



## **Hashemite Kingdom of Jordan**

### **Improving water quality for Livestock watering in the Jordanian Badia Project**

#### **Agreement of Third Year November 2013**

Inception Report

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#### **Prepared by:**

Ministry of Water and Irrigation

Water Authority of Jordan

#### **Submitted to:**

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Badia Restoration Program (BRP)

## 1. Introduction

Improving water quality for ranchers and livestock watering in the Badia is a fundamental element of Community Action Plan (CAP) adopted by the Ministry of Environment /Badia Restoration Program. This can be done by two ways; firstly, utilization of polluted ground water wells by installation of treatment units and distribution system in the areas that do not have drinking water supply system. Secondly, rehabilitation of old distribution networks to prevent contamination through corroded leaking pipes and to increase supplied water quantities. For ranchers communities, the availability of clean and safe water is important for human health and well-being, economic production, and sustainable development. Failure to ensure the safety of drinking water may expose the community to the risk of outbreaks of waterborne and infectious diseases. In addition, the availability of water is expected to reduce the cost of raising livestock because the livestock owners will stop driving long distance costing them a lot of money to bring water to their animals. Reducing the traffic movements, in turn, will have indirect influence on the rangeland areas. As a result, the Ministry of Environment /Badia Restoration Program signed an agreement in November 18, 2014 with the Ministry of Water and Irrigation/ Water Authority of Jordan (WAJ) to improve water quality and quantity in two locations. The first one is Furaifra village where treatment units for Furaifra well will be installed and all relevant infrastructures to transport treated water to the consumers including storage units, pumps, buildings, network and transport pipelines. The second location is Hashmya and Husaynia villages in Husaynia area where two old pipelines will be replaced. The duration of the agreement is one year starting from the date of signing.

## 2. Project Implementation

Since the two locations are far from each other, the project would be divided into two sub-projects. Both would be implemented through the following stages:

### Stage I: Preliminary study

A team from the studies and design department in cooperation with the Desalination department would conduct field visits to the targeted locations Furaifra village and Hashmya and Husaynia in Husaynia area in order to prepare the preliminary technical studies and to have initial estimation of the cost. The following technical requirements would be indicated:

Project No. (1): Furaifra area

- Type of the treatment that would be applied for ground water well.
- Water demand for the community.
- Water storage and production capacity.
- Buildings area for the pumps and operators.
- Determination of all well works
- Determination other infrastructure for the site of the plant such as pavements area, fence length, electrical connection requirements with the main electrical network.
- Site area required for all above facilities
- Quantity, diameter material and routes for the pipelines of the network.
- Estimated cost of each item above

*Project No. (2): Hashmya and Husaynia villages in Husaynia area*

- Selection of the location of the pipelines that have top priority to be replaced in Husaynia area within allocated budget after referring to Ma'an Master plan for water and wastewater systems.
- Preliminary selection of the material, diameters and length of the selected pipelines.
- Estimated cost of each item above

**Stage II: Preparation of the tender documents**

Both projects would be implemented by private sector. The awarded contractor would be selected through competitive tendering procedures. Therefore, tender documents for each project would be prepared in this stage by the respective departments.

Furaifra project would be implemented in three contracts as can be seen in table (1). Activities of each contract can be seen in table (2)

**Table 1 Scope of the work for each contract for Furaifra project**

Contract no.	Scope of the work
1	- Construction of the pumping and treatment plant including all required civil, mechanical and electrical works - Water network
2	Providing and installation of the well pump and casing
3	Providing Electrical Transformer and cables to connect the plant with the national electrical network

**Table 2 Activities of stage II for Furaifra project**

Contract no.	Contract activities
1	<ul style="list-style-type: none"> <li>• More field visits by WAJ technical engineers would be performed to collect the required data for the preliminary design of the new network. This includes all spatial works such as elevation and station of the proposed routes of the pipes, and land layout of the well site and the network.</li> <li>• The preliminary design of the network is tested and finalized by hydraulic analysis software. All pipelines lengths, materials and diameters are determined</li> <li>• The profile of all pipes would be prepared.</li> <li>• Determine plant layout in the well site.</li> <li>• Sizing of the pumps and treatment units</li> <li>• Determining the technical specification of all equipments.</li> <li>• Determine details for electrical and mechanical works for the well, pumping and treatment units.</li> <li>• Design all civil works e.g. cement storage tank, buildings and concrete slabs.</li> <li>• Describe the exact scope of the work</li> <li>• Prepare bill of quantities from all above</li> <li>• Wrap up all documents including project scope of the work, technical specification of the equipments and materials, bill of quantities, drawing, general and special conditions.</li> </ul>
2	<ul style="list-style-type: none"> <li>• Specify well pump production capacity and head</li> <li>• Specify well pump and electrical control panel general specification</li> <li>• Specify well casing length, material and diameter</li> <li>• Describe the exact scope of the work</li> <li>• Prepare bill of quantities from all above</li> <li>• Wrap up all documents including project scope of the work, technical specification of the equipments and materials, bill of quantities, general and special conditions</li> </ul>
3	<ul style="list-style-type: none"> <li>• An official letter from WAJ would be issued to the Electrical Distribution Company to perform the technical study and determine the cost for connecting the plant with the electrical network</li> </ul>

