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Lebanon Water and Wastewater Sector Support Year-Five Work Plan

September 2013

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Lebanon Water and Wastewater Sector Support
Year-Five Work Plan
September 2013
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DISCLAIMER

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Preface

The United States Agency for International Development (USAID) Lebanon Mission has contracted with Development Alternatives Inc. (LWWSS) to implement the Lebanon Water and Wastewater Sector Support Program (LWWSS) under contract number EPP-I-00-04-00023-00/04. This program has an effective contract date of October 1, 2009, and an end date of April 30, 2015. LWWSS will implement the project with the participation of CDM Smith, ABA, Emerging Markets Group (EMG), ValuAdd Management Services, KREDO and EMC.

In compliance with the provision of the contract, we hereby submit this work plan, covering the period from October 1, 2013 to September 30, 2014. The document presents a general plan forecasting activities throughout the life of the project. It also presents the year-five activities in greater detail. However, the LWWSS program is a demand-driven program and its operative focus is on flexibility and producing the maximum positive impact of any given activity. As a result, changes in this work plan are inevitable and expected.

In conjunction with the annual procurement and training plans, this work plan presents a complete picture of resource allocation, activities and expected accomplishments.

William Parente
Chief of Party

September 2013

Table of Contents

PROGRAM INTRODUCTION.....	4
SUMMARY OF YEAR-FIVE ACTIVITES	6
YEAR-FIVE ACTIVITY DETAILS	8
1. BEKAA VALLEY WATER ESTABLISHMENT	8
2. BEIRUT-MOUNT LEBANON WATER ESTABLISHMENT.....	20
3. NORTH LEBANON WATER ESTABLISHMENT	24
4. SOUTH LEBANON WATER ESTABLISHMENT	36
5. STUDY TOURS AND CONFERENCES.....	49
YEAR-FIVE ACTIVITY TIME FRAME	51
ENVIRONMENTAL COMPLIANCE.....	53

Table of Acronyms

ACWUA	Arab Countries Water Utilities Association
AFD	French Development Agency
BMLWE	Beirut and Mount Lebanon Water Establishment
BWE	Bekaa Water Establishment
CAS	Central Agency for Statistics
CDG	Chairman and Director General
CDM	Camp, Dresser and McKee Engineering
CDR	Council for Development and Reconstruction
CIP	Capital Improvement Plan
CIS	Customer Information System
CSR	Customer Service Representative
CIS	Customer Information System
CLIN	Component Line Item Number
COP	Chief of Party
COTR	Contract Officer Technical Representative
CRM	Customer Relationship Management
DAI	Development Alternatives Inc.
DG	Director General
EIB	European Investment Bank
EU	European Union
ERP	Enterprise Resources Planning
FAS	Finance and Accounting System
GA	Geographic Area and Pilot Area
GIS	Geographical Information System
GIZ	German Technical Assistance
GOL	Government of Lebanon
GNSS	Global Navigation Satellite System
HPIP	High Priority Intervention Plan
HR	Human Resources
H&S	Health and Safety
IAR	Initial Assessment Report
IRG	International Resource Group
IT	Information Technology
IAR	Initial Assessment Report
JDE	JD Edwards MIS platform
KPI	Key Performance Indicator
LWWSS	Lebanon Water and Wastewater Sector Support
LWPP	Lebanon Water Policy Program
MOEW	Ministry of Energy and Water
MMS	Maintenance Management System
MIS	Management Information System
MOF	Ministry of Finance
NLWE	North Lebanon Water Establishment
NRW	Non-Revenue Water
NWSS	National Water Sector Strategy
O&M	Operations and Maintenance
PS	Pump Station
PSP	Private Sector Participation
PPP	Public Private Partnership
RFP	Request for Proposal
SLWE	South Lebanon Water Establishment
TNA	Training Needs Assessment
TOR	Terms of Reference
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WE	Water Establishment
WPS	Water Pumping Stations
WW	Wastewater

PROGRAM INTRODUCTION

1. The LWWSS Program Objectives

Based on the initial LWWSS program objectives of building on previous USAID and other donor program progress, and as a result of lessons learned during the first four years, the LWWSS program has focused on implementing its work plan within specific areas of the water establishments' (WE) operations to address their individual needs and apply knowledge and expertise to leverage the successes accomplished to date.

The program contributes to the WEs' staff capacity building, capital investment planning, operational efficiency, financial management, as well as customer service and outreach. It also helps the WEs invest in their infrastructure and equipment to enable them to improve and extend their services to a larger customer base, and deliver better services to the population.

The areas of focus that the LWWSS program will target include:

- Building management capacity within the WEs
- Increasing financial management capacity and financial systems integration
- Procuring equipment to complement technical assistance and capacity building
- Enhancing capital investment planning and benchmarking capacity
- Funding urgent infrastructure works to enhance delivery of access and coverage

2. The LWWSS Program Challenges

The challenges that face the LWWSS program in year five are many of the same challenges that the program was developed to address in assisting WEs in:

- Streamlining administrative procedures and communications between divisions of the WEs;
- Integrating business processes, modernizing data management, and adopting sound financial management;
- Adopting strategic planning processes that enable the WEs to enhance their financial performance, decrease their costs, and plan ahead;
- Improving the operational efficiency of existing infrastructure, expanding the service coverage to the population, and promoting good practice in operations and maintenance;

Some of these challenges include cases where personnel trained did not perform the functions trained for; lack of discipline and ability to apply disciplinary measures to employees who do not show up for work and who do not carry out the functions for which they have been trained (and certified that they understood the training); and lack of capacity in drafting scopes of work for specific positions.

To mitigate these challenges, the LWWSS program specifies in the letters of commitment with the WE the necessity to increase the WE's discipline for employees,

or work with the respective directors general in training staff and providing model subcontracting agreements that the WE can use. The program also applies a more stringent sustainability review that takes into account lessons learned prior to inclusion in the annual work plan or its amendment during the year.

Not all directors general have the same level of employee discipline and leadership level reaching down to the individual operator or employee. Therefore, when the LWWSS program proposes an activity with a specific WE, it reviews the history of the WE in implementing training and operations and maintenance as a part of its work plan activity proposal. In situations where the LWWSS program has provided training but the personnel trained did not perform the functions trained for, it will provide remedial training after conducting an assessment of the specific situation and location.

The LWWSS program also works with WEs to ensure proper maintenance and operation of equipment procured and installed, as well as systems rehabilitated/constructed by the USG. When the WE does not possess the needed O&M capabilities internally, the program will assist them in outsourcing the services through development of requirements and procedures needed for drafting specifications and scopes of work.

The challenges are addressed through LWWSS' work plan in specific WEs and activities that are presented below. Changes in some activities are expected during the year, and the LWWSS program remains flexible to adapt to changed policies and circumstances of the WEs and the MOEW.

SUMMARY OF YEAR-FIVE ACTIVITIES

1. Background

Over the course of the past four years, the LWWSS program has implemented a series of activities distributed across six program components¹, in four water establishments. Many of these activities were completed, while others are ongoing and will proceed throughout year five and into year six. Some have been modified or suspended, as reported on a case by case basis through work plan updates.

2. Activity Environment

The LWWSS team has planned year five activities (new and ongoing) by taking into account the following:

- **Continuation Activities**

Many of the year five activities (and their sub-components) are continuation activities from year four. They relate to the continuing implementation and support in areas such as equipment procurement, infrastructure services and works, IT support, operation and maintenance of supplied equipment, capacity building in preventive maintenance, and continuing service agreement with suppliers on completed activities.

- **LWWSS Program Activities' Contribution to Other Efforts within the Lebanese Water Sector**

LWWSS' activities are increasingly being integrated into the beneficiaries' projects and other donors' contribution, which further increases the sustainability of these activities and multiplies their benefits. Examples include coordination with GIZ on the BWE needs assessment training for the newly hired employees, as well as with USAID/WISE program on Al Shehabieh pump station in SLWE, among others.

- **Contribution to the WEs' Business Plan Targets and MOEW's National Water Sector Strategy (NWSS)**

In those water establishments where a five-year business plan was drafted and adopted, the LWWSS program is emphasizing activities that contribute to the achievement of those business plan targets and objectives. Further, the LWWSS program is aligning our project work planning to the MOEW's National Water Sector Strategy (NWSS), which guides the planning and implementation of both capital and enabling initiatives such as legal reforms, tariff regulation, metering and management of the wastewater sector. The BWE Water Supply and Sewerage Master Plan, the BWE Water Quality Testing Protocol, and the SLWE source metering supply and installation are all projects that strongly take into account the guidance of NWSS and the WE's business plans.

¹ There originally were seven components in LWWSS but component one, development of the HPIP and IAR, was completed in the first six months of year one.

- **The Importance of WE Staff Recruitment and Training**

The lack in skills, effectiveness and availability of staff remains a challenge within most WEs. Across all the program's remaining components, focus will be on assisting the WEs with appropriate employee placement and establishing training programs. For example, during year four, the LWWSS program assisted BWE in defining and allocating adequate roles and responsibilities of the newly hired staff at BWE.

3. Activity Selection Criteria

Activity selection by LWWSS is based on extensive, participatory investigation through LWWSS and subcontractors' specialists using the following criteria:

- Activity being demand-driven
- Activity not duplicating other donor's efforts
- Specificity and focus of the activity
- Relevance to the LWWSS program's scope and work plan activities
- Availability of funds
- Impact on the water establishment's long-term operations
- Sustainability of the activity in terms of operating costs, technology, availability of human skills and training required
- Timing and anticipated schedule of the activity
- Measurable benefit and quantifiable outcome of the activity

Selected activities are the result of an iterative and investigative process of applying these criteria to a broader list of identified activities.

YEAR-FIVE ACTIVITY DETAILS

Details on the background, strategy and identification of individual activities are provided within the sections below. The activity narrative, a program schedule, expected outcomes and the resources and teams allocated for each activity are also included. The activities are grouped by water establishment and aggregated by subject.

1. BEKAA VALLEY WATER ESTABLISHMENT

Component 2: Capacity Building for Managerial, Technical and Operational Efficiency

Table 1

Item	Activity Description	Program Resource	Outcome by End of Year Five	Target Date
2.2	Building the WEs' Water Quality Management Capacity: Water Quality Testing Plan	AUB	Activity completed	
2.3	Capacity Building in Operation and Maintenance of Pump Stations	KREDO	Activity completed	
2.4	Public Administration and Process Management Training			
2.4.2	Public administration and process management training aiming at increasing staff familiarity with WE systems and processes	LWWSS (MK), ABA (MC)	Activity completed	January 2014
2.5	Training on Network Maintenance and Repair			
2.5.1	Basic training on network maintenance, monitoring and repair, for existing and newly recruited network team personnel	- LWWSS (MK) - KREDO	Activity completed	December 2013

Activity 2.4 - Public Administration and Process Management Training

Background

During the course of year three, and as the LWWSS program was implementing the Enterprise Resource Planning (ERP) system in BWE and conducting training to existing and newly employed temporary staff in the WE, it became apparent to both the LWWSS team and BWE management that many staff members within BWE's various departments were unfamiliar with some of the most basic regulations associated with process management within their department.

As such, BWE and the LWWSS program found that these personnel needed to receive complementary training in general financial and administrative matters, which targets and builds on the contents of previous training offered by the LWWSS program, and provides a detailed overview of the business and administrative processes in the WE.

The training is planned to be conducted by the LWWSS Financial and Training Specialists. It was planned to take place in the first half of 2013 as it was expected that the BWE would have hired the new recruits who passed the Civil Service Board exams. However, this did not happen until July 2013 and the training was delayed until year five.

Scope

The training will target selected newly hired permanent staff, mainly from finance and administration. The selection of trainees will be done by the LWWSS team following a GIZ training needs assessment conducted in August and September 2013, and will be based on the mapping of the key training areas identified with the BWE management.

Impact

This activity will enable BWE's key personnel to increase their administrative and managerial efficiency, and enhance their workflow. This will result in faster processing of customer applications, work orders and requests. The training will also allow staff to become more acquainted with the WE's by-laws, which results in higher compliance and accuracy, as well as contributes to the BWE's better organizational and financial performance.

The impact will include faster and more accurate processing of documentation due to clearer instructions relating to the workflow, increased management availability due to workload time savings and optimization, and greater staff accountability due to increased support in converting manual processes to ERP and avoidance of redundant and unclear work processes undertaken unilaterally by staff.

Timeframe

The training was planned to take place in the first half of 2013 as it was expected that the BWE would have hired the new recruits who passed the Civil Service Board exams. However, this did not happen until July 2013. Accordingly, the training was delayed until year five. It is to be noted that the GIZ project has initiated a training needs assessment, which will be shared with our program upon completion in order to avoid duplication of efforts.

Please refer to the Time Frame table below.

Activity 2.5 - Training on Network Maintenance and Repair

Background

This activity, planned for year four but delayed to year five, relates to training for network repair operators at BWE, covering basic maintenance and repair of drinking water distribution pipes and connections, and health and safety practices. Water leaks are frequent and breakdowns within the deteriorated networks happen on a daily basis. This activity was introduced based on the request of BWE management for applied training to the network repair teams.

Scope

The training will cover network repair basics, such as leak detection, team composition, equipment needs, project management and task orders, site mobilization, sequencing of repair tasks, best practice in excavation, pipe laying, connections and backfilling, as well as attention to health and safety. Additionally, the network operations and maintenance training is to help ensure the proper maintenance of the network rehabilitation being undertaken in Zahle under the LWWSS program's infrastructure rehabilitation program (component six).

