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NORTHERN UGANDA WATER SUPPLY SERVICES PROJECT (NUWATER) FINAL REPORT



JUNE 2011

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DISCLAIMER

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

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ACRONYMS AND ABBREVIATIONS

COOPI	<i>Cooperazione Internazionale</i> (an Italian NGO)
COP	Chief of Party
DOS	US Department of State
DWD	Directorate of Water Development
ESU	External Services Unit (a division of NWSC)
FACTS	Foreign Assistance Coordination and Tracking System (includes processes and indicators used to measure project performance)
FPM	Field Program Manager
hh	household
IDAMC	Internally Delegated Area Management Contracts (used by NWSC for managing town water supply services under their jurisdiction)
IDPs	Internally Displaced Persons
KTC	Kitgum Town Council
l/ca/day	liters per capita per day
LOP	Life of Project
M&E	Monitoring and Evaluation
MIS	Management Information System
MOU	Memorandum of Understanding
MWE	Ministry of Water and Environment, home of DWD
NUTI	Northern Uganda Transition Initiative
NUWSS	Northern Uganda Water Supply Support
NWSC	National Water and Sewerage Corporation
NURP	Northern Uganda Rehabilitation Programme
OBA	Output-Based Aid
O&M	Operation and Maintenance
OTI	Office of Transition Initiatives
PTC	Pader Town Council

PPDA	Public Procurement and Disposal of Public Assets Authority
PMP	Performance Monitoring Plan
RGC	Rural Growth Center
TC	Town Council
TSO	Technical Support Office (regional representation of DWD)
UGX	Uganda Shillings
UMEMS	Uganda Monitoring and Evaluation Management Services
USAID	United States Agency for International Development
USG	United States Government
WUC	Water User Committee
WSSB	Water Supply and Sanitation Board

EXECUTIVE SUMMARY

The Northern Uganda Water Supply Services Project (NUWATER (formally NUWSS), USAID Contract No. 617-C-00-08-0014-00, was a three-year initiative funded by the Uganda Mission of the US Agency for International Development (USAID/Uganda). The project was designed to assist local authorities in selected towns of Northern Uganda in reestablishing their water supply services through the use of incentive based contracts with private service providers for operation and maintenance of water systems. The project coordinated with the Ministry of Water and Environment and its lead agency in the water and sanitation sector, the Directorate of Water Development (DWD) while working directly and closely with local government units in Northern Uganda to deliver services. NUWATER was implemented by Tetra Tech ARD, Inc. with subcontractors including the External Services Unit of the National Water and Sewerage Corporation (NWSC) of Uganda.

The tasks defined in the NUWATER Scope of Work were:

Task 1: Design, award and management of operating contracts, focusing on providing technical assistance to local governments for the design, tendering, negotiation and monitoring of incentive based management contracts with local private operators for the operation, management and extension of local water utilities services and systems.

Task 2: Capital investment works, undertaking capital improvements to ensure that water supply systems are viable financial entities with the requisite water production capacity and customer base to recover operational costs.

Task 3: Planning and reporting, aimed at providing effective communications to USAID and project partners.

As discussed in Section 2.1 of this report, Tetra Tech ARD mobilized the NUWATER project on July 10, 2008. Several unexpected developments that came to light at start-up resulted in significant implementation delays, namely the need for an MOU to be signed between USAID and MWE and the need to terminate an existing management contract for the Town of Kitgum. In light of these developments, NUWATER conducted an intensive set of activities during the period June 2008 to February 2009, to implement an alternative strategy to resolve these major issues while preparing for the introduction of the new incentive based contracts to the towns of Kitgum and Pader. During this period, NUWATER worked closely with the towns, DWD, and USAID to develop operating contracts and tender documents incorporating the provisions of the DWD standard operating contracts, with special provisions to deal specifically with the incentive structure, performance targets, a connection subsidy employing an output based aid (OBA) approach and an operating subsidy.

The MOUs between Tetra Tech ARD and the respective town councils were signed in December 2009, while the USAID/MWE MOU was signed on January 19, 2008. The Kitgum Town Council voted to terminate the existing operator on February 23, 2009. This action finally enabled NUWATER to commence with the procurement process for the new incentive based operating contracts. NUWATER published the tenders on April 9, 2009. The successful bidder for Kitgum, WASH Consult Ltd., signed the operating contract with the Kitgum Town Council in August 2009. No acceptable bids were received for Pader, even with reissuance of the tender. Therefore as directed by USAID NUWATER developed and launched an interim management strategy for Pader under which NUWATER focused on refurbishing the existing water system and providing technical assistance to the town water board in managing the system, in anticipation of introducing a private operator after completion of re-design of the water system and completion of the capital investment program.

As discussed in Section 2.2.1, NUWATER provided extensive technical assistance to the Kitgum water board in overseeing the work of the new private operator. Using the Field Supervision Manual and associated contract monitoring and supervision protocols developed under the project, NUWATER conducted monthly technical and financial audits of the Kitgum operator to determine:

- Achievements of the operator against the performance targets as set out in the contract;
- Implementation of the OBA new connections subsidy (with field verification conducted by the Field Coordinator);
- Reimbursement of systems based Operating Expenses; and
- General management of services by the private operator.

In Pader, NUWATER assisted the town council in qualifying for an appointment by the Government of Uganda as the formally recognized town water authority. With this agreement in place, NUWATER provided assistance to the newly-designated authority in establishing a dedicated financial account for the water system, getting the system up and running, and in building capacity of the Authority and water system staff to manage water services in the town.

To assist the towns in acquiring the skills needed to manage their systems, and to sensitize town residents of the need for prompt and timely payments of their water bills, NUWATER provided capacity building, training, and public outreach support, including:

- Local water authority capacity building, primarily through on-the-job training; debriefings on monthly monitoring and evaluation results; and participation in quarterly operator performance review workshops.
- Operator training, including the development and application of protocols and procedures for systematic inspection of the water supply and distribution system, including: (1) the active participation of the operator on NUWATER monthly inspections of all pumping stations, storage facilities, selected tap stands, and power substations, (2) detailed hands-on training on operation and maintenance, recordkeeping, and reporting procedures, and (3) training conducted on a monthly basis during the monitoring and evaluation reviews.
- Public awareness support, including door to door sensitization of customers on the benefits of the improved water supply and the need to settle all water bills, participating in radio talk shows to give more information, create awareness and sensitize customers and the general public on water supply services; conducting focused in-house customer care; providing outreach training for operator staff; and conducting a rapid assessment of the factors affecting revenue collection.

As discussed in Section 2.2.2., in both Kitgum and Pader, the water production and distribution systems proved to be in much worse condition than was the design basis for the NUWATER project. The total overall water production capacity for the five production wells when in full operation was only ≈ 558 m³/day (for a 16 hr operation/day, far below the contractual targets of 682 m³/day, 1115 m³/day, and 1534 m³/day for Year 1, 2, and 3, respectively, of the operating contract with the private operator. In Pader, only one of the three water supply systems in the town was functioning at the time of NUWATER start-up.

In response to these problems, NUWATER worked closely with USAID's NUTI project to implement an emergency rehabilitation program in Kitgum, and to provide emergency payments to Pader to provide fuel for the functioning pump station. In addition to these emergency measures, in April 2009 USAID requested NUWATER to halt implementation of the project work plan for Task 2, and to implement a comprehensive set of activities to address the serious infrastructure problems facing both towns. In response to this request, NUWATER worked closely with USAID, local project offices, district and local officials, and town residents to carry out the following activities:

- Update of 2007 baseline survey;

- Design surveys for both towns;;
- Drilling and siting of wells in Kitgum and Pader;
- Pump testing of the drilled wells in Kitgum and Pader; and
- Small-scale water kiosk rehabilitation and connection of kiosk operators to the central systems.

USAID has commenced construction and rehabilitation activities under a separate contract, which will be completed after closure of the NUWATER project.

In summary, the test of incentive based contracts under NUWATER was not fully completed, largely due to developments beyond the control of NUWATER as discussed in this report, including:

- Delays in tendering operating contracts by nearly eight months at the beginning of NUWATER, due to the need for an MOU to be signed between USAID and GOU and to deal with the existing operating contract in Kitgum, thus significantly shortening the time period for the pilot;
- Major deficiencies in the production and distribution systems, not anticipated in the project design, contributing to the operator's inability to meet targets in the operating contract; and
- In line with the infrastructure deficiencies, implementation of a new capital investment strategy by USAID that was not completed before closure of the NUWATER project.

In spite of these problems, as shown in Section 3.0 of this report, NUWATER has had significant and lasting achievements. With the capital improvement program now being implemented by USAID, the groundwork laid by NUWATER has paved the way for fully demonstrating the incentive based contracting concept. Further, as discussed in Section 4.0, NUWATER has provided a number of valuable lessons learned regarding implementation of incentive based operating contracts and has identified improvements needed in Uganda's framework for managing water systems in small and medium towns, including:

- Policy, institutional and administrative risks need to be identified and resolved prior to embarking on innovative reforms.
- District Procurement Committees need more transparent and streamlined procedures and greater capacity.
- The condition of physical infrastructure is intrinsically linked to incentive based contracting outcomes.
- Asset replacement and reserve funds, financed from collections, are essential to assure long-term water system sustainability.
- Implementation of cost effective methods for monitoring and evaluation is critical to the long-term success of incentive-based operating contracts.
- Private operators need both strong business management and engineering capabilities, particularly in post-conflict environments.

I.0 INTRODUCTION

I.1 BACKGROUND

The principal framework for provision of water supply services in Uganda's gazetted towns and rural areas were laid down in the Local Government Act of 1997, which formally devolves responsibility for providing services to local government, and the National Water Policy of 1999 which includes formal recognition of the role of the private sector in management of water supply services. The Ministry of Water and Environment (MWE) through its Department of Water Development (DWD) has operationalized a framework for gazetted towns through the use of Performance Contracts with Town Councils (which are legally recognized as Town Water Supply and Sewerage Authorities). The Town Councils then designate a Water Supply and Sewerage Board (WSSB) consisting of five members, one of which is the Town Clerk.¹ These Performance Contracts are the legal instruments for handing over custodial care of water and sanitation assets to Town Water Supply and Sewerage Authorities and outline responsibilities for providing services.

Government policy encourages contracting day-to-day operations for town water supply and sewerage systems to a private operator who is responsible for providing technical services, billing and collections on behalf of the town and receiving a management fee for so doing. DWD has developed and provides templates for these Management Contracts. Hence, not only does government policy support the substantive involvement of private operators, but the policy has also led to the development of an active private sector engaged in providing services for a fee. There are now some 25 private contractors providing services in more than 80 towns in Uganda.²

The NUWATER project was designed to assist Uganda to move to a new generation of management contracts, by testing the value of incorporating additional financial incentives to the standard form of management contract to improve service delivery. While Uganda's National Water and Sewerage Corporation (NWSC) has been highly successful in using incentive based contracts to engender impressive water service performance improvements in larger towns across Uganda over the past decade, NUWATER is the first project to adapt and apply this approach to smaller towns in a post-conflict northern region of the country. The project was implemented in the towns of Kitgum and Pader. The lessons learned from the project were intended to be useful in the design and implementation of water supply improvement projects across northern Uganda as well as in small communities across sub-Saharan Africa.

I.2 PROJECT CONCEPT

The Northern Uganda Water Supply Services contract was signed on June 10, 2008, more than a year after the original feasibility study that provided the foundation for project design,³ for a period of 36 months and a total life-of-project funding of just under \$3 million. The objective of the project is to assist the local authorities with reestablishing their water supply services with initial focus on the towns of Kitgum and Pader, all with significantly declining IDP presence at the time of the feasibility study. The Project concept called for the use of incentive based contracts with private service providers for the operation and maintenance of their water systems. These incentive based contracts were to be modeled after the well established management contracts promoted by the Directorate of Water Development (DWD) and the successful incentive-based Internally Delegated Area Management Contracts (IDAMCs) used by the Uganda

¹ According to DWD's Performance Contract template, one of the members must also be a female..

² Source: DWD utility performance database for small and medium towns..

³ PA Consulting, June 8, 2007.

National Water and Sewerage Corporation to engage Ugandan private operators in the operation, maintenance, and expansion of water services. As stated by USAID in the NUWATER Scope of Work, by implementing and refining this private sector approach, USAID anticipates that that at the end of the three years:

- Quality of service provided will be markedly improved,
- More customers will be served, and
- Incentive based systems will contribute to system sustainability.

The use of an incentive based system was expected to improve operating cost recovery and contribute to provision of sustainable services within the three-year time project frame. NUWATER was also expected to demonstrate the viability of incentive-based operating contracting as a mechanism for sustaining water supply services after project support and inputs ended.

I.3 LINKAGES TO THE USAID UGANDA'S OPERATING PLAN⁴

The goal of the USAID mission in Uganda is to support “a more peaceful and democratic country with sustainable economic growth and a healthier, more educated population” with a program focus in northern Uganda to “mitigate causes and consequences of conflict”. Within the Department of State/USAID Joint Strategic Goal Framework, the NUWATER program contributes towards the program area of Investing in People. Although formally part of the health portfolio, the project was placed under Strategic Objective 7 of Economic Growth, because it focused on building private sector capacity to provide services. The NUWATER project was covered by USAID’s Program Element 3.1.8 for Water Supply and Sanitation. The program element is defined as, ensuring broadly accessible, reliable, and economically sustainable water and sanitation services for health, security and prosperity. The project targeted the following key program sub-elements:⁵

- Safe Water Access,
- Water and sanitation policy and governance, and
- Sustainable financing for water and sanitation services.

The principal measures of project success were:

- Measurable increases in water availability to customers in target areas (responding to the anticipated result of improved water services),
- Measurable increases in customer connections and water kiosks (responding increased customers), and
- Measurable progress toward financial sustainability (responding to the contribution of incentive based contracts to ensuring system sustainability).

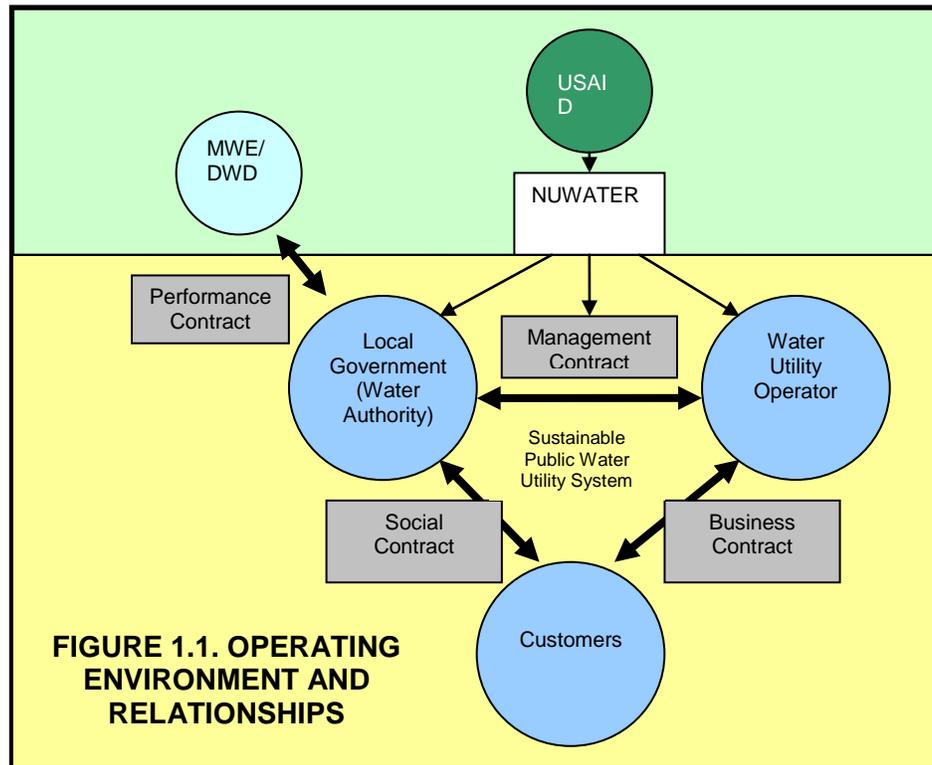
⁴ It should be noted that USAID/Uganda recently announced a new Country Development Cooperation Strategy. Information in this Final Report is based on USAID/Uganda’s results framework in effect during the NUWATER project period of performance.

⁵ NUWATER Performance Management Plan,, September 10, 2008, as revised July 30, 2010.

I.4 DEVELOPMENT HYPOTHESIS

The underlying hypothesis of the NUWATER project:

Well designed incentive-based contracts have the capacity to ensure recovery of costs associated with water supply service provision and will result in significantly improved services to customers, resulting in long-term sustainability of the systems serving these customers.



NUWATER realized that it must overcome years of dependence and subsidy in northern Uganda and that through a better management model the relationship among people, local government and public services can be solidified. This was based on re-enforcing the economic and social contract among the three main players along with USAID in a facilitating role.

