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Lebanon Water and Wastewater Sector Support Year-Three Work Plan

September, 2011

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Lebanon Water and Wastewater Sector Support
Year-Three Work Plan
September, 2011
USAID Contract EPP-I-00-04-00023-00/04

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 four-year program has an effective contract date of October 1, 2009. LWWSS will implement the project with the participation of Camp, Dresser, Mckee (CDM), Emerging Markets Group (EMG), ValueAdd 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, 2011 to September 30, 2012. The document presents a general plan forecasting activities throughout the four-year life of the project. It also presents the year-three activities in greater detail. However, LWWSS 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.

Samuel L. Coxson
Development Alternatives Inc.
Chief of Party

August 31, 2011

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Table of Acronyms

| | |
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| ACWUA | Arab Countries Water Utilities Association |
| AFD | French Development Agency |
| BMLWE | Beirut and Mount Lebanon Water Establishment |
| BWE | Beka'a 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 |
| LWWSS | Development Alternatives Inc. |
| DCOP | Deputy Chief of Party |
| 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 |
| 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 |
| MOTGE | <i>Mise en place des Outils Techniques de Gestion de l'Eau</i> |
| 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 |
| SCADA | Supervisory Control and Data Acquisition |
| 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 |
| WWTP | Wastewater Treatment Plant |

PROGRAM INTRODUCTION

1. 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 two years of the program, LWWSS has focused on implementing its work plan within specific areas of Water Establishment (WE) operations, to address individual needs of each WE, and apply knowledge and expertise to leverage the successes accomplished to date.

The program contributes to the WEs' staff capacity building, capital investment planning, and customer service of the WEs. It also helps them invest in their infrastructure and equipment to enable them to improve and extend their customer services; improve their operations, financial management, planning and customer outreach.

The areas of focus that LWWSS 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;
- business planning to increase capital planning and benchmarking capacity;
- funding urgent infrastructure works to enhance delivery or access and coverage;
- developing a corporate culture, customer service orientation and public outreach programs

Ultimately, the program aims to help all four of Lebanon's Water Establishments (WEs) advance towards financial and operational sustainability and overcome the many challenges they face, including staff shortages, an aging workforce, poor customer relations, low tariffs that fail to recover operating costs, lack of metering, excessive non-revenue water, and underinvestment in the water and wastewater infrastructure.

2. Water and Wastewater Specific Challenges

The challenges that face LWWSS in year three are many of the same challenges that the program was developed to address in assisting WEs and the MOEW 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;
- Improving customer relations through the promotion of a customer-oriented culture, the implementation of customer-relationship management systems, and the optimization of customer-related processes such as service applications and claims;

- Building the capacity of the WEs in outreach and communication, as well as funding key outreach activities that contribute to enhancing the WEs' performance and promoting water conservation;
- Supporting the integration of wastewater management into the WEs' operations and investigating measures to enable wastewater plant operation and maintenance in pilot areas.

These 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 LWWSS remains flexible to adapt to changed policies and circumstances of the WEs and the MOEW.

SUMMARY OF YEAR-THREE ACTIVITIES

1. Background

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

2. Activity Environment

The LWWSS team has planned the year-three activities (both new and ongoing) while taking into consideration the strengths and weaknesses of each water establishment.

The process of assessing and identifying work plan activities takes into account the following:

- **Continuation Activities:** Many of the year-three activities (and their sub-components) are continuation activities from year two. Many activities entail ongoing implementation and support through various steps and with different levels of involvement across the WEs' departments. The table included in section five below presents an overview of all the program's activities to date. Some of the key continued activities include the establishment of production metering across all sources in SLWE, the implementation of a water quality survey and testing protocols in BWE, the rehabilitation of the Jeita pump station in BMLWE, the provision of back-up power generation solutions in NLWE, and the implementation of an integrated management information system that incorporates data management, finance and customer services processes in both BMLWE and BWE.
- **LWWSS Activities' Contribution to Other Efforts within the Water Sector in Lebanon:**

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:

- The UNDP's Lebanon hydrological survey will rely on the database produced by the LWWSS' Pump Station Survey in SLWE to build its hydrological database for Lebanon; GIZ will also use that same database as a key source of information in the development of the South Lebanon water supply master plan.
- The UNDP/MOEW's Lebanese Center for Water Conservation's outreach efforts will rely on existing efforts and outreach documentation produced by LWWSS during the year-two outreach activity with youth in schools in BWE.

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.

- GIZ will use the corporate identity guidelines produced by LWWSS for NLWE and replicate the effort in South Lebanon, to increase the impact of the establishment's newly opened customer service center and hotline.
- **Contribution to the MOEW's National Water Sector Strategy (NWSS):** The Ministry of Energy and Water has completed a national water sector strategy that will guide the planning and implementation of both capital and enabling initiatives such as legal reforms, tariff regulation, metering and management of the wastewater sector. Water establishments, donors and other stakeholders will be required to align their planning to the national strategy. LWWSS will take into account the guidance of NWSS while planning and implementing program activities. For example, the SLWE's business plan update funded by LWWSS will encourage the WE's management to take the NWSS' guidelines into account in the business plan's forecasts for the forthcoming years.
- **Contribution to WEs' Business Plan Targets:** In those water establishments where a five-year business plan has been drafted and adopted, LWWSS will emphasize those activities that contribute to the achievement of business plan targets and objectives. In cases where the business plans requiring drafting or updating, LWWSS will assist the WEs in the participatory and iterative process of drafting these documents, and building the capacity of the water establishments to conduct such processes in-house in the future.
- **The LWWSS Follow-On: Upgrading Infrastructure, Extending Service Provision, and Enhancing Operational Efficiency:** On September 30, 2011, additional funding was approved by USAID for LWWSS, to finance the implementation of infrastructure projects that enable upgrading existing water infrastructure, extending of service provision to non-served populations, and enhancing operational efficiency of existing infrastructure installation through equipment replacement and energy reduction. These projects will be implemented in BWE, NLWE and SLWE and will be completed by April, 2015.

The infrastructure projects complement LWWSS current procurement activities such as source metering in SLWE and BWE, back-up power supply for pump stations in NLWE, pumping equipment replacement in Jeita (BMLWE) and NLWE, and laboratory equipment procurement in SLWE and BWE. In addition to the procurement of equipment, LWWSS is assisting the WEs in recruiting and training operation and maintenance teams, and in the processes of systematic data collection and management that enable sustainable operation of the equipment.

As per previous standard practice requirements, procurement and infrastructure works are premised on carrying out technical feasibility investigations to ensure that the field conditions are understood and that proposed specifications of equipment and works meet the needs of the WEs. These technical feasibility assessments add a substantial time requirement for procurement, installation or construction, but are the only way LWWSS can meet its obligation to ensure the assistance produces the maximum positive impact on the sustainability of water and wastewater services of the WEs.

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

Across all the program's components, LWWSS is focusing on assisting the WEs with appropriate employee placement and establishing training programs as a prerequisite for activities. Training and proper placement are especially applicable for procurement activities, because proper placement ensures sustainability by providing presence of essential skills and experience in specific divisions of the WE.

- **Supply of Consumables for Equipment Procured**, where appropriate, to enable the equipment to be operated, trained on, and serviced during the warranty period, thereby ensuring sustainability of the program's activity while gradually building the WE's capacity to take possession and assume funding of the equipment's operation and maintenance. The provision of consumables is also complemented by a written commitment from WEs prior to each major procurement, confirming that the WE will supply the future consumables and assume the O&M responsibility for the procured equipment.

3. Wastewater Challenges

LWWSS found that providing development assistance in the wastewater sector can be accomplished by developing a model service agreement and focusing on the relationship of the WEs with municipalities. Currently municipalities have installed, or at least been given ownership of, wastewater collection networks within their municipal boundaries. Yet, it is the WE that has the legal responsibility to manage sewage collection and treatment. While the current situation is complex, LWWSS will work with selected WEs and municipalities to establish a pilot service agreement between the two parties. This approach avoids the lengthy and tenuous process of changing fundamental water and wastewater laws while at the same time presenting a model for the working relationship between the WEs and municipalities. This assessment and model service agreement will provide recommended actions by all parties for its implementation.

- **Wastewater not a Sector Priority**

The political leadership in Lebanon is focused on providing adequate water supply to the population. Although the MOEW has included wastewater in its National Water Sector Strategy (NWSS), water remains by far the main focus of the strategy and wastewater will be addressed when the water supply issues and problems have been resolved. The NWSS will provide policy guidelines and be supported by clarifying regulation and budget funding in the forthcoming year.

Furthermore, the MOEW and WEs are yet to establish wastewater divisions, recruit specialized personnel and create an enabling environment for the sector to exist at the decision-making level (MOEW) and at the operational level (WEs). Most of the WEs' organizational charts incorporated within their by-laws do not include wastewater departments, thereby complicating the hiring processes for such positions.

- **Lack of a Revenue Stream**

While this is not an impediment, but rather a delay, the largest problem within the wastewater sector is in establishing a funding stream for wastewater service in order to:

- (1) reduce the Government of Lebanon (GOL) funding needed to carry out the service by the WEs and municipalities, and
- (2) to ensure sustainability of an acceptable level of wastewater service.

The lack of adequate and sustainable funding prevents WEs or municipalities from appointing skilled personnel in key positions, repair and maintain the networks, and operate the treatment plants properly.

The establishment of a revenue stream is further delayed because the WE director generals do not fully acknowledge wastewater as an area that falls under their establishments' legal and operational responsibility. Wastewater is still seen as a distant problem, a burden that would be addressed in the medium-term.

- **Cautious and Limited Donor Involvement**

Given the absence of a clear and definitive section in the national wastewater strategy and the MOEW's and WEs' main focus on water supply issues, donors have limited their involvement on the wastewater sector and chosen to limit their involvement in wastewater in Lebanon.

LWWSS has been involved in an activity that might contribute to advancing the debate in the wastewater sector in Lebanon: the existing USAID wastewater treatment plants in the Bekaa. The assessment focuses on establishing a pilot service agreement between the WE and a municipality that owns, operates and maintains the wastewater collector network or plant within its jurisdiction.

- **Areas of Involvement for LWWSS**

LWWSS will develop a model service agreement based on an assessment of the operating environment, existing laws and decrees to address the operation and maintenance of one of the three existing USAID-funded plants in BWE. LWWSS will propose, among other scenarios, a service agreement between the WE and one of those municipalities currently operating the USAID-funded wastewater treatment plants.

This is a continuation of a year-two activity, whereby LWWSS began drafting a pilot agreement that will focus on the three USAID-funded plants in Aitanit, Ablah and Forzol. By working with USAID's contractor CDM, the union of municipalities of Qaraoun (owner of the Aitanit plant), the municipalities of Ablah and Ferzol, the BWE and other key stakeholders including the Ministry of Interior and Municipalities, LWWSS will develop and present the model service agreement through which the service can be provided sustainably.

In addition, LWWSS will further assist the WEs in billing and collecting the future wastewater tariff through its current financial reform activities by:

- (1) adapting the billing system to include a wastewater tariff (BMLWE and BWE) and;
- (2) preparing the customer for the additional billing through the planned customer awareness campaigns

4. Activity Selection Criteria

Activity selection by LWWSS is based on extensive, participatory investigation through LWWSS's 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 scope and work plan activities
- Availability of LWWSS 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 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.

5. Program Activity Matrix

The list below includes three types of activities:

- Ongoing activities started earlier;
- Activities completed;
- New activities planned for year three onwards.

The table below consolidates all of LWWSS' activities to date, including those that were fully or partly completed, and identifies them by component and beneficiary. It also shows the status of each activity.

| Item | Description | Beneficiary | | | | Deliverable by end of Year Three | Deliverable Timeframe |
|------|-------------|-------------|-----|------|------|----------------------------------|-----------------------|
| | | BMLWE | BWE | NLWE | SLWE | | |

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

| | | | | | | | |
|------------|--|---|---|---|---|---|-----------------|
| 2.1 | Establishing and Building the Capacity of Metering Teams | | | | ✓ | | |
| 2.1.1 | Assist in identifying metering teams and assess training needs | | | | ✓ | - Assessment conducted, recommendations issued to WE | September, 2012 |
| 2.1.2 | Provide management team and field team training on metering | | | | ✓ | - Training planned - Scope of Work defined | September, 2012 |
| 2.1.3 | Provide technical assistance (studies, training, study tours) and/or technological tools for water demand management | | | | ✓ | - Activity planned | September, 2012 |
| 2.2 | Building the WEs' Water Quality Management Capacity | | ✓ | | ✓ | | |
| 2.2.1 | Conduct water quality baseline survey based on seasonal sampling of all sources, with on-the-job staff training | | ✓ | | | - Activity Completed - Assessment issued to BWE | May, 2012 |
| 2.2.2 | Establish a region-specific and Libnor-compatible testing protocols and methodology | | ✓ | | | - Completed, assessment issued to BWE | September, 2012 |
| 2.2.3 | Plan and conduct a comprehensive user training on all aspects of lab operation | | ✓ | | | - Activity planned | September, 2012 |
| 2.3 | Build Pump Stations Operators Capacity in Operation and Maintenance | | ✓ | ✓ | | | |
| 2.3.1 | Pump station operators basic O&M and H&S training (70+ staff) | | ✓ | ✓ | | - Activity completed in Year Two. Will be repeated in BWE to cover new staff. | September, 2012 |
| 2.3.2 | Pump station operators advanced training in O&M | | | ✓ | | - Activity completed - Follow-on in place | September, 2012 |
| 2.4 | Capacity Building in Enhancing Administrative Performance | ✓ | | | | | |
| 2.4.1 | IT literacy training (Windows, Word, Excel, Access, Powerpoint) training aiming at increasing staff productivity | ✓ | | | | - Training completed - Follow-up in place | September, 2012 |

Team

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 CDM: Bassem Ghayda, Gulnard Ters, Elie Hreiz
 EMC: Nada Akl, Mike Chalah

Legend

- ✓ Activities conducted wholly by LWWSS
- Activities conducted in collaboration with other donors

- New activities for year three onward
- Completed activities

| Item | Description | Beneficiary | | | | Deliverable by end of Year Three | Deliverable Timeframe |
|------|-------------|-------------|-----|------|------|----------------------------------|-----------------------|
| | | BMLWE | BWE | NLWE | SLWE | | |