To ensure sustainability of this activity, the LWWSS program will conduct a training needs assessment to identify the most suitable trainees in the BWE region. The course will be developed by KREDO in close coordination with BWE management to ensure the material is compatible and applicable to the realities of BWE. The program will also add to the letter of commitment from the director general the obligation to subcontract the network repair and maintenance should the full-time, permanent employees fail to do the required O&M work. If needed, the LWWSS will help the BWE in developing the Scopes of Work and will provide them with the proper requirements and prerequisites that need to be included in the Scopes.

This activity faces some challenges, namely that skilled staff in BWE are limited, their availability is not always guaranteed (due to their simultaneous involvement on many tasks and roles), and their motivation may be low. Low pay results in many staff being simultaneously employed by the WE while conducting other outside professional activities as well. They sometimes lack interest in developing their career at the WE.

The LWWSS program will attempt to increase interest and attendance of staff by ensuring the training is relevant, applied and focused in addition to the steps described under background above.

Impact

This training will target up to 30 network operators from the BWE. It will support the LWWSS program's efforts in BWE, namely the infrastructure activities which include network replacement in the city of Zahle. It will also introduce best practice methods for detection and repair of water distribution breakdowns, which will directly contribute to a decrease in service disruptions, faults and operational damage of networks, a reduction in the risk of personal injury of operating staff, and financial and resource savings for the BWE. This training may provide the foundation for other USAID programs such as the WISE program, and allow them to leverage the capacity building taking place in year four, in areas such as water loss reduction.

Timeframe

This activity was delayed mainly because the modification of KREDO's subcontract to increase their ceiling took longer than expected in year four, during which time training activities had to cease. The training activities resumed in April 2013, which pushed out their deadlines.

Please refer to the Time Frame table below.

Component 3: Increase Financial and Commercial Viability of Water Establishments

Table 2

Item	Activity Description	Program Resource	Outcome by End of Year Five	Target Date
3.1	Upgrade Finance and Accounting Standards and Methods			
3.1.5	Develop procedures and a standard manual for yearly budgeting within the WE, and conduct applied training to key departments.	ABA (AA, MC)	Procedures defined, manual produced, training conducted.	December 2014
3.1.6	Develop procedures and a standard manual for internal audit within the WE, and conduct applied training to key departments.	ABA (AA, MC)	Procedures defined, manual produced, training conducted.	February 2015
3.2	Integrate the WEs Financial, Accounting, Customer Service and Business Process Systems: The Enterprise Resource Planning (ERP) Platform			
3.2.3	Implement intranet system enabling web-browser based e-training, communication and business process tools	EMC (MC), LWSS (AS), ABA EDM	Activity completed	March 2013
3.2.4	Conduct training, assist in transition phase and provide one year on-site support	ABA (MC) EDM	Activity underway	December 2014

Activity 3.1 – Upgrade Finance and Accounting Standards and Methods

3.1.5 - Develop procedures and a standard manual for yearly budgeting within the WE, and conduct applied training to key departments

Background

Budget preparation and implementation is one of the key activities performed in each WE on an annual basis. It is a tool for planning and control, and is closely supervised by the Ministry of Finance. The budgeting process in the WEs has been enhanced at different levels through the implementation of a five-year business plan (by GIZ), the public finance training conducted in year three, as well as the ERP solution and its associated training at various stages of implementation at BMLWE, SLWE and BWE. This activity builds on the ERP platform and enables the use of the budgeting module to its full potential. The activity takes full advantage of the fact that the ERP integrates all the financial data within one database. It builds the capacity of the key WE personnel associated with annual budgeting to use the centralized and flexible database, analyze the financial information and extract key data for more accurate and reliable budgeting.

The budget manual will play an important role in capacity building as it enables staff to apply the material given during the training, and follow standard practice in terms of budgeting, to further institutionalize the practice of preparing well-documented budget forecasts on a yearly basis.

Scope

This manual and the associated training were completed in September 2013 for BMLWE. Due to its important impact on the WE's management and operation, the LWWSS program will replicate it in year five for each of the other three establishments to enhance and standardize the budget preparation procedure. This will be presented in a workshop to explain and discuss the budget manual and key issues related to its implementation such as: policies, procedures, execution, forecast, methodology, reporting and templates. An action plan to work on the budget standardization across the four WEs and another for the implementation of the manual for the 2015 budget will be developed and shared with all WEs. If the BWE is interested in pursuing this activity, it will be asked to officially commit to dedicating staff to work with the LWWSS team according to the action plan. This would ensure the sustainability of the task through practical, on-the-job implementation under LWWSS supervision. LWWSS will ensure that the methodology determined in the manual is followed properly and the templates provided are filled correctly with the requisite data.

Impact

Currently, the budget process at the WEs follows a dated approach using the previous year's budget adjusted by a predetermined percentage for all items throughout the document. This results in incorrect budgeting and unrealistic estimations that are not based on the forthcoming year's plans for revenues and expenses. It also limits the use of the budget as a planning tool and creates shortages during the year since the budget focuses on the previous year and does not take into consideration WEs' strategy and plans.

The budget manual, if adopted by the BWEs, will introduce the use of budgeting as a planning and control tool, and will provide the WE's key staff (finance department, engineering department and top management) with a step by step guide on how to plan, prepare and implement the budget to improve planning and operations.

The expected impacts of this activity on the WEs' management and operations include:

- Improved planning tools, allowing WEs to prepare their budget using the bottom-up approach to ensure enough budget is available for each budget line item according to WEs strategy
- Better stakeholder involvement in budget preparation, ensuring smooth operations during budget implementation
- Budget control and performance evaluation on a yearly basis and good approach to establish standard practice across departments in the WE
- Contribution to better allocation of funds, which will enable the WEs' operations to proceed with fewer delays. This contributes to higher efficiency and better operational and financial performance for the WE.

Timeframe

Please refer to the Time Frame table below.

3.1.6 - Develop procedures and a standard manual for internal audit

Background

To date, internal audits within the WEs have had a limited role as they focus only on finding problems after an event has occurred, by undertaking regular inspections of annual documentation. They do not undertake routine reviews and revisions of ongoing systems and processes.

During the course of year four, the LWWSS program specialists and NLWE senior management prepared a thorough Internal Audit Manual that covered all aspects of financial audit controls dictated by the by-laws and the legislation applicable to the WEs, following best international practice, in order to improve detective, corrective and preventative controls within the WE. The manual will allow the WE to conduct a financial and operational review of performance on a yearly basis, thereby providing management with a powerful tool to monitor performance and compliance.

The other three WEs do not have Internal Audit Manuals at this stage. They do not even have specialized staff to perform the required internal procedure. This limits available control over establishment activities and prevents the management from obtaining internal feedback on control gaps and operational performance.

Scope

As part of this activity, the LWWSS program has added a new dimension, which includes the administrative aspect of internal auditing. With the BWE, the LWWSS team will work to assign staff to lead the process of internal auditing. A comprehensive training on the manual's contents and processes will be conducted and will include the following components:

- Risk assessment, controls, and risk management
 - Internal control structure and management philosophy
 - Internal control policies for safeguarding and assurance
 - Internal control risk
- Internal auditing
 - Responsibility and authority of the internal audit function
 - Types of audits conducted by internal auditors
- Ethical considerations for management auditing
- Team work and training
- Meetings and reports
- Methodology of verification
- Quality control
- Templates and work flows
- Systems controls and security measures related to general accounting system - application and transactions - network - backup - HR - planning - documentation - performance indicators

If the BWE is interested in the actual implementation of this activity, it will be asked to officially commit to dedicating staff to work with the LWWSS team according to its action plan. This would ensure the sustainability of the task through practical, on-the-job implementation under LWWSS supervision. LWWSS will ensure that the methodology determined in the manual is followed properly and the templates provided are filled correctly with the requisite data. This will result in accurate audit reports that will form the basis for determining the risk management plan and enhancing the technical efficiency and cost effectiveness of the WE.

Impact

Expected impact resulting from the activity, if adopted by the BWE, will include substantial enhancement of capacity within BWE to control the establishment's financial and administrative processes, identify and reduce inefficiencies, clamp down on illegitimate activity conducted within the WE, increase accountability within it, and provide BWE senior management as well as the GOL's auditors with feedback on the WE's performance.

It is not expected that the BWE and the other WEs will implement the audit procedure in the near future, for various reasons such as shortage of resources. However, they would have been sensitized to its importance and would be in possession of the manual as a tool when they have the capacity for implementation.

Timeframe

Please refer to the Time Frame table below.

Activity 3.2 - Integrating the WE's Financial, Accounting, Customer Service and Business Process Systems: The Enterprise Resource Planning (ERP) Platform

Background

The ERP solution was developed by Microsoft and implemented through a subcontract with EDM for both BWE and BMLWE. The ERP provides BWE with an integrated, flexible and modern platform for computerized operation across all its departments, and enables it to achieve fast progress in terms of increased administrative efficiency, accountability, quality control and informed decision making.

By the end of year four, the LWWSS program had completed the deployment of all system modules, namely:

- Accounting (Chart of Accounts - General Ledger - Cost Centers - Dimensions - Cost Management - Receivables - Payables - Banks - Fixed Assets)
- Budget (Budget Accounts - Reservation - Contract - Liquidation)
- Purchasing (Planning - Order Processing - Other Expenses - Tenders)
- Warehouse (Receive - Transfer)
- Human Resources and Payroll (Master File employees - Payroll)
- Billing and Collection
- Document Registry
- Customer Service Management

- Intranet Solution (Sharepoint)

The LWWSS program had also provided a comprehensive training and finalized field adoption training (for the old staff), commissioning, and started training of the new staff, as well as preparations for sign-off.

Moreover, since July 2013 and after many meetings with the DG, the LWWSS team identified the distribution of tasks and responsibilities between old and new staff.

On-site support was supposed to be completed by September 2013, however, due to higher funds demand on the ERP for BMLWE, there were insufficient funds in EDM's subcontract to finalize support to BWE. The work will continue in year five and the EDM subcontract to provide on-site support will be extended until December 2014. BWE will fund the maintenance and service agreements beyond the LWWSS program's activity completion.

Scope

In year five, activities will focus on ongoing training and support for both old and new staff, as well as financial reporting. The LWWSS program will also continue to address pockets of slow implementation where specific individuals need one-on-one remedial training by LWWSS staff or EDM.

To date, the existing BWE staff showed minor resistance to the implementation of the ERP program. However, the major challenge currently is the lack of cooperation and collaboration between the old and the newly hired staff, as the former feel threatened of losing their jobs to the latter. Although this is an internal issue, the LWWSS program will continue to work closely with the Director General to assist him in resolving this situation and help in the integration.

Impact

Prior to this activity, the BWE's financial, accounting and administrative operations were conducted either manually or through fragmented applications run by individual employees. Data was frequently lost, and financial reports manually produced. The WE was continuously vulnerable to data inaccuracy errors, time delay in data production, and inconsistency in financial and accounting standards application.

Upon completion of this activity, BWE will have a centralized management information system that connects to all branches and handles all financial, administrative and customer-related processes, using a robust IT infrastructure with a well-trained team of employees. This will result in a substantial increase in the efficiency of conducting business by the WE, in terms of financial performance and control, compliance, HR systems and processes, customer service and organizational collaboration.

Timeframe

Please refer to the Time Frame table below.

Component 4: Capital Investment Planning and Program/Project Management

Table 3

Item	Activity Description	Program Resource	Outcome by End of Year Five	Target Date
4.4	Master planning			
4.4.1	Water Supply and Sewerage Master plan	LWWSS, KREDO, ValuAdd	Activity completed	December 2014

Activity 4.4 - Developing Water Supply and Wastewater Master Plan

Background

Unlike other WEs, BWE never developed a master plan that surveys its current water supply and sewerage status and needs, nor its projected growth and developments in the future, taking into account trends and management strategies, and resulting in an informed and feasible capital investment plan for the WE.

Further to the adoption of the government's National Water Sector Strategy and the development of a five-year business plan for BWE with funding by GIZ, and starting in year three, the LWWSS team identified an important potential to assist the BWE in developing an engineering water supply and sewerage master plan that will guide the WE's development over the next twenty years. The master plan will combine an asset survey activity, a database, an irrigation status report, but will also expand a detailed survey of population, water demand projections and sewerage requirements, as well as capital financing needs for the longer term. The program appointed local consultancy KREDO for the development of the master plan. KREDO will be supervised and guided by the LWWSS program and its subcontractor ValuAdd.

Scope

This activity identifies and sets priorities for key initiatives, including capital investment, for the period 2014-35, and will lead to reliable planning for the provision of water supply and wastewater services to the residents within the service area of BWE. A framework for the irrigation services to be delivered by BWE will also be included. In addition, this initiative will serve to guide the capital budgeting and support for the central government as well as multi-lateral and bi-lateral donors looking to support the BWE.

The main components of the Master Plan activities are summarized below:

- Working in close collaboration with the BWE staff, collecting existing water supply system, wastewater and irrigation information, starting at the sources of supply and to include all pipelines, structures and operating facilities;
- Reviewing population projections, development trends, and historical demand by system supply zones across the BWE service area;
- Recommending specific improvements to the water and wastewater systems, consistent with the government's NWSS and the strategic goals of BWE as stated in its 2012-2016 Business Plan;
- Drafting scope of work for irrigation master planning;

- Evaluating initiatives and funding mechanisms essential to the timely construction of the recommended improvements and relating them to the defined capital costs.

Impact

The development of the master plan is a well-timed activity as it is also a requirement of the NWSS, and in line with the national effort to empower WEs and assist them by building their capacity in capital investment planning and increasing their efficiency in fulfilling their roles and duties towards the population.