As shown in Figure 1.1, the project design acknowledges three distinct “contracts” are in play:

- A social contract between government and the people to provide public services (which is in line with government policies as per its Constitution, PRSP/PEAP and the PRDP),
- A business contract between the utility and the customer (most succinctly, payment for quality services), and
- An incentive-based management contract between the government and the utility (with government’s role overseeing the private sector on behalf of its citizens).

This service delivery model is directly related to the overall project concept of utility management by the private sector with responsible contract oversight by local government (and technical quality control by the Ministry’s Directorate of Water Development) which would result in:

- Sustainability of water services through cost recovery,
- Improved quality of those water services, and
- Expanded coverage of water services.

I.5 FEASIBILITY STUDY OF 2007

In recognition of the need to reestablish water supply services in conflict affected areas of northern Uganda, USAID commissioned a feasibility study in April 2007 to 1) determine local private sector capacity to support water supply services in northern Uganda, 2) complete a field trip to the region to visit towns, rural growth centers (RGCs), and IDP camps, 3) discuss findings with USAID and others in Kampala, and 4) provide recommendations regarding the feasibility of providing water supply services in the target area through the use of private sector contracts.⁶ The results of this feasibility study suggested that with the right adjustments and financial support, private sector models could be extended into areas in northern Uganda that were not being adequately served. Models for towns, regional growth centers and villages were framed and defined by the assessment. This feasibility study formed the basis for the NUWATER project, by outlining a program to 1) support the design, tendering and execution of water supply operating contracts in the conflict-affected areas of northern Uganda, 2) provide financial support based on Output-Based Aid (OBA) approaches to compensate for the operating losses that will be incurred by the local operators, and 3) provide limited funds for rehabilitation and expansion of systems that had been neglected.

I.6 PROBLEMS NOT ANTICIPATED IN FEASIBILITY STUDY OF 2007

Upon award of the NUWATER contract, a number of developments not anticipated in the 2007 feasibility study were encountered, that would ultimately result in significant delays to NUWATER start-up and implementation and a major refocusing of NUWATER toward the capital investment program (Task 2):

- The Ministry of Water and Environment decided that a Memorandum of Understanding (MOU) between USAID and the Government of Uganda was required as a requisite to on the ground activities in the towns;
- A private operator was already in place in Kitgum, working under a three-year operating contract; and
- Major systems deficiencies in water supply infrastructure in both towns called into question the assumptions used in the 2007 feasibility study regarding the water supply potential and associated revenues.

Section 2.0 of this report discusses these issues in detail, and NUWATER's strategy for overcoming them.

⁶ PA Consulting, June 8, 2007.

2.0 PROJECT TASKS AND RESULTS

This chapter provides a summary of activities conducted over the life of the project, and specific results achieved under each project task. Section 2.1 below provides a timeline of key activities and developments during the project life time, while Section 2.2 describes results achieved under each project task.

2.1 PROJECT START-UP

The NUWATER project was designed on the basis of the feasibility study prepared in 2007. The contract for implementation of the project was awarded to Tetra Tech ARD on June 7, 2008. The following summary provides a timeline of key milestones in the project, as an introduction to specific task activities described in Section 2.2.

Tetra Tech ARD mobilized on July 10, 2008. NUWATER experienced a key personnel change at the beginning of the project. The COP originally slated for the position, Albert Achten, was unable to mobilize at the last minute. John Butler, Senior Technical Advisor/Manager (STA/M) for NUWATER served as COP in the interim until a replacement was sourced and approved. Alioune Fall, the new COP, visited Kampala at the end of July 2008 and fully mobilized on October 11. During this period, no significant delays to meeting project deliverable dates were experienced as a result of this staffing change.

As noted in Section 1.5, the NUWATER project was based on the findings of the feasibility study undertaken in March and April 2007. To update this study and to provide more detailed data upon which the project work plan could be developed, Tetra Tech ARD tasked its subcontractor, the External Services Unit (ESU) of the National Water and Sewerage Corporation, to conduct a field trip and detailed assessment of the three areas originally targeted by the project: Kitgum, Pader, and Aloi. ESU conducted its assessment in the three towns during early July 2008 to verify information contained in the feasibility study and to obtain updated information related to water supply status. This assessment included analysis of engineering, financial, management, and customer services aspects.⁷ Principal findings and status changes over the period April 2007 through July 2008 were presented to USAID. A major finding of the assessment was that a private operator was already in place in Kitgum, an unexpected development that would prove to cause major delays in NUWATER implementation, as discussed below.

During the period July-August 2008 the NUWATER project team and USAID held detailed discussions with the Ministry of Water and Environment (MWE) and the town councils to follow up on the updated assessment and to get their commitment and partnership in NUWATER implementation. During this period several new developments came to light that had a major impact on timing of NUWATER implementation: the need for an MOU to be signed between USAID and MWE; and the need to terminate an existing management contract for the Town of Kitgum, awarded after USAID's 2007 feasibility study, and therefore not reflected in the schedule for the NUWATER contract. Both of these developments resulted in a delay of over six months—to February 2009—for the NUWATER project to start up operations on the ground in Kitgum and Pader. These unexpected developments, and actions taken by NUWATER to overcome them, address them, are described in detail below.

⁷ NWSC ESU, July 2008.

As Tetra Tech ARD was proceeding with negotiating MOUs with the Town Councils of Kitgum and Pader, as planned, MWE unexpectedly determined that an MOU with USAID/Uganda was as prerequisite to project implementation. According to the NUWATER project work plan the MOUs with the town councils were to be signed by the end of September 2008. However, the period between August and December 2008 were characterised by protracted engagements between NUWATER staff and the town councils, and between USAID and the MWE over the necessity for, and details of the MOUs. The final MOU was signed on February 9, 2009.

A further complicating factor was the management contractor that was already in place for the Town of Kitgum, under DWD's standard contract. The contractor, Trandint, Ltd., had been managing the system under an interim arrangement since mid-2007. The contract, signed on May 1, 2008, had a period of performance of three years. The contract did not provide what the NUWATER Team believed were sufficient incentives to enable achievement of the project goals. Initially, NUWATER explored with MWE and the Town of Kitgum the possibility of entering into negotiations with the operator for modifying the contract to include the new incentives structure envisioned by the NUWATER project. However, town officials expressed dissatisfaction with the performance of the contractor and indicated their intention to terminate the contract for cause, independently of the USAID project. Based on deliberations by the Kitgum Town Council, USAID/Uganda, and NUWATER, it was decided that the existing contract was to be terminated, with the understanding that Trandint Ltd. would be eligible to compete for the new incentives based contract.

In light of these developments, NUWATER conducted an intensive set of activities during the period June 2008-February 2009, to develop an alternative strategy to resolve the major issues while preparing for the introduction of the new incentive based contracts to the towns of Kitgum and Pader. The following are key activities during this critical period:

- In July 2008, the NUWATER project team travelled to the Towns of Kitgum and Pader and met with the respective town council officials. In the meetings they informed the officials of the project, including its scope, objectives, the assistance to be provided, and the project framework.⁸ This was discussed thoroughly and the officials from the two towns committed themselves to working together with Tetra Tech ARD in the implementation of the project. It was agreed at that time that MOUs between the town councils and Tetra Tech ARD were to be prepared by Tetra Tech ARD and were to be signed by the end of September 2008.
- Draft MOUs were prepared and sent to the town council authorities in late August 2008. Key elements of the MOUs are provided in Table 2.1. The towns agreed with the contents of the MOU, but the town councils could not move forward with signature as this was contingent on the signature of a MOU between MWE and USAID. Discussions on this matter between Tetra Tech ARD, USAID and officials of the MWE were held during September. USAID had indicated that ARD should sign the MOU with the MWE on their behalf. However MWE expected USAID to sign the MOU as a requirement for the project to be implemented. Tetra Tech ARD provided and presented to USAID a draft MOU. Both sides reviewed the draft and agreed on moving forward to the signing. It was expected that this will conclude during the month of October 2008. Discussions between USAID and MWE were not concluded until December 2008.

⁸ NWSC ESU July 2008.

TABLE 2.1. PRINCIPLES OF COOPERATION IN TETRA TECH ARD/TWA MEMORANDA OF UNDERSTANDING

Party	Contribution to Project
Tetra Tech ARD on behalf of USAID	<ul style="list-style-type: none"> • Technical assistance to design, procure, and manage an operating contract that includes requirements, targets, incentives, and reporting and accountability requirements with the objective of achieving full operation & maintenance (O&M) cost recovery in three years • Output based aid subsidies, including limited new connection subsidies, for two to three years to fill the gap between revenues and costs during the transition to full O&M cost recovery • Limited capital investment and engineering expertise to rehabilitate the production and distribution system as needed to support the objective of achieving O&M cost recovery in three years • On the job training and capacity building to the Kitgum Water Authority and Water Supply and Sanitation Board throughout the life of the project to empower the city government to fully manage the system when the project ends • Additional studies as required (for example, long term investment needs; tariff reviews, etc.)
Town Water Authority	<ul style="list-style-type: none"> • Full access of the project's contractor, ARD, Inc., to the water supply and distribution system for examination and testing as requested by the contractor • Cooperation in providing ARD, Inc. with all information in the town's possession regarding past donor projects and investments in the water system; technical data such as production, maintenance and repair records; and financial information as requested by ARD • Public access to reports on performance of the operating contractor and the water system (technical, financial, managerial), subject to specific restrictions mutually agreed between town authorities and ARD to protect the operating contractors' business proprietary information and customer confidentiality • Designation of a Project Coordinator (staff member of the town government)to coordinate and work with the project, and to receive on the job training • Agreement to enter into an incentive based operating contract designed with the technical assistance of ARD and procured through GOU requirements, including transparency and competition • Designation in the operating contract of ARD, Inc. as the Contract Manager on behalf of the Town Water Authority with roles and responsibilities of the Contract Manager clearly delineated in the operating contract • Provision of office in Kitgum for coordination with NUWATER

- As provided in the NUWATER work plan, NUWATER proceeded with preparation of draft tender documents for the incentive based operating contracts for Kitgum and Pader, and submitted draft documents to USAID on September 2008. NUWATER finalized the bidding documents and submitted the final operating contracts and tender packages to USAID in December 2008.
- Draft bidding documents for capital works to complement the operating contracts were finalized in November upon review by the local council technical committees and USAID.
- During October 22-24, 2008, the Field Program Manger and the USAID Contracting Officer's Technical Representative (CO-TR) met with the Kitgum town council, the town clerk, and the town engineer to assess obstacles impeding an agreement. Bottlenecks and procedural issues that needed to be cleared with the Government of Uganda (GOU) were identified.
- In November 2008, draft Field Supervision Manuals for Kitgum and Pader were prepared by NWSC-ESU, in anticipation of NUWATER oversight of the private operators coming onboard.
- On December 1, 2008, the COP and the Field Program Manager held discussions with officials from the MWE following earlier meetings and discussions between officials from USAID and the

Ministry. In this meeting general agreement was reached to move forward with the MOUs between the towns and Tetra Tech ARD, and between USAID and MWE. In this meeting the MWE officials: Eng. Dominic Kavutse (Assistant Commissioner, Urban Water and Sewerage) and Eng. Azuba, informed the NUWATER team that the Ministry had sent the MOU with USAID to be signed between the MWE and USAID to the Solicitor General for review and clearance for signature. They however informed the team that the Ministry had no problems with signing the MOU and therefore instructed us to sign the MOU between ARD and the Town Councils and to proceed with the implementation of the NUWSS project. They also informed the team that the case of the Kitgum private operator should be handled in line with the agreements made with USAID. The Ministry was then requested to give a letter to the respective Town Clerks giving a no objection to the signing of the MOU between ARD and the Town Councils. This was provided on December 8.

- The COP and the Field Program Manager travelled to Kitgum and Pader December 9 and 11, 2008. During this trip they signed MOUs with the respective Town Councils for the implementation of the NUWATER Project.
- During December 2008 and January 2009, much of NUWATER's focus was on dealing with emergency water supply situations in Kitgum and Pader, in cooperation with USAID/Uganda and USAID's NUTI project:

Water supply for Kitgum had deteriorated drastically due to breakdown of equipment. NUWATER conducted detailed discussions with USAID and USAID's NUTI project, concluding with an understanding that NUTI was to complete the emergency rehabilitation of the Kitgum water supply system by the end of February 2009.

Pader was not receiving any water pumped from the three powered boreholes, due to lack of fuel and breakdown of equipment. The water situation in Pader was critical as there had been no funds for purchase of fuel for the pumps for the previous three months. The NUWATER team prepared a plan and budget for an emergency intervention.

- The MOU between USAID and MWE was signed on January 19, 2009. At this point, NUWATER was enabled to move forward with operator tenders and establishing onsite operations.
- The Kitgum Town Council voted to terminate the contract with Trandint Ltd. The contract was terminated on February 23, 2009 and a letter of termination and related correspondence was copied to USAID and NUWATER. This action finally enabled NUWATER to commence with the procurement process for Kitgum.

In summary, several critical issues were discovered after Tetra Tech ARD was awarded the NUWATER contract that resulted in project implementation being delayed by six to eight months.

2.2 ACTIVITIES AND RESULTS FOR EACH TASK AREA

The following sections describe key NUWATER activities and deliverables for each of the three project Task areas, results, and issues encountered, focusing on activities that commenced with resolution of the issues discussed above, in February 2009.

2.2.1 TASK 1: DESIGN, AWARD, AND MANAGEMENT OF OPERATING CONTRACTS

Task 1 as proposed in the NUWATER Year 1 Work Plan,⁹ is composed of five subtasks, all focused on establishing and monitoring incentive-based operator contracts. These subtasks are 1) contracting, 2) supervision and administration, 3) audit, oversight, and coordination, 4) capacity building, training, and outreach, and 5) handover of responsibilities.

⁹NUWATER August 13, 2008 and November 2009.

Table 2.2 below summarizes the key activities carried out by the NUWATER team:

TABLE 2.2. NUWATER TASKS AND ACTIVITIES

TASKS AND ACTIVITIES	PARTICIPANTS	ACTIVITY/ DELIVERABLE	STATUS
Finalize implementation arrangements with DWD and USAID	DWD, USAID, LWAs, COP		MOU between USAID and the MWE was signed on January 19, 2009. MOUs between Tt ARD and the respective Town Councils were signed on December 10 and 11, 2008.
Establish project coordination mechanisms	MWE/DWD, USAID, COP, DCOP	Engagement with the Water Sector Working Group (WSWG), established by Ministry of Finance	NUWATER actively participated in the WSWG policy discussions and direction. NUWATER was an active participant as a representative of USAID in the Regulation Thematic Group meetings in 2009-2010 of the WSWG and provided valuable input to the development of the new contracting framework for small towns and between MWE and NWSC, currently supported by the USAID SUWASA project.
Develop and finalize details of OBA program	USAID, COP	Amount of subsidy established and described in OpCon tender documents	Completed and submitted to USAID September 2008.
Finalize incentive-based contract language	USAID, LWAs, Project Staff	Contract deliverable	Completed and submitted to USAID in September 2008.
Finalize procurement methodology	USAID, Project Staff	Tender package; instructions for bidders; evaluation procedures	Completed March 2008 – Procurement launched April 2010. Delay due to need to transfer procurement responsibilities to District Procurement Committees.
Prepare and sign MOU with Kitgum	LWA, COP	Principles of cooperation between Tt ARD and KTC agreed to at August 7 meeting	Completed and Signed on December 10, 2011.
Prepare and sign MOU with Pader	LWA, COP	Principles of cooperation between ARD and PTC	Completed and signed on December 11, 2011.

TASKS AND ACTIVITIES	PARTICIPANTS	ACTIVITY/ DELIVERABLE	STATUS
	USAID, LWA, Project Staff	All Key Personnel sit on evaluation panel; LWA makes final decision based on panel's recommendations	The contract with the new operator signed on August 11, 2009.
Complete contracting for Pader	USAID, LWA, Project Staff	All Key Personnel sit on evaluation panel; LWA makes final decision based on panel's recommendations	Acceptable bid was not received after two rounds of public tendering.
Develop field supervision protocols	Project staff	Field supervision manual	Completed during finalization of incentive based contract provisions.
Monitor compliance with operating contract terms and conditions	KWSSB,(Project Coordinator), Project Staff	Monthly visits by Field Program Manager and/or COP, with NWSC-ESU Monitoring & Evaluation Team	Conducted monthly.
Meet with operator & stakeholders to review operator reports	KWSSB,(Project Coordinator), Project Staff	Monthly visits by Field Program Manager and/or COP, with NWSC-ESU Monitoring & Evaluation Team	In addition to monthly visits, Quarterly and Annual Operator Performance Reviews were held with the Operator and Water Board in Kitgum.
Process subsidy payments based on compliance	KWSSB,(Project Coordinator), Project Staff	Disbursements made directly from town escrow account to private operator with NUWATER providing balanced by NUWATER, per terms of operating contract	Conducted monthly.

