



**Summary of Project:**

**AIN JAFFEL**

Governorate SIDI BOUZID Delegation JELMA Year of Execution 2006  
 Water Source DEEP WELL Population Growth Rate 1.50 % Creation of GIC New  
 Possible withdrawal 15.0 L/s The design capacity of the projected WSS is 266m<sup>3</sup>/day (3.1 L/s)

**Demographics**

|                          |              |              |
|--------------------------|--------------|--------------|
| Population               | 2005         | 2021         |
| Groupoed                 | <u>2,455</u> | <u>3,116</u> |
| Scattered                |              |              |
| Total                    | <u>2,455</u> | <u>3,116</u> |
| Households               | <u>424</u>   | <u>537</u>   |
| Sheep and Goats          |              | <u>8,026</u> |
| Cows, Horses and Donkeys |              | <u>497</u>   |

**Outline of Project**

The project will covers 2455 population of 424 families in 37 localities and 3 public institutions in a hilly area. Elevation varies from 470m to 820m. For the realization of the water supply, the project will construct one (1) main distribution tank and six (6) sub-distribution tanks in order to limit the static pressure less than 70m as much as possible. The ductile cast iron pipe is used for the transmission pipeline so as not to install a booster pump. However, one (1) relay pump is installed for Talla sub-area located around five (5) km from most of the localities.

| Year | Population | Cattle | UFW   | Average Daily Water Supply | Maximum Daily Water Supply |
|------|------------|--------|-------|----------------------------|----------------------------|
| 2005 | 63.23      | 44.03  | 61.21 | 124.44                     | 186.66                     |
| 2021 | 110.07     | 44.03  | 67.15 | 177.22                     | 265.82                     |

**Water Supply Planning (m<sup>3</sup>/day)**

**SERVICE INSTALLATIONS**

|   |                    |
|---|--------------------|
| Communal Tap                              | <u>37</u>          |
| Potence                                   |                    |
| Particular Connection                     | <u>3</u>           |
| <b>Population / Service Installations</b> | <b><u>84.2</u></b> |

**CONSTRUCTION COST (DT)**

|                           |                      |
|---------------------------|----------------------|
| Water Source              |                      |
| Pipe Materials            | <u>475,367.000</u>   |
| Pipeline Works            | <u>398,960.000</u>   |
| Civil Engineering Works   | <u>296,200.000</u>   |
| Electrification Equipment | <u>96,000.000</u>    |
| Contingency               | <u>224,479.000</u>   |
| Total                     | <u>1,721,006.000</u> |

**Per Capita Investment Cost** 552.300

**Contribution by Beneficiaries (DT)**

|                                  |               |
|----------------------------------|---------------|
| Estimated Cost / m <sup>3</sup>  | <u>0.584</u>  |
| Proposed charge / m <sup>3</sup> | <u>0.650</u>  |
| Flat Rate / Family               |               |
| Proposed Revolving Fund          | <u>8.000</u>  |
| Revolving Fund Applied           | <u>10.000</u> |

**INSTALLATIONS and FACILITIES**

|                         |   |
|-------------------------|---|
| Pumping Station         | <u>1</u>  |
| Relay Pumping Station   | <u>2</u>  |
| Relay Tank              | <u>2</u> x <u>50</u> , <u>15</u> m <sup>3</sup> |
| Air Valve               | <u>30</u>                                       |
| Washout                 | <u>8</u>  |
| Sluice valve single     | <u>3</u>  |
| Sluice valve double     | <u>22</u>                                       |
| Sluice valve triple     |   |
| Handhole                | <u>60</u>                                       |
| Pressure Reducing Valve | <u>14</u>                                       |

| Distribution Tank | Capacity (m <sup>3</sup> ) | Height (m) | Remarks  |
|-------------------|----------------------------|------------|--|
| SEMI BURIED       | 40                         |            | 7 tanks (R1=40, R2=30, R3=40, R4=10, R5= 40, R6, R7= 10 m <sup>3</sup> ) Capacity of R1,2,3 and 5 are determined by tank behaviour |
| SEMI BURIED       | 30                         |            |  |
| SEMI BURIED       | 40                         |            |  |

Pump Start/Stop Control Ligne Pilote, Radio, Manostatique  
 Office for GIC 1  
 Branching Works from SONEDE or GR  
 Water Hammer Protection Air Chamber V=200L for the Relay Tank 2

Disinfection New  
 Total Pipeline Length (m) 42,593.00

| Pipeline       | Diameter (mm) | Nominal Pressure | Length (m) | Pump H (m) | Pump Q (l/s) | Motor (kW) | Pump Type   | Facilities to be Installed |
|----------------|---------------|------------------|------------|------------|--------------|------------|-------------|----------------------------|
| PUMP DISCHARGE | 150           | DCIP             | 4,682.00   | 188        | 6.00         | 22.0       | SUBMERSIBLE | WELL                       |
| PUMP DISCHARGE | 160           | PN16             | 1,071.00   | 206        | 6.00         | 22.0       | IN LINE     | RELAY TANK                 |
| PUMP DISCHARGE | 160           | PN10             | 1,011.00   | 150        | 1.00         | 4.0        | IN LINE     | RELAY TANK                 |
| PUMP DISCHARGE | 90            | PN16             | 1,096.00   |            |              |            |             |                            |
| PUMP DISCHARGE | 75            | PN10             | 1,670.00   |            |              |            |             |                            |
| DISTRIBUTION   | 160           | PN10             | 114.00     |            |              |            |             |                            |
| DISTRIBUTION   | 125           | PN10             | 1,994.00   |            |              |            |             |                            |
| DISTRIBUTION   | 110           | PN10             | 4,266.00   |            |              |            |             |                            |
| DISTRIBUTION   | 90            | PN10             | 4,317.00   |            |              |            |             |                            |
| DISTRIBUTION   | 90            | PN16             | 130.00     |            |              |            |             |                            |
| DISTRIBUTION   | 75            | PN10             | 16,522.00  |            |              |            |             |                            |
| DISTRIBUTION   | 75            | PN16             | 3,725.00   |            |              |            |             |                            |
| DISTRIBUTION   | 63            | PN10             | 1,531.00   |            |              |            |             |                            |
| DISTRIBUTION   | 63            | PN16             | 464.00     |            |              |            |             |                            |







**Summary of Project:**

**OULED EL FALEH**

Governorate SOUSSE Delegation SIDI EL HANI Year of Execution 2005  
 Water Source SONEDE CONNECTION Population Growth Rate 1.50 % Creation of GIC New

Possible withdrawal 1.0 L/s The source is a deep well. Projected water demand in 2020 is 0.22 liter/second

**Demographics**

|                          |            |              |
|--------------------------|------------|--------------|
| Population               | 2004       | 2020         |
| Groupoed                 | <u>179</u> | <u>226</u>   |
| Scattered                |            |              |
| Total                    | <u>179</u> | <u>226</u>   |
| Households               | <u>29</u>  | <u>36</u>    |
| Sheep and Goats          |            | <u>1,376</u> |
| Cows, Horses and Donkeys |            | <u>45</u>    |

**Outline of Project**

A relay pumping station is constructed just aside the existing elevated tank managed by SONEDE. Water is transmitted from the elevated tank to the relay tank and pumped up to a projected elevated tank with 15m high and 25m3 capacity. The projected elevated tank covers all the service area where four localities exist. Each locality has one communal tap. The relay tank is designed by the strong request by SONEDE without explaining any reason. If there is not any particular reason, this tank only consume the energy that the elevated tank has. Supplying a projected pump with water directly can make use of such energy. Discharge accepted by SONEDE is 1 liter/second which is same as the capacity of the projected pump.

