 2000

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FORWARD

Collaborative Approaches for Resolving Water Issues

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الملحق التنفيذى

قامت الحكومة المصرية بصياغة مشروع قرار جمهورى جديد لدعم إعادة الهيكلة المطلوبة فى قطاع المياه والصرف الصحى . وجاء مشروع القرار الجمهورى المقترح شاملا فى منهجه بحيث يكون الغرض من ورائه تحقق التغيرات التالية فى القطاع:

- لامركزية تخطيط وتوصيل الخدمات لوحدات الحكم المحلى.
- التوجه التجارى بوظيفة المرافق لتسهيل الاستقرار المالى والتشغيلى فيها.
- استحداث "إطار تنظيمى Regulatory structure "يسمح بتحرير التعريفة بحيث تعكس تكلفة الخدمات بدقة.
- إيجاد مناخ عمل ومناخ تنظيمى يشجع ويسهل مشاركة القطاع الخاص فى قطاع المياه والصرف الصحى.

حددت الأهداف الرئيسية الآتية للتحليل التنظيمى للهيئة القومية لمياه الشرب والصرف الصحى:

- تحديد الخطوات التى يمكن للهيئة القومية أن تقوم بها فى المدى القريب لتطوير ما تقوم به حاليا.
- تحديد الخطوات ذات الأولوية التى تحتاج الهيئة القومية لاتخاذها لكى تتمكن من القيام بالدور والوظائف الجديدة الموكلة إليها بموجب مبادرة تطوير القطاع.
- وضع جدول زمنى لإدارة التغيير يضمن إمكانية تحقيق هذا التحول فى الهيئة فى ضوء المطالب الأخرى فى القطاع.
- توفير التوجيه اللازم للجهات المانحة بين الخيارات المختلفة لتقديم المساعدة الفنية للهيئة القومية لتسهيل عملية الإصلاح المؤسسى.

قضايا السياسة التنظيمية للهيئة القومية الواردة فى تطوير القطاع

إن التحدى الأكبر الذى يواجه الهيئة القومية هو تحقيق التحول تنظيميا وفى المهارات من هيئة تحدد وتنفذ استراتيجية الحكومة المصرية فى المياه والصرف الصحى إلى هيئة تضع السياسات والمعايير المعتمدة وتقترح الاستراتيجيات والاحتياجات، وتسهل تنفيذ الاستراتيجيات على مستوى وحدات الحكم المحلى.

الهيكل التنظيمى للهيئة القومية وأداؤها حاليا

إن الهيئة القومية لمياه الشرب والصرف الصحى عبارة عن جهاز عالى التخصص متعدد المهارات. وقد سعت الهيئة القومية على مدى السنوات الماضية لتحقيق الاكتفاء الذاتى لمواجهة مسئولياتها باعتبارها الجهاز الرئيسى لتطوير للبنية الأساسية للمياه والصرف الصحى للحكومة ووحدات الحكم المحلى، وذلك بتنظيم نفسها وتوظيف الكوادر اللازمة.

وقد وصل عدد العاملين فى الهيئة القومية حتى كتابة هذا التقرير حوالى ٢٠٠٠ من المتخصصين والقائمين بالأعمال المساعدة، يعمل اكثر من ٤٠٪ منهم فى الأنشطة المتصلة بتنفيذ المشروعات فى مواقعها ويتواجدون فى المكاتب الإقليمية ومواقع المشروعات فى جميع أنحاء الوجهين البحرى والقبلى.

وتتميز الهيئة بتعدد عناصرها وبكثرة الوظائف التى تتبع السيد رئيس الهيئة مباشرة، وبتداخل بعض الأنشطة بين الإدارات المركزية المختلفة، ووجود عدد كبير من العاملين فى مواقع حساسة بدون مهام محددة لهم مما يتسبب فى ضياع وقت الإدارة فى الهيئة، بينما يمكن تكليف القطاع الخاص بالقيام بهذه الأعمال بكفاءة وتكلفة أوفر.

ولا تستخدم الهيئة تفاصيل كافية فى التخطيط الإستراتيجي أو معايير معتمدة لوضع الأولويات عند تحديد الاحتياجات على مستوى الدولة وبالذات فى ضوء الموارد المالية المحدودة لتلبية هذه الاحتياجات. هذا بالإضافة إلى أن الهيئة تعانى من النقص فى النظم

المتقدمة لإدارة البرامج وإدارة المشروعات والتى توفر بيانات اكثر دقة وأدوات أفضل لاتخاذ القرارت.

ولأن الهيئة فى معزل عن وحدات الحكم المحلى والهيئات الاقتصادية العامة وشركات المياه والصرف الصحى، فقد أصبح هناك غالبا سلوكا يعكس " عدم الملكية" فى أثناء عملية تنفيذ المشروعات وقبول واستلام المرافق الجديدة بواسطة وحدات الحكم المحلى المعنية. وتحتاج الهيئة القومية لإشراك عناصر الحكم المحلى فى هذه العملية منذ مراحلها الأولى - بقدر الإمكان - وتشجيعها على تملكها. ويجب أن يكون التزام المحليات بتوفير العمالة اللازمة والموارد المطلوبة شرطا أساسيا لتمويل هذه المشروعات.

الخطوات المقترحة لتطوير أداء الهيئة وقدراتها

قام واضعو هذا التقرير بخلق إطار لتطوير الأداء فى الهيئة وذلك بترتيب القضايا والتوصيات فى ثلاث مجموعات كما يلى:

- تطوير أداء الهيئة لدورها التقليدى.
- بناء قدرات الهيئة القومية فى مجالات المسئوليات الجديدة الواردة فى مشروع قرار التطوير.
- بناء قدرات الهيئة القومية لدعم اللامركزية فى القطاع.

أولا: تطوير أداء الهيئة لدورها التقليدى

معظم التوصيات المقترحة للتطوير فى هذا المجال تركز على تطوير الإجراءات فى الهيئة القومية لمياه الشرب والصرف الصحى عبر الآتي:

- زيادة مسئولية المهندسين الاستشاريين الذين يخدمون الهيئة القومية وذلك أثناء مرحلة الانشاء.
- تركيز الموارد لاستكمال المشروعات التى تأجلت لمدد طويلة.

- اعتبار نزع ملكية أراضى مواقع المشروعات للمنفعة العامة وضمان حق الطريق مسئولية وحدات الحكم المحلى وشرط سابق لبدئ أى مشروع.
- زيادة إشراك المحليات بشكل واضح فى التفتيش على وقبول واستلام المرافق الجديدة.
- تطوير ا لرقابة على الميزانية وجدولتها .
- إعداد خطط لإعادة التنظيم بحيث تركز على أنشطة ومسئوليات وحدات التشغيل والحد من عدد المسئولين الذين يتبعون رئيس الهيئة مباشرة وقصرهم على فريق الإدارة العليا.

ثانيا: بناء قدرات الهيئة القومية فى مجالات المسئوليات الجديدة الواردة فى مشروع قرار التطوير

- تطوير أساليب مسح الاحتياجات، وإجراءات التخطيط الاستراتيجى.
- تطوير تخطيط المشروعات، وتحديد الأولويات، ومعايير الجدولة الرأسمالية.
- وضع بروتوكول لدور السكرتارية الفنية للجنة تنسيق السياسات بين الوزارات.

ثالثا: بناء قدرات الهيئة القومية لمياه الشرب والصرف الصحى لدعم اللامركزية فى القطاع

- التحول للقيام بدور " إدارة المنح" والإشراف على تعاقدات الهيئات الاقتصادية العامة.
- بناء قدرات الهيئات الاقتصادية العامة لمساعدتها فى حل مشكلات إدارة المرافق ومشكلات الدعم الفنى مع التركيز على تطوير الاداء.
- الارتقاء بالتخصص فى القطاع عبر برامج الحصول على رخص العمل فى الوظائف المختلفة.
- تطوير القدرات بهدف توفير الدعم الفنى اللازم للهيئات الاقتصادية العامة إثناء التعاقد على خدمات مشاركة القطاع الخاص.

الجدول الزمنى لعملية إدارة التغيير والفرص المتاحة للحصول على مساعدة الجهات المانحة

يقترح التقرير جدول لعملية إدارة التغيير فى الهيئة القومية لمياه الشرب والصرف الصحى. حيث يتعين إدارة عملية هذا التحول بحرص لوجود بعض المشروعات تحت التنفيذ ويجب مباشرتها يوميا. وفى ضوء ما تقدم فقد وضع البرنامج لينفذ على مدى خمس سنوات.

وهناك مجالات واضحة يمكن للجهات المانحة - بل يجب عليها - أن تشترك فيها من خلالها لتقديم الدعم الفنى للهيئة القومية. وفيما يلى المجالات التى يمكن للجهات المانحة أن تساعد فيها :-

- الرقابة على موازنات المشروعات والرقابة على جدولتها وتشمل تقديم الدعم الكامل لوظيفة نظم إدارة المعلومات فى الهيئة القومية لمياه الشرب والصرف الصحى، وفى تحديد الاحتياجات لإدارة البيانات وإدارة التقارير، واختيار برامج الكمبيوتر، والتدريب على تطبيقاتها واستخدامها.
- السياسات والإجراءات للمسح وتحديد الاحتياجات والتخطيط الإستراتيجي، بالإضافة إلى تخطيط المشروعات، وتحديد الأولويات، وتحديد مراحل إنفاق رأس المال.
- بناء القدرات لإدارة المرافق فى الهيئة القومية وفى الهيئات الاقتصادية العامة.
- تصميم وتنفيذ برامج الحصول على رخص التشغيل.

EXECUTIVE SUMMARY

The Government of Egypt has drafted a new presidential decree to support the desired restructuring of the water supply and wastewater sector. The proposed presidential decree is comprehensive in its approach in that its underlying purpose is the achievement of the following changes in the sector:

- Decentralization of the planning, implementation, and delivery of services to local government;
- Corporatization of the utility function to facilitate financial and operational sustainability of these enterprises;
- Creation of a regulatory structure that allows for the rational liberalization of tariffs to reflect the true cost of service accurately; and
- Creation of a regulatory and business environment that encourages and facilitates private sector participation in the water and wastewater sector.