TASKS AND ACTIVITIES	PARTICIPANTS	ACTIVITY/ DELIVERABLE	STATUS
Process OBA payments based on verified operator reports	KWSSB,(Project Coordinator), Project Staff	Disbursements made directly to Kitgum private operator by FPM	Conducted monthly by NUWATER, until new connections program halted due to water supply shortages due to production system deficiencies.
Establish audit protocols	Project Staff	Field supervision manual	Completed during finalization of incentive based contract provisions.
Kitgum audit and oversight	KWSSB,(Project Coordinator), Project Staff	Scheduled audit once per quarter; random audits at least once per quarter	Conducted on a monthly basis by M&E team.
Coordination and project feedback to USAID, DWD and local stakeholders	USAID, DWD, LWA, Project Staff	Project progress to be discussed at quarterly town meetings and included in quarterly project reports to USAID	Quarterly meetings and annual Operator performance evaluation workshops held and reported to USAID.
Kitgum & Pader WSSB capacity building	WSSB (Project Coordinator), Project Staff	Continual on-the- job training	Ongoing during project.
Kitgum & Pader Operator training	WSSB, Project Staff	One-day intensive workshop	Completed for Kitgum; N/A for Pader.
Public Outreach program design	WSSB, Project Staff, Operating Contractors	Operator outreach obligations spelled out in operating contract	Completed
Prepare public outreach materials	USAID, DWD, Project Staff	Existing materials to be used as appropriate with new materials produced by NUWATER as needed	First year public awareness campaign led by Kitgum operator focused on door to door collections drives and customer relations training for private operator.
Review arrangements for handover of responsibilities with WSSBs	Town Council, USAID, DWD, COP	Recommendation for handover arrangements to be provided to USAID in 4th quarter of Year 2	Finalized with the holding of close out workshop and development of transition and action plans.

TASKS AND ACTIVITIES	PARTICIPANTS	ACTIVITY/ DELIVERABLE	STATUS
Formally hand over contract management to WSSBs	Town Council, USAID, DWD, COP	Handover of NUWATER contract management responsibilities to Kitgum Town Council	Finalized with the holding of close out workshop in June 2011, and development of transition and action plans.

SUB-TASK: CONTRACTING

This sub-task involved designing and procuring private operators for the target towns. For Kitgum NUWATER signed a contract on August 11, 2009 with a private operator to manage the water supply system and services for a period of two and half years. For Pader, NUWATER was not able to attract a suitable operator to manage the system despite two procurement rounds, and are proposing an interim arrangement to achieve the project's objectives.

A prerequisite for the tendering for the Kitgum Water Supply System operation was the documentation of the Kitgum Contracts Committee's decisions on the procurement of a new operator for the town water supply system. In April, the Field Program Manager held several discussions with town officials including the Mayor, the Town Clerk, the Town Engineer and procurement officer to secure this decision.

The Town of Pader did not have a Performance Contract with DWD, since the town was still in the process of delegation of water authority from the District Government to the Pader Town Council (PTC). In line with clause 5.3 of the Performance Contract, Water Act Cap, 152 of 1997 and the MOU signed between the PTC and Tetra Tech ARD, the PTC appointed members of the Pader Water Supply and Sewerage Board on August 11, 2009 and communicated it to the Ministry on October 2, 2009 as a first step in getting the Town "gazetted" and entering into a performance contract with DWD.

Tenders were developed incorporating the provisions of the DWD standard operating contracts, with special provisions to deal specifically with the incentive structure, performance targets, the connection OBA and operating subsidy.

ARD's procurement process adhered to USAID procurement requirements and followed the Government of Uganda's PPDA's procurement process¹⁰ as it follows procurement best practice. The procurement method used was National Competitive Bidding (NCB). Bidding was open to all competent and eligible bidders who are domiciled and incorporated in Uganda. The invitations for bids were advertised through the local newspapers – New Vision and Monitor. Bidding documents were purchased from both the NUWATER project offices in Kampala and the respective procurement offices in Kitgum and Pader.

Key elements of the tendering process are provided below. Details of the actual bids and evaluations are provided in the CD-ROM accompanying this Final Report.

Preparation of bidding documents including evaluation criteria:

- Inclusion of required flow down provisions from Tetra Tech ARD's implementation contract to the operating contracts;
- Clear criteria and bid evaluation methodology including score sheets; and
- Inclusion of payment schedule details, with a payment schedule based on achievement of progress benchmarks.

¹⁰ Local Governments (Public Procurement and Disposal of Public Property) Guidelines 2008, PPDA, January 2008.

Implementation of a fully transparent and competitive process:

- Advertisements in local papers as required by PPDA for each package, according to an agreed upon schedule;
- Allowance for sufficient time for bidders to respond to solicitation (30 days); and
- Clear description of evaluation criteria, particularly related to capacity to perform, cost, and performance requirements.

Systematic process for managing received and evaluated bids:

- Bid evaluation process clearly articulated to all stakeholders;
- Provision for stakeholder review;
- Documented process to confirm competitive process; and
 - Bid evaluation conducted through a 4-stage process;
 - Assessment of eligibility and completeness;
 - Assessment of substantial responsiveness;
 - Assessment of bankability and business plan; and
 - Comparison of bids.

Awarded operating contract for Kitgum:

- Awards made on the basis of a well documented evaluation process;
- Contract included technical requirements, contract compliance requirements, applicable flow down provisions, reporting requirements, schedule of payments, and other provisions as appropriate;
- Compliance with USAID regulations; and
- Clear statement of ownership of any assets that are procured.

Under the proposed contracting framework NUWATER was to provide partial subsidies for new connections, through an Output Based Aid (OBA) agreement with the operating contractors defined in the operating contract. In Kitgum, customers are accustomed to paying 50,000 UGX per connection, while the actual cost averages 200,000–250,000 UGX. Through the OBA approach, NUWATER compensates the operator for at least a portion of expenses incurred for new connections, based upon clear documentation provided by the operator and confirmation by our Field Coordinator that the connection was completed and fully operational.

The objective of this subsidy was to promote water service coverage on a commercially sustainable basis. Under the OBA framework, the Operator was required to pre-finance the costs of installing the new connections including both materials and labor and was reimbursed on the basis of two fixed average unit rates in respect to a completed, working metered new water connection. These rates were included in the tender documents and bidders were requested to propose their rates.

- A first fixed average unit rate is the *rate for connection and metering*, i.e., the connection and metering unit rate. This rate covers the cost of materials/fittings and labor required for tapping and/or connecting the service line to the existing water main (primary, tertiary or secondary) as well as the cost of materials/fittings and labor for installing the water meter and tap. This rate excludes the cost of the water meter and its connectors (lining unions) which are to be provided by the Authority (Contract Manager) at no cost to the operator. In Kitgum, the Connection and Metering Unit rate is UGX190,000; UGX148,000, and UGX130,000 per new connection respectively from DN100, DN80, and DN50 water mains.
- A second fixed average unit rate is the *rate for pipe laying i.e. pipe laying unit rate*. This covers the cost of pipes and connectors and labor required for route clearance, trench excavation, pipe-laying, pipe-joining, back filling, and compacting. The pipe laying unit rate is a rate per running linear meter of the installed service lines. It is based on the provision of DN15 (1/2") HDPE pipes for the service lines. Where a pipe bigger than DN15 is used, the pipe laying unit rate will be revised only to an extent that takes care of the additional cost of pipe, and the labor component shall be deemed constant. A breakdown of the pipe-laying unit rate is required in order to distinguish charges for the pipe from those for the labor.

On April 9, 2009, the first tender advertisements for bids for the operation of Kitgum and Pader water supply systems were published in prominent Ugandan newspapers (New Vision and Monitor). Bids were to be submitted by May 11, 2009 and opened on May 12, 2009 in the two towns separately. During this period of tendering, the procurement offices in Kitgum and Pader and the NUWATER office in Kampala addressed inquiries and provided the tender documents to requesters. NUWATER sponsored a workshop in cooperation with the Association of Private Water Operators (APWO) to provide all potential bidders with a detailed description of the contract and tender procedures.

Four bids were received for Kitgum. Only two bids were received for Pader. The evaluation committees evaluated the bids during the period May 13-16, 2009 and evaluation report prepared and submitted to the District Contracts Committee. The results of the bid evaluation for Pader concluded that none of the two bids received was responsive and therefore a retender was recommended. Of the four bids submitted for Kitgum, the evaluation concluded that one bidder (WASH Consult Ltd.) was responsive and recommended for contract award subject to successful contract negotiations.

Efforts to procure a private operator for Pader were not successful as the Pader system in its current state proved to be unattractive to bidders. The retender was similarly unsuccessful. No additional effort was therefore put into procuring an operator for Pader. Rather, as directed by USAID this was to be done following the re-design of the water system. As an interim measure, NUWATER was to focus on refurbishing the existing water system previously installed by DWD. In agreement with USAID, NUWATER designed a strategy for the interim management of the Pader system by Pader Town Council with assistance from NUWATER.

SUB-TASK: OPERATING CONTRACTS SUPERVISION AND ADMINISTRATION; AND AUDIT, OVERSIGHT, AND COORDINATION

Under these sub-tasks Tetra Tech ARD served as Contract Manager on behalf of each Town Water Authority, as provided for in the operating contracts, providing technical and financial oversight of the operators. Therefore, in parallel with drafting the operating contracts, NUWATER developed a Field Supervision Manual that included protocols to guide our contract monitoring and supervision program. The protocols served as Terms of Reference for the M&E Team in conducting its monthly technical and financial audits of the Kitgum operator. Since NUWATER was unsuccessful in procuring a private operator for Pader, the protocol was not applied there. Nevertheless, NUWATER provided extensive support to the newly formed water board for Pader, in establishing a framework and the capacity to oversee operators in the future, as USAID completes its plans for capital investment.

Kitgum. NUWATER developed clear and effective operator reporting requirements for both technical and financial management, and for reporting on new connections eligible for the OBA subsidy as detailed in the previous section. At the same time, the project prepared field supervision protocols that closely tracked the operating contract terms and conditions. The protocols detail procedures for verifying information provided by the operator to include report analysis steps, field verification requirements, and supervision reports to be submitted to the project. The team also included procedures for performing technical and financial audits of the operator to ensure compliance by the operator with the service and performance targets in the Operating Contract. A key element of the field supervision procedure was the establishment of regular M&E team tasks for conducting monthly evaluations as summarized below:

- Achievements of the operator against the performance targets as set out in the contract;
- Implementation of the OBA new connections subsidy (with field verification conducted by the Field Coordinator);
- Reimbursement of systems based Operating Expenses; and
- General management of services by the Private Operator.

The M&E team was comprised of a Senior Engineer, Finance Expert and Field Project Manager from NWSC-ESU, tasked with carrying out monthly reviews of the Operator performance in Kitgum. Upon completion of each visit, the M&E team held an exit meeting with officials from KTC, the WSSB and the Operator to:

- Brief stakeholders on the performance of the Operator and the findings of the Team;
- Brief and receive input from the officials on progress in project implementation and necessary updates from USAID; and
- Initiate follow up actions on outstanding issues with the operator and / or the water board since the last visit.

Over the course of its work, the M&E Team identified a number of issues and brought them to the attention of the COP, as well as, addressing a number of critical problems, such as:

- *Resolution of electricity arrears between the water board and the power company (UMEME).* In August 2009, UMEME disconnected the pumping stations of Knew and YY Okot due to unpaid electricity arrears. The NUWATER team held protracted negotiations and discussions with both the UMEME manager

in Kitgum and their regional manager based in Lira over the period September 2009 – March 2010. Power to the Knew and YY Okot pumping stations was restored in January and March 2010, respectively, after opening of new electricity accounts for the two pumping stations.

- *Agreement on remuneration of the operator for collection of arrears.* While the Operating contract, as signed between KTC and the private operator was very clear on how the Operator would be paid for collecting bills that were produced by the operator, it was silent on how it would be paid for collection of arrears left behind by the previous operator. NUWATER identified this gap and brought it to the attention of the contract parties. The process of negotiations over this matter took some time but was finally concluded in February 2010 with KTC agreeing to pay the Operator 50% of the arrears collected.
- *Attachment of the KTC water account by Uganda Revenue Authority:* In February 2010, Uganda Revenue Authority attached all the KTC bank accounts, including the “ring fenced” water account, for non payment of tax arrears. This action meant that the water operations would come to a standstill as no funds could be drawn from the account to meet monthly O&M expenses. The NUWATER team together with KTC engaged the tax body to at least lift the attachment of the water account. This was achieved after a period of about a month of intense discussions and follow up.
- *Management of the escrow account.* During the M&E exercise of June 22-25 2010, the M&E team established that payments totalling UGX 9.9 million had been written between June 4 and 14, 2010, in order to settle various KTC/WSSB expenses. Of this, UGX 3.6 million had already been cashed and the remainder of the cheques withheld by the KTC. These payments were authorized by the Council without consultation with NUWATER, contrary to the terms of the MOU signed between the Town Council and Tetra Tech ARD. During the exit meeting, it was noted that this was due to the lack of knowledge of procedures for managing the escrow account by the new Ag. Town Clerk. This was promptly addressed by training the new official, and there has since been good communication and consultations on the management of the escrow account since that incident.

Pader. As required in its agreement with NUWATER, Pader was declared a Water Supply and Sewerage Area and the Pader Town Council appointed as the Authority in charge of water supply and sewerage Services. This declaration was made through the Uganda Gazette under the General Notice No. 485 of 2009 – the statutory notice was made on November 26, 2009.

With this agreement in place, NUWATER worked with the Pader Town Council to open a dedicated escrow account where all collections made from water sales would be banked, and through which system operations and maintenance and capital purchases would be funded. This was achieved by March 2010. The Town council was encouraged to have three signatories to the escrow account (Town Clerk, Treasurer and Commercial Supervisor).

In the addendum to the MOU signed with Pader Town Council, the Council hired both a Water Supervisor and Commercial Supervisor who would be remunerated from water sales proceeds. The Water Supervisor would deal with technical issues of the system while the Commercial Supervisor would deal with all the operational, commercial and awareness creation needs aspects of the water supply system

SUB-TASK: CAPACITY BUILDING, TRAINING, AND PUBLIC OUTREACH

NUWATER’s capacity building, training, and public outreach activities were highly focused on several key areas: (1) providing on- the- job training to local water authority staff and the Kitgum operator, (2) public outreach to water systems customers to inform them of the new project, (3) planned improvements to water services, (4) the need for prompt payment for these services, and (5) convening workshops for the private operators and local water authority staff to assure complete understanding of operator rights and obligations under their contracts.

Local water authority capacity building. Our primary mode of capacity building was through providing on-the-job training to local water authority staff. The MOUs between NUWATER and both towns called for the

authority to designate a staff member as Project Coordinator to work on a day-to-day basis with NUWATER. The Project Coordinator participated in the monthly reviews conducted by the NUWATER Monitoring and Evaluation Team; met with the Field Program Manager, COP and the operator; and conducted onsite activities to rehabilitate and upgrade the capital assets of the water system. The staff designated to work with NUWATER in Kitgum was Mr. Atube Benson, Water Officer.

In Pader, the project worked with the Town Clerks. After finalization of the interim arrangement for Pader, the PTC hired two staff – a commercial and a technical officer - to work with NUWATER. Through the project's collaboration with these staff, the Pader Water Board has now been assessed to have the capacity to assume day to day management of the stand posts system.

Operator training. The NUWATER Field Program Manager and onsite Field Coordinator worked closely with WASH Consults Ltd. throughout the life of their contract to train the operator on all aspects of system management. This included the protocol and procedures for systematically inspecting the Kitgum system, including: (1) the active participation of the operator on NUWATER monthly inspections of all pumping stations, storage facilities, selected tap stands, and power substations, (2) providing detailed hands-on training on operation and maintenance, recordkeeping, and reporting procedures to the staff of the private operator, and (3) training conducted on a monthly basis during the M&E exercises during which the M&E team, composed of two senior water engineers and a Public Awareness Campaign Advisor, provided hands-on training on technical issues and financial management and customer care.

Quarterly performance review workshops. These workshops, involved detailed reviews of the operator performance against targets set out in the operating contract, were attended by officials from KTC/WSSB and WASH Consult Ltd. The first workshop was held on the November 19, 2009 and then held on a quarterly basis.

Implementation of the public awareness campaign strategy. In cooperation with the Kitgum Water Board and the operator, NUWATER designed a public awareness campaign strategy in Year 1 with the following aims:

- Increasing awareness and changing the attitudes of consumers and customers towards the piped water project and encouraging the potential customers to apply for water service connection;
- Encouraging safe water use and management in terms of water handling and storage from source to mouth;
- Promoting improved water hygiene and sanitation management in the project area; and
- Fostering willingness and promoting a culture of prompt payment for water services.

During the months of November 2009 - February 2010, April - May 2010 and September 2010 various public awareness activities were carried out, including:

- Door to door sensitization of customers on the benefits of the improved water supply and the need to settle all water bills, including payment of arrears from the previous operator;
- Building the capacity of the operator to carry out door to door visits to sensitize customers on water related matters
- Conducting of radio talk shows program to give more information, create awareness and sensitize customers and the general public on water supply services;
- Follow up on feedback from the radio talk show with the operator and the consumers;
- Conducting focused in-house customer care training for operator staff;
- Using a focus group approached, conducted a rapid assessment of the factors affecting revenue collection and discussion of the findings with the management of operator; and
- Conducting a Town Hall Meeting in Kitgum on May 18, 2010 with the private operator, Kitgum Town Council and customers, to discuss the problems of the Kitgum water system and provide feedback to the design engineer during the system design effort, as described in the next section.