| Year | Population | Cattle | UFW  | Average Daily Water Supply | Maximum Daily Water Supply |
|------|------------|--------|------|----------------------------|----------------------------|
| 2004 | 4.61       | 3.19   | 4.36 | 8.97                       | 13.46                      |
| 2020 | 7.98       | 3.19   | 4.87 | 12.85                      | 19.27                      |

**Water Supply Planning (m3/day)**

**SERVICE INSTALLATIONS**

|   |                    |
|---|--------------------|
| Communal Tap                              | <u>4</u>           |
| Potence                                   |                    |
| Particular Connection                     |                    |
| <b>Population / Service Installations</b> | <b><u>56.5</u></b> |

**CONSTRUCTION COST (DT)**

|                           |                           |
|---------------------------|---------------------------|
| Water Source              | <u>2,000.000</u>          |
| Pipe Materials            | <u>13,925.000</u>         |
| Pipeline Works            | <u>33,847.000</u>         |
| Civil Engineering Works   | <u>54,000.000</u>         |
| Electrification Equipment | <u>8,000.000</u>          |
| Contingency               | <u>19,616.000</u>         |
| <b>Total</b>              | <b><u>150,388.000</u></b> |

**Contribution by Beneficiaries (DT)**

|                         |               |
|-------------------------|---------------|
| Estimated Cost / m3     | <u>1.058</u>  |
| Proposed charge / m3    | <u>1.100</u>  |
| Flat Rate / Family      | <u>10.494</u> |
| Proposed Revolving Fund | <u>42.000</u> |
| Revolving Fund Applied  | <u>21.000</u> |

**Per Capita Investment Cost** **665.400**

**INSTALLATIONS and FACILITIES**

|                         |                           |
|-------------------------|---------------------------|
| Pumping Station         |                           |
| Relay Pumping Station   | <u>1</u>                  |
| Relay Tank              | <u>1</u> x <u>10</u> , m3 |
| Air Valve               | <u>2</u>                  |
| Washout                 | <u>1</u>                  |
| Sluice valve single     |                           |
| Sluice valve double     | <u>1</u>                  |
| Sluice valve triple     |                           |
| Handhole                |                           |
| Pressure Reducing Valve |                           |

| Distribution Tank | Capacity (m3) | Height (m) | Remarks |
|-------------------|---------------|------------|---------|
| ELEVATED          | 25            | 15         |         |
|                   |               |            |         |
|                   |               |            |         |

Pump Start/Stop Control Pressure gauge  
 Office for GIC  
 Branching Works from SONEDE or GR 1  
 Water Hammer Protection Not Necessary

Disinfection SONEDE  
 Total Pipeline Length (m) 3,269.35

| Pipeline     | Diameter (mm) | Nominal Pressure | Length (m) | Pump H (m) | Pump Q (l/s) | Motor (kW) | Pump Type | Facilities to be Installed |
|--------------|---------------|------------------|------------|------------|--------------|------------|-----------|----------------------------|
| TRANSMISSION | 75            | PN10             | 1,351.92   | 38         | 1.00         | 1.1        | IN LINE   | RELAY TANK                 |
| DISTRIBUTION | 75            | PN10             | 1,493.83   |            |              |            |           |                            |
| DISTRIBUTION | 90            | PN10             | 423.60     |            |              |            |           |                            |

**Summary of Project:**

**CHRAIFIA**

Governorate SOUSSE Delegation BOUFICHA Year of Execution 2006  
 Water Source EXTENSION GR Population Growth Rate 1.50 % Creation of GIC Existing GIC  
 Possible withdrawal 7.0 L/s It necessitates 0.86L/s in case of 8 hours deep well pumping for the existing GIC system and the project.

**Demographics**

|                          |            |              |
|--------------------------|------------|--------------|
| Population               | 2005       | 2021         |
| Grouped                  | <u>302</u> | <u>384</u>   |
| Scattered                | <u>40</u>  | <u>51</u>    |
| Total                    | <u>342</u> | <u>435</u>   |
| Households               | <u>68</u>  | <u>87</u>    |
| Sheep and Goats          |            | <u>2,318</u> |
| Cows, Horses and Donkeys |            | <u>74</u>    |

**Outline of Project**

The project will supply 342 population in five (5) localities with water through 4BFs and 1 Potence. The projected relay tank stores water transmitted from the existing GIC WSS. However, the flow from it to the project can not be assured in the daytime due to 59 individual connections. It necessitated the capacity of the relay tank equivalent to the maximum daily water supply of the project. From the relay pumping station transmits the water to the projected distribution elevated tank with 15m high and 25m<sup>3</sup> capacity. Total length of distribution pipelines is around 7km.

| Year | Population | Cattle | UFW  | Average Daily Water Supply | Maximum Daily Water Supply |
|------|------------|--------|------|----------------------------|----------------------------|
| 2005 | 8.60       | 5.83   | 8.15 | 16.75                      | 25.12                      |
| 2021 | 14.58      | 5.83   | 8.90 | 23.48                      | 35.22                      |

**SERVICE INSTALLATIONS**

|   |                    |
|---|--------------------|
| Communal Tap                              | <u>4</u>           |
| Potence                                   | <u>1</u>           |
| Particular Connection                     |                    |
| <b>Population / Service Installations</b> | <b><u>54.4</u></b> |

**CONSTRUCTION COST (DT)**

|                                   |                           |
|-----------------------------------|---------------------------|
| Water Source                      |                           |
| Pipe Materials                    | <u>36,505.875</u>         |
| Pipeline Works                    | <u>33,900.000</u>         |
| Civil Engineering Works           | <u>60,000.000</u>         |
| Electrification Equipment         | <u>38,400.000</u>         |
| Contingency                       | <u>25,320.881</u>         |
| <b>Total</b>                      | <b><u>194,126.756</u></b> |
| <b>Per Capita Investment Cost</b> | <b><u>446.300</u></b>     |

**Contribution by Beneficiaries (DT)**

|                                  |               |
|----------------------------------|---------------|
| Estimated Cost / m <sup>3</sup>  | <u>0.555</u>  |
| Proposed charge / m <sup>3</sup> | <u>0.500</u>  |
| Flat Rate / Family               |               |
| Proposed Revolving Fund          | <u>15.000</u> |
| Revolving Fund Applied           | <u>15.000</u> |

**INSTALLATIONS and FACILITIES**

|                         |                                       |
|-------------------------|---------------------------------------|
| Pumping Station         |                                       |
| Relay Pumping Station   | <u>1</u>                              |
| Relay Tank              | <u>1</u> x <u>30</u> , m <sup>3</sup> |
| Air Valve               | <u>9</u>                              |
| Washout                 | <u>4</u>                              |
| Sluice valve single     | <u>1</u>                              |
| Sluice valve double     | <u>3</u>                              |
| Sluice valve triple     |                                       |
| Handhole                | <u>17</u>                             |
| Pressure Reducing Valve |                                       |

| Distribution Tank | Capacity (m <sup>3</sup> ) | Height (m) | Remarks                                  |
|-------------------|----------------------------|------------|--|
| ELEVATED          | 50                         | 15         | Capacity is determined by tank behaviour |
|                   |                            |            |  |