As documented in this report, the primary objectives in conducting the organizational analysis of the National Organization for Potable Water and Sanitary Drainage (NOPWASD) are to:

- Identify near-term actions that NOPWASD can implement to improve its operations;
- Identify priority actions that NOPWASD will need to take to fulfill the new functions and roles delegated to it under the proposed sector reform initiative;
- Develop a change management time schedule to ensure that the transition of the organization is practical in terms of the sector's other demands; and
- Provide guidance to donors on options for providing technical assistance to NOPWASD to facilitate this institutional reform process.

Organizational Policy Issues for NOPWASD under Sector Reform

The major challenge facing NOPWASD is to make the organizational and skills transition from an organization that defines and executes the water and wastewater strategy of the Government of Egypt to one that develops policy and standards, recommends needs and strategies, and facilitates implementation of those strategies at the local government level.

Current NOPWASD Organizational Structure and Operational Performance

NOPWASD is a highly specialized, multi-skilled organization that has sought to staff and organize itself, over the years, to be fully self-sufficient in meeting its responsibilities as the principal developer of water and wastewater infrastructure for the Government of Egypt and its local governments.

As of this writing, NOPWASD staff is composed of nearly 2,000 professionals and support personnel, more than 40 percent of which are associated with project implementation activities in the field and are working in regional offices and at project sites throughout Upper and Lower Egypt.

The organization is highly fragmented, with too many staff directly reporting to the Chairman. There are some overlapping skill sets between various central departments. There are a large number of non-mission critical staff members who consume management time within the organization and whose services might be more efficiently and cost-effectively procured from the private sector.

The organization is not using sufficiently detailed strategic planning and priority setting criteria in establishing the needs of the country, particularly in light of the limited financial resources available to address those needs. In addition, the organization suffers from a lack of the sophisticated program and project management systems that would provide for more accurate data and better decision-making tools.

Because NOPWASD is too isolated from local units of government, public economic authorities (PEAs), and water companies, there often is a "lack of ownership" in the project delivery process and final acceptance of the completed facilities by these local government units. NOPWASD needs to bring the local units of government into the process as early as possible and encourage them to take as much ownership as possible. Local government commitment of personnel and resources should be a prerequisite to funding the projects.

Recommended Actions to Improve NOPWASD's Performance and Capabilities

To create a framework for improving performance, the authors of this report have categorized the issues and recommendations in this report into three major categories:

- Improving NOPWASD's performance in its traditional role;
- Developing capacities within NOPWASD in new areas of responsibility as stated in the draft decree; and
- Developing capacities within NOPWASD to support decentralization in the sector.

Improving NOPWASD's Performance in Its Traditional Role

A majority of the recommended improvements under this category are focused on improving procedures within NOPWASD by:

- Increasing the responsibility of consulting engineers serving NOPWASD during construction;
- Focusing resources on completion of long-delayed projects;
- Making local governmental units and PEAs responsible for land acquisition and rights-of-way, as a condition of project initiation;
- Significantly increasing the involvement of local government in construction inspection and acceptance;
- Improving project budget and schedule control; and
- Developing a reorganization plan to focus activities and responsibilities of operating units, and limiting the staff who directly report to the Chairman or to a senior management team.

Developing Capacities within NOPWASD in New Areas of Responsibility as Stated in the Draft Decree

- Improve needs assessment surveys and strategic planning procedures;
- Develop project planning, priority setting, and capital phasing criteria; and
- Develop protocol for role at Technical Secretariat to the Interministerial Policy Coordinating Committee (IPCC).

Developing Capacities within NOPWASD to Support Decentralization in the Sector

- Transition into a grants management role overseeing PEA contracting;
- Build capacity to assist PEAs in utility management problems and technical assistance problems focused on performance improvement;
- Increase professionalism in the sector through certification of operators; and
- Develop capabilities to provide technical support to PEAs during privates sector participation (PSP) service procurements.

Schedule of the Change Management Process and Opportunities for Donor Assistance

The report presents a suggested schedule for the change management process within NOPWASD. This transition process must be managed carefully, since there are projects in process that must be addressed daily. In light of this, the suggested schedule has been structured to be implemented over five years.

There are clearly areas where donors can and should get involved in providing technical assistance to NOPWASD to facilitate this transition process. Particular areas where it would appear that donor assistance would be helpful are:

- Project budget and schedule control to include fully supporting the management information system function within NOPWASD in defining data management and reporting needs, selecting software, and training in application and use;

- Policies and procedures for proper needs assessment surveys and strategic planning, as well as project planning, priority setting, and capital phasing;

- Utility management capacity building both within NOPWASD as well as in the PEAs; and

- Design and implementation of an operator certification program.

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CHAPTER 1
BACKGROUND

Introduction

The Government of Egypt has indicated that the water and wastewater sector in Egypt needs major restructuring so that it can be both timely and efficient in responding to the needs of the Egyptian people for reliable and cost-effective potable water and sanitary drainage services.[1]

Under the current laws of the Government of Egypt (Presidential Decree No. 197/1981), the National Organization for Potable Water and Sanitary Drainage (NOPWASD) exists and is empowered to act as the national authority, under the Ministry of Housing, Utilities, and Urban Communities, for the purpose of consolidating and nationalizing the water and wastewater sector.

A new presidential decree has been drafted, with the technical assistance of a Legal, Institutional, and Regulatory Reform Program (LIRR) advisory team, funded by the United States Agency for International Development (USAID), to support the desired restructuring of this sector. This proposed presidential decree is comprehensive in its approach in that its underlying purpose is the achievement of the following changes in the sector:

- Decentralization of the planning, implementation, and delivery of services to local government;
- Corporatization of the utility function to facilitate financial and operational sustainability of these services;
- Creation of a regulatory structure that allows for the rational liberalization of tariffs to reflect the true cost of service accurately;
- Creation of a regulatory and business environment that encourages and facilitates private sector participation in the water and wastewater sector.

The primary objectives in conducting this organizational analysis of NOPWASD are to:

- Identify near-term actions that NOPWASD can implement to improve its operations;
- Identify priority actions that NOPWASD will need to take to fulfill the new functions and roles delegated to it under the proposed sector reform initiative;
- Develop a change management time schedule to ensure that the transition of the organization is practical in terms of the sector's other demands; and
- Provide guidance to donors on options for providing technical assistance to NOPWASD to facilitate this institutional reform process.

[1] For the remainder of this report, sanitary drainage will be referred to as wastewater.

Background

NOPWASD's current responsibilities in providing water and wastewater services are quite broad and highly centralized. There are a number of specific problems that could be highlighted and that need to be addressed within NOPWASD's current organization. However, current responsibilities, and the procedures and practices that have been established to fulfill these responsibilities, have created three problems that are of principal importance:

- Because decision making on project needs, planning, design, and implementation is highly centralized, there is little "ownership" of the process of creating water and wastewater infrastructure, at either the municipal or governorate level, until the time of facility turnover.

- Because of this lack of local ownership, many local governments have chosen not to accept a facility, for a variety of reasons, which then leaves NOPWASD in the position of serving as the operator of those facilities, with no off-setting income.

- This "top-down" approach has, more recently, placed NOPWASD in a "demand-for-services" situation, where they are unable to meet that demand in a timely and efficient manner.

Comparison of Current and Draft Presidential Decrees

Table 1 compares the responsibilities of NOPWASD under Presidential Decree No. 197/1981 with the responsibilities as currently contained in the draft presidential decree to support the desired restructuring of the water and wastewater sector.

A simple reading of both the current and draft presidential decrees may leave the impression that little has changed for NOPWASD in this sector reform process, except that some of NOPWASD's responsibilities have been increased, particularly in strategic planning and project prioritization, while others have been clarified. It is critical, however, to keep in mind the underlying purpose of the entire sector reform process to achieve the changes in the sector. Therefore, it is not so much that NOPWASD's responsibilities will change but that NOPWASD will change the way in which it fulfills those responsibilities.

Approach and Methodology Applied in the Analysis

To provide an objective understanding of the issues that needed to be considered in conducting the organizational analysis of NOPWASD, FORWARD reviewed a number of documents, including:

- NOPWASD Organizational Analysis terms of reference (TOR) prepared by USAID/Egypt;

- Draft Decree of the President of the Republic concerning Reorganization of the Water/Wastewater Sector, dated 23 August 1999;

- Presidential Decree No. 197/1981 on the establishment of NOPWASD;

Table 1
Comparison of Current and Proposed NOPWASD Responsibilities

Presidential Decree No. 197/1981	New Draft Presidential Decree
1. Develop general, national level plans for water and wastewater works and follow up with their implementation.	1. Work as the Technical Secretariat for the Water Sector in support of the Sector for Housing and Utilities of the Ministry of Housing, Utilities, and New Urban Communities.
2. Coordinate plans for potable water and sanitary drainage to achieve integration between the two.	2. Prepare strategic plans at the national level for the water and wastewater sector, relate them to the state development plan, and submit them to the Sector for Housing and Utilities.
3. Conduct studies and research, which are specific to safe drinking water, and sewerage and sanitary drainage and participate in setting criteria for potable water and wastewater disposal.	3. Supervise implementation of plans and programs under Item (2) above after Sector for Housing and Utilities' approval.
4. Set conditions and standard technical specifications for water and wastewater projects.	4. Prepare guidelines for sector plans at governorate level, provide technical assistance, and verify conformity.
5. Provide technical consultation in the fields of water and wastewater.	5. Set criteria for selection of projects from local authorities/companies to include in NOPWASD plan and jointly prepare investment plan.
6. Establish training centers to enhance efficiency in design works, implementation, and operation and maintenance of water and wastewater utilities.	6. Implement large governorate-level projects incorporated under the national capital grants program for water supply and sewerage infrastructure, including the design and preparation of studies, tender documents, specifications and contracts; analyze tenders; award contracts; and supervise implementation and acceptance of the same and transfer of assets and obligations to the entity in charge of operations and maintenance.
7. Assist governorates in studies and research; prepare designs of large-scale projects or projects of a special nature and supervise implementation.	7. Set codes and specifications for materials, requirements, and equipment for establishment, operation, and maintenance of water and wastewater utilities in cooperation and coordination with competent agencies; participate, in coordination with all competent entities, in developing a system to monitor compliance of all concerned entities.
8. Assist governorates in drafting contracts for projects under Item (7) for tender and negotiation, and review and examine tenders.	8. Set codes and specifications for performance criteria and methods of evaluation of water and wastewater plants and networks in terms of technical and environmental aspects, impact on occupational health, safety factors, disaster control, and contingency plans.
	9. Develop and implement programs for the preparation of human resources to enhance the technical and administrative performance of the staff in the sector, through establishing and managing training centers.
	10. Conduct studies and applicable research to address technical problems in the fields of the sector.
	11. Upon request by public/private legal entities, or Arab/foreign countries, act as advisor and provide expertise, technical assistance, and services in water/wastewater projects.
	12. During the first operation cycle, undertake operation, maintenance, and supervision of plants of which their implementation NOPWASD finishes, until the expiry of the guarantee period.