SUB-TASK: HANDOVER OF RESPONSIBILITIES TO TOWN WATER SUPPLY AND SANITATION BOARDS (WSSBS)

The process of formally handing over responsibilities to the Kitgum and Pader Water Boards was initiated by NUWATER in February 2011, when NUWATER was informed by USAID that its contract would not be extended. The private operator management contract in Kitgum runs through February 2012. The M&E exercises conducted jointly during the life of the project combined with the board's participation in the quarterly operator performance reviews are expected to enable the Kitgum WSSB to assume the monitoring functions of the operator. However, there are still significant gaps in the board's capacity to assume full "ownership" of the technical and financial monitoring of the private operator performance vis-à-vis the performance standards, and to authorize for the requisite authorizations for payment out of the escrow account. Recognizing these gaps, NUWATER requested USAID to approve a no cost extension to provide several additional months of transition. Therefore, this will be an area that DWD will need to provide additional assistance to the Kitgum WSSB. In addition, NUWATER has worked with the USAID Sustainable Water and Sanitation in Africa (SUWASA) program to incorporate both the Kitgum and Pader water boards in to the training and capacity building activities envisioned under the recently launched SUWASA/Uganda activity.

In Pader, handover was complicated by the fact that there was not a history of having a private operator in place. However, the project feels that through NUWATER's efforts, a high level of enthusiasm and support by town authorities, the town is now ready to effectively manage an operator their systems as USAID completes the capital investment program:

- NUWATER closely worked with the Pader Town Council Commercial Water Officer who coordinated the delivery of water to specific locations. Water collected was sold at 50 UGX per jerry-can and the collected money banked on a daily basis to the escrow account.
- On December 17, 2010, the Pader Town Council assigned additional roles to Solomon Sanny who worked as the Town Agent. He was named Commercial Supervisor of Pader water supply and sewerage service to replace Richard Alvin Labeja who had resigned from the position.
- On January 24, 2011, the Pader Town Council Executive Committee held a meeting in the Chairman's office where it was reported that remarkable progress had been noted in the supply and management of water services. It was noted that when the water system was rehabilitated there were a lot of leaks which were subsequently repaired with the assistance of the NUWATER Field Coordinator who acquired the spare parts from Kampala. The council had a water technician who was working closely with the commercial supervisor to identify and initiate the repairs in a responsive manner.

CLOSE-OUT WORKSHOP

NUWATER held a closeout workshop on May 25-26, 2011 in Kitgum in conjunction with the Annual Performance Review Workshop for the operator to:

- Present the private operator performance in Kitgum since the beginning of the contract;
- Review the operations of water services in Pader;
- Introduce and train key stakeholders on the recently finalized billing software;
- Inform the stakeholders of USAID's ongoing support activities, including the capital investment program;
- Review the performance of the operator and to set a baseline for negotiation of management fee for Year 2 of the management contract;
- Receive feedback from participants on issues of concern as the project closed; and
- Develop an Action Plan for Water Board.

2.2.2 TASK 2: CAPITAL INVESTMENT WORKS

As discussed previously, in both Kitgum and Pader, the water production and distribution systems proved to be in much worse condition with reduced productivity compared to the design basis for the NUWATER project. In Kitgum, well testing of the Knew and Kti pumping stations under the ongoing USAID/NUTI rehabilitation effort found that the yields of these boreholes was below the documented or reported production capacities, with Knew and Kti only producing five m³/hr and eight m³/hr of water respectively compared to their reported production levels used in the design of the NUWATER project work plan of 14 m³/hr and 13 m³/hr respectively. The total overall water production capacity for the five production wells when in full operation was only 31 m³/hr or 558 m³/day (for a 16 hr operation/day). This level of production was far below the contractual targets of 682 m³/day, 1115 m³/day, and 1534 m³/day for Year 1, 2, and 3 respectively of the operating contract with the private operator. In addition, the storage reservoir capacity was only 249 cubic meters, inadequate as it only provided less than three hours storage capability. The provision of an additional reservoir in Year 2 of NUWATER was deemed to be critical to project success.

The NUWATER COP and the Field Program Manager participated in a meeting between USAID's NUTI, Kitgum district officials and the Project Manager from BBM Austria at the District Engineer's office on April 6, 2009. The purpose of the meeting was to review the progress in the implementation of the emergency rehabilitation of the Kti and Knew pumping stations and to take decisions on key aspects of the work. The following points were agreed upon:

- That the repairs/rehabilitation of the two pumping stations be expedited to resolve the water shortage in the town. The contractor was to expedite the procurement of the mechanical and electrical equipments and accessories so that by September the two pumping stations would be back into operation.
- The contractor would review the space availability for the installation of the solar panels at the Knew pumping station.
- NUWATER would finance the procurement of generators, additional solar diagnostic tools and other tools, protective wear, and additional training of the technicians in the use of the diagnostic tools and maintenance of the solar systems.

In addition to these emergency measures, USAID requested NUWATER to implement a comprehensive set of activities to address the serious infrastructure problems facing both towns. In response to this request, NUWATER worked closely with USAID, local project offices, district and local officials, and town residents to carry out the following activities:

- Update of 2007 baseline survey;
- Design surveys for each town – Kitgum (Warner Consults) and Pader (WGMA);
- Drilling and siting of wells in Kitgum and Pader (KLR);
- Pump testing of the drilled wells in Kitgum (WASH Consults Ltd.) and Pader (KLR); and
- Small-scale water kiosk rehabilitation and connection of kiosk operators to the central systems.

UPDATE OF BASELINE SURVEY

In July 2009, NUWATER initiated a baseline survey to examine a range of variables and indicators relevant to the provision of improved water supply services. The results of this survey were intended to inform the re-design of the water system and, as appropriate to update the baseline in the NUWATER's Performance Monitoring Plan, drawn into question since the baseline was built on data in the original 2007 feasibility study. In particular the survey considered three interrelated aspects:

- Collecting and analyzing socio-economic data on existing and potential pipe water consumers in Kitgum;

- Verifying, updating and validating the data so far presented in the Performance Indicator Sheets (PIRS) of the Performance Monitoring Plan (PMP); and
- Investigating willingness and ability to pay for water services in the town.

The study provided the basis for the capital investments program developed by NUWATER, and had the following major findings:

- *Kitgum pipe water system.* Kitgum Pipe Water Supply was installed in the 1960s. During its early years the system was a much smaller service supplying only a handful of institutions using a mono pump. Its turnaround came in 1997 when the first comprehensive rehabilitation was carried out under the Northern Uganda Reconstruction Programme (NURP). NURP installed 4 boreholes, including Kti, Yy Okot, K-Flag and K-New. At the time of the survey the system had a total of 5 boreholes (the fifth, Langalanga was recently installed). However, in spite of significant capital investments into the system the majority (over 80 percent) of the population in Kitgum Town Council still used other water sources such as point source boreholes and the Pager River for their domestic water. About 80 point source boreholes dotted the town and at each of the boreholes often had long lines of jerry cans clearly showing the high demand and need for more water sources.
- *Demographics and socioeconomic profile.* The largest portion of the population is under the age of 19 years old and more than 80% is under 38 years old. The household survey found a mean household size of 5.4 persons in Kitgum town. The primary household income generating source is salaries and wages (31.05%), followed by other sources (23.02%) which include a number of activities categorized under casual labour. Town parish has about 70% of households earning over UGX 100,000 the highest income earners on average, followed by Pongdwongo and Westland.
- *Existing systems.* Estimates based on the study findings showed that borehole water was used by over three quarters (82.2%) of the population in Kitgum town, while only 11.9% used water from the piped system. The general sanitation facilities in Kitgum town include mud pit latrines, cement pit latrines, flush toilets and open defecations (open spaces or inside the river). About 10% of the households considered piped water to be poor for drinking and cooking, while about 57% considered pipe water good for drinking and cooking. Overall, users of point boreholes are more satisfied than those relying on the pipe system. Almost three quarters (71.1%) of households in Kitgum town were paying for water from their main sources. Of these the majority (85.8%) were paying for operation and maintenance of point source boreholes, while very few were buying from water vendors (3.8%) and pipe water systems such as water kiosks (1.6%) and private yard connections (8.8%).
- *Willingness to pay.* Stand posts were the most preferred water option. About 56% of surveyed households chose this option first, followed by yard connections at 23% and house connection at 11%. Approximately 89.5% of all households had considered changing to an improved system of water supply. The surveyed households were willing to pay prices ranging from 15 to 100 UGX for 20 litres of water.
- *Water demand.* From the household survey, the average household consumption of water per day was 89 liters, implying that the approximately 9,600 households in Kitgum town consumed 854 m³ per day. The population demand analysis on the other hand revealed a household demand of 1185 m³ per day, implying there was a suppressed demand of 331 m³ per day (approximately 28%).

DESIGN STUDIES FOR KITGUM AND PADER WATER SYSTEMS

Kitgum. A contract for the re-design and restructuring of the Kitgum water supply system was advertised, evaluated and awarded to Ms Warner Consultants Ltd., in March 2010. The main objective of the assignment was to find practical solutions to increasing the availability of safe water in the town, resulting in improved accessible, reliable and economically sustainable water and sanitation services; and to improve on the system's current operational and financial situation and propel it towards financial sustainability.

In accordance with the Terms of Reference, an Inception Report was prepared in June 2010 followed by a Preliminary Design Report in October 2010. The preparation of the Detailed Design Report took into account comments received from the stakeholders who had the opportunity to participate in the review and public hearing. The consulting team first reviewed the current water supply system and found: (1) an average output of about 600 m³/day, and (2) the system was not able to meet the present demand estimated at about 1450 m³/day. The key issues and proposes interventions from the consultant team are summarized in Table 2.3 below.

TABLE 2.3. SUMMARY OF KITGUM WATER SYSTEM PROBLEMS AND PROPOSED SOLUTIONS

Findings	Proposed Intervention
Production capacity low	Increase production capacity by drilling new boreholes and invest in assessing long-term bulk water delivery from Agoro Hills
All pumps deliver water to Hilltop and then distributed backwards (energy inefficient)	<ul style="list-style-type: none"> Establish two sub-systems with tanks based at Hilltop and PTC to optimize pumping costs and rationalize distribution Install the transmission lines and reroute some of the existing ones to the better location
Reservoirs (3 No.) low at 6 mAMGL	Erect larger capacity tanks at higher elevations at Hilltop and at the PTC
Total storage small at 249 m ³	
Existing distribution lines act as hydraulic bottlenecks	<ul style="list-style-type: none"> Improve distribution by removing hydraulic bottlenecks Maintain sub-system support distribution main across River Pager (the dividing line between the two sub-system) by providing PCVs
Control/Flow scheduling difficult	Identify and install district meters
Upcoming areas not served with network/water	Extend pipelines to upcoming residential and business areas
Some boreholes are located close to homes and therefore susceptible to contamination	Incorporate a sump at each reservoir site to serve as aeration and disinfection point
No disinfection	
Langalanga borehole has a low yield below the DWD threshold for motorizing.	Decommission the borehole
Consumer locations not block mapped	Undertake block mapping of consumers and provide permanent arrangement for map updates
Billing system rudimentary and manual	Introduce a more reliable, accurate billing system with asset management component

Several technical options were developed and analyzed by the consultant to implement these interventions. Following the development of three very high yielding boreholes in September 2010, evaluation of two possible options for restructuring the water supply system was done. The best option was based on a two sub-system configuration, with the first sub-system based at Hill Top and the second one at Kitgum PTC. This was designed to address the limitation of space for storage at Hill Top and saving of energy costs whereby water would not have to be pumped to Hill Top from the PTC side. The configuration is shown in Figure 2.1.

FIGURE 2.1. SCHEMATIC FOR THE PROPOSED KITGUM TOWN WATER SUPPLY SYSTEM-OPTION 1

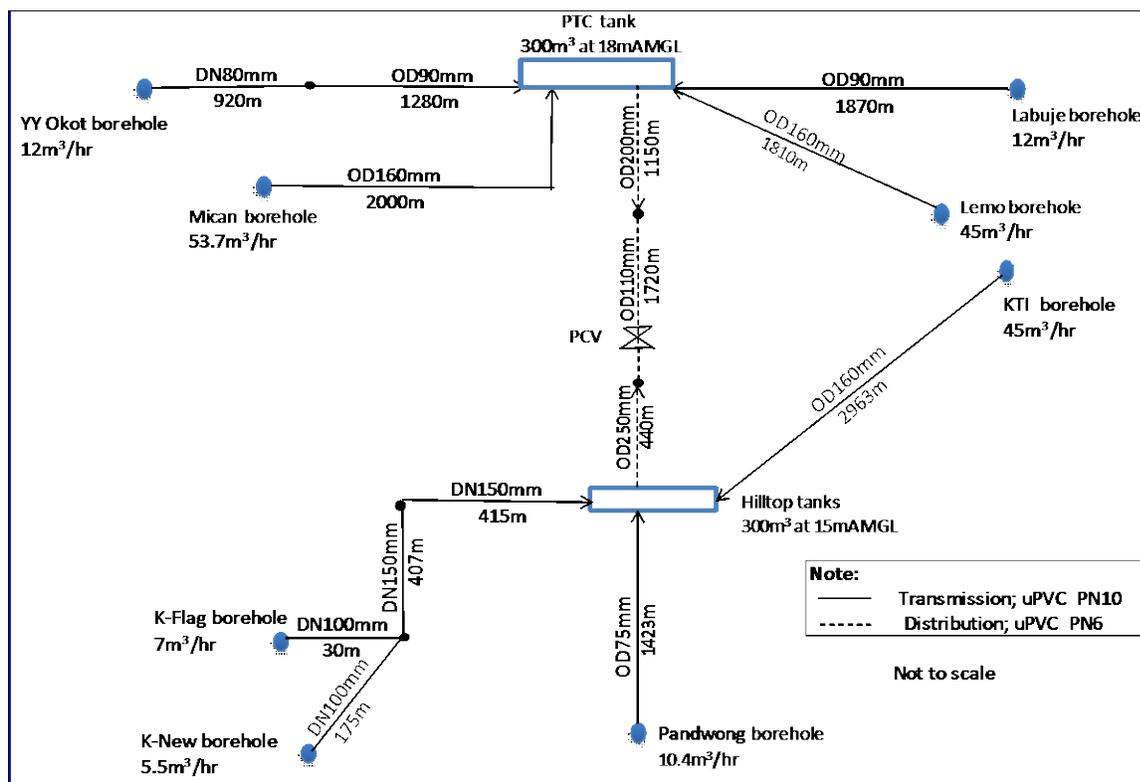


Table 2.4 shows the demand in relation to supply that would be generated with this configuration, using demand projections from the updated baseline study conducted by NUWATER. These estimates show that between years 2015 and 2020 additional sources should be developed if a routine of 16h-day regime is assumed. Otherwise, the sources will suffice up to year 2021 on a 20h-day operational regime.

TABLE 2.4. COMPARISON OF DEMAND AND AVAILABILITY OF WATER UNDER OPTION 1

System	Source		Available, m³/16h-d	Available, m³/20h-d	2010		2015		2020		
	Borehole Location	Yield, m³/h			Demand, m³/d	Supply, m³/d	Demand, m³/d	Supply, m³/d	Demand, m³/d	Supply, m³/d	
Hilltop System	K-New	5.5	67.9	1,086	978	1,150	1,833	2,157	3,439	4,046	
	K-Flag	7.0									
	Pandwong	10.4									
	KTI	45.0									
PTC System	Labuje	12.0	122.0	1,952	476	560	865	1,017	1,617	1,902	
	Lemo	45.0									
	YY Okot	12.0									
	Mican	53.0									
Total	189.9	189.9	3,038	3,798	1,454	1,711	2,698	3,174	5,055	5,947	
Deficit (Supply-Available Supply Capacity) for the 16h-day supply								(1,328)		136	2,909
Deficit (Supply-Available Supply Capacity) for the 20h-day supply								(2,087)		(624)	2,149

Pader. The contract for consultancy services for the design of the Pader Water Supply system by the Consulting firm Ms WGMA Engineers was signed in August 2009 and the preliminary and final design reports submitted to USAID.¹¹ Originally the design could not be completed as NUWATER was instructed

¹¹ WGMA Consults..

not to conduct the siting of the wells and their pump testing, which was to be conducted by USAID under a different contract. However, following additional discussions with USAID in July 2009, it was agreed that NUWATER should contract for the well siting and drilling.