Component 3: Increase Financial and Commercial Viability of Water Establishments

| | | | | | | | |
|------------|--|---|---|---|---|---|---|
| 3.1 | Upgrade Finance and Accounting Standards and Methods | ✓ | ✓ | ✓ | | | |
| 3.1.1 | Build the WE capacity in consolidating and issuing end of year financial reports | ✓ | ✓ | | | - Information collected - Reports produced | March, 2012 |
| 3.1.2 | Training in Public Accounting, Finance, Procurement, Auditing | ✓ | ✓ | ✓ | | - Training completed - Follow-up in place | February, 2012 (BWE) September, 2012 (NLWE) |
| 3.1.3 | Define cost centers, create/update chart of accounts, and accounting coding procedures | ✓ | ✓ | ✓ | | - Information collected - New COAs and procedures defined | March, 2012 (BWE+BMLWE) September, 2012 (NLWE) |
| 3.1.4 | Develop procedures for asset and inventory identification, coding and valuation | ✓ | ✓ | ✓ | | - Procedures defined with the WE | March, 2012 (BWE+BMLWE) September, 2012 (NLWE) |
| 3.2 | Integrate the WEs Financial, Accounting, Customer Service and Business Process Systems | ✓ | ✓ | | ✓ | | |
| 3.2.1 | Conduct business process mapping | ✓ | ✓ | | | - Workflow mapping completed and approved by WE | |
| 3.2.2 | Implement or upgrade Finance and Accounting System (FAS) and Customer Relationship Management (CRM) solution | ✓ | ✓ | | ✓ | - Scope defined - Procurement and implementation started | August, 2012 |
| 3.2.3 | Implement intranet system enabling web-browser based e-training, communication and business process tools | ✓ | ✓ | | ✓ | - Scope defined - Procurement and implementation started | August, 2012 |
| 3.2.4 | Conduct training, assist in transition phase and provide one/two year on site support | ✓ | ✓ | | ✓ | - Training started | September, 2012 |
| 3.2.5 | Supply and install time attendance machines and implement administrative and HR measures to increase HR efficiency | | ✓ | | | - Core equipment installed +training in Year 2. - Two sets planned for Year Three. | September, 2012 |
| 3.3 | Pilot Stakeholder Exercise to Sustain O&M of USAID WWTP | | ✓ | | | - Assessment report | September, 2012 |

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Legend

- ✓ Activities conducted wholly by LWSS
- Activities conducted in collaboration with other donors

- New activities for year three onward
- Completed activities

| Item | Description | Beneficiary | | | | Deliverable by end of Year Three | Deliverable Timeframe |
|------|-------------|-------------|-----|------|------|----------------------------------|-----------------------|
| | | BMLWE | BWE | NLWE | SLWE | | |

Component 4: Capital Investment Planning and Program/Project Management

| | | | | | | | |
|-------|---|---|---|---|---|--|-----------------|
| 4.1 | Increase Capacity in Business Planning, Capital Investment Planning and Benchmarking | • | | | ✓ | | |
| 4.1.1 | Capacity building in planning and updating 5-year business plans, benchmarking and performance monitoring | • | | | ✓ | - Business plan prepared, issued to WE - Follow-up in place | |
| 4.2 | Implement Asset Survey, Inventory and Valuation | | | | ✓ | | |
| 4.2.1 | Pump-station inventory and valuation, in a format that is ready for integration into FAS, MMS and GIS | | | | ✓ | - Activity completed in SLWE | June, 2012 |
| 4.2.2 | Pump station equipment replacement packages for bidding by BWE | | | | ✓ | - Activity completed in SLWE | June, 2012 |
| 4.2.3 | O&M training needs assessment for pump-station operators | | | | ✓ | - Activity completed in SLWE | June, 2012 |
| 4.3 | Build Decision-Makers' Managerial Capacity in Water Utility Management | ✓ | ✓ | ✓ | ✓ | | |
| 4.3.1 | Water utility management: conferences, workshops, specialist training and study tours | ✓ | ✓ | ✓ | ✓ | - Activities planned and undertaken | September, 2012 |
| 4.4 | Master Planning | | ✓ | | | | |
| 4.4.1 | Water Supply and Sewerage Master plan | | ✓ | | | - Activity SOW defined. - Services procured, Activity started | September, 2012 |

Component 5: Procurement of Technical Equipment to Strengthen WEs

| | | | | | | | |
|-------|---|--|--|--|---|---------------------------------------|-----------------|
| 5.1 | Identifying Water Production and Contributing to Water Demand Management | | | | ✓ | | |
| 5.1.1 | Supply and install up to 218 production meters, fittings and protection box/manhole (all non-metered sources in WE) | | | | ✓ | - Orders places, installation started | September, 2012 |

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Legend

- ✓ Activities conducted wholly by LWWSS
- Activities conducted in collaboration with other donors

- New activities for year three onward
- Completed activities

| Item | Description | Beneficiary | | | | Deliverable by end of Year Three | Deliverable Timeframe |
|------|-------------|-------------|-----|------|------|----------------------------------|-----------------------|
| | | BMLWE | BWE | NLWE | SLWE | | |

Component 5: Procurement of Technical Equipment to Strengthen WEs (CONT'D)

| | | | | | | | |
|------------|---|---|---|---|---|--|-----------------|
| 5.2 | Upgrading Pumping and Energy Efficiency | ✓ | | ✓ | ✓ | | |
| 5.2.1 | BMLWE: Jeita - Design equipment replacement and sand removal unit solution | ✓ | | | | - Design Produced and Approved by BMLWE | |
| 5.2.2 | BMLWE: Jeita - Supply 18 pumps and motors (US made), associated valves, fittings and electrical panel boards | ✓ | | | | - Equipment delivered to BMLWE | June 2012 |
| 5.2.3 | SLWE: Test and design pumps, motors and associated works for the rehabilitation of selected stations | | | | ✓ | - Design Produced and Approved by SLWE | September, 2012 |
| 5.2.4 | SLWE: Supply and install pumps, motors and associated works for the rehabilitation of selected stations | | | | ✓ | - Activity planned | September, 2012 |
| 5.2.5 | NLWE: Test and design the replacement up to 20 submersible pumps, motors and other works in up to 15 stations | | | ✓ | | - Procurement started | September, 2012 |
| 5.2.6 | NLWE: Supply and install the replacement of up to 20 submersible pumps, motors and other works in up to 15 stations | | | ✓ | | - Activity planned | September, 2012 |
| 5.2.7 | Establish service agreements, and conduct user training programs for the above activities | ✓ | | ✓ | ✓ | - Activity planned | September, 2012 |
| 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 | | | ✓ | | - Procurement complete - Manufacturing complete, shipping started | September, 2012 |
| 5.3.2 | Establish service agreements and conduct user training program for these generators | | | ✓ | | - Activity planned | September, 2012 |
| 5.4 | Upgrading the Water Analysis Laboratories | | ✓ | | ✓ | | |
| 5.4.1 | Upgrade the water testing laboratories with infrastructure and equipment | | ✓ | | ✓ | - Procurement planned at BWE - Procurement completed in SLWE | September, 2012 |
| 5.4.2 | Establish service agreements, and conduct user training programs for the above activities | | ✓ | | ✓ | - Activity planned in BWE - Activity completed in SLWE | September, 2012 |

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Legend

- ✓ Activities conducted wholly by LWWSS
- Activities conducted in collaboration with other donors

- New activities for year three onward
- Completed activities

| Item | Description | Beneficiary | | | | Deliverable by end of Year Three | Deliverable Timeframe |
|------|-------------|-------------|-----|------|------|----------------------------------|-----------------------|
| | | BMLWE | BWE | NLWE | SLWE | | |

Component 5: Procurement of Technical Equipment to Strengthen WEs (CONT'D)

| | | | | | | | |
|------------|---|---|---|--|---|--|--|
| 5.5 | Water Treatment and O&M Training | | ✓ | | | | |
| 5.5.1 | Install up to 20 UNICEF-supplied chlorinator units; Supply and install safety equipment and gas detection systems | | ✓ | | | | - Installation complete |
| 5.5.2 | Training course for operators and year-long service and supply of consumables | | ✓ | | | | - Training conducted (done) - 1 year service agreement, consumables |
| 5.6 | Increase IT Infrastructure Efficiency | ✓ | ✓ | | ✓ | | |
| 5.6.1 | Assess and design IT infrastructure for WE headquarters and connectivity to branches | ✓ | ✓ | | ✓ | | - Report issued and adopted by SLWE |
| 5.6.2 | Upgrade server installation and power supply infrastructure at head office and selected branches | | ✓ | | ✓ | | - Scope defined - Procurement and implementation started |
| 5.7 | Upgrade the WE's Topographic Surveying Capacity | | | | ✓ | | |
| 5.7.1. | Supply high accuracy GPS-based topographic survey equipment (GNSS) and associated computer tools | | | | ✓ | | - Equipment delivered - Implementation and training completed |
| 5.7.2 | Conduct user training, assist in transition phase and provide on site support | | | | ✓ | | - Training completed - Follow-up ongoing |
| 5.8 | Establishing Direct Customer Interface | | ✓ | | | | |
| 5.8.1 | Design branch office and customer service center in WE's premises in Zahle | | ✓ | | | | - Design complete and approved by WE |
| 5.8.2 | Implement interior works and furnish the new customer service center; connect IT systems to head office | | ✓ | | | | - Implementation complete - Project handed over to WE |
| 5.8.3 | Assist WE in reaching to customers and build staff capacity in customer service | | ✓ | | | | - Activity planned |

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| Item | Description | Beneficiary | | | | Deliverable by end of Year Three | Deliverable Timeframe |
|------|-------------|-------------|-----|------|------|----------------------------------|-----------------------|
| | | BMLWE | BWE | NLWE | SLWE | | |

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

| | | | | | | | |
|------------|--|--|---|---|--|--|-----------------|
| 6.1 | Decreasing Water Losses and Upgrading Existing Networks | | ✓ | | | | |
| 6.1.1 | Design network upgrades in Zahle: rehabilitating the water supply network of the region of Mar Elias. | | ✓ | | | - Engineering consultant appointed - Engineering services started | September, 2012 |
| 6.1.2 | Implement network upgrades in Zahle: rehabilitating the water supply network of the region of Mar Elias. | | ✓ | | | - Preparation for procurement started | September, 2012 |
| 6.1.3 | Design network upgrades in Zahle: rehabilitating five branch networks in Haouche el Oumara, Maalaka, Rassieh, Karak-Forzol and Midan. | | ✓ | | | - Engineering consultant appointed - Engineering services started | September, 2012 |
| 6.1.4 | Implement network upgrades in Zahle: Design network upgrades in Zahle: rehabilitating five branch networks in Haouche el Oumara, Maalaka, Rassieh, Karak-Forzol and Midan. | | ✓ | | | - Preparation for procurement started | September, 2012 |
| 6.2 | Expanding Service Provision to Non-Served Areas | | | ✓ | | | |
| 6.2.1 | Beit Mellat, Akkar, North Lebanon: Design metered house connections to up to 18 villages | | | ✓ | | - Scope defined, consultant appointed - Design complete | September, 2012 |
| 6.2.2 | Beit Mellat, Akkar, North Lebanon: Implement house connections to up to 18 villages | | | ✓ | | - Preparation for procurement started | September, 2012 |
| 6.2.3 | Beit Mellat, Akkar, North Lebanon: Build WE capacity in increasing customer base and implementing consumer metering | | | ✓ | | - Activity planned | September, 2012 |

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

| | | | | | | | |
|------------|--|---|---|---|--|---|--------------|
| 7.1 | Building Customer Service Management Structure | | ✓ | | | | |
| 7.1.1 | Build a customer service staffing plan; Coordinate roles and responsibilities between HO and branches | | ✓ | | | - Activity completed and proposals approved by WE | |
| 7.2 | Customer Service Management Capacity Building | ✓ | ✓ | ✓ | | | |
| 7.2.1 | Customer service training aiming at enhancing service effectiveness and increasing customer satisfaction | ✓ | ✓ | | | - Training provided - Follow-up in place | August, 2012 |
| 7.2.2 | On-the-job capacity building in communication planning | | | ✓ | | - Training provided - Follow-up in place | |

Team

DAI: Sam Coxson, Jimmy Zammar, Ahmad Siddik, May Koleilat
 CDM: Bassem Ghayda, Gulnard Ters, Elie Hreiz
 EMC: Nada Akl, Mike Chalah

Legend

- ✓ Activities conducted wholly by LWWSS
- Activities conducted in collaboration with other donors

- New activities for year three onward
- Completed activities

| Item | Description | Beneficiary | | | | Deliverable by end of Year Three | Deliverable Timeframe |
|------|-------------|-------------|-----|------|------|----------------------------------|-----------------------|
| | | BMLWE | BWE | NLWE | SLWE | | |

Component 7: Corporate Culture, Customer Service Orientation, and Public Outreach (CONT'D)

| | | | | | | | |
|------------|--|---|---|---|---|--|-----------------|
| 7.3 | Develop Tools and Support WEs in Adopting Corporate Communication | | ✓ | ✓ | | | |
| 7.3.1 | Design and Implement WE Brand Identity Guidelines | | | ✓ | | - Activity completed | |
| 7.3.2 | Design and Implement WE Corporate Website | | | ✓ | | - Activity completed | September, 2012 |
| 7.3.3 | Develop and Adopt Customer Service Application Forms | | ✓ | | | - Activity completed | March, 2012 |
| 7.4 | Nation-Wide Customer Satisfaction Poll | ✓ | ✓ | ✓ | ✓ | - Activity completed in 2009 - Follow-on planned for 2013 | Year Four |
| 7.5 | Youth Water Conservation Programs | | ✓ | | ✓ | | |
| 7.5.1 | Elementary school outreach program in Zahle | | ✓ | | | - Activity completed | |
| 7.5.2 | Elementary school outreach program in Jezzine | | | | ✓ | - Activity completed | |
| 7.6 | Consumer-Targeted Awareness Programs: World Water Day, Water Quality, Conservation | | ✓ | ✓ | | | |
| 7.6.1 | Collections- and conservation-related outreach activity for BWE (TV, radio, press, billboards) | | ✓ | | | - Activity completed | |
| 7.6.2 | Water awareness campaigns on 2012 world water day | | | ✓ | ✓ | - Activity completed | April, 2012 |

Team

DAI: Sam Coxson, Jimmy Zammar, Ahmad Siddik, May Koleilat
 CDM: Bassem Ghayda, Gulnard Ters, Elie Hreiz
 EMC: Nada Akl, Mike Chalah

Legend

- ✓ Activities conducted wholly by LWWSS
- Activities conducted in collaboration with other donors

- New activities for year three onward
- Completed activities

YEAR-THREE 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 (BWE)

Background and Key Points

Continuing Human Resource Challenges: BWE still suffers from a lack in human capacity across its organizational structure, despite some progress achieved with temporary recruitment in 2011.

In late 2011, BWE obtained governmental approval to hire contracted personnel through private service providers in the market. Therefore, it succeeded in hiring 105 staff on a temporary basis. BWE also obtained governmental approval in 2011 to initiate the permanent recruitment of over 100 employees through the council of civil service. The completion of this process typically lasts 12 to 18 months.

Despite this progress, the benefits of the temporary hiring process are not visible yet in BWE, and the WE management seems to be hesitant in assigning personnel to key positions and in devolving responsibilities and tasks to those positions.

LWWSS is assisting the WE management in surveying the skills available and is providing recommendations to the assignment of personnel to key positions; however, progress remains slow.

This continued lack of human capacity both in terms of staff and skills in the WE, especially at the middle management level, puts some of LWWSS' ongoing activities in BWE at risk, as these activities were planned to take advantage of the forecasted increase in human capacity.