- Functional organizational and responsibilities chart under sector reform prepared by the LIRR Technical Advisory Team dated 25 August 1999; and

- Explanatory Memorandum to the Cabinet—Proposal for Reorganization of the Water/Wastewater Sector with draft presidential decree dated 26 July 1999.

In addition, extensive interviews were conducted with officials, both inside and outside the NOPWASD organization, with FORWARD staff traveling to NOPWASD regional offices throughout Egypt.

In addition, selected interviews were conducted with responsible local officials at the governorate level to include water and wastewater public economic authorities, water companies, and elected local officials.

The schedule of interviews is included in Annex A. The purpose of interviewing officials outside NOPWASD was to gain a better understanding of the nature of the coordination and cooperation that might be required under the proposed presidential decree.

CHAPTER 2
ORGANIZATIONAL POLICY ISSUES UNDER SECTOR REFORM

The major challenge facing NOPWASD is to make the organizational and skills transition from an organization that defines and executes the water and wastewater strategy of the Government of Egypt, to one that develops policy and standards, recommends needs and strategies, and facilitates implementation of those strategies at the local government level.

In this challenge, the starting point is very clear, and the end-point, as defined by the draft presidential decree, is reasonably clear. However, it is the path from the first condition to the second that is fraught with uncertainty. This organizational change management problem is recognized by many senior Egyptian government officials and USAID, and it is the basis for undertaking this organizational analysis.

While the field investigations and interviews that support this organizational analysis were being conducted, a new government was named in Egypt. The significance of this transition on the issues considered in this report is reflected in two newspaper articles printed during that period.

On 15 October 1999, in the *Al Ahram* newspaper, the renamed Minister of Housing, Utilities and New Urban Communities, Dr. Mohamed I. Soliman, stated, "The Ministry's plan for the coming phase includes completion of certain projects currently under execution by the Ministry. Water and wastewater sector reform is the first on this list . . ." The minister also went on to refer to the "coordination with other ministries and concerned organizations and authorities, for the completion of all aspects of legal and administrative affairs to reach the final shape of the structural reform of the water and wastewater sector to enhance its efficiency, reduce water losses, and increase private sector participation in the operation and maintenance, and in the construction of new projects."

The second article appeared on 18 October 1999, in *The Egypt Gazette*, where new Prime Minister Atef Ebeid "stressed keenness on decentralization, transparency and to put the governmental machinery in top shape through the recruitment of experts of the highest caliber."

Although the following are not the only points to be addressed, they do highlight some of the key issues that NOPWASD faces as it makes the transitions to its new role:

- How to gradually reduce direct responsibility for planning, designing, constructing, and operating the water and wastewater infrastructure across Egypt, and to increase the focus on policy development;

- How to direct assistance to the Sector for Housing and Utilities of the Ministry of Housing, Utilities and New Urban Communities for determining service delivery standards, needs assessments, and implementation priorities;

- How to reduce the disputes with local utilities in the planning, design, and implementation supervision of current and future Bab III projects, which continue to be defined as part of NOPWASD's role in the draft presidential decree;

- How to improve the process of certification and acceptance of new facilities by local utilities;
- How to make adjustments and train NOPWASD staff to assume a responsible role in helping to build management, technical planning, project implementation, and operations and maintenance capacity in local governmental water and wastewater enterprises;
- How to manage the process of organizational change within NOPWASD; and
- How to quantify the timing, resource, and management requirements for organizational restructuring within NOPWASD.

CHAPTER 3
ASSESSMENT OF CURRENT NOPWASD ORGANIZATIONAL STRUCTURE AND OPERATIONAL PERFORMANCE

NOPWASD is a highly specialized and multi-skilled organization that has sought to staff and organize itself, over the years, to be fully self-sufficient in the execution of its responsibilities as the principal developer of water and wastewater infrastructure for the Government of Egypt and its local governments.

At the time of this writing, NOPWASD staff total nearly 2,000 professionals and support personnel. More than 40 percent of them are associated with project implementation activities in the field and are working in regional offices and at project sites throughout Upper and Lower Egypt.

Current Organizational Structure and Staffing Levels

The current organizational structure of NOPWASD is presented in detail in Figure 1. The organizational structure is built around a group of central departments, which represent the core functional activities of NOPWASD, and a large number of general departments and offices that provide a variety of support services.

The critical management alignments and lines of reporting are divided between the Chairman of NOPWASD, who has essentially 17 direct reports, and the Head of the Projects Sector, who has 5 direct reports. The Head of the Projects Sector, who oversees all design and project implementation (construction phase) and more than 50 percent of NOPWASD's personnel, also functions as the Vice Chairman, although there is no such authorized title within NOPWASD.

The actual staffing level during the field work phase of this analysis was 1,963 professionals and support personnel. The staffing of the organization by central, general, and other departments is presented in Table 2. This table further divides the staffing by principal disciplines and skilled/unskilled labor. Lastly, the table is further divided under each discipline to show the number of people who are permanent employees of NOPWASD and those who are contracted employees.

Observations Regarding Staffing Levels

Although the organizational analysis project was not intended to make a specific recommendation on the total number of employees within NOPWASD and the proper staffing levels of particular departments, there are observations that can be made from the staffing data.

Figure 1
NOPWASD Current Organizational Structure

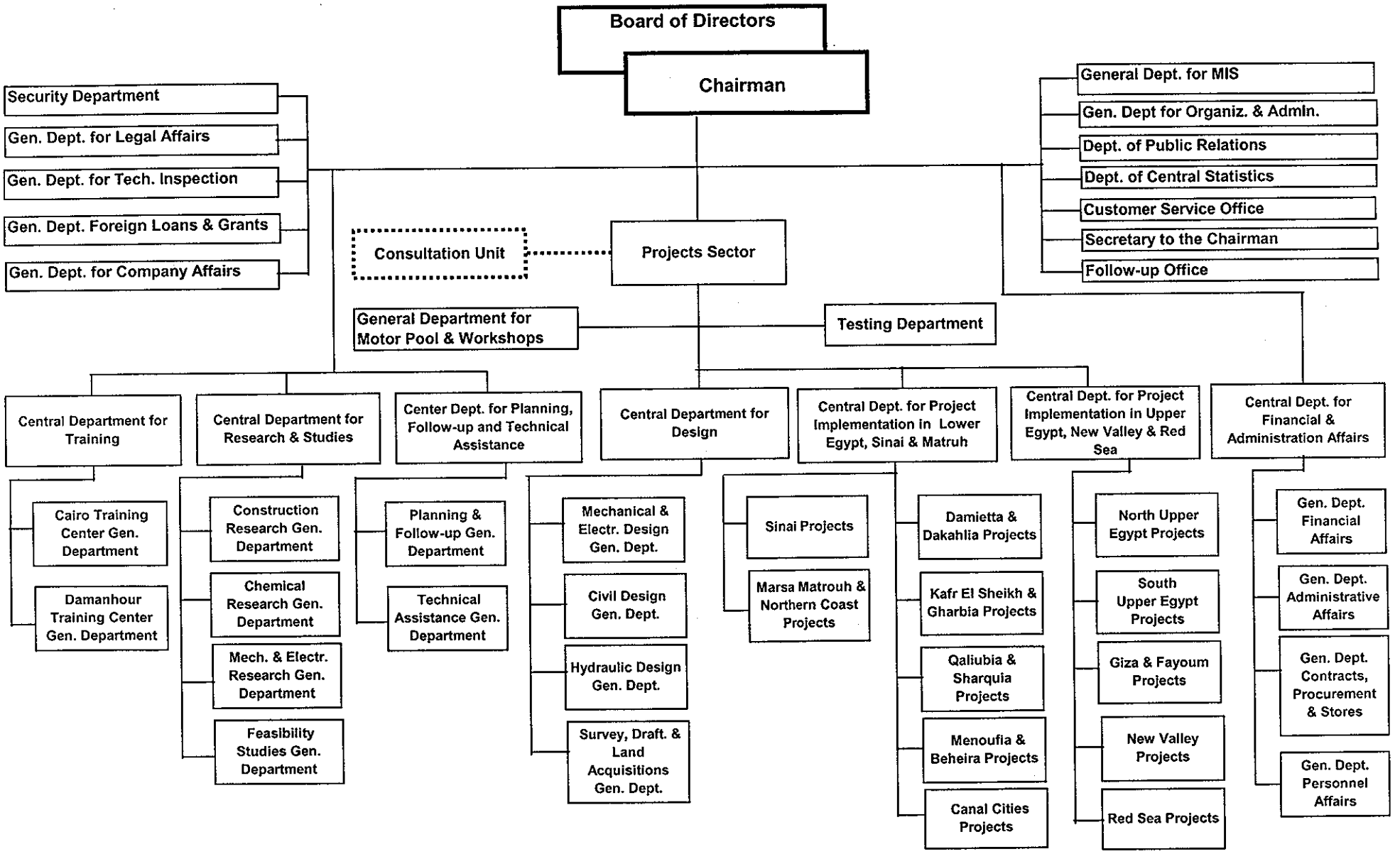

Table 2
NOPWASD Staffing Matrix By Skills and Departments Showing Permanent and Contract Workers