The consultant found that the Pader town water supply system was very rudimentary, and could not meet the average daily demand conservatively estimated to be between 250-350 m³/day regardless of the source of water. The system was intended to supply emergency water to the Internally Displaced Persons (IDP) camp which had existed at the site during the height of the northern Uganda conflict. The so-called town system consisted of a lone 22 m³/hour borehole that was drilled in 2006, which until October 2010 was installed with a pump that had a maximum rate of 8 m³/hour. It had recently been upgraded and fitted with a pump of capacity 22 m³/hour. Water was pumped into two low level plastic tanks with a total storage of 48 m³, standing on a steel tower 8 m high. The distribution system consisted of small size diameter pipes with the largest having an outer diameter of 40mm and the network was limited in range to 500m from the reservoir site.

In mid-2010, NUWATER contracted a drilling firm to drill two additional production boreholes and re-drill the existing DWD borehole which was capable of producing less than 10 m³/hour. The outcomes of the drilling and the pump testing are shown in Table 2.5.

TABLE 2.5. WATER SOURCES FOR THE NEWLY DESIGNED PADER SYSTEM

Source	Depth, m	Ground Elevation, mAMSL	DWL, mBGL	Pump Setting mBMGL	Yield / Discharge	
					m ³ /h	l/s
DWD	65.0	1030	39.3	49.0	22.0	6.1
Olok-ki-Lee	101.0	1031	23.6	67.0	45.0	12.5
Lagwai (PTC)	119.0	1032	36.4	67.0	20.0	5.6
Total					87.0	24.2

Based on these water sources and water demand as projected in the updated baseline survey conducted by NUWATER, the consultant team proposed the system configuration illustrated in Figure 2.2.

FIGURE 2.2. SCHEMATIC FOR PROPOSED PADER TOWN WATER SUPPLY SYSTEM

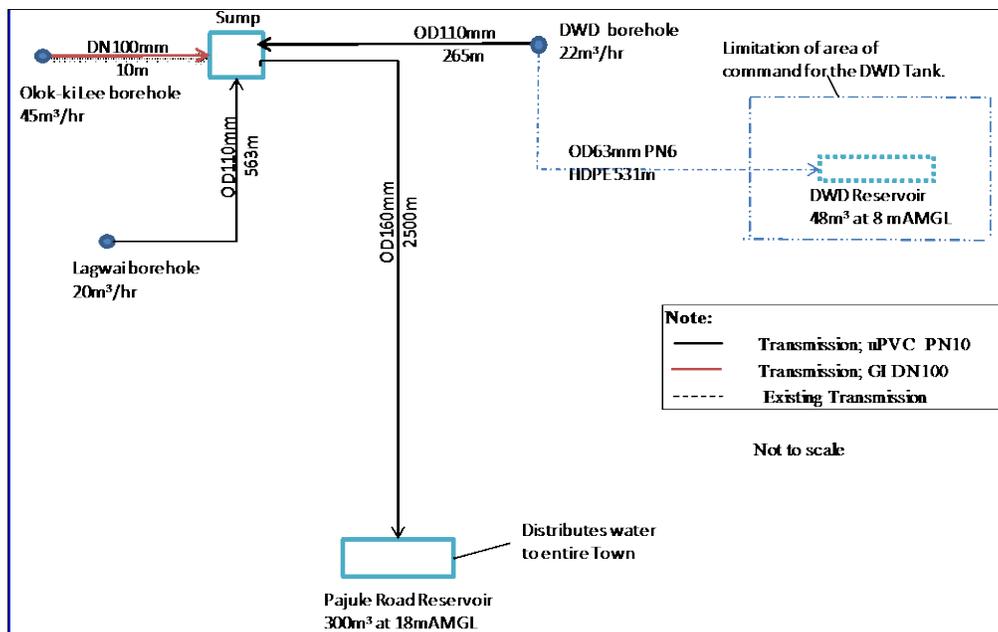


Table 2.6 shows the demand projected through 2020 in relation to supply. It is clear that there will be sufficient water throughout the design horizon. It should also be noted that because the distribution system is designed to handle the peak demand of 66 m³/hour (18.3 l/s), there would still be capacity to handle growing demand beyond the estimated demand in the year 2020.

TABLE 2.6. COMPARISON OF DEMAND AND WATER AVAILABILITY UNDER THE PROPOSED SYSTEM

Source		Available, m ³ /16h-d	2010		2015		2020	
Borehole Location	Yield, m ³ /h		Demand, m ³ /d	Supply, m ³ /d	Demand, m ³ /d	Supply, m ³ /d	Demand, m ³ /d	Supply, m ³ /d
DWD	22.0	352	249	293	666	784	954	1,122
Olok-ki-Lee	45.0	720						
Lagwai (PTC)	20.0	320						
Total	87.0	1,392		293		784		1,122
Surplus water (Available Supply-Demand) for the 16h-day supply				1,099		608		270

WELL SITING, DRILLING AND YIELD TESTING

In mid-2010, NUWATER competitively tendered well siting, drilling and yield testing for the Towns of Kitgum and Pader to complement the system design activities. KLR (U) Limited was determined to be the most competitive bidder for both tenders, and on July 5, 2010 NUWATER signed two contracts with this firm, for two production wells at Kitgum and Pader respectively. NUWATER on August 2, 2010 signed two additional contracts with KLR (U) Limited for re-drilling the Kti production well at Kitgum and the DWD production well at Pader respectively.

In striving to meet the recommended water demand for Kitgum and Pader Town Water Supply Systems, a minimum yield of 10 m³/hour was required per production well. Apart from the re-drilling at Kti and DWD production wells in Kitgum and Pader respectively, the contractor was given the discretion and responsibility of choosing sites within Kitgum and Pader Town Council areas to drill and guarantee the 10 m³/h minimum yields.

Results of the drilling campaign for Kitgum are provided in Table 2.7 below. Results for Pader are provided in Table 2.5 as previously discussed. Locations of the sited wells for Kitgum and Pader are shown in Figures 2.3 and 2.4, respectively. The high yields of the production wells mean that the Kitgum and Pader water supply systems have effectively benefited from additional production wells for the cost of each drilled borehole.

TABLE 2.7. RESULTS OF THE KITGUM DRILLING CAMPAIGN

Well Name & Elevation	Well		Drilled Depth (mbgl)	Pump Testing	
	Coordinates	Coordinates		Pump Installation Depth (mbgl)	YIELD (m ³ /h)
	(UTM)	(Decimal Degrees)			
	(Proj.WGS 84)	(Lat/Long) (Proj.WGS 84)			
DWD (Elev. 1030 m)	510200.52, 318904.13	2.885158°, 33.091767°	101	49	22
OLOK - KI - LEE (Elev. 1031 m)	509993.73, 319156.37	2.887441°, 33.089967°	110	67	45
PTC 1 (Elev. 1032)	509993.73, 319156.37	2.885633°, 33.087904°	125	67	20
KTI (Elev. 941 m)	487804.62, 365278.23	3.304677°, 32.890139°	941	49	45
Lemo (Elev. 930 m)	487340.15, 365160.91	3.303654°, 32.886022°	930	49	45
Mican (Elev. 928 m)	486230.83, 365440.58	3.306229°, 32.876031°	928	49	53.7

FIGURE 2.3. LOCATIONS OF THE DRILLED PRODUCTION WELLS AT KITGUM

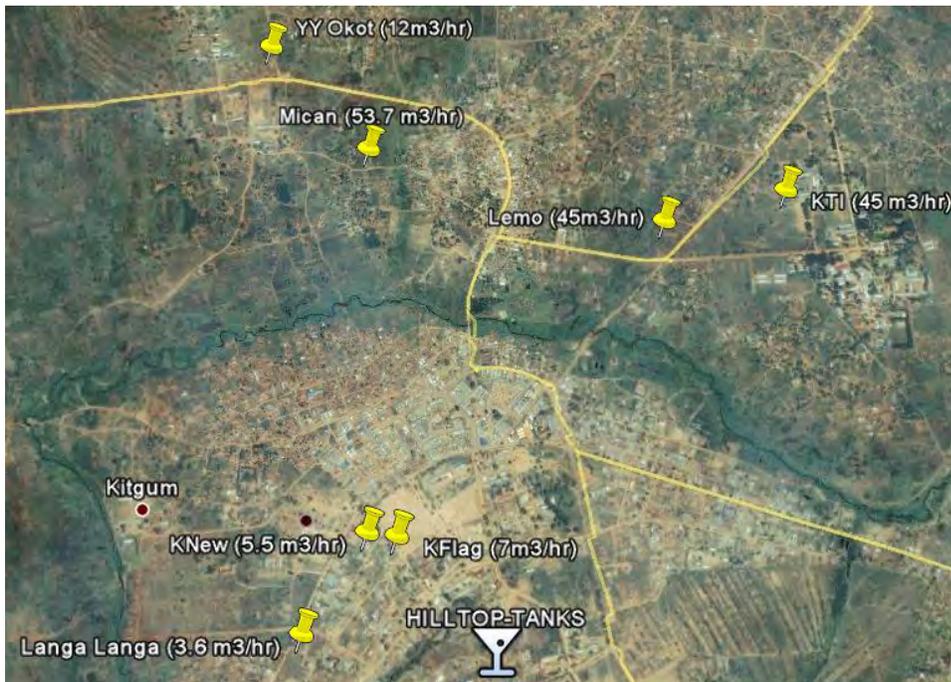
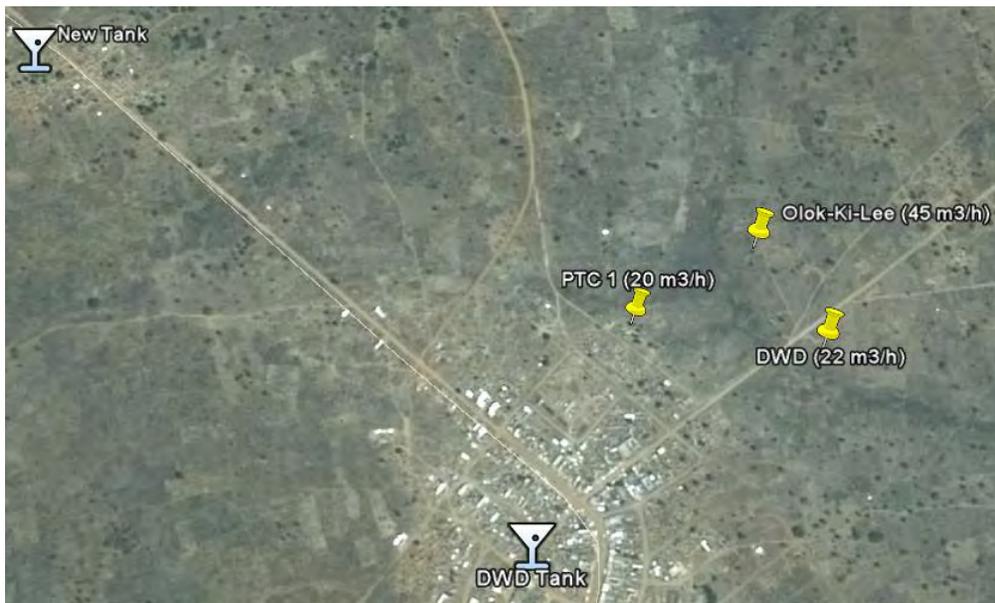


FIGURE 2.4. LOCATIONS OF THE DRILLED PRODUCTION WELLS AT PADER



2.3.3 TASK 3: PLANNING AND REPORTING

Over the life of the project, NUWATER prepared reports as required in the implementation contract. The following project planning and management reports were prepared and submitted to USAID:

- Assessment of Water Systems in Kitgum, Pader and Aloi Towns (July 2008);
- Life of Project (LOP) and First Year Work Plan (August 13, 2008);

- Year 2 Project Work Plan (November 2009), including a revised project procurement plan for capital investments in Kitgum and Pader;
- Performance Monitoring Plan (September 10, 2008);
- Proposed Revisions to Project Monitoring Plan (July 30, 2010);
- LOP Procurement Plan (August 13, 2008);
- Monthly Progress Reports;
- Quarterly Financial Reports; and
- Operator Performance Reports (Quarterly and Annual).

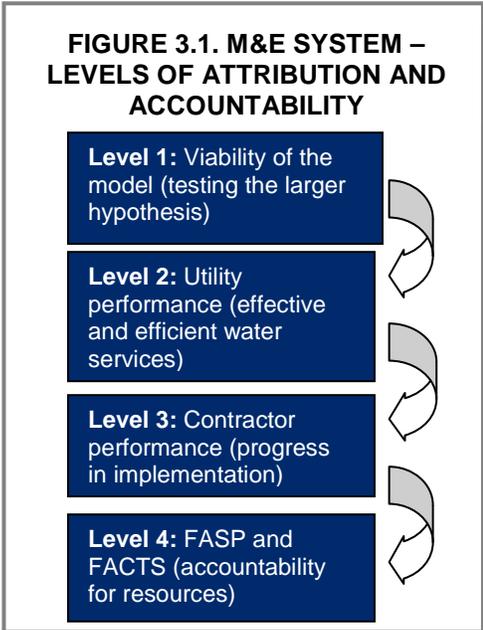
In addition, NUWATER prepared a range of technical reports to address the numerous issues that arose during project implementation. Section 6.0 provides a bibliography of NUWATER reports, and the CD-ROM accompanying this report provides all reports prepared by the NUWATER project.

Throughout the course of the project, the Ministry of Water and Environment provided excellent coordination with MWE entities, including the Permanent Secretary in Kampala and the Water and Sanitation Development Facility North (WSDF-N) in Lira, to facilitate implementation of project activities in the field and achievement of project activities.

3.0 PROJECT ACHIEVEMENTS

The following section reviews the project achievements against the following strategic objectives and the Intermediate Results (IRs) as presented in NUWATER’s Performance Monitoring Plan (PMP).

The NUWATER PMP, as submitted to USAID September 10, 2008 with proposed revisions July 30, 2010, recognizes several levels of indicators. Composite indicators are higher-level indicators that reflect the viability of the hypothesis. Outcome indicators reflect results achieved by the water utility in terms of effectiveness, efficiency, coverage and customer satisfaction. Outputs are the results achieved by the contractor in terms of delivery of resources (financial, training, technical assistance). The final level of outputs is the Foreign Assistance Coordinating and Tracking System (FACTS) indicators that provide standard reporting information. The Performance Monitoring Plan is based on these four levels of results (Figure 3.1).



The Results Framework, as provided in the project PMP, is shown in Figure 3.2 below. The NUWATER program has developed its project framework based on four levels of effect, from outputs (FACTS and custom) to outcomes (what is achieved as a result of the intervention) up to a set of indicators that allow us to analyze the higher level goals of the project, that is, the viability of the water utility model. This framework, consistent with the Mission’s Results Framework, has been our mechanism for establishing logical linkages of cause-and-effect.

The following discussion provides the NUWATER project achievements against the project’s strategic objectives and the Intermediate Results as presented in the NUWATER Results Framework. The figures provided should be compared with the situation of the Kitgum water system prior to the signing of the operating contract on August 11, 2009. A review of the Kitgum operator’s performance in the June – December 2008 period, prior to initiation of the NUWATER intervention, showed a steady decline in key performance variables and indicators, including¹²:

- A 79% drop from monthly base collection of UGX 9,482,500 to an average of UGX 1,944,337.
- Monthly billing declined by 58%, from a base of UGX 9,261,667 to an average of UGX 3,902,457.
- Volume of water supplied reduced by 63%, from 8,306 m³ to 3,110 m³, implying that the share of population accessing clean water in the service area had reduced significantly.
- Water sales dropped by 68%, from 7,475 m³ to a mere 2,393 m³, undermining the ability of the service area’s operations to be self-sustaining.

¹² Source: records provided by Kitgum Town Council to NUWATER, for period June-December 2008.

- The poor performance in service indicators is further underlain by the 26% reduction in number of active connections during the reviewed period, with a corresponding 32% rise in suppressed accounts over the same period.