As part of the water and wastewater master plan, BWE will have a new, comprehensive plan for addressing wastewater services and the capital planning to accompany the master plan. This, along with the MOEW's NWSS implementation efforts in establishing a wastewater division within the BWE, is hoped to enable the BWE to begin taking over the wastewater treatment plants within its jurisdiction.

Timeframe

KREDO has been facing numerous challenges, both expected and unexpected, in finding and collecting data. As a result, they requested an extension of the contract period to finalize the master plan as well as some intermediate submissions. The activity was scheduled to end in March 2014 but will now end in December 2014. The LWWSS program judged this delay not to be critical to the work and was approved.

Please refer to the Time Frame table below.

Component 5: Procurement of Technical Equipment to Strengthen WEs

No activities planned under this component in year five.

Component 6: Small to Medium Scale Rehabilitation/Upgrade/Extension Water and Wastewater Works within WEs

Table 4

Item	Activity Description	Program Resource	Outcome by End of Year Five	Target Date
6.1	Decreasing Water Losses and Upgrading Existing Networks			
6.1.1	Design network upgrades in Zahle: rehabilitating the water transmission lines in Mar Elias, Haouche el Oumara, Maalaka, Rassieh, Karak-Forzol and Midan	LWWSS (WAZ), Local Engineering Firm (WET)	Design completed	January 2013
6.1.2	Implement network upgrades in Zahle: rehabilitating the water transmission lines in Mar Elias, Haouche el Oumara, Maalaka, Rassieh, Karak-Forzol and Midan	Local Engineering Firm (WET) Local subcontractor (Srouji)	Activity completed	February 2014

Activity 6.1 - Decreasing Water Losses and Upgrading Existing Networks in Zahle

Background

This activity is a continuation from year-three and falls within the strategic targets of BWE's two-year urgent strategy dated December 2010 and its business plan. It relates to the replacement of transmission lines in Zahle that have been in service for 30–50 years and suffer from frequent breaks and water service shut-downs.

Zahle is the Bekaa's largest urban center, has the highest number of subscribers among cities in the Bekaa (20 percent), and has the highest rate of bill collection in the Bekaa (45 percent). However, its water network is reported to be the most deteriorated because of aging infrastructure and lack of capital investment.

In year three, the LWWSS program appointed the local engineering firm WET to conduct the design of this project. In year four the local construction firm Nicholas Srouji was subcontracted to implement the works under the supervision of WET and the LWWSS technical team.

Scope

The project's scope relates to the replacement of aged and leaky transmission lines in Zahle. During the execution of the project, Srouji proceeded ahead of schedule with an estimated time saving of three months. The contractor executed the works in a systematic and timely manner, respecting both quality and high output level. Furthermore, detailed calculations were undertaken by the supervising consultant in September 2013, which revealed savings with respect to the original contract price. The reasons for the savings are the following:

- 1- The inclusion in the BOQ of a provisional sum for additional unforeseen expenses which might arise during the execution phase, which was not utilized.
- 2- A decrease in the quantities adopted in the BOQ caused by an overestimation of the number of house connections during the design phase. The number shown in the BOQ was derived from the number of subscribers provided by the BWE. During the execution, it was revealed that this number is much lower because multiple subscribers are actually grouped into one single connection.

Given the savings and the dire situation of the Zahle network, it was decided to rehabilitate additional lines that need urgent replacement. New lines were identified in consultation with BWE. WET then submitted a cost estimate for the additional work based on the contractual rates in the existing subcontract. Srouji confirmed that the additional works would be completed by the contract end date (February 2014).

The project will therefore replace in total about 15 kilometers of pipe of various diameters in the districts of Mar Elias, Haouche el Oumara, Maalaka, Rassieh, Karak-Forzol, Midan (initial scope), El Karak 4, Haouche el Oumara 3 and Dhour Zahle (additional scope).

As with any infrastructure work, a number of risks need to be taken into account, such as the possibility that existing network underground may be in worse condition than

expected. Even in generally good conditions, stress on the network from construction disturbances can cause breakages or new problems. The LWWSS program incorporated safety and protective mitigation measures into the subcontract and is conducting careful construction oversight and quality control. The LWWSS program is also monitoring key risks for early detection, and analyzing and reporting them as soon as they are identified.

The LWWSS program will include in the handover of the completed infrastructure project a more comprehensive letter of commitment stating that the WE will ensure proper maintenance of the USG provided infrastructure through proper network operations and maintenance. If needed, the LWWSS will assist the BWE in developing the Scope of Work and the proper requirements and prerequisites that need to be included in the O&M services.

Impact

By completing this project, the LWWSS program initially estimated to benefit approximately 22,300 people within BWE's largest urban center. With the additional works, it is estimated that 4,015 more people will benefit, totaling about 26,300 beneficiaries. The new works will include a home for the elderly in Dhour Zahle, serving about 100 people, and a hospital in Haouch el Oumara, serving about 150 people.

The specific impact will be to reduce water supply service disruptions to the population, improve water pressure to upper levels of multi-apartment dwellings, decrease physical losses as well as illegal water tapping, and improve the BWE financial position by reducing costly water and revenue losses. The project will also contribute to enhancing the quality of water delivered to households through the replacement of deteriorated pipes with HDPE and ductile iron pipes. Furthermore, the project will provide BWE with an opportunity to initiate a cycle of operation improvement and revenue enhancement: BWE will improve customer satisfaction by extending service reliability, while simultaneously reducing costs due to leakage and maintenance needs. This process should also further improve customer bill payments, and thereby BWE's revenue position.

Timeframe

Please refer to the Time Frame table below.

Component 7: Corporate Culture, Customer Service Orientation, and Public Outreach

Around early 2014, BWE requested LWWSS' assistance to develop a website. Due to the uncertainty of having sufficient time and budget to complete this activity in a satisfactory manner, LWWSS decided to initiate the process by developing a scope of work for this task and getting offers from suppliers (phase 1). Should the offers hold neither time nor cost constraints on LWWSS, the program will move to phase 2, which is the implementation phase. Otherwise, LWWSS will provide BWE with the necessary tools (bidding documents, SOW) to engage, through its own resources, a company to implement this task.

2. BEIRUT-MOUNT LEBANON WATER ESTABLISHMENT

Component 3: Increase Financial and Commercial Viability of Water Establishments

Table 5

Item	Activity Description	Program Resource	Outcome by End of Year Five	Target Date
3.1	Upgrade Finance and Accounting Standards and Methods			
3.1.5	Implement the yearly budgeting within the WE.	ABA (AA, MC)	Activity completed	December 2014
3.1.6	Develop procedures and a standard manual for internal audit within the WE, and conduct applied training to key departments.	ABA (MC, AA)	Procedures defined, manual produced, training conducted	February 2015

Activity 3.1 – Upgrade Finance and Accounting Standards and Methods

3.1.5 – Develop Procedures and Standard Manual for Yearly Budgeting

Background

Budget preparation and implementation is one of the key activities performed in each WE on an annual basis. It is a tool for planning and control, and is closely supervised by the Ministry of Finance. The budgeting process in the WEs has been enhanced at different levels through the implementation of the five-year business planning activity (started by GIZ but completed in years two and three by the LWWSS program), the public finance training conducted, as well as the ERP solution and its associated training at various stages of implementation at BMLWE, SLWE and BWE. This activity builds on the ERP platform and enables the use of the budgeting module to its full potential. The activity takes full advantage of the fact that the ERP integrates all the financial data within one database. It builds the capacity of the key WE personnel associated with annual budgeting to use the centralized and flexible database, analyze the financial information and extract key data for more accurate and reliable budgeting.

The budget manual will play an important role in capacity building as it enables staff to apply the material given during the training, and follow standard practice in terms of budgeting, to further institutionalize the practice of preparing well-documented budget forecasts on a yearly basis.

Scope

This manual and the training were completed in September 2013 for BMLWE and will be replicated and modified for each of the other three establishments to standardize the budget preparation procedure. This will be presented in a workshop to explain and discuss the budget manual and key issues related to its implementation such as: policies, procedures, execution, forecast, methodology, reporting and templates. An action plan to work on the budget standardization across the four WEs and another for the implementation of the manual for the 2015 budget will be developed and shared

with all WEs. If the BMLWE is interested in pursuing this activity, it will be asked to officially commit to dedicating staff to work with the LWWSS team according to the action plan. This would ensure the sustainability of the task through practical, on-the-job implementation under LWWSS supervision. LWWSS will ensure that the methodology determined in the manual is followed properly and the templates provided are filled correctly with the requisite data.

Impact

Currently, the budget process at the WEs follows a dated approach using the previous year's budget adjusted by a predetermined percentage for all items throughout the document. This results in incorrect budgeting and unrealistic estimations that are not based on the forthcoming year's plans for revenues and expenses. It also limits the use of the budget as a planning tool and creates shortages during the year since the budget focuses on last year and does not take into consideration WEs' strategy and plans.

The budget manual, if adopted by the BMLWE, will introduce the use of budgeting as a planning and control tool, and will provide the WE's key staff (finance department, engineering department and top management) with a step by step guide on how to plan, prepare and implement the budget to improve planning and operations.

The expected impacts of this activity on the WEs' management and operations include:

- Improved planning tools, allowing WEs to prepare their budget using the bottom-up approach to ensure enough budget is available for each budget line item according to WEs strategy
- Better stakeholder involvement in budget preparation, ensuring smooth operations during budget implementation
- Budget control and performance evaluation on a yearly basis and good approach to establish standard practice across departments in the WE
- Contribution to better allocation of funds, which will enable the WEs' operations to proceed with fewer delays. This contributes to higher efficiency and better operational and financial performance for the WE.

Timeframe

Please refer to the Time Frame table below.

3.1.6 - Develop procedures and a standard manual for internal audit

Background

To date, internal audits within the WEs have had a limited role as they focus only on finding problems after an event has occurred, by undertaking regular inspections of annual documentation. They do not undertake routine reviews and revisions of ongoing systems and processes.

During the course of year four, the LWWSS program specialists and NLWE senior management prepared a thorough Internal Audit Manual that covered all aspects of

financial audit controls dictated by the by-laws and the legislation applicable to the WEs, following best international practice, in order to improve detective, corrective and preventative controls within the WE. The manual will allow the WE to conduct a financial and operational review of performance on a yearly basis, thereby providing management with a powerful tool to monitor performance and compliance. The other three WEs do not have Internal Audit Manuals at this stage. They do not even have specialized staff to perform the required internal procedure. This limits available control over establishment activities and prevents the management from obtaining internal feedback on control gaps and operational performance.

Scope

As part of this activity, the LWWSS program has added a new dimension, which includes the administrative aspect of internal auditing. With the BMLWE, the LWWSS team will work to assign staff to lead the process of internal auditing. A comprehensive training on the manual's contents and processes will be conducted and will include the following components:

- Risk assessment, controls, and risk management
 - Internal control structure and management philosophy
 - Internal control policies for safeguarding and assurance
 - Internal control risk
- Internal auditing
 - Responsibility and authority of the internal audit function
 - Types of audits conducted by internal auditors
- Ethical considerations for management auditing
- Team work and training
- Meetings and reports
- Methodology of verification
- Quality control
- Templates and work flows
- Systems controls and security measures related to general accounting system - application and transactions - network - backup - HR – planning – documentation – performance indicators

If the BMLWE is interested in the actual implementation of this activity, it will be asked to officially commit to dedicating staff to work with the LWWSS team according to its action plan. This would ensure the sustainability of the task through practical, on-the-job implementation under LWWSS supervision. LWWSS will ensure that the methodology determined in the manual is followed properly and the templates provided are filled correctly with the requisite data. This will result in accurate audit reports that will form the basis for determining the risk management plan and enhancing the technical efficiency and cost effectiveness of the WE.

Impact

Expected impact resulting from the activity, if adopted by the BMLWE, will include substantial enhancement of capacity within BMLWE to control the establishment's

financial and administrative processes, identify and reduce inefficiencies, clamp on illegitimate activity conducted within the WE, increase accountability within it, and provide BMLWE senior management as well as the GOL's auditors with feedback on the WE's performance.

It is not expected that all WEs will implement the audit procedure in the near future, for various reasons such as shortage of resources. However, they would have been sensitized to its importance and would be in possession of the manual as a tool for when they have the capacity for implementation.

Timeframe

Please refer to the Time Frame table below.

Component 5: Procurement of Technical Equipment to Strengthen WEs

No activities are planned for this component for year five.

Component 7: Corporate Culture, Customer Service Orientation, and Public Outreach

No activities are planned for this component in year five.

3. NORTH LEBANON WATER ESTABLISHMENT

Component 2: Capacity Building for Managerial, Technical and Operational Efficiency

Table 6

Item	Activity Description	Program Resource	Outcome by End of Year Five	Target Date
2.5	Training on Network Maintenance and Repair			
2.5.1	Basic training on network maintenance, monitoring and repair, for existing and newly recruited network team personnel	- LWWSS (MK) - KREDO	Activity completed	September 2014

Activity 2.5 - Training on Network Maintenance and Repair

Background

This is a new activity introduced in year five. It is a replication of the same training done at BWE, which constitutes training network repair operators on basic maintenance and repair of drinking water distribution pipes and connections, and health and safety practices. Water leaks are frequent and breakdowns within the deteriorated networks happen on a daily basis. This activity builds on the Beit Mellat network repair activity under the LWWSS program's infrastructure rehabilitation program (component 6).

Scope

The training will cover network repair basics, such as leak detection, team composition, equipment needs, project management and task orders, site mobilization, sequencing of repair tasks, best practice in excavation, pipe laying, connections and backfilling, as well as attention to health and safety.