Pump Start/Stop Control LIGNE PILOTE  
 Office for GIC  
 Branching Works from SONEDE or GR 1  
 Water Hammer Protection Not Necessary  
 Disinfection Existing GIC  
 Total Pipeline Length (m) 6,790.00

| Pipeline       | Diameter (mm) | Nominal Pressure | Length (m) | Pump H (m) | Pump Q (l/s) | Motor (kW) | Pump Type | Facilities to be Installed |
|----------------|---------------|------------------|------------|------------|--------------|------------|-----------|----------------------------|
| PUMP DISCHARGE | 75            | PN10             | 1,128.00   | 64         | 1.00         | 2.2        | IN LINE   | RELAY TANK                 |
| DISTRIBUTION   | 75            | PN10             | 5,284.00   |            |              |            |           |                            |
| DISTRIBUTION   | 110           | PN10             | 378.00     |            |              |            |           |                            |
|                |               |                  |            |            |              |            |           |                            |
|                |               |                  |            |            |              |            |           |                            |





**Summary of Project:**

**RMADHIA**

Governorate MAHDIA Delegation BOU MERDES Year of Execution 2005  
 Water Source SONEDE CONNECTION Population Growth Rate 1.20 % Creation of GIC Existing GIC  
 Possible withdrawal 2.5 L/s Necessary discharge for the projected system is 2.5 liter/second

**Demographics**

|                          |            |            |
|--------------------------|------------|------------|
| Population               | 2004       | 2020       |
| Grouped                  | <u>110</u> | <u>134</u> |
| Scattered                |            |            |
| Total                    | <u>110</u> | <u>134</u> |
| Households               | <u>22</u>  | <u>27</u>  |
| Sheep and Goats          |            | <u>69</u>  |
| Cows, Horses and Donkeys |            | <u>6</u>   |

**Outline of Project**

Water is distributed by residual pressure of flow at the connection point of the SONEDE system. The projected water supply system covers five (5) localities by one communal tap for each locality.

| Year | Population | Cattle | UFW  | Average Daily Water Supply | Maximum Daily Water Supply |
|------|------------|--------|------|----------------------------|----------------------------|
| 2004 | 2.82       | 0.53   | 1.03 | 3.85                       | 5.77                       |
| 2020 | 4.73       | 0.53   | 1.32 | 6.05                       | 9.08                       |

**Water Supply Planning (m3/day)**

**SERVICE INSTALLATIONS**

|   |                    |
|---|--------------------|
| Communal Tap                              | <u>5</u>           |
| Potence                                   |                    |
| Particular Connection                     |                    |
| <b>Population / Service Installations</b> | <b><u>26.8</u></b> |

**CONSTRUCTION COST (DT)**

|                         |                   |
|-------------------------|-------------------|
| Water Source            | <u>2,500.000</u>  |
| Pipe Materials          | <u>24,244.000</u> |
| Pipeline Works          | <u>42,414.000</u> |
| Civil Engineering Works | <u>7,500.000</u>  |
| Electrification         | <u>0.000</u>      |
| Equipment               | <u>2,500.000</u>  |
| Contingency             | <u>11,874.000</u> |
| Total                   | <u>91,032.000</u> |

**Contribution by Beneficiaries (DT)**

|                         |               |
|-------------------------|---------------|
| Estimated Cost / m3     | <u>0.383</u>  |
| Proposed charge / m3    | <u>0.550</u>  |
| Flat Rate / Family      | <u>2.620</u>  |
| Proposed Revolving Fund | <u>11.000</u> |
| Revolving Fund Applied  | <u>11.000</u> |

**Per Capita Investment Cost** 679.300

**INSTALLATIONS and FACILITIES**

|                         |          |
|-------------------------|----------|
| Pumping Station         |          |
| Relay Pumping Station   |          |
| Relay Tank              | x , m3   |
| Air Valve               | <u>4</u> |
| Washout                 | <u>1</u> |
| Sluice valve single     | <u>1</u> |
| Sluice valve double     | <u>1</u> |
| Sluice valve triple     |          |
| Handhole                |          |
| Pressure Reducing Valve |          |

| Distribution Tank | Capacity (m3) | Height (m) | Remarks |
|-------------------|---------------|------------|---------|
|                   |               |            |         |
|                   |               |            |         |
|                   |               |            |         |

Pump Start/Stop Control  
 Office for GIC  
 Branching Works from SONEDA or GR 1  
 Water Hammer Protection

Disinfection New  
 Total Pipeline Length (m) 2,930.00

| Pipeline     | Diameter (mm) | Nominal Pressure | Length (m) | Pump H (m) | Pump Q (l/s) | Motor (kW) | Pump Type | Facilities to be Installed |
|--------------|---------------|------------------|------------|------------|--------------|------------|-----------|----------------------------|
| DISTRIBUTION | 110           | PN10             | 804.00     |            |              |            |           |                            |
| DISTRIBUTION | 90            | PN10             | 2,126.00   |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |

**Summary of Project: SKHAIBIA**

Governorate MAHDIA Delegation SOUASSI Year of Execution 2005  
 Water Source EXTENSION GR Population Growth Rate 1.20 % Creation of GIC Existing GIC  
 Possible withdrawal 5.0 L/s The projected total water demand of concerned two GICs is 1.5 liter/second

**Demographics**

|                          |            |              |
|--------------------------|------------|--------------|
| Population               | 2004       | 2020         |
| Grouped                  | <u>484</u> | <u>587</u>   |
| Scattered                |            |              |
| Total                    | <u>484</u> | <u>587</u>   |
| Households               | <u>99</u>  | <u>120</u>   |
| Sheep and Goats          |            | <u>1,441</u> |
| Cows, Horses and Donkeys |            | <u>56</u>    |

**Outline of Project**

Connecting distribution pipe to the existing distribution tank of GIC OULED AMARA and water is supplied to 8 localities by gravity through 10 communal taps.

| Year | Population | Cattle | UFW   | Average Daily Water Supply | Maximum Daily Water Supply |
|------|------------|--------|-------|----------------------------|----------------------------|
| 2004 | 12.39      | 8.29   | 11.39 | 23.78                      | 35.68                      |
| 2020 | 20.73      | 8.29   | 12.65 | 33.38                      | 50.07                      |

**SERVICE INSTALLATIONS**

Communal Tap 10  
 Potence  
 Particular Connection  
**Population / Service Installations** 58.7

**CONSTRUCTION COST (DT)**

|                                   |                       |
|-----------------------------------|-----------------------|
| Water Source                      | <u>2,000.000</u>      |
| Pipe Materials                    | <u>103,337.000</u>    |
| Pipeline Works                    | <u>131,942.000</u>    |
| Civil Engineering Works           | <u>22,500.000</u>     |
| Electrification                   | <u>0.000</u>          |
| Equipment                         | <u>2,500.000</u>      |
| Contingency                       | <u>39,342.000</u>     |
| Total                             | <u>301,621.000</u>    |
| <b>Per Capita Investment Cost</b> | <b><u>513.800</u></b> |

**Contribution by Beneficiaries (DT)**

|                         |               |
|-------------------------|---------------|
| Estimated Cost / m3     | <u>0.384</u>  |
| Proposed charge / m3    | <u>0.550</u>  |
| Flat Rate / Family      | <u>3.163</u>  |
| Proposed Revolving Fund | <u>13.000</u> |
| Revolving Fund Applied  | <u>13.000</u> |

**INSTALLATIONS and FACILITIES**

Pumping Station  
 Relay Pumping Station  
 Relay Tank x , m3  
 Air Valve 9  
 Washout 4  
 Sluice valve single  
 Sluice valve double 5  
 Sluice valve triple  
 Handhole  
 Pressure Reducing Valve

| Distribution Tank | Capacity (m3) | Height (m) | Remarks |
|-------------------|---------------|------------|---------|
| SEMI BURIED       | 150           |            |         |
|                   |               |            |         |
|                   |               |            |         |