FIGURE 3.2. NUWATER RESULTS FRAMEWORK

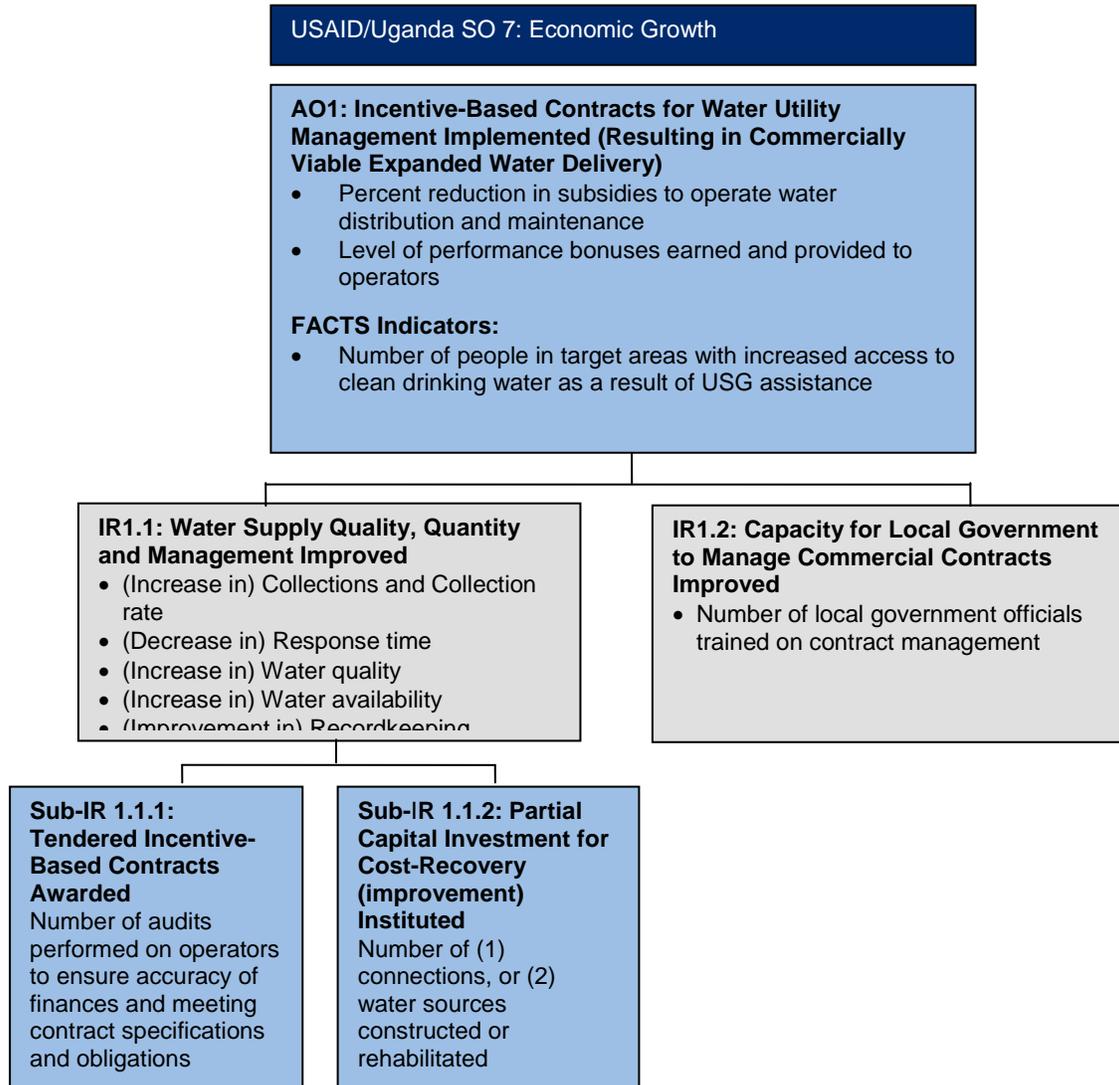


TABLE 3.1. NUWATER INDICATORS, TARGETS AND RESULTS

Results Hierarchy	Indicator	Dis-aggregation	Baseline Survey July 09	FY-II Target in Project PMP (Sept.2008)	FY-II Target in Proposed Revised PMP (July 2010)	Actual (March 2011)
AOI: Incentive-Based Contracts for Water Utility Management Implemented (Resulting in Commercially Viable Expanded Water Delivery)	Percent reduction in subsidies to operate water distribution and maintenance	Kitgum	Between 2001 and 2008 Kitgum water supply system received subsidies of UGX 411,273,674. <ul style="list-style-type: none"> On average UGX 58,753,382 was received per year. Subsidies were erratic; not based on systematic planning processes with clear outcomes. 	N/A ^a	50%	Reduction of NUWATER subsidy per Unit Cost of production from 357Ush/m ³ in September 2009 to 158 in March 2011
		Pader	<ul style="list-style-type: none"> Subsidies were not based on systematically collated or analyzed projections. Subsidies were not sufficient to cover necessary operation and maintenance works. 	N/A ^a	N/A ^a	0
	Level of performance bonuses earned and provided to operators	Kitgum	No bonus system in place before contract. Private operators kept 80% of collections for operations and maintenance.	N/A ^a	N/A ^a	0
		Pader		N/A ^a	N/A ^a	0
	Number of people in target areas with increased access to clean drinking water as a result of USG assistance	Kitgum	721 connections 1221 households x 5.4 = 6593 people. This represents about 11.9% of the population. In Pader, there was no working system. The DWD system was not working due to lack of fuel and maintenance. The other two systems (FHI and Medecins Sans Frontieres) did not have minimal requisite yield to be motorized.	8,000	2,160	1,938
		Pader		4,110	NA	200 per day
Total		12,110		2,160	2,138	
IRI.1: Water Supply Quality, Quantity and Management Improved	(Increase in) Collection rate (measured as percentage collected of billed/expected)	Kitgum	The highest monthly collection ratio was in September 2007 at 155.7 %, also with a high percentage collections being accumulated arrears. The seven months preceding the baseline survey (January to July 2009) registered substantial decline in collections as well as lower monthly collection ratios.	90%	90%	72%
		Pader		90%	90%	N/A ^b

Results Hierarchy	Indicator	Dis-aggregation	Baseline Survey July 09	FY-11 Target in Project PMP (Sept.2008)	FY-11 Target in Proposed Revised PMP (July 2010)	Actual (March 2011)
	(Decrease in) response time (measured as the average number of hours to solve a problem – billing, leak, breakage, etc)	Kitgum	The household survey results showed that:	Average of 3 days	Average of 3 days	Segregated by class of complaint
		Pader	<ul style="list-style-type: none"> • A typical household with a pipe connection has its problem or complaint resolved in a period of not less than 6 months. • 3.3 % of households have their problems resolved in 7 days. • 1.1 % have their problems resolved in 2 weeks. • 4.4 % have their problems resolved in 4 weeks. • 5.5 % have their problems resolved in 3 months. • 2.2 % have their problems resolved in 6 months. 	Average of 3 days	Average of 3 days	N/A ^b
	(Increase in) Water Quality (measured as number of “pass” from Certificate of Analysis, remarking the source may be used for domestic purposes)	Kitgum	In Kitgum Water quality tests were not carried out on routine basis. Tests on the pipe supply system were last carried out in January 2007.	2 passes	2 passes	2 boreholes found with E-coli – YY Okot and KTI (June 2011)
		Pader	<ul style="list-style-type: none"> • Of 6 points tested in the system, 4 passed while 2 failed. The 4 water pumps passed the tests while the 2 points tested on the distribution system failed: the water tank and kiosk that were tested had incidences of E. Coli. • NUWATER conducted tests on the system in November 2009-all 10 samples (collected from 4 pumping stations, 3 distribution points and 3 point source boreholes) passed. • All the 10 samples had 0 incidences of Faecal Coli forms. 	2 passes	2 passes	2 passes

Results Hierarchy	Indicator	Dis-aggregation	Baseline Survey July 09	FY-II Target in Project PMP (Sept.2008)	FY-II Target in Proposed Revised PMP (July 2010)	Actual (March 2011)
	(Increase in) Water Availability (measured as increase in the average number of hours per day that customers can get water from the service)	Kitgum	Water availability refers to the number of hours per day that water can be accessed from the system, either through compound standpipes, community taps or house connections. Interactions with town council staff and customers revealed the system was only partially functional for 6-8 months covering from 2008 to around July 2009. Supply to the kiosks (community taps) was completely unavailable.	18 hours	18 hours	12
		Pader		18 hours	18 hours	12
	(Improvement in) Record Keeping Standards (measured in terms of the number of times operators can produce accurate quarterly reports to Authorities)	Kitgum	Key records for Kitgum system were not left behind by former private operator.	8	8	3 (Kitgum)
		Pader		8	8	NA ^b
Sub-IR 1.1.1: Tendered Incentive-Based Contracts Awarded	Number of audits performed on operators (per year)	Kitgum		6	6	12 per year
Sub-IR 1.1.2: Partial Capital Investment for Cost-Recovery Instituted	Number of (1) connections or (2) water sources constructed or rehabilitated	Kitgum		820	400	393
		Pader		333	NA	4
		Total		1,153	400	397
IRI.2: Capacity for Local Government to Manage Commercial Contracts Improved	Number of local government officials trained on contract management	Kitgum and Pader Combined, M/F/T	The current Kitgum Water and Sewerage Services Board (WSSB) members had not had training in management or operations of pipe water services.	10 total in both towns	10 total in both towns	7/2/9
		Pader M/F/T				5/2/7
		Total M/F/T				12/4/16

^a In the September 2008 PMP, Tetra Tech ARD did not establish performance indicators at Level 1 (Viability of the Mode), since these are composite indicators, directly influenced by the contractor and not necessarily elastic, and do not qualify as performance indicators.

^b Not applicable, since no acceptable bids for managing the Pader water system were received.

3.1 INCENTIVE-BASED CONTRACTS FOR WATER UTILITY MANAGEMENT IMPLEMENTED

3.1.1 PERCENT REDUCTION IN SUBSIDIES TO OPERATE AND MAINTAIN SYSTEMS

BASELINE

- Between 2001 and 2008 the Kitgum water supply system received subsidies in the amount of UGX 411,273,674 for an average of UGX 58,753,382 per year.
- Subsidies were erratic, and not based on systematic planning processes with clear outcomes.
- Subsidies were not based on systematically collated or analyzed projections and did not result in technical and financial sustainability of the system.
- Subsidies were not sufficient to cover necessary operation and maintenance works.

Records show that the system received subsidies in the form of co-financing for the operations and maintenance as well as investment funds from 2001 to 2008. In more specific terms, on average, the service received O&M grants totalling over UGX 43,000,000 per year for three consecutive years (from 2001 to 2004), operational subsidies of UGX 17,077,585 for six years and capital grants of UGX 24,024,137 for seven years (Table 3.2).

TABLE 3.2. PREVIOUS SUBSIDIES FOR KITGUM WATER SYSTEM

Financial Year	Subsidies			Own Operational Costs (Million UGX)
	Operational Subsidies (Million UGX)	Capital Costs (Million UGX)	O&M Grants (Million UGX)	
2001/02	8,791,752	30,143,928	48,000,000	56,569,457
2002/03	4,290,802	33,055,916	49,566,713	54,285,342
2003/04	11,136,590	25,385,379	42,463,134	59,742,649
2004/05	7,290,000	5,658,740		86,922,946
2005/06	23,383,471	11,560,000		51,394,151
2006/07	47,572,900	12,137,000		20,093,560

The O&M grants were occasioned by the requirement to maintain the improved infrastructure after the initial rehabilitation works funded by the Austrian Development Cooperation in 2001. The capital costs were primarily for extending the distribution mains to outlying parishes. The operational subsidies included in the Town Council Annual Budgets were for paying staff salaries, purchasing fuel and spare parts, including payments for costs of repairs on the system. All the subsidies (operational subsidies, capital costs and O&M grants) received were indicative of an erratic trend of transfers or expenditures that did not appear to have been founded on a systematic planning process with clear outcomes.

The extent of previous subsidies is not surprising because the Kitgum water staff also concur that the past operators lacked minimum expertise to operate a water utility. The success of a subsidy scheme however is dependent on a number of factors, many of which in this case were lacking. For instance baseline findings reveal that both the authority and the operator lacked the staff skills and expertise to operate a medium scale water utility like the Kitgum system. Few of the staff with the Urban Water Department then or the operator had adequate technical expertise to effectively structure the subsidies to achieve desired technical and/or economic outcomes. Other skills that would be critical to reinforcing operations of a subsidized system such as demand management or detecting and preventative maintenance or quick repairing leaks were also lacking. Thus without financial and technical expertise the subsidies received for seven years up to 2008 were

mismanaged, lacked accountability or did not serve the purpose. Further, in view of the inadequate technical expertise and lack of collated data it is also possible that the subsidies were not sufficient to cover necessary operation and maintenance costs leading to constant asset breakdown and stripping.

It is clear that the subsidies did not result in technical and financial sustainability of the system. Since 2004 to date the system has been hit with various problems but most outstanding is the failure to supply water to its customers. For the past 5 years the system has only worked well for only a few months on two separate occasions, following the completion of the Austrian funded rehabilitation works and recently after emergency repairs by USAID/NUTI. In addition, the total population that uses pipe water has not increased substantially since 2002. About 2.6 percent (184) of households were connected in 2002 while by August 2009 about 6.2 percent (596) of households were connected.

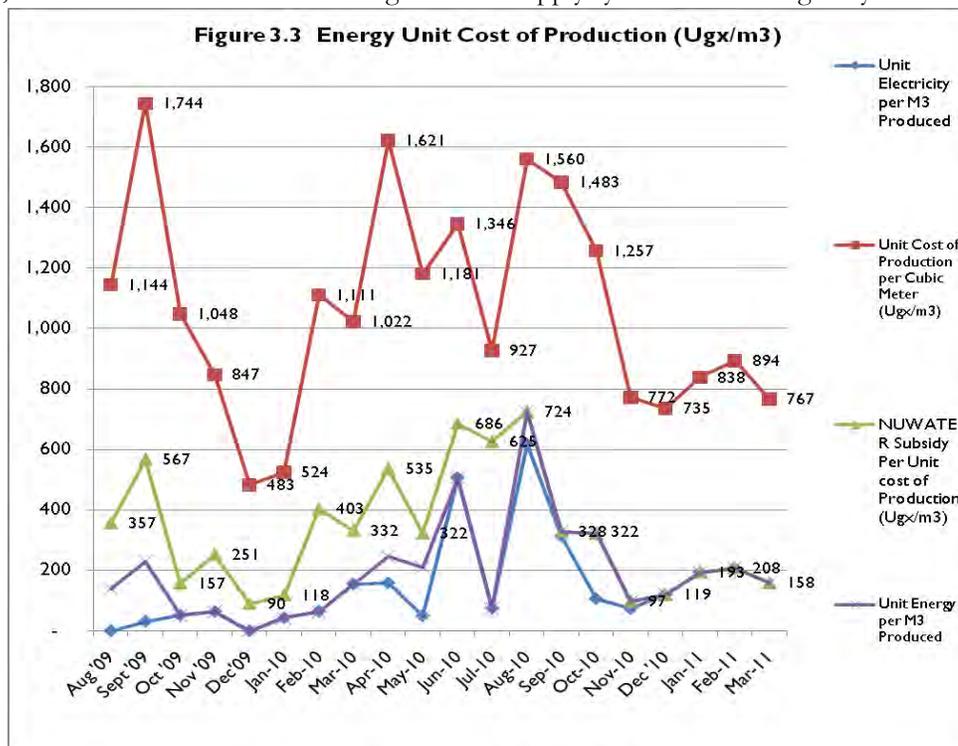
NUWATER ACHIEVEMENTS

- For the first year of the management contract (August 2009-July 2010), NUWATER provided subsidies totalling UGX 45,435, 834 composed of power costs (electricity and fuel) of UGX 13,227,111 and UGX 30,106,723 for operational expenses on the system.
- For the second year of the Operator contract, (beginning August 2010 to date) average monthly subsidies were UGX 1,202,465 for utilities and UGX 2,509,060 for operational expenses

During the first year, the operator covered operational expenses with its negotiated part of the collections constituting management fees (95 percent). The renegotiated management fee framework called for the payment of 50 percent of system based expenses out of the collections. The balance constituted the management fees for the operator. Thus, NUWATER subsidies from August 2010 to May 2011 were reduced by UGX 5,231,404. In agreement with the Kitgum Town Water Board and the operator, the monies were set aside to constitute the first installment in the Asset Reserve Fund.

As illustrated in Figure 3.3, NUWATER subsidies to the Kitgum water supply system have been greatly

reduced since the first year. Due to the low production level and capacity of the system, unit cost of production (UCP) per cubic meter of water sold was as high as UGX 1,744 in September 2009 against a selling price of 1,000 UGX per cubic meter. NUWATER subsidies per UCP were as high as UGX 686 per cubic meter sold. Beginning in August 2010, NUWATER subsidy per UCP was reduced to as low as UGX 97 per cubic meter sold to UGX 158 in March 2011.



3.1.2 LEVEL OF PERFORMANCE BONUSES EARNED AND PROVIDED TO OPERATORS

BASELINE

- No bonus system was in place before contract. Private Operators kept 80% of collections for operations and maintenance.
- The incentive system provided under the contract was based on five parent performance targets (Revenue Collections, Water Sales, Non-Revenue Water, Service Reliability, and New Connections Installed) and was computed every quarter.

NUWATER ACHIEVEMENTS

The Kitgum operator did not qualify for the quarterly incentive fees. The inability of the operator to qualify for a performance bonus can be attributed to several factors:

- First, during the first year of the operating contract the operator retained 95% of collections, making the improved operational efficiencies of the bonus structure less relevant as a motivating factor. This was by design, as NUWATER recognized that uncertainties over supply and demand conditions in Kitgum combined with the introduction of a new contracting approach could have a chilling effect on bidders' responses to the tenders. In Year 2, with retention dropping to 55% the performance improvements due to the incentives were expected to increase dramatically.
- In addition, the operator's performance during the first year was significantly affected by the power disconnection to the three pumping stations of YY Okot, KFlag and Knew for at least six months. Further, the Kti station only ran on solar because of a faulty power stabiliser.
- Finally, production capacity for the pumping stations was much lower than projected during the NUWATER project design. The operator was therefore not able to fulfil the contractual obligations for supplying the targeted amounts of water as provided for in the contract. NUWATER was forced to order the operator to halt installation of new connections, since customers were unhappy about paying for connections that were not providing water due to the system supply shortages.