The network operations and maintenance training will help ensure the proper maintenance and sustainability of the network rehabilitation being undertaken in Bebnine (activity 6.2). The LWWSS program will conduct a training needs assessment to identify the most suitable trainees at NLWE. The course was developed by KREDO for BWE but will be adapted to NLWE following a needs assessment to ensure it fully meets their requirements.

Impact

This training will target up to 20 network operators from the NLWE. It will support the LWWSS program's efforts in the North, namely the infrastructure activities which include network replacement and extension in the city of Bebnine. It will also introduce best practice methods for detection and repair of water distribution breakdowns, which will directly contribute to a decrease in service disruptions, faults and operational damage of networks, a reduction in the risk of personal injury of operating staff, and financial and resource savings for the NLWE.

Timeframe

Please refer to the Time Frame table below.

Component 3: Increase Financial and Commercial Viability of Water Establishments

Table 7

Item	Activity Description	Program Resource	Outcome by End of Year Five	Target Date
3.1	Upgrade Finance and Accounting Standards and Methods			
3.1.5	Develop procedures and a standard manual for yearly budgeting	ABA (MC, AA)	Procedures defined, manual produced, training conducted	December 2014
3.1.6	Develop procedures and a standard manual for internal audit within the WE, and conduct applied training to key departments.	ABA (MC, AA)	Procedures defined, manual produced, training conducted	February 2015

Activity 3.1 – Upgrade Finance and Accounting Standards and Methods

3.1.5 - Develop procedures and a standard manual for yearly budgeting

Background

Budget preparation and implementation is one of the key activities performed in each WE on an annual basis. It is a tool for planning and control, and is closely supervised by the Ministry of Finance. The budgeting process in the WEs has been enhanced at different levels through the implementation of a five-year business plan (by GIZ) and the public finance training conducted in year four.

The budget manual will play an important role in capacity building as it enables staff associated with annual budgeting to apply the material given during the training, and follow standard practice in terms of budgeting, to further institutionalize the practice of preparing well-documented budget forecasts on a yearly basis.

Scope

This manual and the associated training were completed in September 2013 for BMLWE. Due to its important impact on the WE's management and operation, the LWWSS program will replicate it in year five for each of the other three establishments to enhance and standardize the budget preparation procedure. This will be presented in a workshop to explain and discuss the budget manual and key issues related to its implementation such as: policies, procedures, execution, forecast, methodology, reporting and templates. An action plan to work on the budget standardization across the four WEs and another for the implementation of the manual for the 2015 budget will be developed and shared with all WEs. If the NLWE is interested in pursuing this activity, it will be asked to officially commit to dedicating staff to work with the LWWSS team according to the action plan. This would ensure the sustainability of the task

through practical, on-the-job implementation under LWWSS supervision. LWWSS will ensure that the methodology determined in the manual is followed properly and the templates provided are filled correctly with the requisite data.

Impact

Currently, the budget process at the WEs follows a dated approach using the previous year's budget adjusted by a predetermined percentage for all items throughout the document. This results in incorrect budgeting and unrealistic estimations that are not based on the forthcoming year's plans for revenues and expenses. It also limits the use of the budget as a planning tool and creates shortages during the year since the budget focuses on last year and does not take into consideration WEs' strategy and plans.

The budget manual, if adopted by the NLWEs, will introduce the use of budgeting as a planning and control tool, and will provide the WE's key staff (finance department, engineering department and top management) with a step by step guide on how to plan, prepare and implement the budget to improve planning and operations.

The expected impacts of this activity on the WEs' management and operations include:

- Improved planning tools, allowing WEs to prepare their budget using the bottom-up approach to ensure enough budget is available for each budget line item according to WEs strategy
- Better stakeholder involvement in budget preparation, ensuring smooth operations during budget implementation
- Budget control and performance evaluation on a yearly basis and good approach to establish standard practice across departments in the WE
- Contribution to better allocation of funds, which will enable the WEs' operations to proceed with fewer delays. This contributes to higher efficiency and better operational and financial performance for the WE.

Timeframe

Please refer to the Time Frame table below.

3.1.6 - Develop procedures and a standard manual for internal audit

Background

To date, internal audits within the WEs have had a limited role as they focus only on finding problems after an event has occurred, by undertaking regular inspections of annual documentation. They do not undertake routine reviews and revisions of ongoing systems and processes.

During the course of year four, the LWWSS program specialists and NLWE senior management prepared a thorough Internal Audit Manual that covered all aspects of financial audit controls dictated by the by-laws and the legislation applicable to the WEs, following best international practice, in order to improve detective, corrective and preventative controls within the WE. The manual will allow the WE to conduct a financial

and operational review of performance on a yearly basis, thereby providing management with a powerful tool to monitor performance and compliance.

Scope

The LWWSS program has added a new dimension to the current manual, which includes the administrative aspect of internal auditing (controls and security measures related to HR, planning, documentation, performance indicators, etc.).

If the NLWE is interested in the actual implementation of this activity, it will be asked to officially commit to dedicating staff to work with the LWWSS team according to its action plan. This would ensure the sustainability of the task through practical, on-the-job implementation under LWWSS supervision. LWWSS will ensure that the methodology determined in the manual is followed properly and the templates provided are filled correctly with the requisite data. This will result in accurate audit reports that will form the basis for determining the risk management plan and enhancing the technical efficiency and cost effectiveness of the WE.

Impact

Expected impact resulting from the activity, if adopted by the WE, will include substantial enhancement of capacity within NLWE to control the establishment's financial and administrative processes, identify and reduce inefficiencies, clamp on illegitimate activity conducted within the WE, increase accountability within it, and provide NLWE senior management as well as the GOL's auditors with feedback on the WE's performance.

It is not expected that all WEs will implement the audit procedure in the near future, for various reasons such as shortage of resources. However, they would have been sensitized to its importance and would be in possession of the manual as a tool for when they have the capacity for implementation.

Timeframe

Please refer to the Time Frame table below.

Component 5: Procurement of Technical Equipment to Strengthen WEs

Table 8

Item	Activity Description	Program Resource	Outcome by End of Year Five	Target Date
5.2	Upgrading Pumping and Energy Efficiency			
5.2.3	Review and design the replacement of seven submersible pumps and associated works	- CDM Smith (BG, GT) - Local subcontractor (TBD)	Tests completed and design produced	September 2013
5.2.4	Supply and install the replacement seven submersible pumps and associated works	- CDM (BG, GT) - Local subcontractor (TBD)	Activity underway	April 2015

5.3	Increasing Supply Hours to Areas Facing Supply Shortage			
5.3.1	Supply and install up to 9 back-up generators for key NLWE stations	- CDM (BG, GT) - Local subcontractor (TBD)	Activity completed	October 2013
5.3.2	Establish service agreements and conduct user training program for these generators	- CDM (BG, GT), DAI (M) - Local subcontractor (TBD)	Activity commenced	April 2015

Activity 5.2 - Upgrading Pumping and Energy Efficiency

Background

This is a continuation of a year four activity in NLWE. Among the highest priorities for NLWE is the enhancement of the pumping efficiency in key pump stations across North Lebanon.

Given the age and poor condition of the existing pumps within NLWE's stations, the LWWSS program found that submersible pump replacement and basic pump station repair is an essential capital investment that results in immediate improvement of up to 20 percent in pumping efficiency, reflected through an increase in the quantity of water pumped into the network and a decrease in power consumption. It also results in an immediate reduction in operation, maintenance and repair costs.

NLWE started by identifying key sites where equipment replacement (33 pumps initially requested) was needed, and provided an estimate of the specifications required for these sites. The WE requested LWWSS' engineering teams to use pre-existing specifications developed by the WE. However, upon closer inspection by our subcontractor CDM Smith, it was concluded that most of the WE's performance and specification data was incorrect, and was based on unchecked estimates instead of up-to-date information such as well tests, well inspections, and engineering calculation.

This led the LWWSS program, through the CDM Smith engineers, to conduct extensive investigation of the sites. The team surveyed the NLWE-listed sites and found that many are not suitable for pump replacement. Some lacked essential and basic infrastructure (such as reliable power supply, secure location for installation, disputed property, etc.), or required major redesign and rehabilitation. Based on the findings, only nine sites were found to be technically suitable for rehabilitation. These sites were approved by NLWE in May 2012, and are located in the following four sites:

- Tripoli area: Abou Halqa spring (one pump) and Manar tank (one pump)
- Qobayyat: Kfartoun (one pump)
- Batroun: Kfarhelda - Der Bella station (one pump) and Mar Yaacoub (one pump)
- Halba: Al Ouyoun (four pumps located in wells)

Due to the imprecise data supplied by NLWE and the fact that the replacement of pumps located in wells require thorough well tests prior to the design of the pump package, the LWWSS program hired the subcontractor ELARD in January 2013 to conduct a series of tests and inspections for the wells at Al Ouyoun pump station to determine their optimum yield.

ELARD's final report, submitted in July 2013, concluded that two of the four wells should not be pumped because their optimum yield is close to zero. The report was reviewed and analyzed by CDM Smith in the last quarter of year four, and recommended that the two wells should not be re-equipped. NLWE requested that the two pumps be bought nonetheless and kept as spares. Since this is technically viable and the budget already accounts for nine, the LWWSS program agreed.

Scope

This task includes the supply and installation of nine submersible pumps (two of which will be kept as spares), power management panels, protection, power cables, gauges and sensors, as well as the necessary electrical, mechanical and safety protection installations.

The installation will be followed by operation and maintenance training by the equipment supplier, specifically related to the equipment procured. This training complements other O&M trainings in NLWE, but is not related to them. It is a short training aimed at teaching the operator means of applying manufacturer's instructions to avoid equipment damage, avoid warranties being voided, increase the lifespan of the pumps and the sustainability of the procurement activity. In addition to the training, if needed, the LWWSS program will assist the NLWE in outsourcing the services by developing operation and maintenance scopes of work and providing the WE with the necessary technical requirements.

Impact

The estimated number of subscribers served by these stations, according to NLWE, is 135,430. Estimating that the average household consists of 4.75 persons, this means that up to 650,000 could benefit from this activity. The efficient operation of these pump stations is crucial to the livelihoods of these beneficiaries, especially the lower income populations, who frequently incur steep costs to purchase water from private suppliers during shortage periods. The cost per unit of water supply (m³) from private suppliers is considerably higher than that of WE-supplied water.

From the supply side, the current pumps necessitate frequent motor rewinding locally in Lebanon, which results in operation and maintenance problems, excessive down time, excessive running costs, low performance, and frequent shut downs especially during the drought seasons. The anticipated benefits of this activity include:

- Extended hours of water supply to the water users of these stations, due to an increase of up to 20 percent in efficiency (through new pumps and motors), a decrease in break-downs and down time (due to new equipment and new electrical and hydraulic installations), and a longer lifecycle for the equipment (due to better O&M practices as part of the training).
- O&M staff will be trained, using the suppliers' and the LWWSS program's manuals and checklists, and they will receive additional specialized training by equipment suppliers. This will decrease accidents on site, avoid human errors, extend the life of the equipment, and build the capacity of staff to ensure sustainability.

Timeframe

This activity faced difficulties in obtaining proper and acceptable bids for the well testing (pump test and CCTV probing), which led to delays in the schedule. The RFP had to be issued a twice in year three, and both rounds resulted in only one non-compliant bidder. In early year four, the LWWSS program took the initiative to contact companies directly and ask them to submit offers, resulting in the receipt of two proposals, and ELARD being selected at the end of December 2012.

ELARD's assessment, which started in late January, was completed in July 2013, instead of the planned deadline of March 2013, due to:

- The prevailing security situation in the North and restricted access to the sites;
- The change in the period of the subcontract by three additional weeks, in May 2013, to include additional pump and aquifer tests, based on the findings of the CCTV survey and testing performed at wells N1 and O3. This test information would allow determining optimum yields for each well with interference from all wells pumping in the well field.

CDM Smith then reviewed and verified the assessment report, conducted additional analysis and submitted its recommendations at the end of August. Meetings were held with all stakeholders to agree on the findings in September.

Please refer to the Time Frame table below.

Activity 5.3 - Increasing Supply Hours to Areas Facing Supply Shortage

Background

This is a continuation from year four. The supply of power generation equipment for key pump stations in NLWE is one of the most crucial capital investments identified for NLWE. It will enable the WE to provide water supply to remote areas where power is unstable and cuts are frequent.

The request for power generation equipment necessitated several rounds of investigations and negotiations to ensure the requests meet the LWWSS program's activity selection criteria. Based on the investigations, a shortlist was produced that included the finalized locations and sizes of generators to be investigated, designed and procured.

During year four, the generators were installed in the following stations: Hab, Aayrouniyeh, Nakhle, Bqerqacha, Beshmezzin, Qbayyet, Kfartoun and Rahbeh, and four were tested and commissioned. User training was also provided by the local subcontractor Edan Group.

Scope

In the first few weeks of year five, the remaining four generators will be tested and commissioned. It is estimated that the servicing and warranties for the installed

generators in North Lebanon (for a period of up to two years or 2,000 hours of operation from date of site completion) will extend until April 2015.

Impact

As part of its current operational practice, it is standard for NLWE to rely on stand-by generators in those key stations that help maintain 24-hour supply to Tripoli, and to provide back-up power supply to those stations that are located far from stable power supply. In the latter case, the generator power supply enables the pumping and distribution of water to thousands of users in rural and deprived areas of NLWE’s territory.

The provision of power generation equipment will result in an increased water supply to high density urban areas within the capital of North Lebanon (Tripoli) and within some of the villages that need water supply the most.

Timeframe

Please refer to the Time Frame table below.