Pump Start/Stop Control  
 Office for GIC 1  
 Branching Works from SONEDE or GR 1  
 Water Hammer Protection

Disinfection New  
 Total Pipeline Length (m) 10,675.00

| Pipeline     | Diameter (mm) | Nominal Pressure | Length (m) | Pump H (m) | Pump Q (l/s) | Motor (kW) | Pump Type | Facilities to be Installed |
|--------------|---------------|------------------|------------|------------|--------------|------------|-----------|----------------------------|
| DISTRIBUTION | 160           | PN10             | 2,004.00   |            |              |            |           |                            |
| DISTRIBUTION | 110           | PN10             | 1,905.00   |            |              |            |           |                            |
| DISTRIBUTION | 90            | PN10             | 6,766.00   |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |

**Summary of Project:**

**SLAYMIA**

Governorate MAHDIA Delegation SOUASSI Year of Execution 2005  
 Water Source SONEDE CONNECTION Population Growth Rate 1.20 % Creation of GIC Existing GIC  
 Possible withdrawal 15.5 L/s 12 liters/s for Zone Thouabtya while projected water demand in 2020 is 1.0 liter/s. 3.5 liter/s for Zone Ouled Slama while water demand in 2020 is 0.26 liter/s

**Demographics**

|                          |       |       |
|--------------------------|-------|-------|
| Population               | 2004  | 2020  |
| Grouped                  | 1,380 | 1,674 |
| Scattered                |       |       |
| Total                    | 1,380 | 1,674 |
| Households               | 293   | 357   |
| Sheep and Goats          |       | 940   |
| Cows, Horses and Donkeys |       | 25    |

**Outline of Project**

The projected service area is divided into two areas and each area is supplied with water from a different distribution tank managed by SONEDE. One area has 20 communal taps for 14 localities of which total population is 1101. Another area has 4 communal taps and 3 individual connections. Total population of this area is 279. Two pressure reducing valves are installed in the former system and one for the latter for both dynamic and static pressure of the pipeline and at the service points appropriate.

| Year | Population | Cattle | UFW   | Average Daily Water Supply | Maximum Daily Water Supply |
|------|------------|--------|-------|----------------------------|----------------------------|
| 2004 | 35.34      | 5.45   | 11.56 | 46.90                      | 70.35                      |
| 2020 | 59.13      | 5.45   | 15.14 | 74.27                      | 111.41                     |

**Water Supply Planning (m3/day)**

**SERVICE INSTALLATIONS**

|   |             |
|---|-------------|
| Communal Tap                              | 24          |
| Potence                                   |             |
| Particular Connection                     | 3           |
| <b>Population / Service Installations</b> | <b>69.8</b> |

**CONSTRUCTION COST (DT)**

|                                   |                |
|-----------------------------------|----------------|
| Water Source                      | 4,000.000      |
| Pipe Materials                    | 159,448.000    |
| Pipeline Works                    | 238,303.000    |
| Civil Engineering Works           | 30,000.000     |
| Electrification                   | 0.000          |
| Equipment                         | 5,000.000      |
| Contingency                       | 65,513.000     |
| Total                             | 502,264.000    |
| <b>Per Capita Investment Cost</b> | <b>300.000</b> |

**Contribution by Beneficiaries (DT)**

|                         |        |
|-------------------------|--------|
| Estimated Cost / m3     | 0.542  |
| Proposed charge / m3    | 0.750  |
| Flat Rate / Family      | 3.146  |
| Proposed Revolving Fund | 13.000 |
| Revolving Fund Applied  | 13.000 |

**INSTALLATIONS and FACILITIES**

|                         |        |
|-------------------------|--------|
| Pumping Station         |        |
| Relay Pumping Station   |        |
| Relay Tank              | x , m3 |
| Air Valve               | 8      |
| Washout                 | 4      |
| Sluice valve single     | 7      |
| Sluice valve double     | 4      |
| Sluice valve triple     |        |
| Handhole                |        |
| Pressure Reducing Valve | 3      |

| Distribution Tank | Capacity (m3) | Height (m) | Remarks |
|-------------------|---------------|------------|---------|
| SEMI BURIED       | 100           |            |         |
| SEMI BURIED       | 100           |            |         |

Pump Start/Stop Control

Office for GIC 1  
 Branching Works from SONEDE or GR 2  
 Water Hammer Protection

Disinfection New x 2  
 Total Pipeline Length (m) 18,545.00

| Pipeline     | Diameter (mm) | Nominal Pressure | Length (m) | Pump H (m) | Pump Q (l/s) | Motor (kW) | Pump Type | Facilities to be Installed |
|--------------|---------------|------------------|------------|------------|--------------|------------|-----------|----------------------------|
| DISTRIBUTION | 160           | PN10             | 960.00     |            |              |            |           |                            |
| DISTRIBUTION | 110           | PN10             | 3,408.00   |            |              |            |           |                            |
| DISTRIBUTION | 90            | PN10             | 14,177.00  |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
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|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |

**Summary of Project: OULED AMMAR ET OULED ESSAAFI**

Governorate MAHDIA Delegation SIDI ALLOUANE Year of Execution 2006  
 Water Source SONEDE CONNECTION Population Growth Rate 1.20 % Creation of GIC New

Possible withdrawal 12.0 L/s The design capacity of the project is 126m3/day (1.46L/s)

**Demographics**

|                          |              |              |
|--------------------------|--------------|--------------|
| Population               | 2005         | 2021         |
| Grouped                  | <u>1,260</u> | <u>1,526</u> |
| Scattered                |              |              |
| Total                    | <u>1,260</u> | <u>1,526</u> |
| Households               | <u>253</u>   | <u>305</u>   |
| Sheep and Goats          |              | <u>2,252</u> |
| Cows, Horses and Donkeys |              | <u>269</u>   |

**Outline of Project**

The project will construct the elevated tank with 20m high and 50m3 storage tank to make the distribution by gravity for OULED AMMAR project and OULED ESSAFI project. The former, which is located in upstream area of the distribution system, supplies 20 localities with water by 20 BFs and one BP and the latter covers 14 localities by 14 BFs. Several BFs may be difficult to have sufficient flow for the number of beneficiaries due to their disadvantageous topographic conditions (rather high than that of upstream and downstream BFs).

| Year  | Population | Cattle | UFW   | Average Daily Water Supply | Maximum Daily Water Supply |
|---|------------|--------|-------|----------------------------|----------------------------|
| <b>Water Supply Planning (m3/day)</b><br>2005 | 32.26      | 19.33  | 27.51 | 59.77                      | 89.66                      |
| 2021  | 53.91      | 19.33  | 30.31 | 84.22                      | 126.33                     |

**SERVICE INSTALLATIONS**

|   |             |
|---|-------------|
| Communal Tap                              | <u>34</u>   |
| Potence                                   |             |
| Particular Connection                     | <u>1</u>    |
| <b>Population / Service Installations</b> | <u>44.9</u> |

**CONSTRUCTION COST (DT)**

|                         |                      |
|-------------------------|----------------------|
| Water Source            |                      |
| Pipe Materials          | <u>538,131.916</u>   |
| Pipeline Works          | <u>189,730.000</u>   |
| Civil Engineering Works | <u>129,000.000</u>   |
| Electrification         | <u>40,000.000</u>    |
| Equipment               | <u>12,000.000</u>    |
| Contingency             | <u>136,330.287</u>   |
| <b>Total</b>            | <u>1,045,192.203</u> |