More fundamentally, the incentive-based contract may have been too “sophisticated” for the northern Uganda market. Private operators in Uganda are used to the established management fee framework practice established by MWE, in which the operator keeps 85% of collections with no responsibility for increasing the customer base and asset replacement. In the informal survey conducted for NUWATER by APWO following the first unsuccessful bidding round, some of the operators indicated that the incentive framework was too complicated and the targets hard to attain under the existing socio-economic conditions in the north¹³.

With more experience in incentive-based management contracting, this barrier may be overcome. Experience with the system over the past year and half has demonstrated that at a price of UGX 1,000 per month, current system production capacity (16-18,000 cubic meters a month) was enough to cover total operational expenses averaging UGX 12 million a month. Since November 2008, NUWATER was able to average 16,000 cubic meters production per month by running all of the five existing pumping stations at 85% efficiency. If level of production level and efficiency are maintained, the operator should be able to cover cost if billings and collections efficiency are improved and non-revenue water (NRW) is brought under control.

¹³ None of the five largest private operators in Uganda, including those familiar with other recent experiments in innovative contracting, such as the recently completed GPOBA pilot of a “new generation” of management contracts using design-build-operate provisions with OBA subsidies, chose to bid. The most common explanation, as reported to NUWATER by APWO, was that the Kitgum region was far from the operators' business base.

3.2 FACTS INDICATORS

3.2.1 NUMBER OF PEOPLE WITH INCREASED ACCESS TO CLEAN DRINKING WATER

BASELINE

- In July 2009 the Kitgum system was meeting the demand for 6,593 people, approximately 11.9% of the population.
- At that time, the Pader piped water system was not functioning.

NUWATER ACHIEVEMENTS

Since August 2009, NUWATER has provided:

- 165 new connections,
- 128 defective meters replaced,
- 30 metered connections for traditionally un-metered connections installed.

At an average of 6 persons per household, an additional 1,938 persons in Kitgum had access to clean drinking water as a result of USG assistance.

3.3 IRI.1: WATER SUPPLY QUALITY, QUANTITY AND MANAGEMENT IMPROVED

3.3.1 (INCREASE IN) COLLECTION RATE

BASELINE

- Following all 3 of the previous rehabilitation works to the system the operators put much effort in recovering outstanding bills, but the customers also paid up hoping for improved service which never materialized.
- During the period June - December 2008, prior to the NUWATER intervention, the Kitgum system experienced a 79% drop from monthly base collection from UGX 9,482,500 to an average of UGX 1,944,337.
- The seven months preceding the baseline survey (January to July 2009) registered continuing declines in collections, as well as, lower monthly collection ratios, with average monthly collections at UGX 751,152.
- Not all the money paid by the customers was receipted in official receipt books.

NUWATER ACHIEVEMENTS

- For the first year of the private operator contract, monthly billings averaged 9,186,544 UGX against average monthly collections of 6,569,266
- From August 2010 to March 2011, monthly billings have averaged UGX 10,768 while monthly collections averaged UGX 6,595,000.

Table 3.3 shows monthly billings and collections from September 2009 through March 2011.

TABLE 3.3. BILLING AND COLLECTION EFFICIENCY

T Month	Target Billing (Net of VAT)	Actual Billings (Net of VAT)	Target Collection (Net of VAT)	Collections (Net of VAT)	Actual Collections Efficiency
	UGX	UGX	UGX	UGX	%
Sep - 2009	16,887,000	6,812,236	13,510,000	5,043,941	41%
Oct - 2009	16,887,000	8,999,500	13,510,000	4,955,669	73%
Nov - 2009	16,887,000	7,235,806	13,510,000	4,712,856	52%
Dec - 2009	16,887,000	5,947,664	13,510,000	8,363,697	116%
Jan - 2010	16,887,000	10,313,112	13,510,000	4,866,890	82%
Feb - 2010	16,887,000	6,814,342	13,510,000	3,654,203	35%
Mar - 2010	16,887,000	6,992,245	13,510,000	4,459,619	65%
Apr - 2010	16,887,000	6,797,399	13,510,000	4,685,356	67%
May - 2010	16,887,000	7,043,003	13,510,000	9,309,932	137%
Jun - 2010	16,887,000	6,919,004	13,510,000	7,343,604	104%
Jul - 2010	16,887,000	7,198,004	13,510,000	7,178,500	104%
Aug - 2010	15,467,000	8,921,000	13,510,000	6,774,000	94%
Sep - 2010	18,414,000	5,471,000	13,510,000	6,608,000	74%
Oct - 2010	18,414,000	5,173,000	13,510,000	6,130,000	112%
Nov - 2010	18,414,000	7,888,000	13,510,000	6,614,000	128%
Dec - 2011	18,414,000	10,587,000	13,510,000	5,144,000	65%
Jan - 2011	18,414,000	13,350,000	13,510,000	7,601,000	72%
Feb - 2011	18,414,000	12,087,000	14,731,000	8,584,441	64%
Mar - 2011	18,414,000	9,527,000	14,731,000	4,934,076	41%

3.3.2 (DECREASE IN) RESPONSE TIME

BASELINE

Efforts to examine complaints or problem log books of the previous operators were unsuccessful because they were not available. According to local water authorities in Kitgum, previous operators initially responded promptly to complaints and problems with a response time of one day. However, over time the response time increased to over seven days due to mismanagement of the system. Financial mismanagement affected the integrity of the system because there were little or no funds for operation and maintenance. Monthly collections were affected and the water consumers in Kitgum Town constantly complained about the poor service without response.

The NUWATER July 2009 household survey results revealed that at that time a typical household with a pipe connection had its problem or complaint resolved in a period of not less than 6 months.

NUWATER ACHIEVEMENTS

- Average response time to billing complaints was reduced to 11 hours.
- Average response time to leaks and bursts declined from 12 hours to 11 hours.

NUWATER has provided the operator (WASH Consults Ltd.) with a complaints/problems log book. For every complaint or problem reported a number of entries are recorded including: name of person reporting a complaint/problem, contact address and telephone, nature of complaint, technician assigned, and evaluation

of technician's response (by operator's senior staff). Table 3.4 shows improvement in response to leaks, bursts and technical complaints.

TABLE 3.4. IMPROVEMENT RESPONSE TO LEAKS, BURSTS AND PUMPING EFFICIENCY

Unit	Target Response Time to Leaks and Bursts	Av. Response Time to Leaks and Bursts	Target. Response Time to Technical Complaints	Av. Response Time to Technical Complaints	Actual Service Reliability (Hours of Pumping Water)
	Hours	Hours	Hours	Days	Hours
Sep - 2009	6	2	24	1	12.0
Oct - 2009	6	2	24	0	14.0
Nov - 2009	6	67	24	0	10.8
Dec - 2009	6	9	24	3	13.9
Jan - 2011	6	8	24	3	14.3
Feb - 2011	6	6	24	0	13.5
Mar - 2011	6	16	24	0	10.4
Apr - 2011	6	6	24	1	9.1
May - 2011	6	1	24	1	9.8
Jun - 2011	6	3	24	1	14.4
Jul - 2011	6	6	24	1	14.0
Aug - 2011	6	2	24	1	15.0
Sep - 2011	6	2	24	1	10.0
Oct - 2011	6	2	24	1	9.0
Nov - 2011	6	3	24		15.0
Dec - 2011	6	3	24	1	9.8
Jan - 2011	6	2	24		9.8
Feb - 2011	6	2	24	6	9.8
Mar - 2011	6	6	24	1	9.8

3.3.3 (INCREASE IN) WATER QUALITY

BASELINE

Water quality tests were not carried out on routine basis; for instance, tests on the pipe supply system prior to NUWATER had been last carried out in January 2007. During that test, of the 6 points tested in the system, 4 points passed while 2 failed. While the motorised pumps were free of any incidence of E. Coli the water tank and a kiosk that were tested had incidences of E. Coli.

NUWATER ACHIEVEMENTS

- In November 2009, all 10 samples (collected from 4 pumping stations, 3 distribution points and 3 point source boreholes) passed.
- All 10 samples had 0 incidences of fecal coliform.
- In water quality tests conducted by NUWATER Kitgum and Pader on June 1, 2011, all points tested in the Pader system passed. However, in Kitgum the following incidences of coliform bacteria and E-Coli were found:
 - YY Okot well: 50CFU/100ml (coliform bacteria)

- 10CFU/100 ml (E-Coli)
- K New well: 10CFU/100ml (coliform bacteria)
- 2CFU/100 ml (E-Coli)

The results were communicated to the Water Board, via the Water Office and the Town Engineer and through the Private Operator with recommendation for chlorination of the respective wells and retesting. weeks. According to the water officer, the YY Okot contamination may be due the cattle craal near the station. As of the date of this report, the Board planned to meet to discuss the requisite measures to address the situation.

- Customer Perceptions:
 - Approximately 68% perceive piped water as not smelly.
 - About 80% perceive their main water for drinking and cooking not smelly.
 - Approximately 59% consider piped water good for drinking and cooking.
 - Several respondents expressed reservations about the level of hygiene in the water tanks and the pipeline.

3.3.4 (INCREASE IN) WATER AVAILABILITY

BASELINE

- According to the Kitgum Town Council staff and customers, the Kitgum water system was only partially functional for six to eight months from July 2008 to July 2009. During this period water was not available to the majority of customers, especially those on high ground, and supply to the kiosks (community taps) was completely unavailable. For the previous five years the system had worked well for only a few months. The total population that used piped water had not increased substantially since 2002.
- Out of the 27 water kiosks, only 10 were working and most of these opened for an average of 9 hours every day.
- People who reside on high grounds such as Alango and parts of Ayul do not get pipe water at all because the small diameter pipes used by the network cannot convey water to those areas.
- The majority of institutions (such as NGOs, Schools and Local Government offices) connected to the network, did not have flowing water in the pipes, while a few institutions have reported inadequate, intermittent supply.
- In all the majority of people using the system accessed water for a period averaging 9 hours a day.

NUWATER ACHIEVEMENTS

Table 3.5 gives a summary of the monthly water production targets in the operator's contract versus water actually produced. While production fell well short of targets at the beginning of the contract term, production improved remarkably in November 2010. While still short of the monthly target, production has consistently come within 11 percent of the target each month since then, while exceeding the target in December.

TABLE 3.5 TOTAL WATER QUANTITY PRODUCED PER MONTH KITGUM WATER SYSTEM

Unit	Target Production / Month	Actual Vol. Water supplied / month
	m ³	m ³
Aug - 2009	20,746	11,807
Sep - 2009	20,746	9,445
Oct - 2009	20,746	12,842
Nov - 2009	20,746	12,354
Dec - 2009	20,746	17,248
Jan - 2010	20,746	17,880
Feb - 2010	20,746	11,921
Mar - 2010	20,746	10,409
Apr - 2010	20,746	6,798
May - 2010	20,746	9,302
Jun - 2010	20,746	11,709
Jul - 2010	20,746	12,315
Aug - 2010	18,400	14,022
Sep - 2010	18,400	9,879
Oct - 2010	18,400	12,279
Nov - 2010	18,400	16,860
Dec - 2010	18,400	18,769
Jan - 2011	18,400	16,272
Feb - 2011	18,400	16,370
Mar - 2011	18,400	17,402

3.3.5 (IMPROVEMENT IN) RECORD KEEPING STANDARDS

BASELINE

- The previous operators for Kitgum left few records and reports regarding technical and financial operations. Therefore, NUWATER essentially started with building a record keeping system from scratch.
- The customer accounts record was based on manual recordkeeping in loosely organized notebooks, and customer registers were incomplete and inconsistent.
- Upon assuming management of the system in 2009, the new operator (WASH Consults) struggled with inadequate practices regarding data recording, statistical processing and retrieval.
- The new operator maintains a complaint/problem and resolution log book (less than one month of implementing the new contract).
- The new operator was given formats for monthly reports by NUWATER. However, the operator is yet to receive formats for quarterly reports. These formats and their application will determine the realization of record keeping requirements and reporting standards as spelled out in the management contract.

ACHIEVEMENTS AND STATUS TO DATE (MAY 2011)

- Development of a monthly reporting template for the operator.
- Monthly review of reports and conducted monitoring and evaluation exercises.
- Development, installation and training on new web based billing software for the operator and water board.

The operator is now routinely using template forms developed by NUWATER including:

- Connection Form (new/replacement),
- Stock Card,
- Store Requisition Form,
- Cash Requisition,
- Payment Vouchers,
- Invoices,
- Receipts provided by the Town Council,
- Pump Production Form,
- Log Book, and
- Connection Form (New/Replacement).

The operator also maintains an excel database with all the names of customers, type of connection, their addresses, water meter numbers, as well as current billing and collection statistics.

In spite of this progress, problems still remain. For example, the operator has been provided with a pump production log book template; however, pump attendants take meter readings on pieces of paper before the data is entered in the production form at the operator's office. Such information is not fully captured because only the meter readings are noted while the hours of operation are not accurately recorded. Whereas the starting time at every pump is recorded, the end time, pumping rate, and stoppages in service (or power breakdowns) are not recorded. This information has been reconstituted on a monthly basis by the NUWATER M&E team, with training provided to the operator staff.

In addition to continual on-the-job training, NUWATER has worked to address these problems through the development and installation of a new recordkeeping and billing software to facilitate the capturing, storage, retrieval and manipulation of data on connections, customers and the water system in general (see Section 2.2.1).

3.4 SUB-IR I.I.I: TENDERED INCENTIVE-BASED CONTRACTS AWARDED

BASELINE SURVEY - NUMBER OF AUDITS PERFORMED ON OPERATORS TO ENSURE ACCURACY OF FINANCES AND MEETING CONTRACT SPECIFICATIONS

Prior to NUWATER, the Kitgum private operator had not been audited since July 2006.

- The audits were not routine but special audits carried out only by the Town Council's internal auditors upon request of the council.
- There were no independent auditors or auditors from a central government agency called in to appraise the operators' performance on the basis of best practice or established standards.

NUWATER ACHIEVEMENTS

- Monthly monitoring and evaluation conducted to audit the performance of the private operator against the contract performance standards.
- M&E findings were shared with the Kitgum Water Board members prior to the team departing Kitgum.
- Two financial audits have been conducted regarding the operator's management of operating expenses and then of its meters.

3.5 SUB-IR 1.1.2: PARTIAL CAPITAL INVESTMENT FOR COST-RECOVERY (IMPROVEMENT) INSTITUTED

BASELINE NUMBER OF (1) CONNECTIONS OR (2) WATER SOURCES CONSTRUCTED OR REHABILITATED

- Neither system in Kitgum or Pader had sufficient production capacity to support a customer base of sufficient size as required for operational cost recovery.
- There were 721 total metered connections at the start of the WASH operating contract.

NUWATER ACHIEVEMENTS

Pump testing of the wells were conducted and some of the pump sizes upgraded for additional production. The Yy Okot pumping station, which was fitted with a 6 cubic meter per hour pump, was retested and found to produce over 12 cubic meters per hour. Overall, current pumping rates have increased by 135 percent over the past two years (see Table 3.6).

Over 170 new connections were installed under the NUWATER Output Based Aid program and over 40 disconnections were reconnected following the customers' settlement of their overdue bills (see Table 3.7).

TABLE 3.6. NUWATER IMPROVEMENTS IN KITGUM WATER SYSTEM PUMPING RATES

Pump	Original Pumping Rates	Pumping Rates - 2009	Current Pumping Rates -2011
K-Flag	10 m ³ / hr	5 m ³ / hr	9.8 m ³ / hr
K-New	10 m ³ / hr	8 m ³ / hr	5.5 m ³ / hr
YY Okot	15 m ³ / hr	6 m ³ / hr	12.6 m ³ / hr
KTI	17 m ³ / hr	8 m ³ / hr	11.5 m ³ / hr
Langalanga	Not confirmed	5 m ³ / hr	3.9 m ³ / hr
Total for all Pumps		32 m ³ / hr	43.3m ³ / hr

TABLE 3.7. CONNECTIONS TO THE KITGUM WATER SYSTEM

Connection	Number (2009)	Number (2011)	Remarks
Total Connections	721	892	The increase in number of connections is a result of the OBA activities
Non Active Connections	169	103	
Institutional Connections	95	100	Offices, Schools, NGO installations
Yard Connections	478	652	Includes OBA new connections

3.6 IRI.2: CAPACITY FOR LOCAL GOVERNMENT TO MANAGE COMMERCIAL CONTRACTS IMPROVED

BASELINE NUMBER OF LOCAL GOVERNMENT OFFICIALS TRAINED ON CONTRACT MANAGEMENT

The current Water and Sewerage Services Board (WSSB) members had not had training in management or operations of pipe water services.

- The last training was a workshop attended by some members of the previous WSSB in 2006 in Soroti (Eastern Uganda).

NUWATER ACHIEVEMENTS

- On-the-job continuous training was conducted with the Kitgum Water Board, with regular monthly debriefing meetings by the M&E team to present the findings of their works
- Quarterly and annual evaluation workshops were organized with the Board to review the Operator performance, discuss challenges and chart a way forward.