Component 6: Small to Medium Scale Rehabilitation/Upgrade/Extension Water and Wastewater Works within WEs

Table 9

Item	Activity Description	Program Resource	Outcome by End of Year Five	Target Date
6.2	Expanding Service Provision to Non-Served Areas			
6.2.1	Beit Mellat, Akkar, North Lebanon: Design metered house connections	LWWSS (WAZ) KREDO	Design completed	October 2013
6.2.2	Beit Mellat, Akkar, North Lebanon: Implement works	KREDO Local subcontractor (TBD)	Procurement completed; works underway	April 2015

Activity 6.2 - Expanding Service Provision to Non-Served Areas in Beit Mellat

Background

This activity is a continuation from year four, relating to providing water supply to villages in the Beit Mellat area of the Akkar region.

Water for the Beit Mellat villages is supplied from the large Al Ouyun well station and stored in recently built reservoir tanks. In the late nineties, the Lebanese Council for Development and Reconstruction (CDR) contracted local firms to design and execute a water supply project for the region by transporting water through main transmission lines, village reservoirs, main distribution lines and providing branch connections.

Despite this significant investment, the completed project was not fully commissioned and as such, the deployment of the NLWE water services was not achieved. The population is currently either underserved by public water supply or not served at all.

NLWE was starting a process of putting the system into operation, with an in-house project aiming at connecting up to seven of the villages to permanent water supply. The WE requested the LWWSS program to contribute to this project and fund the commissioning and water connection to households in other villages within the Beit Mellat region.

The NLWE conducted a detailed assessment to identify a long-list of priority villages that require assistance from LWWSS. The general approach for assessing and selecting villages by NLWE was based on two sets of criteria: humanitarian (highest need) and economic (highest income to the WE). Both criteria maximize the potential for project success by ensuring that water is delivered to those households that are most in need of water while generating the highest returns and encouraging financial sustainability.

After extensive consultations with all stakeholders during years three and four, a long-list of 12 villages was produced as follows:

Priority	Village name	Number of current subscribers*	Number of illegal Users*	Number of potential new subscribers*	Total number of households impacted
1	Bebnine	0**	0**	4,354	4,354
2	Hakour	117	7	33	157
3	Bqerzla	227	114	109	450
4	Dahr Nassar	22	38	35	95
5	Rahbeh	652	121	503	1,276
6	Ilet	141	60	99	300
7	Edbel	185	97	174	456
8	Gebrayel	176	34	121	331
9	Beit Mellat	186	38	84	308
10	Dahr Ellaysineh	49	4	52	105
11	Hekr Cheikh Taba	33	8	15	56
12	Berqayel	0	0	2,296	2,296
		1,788	521	7,875	10,184

* Source: NLWE management

** The villages with no current subscribers are selected based on the substantial mass of potential subscribers anticipated upon their connection, given that these are highly urbanized villages. NLWE assessment estimates that these villages might provide a major share of the income anticipated.

Based on the contents of the list, the LWWSS program appointed in early year four the engineering subcontractor KREDO to undertake the engineering services associated with the design and supervision of this project. During the design stage, completed in September 2013, it became apparent that only one village, Bebnine, could be selected due to its large size and the budget available. The subcontractor also developed a detailed scope of work and the bid documents for the ensuing infrastructure works.

Scope

In year five, the LWWSS will procure a subcontractor for the infrastructure works which will be supervised by KREDO and the LWWSS technical team. Specifically, the project will include the following activities:

- Review the bid package for network rehabilitation and new works and procure a local construction firm to perform the work.
- Rehabilitate the existing water supply network and extend it to cover the new areas of Bebnine.
- Supply protective boxes to each building or residential unit.
- Test and commission the new water distribution network in conjunction with the NLWE.
- Build the capacity of NLWE's regional teams to run and operate the metered water supply network.
- Provide guidance to the NLWE on the preparation for the awareness raising and marketing of connections to encourage households to subscribe.

As a part of the overall strengthening of its approach to sustainability of USG provided equipment and infrastructure, the LWWSS program will strengthen the letter of commitment to be provided by the director general upon commissioning of the system. The increased comprehensiveness of the letter of commitment will entail an obligation to subcontract for maintenance and operations service should the WE have problems in fielding the required number of network maintenance employees or has employee discipline problems in keeping up the standards in network O&M.

Impact

By completing this project, the LWWSS program estimated initially to connect up to 7,875 households to enhanced water supply, leverage substantial existing investments and commitments from NLWE, and demonstrably improve service coverage in parts of Akkar. However, as more data on the actual status on the ground became available, only Bebnine could be covered with the available budget, resulting in a reduction in the number of households benefitting from the project to around 4,360.

This project will therefore result in:

- Improved water service delivery by NLWE to up to 4,360 households;
- Contribution to the National Water Sector Strategy and the five-year business plan, adopted by NLWE in 2010, through the increase in the metered customer base and the eventual adoption of a consumption-based tariffs for water use that exceeds the minimum threshold of 1 m³/day/household. This will increase NLWE's revenues as it seeks to move away from the flat annual rate tariff scheme paid by most customers, improving financial sustainability and solvency.

Timeframe

The nearly four-month delay incurred during the procurement of the engineering consultancy in years three and four resulted from the need to request and evaluate a second submission based on 'best and final offer' procedure between two bidders, as well as other administrative delays. These delays affected the general timeline of the engineering consultancy by two months.

Please refer to the Time Frame table below.

Component 7: Corporate Culture, Customer Service Orientation, and Public Outreach

Table 10

Item	Activity Description	Program Resource	Outcome by End of Year Five	Target Date
7.3	Develop Tools and Support WEs in Adopting Corporate Communication			
7.3.2	Hosting of NL WE Corporate Website	Netways	Activity underway	April 2015

Activity 7.3 – Designing and Implementing WE Corporate Website

Background

This is a continuation of communication-related activities conducted by the LWWSS program in NLWE since year two. The activity encompasses the development of corporate graphic communication guidelines, provision of on-the-job training on communication planning, as well as the design and implementation of a corporate website for the NLWE.

During year three, NLWE engaged in a period of transition as it adopted the updated corporate graphic communication guidelines prepared by the LWWSS program, and deployed some of these guidelines in their communication material. The LWWSS program also held on-the-job training and awareness sessions within NLWE to promote the use of these guidelines.

As NLWE was undergoing a transition to the newly developed corporate graphic communication guidelines, it requested the LWWSS program to postpone launching the corporate website activity until year four, to enable it to take place once the corporate graphic communication guidelines are fully adopted across the key departments within the WE. This postponement benefited the WE in that it provided sufficient time for the adoption of the corporate guidelines in three languages (Arabic, French and English) and across various departments in the WE. It also ensured the departments have been granted sufficient time to understand the various aspects of the new corporate identity guidelines and its uses, before engaging on the website project. It therefore increases the chances for the website activity to succeed and be sustainable.

Scope

The various components of the project included the following tasks achieved in years three and four:

- Successful and approved website design consistent with the NLWE corporate identity guidelines
- Approved content, in three languages (English, French, Arabic), incorporated into the design

- Website hosting agreement in place, tested and approved
- Content management system is installed, which enables NLWE to update the contents of the website as needed
- Testing and trial period completed and approved
- Training and commissioning finalized and approved
- Complete documentation approved and issued to NLWE
- Website launched successfully
- Service in place

In years five and six, the activity includes hosting the website servers for the WE for a period of two years, ending in April 2015.

Impact

This activity will enable the NLWE to have a website and establish an online presence, which will provide it with an extended reach to its customers and help it build trust with the population.

It will also facilitate the dissemination of public awareness messages to thousands of subscribers and visitors and provide information on the services that are accessible to customers through their computers, thereby increasing customer service effectiveness.

The website will also serve as a basis to enable NLWE to deploy on-line payment systems in the future, which will result in a substantial increase in customer service efficiency.

Timeframe

The local subcontractor, Netways, will be hosting the website servers for a period of two years. There will be no additional activities by the LWWSS program.

Please refer to the Time Frame table below.

4. SOUTH LEBANON WATER ESTABLISHMENT

Component 2: Capacity Building for Managerial, Technical and Operational Efficiency

Table 11

Item	Activity Description	Program Resource	Outcome by End of Year Five	Target Date
2.4	Public Administration and Process Management Training			
2.4.2	Public administration and process management training aiming at increasing staff familiarity with WE systems and processes	LWWSS (MK), ABA (MC)	Activity completed	July 2014

Activity 2.4 - Public Administration and Process Management Training

Background

In April and May 2014, 50 new people will be hired at SLWE across all departments. These are unfamiliar with some of the most basic regulations associated with process management within their department. As such, and at the request of SLWE, the LWWSS program will conduct training in general financial and administrative matters to the relevant staff. This will provide them with a detailed overview of the business and administrative processes in the WE. It will also tie in with the ERP task being implemented at the WE in year five.

The training is similar to the one planned for BWE in quarter three. It will also be conducted by the LWWSS Financial and Training Specialists during the third and fourth quarter of year five.

Scope

The training will target selected newly hired permanent staff, mainly from finance and administration. The selection of trainees will be done by the LWWSS team and SLWE management, and will be based on the mapping of the key training areas identified.

Impact

This activity will enable SLWE's new personnel to increase their administrative and managerial efficiency, and enhance their workflow. This will result in faster processing of customer applications, work orders and requests. The training will also allow staff to become more acquainted with the WE's by-laws, which results in higher compliance and accuracy, as well as contributes to the SLWE's better organizational and financial performance.

The impact will include faster and more accurate processing of documentation due to clearer instructions relating to the workflow, increased management availability due to

workload time savings and optimization, and greater staff accountability due to increased support in converting manual processes to ERP and avoidance of redundant and unclear work processes undertaken unilaterally by staff.

Timeframe

Please refer to the Time Frame table below.

Component 3: Increase Financial and Commercial Viability of Water Establishments

Table 12

Item	Activity Description	Program Resource	Outcome by End of Year Five	Target Date
3.1	Upgrade Finance and Accounting Standards and Methods			
3.1.5	Develop procedures and a standard manual for yearly budgeting within the WE, and conduct applied training to key departments.	ABA (AA, MC)	Procedures defined, manual produced, training conducted.	December 2014
3.1.6	Develop procedures and a standard manual for internal audit within the WE, and conduct applied training to key departments.	ABA (AA, MC)	Procedures defined, manual produced, training conducted.	February 2015
3.1.7	Develop module, procedures and provide training on the Cost Tariff Model for Strategic Planning and Budgeting	ABA (AA, MC)	- Module installed, connected to ERP - Procedures defined, training conducted.	February 2015
3.2	Integrate the WEs Financial, Accounting, Customer Service and Business Process Systems			
3.2.1	Procurement of software design and implementation	LWWSS (EH), ABA (AA, MC)	Activity completed	January 2014
3.2.2	Process mapping and other prerequisites	ABA (AA, MC), Local subcontractor (tbd)	Activity completed	March 2014
3.2.3	System implementation, adoption, user training, migration	ABA (AA, MC), Local subcontractor (tbd)	Activity completed	September 2014
3.2.4	On-site support	ABA (AA, MC), Local subcontractor (tbd)	Activity completed	February 2015

Activity 3.1 – Upgrade Finance and Accounting Standards and Methods

3.1.5 - Develop procedures and a standard manual for yearly budgeting

Background

Budget preparation and implementation is one of the key activities performed in each WE on an annual basis. It is a tool for planning and control, and is closely supervised by the Ministry of Finance. The budgeting process in the WEs has been enhanced at different levels through the implementation of a five-year business plan, as well as the planned ERP solution and its associated training. This activity will build on the ERP platform and enable the use of the budgeting module to its full potential. The activity will

also take full advantage of the fact that the ERP integrates all the financial data within one database. It builds the capacity of the key WE personnel associated with annual budgeting to use the centralized and flexible database, analyze the financial information and extract key data for more accurate and reliable budgeting.

The budget manual will play an important role in capacity building as it enables staff to apply the material given during the training, and follow standard practice in terms of budgeting, to further institutionalize the practice of preparing well-documented budget forecasts on a yearly basis.

Scope

This manual and the associated training were completed in September 2013 for BMLWE. Due to its important impact on the WE's management and operation, the LWWSS program will replicate it in year five for each of the other three establishments to enhance and standardize the budget preparation procedure. This will be presented in a workshop to explain and discuss the budget manual and key issues related to its implementation such as: policies, procedures, execution, forecast, methodology, reporting and templates. An action plan to work on the budget standardization across the four WEs and another for the implementation of the manual for the 2015 budget will be developed and shared with all WEs. If the SLWE is interested in pursuing this activity, it will be asked to officially commit to dedicating staff to work with the LWWSS team according to the action plan. This would ensure the sustainability of the task through practical, on-the-job implementation under LWWSS supervision. LWWSS will ensure that the methodology determined in the manual is followed properly and the templates provided are filled correctly with the requisite data.

Impact

Currently, the budget process at the WEs follows a dated approach using the previous year's budget adjusted by a predetermined percentage for all items throughout the document. This results in incorrect budgeting and unrealistic estimations that are not based on the forthcoming year's plans for revenues and expenses. It also limits the use of the budget as a planning tool and creates shortages during the year since the budget focuses on last year and does not take into consideration WEs' strategy and plans.

The budget manual, if adopted by the WEs, will introduce the use of budgeting as a planning and control tool, and will provide the WEs' key staff (finance department, engineering department and top management) with a step by step guide on how to plan, prepare and implement the budget to improve planning and operations.