**Contribution by Beneficiaries (DT)**

|                         |               |
|-------------------------|---------------|
| Estimated Cost / m3     | <u>0.618</u>  |
| Proposed charge / m3    | <u>0.667</u>  |
| Flat Rate / Family      |               |
| Proposed Revolving Fund | <u>15,000</u> |
| Revolving Fund Applied  | <u>15,000</u> |

**Per Capita Investment Cost** **684.900**

**INSTALLATIONS and FACILITIES**

|                         |           |
|-------------------------|-----------|
| Pumping Station         | <u>1</u>  |
| Relay Pumping Station   |           |
| Relay Tank              | x , m3    |
| Air Valve               | <u>23</u> |
| Washout                 | <u>8</u>  |
| Sluice valve single     |           |
| Sluice valve double     | <u>10</u> |
| Sluice valve triple     |           |
| Handhole                | <u>41</u> |
| Pressure Reducing Valve |           |

| Distribution Tank | Capacity (m3) | Height (m) | Remarks                                  |
|-------------------|---------------|------------|--|
| ELEVATED          | 100           | 20         | Capacity is determined by tank behaviour |
|                   |               |            |  |

Pump Start/Stop Control LIGNE PILOTE

Office for GIC  
 Branching Works from SONEDÉ or GR 1  
 Water Hammer Protection Not Necessary

Disinfection SONEDE  
 Total Pipeline Length (m) 28,211.61

| Pipeline       | Diameter (mm) | Nominal Pressure | Length (m) | Pump H (m) | Pump Q (l/s) | Motor (kW) | Pump Type | Facilities to be Installed |
|----------------|---------------|------------------|------------|------------|--------------|------------|-----------|----------------------------|
| PUMP DISCHARGE | 90            | PN10             | 40.95      | 30         | 5.00         | 3.0        | IN LINE   | Existing Distribution Tank |
| DISTRIBUTION   | 90            | PN10             | 13,317.98  |            |              |            |           |                            |
| DISTRIBUTION   | 110           | PN10             | 3,011.99   |            |              |            |           |                            |
| DISTRIBUTION   | 160           | PN10             | 3,204.87   |            |              |            |           |                            |
| DISTRIBUTION   | 200           | PN10             | 3,762.14   |            |              |            |           |                            |
| DISTRIBUTION   | 250           | PN10             | 4,873.68   |            |              |            |           |                            |
|                |               |                  |            |            |              |            |           |                            |
|                |               |                  |            |            |              |            |           |                            |
|                |               |                  |            |            |              |            |           |                            |
|                |               |                  |            |            |              |            |           |                            |
|                |               |                  |            |            |              |            |           |                            |
|                |               |                  |            |            |              |            |           |                            |
|                |               |                  |            |            |              |            |           |                            |
|                |               |                  |            |            |              |            |           |                            |
|                |               |                  |            |            |              |            |           |                            |
|                |               |                  |            |            |              |            |           |                            |

## Summary of Project:

RQUIAT

Governorate MAHDIADelegation SIDI ALOUENEYear of Execution 2006Water Source EXTENSION GRPopulation Growth Rate 1.20 %Creation of GIC Existing GICPossible withdrawal 6.0 L/s

The maximum demand for the project is 5.5 liter/second. Even if all the communal taps are opened, 5.5 liter/second can meet the necessary discharge.

## Demographics

|                          |            |            |
|--------------------------|------------|------------|
| Population               | 2004       | 2021       |
| Grouped                  | <u>421</u> | <u>516</u> |
| Scattered                |            |            |
| Total                    | <u>421</u> | <u>516</u> |
| Households               | <u>89</u>  | <u>108</u> |
| Sheep and Goats          |            | <u>273</u> |
| Cows, Horses and Donkeys |            | <u>91</u>  |

## Outline of Project

Water is distributed from the existing 150m<sup>3</sup> distribution tank managed by SONEDE to 11 localities, 1 communal tap each.

| Year | Population | Cattle | UFW  | Average Daily Water Supply | Maximum Daily Water Supply |
|------|------------|--------|------|----------------------------|----------------------------|
| 2004 | 10.78      | 4.09   | 6.47 | 17.25                      | 25.87                      |
| 2021 | 18.23      | 4.09   | 7.43 | 25.66                      | 38.50                      |

Water Supply Planning (m<sup>3</sup>/day)

## SERVICE INSTALLATIONS

|                                    |             |
|------------------------------------|-------------|
| Communal Tap                       | <u>11</u>   |
| Potence                            |             |
| Particular Connection              |             |
| Population / Service Installations | <u>46.9</u> |

## CONSTRUCTION COST (DT)

|                            |                    |
|----------------------------|--------------------|
| Water Source               | <u>0.000</u>       |
| Pipe Materials             | <u>67,628.000</u>  |
| Pipeline Works             | <u>102,599.000</u> |
| Civil Engineering Works    | <u>0.000</u>       |
| Electrification Equipment  | <u>0.000</u>       |
| Contingency                | <u>25,534.050</u>  |
| Total                      | <u>195,761.050</u> |
| Per Capita Investment Cost | <u>379.400</u>     |

## Contribution by Beneficiaries (DT)

|                                  |              |
|----------------------------------|--------------|
| Estimated Cost / m <sup>3</sup>  | <u>0.344</u> |
| Proposed charge / m <sup>3</sup> | <u>0.500</u> |
| Flat Rate / Family               | <u>1.518</u> |
| Proposed Revolving Fund          | <u>6.072</u> |
| Revolving Fund Applied           | <u>6.000</u> |

## INSTALLATIONS and FACILITIES

|                         |                    |
|-------------------------|--------------------|
| Pumping Station         |                    |
| Relay Pumping Station   |                    |
| Relay Tank              | x , m <sup>3</sup> |
| Air Valve               | <u>7</u>           |
| Washout                 | <u>4</u>           |
| Sluice valve single     |                    |
| Sluice valve double     | <u>5</u>           |
| Sluice valve triple     |                    |
| Handhole                |                    |
| Pressure Reducing Valve |                    |

| Distribution Tank | Capacity (m <sup>3</sup> ) | Height (m) | Remarks |
|-------------------|----------------------------|------------|---------|
| SEMI BURIED       | 150                        |            |         |
|                   |                            |            |         |
|                   |                            |            |         |

Pump Start/Stop Control

Office for GIC  
Branching Works from SONEDE or GR

Water Hammer Protection

## Disinfection

SONEDE

Total Pipeline Length (m)

6,804.00

| Pipeline     | Diameter (mm) | Nominal Pressure | Length (m) | Pump H (m) | Pump Q (l/s) | Motor (kW) | Pump Type | Facilities to be Installed |
|--------------|---------------|------------------|------------|------------|--------------|------------|-----------|----------------------------|
| DISTRIBUTION | 90            | PN10             | 5,643.00   |            |              |            |           |                            |
| DISTRIBUTION | 110           | PN10             | 156.00     |            |              |            |           |                            |
| DISTRIBUTION | 160           | PN10             | 1,005.00   |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |

**Summary of Project: GUERGOUR-BRAHMIA-FKAYHIA**

Governorate SFAX Delegation AGAREB Year of Execution 2005  
 Water Source SONEDE CONNECTION Population Growth Rate 1.50 % Creation of GIC New  
 Possible withdrawal 6.0 L/s The projected water demand in 2020 is 3.64 liter/second