Throughout year three, LWWSS will maintain its assistance to the WE management by helping them plan their HR needs and encouraging them to assign appropriate personnel to key positions. However, the year-three work-plan schedule will take into account the ongoing weaknesses in human capacity, by proposing a phasing in of those activities that rely on advanced middle management skills and linking their progress to the recruitment of capable personnel. Examples include the ERP software platform and its hardware infrastructure, as well as the source metering supply and installation.

Ongoing Financial Challenges: The weakness in human capacity, combined with the subscription and collection challenges in the Bekaa region, continue to impact

BWE's financial performance. The temporary appointment of Mr. Maroun Mousallem as director general has resulted in a visible enhancement of WE performance. However, major challenges remain, such as: low collection rates, low subscription rates, high percentage of illegal connections, poor technical efficiency (water supply hours, equipment breakdowns, high energy consumption) and low staff performance.

LWWSS, as well as other donors, is assisting by building the WE's capacity to address this lack of performance. GIZ is assisting in developing a five-year business plan for the WE, while LWWSS' year-three activities focus on increasing BWE's capacity in financial management, billing and collection efficiency, and management of its infrastructure.

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

Table 1

| Item | Activity Description | Program Resource | Deliverable by End of Year Three | Timeframe |
|------------|---|--------------------------------|--|------------|
| 2.2 | Building the WEs' Water Quality Management Capacity | | | |
| 2.2.1 | Conduct water quality baseline survey based on seasonal sampling of all sources, with on-the-job staff training | AUB | Activity Completed Assessment issued to BWE | May, 2012 |
| 2.2.2 | Establish a region-specific and Libnor-compatible testing protocols and methodology | AUB | Activity Completed Assessment issued to BWE | Sept, 2012 |
| 2.2.3 | Plan and conduct a comprehensive user training on all aspects of lab operation | AUB | Activity planned | Sept, 2012 |
| 2.3 | Build Pump Stations Operators Capacity in Operation and Maintenance | | | |
| 2.3.1 | Pump station operators basic O&M and H&S training (70+ staff) | CDM (BG, GT), LWWSS (MK) Kredo | - Activity completed in Year Two. - Will be repeated in BWE to cover new staff. | Sept, 2012 |

Activity 2.2 - Building the WEs' Water Quality Management Capacity

Background, Scope and Impact

YEAR TWO- LWWSS is proceeding with the implementation of a comprehensive group of activities that aim at building BWE's capacity in managing water quality through an adapted management plan that is based on the reality of BWE's water pollution profile, water treatment and testing infrastructure, and human capacity. The plan is scalable and encompasses setting testing standards and methodologies, water monitoring protocols, as well as reporting and management.

Once a plan is adopted, a comprehensive training will take place for existing and forthcoming staff (both temporary and permanent), followed by a phased procurement of laboratory equipment that takes into account the capacity of the

BWE to implement the plan, fund consumables, and operate the equipment (refer to “Background and Key Points” above).

LWWSS has appointed the American University of Beirut’s (AUB) Public Health Department to provide the services under this group of activities. AUB has completed the dry month water quality sampling for BWE as well as the assessment of water quality management practices and existing infrastructure. Wet season sampling will take place in the winter of 2012, prior to the production of the water quality management plan and testing protocol to enable the WE to conduct water testing that matches local and international standards.

At the end of year-three, LWWSS will be in a position to conduct a comprehensive staff training (implementation will take into account availability and skills of BWE staff at the time of training) and commence equipment procurement (subject to availability of skilled personnel).

Also, as highlighted under component five, LWWSS completed in 2011 the procurement of urgent equipment needed for the BKWE’s water analysis laboratory in Zahle to enable the basic tests to be undertaken until such time as the comprehensive Water Quality Management activities are complete. LWWSS also provided, through its subcontractor Numelab, the user training course for this equipment and is in the process of providing consumables for it.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| Water quality baseline survey completed | | | | | | | | | | | | |
| Establish testing protocols and methodology | | | | | | | | | | | | |
| Plan and conduct a comprehensive user training on lab operation | | | | | | | | | | | | |

Activity 2.3 – Building Operators’ Capacity in Operation and Maintenance of Pump Station Equipment

Background, Scope and Impact

During year two, LWWSS has successfully completed the Pump Station O&M training for 20 staff at BWE. This training resulted in improved skills and processes for pump station staff in operating and maintaining pump station plant and equipment, as well as improved health and safety practices.

This training results in fewer site accidents and equipment breakdown, as well as improved efficiency for pumping and energy consumption. The training impacts 12 stations, serving a population of over 100,000 across BWE.

During year three, and to ensure sustainability of this activity, LWWSS will plan and conduct a follow-on refresher course for those operators trained in year two and new for those newly appointed operators who joined BWE during the last months of 2011. This short training refresher (one or two days) will cover the course material provided to the operators in year-two, remind the trainees of the O&M and health and safety basics, and assess the extent to which the processes are being adhered to by the trainees.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Staff interviews, training needs assessment | | | | | | | | | | | | |
| Course preparation | | | | | | | | | | | | |
| Conduct training | | | | | | | | | | | | |

Component 3: Increase Financial and Commercial Viability of Water Establishments

Table 2

| Item | Activity Description | Program Resource | Deliverable by End of Year Three | Timeframe |
|------------|---|--------------------------------------|--|-------------|
| 3.1 | Upgrade Finance and Accounting Standards and Methods | | | |
| 3.1.1 | Build the WE capacity in consolidating and issuing end of year financial reports | EMC (MC), LWWSS (AS) ABA | Information collected Reports produced | March, 2012 |
| 3.1.2 | Training in Public Accounting, Finance, Procurement, Auditing | EMC (MC)*, LWWSS (MK) | Training completed Follow-up in place | Feb, 2012 |
| 3.1.3 | Define cost centers, create/update chart of accounts, and accounting coding procedures | EMC (MC), LWWSS (AS) ABA | Information collected New COAs and procedures defined | March, 2012 |
| 3.1.4 | Develop procedures for asset and inventory identification, coding and valuation | EMC (MC), LWWSS (AS) ABA | Procedures defined with the WE | March, 2012 |
| 3.2 | Integrate the WEs Financial, Accounting, Customer Service and Business Process Systems | | | |
| 3.2.2 | Implement software platform including Finance and Accounting System and Customer Relationship Management solution | EMC (MC, NA), LWWSS (AS), ABA EDM | Implementation completed and approved | Aug, 2012 |
| 3.2.3 | Implement intranet system enabling web-browser based e-training, communication and business process tools | EMC (MC, NA), LWWSS (AS), ABA EDM | Implementation completed and approved | Aug, 2012 |
| 3.2.4 | Conduct training, assist in transition phase and provide one/two year on | EMC (MC, NA), LWWSS (AS), ABA | Training started | Sept, 2012 |

| | | | | |
|-------|---|------------------------------------|--|-----------------|
| | site support | EDM | | |
| 3.2.5 | Supply and install time attendance machine and implement administrative and HR measures to increase HR efficiency | EMC (MC, NA), LWWSS (AS) EDM | - Core equipment installed with training in Year Two. - Two sets of equipment planned for Year Three. | Sept, 2012 |
| 3.3 | Pilot Stakeholder Exercise to Sustain O&M of USAID WWTP | - DAI (SC, BJ) | - Assessment report | September, 2012 |

Activity 3.1 - Upgrading Finance and Accounting Standards and Methods

Background, Scope and Impact

The implementation of the ERP solution in BWE requires implementing a number of pre-requisite activities to enhance the staff's skills in conducting public and commercial accounting.

Therefore, and to achieve this goal, LWWSS is implementing a training activity in BWE during the first quarter of year three, whereby LWWSS finance specialist will provide 19 finance staff with training that includes public accounting, accrual based accounting, compliance and audit, procurement.

The training is taking place within the premises of BWE and will increase the potential for the ERP project to succeed and be sustained. It will also provide newly appointed personnel with an overview of the regulations, reports and requirements that frame the finance and accounting operations of BWE.

In parallel to the ERP solution implemented in BWE (refer activity 3.2) and the finance training activity, LWWSS will also assist BWE finance personnel in consolidating the yearly financial reports required according to the BWE by-laws. This process ensure all financial, accounting, and compliance processes associated with the ERP and the finance operations of the WE, are up-to-date, and compliant with both Lebanese Government standards, as well as the latest accrual based accounting methodologies.

To ensure sustainability of this activity, LWWSS will also develop procedures for asset and inventory identification, coding and valuation. These procedures will be incorporated into the staff training and into the ERP processes.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Build the WE capacity in consolidating and issuing end of year financial reports | | | | | | | | | | | | |
| Training in Public Accounting, Finance, Procurement, Auditing | | | | | | | | | | | | |
| Define cost centers, create/update chart of accounts, and accounting | | | | | | | | | | | | |

| | | | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--|
| coding procedures | | | | | | | | | | | | | |
| Develop procedures for asset and inventory identification, coding and valuation | | | | | | | | | | | | | |

Activity 3.2 - Integrating the WE's Financial, Accounting, Customer Service and Business Process Systems

Background, Scope and Impact

Further to the process mapping stage conducted during year two, LWWSS continued the implementation of the Enterprise Resource Planning (ERP) platform in BWE and BMLWE, by purchasing the ERP software and implementation services. They include customizing the purchased software product and installing it at respective departments within each WE, adapting modules to the departments' requirements and regulations, and conducting user training and adoption.

This stage was done through the appointment of a local subcontractor, EDM, which is implementing a comprehensive Microsoft solution (Navision, CRM, Sharepoint) at both BMLWE and BWE. The implementation is expected to last throughout 2012, and the systems will be operational and training completed by the end of the year.

BWE has committed to provide support in terms of buy-in by the top management, IT personnel to operate and manage the platform, and funding for maintenance and service agreement beyond LWWSS. LWWSS is continuously engaged with BWE in terms of coordination and assessment of the pace of progress, risks and success factors for this project.

BWE's continuous engagement in terms of enforcing system adoption throughout the departments, providing IT staff and establishing an IT unit that reports to senior management, as well as contracting and funding on-going support for system maintenance (for hardware and software) are the most critical areas for project success.

Upon completion of this activity, BWE will have a centralized management information system that connects to all branches and that handles all financial, administrative and customer-related processes, using a robust IT infrastructure. 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.

It is to be noted that as part of this activity, LWWSS has provided two Time Attendance Machines in the BWE headquarters, with a view to enroll such installations in the Zahle branch and the Baalbeck branch later in year three. This installation is critical to modernizing the human resource and financial operations in the WE. It will empower the WE to proceed with their already started efforts to modernize their HR and finance systems by obtaining automatic logging of hours and by providing the senior management with tools to enforce staff attendance.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| Implement software platform including FAS and CRM solutions | | | | | | | | | | | | |
| Implement intranet system enabling web-browser based e-training | | | | | | | | | | | | |
| Conduct training, assist in transition phase and provide one/two year on site support | | | | | | | | | | | | |
| Supply and install time attendance machines and implement administrative and HR measures to increase HR efficiency | | | | | | | | | | | | |

Activity 3.3 – Developing Pilot Stakeholder Exercise to Sustain O&M of USAID Wastewater Treatment Plants

Background, Scope and Impact

As highlighted in Section 3, “Wastewater Challenges” under the “Summary of Year Three Activities” chapter of this report, and despite the numerous challenges that face the wastewater sector in Lebanon, LWWSS has been involved in an activity that will contribute to advancing the development of clearer policies relative to the responsibility and sustainability of wastewater collection and treatment services.

This activity revolves around the existing USAID wastewater treatment plants in the Bekaa. Its objective is to propose mechanisms of establishing service agreements between the WE and those municipalities that own, operate and maintain the wastewater collector network or plant within their jurisdictions.

Its outcome will be a case study that proposes a set of scenarios for sustaining the O&M funding and transitioning the operation to BWE in these wastewater treatment plants located in Qaraoun, Ablah and Forzol.

Today, sustainability of quality service within municipalities, whether they operate the collection network or network and treatment plants, is threatened because funding for proper maintenance and operation of both networks and plants is not certain.

To address this situation, LWWSS has held one-on-one meetings with selected municipal, WE and MOEW officials. These initial meetings during year two of the project were designed to establish a clear picture of the issues, concerns and financial circumstances of the municipalities and the WEs.

The next step is to bring the stakeholders together in an effort to reach a consensus on options available to enable better sustainability of the network and treatment plants’ operations and maintenance. Eventually, scenarios for funding O&M will likely

result in service agreements being put in place between the various bodies. The service agreement approach the parties that have funding, or tariff levying authority, to reach agreement on how the individual municipality would handle the ownership and O&M of the wastewater treatment plant vis-à-vis the WE.

An additional feature of the service agreement as an approach to the complex problem of wastewater collection and treatment is that its focus is on shared funding and operations and maintenance responsibility. Eventual implementation of scenarios or recommendations will inevitably involve the MOEW and the Ministry of Interior and Municipalities (MOIM).

During year three, LWWSS will complete the drafting of a service agreement template and complete an assessment of the alternatives for O&M funding based on the interviews conducted and on other forthcoming investigations.

LWWSS recognizes that this process is fraught with potential failure which is why it is a pilot effort. Alternative approaches entail either new legislation (a time consuming and difficult process at best and assumes a sitting government) or a more proactive approach by the MOEW than is now exhibited. Nevertheless, wastewater collection and treatment must be addressed in a more consistent and comprehensive way than has been attempted thus far. The assessment report and pilot service agreement template are the most feasible way forward.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Draft assessment report | | | | | | | | | | | | |
| Discuss, amend and issue to USAID | | | | | | | | | | | | |

Component 4: Capital Investment Planning and Program/Project Management

Table 3

| Item | Activity Description | Program Resource | Deliverable by End of Year Three | Timeframe | CLIN |
|-------|---------------------------------------|--------------------------------------|--|------------|------|
| 4.4 | Master planning | | | | |
| 4.4.1 | Water Supply and Sewerage Master plan | Local subcontractor (TBC) Valuadd | Activity SOW defined. Services procured Planning started | Sept, 2012 | 4 |

Activity 4.4 - Developing Water Supply and Wastewater Master plan

Background, Scope and Impact

Unlike other WEs, BWE has never developed a master plan that surveys its current water supply and sewerage status and needs, and projects 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. Other WEs have done so, such as SLWE, for whom the USAID/LWPP program has developed a sewerage master plan in 2006.

As such, and further to the adoption of NWSS and the ongoing development of a five-year business plan for BWE with funding by GIZ, LWSS identified an important potential to assist the BWE by developing an engineering water supply and sewerage master plan that will guide the WE’s development over the next twenty years

The water supply and sewerage master plan will combine an asset survey activity, a GIS database, an irrigation status report, but will also expand on with a detailed survey of population, water demand projections and sewerage requirements, as well as capital financing needs for the longer term.