The expected impacts of this activity on the WEs' management and operations include:

- Improved planning tools, allowing WEs to prepare their budget using the bottom-up approach to ensure enough budget is available for each budget line item according to WEs strategy
- Better stakeholder involvement in budget preparation, ensuring smooth operations during budget implementation
- Budget control and performance evaluation on a yearly basis and good approach to establish standard practice across departments in the WE

- Contribution to better allocation of funds, which will enable the WEs' operations to proceed with fewer delays. This contributes to higher efficiency and better operational and financial performance for the WE.

Timeframe

Please refer to the Time Frame table below.

3.1.6 - Develop procedures and a standard manual for internal audit

Background

To date, internal audits within the WEs have had a limited role as they focus only on finding problems after an event has occurred, by undertaking regular inspections of annual documentation. They do not undertake routine reviews and revisions of ongoing systems and processes.

During the course of year four, the LWWSS program specialists and NLWE senior management prepared a thorough Internal Audit Manual that covered all aspects of audit controls dictated by the by-laws and the legislation applicable to the WEs, following best international practice, in order to improve detective, corrective and preventative controls within the WE. The manual will allow the WE to conduct a financial and operational review of performance on a yearly basis, thereby providing management with a powerful tool to monitor performance and compliance. The other three WEs do not have Internal Audit Manuals at this stage. The SLWE hired two specialized staff to perform the required internal procedure in May 2014. This limits available control over establishment activities and prevents the management from obtaining internal feedback on control gaps and operational performance.

Scope

As part of this activity, the LWWSS program has added a new dimension, which includes the administrative aspect of internal auditing. With the SLWE, the LWWSS team will work with the assigned staff to lead the process of internal auditing. A comprehensive training on the manual's contents and processes will be conducted and will include the following components:

- Risk assessment, controls, and risk management
 - Internal control structure and management philosophy
 - Internal control policies for safeguarding and assurance
 - Internal control risk
- Internal auditing
 - Responsibility and authority of the internal audit function
 - Types of audits conducted by internal auditors
- Ethical considerations for management auditing
- Team work and training
- Meetings and reports
- Methodology of verification

- Quality control
- Templates and work flows
- Systems controls and security measures related to general accounting system - application and transactions - network - backup - HE – planning – documentation – performance indicators

The WEs interested in the actual implementation of this activity will be asked to officially commit to dedicating staff to work with the LWWSS team according to its action plan. This would ensure the sustainability of the task through practical, on-the-job implementation under LWWSS supervision. LWWSS will ensure that the methodology determined in the manual is followed properly and the templates provided are filled correctly with the requisite data. This will result in accurate audit reports that will form the basis for determining the risk management plan and enhancing the technical efficiency and cost effectiveness of the WE.

Impact

Expected impact resulting from the activity, if adopted by the WE, will include substantial enhancement of capacity within SLWE to control the establishment's financial and administrative processes, identify and reduce inefficiencies, clamp on illegitimate activity conducted within the WE, increase accountability within it, and provide SLWE senior management as well as the GOL's auditors with feedback on the WE's performance.

It is not expected that all WEs will implement the audit procedure in the near future, for various reasons such as shortage of resources. However, they would have been sensitized to its importance and would be in possession of the manual as a tool for when they have the capacity for implementation.

Timeframe

Please refer to the Time Frame table below.

3.1.7 - Develop module, procedures and provide training on the Cost Tariff Analysis Module for Strategic Planning and Budgeting

Background

The USAID-funded Lebanon Water Policy Program (LWPP) assisted the Lebanese water establishments to prepare a cost tariff analysis module that BMLWE and SLWE used as a planning tool. This module was prepared based on the data for 2004 that was available at the time, and only limited updates were done to the module over the past years, due to the lack of accurate, dynamic and up-to-date financial data within each establishment. In year four, the LWWSS program upgraded the cost tariff model to accommodate BMLWE management needs, and restructured the model using a database structure to make it ready for importing data from the new ERP solution.

The cost tariff analysis model is a complex excel file where the user inputs key financial data related to the WE's operations in order to calculate a medium term forecast of the

financial performance of the WE on a yearly basis. It is fully customized to the realities of the Lebanese WEs and is in line with their by-laws and their operational model.

The model is also designed to integrate key assumptions and performance indicators to enable the creation of various scenarios for forecasts, and to enable the reporting of these scenarios according to predefined criteria and benchmarks. This enables the WE to input and report on NWSS benchmarks as well as its own business planning benchmarks through the use of the cost tariff analysis module.

Scope

In year five, the LWWSS program will support SLWE in the implementation and proper use of the model. It will provide hands on training to the decision-makers and will create all needed reports for the optimal use of the model for planning and decision-making.

Impact

Currently, SLWE has no real data on cost of water production, distribution and billing and collection. Although the planned ERP platform will contain good financial information, this information will not be consolidated into a single module that analyzes it within a single interface for planning and decision making. As such, updating and connecting the existing cost recovery module to the ERP platform will enable SLWE to capitalize on the ERP solution's output.

The cost tariff analysis module will also provide SLWE with an analytical tool that supports financial and business planning and enables the decision-makers to adjust their strategies in accordance with the foreseen costs and revenues of the WE. It also complements the budgeting efforts to strengthen the WE's capacity to improve its decision making process and to achieve cost recovery and better financial performance.

Anticipated impact on the SLWE's management and operations:

- SLWE will have a planning and budgeting tool to help in planning for:
 - Cost Recovery
 - Water Balance
 - Tariff
 - Efficiency
 - Capital Investment
 - Public Private Partnership
- Cost details for each level of service or facility will be provided through the module and forecasted over the coming years. This enables advanced analysis of individual costs and empowers SLWE management to take informed decisions in relation to future expenditure and investments.

Timeframe

Please refer to the Time Frame table below.

Activity 3.2 - Integrating the WE's Financial, Accounting, Customer Service and Business Process Systems: The Enterprise Resource Planning (ERP) Platform

Background

In 2007, the USAID funded LWPP program provided the JD Edwards system to the SLWE. The local provider, the only one to have the license to sell the JD Edwards system at the time, ITEC, became the provider of the JD Edwards system to the SLWE. The system covered all aspects of the financial and accounting system (FAS).

In 2010, when the ITEC support team completed its contract, the SLWE team began to take over and discovered that the system had been modified and had become an ITEC-dependent system and that ITEC maintained the specific passwords of the system, giving them complete control over the system. ITEC demanded ever higher maintenance fees making continuation of the JD Edwards system much more expensive than the original proposal. The SLWE was required to pay the system maintenance costs that ITEC demanded as well as an annual license fee. The annual license fee was \$16,000.

Other problems of data integrity also began to accrue such as data corruption. In the meantime some SLWE finance staff gave up using the JD Edwards system and began using their own Excel spreadsheets. In addition to this situation, SLWE learned that ITEC had not forwarded the annual license fee paid to ITEC to be forwarded on to JD Edwards for the last three years.

The ERP, developed by Microsoft and implemented through several certified providers in Lebanon, will provide the SLWE with an integrated, flexible and modern platform for computerized operation across all its departments, and will enable it to achieve fast progress in terms of increased administrative efficiency, accountability, quality control and informed decision making.

In terms of sustainability, the SLWE management, particularly the director general, is the strongest leader of the four water establishments the LWWSS program has worked with. The director general has done everything he has agreed to and has properly maintained any equipment provided to the SLWE by LWWSS. Moreover, the SLWE is desperate for an operating IT system and will make the commitment to do what it takes to implement the IT system, in particular, budgetary commitments related to keeping licenses current. So, in addition to getting a letter of commitment from the SLWE, the LWWSS program is confident that the WE will follow through and continue to use the software system, if implemented.

Scope

The implementation of this activity will be done through a local subcontractor implementing a comprehensive Microsoft solution (Navision, CRM, SharePoint). The system will be operational and training completed by September 2014, with ongoing training, transition, financial reports production and on-site support expected to last through February 2015. SLWE will fund the maintenance and service agreements beyond the LWWSS program's activity completion.

This activity includes the following software modules that are central to water utility operation and management:

- Accounting (Chart of Accounts - General Ledger - Cost Centers - Dimensions - Cost Management - Receivables - Payables - Banks - Fixed Assets)
- Budget (Budget Accounts - Reservation - Contract - Liquidation)
- Purchasing (Planning - Order Processing - Other Expenses - Tenders)
- Warehouse (Receive - Transfer)
- Human Resources and Payroll (Master File employees - Payroll)
- Billing & Collection
- Document Registry
- Customer Service Management
- Intranet Solution (SharePoint)

Subcontractor ABA will support the implementation of this activity by augmenting the LWWSS team's efforts, and providing financial and management consultancy assistance to the program and to the WE's team. ABA's role includes ensuring compliance of the ERP components with the WE by-laws and regulations, as well as the accuracy of the modules' financial transactions. As part of this role, ABA's management expert Ahmad Al-Azzam will also conduct detailed reviews of the completed ERP modules.

These reviews will take place in the presence of the LWWSS program's specialist, the platform's supplier, and the WE personnel. They will also include a review of each department's adoption of the ERP and provide recommendations and assistance to ensure the ERP is helping these departments to conduct their tasks efficiently and realistically, using the platform to its maximum potential.

ABA's tasks during these visits will also serve as an opportunity to assist the WE departments in taking advantage of the momentum created by the ERP by formulating up-to-date mission statements for these departments. These mission statements aim to formulate clear goals for the WE's departments and establish a sense of collective purpose within them.

Impact

Prior to this activity, the SLWE faced a number of challenges with its JD Edwards system, as reported in the Background section. It is especially vulnerable to data inaccuracy errors, time delay in data production, and inconsistency in financial and accounting standards application.

Upon completion of this activity, SLWE will have a centralized management information system that connects to all branches and handles all financial, administrative and customer-related processes, using a robust IT infrastructure with a well-trained team of employees. This will result in a substantial increase in the efficiency of conducting business by the WE in terms of financial performance and control, compliance, HR systems and processes, customer service and organizational collaboration.

Timeframe

Please refer to Time Frame table below.

Component 4: Capital Investment Planning and Program/Project Management

No activities are planned under this component in year five.

Component 5: Procurement of Technical Equipment to Strengthen WEs

Table 13

Item	Activity Description	Program Resource	Outcome by End of Year Five	Target Date
5.1	Identifying Water Production and Contributing to Water Demand Management			
5.1.1	Supply and install up to 224 production meters, fittings and protection box/manhole (all non-metered sources in WE)	- CDM Smith (BG, GT) - Modon Group	Activity completed	September 2013
5.1.2	Establish service agreements, conduct training and complete meter reading	- CDM Smith (BG) - Modon Group	Activity completed	September 2014
5.4	Upgrading Water Analysis Laboratories			
5.4.4	Conduct user training program on the atomic absorption instrument	- LWWSS (MK) - Numelab	Activity completed	August 2014

Activity 5.1 - Identifying Water Production

Background

Metering source production is an essential part of non-revenue water management and reduction. It is the foundation for knowing the current performance of the water sources, tracking this performance over time, and achieving water balance, through informed decision-making.

Source metering meets the sustainability criteria that the LWWSS program has set for LWWSS' procurement, given that it provides water utilities with equipment that is highly needed, easy to operate and maintain, durable and uniformly distributed across the WE's sources.

This source metering installation activity is a continuation from years three and four where 237 meters were procured (198 installed in about 226 locations, and 39 stored as spare parts) by Modon under the supervision of the LWWSS engineering consultant CDM Smith. The activity included training on water meter operation and maintenance for the pump station personnel to maximize the impact of this activity.

Scope

The activity continues into a year-long meter reading service provided by the supplier starting beginning of year five, in addition to the warranty and service of the supplied

equipment. It is intended to ensure the sustainability of the source metering installation efforts conducted.

To further sustain the maintenance and operations of the source meters, the LWWSS program will require a strengthened letter of commitment from the director general, which will be included in the handover letter, requesting the commitment to ensure the continuation of the meter reading and maintenance.

Impact

This activity yields tremendous benefits to SLWE and advances its capacity to monitor water production per site, as well as instate a culture of water demand management within the WE. The activity will also allow SLWE to obtain highly accurate information on water production throughout the SLWE territory, thus providing increased accuracy on actual drinking water provision patterns, service areas and flows. This will enable SLWE management to control operating costs, manage water production, decrease losses and advance towards achieving water balance.

SLWE's planning department will have the equipment and management tools to make the best use of the available water within the SLWE departments and build a database on water production. Non-revenue water reduction measures and water demand management could then be undertaken with higher certainty. Ultimately, through this activity, SLWE will build its capacity to deliver higher water quantities more equitably to the population of South Lebanon.

Timeframe

As detailed in the second quarterly report of year three, this activity was delayed several months due to the difficulty in getting local bidders to meet USAID and FAR bidding standards that allow the LWWSS program to determine whether the bids can be compared with each other and that the specifications required will be met. Lebanese contractors sometimes tend to operate more flexibly than is acceptable for the LWWSS program procurement and infrastructure works. As such, this activity had to be bid out twice, and it involved considerable negotiations with the lowest bidder before final selection.

Please refer to the Time Frame table below.

Activity 5.4 – Upgrading Water Analysis Laboratories

Background

This is a follow up to activities started in year three related to the installation of equipment in SLWE's water analysis laboratories in Saida, Sour (Tyre) and Nabatieh. The key equipment (atomic absorption meter) was commissioned in year three, which enables SLWE to conduct extensive water quality testing.

In year four, the LWWSS program procured the lab consumables. The planned training on the atomic absorption meter was postponed at the request of the SLWE's Head of Laboratories, Amal Chidiac. Ms. Chidiac who requested a few months to test water

samples by using the new machine to identify if they actually need training, and if so, to prepare questions for the trainer in order to enhance the effectiveness of the training.