**Demographics**

|                          |              |              |
|--------------------------|--------------|--------------|
| Population               | 2004         | 2020         |
| Grouped                  | <u>2,718</u> | <u>3,444</u> |
| Scattered                | <u>904</u>   | <u>1,147</u> |
| Total                    | <u>3,622</u> | <u>4,591</u> |
| Households               | <u>705</u>   | <u>893</u>   |
| Sheep and Goats          |              | <u>5,305</u> |
| Cows, Horses and Donkeys |              | <u>375</u>   |

**Outline of Project**

Water is transmitted to a projected relay pumping station by residual pressure of the flow at the connection point of SONEDE water supply system. The location of the pumping station is determined considering the topographic conditions and the distance from the power supply line in order to the construction cost as well as operation cost appropriate. The relay pumping station deliver water to a relay tank planned to install at a highest point near the service area. This tank connects a distribution tank with 30m3 capacity for 12 localities and a projected elevated tank of which the high is 12m and the capacity is 150m3. The elevated tank covers 35 localities.

| Year | Population | Cattle | UFW   | Average Daily Water Supply | Maximum Daily Water Supply |
|------|------------|--------|-------|----------------------------|----------------------------|
| 2004 | 88.63      | 37.77  | 56.73 | 145.36                     | 218.04                     |
| 2020 | 144.60     | 37.77  | 65.12 | 209.72                     | 314.58                     |

**Water Supply Planning (m3/day)**

**SERVICE INSTALLATIONS**

|   |                    |
|---|--------------------|
| Communal Tap                              | <u>50</u>          |
| Potence                                   | <u>3</u>           |
| Particular Connection                     | <u>2</u>           |
| <b>Population / Service Installations</b> | <b><u>74.0</u></b> |

**CONSTRUCTION COST (DT)**

|                         |                      |
|-------------------------|----------------------|
| Water Source            | <u>2,500.000</u>     |
| Pipe Materials          | <u>756,270.000</u>   |
| Pipeline Works          | <u>472,875.000</u>   |
| Civil Engineering Works | <u>143,000.000</u>   |
| Electrification         | <u>62,500.000</u>    |
| Equipment               | <u>78,000.000</u>    |
| Contingency             | <u>227,272.000</u>   |
| Total                   | <u>1,742,417.000</u> |

**Contribution by Beneficiaries (DT)**

|                         |               |
|-------------------------|---------------|
| Estimated Cost / m3     | <u>0.576</u>  |
| Proposed charge / m3    | <u>0.750</u>  |
| Flat Rate / Family      | <u>4.087</u>  |
| Proposed Revolving Fund | <u>17.000</u> |
| Revolving Fund Applied  | <u>17.000</u> |

**Per Capita Investment Cost** **379.500**

**INSTALLATIONS and FACILITIES**

|                         |                     |
|-------------------------|---------------------|
| Pumping Station         |                     |
| Relay Pumping Station   | <u>1</u>            |
| Relay Tank              | <u>2 x 20 , 8m3</u> |
| Air Valve               | <u>36</u>           |
| Washout                 | <u>14</u>           |
| Sluice valve single     |                     |
| Sluice valve double     | <u>21</u>           |
| Sluice valve triple     |                     |
| Handhole                |                     |
| Pressure Reducing Valve |                     |

| Distribution Tank | Capacity (m3) | Height (m) | Remarks |
|-------------------|---------------|------------|---------|
| SEMI BURIED       | 30            |            |         |
| ELEVATED          | 150           | 12         |         |

Pump Start/Stop Control Pilot cable with electrode  
 Office for GIC 1  
 Branching Works from SONEDE or GR 1  
 Water Hammer Protection Not Necessary

Disinfection New  
 Total Pipeline Length (m) 56,380.60

| Pipeline     | Diameter (mm) | Nominal Pressure | Length (m) | Pump H (m) | Pump Q (l/s) | Motor (kW) | Pump Type | Facilities to be Installed |
|--------------|---------------|------------------|------------|------------|--------------|------------|-----------|----------------------------|
| TRANSMISSION | 160           | PN10             | 899.83     | 33         | 6.00         | 4.0        | IN LINE   | RELAY TANK                 |
| DISTRIBUTION | 160           | PN10             | 10,610.56  |            |              |            |           |                            |
| TRANSMISSION | 125           | PN10             | 3,729.57   |            |              |            |           |                            |
| DISTRIBUTION | 250           | PN10             | 4,351.98   |            |              |            |           |                            |
| DISTRIBUTION | 200           | PN10             | 5,074.05   |            |              |            |           |                            |
| DISTRIBUTION | 110           | PN10             | 7,375.06   |            |              |            |           |                            |
| DISTRIBUTION | 90            | PN10             | 24,339.55  |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |

**Summary of Project:**

**HCHACHNA**

Governorate GAFSA Delegation EL GUETAR Year of Execution 2005  
 Water Source EXTENSION GR Population Growth Rate 0.50 % Creation of GIC Existing GIC

Possible withdrawal 8.0 L/s The source is a deep well. Projected water demand in 2020 of the project and GIC BIR SAAD is 2.0 liter/second

**Demographics**

|                          |            |              |
|--------------------------|------------|--------------|
| Population               | 2004       | 2020         |
| Grouped                  | <u>363</u> | <u>394</u>   |
| Scattered                |            |              |
| Total                    | <u>363</u> | <u>394</u>   |
| Households               | <u>63</u>  | <u>70</u>    |
| Sheep and Goats          |            | <u>1,085</u> |
| Cows, Horses and Donkeys |            | <u>55</u>    |

**Outline of Project**

Water is distributed by gravity from the existing distribution tank with 100m<sup>3</sup> capacity of GIC BIR SAAD to 9 localities, 1 communal tap each.

| Year | Population | Cattle | UFW  | Average Daily Water Supply | Maximum Daily Water Supply |
|------|------------|--------|------|----------------------------|----------------------------|
| 2004 | 9.17       | 5.57   | 7.78 | 16.95                      | 25.42                      |
| 2020 | 13.92      | 5.57   | 8.49 | 22.41                      | 33.62                      |

**SERVICE INSTALLATIONS**

|   |                    |
|---|--------------------|
| Communal Tap                              | <u>9</u>           |
| Potence                                   |                    |
| Particular Connection                     |                    |
| <b>Population / Service Installations</b> | <b><u>43.8</u></b> |

**CONSTRUCTION COST (DT)**

|                         |                           |
|-------------------------|---------------------------|
| Water Source            | <u>2,000.000</u>          |
| Pipe Materials          | <u>93,009.625</u>         |
| Pipeline Works          | <u>114,205.424</u>        |
| Civil Engineering Works | <u>24,000.000</u>         |
| Electrification         | <u>3,000.000</u>          |
| Equipment               | <u>5,000.000</u>          |
| Contingency             | <u>36,182.258</u>         |
| <b>Total</b>            | <b><u>277,397.307</u></b> |

**Contribution by Beneficiaries (DT)**

|                                  |               |
|----------------------------------|---------------|
| Estimated Cost / m <sup>3</sup>  | <u>0.506</u>  |
| Proposed charge / m <sup>3</sup> | <u>0.600</u>  |
| Flat Rate / Family               | <u>5.018</u>  |
| Proposed Revolving Fund          | <u>12.307</u> |
| Revolving Fund Applied           | <u>12.000</u> |