Departments and Skills	Engineers			Accountants			Administration			Lawyers			Chemists			Technicians			Clerks			Labor-Skld			Labor-Unskld			Total		
	P	C	T	P	C	T	P	C	T	P	C	T	P	C	T	P	C	T	P	C	T	P	C	T	P	C	T	P	C	T
Management	21	0	21	3	0	3	4	0	4	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	0	29
Subtotal	21	0	21	3	0	3	4	0	4	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	0	29
Central Departments																														
Planning	17	0	17	1	0	1	0	0	0	0	0	0	4	0	4	2	0	2	14	1	15	1	0	1	3	0	3	42	1	43
Design	104	24	128	1	1	2	3	1	4	0	0	0	0	0	0	23	7	30	11	6	17	3	0	3	14	0	14	159	39	198
Project Implementation																														
Upper Egypt	69	24	93	1	2	3	1	0	1	0	0	0	0	1	1	20	80	100	17	8	25	0	0	0	10	3	13	118	118	236
Lower Egypt	196	64	260	0	8	8	3	3	6	0	0	0	0	2	2	27	183	210	52	21	73	3	0	3	27	12	39	308	293	601
Research & Studies	10	0	10	0	0	0	0	1	1	0	0	0	8	6	14	8	1	9	6	1	7	0	0	0	4	0	4	36	9	45
Finance & Administration	0	0	0	61	9	70	39	3	42	0	0	0	0	0	0	16	2	18	129	21	150	4	0	4	54	7	61	303	42	345
Training	12	3	15	0	1	1	4	1	5	0	0	0	1	0	1	8	1	9	17	1	18	2	0	2	5	5	10	49	12	61
Subtotal	408	115	523	64	21	85	50	9	59	0	0	0	13	9	22	104	274	378	246	59	305	13	0	13	117	27	144	1015	514	1529
General and Other Depts.																														
MIS	1	0	1	3	2	5	3	7	10	0	0	0	0	0	0	3	0	3	4	0	4	0	0	0	1	0	1	15	9	24
Organization & Admin.	0	0	0	1	0	1	3	0	3	0	0	0	0	0	0	0	0	0	8	0	8	0	0	0	1	0	1	13	0	13
Citizen Relations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Central Statistics	0	0	0	2	0	2	2	0	2	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	1	0	1	7	0	7
Public Relations	0	0	0	1	0	1	1	1	2	0	0	0	0	0	0	0	0	0	3	3	6	0	0	0	1	0	1	6	4	10
Office of the Chairman	3	0	3	0	0	0	2	1	3	0	0	0	0	0	0	11	0	11	6	1	7	0	0	0	5	0	5	17	2	19
Technical Office of Chairman	6	0	6	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	8	2	10	0	0	0	1	0	1	16	3	19
Security	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	30	0	30	33	0	33
Legal Affairs	0	0	0	0	0	0	0	0	0	17	4	21	0	0	0	0	0	0	10	0	10	0	0	0	2	0	2	29	4	33
Technical Inspection	6	2	8	0	1	1	0	0	0	0	0	0	0	0	0	1	1	2	4	2	6	0	0	0	1	0	1	12	6	18
Motor Pool/Workshop	2	0	2	0	0	0	1	1	2	0	0	0	0	0	0	15	2	17	5	1	6	148	4	152	6	0	6	177	8	185
Testing	11	0	11	1	0	1	1	0	1	0	0	0	1	0	1	8	1	9	5	2	7	0	0	0	3	0	3	30	3	33
Office of the Vice Chairman	3	0	3	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	2	0	2	10	1	11
Subtotal	32	2	34	8	3	11	15	12	27	17	4	21	1	0	1	38	4	42	62	11	73	148	4	152	54	0	54	365	40	405
Total	461	117	578	75	24	99	69	21	90	18	4	22	14	9	23	142	278	420	308	70	378	161	4	165	171	27	198	1409	554	1963

In terms of engineering expertise, the Design Central Department has 24 contracted engineers, or 19 percent of its total engineering staff, and the Project Implementation Central Department has 88 contracted engineers, or 25 percent of its total engineering staff. Furthermore, the Project Implementation Central Department has 263 contracted personnel that are classified as technicians (functionally referred to as construction inspectors), or 85 percent of their total Construction Inspection staff. If retaining technical skills is important to NOPWASD's success in performing its duties, it would appear that NOPWASD is very vulnerable to changes in the economy. Contracted employees have little reason to stay with NOPWASD if they can get another job that might pay more or have other benefits that are more valuable to the contracted employee. The result is a potential loss of expertise within the organization.

The total staffing of the Finance and Administration Central Department seems rather high. Since 150 (45 percent) of the total of 345 personnel are classified as clerks, there is a significant opportunity to introduce computers into the operations, increase effectiveness and information management, and reduce the long-term cost of labor.

The total staffing level of all general and other support departments is 405 personnel (21 percent) of the total organization of NOPWASD. Furthermore, 185 (46 percent) of that total is located in the Motor Pool/Workshop General Department. There are far too many people performing activities that are not core activities of the organization.

Comments and Observations by Selected Departments

The following provides observations made on the core central departments, plus other support general departments, and local government authorities such as public economic authorities (PEAs), water companies, and governorates.

Central Department for Planning, Follow-up, and Technical Assistance

Planning, Follow-up, and Technical Assistance performs some unique and widely diverse functions within NOPWASD. The planning function initially appears to be a form of strategic planning and needs assessment for the entire country. The planning is based on a concept of a five-year plan rather then an annual rolling program with a five-year horizon. Upon closer examination, the planning function seems to lack the procedures and planning criteria that would be expected to be used in trying to allocate scarce financial resources. Some of this may result from the fact that priority setting and project authorization is largely a political decision.

The department's "follow-up" role is to schedule the use of national capital grants program funds for water supply and sewerage infrastructure that are approved by the Ministry of Planning. This approval comes back as specific project funding levels for the first budget year and lump sum amounts for the remaining four years.

This central department also performs a technical assistance role to water supply and wastewater utilities in local units of government and PEAs, which is not common in a planning unit. This technical assistance is largely in the area of water treatment processes and chemical dosing and seems to overlap with similar resources in the Central Department for Research and Studies.

The department also provides oversight and management for all contract operations and maintenance (O&M) engagements with the private sector to operate facilities that are not assumed by local government after the construction contractor's contractual warrantee period ends. Twenty-three systems are currently under extended contract O&M because the local unit of government, or PEA, had declined to take over ownership and operational responsibility. If administrative changes are not implemented, this number is expected to grow dramatically over the next three to five years as more projects are brought to completion. The funding of these contract O&M engagements is from a "rehabilitation" fund that allocated to each of the governorates from the national government. In turn, needed rehabilitation does not take place and other aspects of the infrastructure deteriorate.

The following are specific observations and comments on activities and procedures of the Central Department for Planning, Follow-up, and Technical Assistance that affect operational efficiency and effectiveness:

- The strategic planning and priority system does not seem well documented and does not provide information on how to allocate scarce financial resources.

- It is not clear that a proper needs assessment is being performed based on defined service levels that can be afforded by the end user.

- The technical assistance function provided by this central department seems to be overlapping with the Central Department for Research and Studies.

- Managing the contract O&M function in this central department does not seem to place the priority issue of facility transfer where it belongs, which is more properly in the Central Department for Project Implementation.

Central Department for Design

This central department is responsible for taking a particular project, once approved for funding by the Ministry of Planning, and managing the project through the technical report, detailed design, and construction bidding/award phases. Although staffed with engineers in a variety of disciplines, it accomplishes the bulk of its responsibilities by engaging private sector consulting engineering firms to prepare the technical reports and detailed designs.

The staff of this central department numbers 198 professionals and support personnel. Within the last two years, the Central Department for Design was reorganized by geographic area, which has distributed scarce personnel resources in some proportional manner among four defined geographical areas of the country. This is not the best way to maximize the utilization of special disciplines, nor does it properly address the project management issue, which is a constant, growing problem for NOPWASD.

Because the turnover rate among technical staff is high, the staff's average number of years of experience is low. The staff is not competitively compensated. An engineer working at NOPWASD with five years of experience could make three to ten times as much working in a similar position in the private sector.

This central department has between 40 and 70 projects in various stages of design. There was no clear project management system in place, except for some simple spreadsheet programs that were prepared by the staff. Consequently, it was very difficult for the staff to present the current status of projects and the costs to date on projects. In addition, staff time spent on individual projects is not recorded or analyzed.

The Central Department for Design suffers from having no clear standards for the technical report phase of projects. This is a critical issue in any engineering design project. Consequently, the quality, accuracy, and completeness of the technical reports prepared by both domestic and international consulting engineering firms is very unpredictable, inconsistent, and difficult to enforce to a standard.

There are often long delays between design and the start of construction. The Central Department for Design must correct problems in the design that are found in the field because the consulting engineering firm has been paid and has no further responsibility for the particular project.

The following are observations and comments on the activities and procedures of the Central Department for Design that affect operational efficiency and effectiveness:

- Distribution of the various technical skills of the workforce by geographic area may not be the best use of talents. It also does not properly address the project management function as a unique responsibility.

- Project management and engineering economics skills seem lacking among the design personnel.

- Project schedule and cost control systems are not adequate and should be a fully integrated system with project implementation.

- Technical report standards to be followed by consulting engineering firms do not exist and, therefore, are not applied.

- Consulting engineering firms are not provided with clear standards for design and documentation, and they are not asked to take sufficient and appropriate responsibility and risk, which should extend into the construction phase.

Central Department for Research and Studies

This central department is involved in a wide variety of activities that are not clearly reflected in its name, including evaluation of vendor technologies, coordination of donor projects in the feasibility phase, standards review, quality assurance/quality control of all plants that NOPWASD has under contract O&M (laboratory function), industrial discharge monitoring in new communities, approval of filter media supplied to NOPWASD projects, and technical support on noncompliance at water/wastewater plants.

Of the 45 personnel in the department, 26 are chemists or chemical technicians. The activities of this group of employees seem to be somewhat redundant with the chemists in the Central Department for Planning, Follow-up, and Technical Assistance.

The following are observations and comments on the activities and procedures of the Central Department for Research and Studies that affect operational efficiency and effectiveness:

- It is unclear why this central department is coordinating donor activities on projects.
- Feasibility studies should be limited to truly research-related studies and not project-related studies, which are best managed within the technical report and detailed design process.
- The chemical research activity seems to be functionally overlapping with the Central Department for Planning, Follow-up, and Technical Assistance.

Central Departments for Project Implementation for Both Upper Egypt and Lower Egypt

Project implementation consists of two central departments known as Upper Egypt and Lower Egypt. Project implementation assumes responsibility for a project immediately after the contract has been negotiated and signed by the successful construction contractor.

Each of the two central departments is further divided into organizations, with each organization responsible for the construction activities in two to three governorates. Table 3 quantifies the distribution of personnel resources in each of the central departments in Upper and Lower Egypt.