Hashmya and Husaynia villages in Husaynia project would be implemented in one contract. Activities of the second stage can be seen in table (3)

**Table 3 Activities of stage II for Husaynia area project**

Contract no.	Contract activities
1	<ul style="list-style-type: none"> <li>• More field visits by WAJ technical engineers would be performed to collect the required data for the preliminary selection of the material and diameters of the pipelines that would be replaced. This includes all spatial works such as elevation and station of the pipes routes.</li> <li>• Modified network would be tested and analyzed by hydraulic analysis software. Pipelines lengths, materials and diameters would be determined accurately. In addition, any changes in the existing pumps in the pumping station would be specified</li> <li>• The profile of all pipes would be prepared.</li> <li>• Determining the technical specification of the pumps.</li> <li>• Describe exact scope of the work</li> <li>• Prepare bill of quantities from all above</li> <li>• Wrap up all documents including project scope of the work, technical specification of the equipments and materials, bill of quantities, drawing, general and special conditions.</li> </ul>

The respective departments responsible for the implementation of this stage can be seen in table (4)

**Table 4 The respective department responsible for stage II**

Project name	Contract no.	Respective department
Furaifra project	1	Design and Studies Department
	2	Workshops Department
	3	Desalination Department
Hashmya and Husaynia villages in Husaynia area	1	Design and Studies Department

### Stage III: Tendering process

All contracts -except contract no. (3) for Furaifra project- would follow the same tendering procedure as can be described below:

- The tender documents are submitted to the tender department where the documents are checked and approved
- The potential bidders are called for quotation by advertising in the website and in the local newspapers
- Interested bidders would buy the documents and submit their technical and financial offers
- Offers are opened in public and then evaluated by a technical committee to select winning bidder
- The main tender committee award the bid to the selected bidder and then tender department prepare the contract and sign it
- The technical committee might recommend for retendering as a result the hole process will be repeated
- Signed contract would be sent to the super vision department to start implementation

### Stage IV: Implementation and supervision of the contracts:

Signed contracts are sent to the respective departments for implementation as can be seen in table (5). Activities for each contract can be seen in tables (6) and (7)

**Table 5 The respective departments responsible for stage IV**

Project name	Contract no.	Respective department
Furaifra project	1	Supervision Department/ center
	2	Workshops Department/ center
	3	Desalination Department/ center and Ma'am Water Administration Governorate
Hashmya and Husaynia villages in Husaynia area	1	Supervision Department/ Ma'am Water Administration Governorate or center

**Table 6 Activities of stage no. (4) for Furaifra project**

Contract no.	Contract activities
1	<ul style="list-style-type: none"> <li>• The site of the contract would be handed over and a letter for starting date of implementation would be issued</li> <li>• Official letters would be issued to all respective governmental departments e.g. Ministry of Public works and Housing and the municipality to cooperate with the contractor during implementation</li> <li>• The submittals of the equipments would be submitted by the contractor and then approved by the supervisor</li> <li>• Soil tests would be performed for civil works, e.g. tank and building</li> <li>• Redesign of the tank and building might be required when actual bearing capacity is different than proposed in the tender documents. In this case variation order would be issued.</li> <li>• Start of the implementation of the works for the network and plant site</li> <li>• During implementation payments would be submitted with all supported documents as per percent of progress</li> <li>• The contractor would Hand over all the works to a technical committee</li> <li>• Final payment is submitted and then checked by supervisor and sent to the financial department with all supported documents</li> </ul>
2	<ul style="list-style-type: none"> <li>• The site of the contract would be handed over and a letter for starting date of implementation would be issued</li> <li>• The submittals of the equipments would be submitted by the contractor and then approved by the supervisor</li> <li>• Equipment procurements and installation under workshops supervision</li> <li>• The contractor would hand over all the works to a technical committee</li> <li>• Final payment is submitted and then checked by supervisor and sent to the financial department with all supported documents</li> </ul>
3	<ul style="list-style-type: none"> <li>• The technical and financial offer is checked and approved</li> <li>• The cost of the connection works is paid to the Electric Distribution company (EDCO)</li> <li>• EDCO would provide and install all required equipments and material to connect the main distribution panel in the well site with national electrical network</li> </ul>

**Table 7 Activities of stage IV for Hashmya and Husaynia villages in Husaynia project**

Contract no.	Contract activities
1	<ul style="list-style-type: none"> <li>• The site of the contract would be handed over and a letter for starting date of implementation would be issued</li> <li>• Official letters would be issued to all respective governmental departments e.g. Ministry of Public works and Housing and the municipality to cooperate with the contractor during implementation</li> <li>• The submittals of the pumps would be submitted by the contractor and then approved by the supervisor</li> <li>• Start of the implementation of the works for replacement of the pipes and pumps</li> <li>• The contractor would hand over all the works to a technical committee</li> <li>• Payment is submitted and then checked by supervisor and sent to the financial department with all supported documents</li> </ul>

**3. Proposed time schedule for the project:**

Stage no.	Start date	End Date	notes
I	8/11/2013	5/2/2014	
II	6/2/2014	2/4/2014	
III	3/4/2014	15/6/2014	End date might be delayed if retendering is recommended by the technical committee
IV	16/6/2014	18/11/2014	End date might be delayed if variation order is recommended by the technical committee