**Per Capita Investment Cost** **704.100**

**INSTALLATIONS and FACILITIES**

|                         |                    |
|-------------------------|--------------------|
| Pumping Station         |                    |
| Relay Pumping Station   |                    |
| Relay Tank              | x , m <sup>3</sup> |
| Air Valve               | <u>18</u>          |
| Washout                 | <u>3</u>           |
| Sluice valve single     | <u>1</u>           |
| Sluice valve double     | <u>4</u>           |
| Sluice valve triple     |                    |
| Handhole                |                    |
| Pressure Reducing Valve |                    |

| Distribution Tank | Capacity (m <sup>3</sup> ) | Height (m) | Remarks |
|-------------------|----------------------------|------------|---------|
|                   |                            |            |         |
|                   |                            |            |         |
|                   |                            |            |         |

Pump Start/Stop Control

Office for GIC 1  
 Branching Works from SONEDE or GR 1

Water Hammer Protection

Disinfection New  
 Total Pipeline Length (m) 12,334.11

| Pipeline     | Diameter (mm) | Nominal Pressure | Length (m) | Pump H (m) | Pump Q (l/s) | Motor (kW) | Pump Type | Facilities to be Installed |
|--------------|---------------|------------------|------------|------------|--------------|------------|-----------|----------------------------|
| DISTRIBUTION | 75            | PN10             | 7,089.45   |            |              |            |           |                            |
| DISTRIBUTION | 75            | PN16             | 1,118.94   |            |              |            |           |                            |
| DISTRIBUTION | 90            | PN10             | 1,474.91   |            |              |            |           |                            |
| DISTRIBUTION | 110           | PN10             | 322.77     |            |              |            |           |                            |
| DISTRIBUTION | 125           | PN10             | 1,216.57   |            |              |            |           |                            |
| DISTRIBUTION | 125           | PN16             | 1,111.47   |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |
|              |               |                  |            |            |              |            |           |                            |

**Summary of Project:**

**OUED ZITON**

Governorate GAFSA Delegation SENEDE Year of Execution 2005  
 Water Source EXTENSION GR Population Growth Rate 0.50 % Creation of GIC Existing GIC

Possible withdrawal 20.0 L/s The source is a deep well. Projected total demand in 2020 of concerned three GIC who use same water source is 5.2 liter/second.

**Demographics**

|                          |            |            |
|--------------------------|------------|------------|
| Population               | 2004       | 2020       |
| Grouped                  | <u>135</u> | <u>146</u> |
| Scattered                |            |            |
| Total                    | <u>135</u> | <u>146</u> |
| Households               | <u>26</u>  | <u>28</u>  |
| Sheep and Goats          |            | <u>381</u> |
| Cows, Horses and Donkeys |            | <u>17</u>  |

**Outline of Project**

Distribution pipeline is connected to the existing distribution tank of GIC EL GOUSSA and water is distributed to 4 localities by one communal tap for each locality

| Year | Population | Cattle | UFW  | Average Daily Water Supply | Maximum Daily Water Supply |
|------|------------|--------|------|----------------------------|----------------------------|
| 2004 | 3.41       | 2.06   | 2.88 | 6.29                       | 9.43                       |
| 2020 | 5.16       | 2.06   | 3.14 | 8.30                       | 12.45                      |

**Water Supply Planning (m3/day)**

**SERVICE INSTALLATIONS**

|   |                    |
|---|--------------------|
| Communal Tap                              | <u>4</u>           |
| Potence                                   |                    |
| Particular Connection                     |                    |
| <b>Population / Service Installations</b> | <b><u>36.5</u></b> |

**CONSTRUCTION COST (DT)**

|                           |                          |
|---------------------------|--------------------------|
| Water Source              | <u>2,000.000</u>         |
| Pipe Materials            | <u>30,624.855</u>        |
| Pipeline Works            | <u>41,621.379</u>        |
| Civil Engineering Works   | <u>3,600.000</u>         |
| Electrification Equipment | <u>5,000.000</u>         |
| Contingency               | <u>12,876.935</u>        |
| <b>Total</b>              | <b><u>98,723.169</u></b> |

**Contribution by Beneficiaries (DT)**

|                         |               |
|-------------------------|---------------|
| Estimated Cost / m3     | <u>0.404</u>  |
| Proposed charge / m3    | <u>0.500</u>  |
| Flat Rate / Family      | <u>3.991</u>  |
| Proposed Revolving Fund | <u>9.576</u>  |
| Revolving Fund Applied  | <u>10.000</u> |

**Per Capita Investment Cost** 676.200

**INSTALLATIONS and FACILITIES**

|                         |          |
|-------------------------|----------|
| Pumping Station         |          |
| Relay Pumping Station   |          |
| Relay Tank              | x , m3   |
| Air Valve               | <u>3</u> |
| Washout                 | <u>1</u> |
| Sluice valve single     | <u>2</u> |
| Sluice valve double     | <u>1</u> |
| Sluice valve triple     |          |
| Handhole                |          |
| Pressure Reducing Valve |          |

| Distribution Tank | Capacity (m3) | Height (m) | Remarks |
|-------------------|---------------|------------|---------|
| SEMI BURIED       | 60            |            |         |
|                   |               |            |         |
|                   |               |            |         |

Pump Start/Stop Control  
 Office for GIC  
 Branching Works from SONEDE or GR 1  
 Water Hammer Protection

Disinfection New  
 Total Pipeline Length (m) 3,916.94

| Pipeline     | Diameter (mm) | Nominal Pressure | Length (m) | Pump H (m) | Pump Q (l/s) | Motor (kW) | Pump Type | Facilities to be Installed |
|--------------|---------------|------------------|------------|------------|--------------|------------|-----------|----------------------------|
| DISTRIBUTION | 75            | PN10             | 1,334.19   |            |              |            |           |                            |
| DISTRIBUTION | 90            | PN10             | 603.25     |            |              |            |           |                            |
| DISTRIBUTION | 110           | PN10             | 1,979.50   |            |              |            |           |                            |



## Summary of Project:

**ENJAIMIA**

Governorate GAFSA Delegation MDHILLA Year of Execution 2006  
 Water Source SONEDE CONNECTION Population Growth Rate 0.50 % Creation of GIC New  
 Possible withdrawal 2.5 L/s The design capacity of the projected WSS is 62m<sup>3</sup>/day (0.72L/s)

### Demographics

|                          |            |               |
|--------------------------|------------|---------------|
| Population               | 2005       | 2021          |
| Grouped                  | <u>316</u> | <u>342</u>    |
| Scattered                | <u>623</u> | <u>676</u>    |
| Total                    | <u>939</u> | <u>1,018</u>  |
| Households               | <u>132</u> | <u>144</u>    |
| Sheep and Goats          |            | <u>14,602</u> |
| Cows, Horses and Donkeys |            | <u>542</u>    |

### Outline of Project

Transmission pipe is branched on the distribution pipeline of SONED at around 380m upstream point from an existing break pressure. The elevation of the connection point is 227.68m and the minimum dynamic pressure of it is 40m. The transmission pipe deliver water mainly in the night to a projected distribution elevated tank with 100m<sup>3</sup> capacity and 12m high. The elevated tank distribute water to three (3) BFs and four (4) Potences through 3.1km distribution pipeline.

| Year | Population | Cattle | UFW   | Average Daily Water Supply | Maximum Daily Water Supply |
|------|------------|--------|-------|----------------------------|----------------------------|
| 2005 | 20.57      | 10.24  | 14.97 | 35.54                      | 53.31                      |
| 2021 | 25.60      | 10.24  | 15.62 | 41.22                      | 61.83                      |