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 efforts 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.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Draft and issue EOI for master planning subcontractor | | | | | | | | | | | | |
| Evaluate EOI returns and develop shortlist of companies to be invited for the RFP | | | | | | | | | | | | |
| Issue RFP, receive and evaluate bids | | | | | | | | | | | | |
| Appoint master planning subcontractor | | | | | | | | | | | | |

Component 5: Procurement of Technical Equipment to Strengthen WEs

Table 4

| Item | Activity Description | Program Resource | Deliverable by End of Year Three | Timeframe |
|-------|--|------------------------|---|------------|
| 5.4 | Upgrading the Water Analysis Laboratories | | | |
| 5.4.1 | Upgrade the water testing laboratories with infrastructure and equipment | AUB Local suppliers | Laboratory procurement scheme planned and | Sept, 2012 |

| | | | | |
|------------|---|---|--|------------|
| | | | agreed with BWE | |
| 5.4.2 | Establish service agreements, and conduct user training programs for the above activities | AUB LWWSS (MK)* | Activity planned | Sept, 2012 |
| 5.5 | Water Treatment and O&M Training | | | |
| 5.5.1 | Install up to 20 UNICEF-supplied chlorinator units; Supply and install safety equipment and gas detection systems | CDM (BG, GT, EH) Sanabel | Installation complete | |
| 5.5.2 | Training course for operators and year-long service and supply of consumables | CDM (BG, GT, EH), LWWSS (MK) Sanabel | Training conducted (done) 1 year service agreement, consumables | Sept, 2012 |
| 5.6 | Increase IT Infrastructure Efficiency | | | |
| 5.6.1 | Assess and design IT infrastructure for WE headquarters and connectivity to branches | LWWSS (AS) | Report issued and adopted by SLWE | |
| 5.6.2 | Upgrade server installation and power supply infrastructure at head office and selected branches | LWWSS (AS) Local subcontractor (MDS + TBD) | Scope defined Procurement and implementation started | Sept, 2012 |
| 5.8 | Establishing Direct Customer Interface | | | |
| 5.8.1 | Design branch office and customer service center in WE's premises in Zahle | EMC (NA)*, LWWSS (AS) Boudy Esta Architects | Design complete and approved by WE | |
| 5.8.2 | Implement interior works and furnish the new customer service center; connect IT systems to head office | Boudy Esta Architects, LWWSS, EMC Al Handassa Constructors | Implementation complete Project handed over to WE | May, 2012 |
| 5.8.3 | Assist WE in reaching customers and building staff capacity in customer service | EMC (NA) Local subcontractor (TBD) | Activity planned | Sept, 2012 |

Activity 5.4 – Upgrading Water Analysis Laboratories

Background, Scope and Impact

As detailed under activity 2.2 above, LWWSS is proceeding since year two with the implementation of a comprehensive group of activities that aim at building BWE's capacity in managing water quality through an adapted management plan, a comprehensive training, and a phased procurement of laboratory equipment that takes into account the capacity of the BWE to implement the plan, fund consumables, and operate the equipment (refer to "Background and Key Points" above).

LWWSS has appointed the American University of Beirut's (AUB) Public Health Department to provide the services of surveying and specifying the required laboratory equipment, under this group of activities. AUB has completed parts of activity 2.2 (dry season water sampling and testing will take place starting October, 2011 and wet season water testing will take place starting March 2012), further to

which, AUB will develop a the specification for the laboratory equipment needed for BWE. Once this task is completed, procurement will begin. Based on these timeframe, at the end of year-three, LWWSS will be in a position to commence equipment procurement (subject to availability of skilled personnel).

During 2011, LWWSS completed the procurement of urgent equipment needed for the BKWE’s water analysis laboratory in Zahle to enable the basic tests to be undertaken until such time as the comprehensive Water Quality Management activities are complete. LWWSS also provided, through its subcontractor Numelab, the user training course for this equipment and is in the process of providing consumables for it.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Based on water quality mapping, investigate and plan laboratory equipment needs | | | | | | | | | | | | |
| Start procurement | | | | | | | | | | | | |
| Establish service agreements, and conduct user training programs for the above activities | | | | | | | | | | | | |

Activity 5.5 – Water Treatment and O&M Training

Background, Scope and Impact

This is a continuation of the year-two activity. It relates to the supply of chlorine and provision of maintenance service and follow-up training for the chlorinator units installed during the fourth quarter of year two and the first quarter of year three.

Chlorination is a critical part of a utility’s water quality management process, and both the WEs and the MOEW requested LWWSS to assist in installation and training of complete chlorination solutions. In addition to the benefits of chlorination in terms of water quality, this activity helped train operational staff on the necessary O&M and health and safety measures to minimize risk of injury to WE staff due to incorrect operating of chlorinators.

LWWSS had installed 15 chlorination units donated by UNICEF to BKWE, including the supply of health and safety gas detection system and personal protection equipment. LWWSS has also completed O&M as well as health and safety training session for 17 WE staff associated with this activity.. This activity has succeeded in providing over 100,000 people across the BWE territory with treated water, thereby minimizing bacteriological infections and waterborne diseases. This is particularly important given the pollution profile of many sources in BWE where fecal coliform and other bacteriological and viral contamination is often found.

Throughout year three, LWWSS will continue to support the installed chlorinators through the supply of chlorine gas bottles, maintenance and follow-up on O&M training.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ongoing training and follow-up with operators | | | | | | | | | | | | |
| Provide consumables | | | | | | | | | | | | |

Activity 5.6 - Increasing IT Infrastructure Efficiency

Background, Scope and Impact

Further to the IT assessment conducted during year two, and to enable the implementation of an Enterprise Resource Planning (ERP) platform in BWE, LWWSS will be funding an IT infrastructure upgrade. This upgrade will establish a server room at BWE headquarters, providing IT equipment to ERP operating staff and funding the connectivity infrastructure and services across the BWE branches.

The ERP activity in BWE will install hardware and software infrastructure for a Financial and Accounting System (FAS), Customer Relationship Management system (CRM) and a Sharepoint (Intranet) solution that connects all administrative employees and branches of the water utility. It will enable a computerized, integrated and optimized processing of the entirety of the accounting, financial, customer service, billing and collection and administrative processes within BWE.

The IT assessment led to the design and specification of an IT infrastructure package to suit the ERP platform. It includes hardware and a robust internet connection that establishes permanent connectivity between the branch offices and the servers at the head office. This activity is a prerequisite for the MIS/ERP software to be implemented.

Procurement of the IT hardware infrastructure and Data Transmission Network Communication Link started in 2011 and installation will start in early 2012. It includes a set of servers, stable power supply (mains power, UPS, generator back-up), cooling, cabling, computers, printers, installation and accessories, as well as connectivity infrastructure and connection. As part of the activity, LWWSS will also provide the necessary training of BWE IT personnel in the operation and maintenance of the WE's IT infrastructure.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|-------------------|---|---|---|---|---|---|---|---|---|---|---|---|
|-------------------|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Complete procurement of IT equipment required. | | | | | | | | | | | | | |
| Equipment delivery on site. | | | | | | | | | | | | | |
| Install and launch equipment, ahead of programming the ERP platform. | | | | | | | | | | | | | |

Activity 5.8 – Establishing Direct Customer Contact

Background, Scope and Impact

The establishment of a pilot customer service branch for BWE in Central Bekaa is a year-two activity that is progressing with a target completion date in May, 2012.

LWWSS is assisting BWE in establishing a customer service center for the BWE Zahle administrative branch. The center will act as a hub for customer service (new subscriptions, subscription amendments, bill payment, upgrades, complaints, repairs), resulting in an efficient model for the WE operation in central Bekaa, a region that yields the highest income for the WE.

The renovated branch is located in a space that is owned by the WE in a prime location, accessible to the Zahle and Central Bekaa customer base. The branch will serve as a much needed addition to the head office space and provides a venue for customer subscriptions, bill payment, and follow-up on all customer matters.

The renovation includes interior works, furniture and IT equipment. It will provide a space for 10 to 12 staff (customer service, finance, and branch staff who will be relocated from the head office to the Zahle branch), and a space for customers to interact with the WE. This type of space does not exist in BWE, and in the current circumstances, the customers' only option is to visit the head office building and escalate their issues to the higher WE management.

LWWSS has appointed a local architectural firm (inclusive of specialist engineers) to conduct the design and oversee the implementation of the work. A construction contractor was also appointed (Al-Handassa) and work is progressing on site.

The completion of the customer service branch will be accompanied by an outreach activity that will include awareness to all subscribers of the Zahle region (including suburban areas of Riyak and Chtaura), advising the opening of a customer service branch and encouraging customers to submit their queries to the regional Zahle branch instead of the WE Headquarters. The campaign will include distributing leaflets or brochures, presenting the services that the branch offers and the contact details; it will also be an opportunity for the Water Establishment to relay to its subscribers some basic information on household water conservation practices.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| Commence interior works associated with the branch. | | | | | | | | | | | | |
| Commence procurement of furniture and other associated packages. | | | | | | | | | | | | |
| Finalize and handover branch to WE ahead of launching. | | | | | | | | | | | | |
| Provide specialist customer service training to staff at the branch. | | | | | | | | | | | | |

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

Table 5

| Item | Activity Description | Program Resource | Deliverable by End of Year Three | Timeframe |
|-------|---|---|---|------------|
| 6.1 | Decreasing Water Losses and Upgrading Existing Networks | | | |
| 6.1.1 | Design network upgrades in Zahle: rehabilitating the water supply network of the region of Mar Elias | LWWSS (Infrastructure PM) Local Engineering Firm (TBD) | Engineering consultant appointed Design complete | Sept, 2012 |
| 6.1.2 | Implement network upgrades in Zahle: rehabilitating the water supply network of the region of Mar Elias | Local Engineering Firm (TBD) Local subcontractor (TBD) | Preparation for procurement started | Sept, 2012 |
| 6.1.3 | Design network upgrades in Zahle: rehabilitating five branch networks in Haouche el Oumara, Maalaka, Rassieh, Karak-Forzol and Midan | LWWSS (Infrastructure PM) Local Engineering Firm (TBD) | Engineering consultant appointed Design complete | Sept, 2012 |
| 6.1.4 | Implement network upgrades in Zahle: rehabilitating five branch networks in Haouche el Oumara, Maalaka, Rassieh, Karak-Forzol and Midan | Local Engineering Firm (TBD) Local subcontractor (TBD) | Preparation for procurement started | Sept, 2012 |

Activity 6.1 - Decreasing Water Losses and Upgrading Existing Networks

Background, Scope and Impact

This activity contains two projects that are part of the follow-on to the LWWSS program. The region of central Bekaa, which includes the City of Zahle and its surrounding towns, has been at the center of MOEW and BWE demands for capital funds over the past two years.

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.

The BWE chairman and the Minister of Energy and Water have repeatedly urged funding to be channeled to Zahle given the high potential for increasing WE income from such investments. LWWSS's discussions with the BWE Director General and key staff resulted in priority projects that are considered to be urgent, with important immediate benefits including enhanced water delivery to a large population and increased subscriptions and revenues for the WE.

These projects fall within the strategic target number five, of the WE's two-year urgent strategy dated December 2010: "Improving the level of service to customers by providing all registered customers with a supply of water for no less than four hours per day by the last quarter of 2011, and for six hours per day by the last quarter of 2012."

Both these projects relate to the replacement of distribution lines in the City of Zahle. Several of the city's lines have been in service for 30–50 years and suffer from frequent breaks and water service shut-downs. Leaks within the network cause drops in water pressure, denying water service to the higher levels of multi-apartment houses even if the service is not shut down.

The two projects proposed are as follows:

Project A: Rehabilitating the water supply network of the region of Mar Elias

This project is a replacement to the initially planned "Connection of the Main Water Supply Pipeline" serving about 180 connections within the center of Zahle.

Upon launching the infrastructure project, BWE advised LWWSS that they obtained recent governmental funding which enabled them to launch urgent infrastructure projects. As such, the BWE has started direct implementation of the "Connection of the Main Water Supply Pipeline" project, given the exceptional urgency for connecting this pipeline.

Instead, BWE requested LWWSS to assist with a similar project, of a similar value, located in the Mar Elias area, in Zahle. The project's scope is identical to the rest of the infrastructure activities conducted in BWE. It relates to the replacement of aged and leaky branch network lines, serving a population of over three thousand people.

The project will replace 2.2 kilometers of pipe of various diameters in the region of Mar Elias in Zahle. This project meets all the parameters of the LWWSS infrastructure activities and as such, it is adopted as a replacement of the Zahle main water pipeline project.

The population that will be impacted under this project is about three thousand people as opposed to eight thousand five hundred people earlier anticipated for project A. However, this project is of higher priority to BWE and will have a more

immediate impact on the served population. The deterioration of the pipes in Mar Elias district is causing one of the highest financial burdens on the BWE. According to the BWE, the pipes in the network are among the oldest in Zahle, dating from the 1950s, and are made of fragile cast-iron with deteriorated lead joints. As such, the WE estimates that the deterioration of pipes is resulting in 50-60% physical water loss in the Mar Elias district, due to continuous, unnoticed leaking as well as frequent breakage, which translates into energy and financial costs to the WE and poor water quality. In addition to the above project, and as the infrastructure projects in Zahle are progressing, LWWSS's engineering team is investigating some additional infrastructure needs that have been identified with BWE in the region. This will bring the number of people impacted closer to that initially planned.

Project B: Rehabilitating five branch networks in Haouche el Oumara, Maalaka, Rassieh, Karak-Forzol and Midan.

As highlighted within LWWSS' infrastructure follow-on, this project will replace several kilometers of branch network pipes within Zahle's most densely populated areas. Details of pipe lengths, subscriber numbers and population affected are outlined in the table below.

As with project A, this project will improve water services for thousands of people within BWE's largest urban center. 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 losses. Furthermore, the project will contribute to enhancing the quality of water delivered to households through the replacement of deteriorated pipes with HDPE pipes.

Table 6 - Estimated Impact of Zahle Project

| Region | Pipeline Length (km) | Number of subscribers | Population affected |
|------------------|----------------------|--------------------------|---------------------------|
| <u>PROJECT A</u> | | | |
| Mar Elias | 2.2 | 717 | 3,011 |
| <u>PROJECT B</u> | | | |
| Haouch Al Omara | 1.2 | 2,661 | 11,176 |
| Maalaka | 1.0 | 2,818 | 11,835 |
| Rasiyeh | 1.0 | 1,160 | 4,872 |
| Karak-Forzol | 1.2 | 742 | 3,116 |
| Midan | 1.2 | 1,348 | 5,661 |
| TOTAL | 7.8 km | 9,446 subscribers | 39,671 inhabitants |

These projects are funded by the LWWSS follow-on, approved by USAID on September 30, 2011.

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

Even in generally good conditions, stress on the network from construction disturbances can cause breakages or new problems.

LWWSS will incorporate mitigation measures into construction contracts and conduct careful construction oversight, quality control and assurance to reduce and manage risks by the appointment of capable, local engineering consultancies in Lebanon.

The above projects will provide BWE with an opportunity to initiate a cycle of operations 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.