Table 3
Distribution of Personnel and Projects by Central Department

	Upper Egypt	Lower Egypt
Discipline/Skill Type		
Managers	15	15
Civil Engineers	49	125
Chemical Engineers	2	4
Mech/Elec Engineers	14	68
Supervisors	100	171
Administrators	20	48
Total Personnel	**200**	**431**
Water Supply Projects		
Standard Systems	68	75
Package Plants/Wells	2	20
20		
Sewerage Projects	105	275
Total Projects	**175**	**370**

Within each governorate, NOPWASD has a General Director for Construction and a number of civil engineers, mechanical/electrical engineers, and site supervisors assigned to him. Another position, the General Director of Planning, documents the progress on the projects in his area and consolidates the input of the various site reports into a report that is sent to the Head of the central department. It was reported that this position works with the local governorate to determine facility needs and provides this information to the Central Department for Planning, Follow-up, and Technical Assistance.

NOPWASD has a significant number of major projects that are extensively delayed in terms of their final completion dates. This has resulted from four operational policies:

1. *Projects that were direct, non-competition awards, where NOPWASD must approve the specialty subcontractors and the final equipment to be supplied to the project.* These were design-build, cost-plus contracts. Many of them are in some form of litigation because of disputes between the general contractor and NOPWASD.

2. *Projects that split awards between civil and mechanical contractors, and the mechanical contract has not been awarded or the equipment being proposed has been rejected by NOPWASD.* Quite often, once the final equipment is approved, there is a need to modify the civil work, already in place to accommodate the approved equipment. This is all at added cost to NOPWASD and the Government of Egypt. It was reported that all new contracts are awarded as single general contractor projects, with single contract responsibility.

3. *Projects that cannot be completed because the land needed for an element of the system has not been acquired.* This was particularly obvious when a treatment plant was built, but the networks were not complete because of land acquisition delays. Therefore, the treatment plant cannot be brought online, and the investment is temporarily of no value to the people.

4. *Projects that were not fully funded and therefore continue to suffer, and the new five-year plans require new project starts to be responsive to a political agenda.* This problem persists today with no obvious solution strategy.

All of these delays have been, and continue to be, extremely costly to the Government of Egypt in terms of change orders resulting from changed conditions and interest on late payments due to the contractors. This is indicative of poor project planning and poor financial scheduling at the outset, then later by poor project management beginning at the technical report phase of a project.

The project management tools that were used by the heads of the two Central Departments for Project Implementation were totally inadequate for the size programs they are managing. These tools were in fact unique to each manager based on what he felt he needed, and they were either generic spreadsheet programs or word processor programs. There is no uniform project tracking and management system within NOPWASD today.

The following are specific observations and comments on activities and procedures of the Central Departments for Project Implementation that affect operational efficiency and effectiveness:

- The Manager of Planning's role in making needs assessments seems misplaced and of limited use in providing accurate project level data because of the lack of a standardized reporting system.

- The timing—and frequent delays in—project funding make construction management totally inefficient.

- Project scheduling and budget management programs and procedures are totally inadequate.

- The inability to transfer completed projects to the responsible local government body will create a major problem over the next three to five years, if not solved.

Central Department for Training

The Central Department for Training manages an extensive training course program based in the center of Cairo and Damanhour, 90 kilometers south of Alexandria. The training courses are presented for NOPWASD staff; governorate, PEA, and water company staff; and other people interested in the field. The training courses cover the technical areas of design, project execution, and operations and maintenance, as well as organizational administration and finance.

Table 4 presents data on the size of the training program and level of participation of attendees.

Table 4
Central Department Training Program

Training Center	Number of Courses	Number of Courses Delivered Per Year	Number of Attendees
Cairo	50	104	1,500
Damanhour	67	156	1,700

The Central Department for Training, which is very much training facility based, is proposing more training facilities be built in Egypt, including a proposed site in Obour to replace the Cairo facility and new training facilities in New Luxor, New Minia, and the Canal Cities.

The Central Department for Training draws its trainers from a variety of sources, including staff from NOPWASD, Cairo University and American Cairo University, and Cairo Water Organization.

Course attendance is voluntary, and attendance fees are paid by their respective governorates or organizations.

The following are observations and comments on the activities and procedures of the Central Department for Training that affect operational efficiency and effectiveness:

- The training facilities are too removed from the people needing the training (Upper and Lower Egypt). Greater use should be made of other institutions of learning for facilities and faculty.

- There are no apparent training needs assessments being performed to define the training most necessary to meet Egypt's capacity-building needs in the sector.

- Training programs need targets. These targets should be operator and utility manager certification.

General and Other Departments

The organizational analysis was intentionally limited, in terms of a detailed analysis, to the core technical central departments. However, the organizational analysis team did conduct discussions with senior managers in some of the general departments and other departments to gain a sense of appreciation of their role within NOPWASD's overall mission.

The following are observations and comments on the activities and procedures of various general and other departments that affect operational efficiency and effectiveness:

- The overall organizational structure has too many direct reports to the Chairman.

- It is questionable whether NOPWASD needs to staff its organization to perform the functions of Central Statistics, Testing, and Motor Pool and Workshops.

- The Consultation Unit creates a potential conflict of interest situation because it provides services to the private sector. Instead, it should function inside the Central Department for Design and focus on consulting support services to public legal entities and Arab/foreign countries.

Governorates, Public Economic Authorities, and Water Companies

An analysis of governorates, PEAs, and water companies was not a part of the project. However, interviews were conducted with the following organizations to gain an understanding of the motivation and capacity of local units of government to carry a larger responsibility for water and wastewater infrastructure project development, implementation, and operation and maintenance.

- Qena Governorate

- Minia Water and Wastewater PEA

- Daqahliya Water and Wastewater PEA

- Damietta Water Company

Despite the perception that is shared in Cairo amongst NOPWASD staff that the local units of government lack the capacity and expertise to manage their own infrastructure programs from beginning to end, there is clear evidence that this is not accurate in the field.

Although the two PEAs visited are not at breakeven in terms of their operating costs, each of their financial performance statements appeared to be improving, year-by-year, with increased revenues and improved collections. These PEAs suffer from sizeable overstaffing (labor costs) because of the requirement that they had to assume all of the water/wastewater staff in each of the municipalities in their governorate, when the PEA was formed.

The municipal officials of Qena are ready and willing to form their PEA and assume greater responsibility for their water/wastewater infrastructure, once the draft presidential decree is signed.

The Damietta Water Company does meet all of its O&M costs out of revenues, and it is not at its current regulatory tariff maximum. It does have some advantage over the PEAs in that it was formed only to provide water supply services and it was allowed to pick only the number of personnel that it felt it needed to operate and maintain the utility.

Based on the above, the following observations and comments can be made:

- Governorates must move rapidly to form PEAs, once the new presidential decree is signed.
- Capacity building at the PEA/water company level must be a top priority for NOPWASD over a sustained (10-year) period.
- PEAs seem to be moving in the right direction in terms of assuming responsibility, building capacity, and improving financial performance.
- Water companies are proving that a water supply utility in Egypt can operate at or better than break-even in terms of its O&M costs.

CHAPTER 4
RECOMMENDED ACTIONS TO ADDRESS NEAR-TERM AND LONG-TERM NOPWASD ORGANIZATIONAL ISSUES

As pointed out in Chapter 2, NOPWASD will be in the midst of a transition once the draft presidential decree is approved by the Parliament and signed by the President. It is currently estimated that the signing of the decree will take place early in 2000.

Also, as pointed out in Chapter 1, it is not so much that NOPWASD's responsibilities change but that NOPWASD change the way in which it fulfills those responsibilities.

This chapter addresses specific issues facing NOPWASD and recommended actions that could be taken to deal with those issues. There are three major categories of issues and recommendations:

- Improving NOPWASD's performance in its traditional role;
- Developing capabilities within NOPWASD in new areas of responsibility as stated in the draft decree; and
- Developing capacities within NOPWASD to support decentralization in the water and wastewater sector.

Defining a Re-engineered NOPWASD

This report has attempted to provide the observations and guidance necessary so that NOPWASD can "re-engineer" itself to efficiently, cost-effectively, and responsively perform its stated duties and responsibilities. It cannot be repeated enough times that NOPWASD's greatest challenge will be to learn to "steer more and drive less." From the perspective of totally understanding the needs of the sector, defining the policies to address those needs, and developing the strategic plans to fulfill those needs, NOPWASD should be seen as the "steward" of the sector.

NOPWASD is, first and foremost, a technical organization, and, therefore, it is capable of re-engineering itself. However, that re-engineering process must be defined by the fundamental guidelines stated above, or it will naturally result in an organization that will ultimately pursue "business as usual."

In re-engineering itself, NOPWASD must take a serious look at its current organizational structure and simplify that structure to be less fragmented, while also reducing the number of direct reports to the Chairman to only executive staff and the senior management team (Figure 2). Within this organizational structure, NOPWASD should further examine all non-core/non-mission essential activities to determine whether these may be better performed by some type of out-sourcing arrangement.