To ensure proper use, maintenance and operation of the laboratory equipment provided, the LWWSS program strengthened its letter of commitment provided at handover and commissioning of the laboratory equipment, which requires the DG to agree to budget for and supply the lab with consumables in the future.

Scope

The LWWSS program will deliver the planned training for the laboratory staff on the O&M of the atomic absorption meter to increase the sustainability of the equipment’s use, enable routine testing methodologies to be established and fully adopted, and allow SLWE to master the tasks of operating the equipment. The LWWSS program will hire a specialist from Perkin Elmer, the manufacturing company, to provide the needed training for a period of up to two weeks.

Impact

This activity answers an urgent need of the WE and contributes to informing the WE about the health risks generated by poor water quality in SLWE. The impacts will include better capacity for the WE to conduct sampling and testing, reporting it regularly to the WE management, the MOEW and other parties (municipalities, ministry of public health, donors and customers). Most importantly, it will incite the WE to have regular systems and processes (including software) that enable it to understand and eventually improve delivered water quality, and to reach out to the population transparently about the water quality testing results.

This activity will also enable South Lebanon’s laboratories to meet the forthcoming national potable water testing standards (Libnor).

Timeframe

As mentioned above, the planned training on the atomic absorption meter was postponed at the request of the SLWE’s Head of Laboratories, Amal Chidiac. Ms. Chidiac who requested a few months to test water samples by using the new machine to identify if they actually need training and if so, to prepare questions for the trainer in order to enhance the effectiveness of the training. As the need was determined in the last quarter of year four, the training is now planned for the last quarter of year five, as per the availability of the trainer and the lab team.

Please refer to the Time Frame table below.

Component 6: Small to Medium Scale Rehabilitation/Upgrade/Extension Water and Wastewater Works within WEs

Table 14

Item	Activity Description	Program Resource	Outcome by End of Year Five	Target Date
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6.3	Pump Station Infrastructure Rehabilitation			
6.3.1	SLWE: Test and design pumps, motors and associated works for the rehabilitation of selected stations	CDM Smith (and their subcontractor DEP)	Activity completed	February 2013
6.3.2	SLWE: Supply and install pumps, motors and associated works for the rehabilitation of selected stations	- CDM Smith (and their subcontractor DEP) - Local subcontractor (Al Rawan)	Infrastructure contract placed; works commenced	March 2015

Activity 6.3 – Pump Station Infrastructure Rehabilitation

Background

This is a continuation of a year-three activity. It relates to the rehabilitation of key pump stations in SLWE, which are in dire condition and require immediate intervention to replace inefficient pumps and motors. An improvement to the pump station infrastructure will enhance overall performance by reducing water loss, saving energy, decreasing pumping down-time with fewer pump and motor malfunctions or burnouts, and ultimately increase supply hours to the population of South Lebanon.

Following extensive research and analysis, as well as discussions with SLWE, three large stations were selected for rehabilitation: Ouadi Jilo, Al Shehabieh and Batoulay.

The LWWSS program proceeded with the preliminary field investigation and engineering design for all three pump stations. CDM Smith, the subcontractor overseeing this activity, conducted detailed pump station and well tests. The tests identified a higher number of deficiencies, requiring an increased demand for a larger number of pumps and a more comprehensive and costly design than originally anticipated. CDM Smith then prepared the design package and associated detailed cost estimates, based on local market prices. It became clear that there would be insufficient budget to fund the replacement and upgrade of the three large pump stations.

It must be noted that the initial project budget and available funding for this work was simply an amount of money allocated to SLWE for work at these pump stations. There could not be an accurate estimate of how much work could be done for this amount, until all of the three facilities were examined, tested, and preliminary designs drawn up to compute approximate quantities and costs. Normally, this info is gathered during a concept design stage, which did not occur in this instance due to time and funding constraints. The said pumps stations are operationally very complex stations.

After extensive discussions with SLWE, it was decided that the LWWSS program will fund the full rehabilitation of only two pump stations, namely the Ouadi Jilo and Batoulay stations. It was agreed that SLWE will retain the design work that CDM Smith did for Al Shehabieh and seek an alternative funding source (since identified to be the USAID-funded WISE program).

Scope

In years three and four, well tests and measurements were conducted, preliminary and detailed designs were drafted, the contractor was hired, and works commenced.

In years five and six, implementation works will continue in the two pump stations. This includes upgrading of the pump stations, supply and installation of pumps and motors, commissioning, handing over, and training operators on the use of the new machinery.

Impact

The two stations cover important service areas and impact thousands of the South Lebanon population. The first station, Ouadi Jilo, raises aquifer ground water to surface level, and serves an estimated population of 31,462. The second station, selected by the SLWE director general for critical and urgent rehabilitation is Batoulay, serves an estimated population of 40,444. Therefore, this activity will benefit an estimated total population of 71,906.

The project will substantially increase the efficiency of these pump stations, resulting in up to a 25 percent enhancement in the volume of water supply delivered while the pumps are working. An additional benefit from the new pumps is that they consume approximately 15 percent less electricity for at least the first three years of their use, on average. This cost reduction is a crucial contribution to SLWE's strategic targets set in its five-year business plan of achieving full O&M cost recovery.

The proposed upgrades will also reduce the frequency of equipment breakdowns, minimizing repair costs and down time. Importantly, the upgrades will stem the long hours of service disruption due to these repairs. Furthermore, the new equipment will enhance health and safety practices in these stations because of the upgraded electrical controls installed and user training provided by the equipment vendor.

Timeframe

Please refer to the Time Frame table below.

Component 7: Corporate Culture, Customer Service Orientation, and Public Outreach

No activities are planned under this component in year five.

5. STUDY TOURS AND CONFERENCES

Background

Over the past four years, the LWWSS team researched and identified a number of relevant opportunities to complement the program's effort in capacity building for key personnel at the WE. These events took place both locally and regionally.

Once a suitable activity is identified, the LWWSS program conducts a detailed screening of the activity's background, objectives, and outcomes, and works with the WEs to identify the personnel most suited for attendance, and ensure that the activity directly contributes to the LWWSS program's scope and the WEs' needs. As such, the conference and study tour activities conducted succeeded in serving as a complementary effort to enhance the success and impact of the LWWSS program's efforts.

The activities conducted include:

- The first Arab Water Week Conference and Workshop
 - Location: Amman, Jordan
 - Dates: December 5 to December 9, 2010
 - Conference and Workshop Topics: The theme of the conference training was cost recovery of water and wastewater utilities. The workshops focused on training the attendees on benchmarking, performance management, and planning.
 - Participants:
 - SLWE: Director General and senior finance controller
 - NLWE: Head of the finance department
 - Impact: The conference topics directly support the LWWSS program's emphasis on cost recovery improvement and the use of data for critical management decision-making in areas of operational performance improvement and capital investment planning.

- Development of Water Safety Plan
 - Organizer: UN ESCWA, ACWUA and WHO
 - Location: UN House, Beirut, Lebanon
 - Dates : January 9 to January 13 , 2012
 - Subject: The purpose of the course is to train the participants to develop and apply a water safety plan in their institutions.
 - Participants: eleven senior staff from the WEs.
 - Impact: The workshop provided the attendees with a deeper understanding of the requirements for setting and maintaining a water safety plan that is adapted to the water utilities in Lebanon. The workshop also trained the attendees to collaborate with a team of peers and specialists to ensure the plan is feasible, taking into account the constraints and specificities of each utility. In doing so, the participants learned to safeguard customers, optimize operations and positively impact the environment.

➤ ACWUA's 5th Best Practices Conference

- Location: Muscat, Sultanate of Oman
- Dates: June 3 to 5, 2012 (LWWSS year three)
- Conference Topics: The theme of the conference is the utilities' perspective on water resource management in the Arab region. It aims to present and debate best practice in water utilities, and exchange local experiences with international water community experts on how to tackle water scarcity problems in the region. Discussions revolved on development of best practices and guiding principles on water resource management.
- Participants: The Directors General of the NLWE, BMLWE and BWE
- Impact: The conference provided case studies and best practices in water utility management in the Arab region, and enabled sharing and exchanging experiences with the international water community. It also provided a venue to discuss lessons learned from each case study being presented at the event.

➤ Morocco Study Tour

- Training Provider: The Office National de l'Electricité et de l'Eau Potable (ONEE)
- Location: Rabat, Morocco
- Dates : May 19 to 24, 2013
- Objective: The study tour program aimed to enhance the capacity of participants from the four Lebanese Water Establishments through building knowledge and sharing best practices. The program included class room presentations and workshops, in addition to a focus on technical matters of water treatment distribution and technologies with site visits to water treatment plants, distribution networks, and service branches of ONEE. The program highlighted the following: management of water distribution networks, pipes and network equipment, water meters/metering, challenges and lessons learned, leak detection practice, water consumption analysis, network efficiency, tariff structure and billing, water quality control, etc.
- Participants: 15 senior staff from the four WEs, including three directors general (BMLWE, NLWE, BWE)
- Impact: Through the class room presentations, workshops and site visits to water treatment plants, distribution networks, and service branches of ONEE, the study tour enhanced the knowledge of the participants in technical matters of water treatment distribution and technologies, management of water distribution networks, pipes and network equipment, water meters/metering, challenges and lessons learned, leak detection practice, water consumption analysis, network efficiency, tariff structure and billing, and water quality control.

As the focus of the LWWSS program shifts in years five and six to infrastructure and procurement, it is not expected that additional workshops, conferences and study tours will be planned.

YEAR-FIVE ACTIVITY TIME FRAME

WP Item	Work Plan Activity Title Activity Stages	Y-3 (FY'12)				Y-4 (FY'13)				Y-5 (FY'14)				Y-6						
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2					
		O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A
	BWE																			
2.4	Public Admin. and Process Management Training																			
	Procurement of services (task cancelled as will be done in-house)																			
	Course preparation (cancelled as available)																			
	Course provision in-house by LWSS staff (Y5 change)																			
2.5	Training on Network Maintenance and Repair																			
	Staff interviews; training needs assessment																			
	Course preparation																			
	Training provision																			
3.1.5	Develop procedures and a standard manual for yearly budgeting																			
	Investigate and define key best practices in budgeting																			
	Draft budgeting manual and establish linkages with ERP solution																			
	Issue final manual and conduct training and follow-up																			
3.1.6	Develop procedures and a standard manual for internal audit																			
	Review requirements and define key best practices																			
	Draft audit manual, review and issue																			
	Conduct training, incorporate any revisions, and issue final copy																			
3.2	The Enterprise Resource Planning (ERP) Platform																			
	Initial assessment																			
	Implementing accounting prerequisites																			
	Implementing prerequisite training (finance, accounting, etc)																			
	Pilot processes applied and tested																			
	IT infrastructure survey																			
	Procurement of IT infrastructure																			
	Process mapping completed, software specifications drafted																			
	Procurement of software design and implementation																			
	System implementation, adoption, user training, migration																			
	Provide on site support for a period of 12 months																			
4.4	Water Supply and Wastewater Master Plan																			
	Define scope of works; procure the master planning services																			
	Develop Master Plan																			
5.4	Upgrading the Water Analysis Laboratory																			
	Finalize laboratory layout and commence procurement																			
	Deliver and install equipment, complete works																			
	Establish service agreements and provide user training																			
6.1	Upgrading Existing Networks in Zahle																			
	Hiring project personnel; conducting technical investigation																			
	Drafting engineering SOW, appointing engineering subcontractor																			
	Engineering design stage and preparation of bid package																			
	Procurement and contract signature with infrastructure subcontractor																			
	Site implementation period; O&M sustainability support by LWSS																			
	BMLWE																			
3.1.5	Develop procedures and a standard manual for yearly budgeting																			
	Investigate, and define key best practices in budgeting																			
	Draft budgeting manual and establish linkages with ERP solution																			
	Issue final manual and conduct training and follow-up																			
	Support in implementation of manual for 2014 budget (new Y5 task)																			
3.1.6	Develop procedures and a standard manual for internal audit																			
	Review WE requirements and define key best practices																			
	Draft audit manual, review and issue to WE																			
	Conduct training, incorporate any revisions, and issue final copy																			
3.1.7	Develop module and training on the Cost Tariff Analysis Model																			
	<i>Activity introduced in year 4</i>																			
	Conduct data collection from finalized modules of ERP																			
	Conduct modeling, update model and connect to ERP platform																			
	Develop user manual, train and follow-up as needed																			
	NLWE																			
2.5	Training on Network Maintenance and Repair																			
	Staff interviews; training needs assessment																			
	Course preparation																			
	Training provision																			
3.1.5	Develop procedures and a standard manual for yearly budgeting																			
	Investigate, and define key best practices in budgeting																			
	Draft budgeting manual and establish linkages with ERP solution																			
	Issue final manual and conduct training and follow-up																			
3.1.6	Develop procedures and a standard manual for internal audit																			
	Review NLWE requirements and define key best practices																			
	Draft audit manual, review and issue to NLWE																			
	Conduct training, incorporate any revisions, and issue final copy																			
	Support in implementation of internal audit (new Y5 task)																			