LWWSS's current and forecasted yearly technical assistance activities will also complement this effort through the provision of WE staff capacity building on O&M of the network.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| Hiring of project personnel and conducting detailed technical investigation of project parameters. | | | | | | | | | | | | |
| Drafting engineering SOW, launching procurement and appointing engineering subcontractor. | | | | | | | | | | | | |
| Starting the design and the preparation of the procurement of the works. | | | | | | | | | | | | |

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

Table 8

| Item | Activity Description | Program Resource | Deliverable by End of Year Three | Timeframe |
|-------|--|---|---|-------------|
| 7.2 | Customer Service Management Capacity Building | | | |
| 7.2.1 | Customer service training aiming at enhancing service effectiveness and increasing customer satisfaction | EMC (NA) LWWSS (MK) | Training provided Follow-up in place | March, 2012 |
| 7.3 | Develop Tools and Support WEs in Adopting Corporate Communication | EMC (NA) Local subcontractor (TBD) | Activity completed | March, 2012 |
| 7.3.3 | Develop and Adopt Customer Service Application Forms | - EMC (NA) - Local subcontractor (TBD) | - Activity completed | March, 2012 |

Activity 7.2 - Customer Service Management Capacity Building

Activity 7.3 - Develop tools and Support WEs in Adopting Corporate Communication

Background, Scope and Impact

The implementation of the ERP solution in BWE, the establishment of the customer service branch in Zahle, and the hiring of new customer service contracted personnel by BWE during 2011 has resulted in an increased potential for BWE to structure its teams and enhance its performance in terms of customer service management.

LWWSS has, therefore, planned a number of activities that comprehensively assist BWE in mapping out its customer service needs for the future and establishing a unit that acts as a starting point for a culture of customer service management in BWE.

This initiative contributes to the success of the above-mentioned LWWSS activities, but also helps BWE in tackling one of the most critical issues it faces: subscription and collection rates—both of which are directly related to its customer relationship and financial sustainability.

During year two, and further to a survey of BWE's organizational structure, business processes and institutional by-laws, LWWSS coordinated with BWE the planning of a staffing plan that tries to serve the goal of establishing a customer service cell within BWE while remaining compliant with the WE's by-laws and organizational structure.

The plan was adopted by BWE in year two and has resulted in the hiring of up to three contracted customer service personnel who, in collaboration with the existing personnel at BWE, will create a unit that will handle the Customer Relationship Management (CRM) module of the ERP both at the BWE Headquarters and in the Zahle branch, run the case management modules relating to claims, complaints and customer templates, and act as a pilot unit for instituting a customer service culture within BWE.

To implement this vision, LWWSS is proceeding with activities that train the customer service personnel and provide them with customer service application forms that can be adopted as of year three throughout BWE and are compatible with BWE's by-laws and the forthcoming LWWSS-funded CRM module of the ERP platform.

The training is taking place within the premises of BWE and will increase the potential for the ERP project to succeed and be sustained. It will also provide newly appointed personnel with an overview of the processes, regulations, customer templates and requirements that frame the operation of a customer service department at a water utility. It will also cover the basic operational practice of handling customers, and operating a customer service branch.

The training and template development activity is managed and run by LWWSS's customer service and communication specialist, and will be implemented as per the schedule listed in the above table.

Upon completion of this activity, nine subscription forms will be prepared, adopted by BWE's board of directors, printed and distributed for immediate usage at BWE customer service points. In addition, 18 customer service staff will have been trained on BWE's systems and processes, as well as the basics of customer relationship.

The training will substantially increase a vital aspect of water utility operation and will result in increased efficiency in customer handling, better management of complaints, shorter application processing times, professional customer interface at the forthcoming Zahle branch, and a readiness to adopt the CRM module of the ERP in a way that maximizes its usage.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| Course preparation for customer service training | | | | | | | | | | | | |
| Customer service training course provision. | | | | | | | | | | | | |
| Finalize design, obtain WE approval and deploy forms as pilot in branches. | | | | | | | | | | | | |
| Obtain final feedback and issue formally, then arrange for printing. | | | | | | | | | | | | |

2. BEIRUT-MOUNT LEBANON WATER ESTABLISHMENT (BMLWE)

Component 3: Increase Financial and Commercial Viability of Water Establishments

Table 9

| Item | Activity Description | Program Resource | Deliverable by End of Year Three | Timeframe |
|-------|---|-----------------------------|--|-------------|
| 3.1 | Upgrade Finance and Accounting Standards and Methods | | | |
| 3.1.1 | Build the WE capacity in consolidating and issuing end of year financial reports | EMC (MC), LWWSS (AS) ABA | Information collected Reports produced | March, 2012 |
| 3.1.3 | Define cost centers, create/update chart of accounts, and accounting coding procedures | EMC (MC), LWWSS (AS) ABA | Information collected New COAs and procedures defined | March, 2012 |
| 3.1.4 | Develop procedures for asset and inventory identification, coding and valuation | EMC (MC), LWWSS (AS) ABA | Procedures defined with the WE | March, 2012 |
| 3.2 | Integrate the WEs Financial, Accounting, Customer Service and Business Process Systems | | | |

| | | | | |
|-------|---|---|---------------------------------------|------------|
| 3.2.2 | Implement software platform including Finance and Accounting System and Customer Relationship Management solution | EMC (MC, NA), LWWSS (AS), ABA EDM | Implementation completed and approved | Aug, 2012 |
| 3.2.3 | Implement intranet system enabling web-browser based e-training, communication and business process tools | EMC (MC, NA), LWWSS (AS), ABA EDM | Implementation completed and approved | Aug, 2012 |
| 3.2.4 | Conduct training, assist in transition phase and provide one/two year on site support | EMC (MC, NA), LWWSS (AS), ABA EDM | Training started | Sept, 2012 |

Activity 3.1 - Upgrading Finance and Accounting Standards and Methods

Background, Scope and Impact

The implementation of the ERP solution started in year-two in BMLWE and BWE. It requires implementing a number of pre-requisite activities to enhance the staff's skills in conducting public and commercial accounting, as well as consolidating end-of-year financial reports that will feed into the new system in 2012.

LWWSS has, therefore, implemented a training activity in BMLWE whereby LWWSS has contracted the Institute of Finance to provide 19 WE staff with training that covers public accounting, accrual based accounting, compliance and audit, procurement.

During year two, LWWSS had also provided a number of BMLWE staff with IT literacy training through subcontractor Formatech, based on a comprehensive assessment of the WE personnel's IT skills and needs.

In parallel to the training activities, LWWSS will train and assist BMLWE finance personnel in consolidating the yearly financial reports required according to the BMLWE by-laws. These reports are due to the MOEW and Ministry of Finance. To ensure sustainability of this activity, LWWSS will develop procedures for asset and inventory identification, coding and valuation. These procedures will be incorporated into the staff on-the-job training and into the ERP processes.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Build the WE capacity in consolidating and issuing end of year financial reports | | | | | | | | | | | | |
| Training in Public Accounting, Finance, Procurement, Auditing | | | | | | | | | | | | |
| Define cost centers, create/update chart of accounts, and accounting coding procedures | | | | | | | | | | | | |
| Develop procedures for asset and inventory identification, coding and valuation | | | | | | | | | | | | |

Activity 3.2 - Integrating the WE's Financial, Accounting, Customer Service and Business Process Systems

Background, Scope and Impact

Further to the IT assessment and process mapping stage conducted during year two, LWWSS continued the implementation of the Enterprise Resource Planning (ERP) platform in BMLWE.

As such, LWWSS completed the purchase of the ERP software and its implementation services, which include customizing the purchased software product and installing it at respective departments within each WE, adapting modules to the departments' requirements and regulations, and conducting user training and adoption.

A local subcontract, EDM, is implementing a comprehensive Microsoft solution (Navision, CRM, Sharepoint) at both BMLWE and BWE. The implementation is expected to last throughout 2012, and the systems will be operational and training completed by the end of the year.

BMLWE has committed to provide support in terms of buy-in by the top management, personnel to operate and manage the platform, and funding for maintenance and service agreement beyond LWWSS.

The process of implementing the software platform is progressing, and BMLWE's continuous engagement in terms of enforcing system adoption throughout the departments and allocating staff for implementation meetings and workshops as well as training has been positive.

To ensure adoption and maximize BMLWE's capacity in learning and in-house enhancement of the system, and as part of the training activities planned for the ERP, LWWSS and EDM have identified the need to train BMLWE's senior IT manager to become a certified system developer of the software platform funded by LWWSS. This training will ensure fast, in-house resolution of queries, bugs, and issues within the system. It will also enable the senior IT manager at BMLWE to make the best use of the ERP tool by enabling the manager to understand the capacity and breadth of the software tool, and plan enhancements and expansion of the system with the WE management with full knowledge of the software's capabilities. This training (financed separately from the EDM contract), combined with the service agreement provided as standard within the ERP contract with EDM, will enable the WE to better adopt and transition into the new system. LWWSS is still in the process of identifying and assessing personnel from the BWE to attend the training alongside their peers in BMLWE. Should a candidate be identified, LWWSS will conduct the training for both persons at once.

Upon completion of this activity, BWE will have a centralized management information system that connects to all branches and that handles all financial, administrative and customer-related processes. 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

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Implement software platform including FAS and CRM solutions | | | | | | | | | | | | |
| Implement intranet system enabling web-browser based e-training | | | | | | | | | | | | |
| Conduct training, assist in transition phase and provide one/two year on site support | | | | | | | | | | | | |
| Provide training to senior IT personnel at WE. | | | | | | | | | | | | |

Component 5: Procurement of Technical Equipment to Strengthen WEs

Table 10

| Item | Activity Description | Program Resource | Deliverable by End of Year Three | Timeframe |
|-------|---|---|---------------------------------------|-----------------|
| 5.2 | Upgrading Pumping and Energy Efficiency | | | |
| 5.2.1 | Jeita Pump Station: Design equipment replacement and sand removal unit solution | CDM (BG, GT, EH) | Design Produced and Approved by BMLWE | |
| 5.2.2 | Jeita Pump Station: Supply 18 pumps and motors (US made), associated valves, fittings and electrical panel boards | CDM (BG, GT, EH) NPC and other US manufacturers | Equipment delivered to BMLWE | June, 2012 |
| 5.2.7 | Establish service agreements, and conduct user training programs for the above activities | - CDM (BG, GT, EH), DAI (MK) - Local subcontractor (TBD) | - Activity planned | September, 2012 |

Activity 5.2 - Upgrading Pumping and Energy Efficiency

Background, Scope and Impact

The Jeita pump station rehabilitation is a key activity for LWWSS in BMLWE and one of the WE's two highest priority projects (alongside the ERP). It has been progressing for the past two years.

The Jeita rehabilitation project started with a thorough investigation and design stage in year-two, led by LWWSS's subcontractor CDM. The design included equipment replacement (pumps, motors, electrical boards and installations) which will be procured through funding by LWWSS, and sand removal tank works and other associated installation works for the LWWSS-purchased equipment, which will be funded by BMLWE.

The overall activity, led and funded jointly by LWWSS and BMLWE (the former through design supply of equipment and the latter through installation and commissioning) will result in a full rehabilitation of one of the country's most critical pump stations that serves coastal Metn (Greater Beirut) and some additional areas of the capital.

Jeita's continuous operation is crucial to the livelihood of over a 100,000 Lebanese, especially the lower-income population who frequently incur increasing costs of having to purchase water during shortage periods.

Historically, Jeita has been incrementally designed and expanded over the decades, which has resulted in its current poor installation and record of unreliability. As such, equipment replacement is frequent, given that several of its motors have reached the end of their life cycle. Also, pumps are often damaged by the excessive sand found in the Jeita water. These issues result in ongoing operation and maintenance problems, excessive down time, excessive running costs, low performance, and frequent shut downs especially during the drought season.

As an example, Jeita must pump 1,200m³ per hour of water, 24 hours per day, to provide continuous water supply to its network. Today, it is only achieving an output of 700-1000m³ per hour. Furthermore, to achieve this output, Jeita is simultaneously running five sets of pumps and motors instead of three.

The rehabilitation of Jeita will enable it to operate more effectively, achieving its targeted water supply and reducing its running costs.

The Jeita station can only be shut down a maximum of 12 hours in the summer and no more than two weeks in the winter. This makes the design of any solution to the sand problem more complex.

The current plan for the implementation of site works (sand removal tank and equipment installation) spans across five months (February to June, 2012) and is carefully designed by both BMLWE and LWWSS to avoid extensive shut down.

The activity also incorporates a number of sub-activities to ensure sustainability of the works, as follows:

- On-the-job training by LWWSS specialists for BMLWE engineering staff on specification writing, bid and bills of quantity drafting, and engineering management to enable staff to better identify technical requirements within their bids, thereby avoiding inappropriate procurement.
- Operation and maintenance training courses on the equipment installed within the Jeita pump station, for the operators of those stations.

The anticipated benefits of this activity include:

- Extended hours of water supply to more than 100,000 water users due to an increase of up to 30 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 the sand filter solution designed by LWWSS and financed by BMLWE).

- More efficient design and installation for this key pump station, decreasing operating and maintenance costs for BMLWE. Currently, installation is so poor that BMLWE spends one-third of its yearly O&M costs on servicing Jeita.
- Jeita staff will be trained, using the LWWSS-developed O&M manuals and checklists, and they will receive additional specialized training by the suppliers of the equipment. This process will decrease accidents on site, avoid human errors, extend the life of BMLWE’s equipment, and build the capacity of staff to ensure sustainability.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Complete procurement and place orders on pumps and motors. | | | | | | | | | | | | |
| Manufacturing and delivery of pumps (ahead of installation by BMLWE) | | | | | | | | | | | | |
| Procurement, manufacturing and delivery of valves (ahead of installation by BMLWE) | | | | | | | | | | | | |
| Procurement, manufacturing and delivery of electrical panels (ahead of installation by BMLWE) | | | | | | | | | | | | |
| Procurement, manufacturing and delivery of fittings (ahead of installation by BMLWE) | | | | | | | | | | | | |

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

Table 11

| Item | Activity Description | Program Resource | Deliverable by End of Year Three | Timeframe |
|-------|--|------------------------|---|------------|
| 7.2 | Customer Service Management Capacity Building | | | |
| 7.2.1 | Customer service training aiming at enhancing service effectiveness and increasing customer satisfaction | EMC (NA) LWWSS (MK) | Training provided Follow-up in place | July, 2012 |

Customer Service Management Capacity Building

Background, Scope and Impact

The implementation of the ERP solution in BMLWE, and the ongoing coordination between the LWWSS specialists and the BMLWE chairman and customer service manager, resulted in an increased interest by BMLWE to train its staff on the basics

of managing customer service relations. BMLWE staff will receive training in customer complaint handling, managing and assessing the customer relation process to improve overall customer relations.

This initiative will contribute to the success of the above-mentioned LWWSS activities, but also helps BWE in tackling one of the most critical issues for its successful operation: increasing subscription, collection and customer communication and loyalty. This training emphasizes the qualities of efficiency, the importance of a feedback loop between the customers and the WE, and the operational benefits of an optimized and friendly processing of customer requests and complaints.