4.0 PROBLEMS, LESSONS LEARNED, AND RECOMMENDATIONS

The Government of Uganda considers water as a fundamental human right and an essential resource which directly contributes to economic and social development. Water management is inherently a state responsibility as the custodian of this resource. The overall policy objective of the government is to “manage and develop the water resources of Uganda in an integrated and sustainable manner, so as to secure and provide water of adequate quantity and quality for all social and economic needs of the present and future generations with the full participation of all stakeholders.”¹⁴

In the last 20 years the policy and legal framework as well as the actual management and development of the water sector in Uganda has undergone a series of fundamental reforms aimed at moving the sector towards sustainability, decentralization, efficiency, private-public partnerships, accountability, equity and quality. However, low access and coverage for water and sanitation remains a challenge due to various reasons including “ increasing cost of service delivery; lack of sustainability of facilities and services; ever increasing number of decentralized units and entities of local governments; inadequate capacity of government institutions and the private sector, especially private water operators; declining sector funding; poor O&M policies and practices as well as lack of pro-poor strategies and best practices; and high poverty levels that affect the ability of many potential consumers to pay for services.”¹⁵

In addition there are large institutional bottlenecks that have not been fully addressed by the GOU. This includes ineffective regulatory mechanisms and oversight institutions for the small and medium town water sector. The MWE has recognized the regulatory gap, and in 2009 established a new Regulatory Unit within DWD – as a possible first step toward eventually establishing an independent regulatory body outside of the Ministry¹⁶.

The NUWATER project was designed to pilot an incentive based operating contract approach in light of these challenges and bottlenecks. The NUWATER “experiment” not yet been fully completed, largely due to developments beyond the control of NUWATER as discussed in the report, including:

- Delays in tendering operating contracts by nearly eight months at the beginning of NUWATER, due to the need for an MOU to be signed between USAID and GOU, thus significantly shortening the time period for pilot;
- Major deficiencies in the production and distribution systems, not anticipated in the project design, contributing to the operator’s inability to meet targets in the operating contract; and

¹⁴ *National Water Policy*, Chapter 4: Water Resources Management, Ministry of Water & Environment.

¹⁵ Reform of the Urban Water and Sanitation Sub-Sector, GTZ, undated.

¹⁶ In late 2010, USAID’s Sustainable Water and Sanitation in Africa (SUWASA) project launched a reform support activity in Uganda that focuses on implementation of a new generation of operating contracts. A key component of the project is providing technical assistance to the new Regulatory Unit. Experience and lessons learned from NUWATER were invaluable to the design of this activity.

- In line with the infrastructure deficiencies, implementation of a new capital investment strategy by USAID that was not fully implemented before closure of the NUWATER “experiment.”

Given this situation, it is not surprising that the value of incentive based contracts in post-conflict conditions has not been fully demonstrated during the three-year life of SUWASA. Using the laboratory analogy, the experiment has not yet been completed since the conditions under which the experiment was to be conducted were not fully met. However, with the capital improvement program now being implemented by USAID, the groundwork laid by NUWATER has paved the way for fully demonstrating the incentive based contracting concept, e.g.:

- In Kitgum and Pader, residents have shown a strong willingness to pay for new connections and water services – provided that they are assured that water will actually be provided.
- The town water boards are now actively engaged in monitoring the technical and financial operations of their systems, whereas prior to NUWATER both town councils deferred to external sources of assistance – the district governments and/or international donors. In Pader, NUWATER was instrumental in the establishment of a gazetted water board, staffed with technical and financial officers.
- Prior to NUWATER the town councils of Kitgum and Pader were almost entirely dependent on assistance from outside sources, the districts, DWD, and/or donors, to manage their systems. The Kitgum Town Council is now actively engaged in overseeing the private operator and has a heightened understanding of the technical and financial aspects of the system. Pader now has a gazetted and functioning water board and technical and commercial operations officers.
- Both towns have “ringed fence” the financial accounts of their water systems that recycle funds from fee collections back into system operations and maintenance, with financial oversight by the town water boards.
- NUWATER designs have facilitated USAID’s implementation of much-needed capital works in both towns.

NUWATER has provided a number of valuable lessons learned regarding implementation of incentive based operating contracts and has identified improvements needed in Uganda’s framework for managing water systems in small and medium towns, including:

Policy, institutional and administrative risks need to be identified and resolved prior to embarking on innovative reforms.

Although NUWATER project planning and design was conducted in coordination and consultation with local and national authorities, some of the policy/institutional/administrative risks were not clearly identified and addressed prior to project start-up, thus requiring considerable “catch up” at the beginning of the project. In particular, the need to sign an MOU between USAID and the GOU and the need to resolve the disposition of the existing operating contract in Kitgum were pending actions at start-up.

These factors resulted in delays in NUWATER implementation of nearly eight months. While delays of this magnitude are not uncommon in development projects, they are particularly problematic for projects like NUWATER that involve private sector contracting as the centerpiece of the project design. Effectively, the three-year NUWATER “experiment” was truncated to less than 2 ½ years.

District Procurement Committees need more transparent and streamlined procedures and greater capacity.

In implementing the tenders for water operators, NUWATER found that the local procurement process is long, with every step requiring approval by the respective Contracts Committee. For procurements above UGX 50 million, when the contract is due for award, the Office of the Solicitor General in Gulu has to be contacted to approve the award and signing of the contract. The process adds extensive time, uncertainty, and

potential opportunities for corrupt practices and therefore compounds the dilemma in getting procurements concluded in a timely manner.

The condition of physical infrastructure is intrinsically linked to incentive based contracting outcomes.

The ability of operators to meet their contractually established targets and standards, and for water systems to achieve cost recovery, is largely dependent on the capacity of the water production and distribution system to provide sufficient supplies. The Kitgum water system, like many other systems across Uganda, proved to be far more deficient than was indicated by the review of records that served as the basis for the NUWATER project. Detailed physical testing is especially critical to establishing performance targets and schedules in operating contracts (e.g., testing of electrical equipment, yield testing of production wells, etc.). Notably, DWD has had similar experiences in implementing its new design-build-operate DBO management contracts, which are the subject of USAID/SUWASA's support in Uganda, and DWD is now considering options for incorporating rigorous onsite testing and analysis as part of its operating contract tender preparation process.

The terms of operating contracts in towns with water systems in need of substantial expansion and/or rehabilitation should be extended.

A very important lesson learned from NUWATER is that the period of performance of DWD's standard operating contracts, which typically are 2-3 years in duration, may not be sufficient to adequately incentivize operators to expand the customer bases through added connections and extensions. While the provision of the standard contracts allowing operators to retain a significant percentage of collections is an incentive for operators to increase their revenues through the addition of customers, the total resulting revenues that they can earn over such a short time is generally too low to warrant the additional staffing and technical challenges involved. Even in Kitgum, where the operator was provided with bonus fees for increased collections (as well as retaining a percentage of total collections), and the major driver for adding a collection was the operator's profit from connection fees.

By increasing the term of the operating contracts, a stronger business case can be made for increasing the customer base. In fact, this lesson has not been lost on DWD, and the new generation of DBO management contracts that it is now implementing provide for five to seven year performance periods.

Asset replacement and reserve funds, financed from collections, are essential to assure long-term water system sustainability.

Long-term sustainability of water facilities is a major problem in Uganda's small and medium towns. Historically, DWD's standard operating contracts have provided for the vast majority of system revenues to be retained by the private operators, with the remaining funds either going into the towns' general revenue budget or used for routine operation and maintenance. Thus, towns have been reliant on capital grants from MWE to replace or upgrade capital resources, an uncertain and unreliable source of funding. To deal with this problem, NUWATER worked with the Water Board in Kitgum to establish an Asset Reserve Replacement Fund, where a percentage of collections are deposited each month to serve for critical asset replacement or repair. The development of administrative and other disbursement mechanisms will be one of the transition issues to be managed by the Board. At the end of the NUWATER project, the Fund had a balance of 5 million Ugandan Shillings. This fund serves as a model for towns across Uganda and, in fact, DWD has recently added a requirement to its standard operating contract requiring town water authorities to establish and maintain similar reserve funds.

Implementation of cost effective methods for monitoring and evaluation is critical to the long-term success of incentive-based operating contracts.

NUWATER put a substantial amount of effort into monitoring and evaluation the Kitgum operator's performance. This included monthly performance audits conducted by the NUWATER M&E team, review of monthly audit results with the water board, and quarterly operator performance reviews conducted jointly

by the M&E team and the water board. This level of effort was important to the success of NUWATER as a pilot, and provided a wealth of data and experience on the technical, financial, and managerial issues involved in introducing a new contracting approach and subsidy mechanism (OBA) to Uganda. These data bring substantial value to MWE as the Ministry now embarks upon scale-up of its new generation of management contracts, including the nationwide DBO-OBA management contract program being launched by the Ministry with the support of USAID's SUWASA project.

At the same time, however, NUWATER has recognized from the outset that the labor intensive approach that was appropriate for the NUWATER pilot was not necessarily appropriate for application on a national scale, particularly given MWE's budgetary limitations. To this end, NUWATER prepared M&E tools and protocols that bolster the ability of local water boards to conduct focused monitoring and evaluation reviews with less reliance on external sources of assistance. Further, the Web-based billing system developed by NUWATER and its complementary modules to manage key water system production data holds the potential of improving the quality of local water authority monthly reports currently provided electronically to DWD. SUWASA will explore uses of these tools as part of the technical support that it is providing to the DWD's new Regulatory Unit.

Private operators need both strong business management and engineering capabilities, particularly in post-conflict environments.

Historically, the responsibilities of private operators in Uganda's small and medium towns have been limited solely to "running the system", i.e., conducting routine operation and maintenance functions and managing customer billings and collections. Planning and management of capital investments and system expansion was provided by MWE and/or external donors. However, in recent years, pilot activities such as NUWATER and the GPOBA's DBO-OBA program have provided impetus for MWE to engage private operators in a significantly wider range of responsibilities to improve and expand water system infrastructure and to manage water systems as businesses, focusing on expanding the customer base and improving customer service.

While Uganda has a robust private operator sector that is well experienced in carrying out routine O&M and financial management functions, NUWATER experience has shown that effective management of incentive based operating contracts requires operators to expand their capabilities in capital investment planning, design, and construction as well as in strategic business planning and administration. The lessons learned from NUWATER's experience will be valuable to the sector as MWE embarks upon its national DBO-OBA scale-up program.

BIBLIOGRAPHY

(NOTE: All documents referenced below are provided on the CD-ROM that accompanies this report.)

- BEC Engineers. (February 2010.) Northern Uganda Water Supply Services (NUWATER), Consultancy Services for the Baseline Survey of Water Supply Systems Services in Kitgum. Prepared for USAID/Uganda.
- BEC Engineers. (June 2011.) Northern Uganda Water Supply Services (NUWATER), Follow Up Study and Updated of Baseline Survey of Water Supply Systems Services in Kitgum. Prepared for USAID/Uganda.
- EBOWA Investments Ltd. (June 2011.) Pump Testing for Confirmation of Previous Pump Testing Results for Three Production Boreholes (Mican, Lemo, KTI).
- Kitgum Town Water Authority and ARD. (December 12, 2008.) Memorandum of Understanding.
- KLR Uganda Ltd. (August 2010.) Driller's Logs Report for Re-drilling of one Production Borehole (DWD) in Pader District.
- KLR Uganda Ltd. (June 2011.) Driller's Logs Report for Drilling of Two New Production Boreholes (Olok-ki-lee and PTC) in Pader District.
- KLR Uganda Ltd. (June 2011.) Driller's Logs Report for one Production Borehole in Kitgum District (YY Okot).
- KLR Uganda Ltd. (September 2010.) Driller's Logs Report for Re-drilling of one Production Borehole (KTI) in Kitgum District.
- KLR Uganda Ltd. (September 2010.) Driller's Logs Report for Two Production Boreholes (Mican, Lemo) in Kitgum District.
- NUWATER (September 10, 2008) Performance Monitoring Plan.
- NUWATER (August 13, 2008) Life of Project Work Plan.
- NUWATER. (August 2009.) Contract for Operation of Kitgum Town Piped Water Supply System signed between WASH Consults and KITWA. Prepared for USAID/Uganda.
- NUWATER. (October 2008.) Bidding Documents for Design of Pader Water Supply System. Prepared for USAID/Uganda.
- NUWATER. (October 2008.) Bidding Documents for Operation of Kitgum Town Piped Water Supply System. Prepared for USAID/Uganda.
- NUWATER. (October 2008.) Draft Field Supervision Manual for Operation of Kitgum Town Piped Water Supply System. Prepared for USAID/Uganda.
- NUWATER. (October 2008.) Draft Field Supervision Manual for Operation of Pader Town Piped Water Supply System.
- NUWATER (July 30, 2010), Performance Monitoring Plan (Revised).

NUWATER (November 2009) Year 2 Project Work Plan.

NWSC ESU. (August 2008.) Assessment of Water Systems in Kitgum, Pader and Aloi and Initial Preparations for Implementation of USAID Northern Uganda Water Supply Services Project, Prepared by Charles Odonga.

P.A. Consulting. (June 8, 2007.) Using Incentive-Based Supply and Operating Contracts for Water and Sanitation Services in Northern Uganda. Prepared for USAID.

Pader Town Water Authority and ARD. (December 12, 2008.) Memorandum of Understanding, NUWATER.

Pader Town Water Authority and ARD. (December 12, 2008.) Memorandum of Understanding, NUWATER, (November 2009.) MOU Amendment No. 1.

SoftEdge. (May 2011.) Northern Uganda Water Services Project (NUWATER), Private Billing Software Reference Manual. Prepared for USAID/Uganda

USAID and the Ministry of Water and Environment. (January 22, 2009.) Memorandum of Understanding on the Northern Uganda Water Supply Services Project.

Warner Consultants Ltd. (March 2011.) Northern Uganda Water Supply Services (NUWATER), Consultancy for Meter Reviewing for Kitgum Town Water Supply System.

Warner Consultants Ltd. (November 2010.) Northern Uganda Water Supply Services (NUWATER), Consultancy for the Restructuring and Redesign of Kitgum Water Supply System, Final Design Report.

Warner Consultants Ltd. (November 2010.) Northern Uganda Water Supply Services (NUWATER), Consultancy for the Review and Redesign of the Pader Water Supply System, Review and Redesign Report.

Warner Consultants Ltd. (November 2010.) Northern Uganda Water Supply Services (NUWATER), Consultancy for the Identification of Consumer Connections and the Extraction of Meters Information for Kitgum Water Supply System.

Warner Consultants Ltd. (September 2010.) Northern Uganda Water Supply Services (NUWATER), Tender Documents for the Rehabilitation and Expansion of Kitgum and Pader Towns Water Supply Systems. Prepared for USAID/Uganda.

Warner Consultants Ltd. (November 2010.) Northern Uganda Water Supply Services (NUWATER), Bidding Documents for the Procurement of Works for the Construction of Pader Piped Water Supply System, in Pader District, Northern Uganda. Prepared for USAID/Uganda.

Warner Consultants Ltd. (November 2010.) Northern Uganda Water Supply Services (NUWATER), Drawings for the Construction of Pader Piped Water Supply System, in Pader District, Northern Uganda. Prepared for USAID/Uganda.

Warner Consultants Ltd. (November 2010.) Northern Uganda Water Supply Services (NUWATER), Bidding Documents for the Procurement of Works for the Construction of Pader Piped Water Supply System, in Pader District, Northern Uganda. Prepared for USAID/Uganda.

Warner Consultants Ltd. (November 2010.) Northern Uganda Water Supply Services (NUWATER), DRAFT Terms of Reference for the Selection of a Construction Engineering Firm for the construction of the Kitgum and Pader Piped Water Supply Systems,. Prepared for USAID/Uganda.

WASH Consults. (May 2010.) Well Flushing and Test Pumping Completion Report for Kitgum Town Water Supply Production Wells.

- WGMA Consults. (October 2009.) Hydro-Geophysical Survey Report for Detailed Engineering Design for Pader Town Water Piped Water Supply, Pader District, Northern Uganda.
- WGMA Consults. (October 2009.) Proposed Environmental Impact Assessment TORs for Detailed Engineering Design for Kitgum Town Water Piped Water Supply, Pader District, Northern Uganda.
- WGMA Consults. (October 2009.) Socio-Economic Survey Report for Detailed Engineering Design for Pader Town Water Piped Water Supply, Pader District, Northern Uganda.
- WGMA Consults. (October 2009.) Water Resources Assessment Report for Detailed Engineering Design for Pader Town Water Piped Water Supply, Pader District, Northern Uganda.
- WGMA Consults. (January 2010.) Engineers Estimates(Bills of Quantities) for Detailed Engineering System Design for Pader Town Water Piped Water Supply, Pader District, Northern Uganda.
- WGMA Consults. (January 2010.) Draft Drawings for Detailed Engineering System Design for Pader Town Water Piped Water Supply, Pader District, Northern Uganda.

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