### Water Supply Planning (m<sup>3</sup>/day)

#### SERVICE INSTALLATIONS

|   |                    |
|---|--------------------|
| Communal Tap                              | <u>3</u>           |
| Potence                                   | <u>4</u>           |
| Particular Connection                     |                    |
| <b>Population / Service Installations</b> | <b><u>53.6</u></b> |

#### CONSTRUCTION COST (DT)

|                           |                           |
|---------------------------|---------------------------|
| Water Source              | <u>1,300.000</u>          |
| Pipe Materials            | <u>366,268.000</u>        |
| Pipeline Works            | <u>166,038.000</u>        |
| Civil Engineering Works   | <u>78,000.000</u>         |
| Electrification Equipment |                           |
| Contingency               | <u>91,741.000</u>         |
| <b>Total</b>              | <b><u>703,347.000</u></b> |

#### Contribution by Beneficiaries (DT)

|                                  |               |
|----------------------------------|---------------|
| Estimated Cost / m <sup>3</sup>  | <u>0.594</u>  |
| Proposed charge / m <sup>3</sup> | <u>0.600</u>  |
| Flat Rate / Family               |               |
| Proposed Revolving Fund          | <u>15.000</u> |
| Revolving Fund Applied           | <u>10.000</u> |

**Per Capita Investment Cost** **690.900**

#### INSTALLATIONS and FACILITIES

|                         |                    |
|-------------------------|--------------------|
| Pumping Station         |                    |
| Relay Pumping Station   |                    |
| Relay Tank              | x , m <sup>3</sup> |
| Air Valve               | <u>23</u>          |
| Washout                 | <u>7</u>           |
| Sluice valve single     | <u>1</u>           |
| Sluice valve double     | <u>5</u>           |
| Sluice valve triple     |                    |
| Handhole                | <u>33</u>          |
| Pressure Reducing Valve |                    |

| Distribution Tank | Capacity (m <sup>3</sup> ) | Height (m) | Remarks                                  |
|-------------------|----------------------------|------------|--|
| ELEVATED          | 100                        | 12         | Capacity is determined by tank behaviour |
|                   |                            |            |  |
|                   |                            |            |  |

Pump Start/Stop Control Float Valve

Office for GIC  
 Branching Works from SONED or GR 1  
 Water Hammer Protection

Disinfection SONEDE

Total Pipeline Length (m) 32,137.00

| Pipeline     | Diameter (mm) | Nominal Pressure | Length (m) | Pump H (m) | Pump Q (l/s) | Motor (kW) | Pump Type | Facilities to be Installed |
|--------------|---------------|------------------|------------|------------|--------------|------------|-----------|----------------------------|
| TRANSMISSION | 110           | PN10             | 1,105.00   |            |              |            |           |                            |
| DISTRIBUTION | 75            | PN16             | 9,112.00   |            |              |            |           |                            |
| DISTRIBUTION | 110           | PN10             | 3,166.00   |            |              |            |           |                            |
| DISTRIBUTION | 110           | PN16             | 3,440.00   |            |              |            |           |                            |
| DISTRIBUTION | 125           | PN10             | 5,329.00   |            |              |            |           |                            |
| DISTRIBUTION | 125           | PN16             | 2,547.00   |            |              |            |           |                            |
| DISTRIBUTION | 160           | PN10             | 3,558.00   |            |              |            |           |                            |
| DISTRIBUTION | 250           | PN10             | 3,880.00   |            |              |            |           |                            |

## Summary of Project:

SMAIDIA

Governorate GAFSA  
 Water Source DEEP WELL  
 Possible withdrawal 3.0 L/s

Delegation GAFSA NORD  
 Population Growth Rate 0.50 %

Year of Execution 2006  
 Creation of GIC New

The design capacity of the projected WSS is 46m3/day (0.54 L/s)

**Demographics**

Population 2005 2021  
 Grouped 503 543  
 Scattered  
 Total 503 543  
 Households 84 90  
 Sheep and Goats 2,442  
 Cows, Horses and Donkeys 144

**Outline of Project**

Transmission pipe is connected to the elevated tank for a irrigation project and a booster pump is installed in the transmission pipeline. This pump transmits water to the projected elevated distribution tank with 15m high and 25m3 capacity. Disinfection is planned to install in the booster pumping station. Distribution system is comprised of 12 BFs, one Potence and total 13km pipelines. The potence is directly connected to the tank so as not to affect the pressure of other service installations.

| Year | Population | Cattle | UFW   | Average Daily Water Supply | Maximum Daily Water Supply |
|------|------------|--------|-------|----------------------------|----------------------------|
| 2005 | 12.70      | 7.67   | 10.80 | 23.50                      | 35.25                      |
| 2021 | 19.18      | 7.67   | 11.70 | 30.88                      | 46.32                      |

**Water Supply Planning (m3/day)****SERVICE INSTALLATIONS**

Communal Tap 12  
 Potence 1  
 Particular Connection  
 Population / Service Installations 33.9

**CONSTRUCTION COST (DT)**

Water Source  
 Pipe Materials 71,172.000  
 Pipeline Works 92,156.000  
 Civil Engineering Works 72,800.000  
 Electrification Equipment 22,000.000  
 Contingency 38,719.000  
 Total 296,847.000  
 Per Capita Investment Cost 546.700

**Contribution by Beneficiaries (DT)**

Estimated Cost / m3 0.494  
 Proposed charge / m3 0.600  
 Flat Rate / Family  
 Proposed Revolving Fund 15.000  
 Revolving Fund Applied 15.000

**INSTALLATIONS and FACILITIES**

Pumping Station  
 Relay Pumping Station 1  
 Relay Tank x , m3  
 Air Valve 17  
 Washout 1  
 Sluice valve single  
 Sluice valve double 10  
 Sluice valve triple  
 Handhole 25  
 Pressure Reducing Valve

| Distribution Tank | Capacity (m3) | Height (m) | Remarks |
|-------------------|---------------|------------|---------|
| ELEVATED          | 25            | 15         |         |
|                   |               |            |         |
|                   |               |            |         |

Pump Start/Stop Control

LIGNE PILOTE

Office for GIC

Branching Works from SONEDE or GR

1

Water Hammer Protection

Not Necessary

Disinfection

New

Total Pipeline Length (m)

13.971.00

| Pipeline       | Diameter (mm) | Nominal Pressure | Length (m) | Pump H (m) | Pump Q (l/s) | Motor (kW) | Pump Type | Facilities to be Installed                    |
|----------------|---------------|------------------|------------|------------|--------------|------------|-----------|---|
| PUMP DISCHARGE | 90            | PN10             | 794.00     | 18         | 3.00         | 1.1        | IN LINE   | as booster pump in the transmission pipeline. |
| DISTRIBUTION   | 75            | PN10             | 9,062.00   |            |              |            |           |   |
| DISTRIBUTION   | 90            | PN10             | 1,556.00   |            |              |            |           |   |
| DISTRIBUTION   | 110           | PN10             | 1,195.00   |            |              |            |           |   |
| DISTRIBUTION   | 125           | PN10             | 486.00     |            |              |            |           |   |
| DISTRIBUTION   | 160           | PN10             | 878.00     |            |              |            |           |   |
|                |               |                  |            |            |              |            |           |   |
|                |               |                  |            |            |              |            |           |   |
|                |               |                  |            |            |              |            |           |   |
|                |               |                  |            |            |              |            |           |   |
|                |               |                  |            |            |              |            |           |   |
|                |               |                  |            |            |              |            |           |   |
|                |               |                  |            |            |              |            |           |   |