Upon completion of this activity, 20 customer service staff will have been trained on BMLWE’s systems and processes, as well as the basics of customer relationship.

The training will substantially increase a vital aspect of water utility operation and will result in increased efficiency in customer handling, better management of complaints, shorter application processing times, professional customer interface at the BMLWE branches, and a readiness to adopt the CRM module of the ERP in a way that maximizes its usage.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| Course preparation for customer service training | | | | | | | | | | | | |
| Customer service training course provision. | | | | | | | | | | | | |

3. NORTH LEBANON WATER ESTABLISHMENT (NLWE)

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

Table 12

| Item | Activity Description | Program Resource | Deliverable by End of Year Three | Timeframe |
|-------|--|-----------------------|--|------------|
| 2.3 | Build Pump Stations Operators Capacity in Operation and Maintenance | | | |
| 2.3.2 | Pump station operators advanced training in O&M | - DAI (MK) - Kredo | - Activity completed - Follow-on in place | Sept, 2012 |

Activity 2.3 – Building Operators’ Capacity in Operation and Maintenance of Pump Station Equipment

Background, Scope and Impact

This is a follow-on of the successful year-two activity of basic pump station operators O&M training. The activity relates to an advanced training for pump station operators, covering specific operation and maintenance subjects, depending on each trainee group's requirements.

The year-two basic training that took place with pump station staff was highly successful. It resulted in a recommendation by both trainees and WE management for LWWSS to pursue an advanced training that addressed specific needs of employees in areas of pump station operation. The follow-on training will therefore be based on the training needs assessment conducted by LWWSS, and by the training results and post-training assessments.

The courses will therefore move into selected areas of training, as opposed to the general, all-encompassing training provided in year two. The courses will therefore cover a smaller selection of subjects that are tailored to the need of a small group of trainees that will be selected in coordination with the WE management, and will focus on specific areas of learning such as preventive maintenance standards, establishing basic facility management practices, recording operation history of equipment, troubleshooting breakdowns, and health and safety. These subjects were addressed briefly during the training conducted in year two, however, they were provided as part of a large array of subjects revolving around the basics of pump station operation. This year, and based on feedback from the trainees, and NLWE, the training will focus on selected subjects by providing a longer and more in-depth overview of core subjects such as the ones discussed above.

The activity is therefore planned to focus on one or two of the key subjects above, and on a smaller team of trainees who could then be provided an advanced course in implementing a comprehensive set of tools and actions that would result in an exemplary application of key O&M subjects. The subjects, personnel and areas of training will be selected in a participatory manner with the WE, and will contribute to a better operation and maintenance at the WE plants and an increased efficiency of operation, and more importantly, they will result in a pilot application of a comprehensive set of instructions around specialized subjects that will advance the skills of O&M operators, and further instate the culture of systematic application of subjects such as preventive maintenance, facility management and troubleshooting.

Such advanced training within a limited number of pump stations will result in a decrease in energy consumption, a decrease in faults and equipment damage, and a reduction in the risk of personal injury of operating staff. The training also helps WEs increase the efficiency of their operating staff, thereby reducing water service disruption due to human errors and O&M-related equipment failures.

The course details will be developed by LWWSS's subcontractor KREDO and will be based on detailed assessment of the training needs. This activity will include:

- Interviewing the employees proposed for the advanced training;
- Preparing the course to suit the profiles of the selected persons;
- Conducting the training and evaluation both on site and in class;

- Certificate distribution;
- Evaluation and follow-up.

This activity faces many challenges, namely that staff numbers in WEs are limited, their availability is not guaranteed (simultaneous involvement on many tasks and roles), and their motivation is low. Low pay results in many staff being simultaneously employed by the WE while conducting other professional activities. They lack interest in developing their career at the WE. LWWSS will foresee that these challenges might be overcome by the encouragement of the WE's upper management (the director general is personally encouraging staff attendance) as well as the positive feedback received from the year-two training activity and the acknowledgement by trainees that this LWWSS training program is resulting in a tangible learning experience that translates into efficient operation.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Staff interviews, training needs assessment | | | | | | | | | | | | |
| Course preparation | | | | | | | | | | | | |
| Implement training | | | | | | | | | | | | |

Component 3: Increase Financial and Commercial Viability of Water Establishments

Table 13

| Item | Activity Description | Program Resource | Deliverable by End of Year Three | Timeframe |
|-------|--|-----------------------------|--|------------|
| 3.1 | Upgrade Finance and Accounting Standards and Methods | | | |
| 3.1.2 | Training in Public Accounting, Finance, Procurement, Auditing | EMC (MC)*, LWWSS (MK) | Training completed Follow-up in place | Sept, 2012 |
| 3.1.3 | Define cost centers, create/update chart of accounts, and accounting coding procedures | EMC (MC), LWWSS (AS) ABA | Information collected New COAs and procedures defined | Sept, 2012 |
| 3.1.4 | Develop procedures for asset and inventory identification, coding and valuation | EMC (MC), LWWSS (AS) ABA | Procedures defined with the WE | Sept, 2012 |

Activity 3.1 - Upgrading Finance and Accounting Standards and Methods

This activity was identified during year two. It relates to an upgrade of the financial and accounting methods used by NLWE, to enable them to shift to accrual based accounting.

Accrual based accounting will enable the WE to adopt standard and modern accounting methods, as opposed to a limited, cash-based accounting method currently in use. SLWE had switched to accrual based accounting under the USAID/LWPP program. BMLWE and BWE are in the process of switching to accrual based accounting through the assistance from LWWSS.

Accrual-based accounting will enable NLWE to comply with international accounting standards, and enhance their management of payables and receivables. It will also enable the WE to have greater control over its financials, operate as a modern water utility and possess the methods that enable it to monitor financial performance and conduct business planning.

To achieve this goal, LWWSS will provide a set of financial technical assistance tasks including:

- Asset identification, valuation and coding:
 1. Conducting a comprehensive survey of assets, inventory and stock;
 2. Conducting financial valuation of surveyed assets;
 3. Establishing and adopting an inventory coding system that meets accounting standards;

- Accrual based accounting:
 4. Specifying and designing the accounting methods;
 5. Identifying reports that must be produced under these methods;
 6. Defining cost and profit centers that meet accrual accounting standards;
 7. Amending existing chart of accounts and coding measures;
 8. Assisting the WE in implementing the accrual-based accounting methods;
 9. Conducting necessary training on matters of public accounting, accrual based accounting, procurement and auditing, to ensure the WE staff possess the skills to adopt accrual accounting standards while meeting the government of Lebanon’s requirements and regulations.

The newly developed procedures will be compatible with and will not duplicate the existing accounting software used by NLWE (PIMS). As such, the NLWE will continue to use cash based accounting for reporting to the GOL as well as using accrual based accounting for compliance with international accounting standards.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| Training in Public Accounting, Finance, Procurement, Auditing | | | | | | | | | | | | |
| Define cost centers, create/update chart of accounts, and accounting coding procedures | | | | | | | | | | | | |
| Develop procedures for asset and inventory identification, coding and valuation | | | | | | | | | | | | |

Component 5: Procurement of Technical Equipment to Strengthen WEs

Table 14

| Item | Activity Description | Program Resource | Deliverable by End of Year Three | Timeframe |
|------------|---|--|--|------------|
| 5.2 | Upgrading Pumping and Energy Efficiency | | | |
| 5.2.1 | NLWE: Test and design the replacement up to 20 submersible pumps, motors and other works in up to 15 stations | - CDM (BG, GT, EH) - Local subcontractor (TBD) | - Procurement started | Sept, 2012 |
| 5.2.2 | NLWE: Supply and install the replacement of up to 20 submersible pumps, motors and other works in up to 15 stations | - CDM (BG, GT, EH) - Local subcontractor (TBD) | - Activity planned | Sept, 2012 |
| 5.2.7 | Establish service agreements, and conduct user training programs for the above activities | - CDM (BG, GT, EH), DAI (MK) - Local subcontractor (TBD) | - Activity planned | Sept, 2012 |
| 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, EH) Local subcontractor (TBD) | Procurement complete Manufacturing complete | Sept, 2012 |
| 5.3.2 | Establish service agreements and conduct user training program for these generators | CDM (BG, GT, EH), LWWSS (MK) Local subcontractor (TBD) | Activity planned | Sept, 2012 |

Activity 5.2 - Upgrading Pumping and Energy Efficiency

Background, Scope and Impact

This is a continuation of a year-two activity in NLWE. Among the highest priorities for NLWE is the enhancement of the pumping efficiency in up to 14 key pump stations across North Lebanon. The total number of submersible pumps in these stations is about 18.

Given the age and poor condition of the existing pumps within NLWE's stations, LWWSS 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, which reflects as 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 reparation costs.

This activity is a high priority for the water establishment. The investigation for this activity started in year two, but has faced delays due to poor or lacking data from the NLWE in relation to the wells where the pumps are enlisted for installation. Throughout the stage of information collection, LWWSS and its subcontractor CDM realized that existing site information from NLWE was extremely limited for the pump station sites.

This has resulted in LWWSS an extended site investigation stage whereby wells were visited, inspected, and data was collected and sent to CDM in the USA for analysis. Feedback from CDM indicated that there is a clear conflict/mismatch between data provided by NLWE and the site surveys conducted by LWWSS' team. As such, LWWSS and NLWE are currently reassessing the scope of this activity, prior to commencing procurement, to ensure the best use of USAID funds and that the selected sites are suitable for pump replacement and rehabilitation.

As part of this exercise, LWWSS might conduct hydraulic tests to determine the status of the well and the water table, CCTV inspection of the well, which allows CDM to specify equipment that meets the well's criteria. The procurement will include a supply of submersible pumps, but also, depending on the findings of the investigation, may also include a group of associated works such as power management panels, protection, power cables, gauges and sensors, as well as necessary electrical, mechanical and safety protection installations.

The project includes the following stages:

- Hydraulic tests and survey
- Design of the required pumps
- Procurement and installation of the pumps
- 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. This training is short and aimed at teaching the operator to apply the manufacturer's instructions to avoid equipment damage, avoid warranties being voided, increase the lifespan of the pumps and the sustainability of the procurement activity.

The 14 stations identified are the following (some stations include more than one pump--the maximum number of pumps to be replaced within these stations is 18):

- Sankary
- Manar well
- Manar tank
- Dennewi
- Abou Halqa spring
- Al Jesser
- Bqerqacha
- Agrotec - Amioun
- Kferhazir - Ein el Baqar
- Jran
- Bejdarfel
- Kfarhelda - Der Bella station
- Al Ouyoun
- Kfartoun

The efficient operation of these pump stations is crucial to the livelihoods of the water users connected to these stations, especially the lower-income population who is frequently incurring the increasing costs of purchasing water during shortage periods.

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 LWWSS' manuals and checklists, and they will receive additional specialized training by the suppliers of the equipment. 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

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Complete assessment and design for pumps. | ■ | ■ | ■ | ■ | ■ | | | | | | | |
| Confirm costing and start testing ahead of procurement. | | | | | | ■ | ■ | ■ | ■ | ■ | | |
| Start procurement process for manufacturing and installation. | | | | | | | | | | | ■ | ■ |

Activity 5.3 - Increasing Supply Hours to Areas Facing Supply Shortage

Background, Scope and Impact

This is a continuation of a year-two activity. 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. This request necessitated several rounds of investigations and negotiations to ensure the requests meet LWWSS' 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.

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, deprived areas of NLWE's territory.

The project includes the following stages:

- Due diligence to identify the detailed power requirements of each pump station (completed in year-two)
- Design of the required generator infrastructure (completed in year-two)
- Procurement and installation of the generators
- Operations and maintenance training to pump station staff

The stations that were identified to receive generator power-supply procurement are the following:

- Hab
- Aayrouniyeh
- Nakhle
- Bqerqacha
- Beshmezzin
- Qbayyet 2/3
- Kfartoun
- Bqarezla
- Rahbeh

The works include the supply of generators, but also a group of associated works such as power management panels, protection and fencing, power cables, concrete pad, steel bollards, generator tanks as well as necessary electrical and safety protection installations.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| Complete assessment and design for generators. | | | | | | | | | | | | |
| Confirm costing and start procurement process. | | | | | | | | | | | | |
| Place procurement orders for manufacturing and installation. | | | | | | | | | | | | |

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

Table 15

| Item | Activity Description | Program Resource | Deliverable by End of Year Three | Timeframe |
|-------|---|---|--|------------|
| 6.2 | Expanding Service Provision to Non-Served Areas | | | |
| 6.2.1 | Beit Mellat, Akkar, North Lebanon: Design metered house connections to up to 18 villages | LWWSS (Infrastructure PM) Local Engineering Firm (TBD) | Scope defined, consultant appointed Engineering services started. | Sept, 2012 |
| 6.2.2 | Beit Mellat, Akkar, North Lebanon: Implement house connections to up to 18 villages | Local Engineering Firm (TBD) Local subcontractor (TBD) | Preparation for procurement started | Sept, 2012 |
| 6.2.3 | Beit Mellat, Akkar, North Lebanon: Build WE capacity in increasing customer base and implementing consumer metering | Local Engineering Firm (TBD) LWWSS (Infrastructure PM) | Activity planned | Sept, 2012 |

Activity 6.2 - Expanding Service Provision to Non-Served Areas

Background, Scope and Impact

This project is part of the add-on to the LWWSS program. The Akkar region is a rural *casa* of approximately 230 villages and towns served by the North Lebanon Water Establishment (NLWE). Akkar covers 40 percent of the North Lebanon territory and is inhabited by approximately 276,000 people, 40 percent of whom farm as the main source of their income.

North Lebanon's Akkar, Minyeh, and Donnieh regions are among the poorest in the country, with a poverty rate of over 60 percent—far exceeding the national average of 28 percent. Water supply projects are among the highest priorities for both the government (MOEW, Ministry of Social Affairs, and so on) and local municipalities.

There are ample water sources in the Akkar region from springs, rivers, streams, and groundwater. The region, however, still lacks essential infrastructure to deliver this resource to the population. Most villages are either not connected to water networks or struggle with deteriorating infrastructure. Water use is mainly residential, with a small allocation for schools and rural businesses.

Water for the Beit Mellat group of 32 villages is supplied from the large Ouyun well station and stored in recently built reservoir tanks. The Lebanese Council for Development and Reconstruction (CDR) contracted local firms to design and execute a water supply project for this group of villages by transporting water through main transmission lines, main distribution lines and providing branch connections within the villages.

This CDR project, funded by the European Investment Bank (EIB) and the International Bank for Reconstruction and Development (World Bank) focused on replacing old water distribution networks with new ones in 32 villages. The CDR

project also worked to install new water transmission lines and create 16 local water tanks for select villages. The total cost of the projects amount to \$25 million.

Despite this substantial investment, the completed projects were not fully commissioned and as such, the deployment of the NLWE water services in these regions was incomplete. The impact on the water supply situation in the region was therefore unachieved. The population is currently either underserved by public water supply or not served at all.