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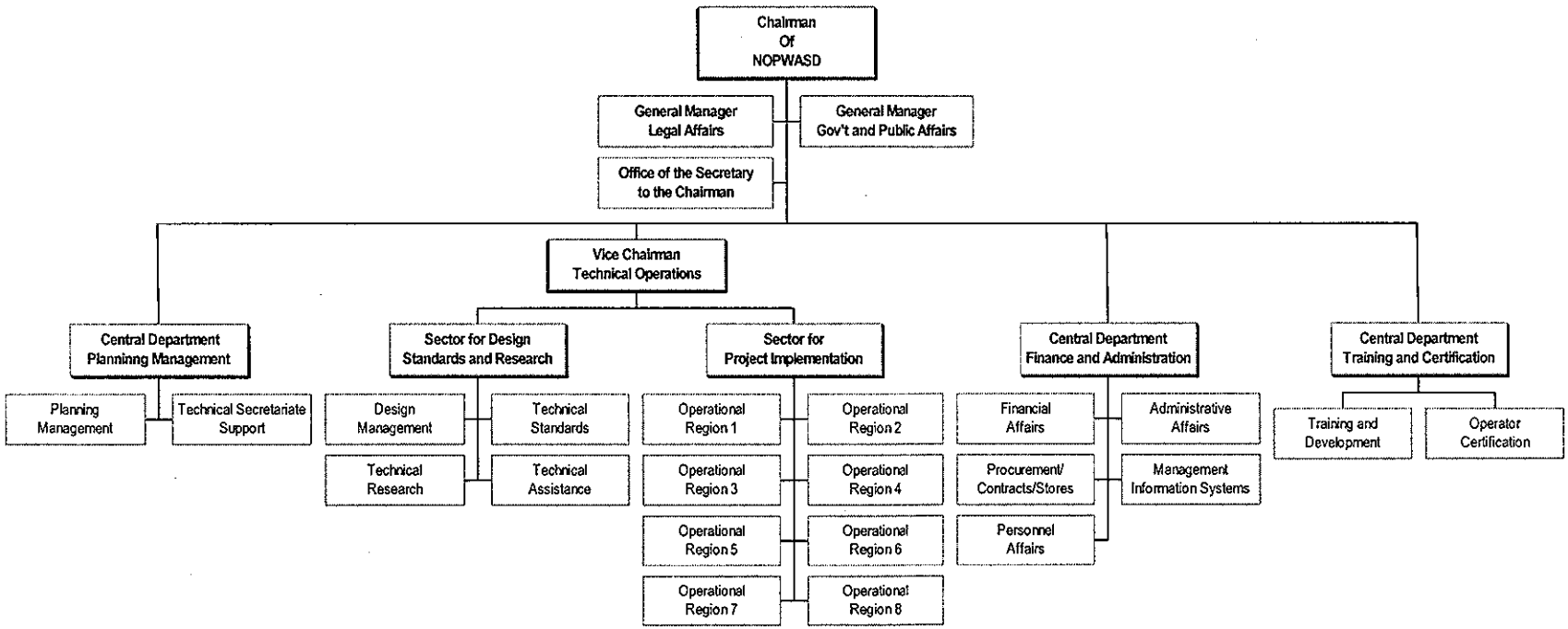
Figure 2
Recommended NOPWASD Organizational Structure



Stated Issues to be Addressed and Recommended Actions

The following describes the three major categories to be addressed, with the issues related to each category listed. With each issue, there is a stated action, as well as a discussion of that action explaining why and how it should be implemented.

Improving NOPWASD's Performance in Its Traditional Role

In the near term, NOPWASD can take a number of actions to improve its overall performance that are within its current capabilities and authorities to implement.

Issue 1: **Completion of currently uncompleted and long delayed projects.**

Action: Immediately review all uncompleted projects, determine and rank the project need, and prepare an estimated cost-to-complete and time-to-complete report on each. Prepare a strategy to address funding needs and timing.

Discussion: A number of policy and administrative decisions were made previously about construction contract awards and construction contract bidding structures that have now created cost and efficiency problems. There are a number of partially completed, yet essentially stopped, construction projects. Each of these projects needs to have a specific, individual action plan prepared that addresses the following:

- Identify the steps needed to resolve any legal barriers to project completion (contractors' lawsuits);
- Determine the extent and estimate the cost of any re-engineering needed; and
- Schedule the availability of funds to complete the project, so that each project proceeds only when full funding is identified and construction can proceed cost-effectively.

Resolving this situation as quickly as possible will return credibility to NOPWASD's capital planning and development program and will communicate how NOPWASD will manage its programs in the future to maximize the effectiveness of funds spent.

Issue 2: **Timely completion of land and right-of-way acquisition.**

Action: Notify local governmental units, PEAs, and water companies that land and right-of-way acquisition is a local responsibility and that projects will not proceed to the next phase until titles to required land and rights-of-way, as defined in the technical report and design documents, have been obtained and provided to NOPWASD.

Discussion: This action will immediately improve the efficiency and timeliness of project delivery, and it will reduce the cost of future re-design. In addition,

it will begin to cultivate the active participation of the local unit of government (governorate or local municipality), or the responsible PEA or water company, so that it becomes an "owner" in the early stages of the project.

NOPWASD must start to communicate to the local units of government that it sees its involvement in the delivery of water and wastewater facilities, through the national capital grants funding program for water supply and sewerage infrastructure, as a partnership with local government. If the local units of government cannot assume the responsibility to secure title to land and rights-of-way, then they are in no position to assume responsibility for the water/wastewater assets either. Only in this way will the ultimate consumers of water and wastewater services see that it is local government—not the National government or NOPWASD—that is not delivering on its promises.

The notification of this proposed change, although within the authority of NOPWASD to do unilaterally, should be made in a collaborative way, by pointing out past problems and current project delays resulting from the lack of titles or rights-of-way. The local units of government and PEAs should be provided with early, transitional support by NOPWASD in this process to demonstrate the intended nature of the partnership between NOPWASD and the local units of government.

Issue 3: **Design engineering contracting and technical report/design standards.**

Action: Review and revise technical report standards and design standards, and document these in manuals of practice. Strengthen consulting contracts to transfer more design risk to the consultants and to ensure compliance with standards.

Discussion: NOPWASD should revise/develop its technical report standards and design standards and enforce compliance with those standards by its contracted consulting engineers.

The technical report, generated prior to final design, is possibly the most critical stage in a project cycle. It is this stage when the detailed, technical "road map" for the project is prepared; where all of the actual site conditions and technical assumptions are finally reviewed; and where the design criteria are agreed upon between NOPWASD and the consulting engineering firm. In that regard, consulting engineering firms must be held accountable to have fully determined the site conditions of a project before the start of design.

The technical report must have a defined level of technical detail, and it must provide all of the basic design data and construction cost estimates to support the final design process, the estimated capital cost, and the scheduling of capital funds.

Even such simple things as the size of drawing sheets on a NOPWASD project should be a standard, with the location of sheet titles and type of drawing sections (civil, yard piping, structural, electrical, mechanical, instrumentation, etc.) all defined.

Issue 4: **Construction contracting with single responsibility.**

Action: Ensure that all construction contracts (civil/mechanical/electrical) are bid as the responsibility of one construction contractor, who shall identify his principal subcontractors in his original bid.

Discussion: Every indication is that NOPWASD has abandoned the idea of splitting contracts between different types of work and awarding this work to different contractors. This practice clearly places NOPWASD in the middle of the project and exposes it, and the project, to conflicts, which NOPWASD will always have to resolve.

The direction in global markets is to move more toward turnkey or design-build contracts, which are bid on a performance and quality specification basis, and which further place the responsibility on one single contractor, thereby making the enforcement of the contract requirements more simple for an organization like NOPWASD.

NOPWASD must understand that this overall approach to contracting, although more effective in terms of having single contract responsibility, places a greater need for clear and accurate bidding and construction agreement documents. Again, this strengthens the case for having well-documented standards and procedures that must be followed by both consulting engineers and contractors in working with NOPWASD.

Issue 5: **Consulting engineering services during construction.**

Action: Engage the consulting engineering firm that did the design work to review and approve shop drawings. Hold them responsible for reviewing and approving change orders, during construction, before submission to NOPWASD.

Discussion: If NOPWASD is going to continue to review shop drawings, it will be continuing to relieve the consulting engineer from further design responsibility. This situation is similar to the one that NOPWASD created when it split construction contracts, in that it placed itself in the middle of the process and thereby assumed a responsibility that is best left with the service provider—in this case, the consulting engineer.

If a construction contractor submits a change order with a request for increased compensation, the consulting engineer must first justify this to NOPWASD and explain why it is not a design error.

NOPWASD should move as quickly as possible to implement a pilot program in this area to see what it will take to eventually transfer all of the shop drawing review effort to the consulting engineering firm that did the design.

Issue 6: **Construction inspection and acceptance.**

Action: At a minimum, involve governorates, PEAs, and water companies in the construction inspection aspect of all projects, and provide qualification and on-the-job training to build PEA/water company capacity. Notify governorates, PEAs, and water companies that no new construction contracts will be awarded unless the governorate, PEA, or water company has identified and committed the required number of personnel to participate in the construction inspection phase.

Discussion: Currently, NOPWASD, through its Project Implementation Central Department, provides construction inspection on all projects that it undertakes. This central department feels itself to be understaffed for the number of projects that it must inspect. At the same time, the existing governorates, PEAs, and water companies want to be more involved in the projects at every stage.

Since NOPWASD is increasing the situation where local units of government and PEAs do not want to accept projects once they are completed, then NOPWASD should encourage early and significant involvement of local units of government and PEAs to build a sense of ownership and responsibility for the facilities. In turn, if local units of government and PEAs are totally involved from the start of construction, it will be harder for them to argue that the facilities are faulty.

In the future, NOPWASD should make the bidding of the construction phase of a project contingent on the local unit of government's or PEAs providing the required number of site inspectors and requiring that these site inspectors take and pass a NOPWASD course on site inspection.

As a further enlargement on this policy, NOPWASD should require governorates and PEAs to provide personnel, on a seconded basis to NOPWASD to actively participate in a project from its inception in the technical process.

Issue 7: **Project budget and schedule control.**

Action: Redesign and upgrade project management reporting. Build management information system capability to institute readily available, computer-based, project management systems. Prepare monthly standard project performance, project schedule, and budget summary reports for all design and construction projects and distribute them to the Chairman and the senior management team.

Discussion: NOPWASD's current project management reporting systems do not gather the type of data and provide the type of timely reports that a major development and implementation organization, such as NOPWASD, should have. Senior central department managers are left to their own resources and techniques to design and develop systems using standard spreadsheet programs that are inadequate to do the job properly.

NOPWASD should assess this problem starting from the point at which a project is authorized to proceed from the Ministry of Planning, since it is at that point in time that a final budget has been defined and an expectation for project completion has been created.

Such a project/program management system would track a project throughout its life and provide management with accurate, timely reports to identify problems and make decisions. Such a system would require time reporting of all personnel in the engineering and project implementation process, as well as accurate cost and budget information. The system would allow for reforecasting of completion costs and completion schedules.

It is impossible for NOPWASD to be successful in its mission of improving the delivery of water and wastewater services across Egypt until it starts to take control of its information management needs.

Develop NOPWASD's Capabilities in the New Areas Stated in the Draft Decree

The issues addressed below assume that the preceding recommendations will be implemented and build on that assumption to develop NOPWASD's capabilities further to respond to its added responsibilities as stated under the draft decree.

Issue 8: **Needs assessment surveys and strategic planning.**

Action: Develop needs assessment guidelines, master planning guidelines, and technical report (facilities planning) guidelines to assist PEAs and water companies in performing their future planning and technical evaluation responsibilities.