WP Item	Work Plan Activity Title Activity Stages	Y-3 (FY'12)				Y-4 (FY'13)				Y-5 (FY'14)				Y-6					
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2				
		O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
5.2	Upgrading Pumping and Energy Efficiency																		
	<i>Survey and data gathering (Y2 WP)</i>																		
	<i>Bidding documents and specifications (Y2 WP)</i>																		
	<i>Procurement (Y2 WP)</i>																		
	<i>Activity rescheduled based on findings regarding NLWE's data quality</i>																		
	Complete assessment and design for pumps																		
	Confirm costing and start testing ahead of procurement																		
	Start procurement process for manufacturing and installation																		
	<i>Activity rescheduled due to delays with procurement of well-test package</i>																		
	Complete well assessment and obtain well test results																		
	Finalize design, BOQ, SOW and specs																		
	Start procurement process for manufacturing and installation (Y5 WP)																		
	Award, manufacturing, delivery, installation and training																		
	Testing and commissioning																		
5.3	Increasing Supply Hours to Areas Facing Supply Shortage																		
	Survey and data gathering																		
	Bidding documents and specifications																		
	Procurement																		
	<i>Activity rescheduled based on findings regarding NLWE's data quality</i>																		
	Complete assessment and design for generators																		
	Confirm costing and start procurement process																		
	Place procurement orders for manufacturing and installation																		
	Implementation: supply/installation of generators and training operators																		
	Servicing and warranties																		
6.2	Expanding Service Provision to Non-Served Areas: Beit Mellat																		
	Hiring personnel, technical investigation of project parameters																		
	SOW, procurement and appointment of engineering subcontractor																		
	Start investigation and design for procurement of works																		
	Detailed design and preparation of bid package																		
	Procurement and appointment of infrastructure works contractor																		
	Site implementation period; O&M sustainability support as needed																		
7.3	Designing and Implementing WE Corporate Website																		
	Website design and implementation																		
	Prepare for website activity launch																		
	Appoint website design supplier																		
	Implement website and go live																		
	Hosting website																		
	SLWE																		
2.3	Capacity Building in O&M of Pump Stations																		
	Staff interviews																		
	Course preparation																		
	Conduct training																		
	Evaluation and follow-up																		
2.4	Public Admin. and Process Management Training																		
	Course provision in-house by LWSS staff																		
3.1.5	Develop procedures and a standard manual for yearly budgeting																		
	Investigate, and define key best practices in budgeting																		
	Draft budgeting manual and establish linkages with ERP solution																		
	Issue final manual and conduct training and follow-up																		
3.1.6	Develop procedures and a standard manual for internal audit																		
	Review WE requirements and define key best practices																		
	Draft audit manual, review and issue to WE																		
	Conduct training, incorporate any revisions, and issue final copy																		
3.1.7	Develop module and training on the Cost Tariff Analysis Model																		
	Conduct data collection from finalized modules of the ERP																		
	Conduct modeling, update model and connect to ERP platform																		
	Develop user manual, train and follow-up																		
3.2	The Enterprise Resource Planning (ERP) Platform																		
	Procurement of software design and implementation																		
	Process mapping and other prerequisites																		
	System implementation, adoption, user training, migration																		
	On site support																		
5.1	Identifying Water Production																		
	Specification Stage																		
	Bidding documents consolidated																		
	Procurement started																		
	Complete specifications																		
	Place subcontract for supply and installation																		
	Place orders, instal, test and commission meters																		
	Conduct meter reading for 1 year																		
5.4	Upgrading Water Analysis Laboratories																		
	Procure contract to supply lab consumables																		
	Deliver lab consumables																		
	Conduct testing on atomic absorption instrument																		
	Provide specialist training																		
6.3	Pump Station Infrastructure Rehabilitation																		
	Local engineer (subcontractor to CDM Smith): RFP stage																		
	Evaluate bids and appoint engineering subcontractor																		
	Start design stage: issue completed design package																		
	Complete design stage and prepare bids for all stations																		
	Launch procurement for supply of pumps and rehab works																		
	Appoint contractor, implement works and train operators																		

Legend
 Planned timeframe per Y4 WP
 Activities introduced in Y5 WP
 Revised timeframe

ENVIRONMENTAL COMPLIANCE

Environmental Compliance Actions Planned for Year Five

The LWWSS Project Environmental Mitigation and Monitoring Plan (EMMP) details the project environmental compliance requirements, as well as including a list of planning and reporting tools for submission to USAID. The primary environmental compliance planning tool is the Workplan, while the primary reporting tool is the Quarterly Report.

The first table below entitled “LWWSS Environmental Compliance Overview” summarizes the environmental compliance actions for each LWWSS activity. The second table below entitled “LWWSS Environmental Mitigation and Monitoring Actions” details environmental mitigation and monitoring actions planned for year five for each activity that requires an ERAC and EMMP. The quarterly reports throughout year five will be tracking these actions.

Environmental Compliance Table 1:

LWWSS Environmental Compliance Overview				
Activities (Completed, On-going and Planned)		Environmental Compliance Actions		
No.	Description	Has an initial screening form been completed?	As per the screening form, are an ERAC and EMMP necessary?	Is there an approved ERAC and EMMP (if applicable)?
Component 2: Capacity Building for Managerial, Technical and Operational Efficiency				
2.1	Source metering training in SLWE	Yes, see activity 5.1	See activity 5.1	See activity 5.1
2.2	Water quality management in the Bekaa implemented by AUB	Yes	No	N/A
2.3	O&M trainings for pump station operators in BWE, NLWE, and SLWE	Yes	No	N/A
2.4	IT literacy training for BMLWE and BWE	Yes, see activity 3.1	No	N/A
2.5	Network maintenance and repair training for BWE	Yes	No	N/A
Component 3: Increase Financial and Commercial Viability of the WEs				
3.1	Upgrade finance and accounting standards and methods	Yes	No	N/A
3.2	Enterprise Resource Planning (ERP) platform and associated activities	Yes	No	N/A
3.3	Pilot Stakeholder exercise to sustain O&M of USAID WWTP	Yes	No	N/A
Component 4: Capital Investment Planning and Program/Project Management				
4.1	Business planning for BMLWE and SLWE	Yes	No	N/A
4.2	Pump station inventory in South Lebanon	Yes	No	N/A
4.3	Water utility management: conferences, work shops, specialist trainings and study tours	Yes	No	N/A
4.4	Masterplanning for BWE	Yes	No	N/A

Component 5: Procurement of Technical Equipment to Strengthen WEs				
5.1	Source metering installation and training	Yes	Yes	Yes
5.2.1-5.2.2	Jeita pump station rehabilitation	Yes	Yes	Yes
5.2.3-5.2.4	Pump station rehabilitation in North Lebanon	Yes	Yes	No, in Q1 of Y5*
5.3	Back-up power generators for NLWE pump stations	Yes	Yes	Yes
5.4	Upgrading water analysis laboratories in SLWE and BWE (Y3) and rehabilitation of laboratory and equipment purchases for BWE (Y4)	Yes	Yes	Yes
5.5	Customer Service Center in BWE	Yes	Yes	Yes
5.6	Upgrade IT equipment in BWE and SLWE	Yes	Yes	Yes
5.7	GNSS procurement and training for SLWE	Yes	Yes	Yes
Component 6: Small to Medium Scale Rehabilitation/Upgrade/Extension Water and Wastewater Works within WEs				
6.1	Network rehabilitation in Zahle (BWE)	Yes	Yes	Yes
6.2	Expanding service provision in Beit Mellat (NLWE)	Yes	Yes	No, in Q1 of Y5**
6.3	Pump station rehabilitation in South Lebanon	Yes	Yes	Yes
6.4	Chlorination systems installation and training	Yes	Yes	Yes
Component 7: Corporate Culture, Customer Service Orientation, and Public Outreach				
7.1	Building customer service management structure at BWE	Yes	No	N/A
7.2.1	Customer Service training at BWE and BMLWE	Yes	No	N/A
7.2.2	On-the-job training in communication planning	Yes	No	N/A
7.3.1-7.3.2	Design and implement WE brand identity guidelines and design and implement corporate website	Yes	No	N/A
7.3.3	Design and adopt customer service application forms	Yes	No	N/A
7.4	Customer satisfaction survey	Yes	No	N/A
7.5	Youth water conservation programs	Yes	No	N/A
7.6.1	Media campaign in the Bekaa	Yes	No	N/A
7.6.2	World Water Day 2012 youth outreach	Yes	No	N/A

NOTES:

ERAC=Environmental Review and Assessment Checklist

EMMP = Environmental Mitigation and Monitoring Plan

* These EMMPs were originally planned to be completed during Q1 of Y4, but the activities were not finalized during Year 4.

**These EMMPs were originally planned to be completed during Q2 of Y4, but the activities were not finalized during Year 4.

Environmental Compliance Table 2:

LWWSS Environmental Mitigation and Monitoring Actions		
Activity # as per Workplan	Activity Description	Environmental Mitigation and Monitoring Actions Planned for Year Five
5.1	Source metering installation and training	Year Five does not include monitoring of these activities, as all requirements were fulfilled in Year Four.
5.2.1-5.2.2	Jeita pump station rehabilitation	Year Five does not include monitoring of these activities, as all requirements were fulfilled in Year Four. As per the EMMP, the BMLWE Director General signed a commitment letter agreeing to follow detailed safety procedures during use of the equipment and to dispose of the equipment in an environmentally responsible manner at the end-of-useful life of the equipment.
5.2.3-5.2.4	Pump station rehabilitation in North Lebanon	<p>This activity has been delayed and began during the second quarter of year four with well assessment tests. The well assessment tests results were completed by the end of the fourth quarter of year four. The ERAC and EMMP were completed and approved during the second quarter of year five.</p> <p>Once the rehabilitation starts, LWWSS' ES will go on periodic site visits (as permitted by the security situation, given that a few of the sites are near risky areas) to ensure that all mitigation measures are being followed. LWWSS' ES will document these site visits with photos and will summarize the visits in each quarterly report.</p>
5.3	Back-up power generators for NLWE pump stations	This activity ended in Year Four. As per the EMMP, the NLWE Director General was requested to sign a commitment letter agreeing to dispose of the equipment in an environmentally responsible manner at the end-of-useful life of the equipment. Once received, the letter will be included in the EMMP monitoring files.
5.4	Upgrading water analysis laboratories in SLWE and BWE	<p>Year Five does not include monitoring of these activities, as LWWSS' capacity building specialist and engineers conducted frequent site visits to the laboratories throughout Year Three to ensure that all mitigation measures were followed and reported back to the ES, as well as taking photos for documentation. The ES also conducted periodic site visits to both SLWE and BWE and found that all mitigation measures were being followed.</p> <p>As per the EMMP, both the SLWE Director General and the BWE Director General signed commitment letters during Year Three agreeing to follow detailed safety procedures during use of the equipment and to dispose of laboratory equipment in an environmentally responsible manner at the end-of-useful life of the equipment.</p> <p>Year Five does not include monitoring of the Year Four BWE Lab rehabilitation and equipment activities, as all requirements were fulfilled in Year Four. As per the EMMP, the BWE Director General signed a commitment letter agreeing to follow detailed safety procedures during use of the equipment and to dispose of the equipment and consumables in an environmentally responsible manner at their end-of-useful life.</p>

5.5	Chlorination systems installation and training	Year Five does not include monitoring of these activities, as LWWSS' capacity building specialist and engineers conducted frequent site visits to chlorination sites throughout Year Three to ensure that all mitigation measures were followed and reported back to the ES, as well as taking photos for documentation.
5.6	Upgrade IT equipment in BWE	Year Five does not include monitoring of these activities, as all requirements were fulfilled in Year Three. As per the EMMP, the BWE Director General signed a commitment letter agreeing to dispose of IT equipment in an environmentally responsible manner at the end-of-useful life of the equipment.
	Upgrade IT equipment in SLWE	Year Five does not include monitoring of these activities, as all requirements were fulfilled in Year Four. As per the EMMP, the SLWE Director General signed a commitment letter agreeing to dispose of IT equipment in an environmentally responsible manner at the end-of-useful life of the equipment.
5.7	GNSS procurement and training for SLWE	Year Five does not include monitoring of these activities, as all requirements were fulfilled in Year Three. As per the EMMP, the SLWE Director General signed a commitment letter agreeing to dispose of the GNSS equipment in an environmentally responsible manner at the end-of-useful life of the equipment.
5.8	Customer Service Center in BWE	Year Five does not include monitoring of these activities, as all requirements were fulfilled in Years Three and Four. As per the EMMP, the BWE Director General signed a commitment letter agreeing to follow the mitigation measures during operation of the customer service center.
6.1	Network rehabilitation in Zahle (BWE)	The rehabilitation began in the third quarter of Year Four. The LWWSS ES will continue coordinating with the site supervisor who is responsible of ensuring that all mitigation measures are followed, and filling out the checklists at each site. The LWWSS' ES will conduct site visits twice quarterly to ensure that all mitigation measures are being followed. She will document these site visits with photos and short reports and will summarize the visits in each quarterly report.
6.2	Expanding service provision in Beit Mellat (NLWE)	This activity began in Year Four. The ERAC and EMMP were completed and approved in Q2 of Year 5.
		A signed commitment letter was received from the NLWE agreeing to follow safety procedures and mitigation measures during the operations phase. Contractor GOCQ submitted the official permit to dump excavated material in the Bebnine municipality dumpsite.
6.3	Pump station rehabilitation in South Lebanon	Once the construction part of the activity starts in the second quarter of Year Five, LWWSS' ES will go on site visits (as permitted by the security situation, given that the sites are near risky areas) to ensure that all mitigation measures are being followed. She will document these site visits with photos and short reports and will summarize the visits in each quarterly report
		This activity began during Year Four. As per the EMMP, the SLWE Director General signed a commitment letter agreeing to dispose of excavation waste and decommissioned equipment at the Ras Al Ain landfill.
		During rehabilitation, LWWSS' ES will go on site visits (as permitted

	by the security situation, given that the sites are near risky areas) to ensure that all mitigation measures are being followed. LWWSS' ES will document these site visits with photos and short reports and will summarize the visits in each quarterly report.
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ERAC = Environmental Review and Assessment Checklist
EMMP = Environmental Mitigation and Monitoring Plan
ES = LWWSS Environmental Specialist