Today, NLWE is focusing on commissioning the system, putting it to operation in a phased manner and fixing parts of the transmission and distribution network. The WE is therefore starting a process of putting the system in operation, and requesting assistance from donors in repairing the house connections, to ensure the delivered water is served to the subscribers. The house connections include consumption meters for each household.

The establishment of the household connections is therefore a critical need for NLWE to be fulfilled by LWWSS. This effort will include the associated upgrades and minor commissioning needed on the network in those parts to be funded by LWWSS to ensure that the whole system is fully functional.

As part of this activity, LWWSS will provide household connections, commission required network parts, and incorporate consumer metering—supplying and installing metering boxes and installing existing consumer meters in houses that are already subscribed with the WE—so as to complete the investments and improve service. This project aligns with the overarching objective of the LWWSS program of improving service delivery, and is particularly attractive because it does so in one of Lebanon’s poorest districts.

The scope of work for this project involves completing the most suitable parts of the CDR “Beit Mellat” project by establishing or upgrading service to up to 18 villages (8,208 households) within the NLWE service area. Of these households, 5,016 have no connections (or illegal connections) and 3,192 have deteriorated networks with problematic service delivery. By completing this project, LWWSS will leverage substantial existing investments and commitments from NLWE and will demonstrably improve service coverage in Akkar.

The project will include the following activities:

- Link up to 3,192 households to the newly built water supply network in these villages and enable 5,016 households to apply for new connections with NLWE.
- Connect a total of up to 8,208 customers to the water supply network, as follows: link up to 3,192 households to the newly built water supply network for immediate service provision in these villages where the service is already available, and provide up to 5,016 additional households with new connections ready to be activated upon household subscription to the Water Establishment, in those villages where the NLWE service is currently unavailable.
- Supply protective metal meter boxes to each building or residential unit.
- Commission the new, but as yet unused, water distribution network.

- Conduct community outreach activities to inform the population of the connection of metered water supply to households, increase awareness of the benefits of connecting to the public water supply, and encourage households to subscribe.
- Build the capacity of NLWE's regional teams to run and operate the metered water supply network.

To address the illegal connections and non-subscribers in the area, and once water supply is switched to the new network, LWWSS will provide all necessary support for NLWE to conduct community outreach activities and campaigns to inform and incentivize the population to apply for legal connections to the new network. In concert with broader, existing interventions under LWWSS, the team will provide technical assistance, such as training on customer service and billing and collection policy and procedure improvements based on metered consumption and assistance to strengthen customer relations in the newly served and metered areas.

This project will result in the following:

- Improved water service delivery by NLWE to up to 3,192 households that will be switched from the old, non-performing network to the new network.
- New service connections available to up to 5,016 households not previously served by NLWE, thereby potentially expanding NLWE's customer base by over 4 percent. This represents a potential new revenue stream of ranging from approximately \$475,500 to \$792,500 per year.
- Contribution to the MOEW National Water Sector Strategy, and the five-year business plan adopted by NLWE in 2010, to increase the metered customer base and apply consumption-based tariffs for water use that exceeds the minimum threshold of 1 m³/day. This will increase NLWE's revenue and help it move away from the flat annual rate tariff scheme paid by most customers.

This project will leverage existing capital investments made by the World Bank, EIB, and MOEW, representing approximately \$25 million. In addition, NLWE has formally confirmed its willingness to contribute through a cost-sharing arrangement with LWWSS approximately \$1,022,000 by undertaking part of the works required, as follows:

- Fund the commissioning of the network throughout the 32 villages and rectify any defects (\$150,000).
- Complete other project phases by constructing house connections for seven villages (\$680,000).
- Provide around 3,200 customer meters that LWWSS will install for existing NLWE customers being switched to the new network. NLWE has already purchased and will provide these meters free of charge for LWWSS to install them (these are valued at \$192,000).

LWWSS heavily vetted stakeholder interest and commitment as part of the project identification process. To ensure sustainability, NLWE will be able to charge metered consumption for improved services to up to 3,192 subscribers and will have the potential to add another 5,016 subscribers on consumption-based tariffs. The simultaneous provision of more reliable or new service together with the new billing scheme will improve customer satisfaction as well as revenues.

In addition, metering water consumption helps to reduce non-revenue water. Because this procedure ties to existing LWWSS efforts, the addition of consumer metering improves flow measurement data, enabling the identification of areas of water loss and theft, which can then be addressed much more quickly. Reducing non-revenue water directly affects NLWE’s bottom line because leakages and illegal connections by definition incur costs of production while generating no revenue.

Finally, NLWE’s commitment to cost-share through a significant contribution of approximately \$1 million demonstrates the vital importance of this project to the WE. In addition, donor institutions have already heavily invested in this project and are extremely supportive of this package, which will enable connection and utilization of their investment.

Please refer to **Error! Reference source not found.6** for year-three deliverables and timeframes under this activity group.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| Hiring of project personnel and conducting detailed technical investigation of project parameters. | | | | | | | | | | | | |
| Drafting engineering SOW, launching procurement and appointing engineering subcontractor. | | | | | | | | | | | | |
| Starting the design and the preparation of the procurement of the works. | | | | | | | | | | | | |

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

Table 16

| Item | Activity Description | Program Resource | Deliverable by End of Year Three | Timeframe |
|-------|---|-------------------------------------|----------------------------------|-------------|
| 7.3 | Develop Tools and Support WEs in Adopting Corporate Communication | | | |
| 7.3.2 | Design and Implement WE Corporate Website | EMC (NA), Local subcontractor (TBD) | Activity completed | Sept, 2012 |
| 7.6 | Consumer-Targeted Awareness Programs: World Water Day, Water Quality, Conservation | | | |
| 7.6.2 | Water awareness campaigns on 2012 World Water Day | EMC (NA) Local subcontractor (TBD) | Activity completed | April, 2012 |

Activity 7.3 –Designing and Implementing WE Corporate Website

Background, Scope and Impact

This is a continuation of a group of communication-related activities conducted by LWWSS in NLWE as of year two. These activities encompass the development of corporate guidelines, provision of on-the-job training on communication planning, and the design and implementation of a corporate website for the NLWE.

During year two, both the training and corporate guidelines were completed successfully, and adopted by NLWE. LWWSS will therefore proceed with the design and implementation of a corporate website while working closely with NLWE.

LWWSS’s communication specialist will oversee this activity. The design and implementation will be done through a local subcontractor who specializes in web design and hosting of corporate websites. The experience of both LWWSS’ specialist and the appointed subcontractor will benefit NLWE, by providing it with the capacity building and the tools to instate the WE’s online presence and reach out to customers through the web.

Please refer to **Error! Reference source not found.**19 for year-three deliverables and timeframes under this activity group.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| Obtain approval on corporate guidelines, thereby enabling website design to start. | | | | | | | | | | | | |
| Appoint web design subcontractor and start design and implementation process. | | | | | | | | | | | | |

Activity 7.6 - Implementing Consumer-Targeted Awareness Programs: World Water Day, Water Quality, Conservation

Background, Scope and Impact

Based on the positive feedback received from NLWE, and to support the WE in its effort to reach out to customers, build its corporate identity and promote water conservation, LWWSS will implement an outreach campaign on World Water Day in March, 2012.

This youth activity will repeat and replicate the effort conducted in year two in BWE and will focus on students in public schools in the North Lebanon during March, 2012. The target would be to over 200 students, teachers and parents. The activity will include a class-based presentation on water conservation, conservation booklet including interactive games as well as projects involving teachers and parents.

LWWSS is proposing to sustain this activity by engaging with the newly formed Lebanese Center for Water Conservation (LCWC), a project funded by the Italian Cooperation and implemented by UNDP at the MOEW. LWWSS and the LCWC will share experience, outreach material, costs of production of new material, and will likely share the tasks of implementation of the training. LWWSS will leverage the LCWC's partnership with local universities to train Lebanese engineering students on conducting the training in schools, thereby sustaining this activity which could then be replicated throughout Lebanon on a yearly basis.

As with the year-two activity, this initiative will take place as a joint effort by LWWSS and NLWE, thereby building the image of the WE in the public's eyes, establishing a relationship between the youth and the water utility, building the capacity of NLWE staff, teaching personnel and parents, and spreading the message of water conservation to the public.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| Identify target audience, prepare awareness material and brief all stakeholders. | | | | | | | | | | | | |
| Conduct interactive activity, record impacts and report to USAID. | | | | | | | | | | | | |

4. SOUTH LEBANON WATER ESTABLISHMENT (SLWE)

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

Table 17

| Item | Activity Description | Program Resource | Deliverable by End of Year Three | Timeframe |
|-------|--|---|--|-----------|
| 2.1 | Establishing and Building the Capacity of Metering Teams | | | |
| 2.1.1 | Assist in identifying metering teams and assess training needs | - CDM (BG, GT, EH) - DAI (MK) - ValuAdd | - Assessment conducted, recommendations issued to WE | Sep, 2012 |
| 2.1.2 | Provide management team and field team training on metering | - CDM (BG, GT, EH) - DAI (MK) | - Training planned - Scope of Work defined | Sep, 2012 |
| 2.1.3 | Provide technical assistance (studies, training, study tours) and/or technological tools for water demand management | - DAI (TBD) - ValuAdd | - Activity planned | Sep, 2012 |

Activity 2.1 – Establishing and Building the Capacity of Metering Teams

Background, Scope and Impact

This activity accompanies the component five activity 5.1, relating to the identification of water production in SLWE, through the procurement and installation of source metering equipment.

This activity yields tremendous benefit to SLWE, and advances its capacity to monitor water production per site, and instate a culture of water demand management within the WE, which enables the WE to control operating costs, manage water production, decrease losses, and advance towards achieving water balance.

This activity consists of a comprehensive effort to establish a meter reading team, and implement an adapted methodology for meter reading, meter maintenance, metering data collection and management, as well as the principle of water balance for the WE. The initiative will include the provision of Microsoft Excel-based tools, to enable the WE to effectively start monitoring water production and consumption. A geographic focus around cities where zone and consumer metering is being deployed will also take place.

The source metering installation activity will include training on water meter operation and maintenance for the pump station personnel to maximize the impact of this activity.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Assist in identifying metering teams and assess training needs. | | | | | | | | | | | | |
| Prepare for the provision management team and field team training on metering. | | | | | | | | | | | | |
| Prepare for the provision of technical assistance (studies, training, study tours) and/or technological tools for water demand management | | | | | | | | | | | | |

Component 3: Increase Financial and Commercial Viability of Water Establishments

Table 18

| Item | Activity Description | Program Resource | Deliverable by End of Year Three | Timeframe |
|------|--|------------------|----------------------------------|-----------|
| 3.2 | Integrate the WEs Financial, Accounting, Customer Service and Business Process Systems | | | |

| | | | | |
|-------|--|---|--|------------|
| 3.2.2 | Update software platform including Finance and Accounting System and Customer Relationship Management solution | EMC (MC, NA), LWWSS (AS), ABA EDM | Implementation scope agreed and activity started | Aug, 2012 |
| 3.2.3 | Implement intranet system enabling web-browser based e-training, communication and business process tools | EMC (MC, NA), LWWSS (AS), ABA EDM | Implementation scope agreed and activity started | Aug, 2012 |
| 3.2.4 | Conduct training, assist in transition phase and provide one/two year on site support | EMC (MC, NA), LWWSS (AS), ABA EDM | Training started | Sept, 2012 |

Activity 3.2 - Integrate the WEs Financial, Accounting, Customer Service and Business Process Systems

Background

This activity follows from the upgrade of IT infrastructure in SLWE (activity number 5.6, under component five), which addresses a number of urgent IT upgrades required on the infrastructure in SLWE, thereby providing the WE with a robust backbone for its IT operations across its territory.

This activity is based on the findings of the investigation conducted by LWWSS in years one and two, around the subject of connecting the Jezzine branch to the head office's JD-Edwards system (refer year two work plan). This year, two activities had been discontinued after LWWSS' investigations led to an agreement with GIZ that yields higher efficiency to SLWE: GIZ had already connected all the branches to the SLWE Head Office's JD-Edwards system, and they had developed enough knowledge and cost advantage that it was more economical and more efficient for LWWSS and SLWE to ask them to proceed with connecting the Jezzine branch rather than start the activity through LWWSS from scratch. In return, LWWSS found that a bigger advantage can be achieved by diverting efforts into areas where SLWE had no support from other donors, such as providing some reprogramming necessary for the head office's JD-Edwards system, which will increase functionality of the system and result in a better use of the system.

Scope and Impact

The JD-Edwards system, initially funded by USAID/LWPP has been used by the WE since 2007. The operation of the system was done by a private sector provider, iTech, until 2011. Since 2011, the system's operation was shifted to a newly recruited in-house team (in early 2011).

However, during the years of operation by iTech and the WE, a number of necessary enhancements came up. These minor enhancements are required to bring the payroll and reporting modules of the system up to date, and enable them to meet new needs and new financial reporting requirements. Examples of these minor enhancements include:

- The payroll module needs to be updated to reflect recent changes in deductions to salaries such as income tax, overtime, leave days.

- Various modules need to be updated to enable them to produce new types of financial reports required by the WE.

These tasks require some reprogramming of JD-Edwards modules. As such, they cannot be undertaken by SLWE's in-house finance team and require specialist assistance from a JD-Edwards certified programmer. LWWSS is best positioned to provide expert assistance in surveying these enhancements and funding their implementation.

LWWSS will therefore identify and appoint a specialist company to address these enhancements. LWWSS will also build the capacity of the WE in appointing software maintenance companies to systematically attend to the continuous and ongoing need for upgrading and enhancing the JD-Edwards system.

LWWSS will also provide any further training required for the in-house financial team to operate the amended modules of the JD-Edwards system.

This activity will enhance the usability of the system, resulting faster processing of tasks on JD-Edwards, and a reduction in errors.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Upgrade software platform including FAS and CRM solutions | | | | | | | | | | | | |
| Implement intranet system enabling web-browser based e-training | | | | | | | | | | | | |
| Conduct training, assist in transition phase and provide one/two year on site support | | | | | | | | | | | | |

Component 4: Capital Investment Planning and Program/Project Management

Table 19

| Item | Activity Description | Program Resource | Deliverable by End of Year Three | Timeframe |
|-------|---|--|----------------------------------|------------|
| 4.2 | Implement Asset Survey, Inventory and Valuation | | | |
| 4.2.1 | Pump-station inventory and valuation, in a format that is ready for integration into FAS, MMS and GIS | - CDM (BG), EMC (MC), DAI (AS) - Cadres | - Activity completed | June, 2012 |
| 4.2.2 | Pump station equipment replacement packages for bidding by BWE | - CDM (BG), EMC (MC), DAI (AS) - Cadres | - Activity completed | June, 2012 |
| 4.2.3 | O&M training needs assessment for pump-station operators | - CDM (BG), EMC (MC), DAI (AS) - Cadres | - Activity completed | June, 2012 |

Activity 4.2 - Implementing Asset Inventory and Valuation

Background, Scope and Impact

This is a continuation of a year-two activity. Around 250 water sources exist in SLWE, and LWWSS is proceeding with a comprehensive survey of these stations to create an asset listing and valuation, identifying the status and specifications of existing equipment, and write procurement documents that will enable SLWE to purchase urgent equipment replacement works for these stations in the local market.