Discussion: This issue and action is a clear example of how NOPWASD's role must change under the draft decree. NOPWASD, in this instance, has a clear responsibility to set the standards and the requirements for PEAs to receive funding for nationally funded capital projects for water supply and sewerage infrastructure. These guidelines must be comprehensive and clearly understandable so that all needs assessments, master water and sewerage plans, and technical reports meet a common standard and so that NOPWASD is provided with the information necessary to integrate these needs into the national plan.

Issue 9: **Project planning, priority setting and capital phasing.**

Action: Develop project priority-setting criteria for submission to, and approval by, the Sector for Housing and Utilities of the Ministry of Housing, Utilities, and New Urban Communities, and apply capital phasing models to maximize effective timing and use of funds. Increase training of NOPWASD technical staff in the areas of project financing, budgeting, and phased capital planning.

Discussion: By drawing from the outputs of the proceeding issue, needs assessment surveys, and strategic planning, NOPWASD is the only organization in position to apply project priority-setting criteria and then develop a capital phasing program tied to alternative funding scenarios.

In this area, NOPWASD will need to build greater capability and capacity within its organization in the area of project financing, budgeting, and phased capital planning. It is envisioned that this would entail a combination of finance specialists and engineers, who will receive this special training.

Issue 10: **Technical Secretariat role to the Sector for Housing and Utilities of the Ministry of Housing, Utilities and New Urban Communities.**

Action: Develop a protocol for actions to be taken by NOPWASD in the fulfilling of its Technical Secretariat responsibilities.

Discussion: For the Sector for Housing and Utilities to be effective in its duties, it is critical that the role of the Technical Secretariat, NOPWASD, be clearly understood from the outset. The role of a Technical Secretariat is not to be obedient and simply wait to do whatever it is told, but rather to develop the annual and scheduled agenda and provide the supporting information that the Sector for Housing and Utilities will need to fulfill its responsibilities.

In this regard, NOPWASD should develop a protocol to include the following duties:

- Prepare a yearly calendar for the Sector for Housing and Utilities with specific schedules for submitting documents and holding meetings and with topics that are tied to the strategic planning and budget cycle of the water and wastewater sector;

- Conduct investigations and prepare reports, as requested by the Sector for Housing and Utilities;

- Present an annual report on the national needs of Egypt for water and wastewater facilities and services;

- Present an annual project priority list, with a phased capital plan, for review and approval by the Sector for Housing and Utilities; and

- On behalf of the Sector for Housing and Utilities, NOPWASD should prepare and conduct an annual *donor briefing session* to assist foreign donors in understanding the infrastructure needs of Egypt and to aid in channeling available funds into the highest priority projects, as well as into governorates or PEAs that are best prepared to absorb the funding.

The organizational responsibility within NOPWASD for the Technical Secretariat function would probably be best placed in the Central Department for Planning, within the recommended organizational structure. The proposed Technical Secretariat Support Department would be staffed with personnel having a cross-section of professional skill sets to include infrastructure planning, capital planning, financial budgeting/forecasting, construction management, and utility management. This group initially would not total more than six to eight personnel and include technicians and clerks. This General Department would use other parts of NOPWASD, as needed, to provide information to support its efforts.

NOPWASD's attendance at presentations before the Sector for Housing and Utilities, as the Technical Secretariat, would always be in the person of the Chairman of NOPWASD.

Develop NOPWASD's Capacities to Support the Decentralization of the Sector

Issue 11: **Grants management and PEA contracting review.**

Action: Develop procedures that will facilitate project contracting by all PEAs while providing the necessary oversight to insure the proper expenditure of national capital grant funds for water supply and sewerage infrastructure by the PEAs.

Discussion: Over time, NOPWASD should remove itself from all of the direct engineering design and project implementation functions that it currently fulfills. In doing this, it will take on a "grants management" role to ensure that the funds provided by the national government are properly applied to the approved projects by the PEAs.

This process may necessitate that NOPWASD develop minimum requirements that a PEA would have to meet to be allowed to undertake its own engineering design and project implementation programs with national funds. These are defined as "delegated authorities," meaning that NOPWASD has the primary authority but that it can determine how and when this authority is delegated. Delegated authority also can be withdrawn if the PEA performs its delegated duties poorly.

Issue 12: **Utility management capacity building and technical assistance in *utility performance improvement.***

Action: Redesign and expand NOPWASD's training programs to address comprehensive utility management and the related issues of strategic planning and business planning, financial management, tariff policy, maintenance management, demand management, and unaccounted-for-water reduction.

Over time, reorganize NOPWASD's project implementation unit to provide a regionally based utility management, operations and maintenance technical assistance service to the PEAs.

Discussion: This is an area where NOPWASD must grow its capabilities to support the overall needs of the sector to build capacity in utility management and cost-effective operation and maintenance management. This type of structured mission can provide high caliber, operational audits of PEAs, particularly when they are out of compliance, to assist in the development of performance improvement programs and provide the training needed to improve performance.

Issue 13: **Improve professionalism in the water/wastewater sector.**

Action: Develop and propose a program for testing and mandatory operator certification. Decentralize training facilities and training delivery to improve access to training in geographic areas of greatest need.

Discussion: Training is most effective when it is related to a qualification that an individual needs to obtain to retain a job. Therefore, NOPWASD could play a major role in improving the professionalism in the sector through the development of regulations, for passage by the proper authorities, to make certification a requirement. This would not be just a one-time event, since maintaining certification could be dependent on an individual attending or receiving a prescribed number of course hours during a specified time period, such as five years.

To make this effective and practical, NOPWASD will have to rethink its training programs so that they are more decentralized and easily accessible to all of the employees of the PEAs.

CHAPTER 5
CHANGE MANAGEMENT TIME SCHEDULE AND DONOR ASSISTANCE OPPORTUNITIES

This chapter presents a suggested schedule for the implementation of a change management process. The transformation of NOPWASD must be managed carefully, since there are a large number of projects in progress that must be addressed daily. At the same time, the various governorates, PEAs, and water companies are at different stages in their ability to be equal and responsible partners.

Change Management Program and Schedule

As Figure 3 shows, the Change Management Program has been structured to be implemented over a five-year period. Based on observations made during the field investigation portion of the analysis, both NOPWASD and the current and future PEAs (current governorates) appear motivated to bring about the changes presented in the Action Plan. These changes would allow projects to go to completion more quickly and would increase local government participation to improve project acceptance.

Within a particular bar, which reflects the scheduling of an entire "action," there will obviously be a number of more detailed actions that will need to be individually defined and scheduled. This organizational analysis was not intended to go into that level of detail. However, such a detailing of the Change Management Program must be done immediately. This, obviously, will require the input of the management team, and their senior staff, to prepare and agree to these detailed actions.

Areas for Donor Technical Assistance

There are clearly areas where donors can and should get involved in providing technical assistance to NOPWASD to facilitate this transition. Particular areas where it would appear that donor assistance would be helpful are:

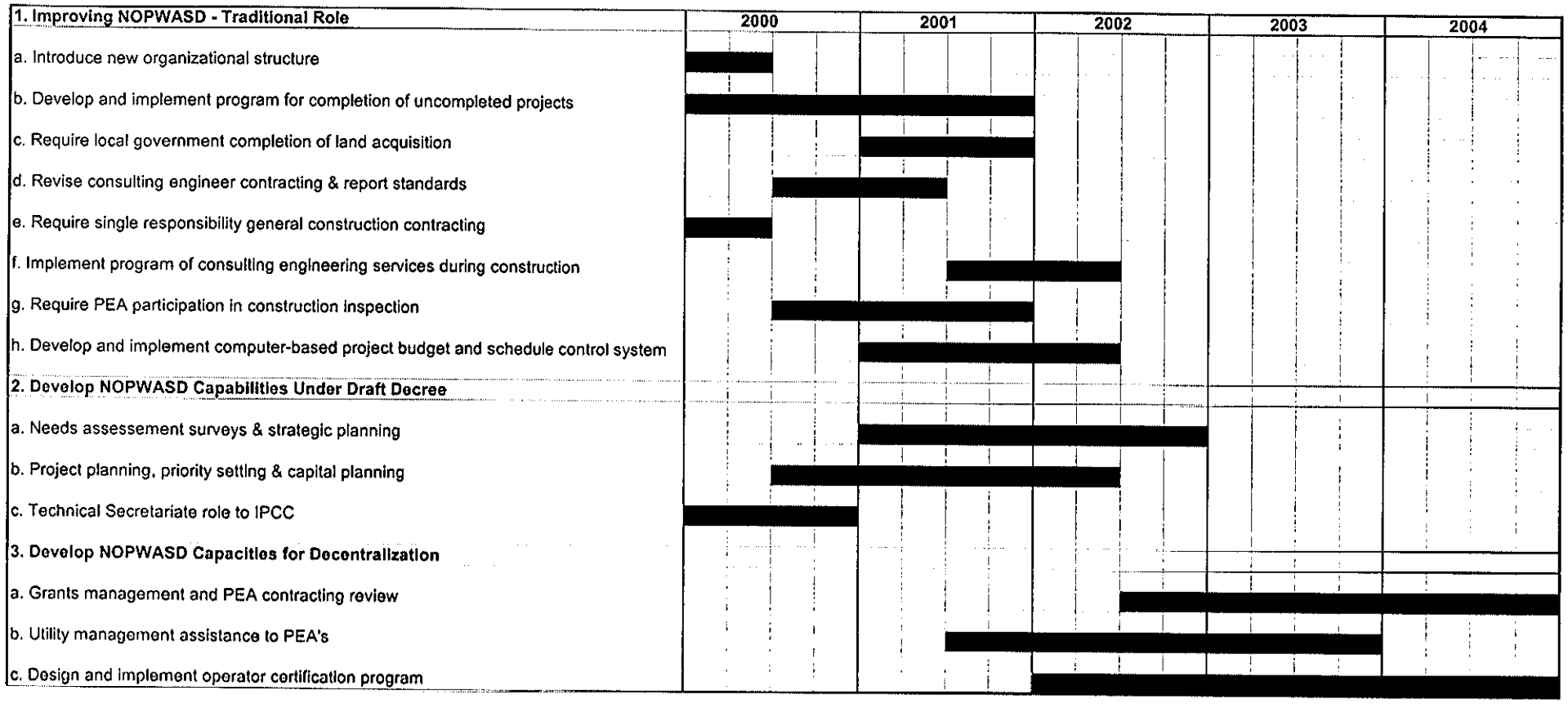
- Project budget and schedule control to include fully supporting the management information system function within NOPWASD in defining data management and reporting needs, selecting software, and training in application and use;
- Policies and procedures for proper needs assessment surveys and strategic planning, as well as project planning, priority setting, and capital planning;
- Utility management capacity building within NOPWASD and the PEAs; and
- Design and implementation of an operator certification program.