The comprehensive inventory database is in a Microsoft Access format that had been designed in compliance with the Geographic Information System (GIS) software that SLWE operates, as well as the JD-Edwards Maintenance Management System (MMS) module which SLWE will install in the future.

This activity will enable SLWE to:

- Oversee and manage its assets through a consolidated database;
- Plan its procurement in a cost-effective manner by achieving economies of scale for larger orders;
- Plan future projects and conduct master planning using up-to-date information on pump station locations, capacity, distribution, service areas, and equipment caliber;
- Update and integrate the inventory into SLWE's GIS system

Further, the survey will include the production of operational documentation (drawings, equipment lists, maintenance records, emergency plans) that would be placed in designated areas within each station, to enable effective facility management and O&M.

Once completed, this exercise will enable SLWE to:

- Integrate its asset database into the FAS module of its JD-Edwards platform, thereby achieving a substantial enhancement on the quality of financial planning and accrual accounting practice within the WE, given that SLWE will be able to rely on accurate, up-to-date valuation data;
- Update the WE's inventory for fixed assets using accurate, up-to-date data;
- Possess an up-to-date inventory of its pump stations ready for incorporation into MMS and GIS;
- Plan and procure an MMS module for its JD-Edwards platform and implement a computerized maintenance management process;
- Prioritize, based on the survey's findings, its procurement of replacement pumps and motors for pump stations;
- Identify priority trainings based on the TNA conducted as part of the activity
- Identify key areas of enhancement in terms of O&M practice across SLWE's pump stations

This activity is implemented by LWWSS's subcontractor Cadres and supervised by CDM.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| Pump-station inventory and valuation, in a format that is ready for integration into FAS, MMS and GIS. | | | | | | | | | | | | |
| Pump station equipment replacement packages for bidding by BWE. | | | | | | | | | | | | |
| O&M training needs assessment for pump-station operators. | | | | | | | | | | | | |

Component 5: Procurement of Technical Equipment to Strengthen WEs

Table 20

| Item | Activity Description | Program Resource | Deliverable by End of Year Three | Timeframe |
|------------|---|---|---|-----------|
| 5.1 | Identifying Water Production and Contributing to Water Demand Management | | | |
| 5.1.1 | Supply and install up to 218 production meters, fittings and protection box/manhole (all non-metered sources in WE) | - CDM (BG, GT, EH) - Local subcontractor (TBD) | - Orders placed, installation started | Sep, 2012 |
| 5.2 | Upgrading Pumping and Energy Efficiency | | | |
| 5.2.3 | SLWE: Test and design pumps, motors and associated works for the rehabilitation of selected stations | - CDM (BG, GT, EH) - Local subcontractor (TBD) | - Design Produced and Approved by SLWE | Sep, 2012 |
| 5.2.4 | SLWE: Supply and install pumps, motors and associated works for the rehabilitation of selected stations | - CDM (BG, GT, EH) - Local subcontractor (TBD) | - Activity planned | Sep, 2012 |
| 5.2.7 | Establish service agreements, and conduct user training programs for the above activities | - CDM (BG, GT, EH), DAI (MK) - Local subcontractor (TBD) | - Activity planned | Sep, 2012 |
| 5.4 | Upgrading Water Analysis Laboratories | | | |
| 5.4.1 | Upgrade the water testing laboratories with infrastructure and equipment | - AUB - Local suppliers | - Activity completed | Sep, 2012 |
| 5.4.2 | Establish service agreements, and conduct user training programs for the above activities | - AUB - DAI (MK) | - Activity planned | Sep, 2012 |
| 5.6 | Increase IT Infrastructure Efficiency | | | |
| 5.6.2 | Upgrade server installation and power supply infrastructure at head office and selected branches | - DAI (AS) - Local subcontractor (MDS + TBD) | - Scope defined - Procurement and implementation started | Sep, 2012 |

Activity 5.1 - Identifying Water Production

Background, Scope and Impact

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.

Source metering meets the sustainability criteria that LWWSS 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 activity, a continuation from year two, will enable the water establishment to obtain accurate information on water production, better manage water supply, and plan long-term projects that connect and make use of the meters. A survey and specification stage took place in year two by LWWSS's subcontractors CDM. Procurement followed and resulted in the identification of a preferred subcontractor for the supply and installation of the equipment, as well as the implementation of necessary site works.

Follow-up for this activity continues under activity 2.1, above.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| Complete specifications of equipment. Start procurement of up to production meters, fittings. | | | | | | | | | | | | |
| Place subcontract for supply and installation of up to 218 production meters, fittings and protection boxes. | | | | | | | | | | | | |
| Place orders. Start installation on site. | | | | | | | | | | | | |

Activity 5.2 – Upgrading Pumping and Energy Efficiency

Background, Scope and Impact

This project is part of the add-on to the LWWSS program. SLWE's business plan developed with LWWSS support, prioritizes pump station rehabilitation as one of the most urgent issues related to enhancing water supply to the population and decreasing the WE's operating expenses. Many SLWE pump stations are in dire condition and require immediate intervention to replace their inefficient pumps and motors, enhance their overall performance, reduce their electrical consumption, and increase their supply hours to the population of South Lebanon.

An improvement to the pump station infrastructure will increase supply, reduce water loss, and save energy in an area of Lebanon that faces decreasing groundwater resource availability because of overexploitation and increasing pollution contamination.

Since late 2009, LWWSS and SLWE have proceeded with a detailed survey covering the WE's pump station infrastructure and aimed at prioritizing the rehabilitation needs among SLWE's stations. The survey is expected to be completed by the end of 2011. The early findings of the survey revealed that key stations in SLWE need rehabilitation, and that the impact on water supply continuity (hours of service) and O&M costs will be immediate and lasting.

On-site information and planning data provided by the survey and by SLWE, as well as detailed infrastructure planning workshops held with the WE management, helped LWWSS identify up to six key pump stations that are in most need for rehabilitation. These stations cover important service areas and impact hundreds of thousands of the South Lebanon population. These stations are located throughout SLWE and include the following by order of priority:

- 1) Wadi Jeelo 1 Station and Al Shehabieh Station (two "linked" stations that will be designed and implemented jointly) – benefitting a minimum of 51,000 people
- 2) Ebel El Saki Station– benefitting a minimum of 35,000 people
- 3) Al Hasbani Station – benefitting a minimum of 8,200 people
- 4) Wazzani Fawka (Maysat) Station and Wazzani Tahta Station (these will also to designed and implemented jointly. These stations are located in a geographic area that presents some security risks, and as such, their selection is still subject to assessment by LWWSS) – benefitting a minimum of 35,000 people

Upgrading these priority pump stations is a natural extension of the LWWSS activity. More than 130,000 people will benefit from an increased supply of water if these stations are rehabilitated. The initial add-on proposal mentioned that up to 40 stations will be rehabilitated, assuming that the program will be rehabilitating small, single-well stations. However, further to a technical workshop held between LWWSS, CDM and SLWE on November 18, 2011, it was found that rehabilitating a smaller number of larger stations would yield a more impactful result and would provide a longer term benefit to the SLWE. Therefore, the stations currently selected for rehabilitation were found to have an impact on a larger number of people than the initially planned rehabilitation (which was meant to target 109,600 people).

LWWSS and SLWE therefore prioritized these larger stations jointly based on agreed criteria that included number of beneficiaries, urgency of repairs, potential for efficiency improvements, and the condition of other parts of the pump station's network.

The project will substantially increase the efficiency of these pump stations, resulting in up to a 25 percent enhancement in the number of hours of water supply delivery for over 130,000 people. Efficiencies will also include up to a 15 percent reduction in electricity costs for SLWE, which represent one of the highest operating costs for

these stations. The 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 from labor assigned to these works and enabling staff to focus on other tasks. Importantly, the upgrades will also 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 installations, user training, and O&M capacity building. A safer working environment will in turn lead to less service disruption due to accidents.

Finally, the WE will continue to build relationships with customers through enhanced service, and SLWE will have the water pumping capacity needed to extend the service to new customers.

Given the level of analysis performed through the pump station surveys, the risks on this project are relatively low. Outside factors during upgrade works could affect outcomes, but otherwise the work is promising in terms of impact and is, by its very nature, a scalable and replicable approach. To minimize risks and ensure a lasting impact, LWWSS will also undertake all necessary hydraulic tests and surveys on the well stations, prior to commencing the design stage.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Investigation project, draft SOW, lunch RFP, obtain bids for local subcontractor to CDM, for design services. | ■ | ■ | ■ | ■ | ■ | | | | | | | |
| Conduct evaluation of RFPs, interviews, and appoint engineering subcontractor. | | | | | | ■ | ■ | | | | | |
| Start design stage and issue completed design package for SLWE review. | | | | | | | | ■ | ■ | ■ | ■ | ■ |

Activity 5.4 – Upgrading Water Analysis Laboratories

Background, Scope and Impact

This activity relates to the conclusion of the year-two group of activities relating to the installation of key equipment in SLWE’s water analysis laboratories in Saida, Sour (Tyre) and Nabatieh. The installation has taken longer than expected given that LWWSS faced a number of electrical problems that need rectification on site, prior to installation. The delay is also due to inconsistency in meeting the delivery milestones by the suppliers of the safety equipment associated with the water analysis equipment.

LWWSS is addressing these issues and arranging for all the systems to be fully functional prior to the installation of the key equipment (atomic absorption meter). This will enable the training to be made in real life environment and will maximize the

learning by the trainees. It will also ensure that equipment and personnel safety are addressed at the point of equipment delivery.

The equipment that enables SLWE to conduct extensive water quality testing (atomic absorption meter) will be fully commissioned during year-three. SLWE already had competent laboratory staff and is allocating appropriate funds for operation and maintenance of these labs. As such, LWWSS will focus on the continuous training of laboratory staff on the O&M of the atomic absorption meter to increase 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.

This activity will enable South Lebanon's laboratories to meet the forthcoming national potable water testing standards (Libnor). LWWSS will benefit on its experience in the implementation of the same water quality testing plan in BWE, to replicate this activity in SLWE.

This activity also 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). 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.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| Delivery of remaining laboratory equipment packages. | | | | | | | | | | | | |
| Installation and complete user training. | | | | | | | | | | | | |
| Service agreement and follow-up in place. | | | | | | | | | | | | |

Activity 5.6 – Increasing Information Systems Infrastructure Efficiency

Background, Scope and Impact

Further to an assessment conducted during year two, LWWSS found that the IT hardware infrastructure within the WE needs upgrading, given that it dates from 2005. The current system is slow, and requires memory and storage capacity upgrades to enable a more efficient operation of the JD-Edwards application that runs on it.

Upgrading IT infrastructure will provide processing capacity, to cater for the ongoing upgrades of the JD-Edwards software. Enhanced IT equipment will also empower the newly recruited teams within the WE to maximize their efficiency, process tasks faster, with less errors or failures. This results in a better performance of all those departments that relay on JD-Edwards (accounting, finance, payroll, purchasing, etc).

LWWSS will therefore fund a server upgrade, including associated equipment. This will enable SLWE to have a robust server infrastructure at SLWE headquarters in Saida, thereby maximizing the performance of the existing ERP platform and enabling SLWE to avoid incurring additional operational costs while it transitions the operation of its ERP solution into its in-house teams. The increased performance anticipated by this activity will translate into higher productivity by the SLWE staff, increased efficiency in conducting their daily operations, and lower down time and repair costs.

This activity will proceed in tandem with activity 3.2 above. Completing both activities in parallel will multiply the benefits of the effort deployed in SLWE.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Finalize specifications, start procurement for server upgrades. | | | | | | | | | | | | |
| Upgrade server installation and other key IT infrastructure at head office. | | | | | | | | | | | | |

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

Table 21

| Item | Activity Description | Program Resource | Deliverable by End of Year Three | Timeframe |
|-------|---|---------------------------------------|----------------------------------|-------------|
| 7.6 | Consumer-Targeted Awareness Programs: World Water Day, Water Quality, Conservation | | | |
| 7.6.2 | Water awareness campaigns on 2012 World Water Day | EMC (NA) Local subcontractor (TBD) | Activity completed | April, 2012 |

Activity 7.6 - Implementing Consumer-Targeted Awareness Programs: World Water Day, Water Quality, Conservation

Background, Scope and Impact

To complement its year-three activities in SLWE, to support the WE in its effort to reach customers, build its corporate identity and promote water conservation, LWWSS will implement an outreach campaign on World Water Day in March, 2012.

This youth activity will repeat and replicate the effort conducted in year two and will focus on students in schools in the South during March, 2012. The target would be to reach up to 600 students, teachers and parents. The activity will include a class-based presentation on water conservation, conservation booklet including interactive games as well as projects involving teachers and parents.

LWWSS is proposing to sustain this activity by engaging with the newly formed Lebanese Center for Water Conservation (LCWC), a project funded by the Italian Cooperation and implemented by UNDP at the MOEW. LWWSS and the LCWC will share experience, outreach material, costs of production of new material, and will likely share the tasks of implementation of the training. LWWSS will leverage the LCWC's partnership with local universities to train Lebanese engineering students on conducting the training in schools, thereby sustaining this activity which could then be replicated throughout Lebanon on a yearly basis.

As with the year-two activity, this initiative will take place as a joint effort by LWWSS and SLWE, thereby building the image of the WE in the public's eyes, establishing a relationship between the youth and the water utility, building the capacity of SLWE staff, teaching personnel and parents, and spreading the message of water conservation to the public.

Timeframe

| Activity Progress | O | N | D | J | F | M | A | M | J | J | A | S |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| Identify target audience, prepare awareness material and brief all stakeholders. | | | | | | | | | | | | |
| Conduct interactive activity, record impacts and report to USAID. | | | | | | | | | | | | |

5. STUDY TOURS AND CONFERENCES

Table 21 Study Tours and Conferences

| Item | Activity Description | Program Resource | Deliverable by End of Year Three | Timeframe |
|-------|---|------------------|-----------------------------------|------------|
| 4.3 | Build Decision-Makers' Managerial Capacity in Water Utility Management | | | |
| 4.3.1 | Water utility management: conferences, workshops, specialist training and study tours | LWWSS (MK) | Activities planned and undertaken | Sept, 2012 |

LWWSS' team continuously researches relevant conferences and study tour activities both locally, regionally and internationally. Once a suitable activity is identified and passes LWWSS' selection criteria screening, it is then discussed

within the LWWSS team and with the beneficiaries to ensure that it directly contributes to the LWWSS scope and the WEs' needs.

Candidate selection then takes place and a proposal is issued to USAID. Study tours and conferences are constrained by MOEW's resistance to allow senior WE personnel to attend training, especially overseas. LWWSS proposes study tours for USAID approval on a case by case basis throughout the year.