In this regard, NOPWASD should prepare donor briefing packages in each of the above areas where it wishes to receive consideration for donor technical assistance. These packages should be of sufficient detail for the donors to understand clearly the scope and magnitude of

the requested assistance and the ultimate benefit that will be derived from the expenditure of funds.

NOPWASD should make a formal presentation to the donor group in Egypt of its technical assistance needs, with all donors receiving a copy of the various briefing packages for their review and consideration. Providing the donors with a copy of the NOPWASD Organizational Analysis Report, along with NOPWASD's current actions to implement the recommendations, might also serve to demonstrate to donors the seriousness that NOPWASD has placed on sector reform and its role within that reform.

Figure 3
NOPWASD Change Management Schedule



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ANNEXES

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ANNEX A
INTERVIEW SCHEDULE

Date	Time	Name and Title – Meeting Topic
Tuesday, Sept. 28, 1999	08:30 – 11:30	Tim Alexander and Mohamed El Alfy, USAID Topic: Reconfirm project direction and objectives based on inception report. (Conducted by telephone with Alexander only)
	13:00 – 16:00	Eng. Sami Emara, Deputy Chairman, NOPWASD Osama Abdel Rahman, Mgr. of Int'l Coop. Talat Kandiel, Manager of CAOA Coordination Topic: Develop consensus on organizational analysis objectives and support of Chairman.
Wednesday, Sept. 29, 1999	09:00 – 15:00	Eng. Saeed Momtaz , Head, Central Department for Engineering Design Topic: Discuss all functions of the department, and meet section managers as appropriate. Eng. Mahmoud Ibrahim, Consultant to Dept. Eng. Fatma Hamana, Gen. Mgr. Computer Lab. Eng. Mohamed Zaki Mohamed Nasir Eng. Saeed El Gohary, Gen. Mgr. Hydraulics
Thursday, Sept. 30, 1999	09:00 – 15:00	Eng. Samir El Nahas, Head, Central Department for Planning Topic: Discuss all functions of the department, and meet section managers as appropriate. Eng. Wedad Mohamed Aly, Gen. Mgr. Planning and follow-up Eng. Ashraf Zakaria, Plng. & Follow-up Eng. Fatma Kamal Aly, Gen. Mgr. Tech Support Eng. Maged El Tayeb, Chemical Hygiene Support
Friday, Oct. 1, 1999		
Saturday, Oct. 2, 1999	08:30 – 09:00	Shafie El Dakrouri, Chairman, NOPWASD Topic: Status report on analysis and policy questions.
	09:00 – 12:00	Eng. Samira Nicola, Central Department, Research and Studies Topic: Discuss all functions of the department and meet section managers as appropriate. Eng. Ahmed Hossam Eddin Kotb, Sr. Eng. Eng. Howida El Mayati
	13:00 – 15:00	Eng. Sayed Tantawi, Head of Contracts Dept. of Procurement and Contracts

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Date	Time	Name and Title – Meeting Topic
Sunday, Oct. 3, 1999	10:00 – 13:00	Eng. Mohamed Tawfik, Central Department, Lower Egypt Implementation Topic: Discuss all functions of the department and meet section managers as appropriate. Eng. Moustafa Abul Fath, Central Department, Upper Egypt Implementation Topic: Discuss all functions of the department and meet section managers as appropriate.
	13:00 – 13:30	Eng. Ahmed El Kadi, Gen. Mgr. Projects Consulting Unit
	9:30	Fly to Luxor and spend the night in Luxor
Monday, Oct. 4, 1999	08:00 – 08:30	Meet with Mohamed Hassan, Project Mgr. Tour of Luxor Water Treatment Plant
	08:30 – 09:30	Drive to Qena
	09:30 – 11:15	Eng. Adel Salama, NOPWASD Lower Upper Egypt Regional Mgr.
	11:30 – 12:00	Governor Safwat Shaker, Qena Governorate
	12:00 – 13:30	Meeting with Governor and Qena Popular Council
	14:30	Drive to Minia (5 hours)
Tuesday, Oct. 5, 1999	09:30 – 10:30	Eng. Adel Sharabas, NOPWASD Northern Upper Egypt Regional Mgr. Eng. Eid Osman Hegazy, NOPWASD Gen. Mgr. for Minia Governorate
	10:30 – 12:30	Samir Abo El Lail, Chairman of Minia PEA and President of Minia City Council Eng. Mahmoud Abu Zied, Vice Chrmn Technical Abdel Salam Abdel Hameed, Gen. Mgr. For Finance and Administration Abdel Wahed Khafagi, Mgr. Employee Affairs
	12:30 – 14:30	Eng. Adel Sharabas, NOPWASD Northern Upper Egypt Regional Mgr. (continuation of prior mtg.)
	15:00	Drive to Fayoum and spend the night

Date	Time	Name and Title – Meeting Topic
Wednesday, Oct, 6, 1999	10:00 – 12:30	Sam Coxson, PADCO Party Chief for Middle Egypt Institutional Strengthening Project
	13:00	Drive to Cairo
Thursday, Oct. 7, 1999	09:45 – 13:00	Fathi Mansour, Central Department, Finance and Administration Topic: Discuss all functions of the department and meet section managers as appropriate. Hassam Aly, Mgr. of Finance
	13:00 – 14:30	Eng. Fouad Mohamed Aly, Head of Central Department of Training
Friday, Oct. 8, 1999		
Saturday, Oct. 9, 1999	07:30	Drive to Daqahliya
	09:30 – 10:45	Eng. Maher Nassif Megalah, NOPWASD Gen. Mgr. for Daqahliya Eng. Ibrahim El Sherbini, Mech/Elec Gen. Supr.
	11:00 – 12:30	Gen. Ahmed Shehab, Chairman Daqahliya PEA Eng. Shawky Mattar, Vice Chairman Abdel Salam Nasser, Mgr. of Finance & Admin Eng. Moustafa Hegazy, Vice Chairman Eng. Amal Mansour Moustafa, Mgr. of Planning and Follow-up
	12:30 – 13:30	Tour of Mansoura Water Treatment Plant
	13:30	Drive to Damietta and spend the night.
Sunday, Oct. 10, 1999	07:30	Drive to Damietta
	10:00 – 11:45	Eng. Mohamed Dessouki, NOPWASD Reg. Mgr.
	12:00 – 14:00	Gen. Ahmed Kadry, Chairman, Damietta Water Co. Eng. Mohana Mikhaiel, Gen. Mgr. for Projects Ibrahim El Selntti, Gen. Mgr. Admininstration
	15:00	Drive to Cairo
	20:00	Dinner with Farid Sweliem, Consultant, former Chairman of NOPWASD, CGOSD, AGOSD

Date	Time	Name and Title – Meeting Topic
Monday, Oct. 11, 1999	10:00 - 12:00 13:00 – 16:00	Fathy Sheihk – Under Secretary, Ministry of Planning Project Analysis at EQI Offices
Tuesday, Oct. 12, 1999	11:00 – 12:00 12:45 – 14:00	Eng. Mahmoud Sarnagawi, 1st Under Secretary for New Communities, Ministry of Housing Ahmad Gaber, President, Chemonics Egypt Sector Reform Discussion
Wednesday, Oct. 13, 1999	09:00 – 16:00 13:00 – 16:00	Project Analysis at EQI Offices Meeting with Tim Alexander and Mohamed El Alfy of USAID at USAID offices
Thursday, Oct. 14, 1999	09:00 – 11:00 12:30 – 16:00	Eng. Sami Emara, Deputry Chairman, NOPWASD Osama Abd El Rahman, Mgr. of Int'l Coop Samira Nicola, Central Department, Research and Studies Tim Alexander and Mohamed El Alfy, USAID Topic: Summary observations from interviews and field trips. Project Analysis at EQI Offices
Friday, Oct. 15, 1999		
Saturday, Oct. 16, 1999	10:30 – 12:30	Nader El Bayoumi, Gen. Mgr. Personnel Affairs Talat Kandiel, Manager of CAOA Coordination
Sunday, Oct. 17, 1999	08:30 – 10:00 10:00 – 10:45 10:45 - 11:30 12:00 – 12:45 12:45 – 13:30 13:30 – 14:00	Shafie El Dakrouri, Chairman of NOPWASD Eng. Sami Emara, Deputy Chairman Osama Abdel Rahman, Mgr. Of Int'l Coop. Tim Alexander and Mohamed El Alfy, USAID Hassan Aly Hassan, Deputry Gen. Mgr. Financial Affairs and Mgr. of the Budget Discuss Bab III Funding Eng. Yassin Bahi Eddin, Mgr. Of MIS Department Discuss management systems and reports Magd El Din Ibrahim, 1st Under Secretary for Utilities, Ministry of Housing Eng. Salah Eddin Hussan, Gen. Mgr. of Testing Department Hassan Omar, Mgr. of Statistics Section

Date	Time	Name and Title – Meeting Topic
Monday, Oct. 18, 1999		Prepare for Senior Management Workshop at EQI offices
Tuesday, Oct. 19, 1999	09:00 – 13:00 13;00 – 16:00	NOPWASD Senior Management Workshop Review Results of Senior Management Workshop and schedule follow-up meetings
Wednesday, Oct. 20, 1999	09:00 – 11:00	Eng. Mohamed Tawfik, Central Department, Lower Egypt Implementation Eng. Moustafa Abul Fath, Central Department, Upper Egypt Implementation
Thursday, Oct. 21, 1999	09:00 – 10:30	Shafie El Dakrouri, Chairman, NOPWASD Topic: Final meeting on comments on workshop Prepare and submit "Exit Report for USAID"

ANNEX B
ACRONYMS

IPCC	Interministerial Policy Coordinating Committee
LIRR	Legal, Institutional, and Regulatory Reform Program
MIS	Management information system
NOPWASD	National Organization for Potable Water and Sanitary Drainage
O&M	Operation and maintenance
PEA	Public economic authority
PSP	Private sector participation
TOR	Terms of reference
USAID	U.S. Agency for International Development

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