## Appendices

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2. Study Schedule
3. List of Parties Concerned in the Recipient Country
4. Minutes of Discussions
5. Soft Component (Technical Cooperation) Plan
6. Other Relevant Data 6-1 Collected Data List
7. References

7-1 Hydraulic Calculation
7-2 Result of Test Well Drilling (Well Column Diagram)

## Appendix 1

## Member List of the Study Team

## (1) Preparatory Survey (September 19, 2011 to July 14, 2012)

| Yuji Maruo | Team Leader | Japan International Cooperation Agency (JICA) |
| :--- | :--- | :--- |
| Shutaro Shiraki | Planning Management | Japan International Cooperation Agency (JICA) |
| Takeshi Nakano | Chief Consultant / <br> Water Supply Facility Planning |  |
| Kenji Shinoda | Sub Chief Consultant / Water Supply Kogyo Co., Ltd. <br>  <br>  <br>  <br>  <br> Facility Design / Pipeline Design / <br> Operation and Maintenance Planning |  |
| Hisayuki Ukishima | Hydrogeology 1 / <br> Groundwater Development Planning 1 Co., Ltd. |  |
| Yusuke Oshika | Hydrogeology 2 / |  |
| Risako Imai | Groundwater Development Planning 2 |  |
| Yosuke Yamamoto Consultant System Science |  |  |
| Shinichi Ogawa | Environmental Social Consideration | Kokusai Kogyo Co. |
| Construction Planning / Procurement | Kokusai Kogyo Co. |  |
| Masatoshi Tanaka | Test Well Drilling Supervision | Kokusai Kogyo Co. |
| Kosuke Kikuchi | Coordinator | Kokusai Kogyo Co. |

(2) Explanation of Draft Report (November 2, 2012 to November 10, 2012)

| Yuji Maruo | Team Leader | Japan International Cooperation Agency (JICA) |
| :--- | :--- | :--- |
| Toshikazu <br> Watanabe | Cooperation Planning | Japan International Cooperation Agency (JICA) |
| Takeshi Nakano | Chief Consultant /  <br>  Water Supply Facility Planning |  |
| Kenji Shinoda | Sub Chief Consultant / Water Supply Kogyo Co., Ltd. |  |
|  | Facility Design / Pipeline Design / |  |
|  | Operation and Maintenance Planning Kogyo Co., Ltd. |  |
|  |  |  |

## Appendix 2 Study Schedule

## (1) Preparatory Survey

| Date |  | JICA | Takeshi Nakano | Kenji Shinoda | Hisayuki Ukishima | Yusuke Oshika | Risako Imai <br> Environmental Social Consideration | Shinichi Ogawa <br> Construction Planning / <br> Rrocurement Planning / Cost <br> Estimation | Masatoshi Tanaka <br> Test Well Drilling Supervision | Kosuke Kikuchi <br> Coordinator |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Chief Consultant/ Water Supply Facility Planning | $\begin{aligned} & \text { Sub Crief Corsultart/ Waiter Supply } \\ & \text { Facilyty Design/PPpeline Design/ } \\ & \text { Opertion and Masitenance Planning } \end{aligned}$ | Hydrogeology $1 /$ Groundwater Development Planning 1 | Hydrogeology 21 <br> Groundwater Development <br> Planning 2 |  |  |  |  |
| 9/19 | Mon |  |  |  | Departure Japan | Departure Japan |  |  | Departure Japan |  |  |
| 9/20 | Tue |  |  | JICA Report | JICA Report |  |  | JICAReport |  |  |
| 9/21 | Wed |  |  | AWRDB Meeting | AWRDB Meeting |  |  | AWRDB Meeting |  |  |
| 9/22 | Thu |  |  | Discussion | Inland Transportation |  |  | Discussion |  |  |
| 9/23 | Fri |  |  | Discussion | AWRDB Meeting |  |  | Discussion |  |  |
| 9/24 | Sat |  |  | Tender Preparation | Data Collection |  |  | Tender Preparation |  |  |
| 9/25 | Sun |  |  | Tender Preparation | Data Collection |  |  | Tender Preparation |  |  |
| 9/26 | Mon |  |  | Discussion | Discussion |  | Departure Japan | Market Reserch |  |  |
| 9/27 | Tue |  |  | Tender Opening | Discussion |  | Arrive Ethiopia | Market Reserch |  |  |
| 9/28 | Wed |  |  | Tender Opening | Discussion |  | Discussion | Tender Opening |  |  |
| 9/29 | Thu |  |  | Discussion | Discussion |  | Discussion | Market Reserch |  |  |
| 9/30 | Fri |  |  | Discussion | Discussion |  | Discussion | Market Reserch |  |  |
| 10/1 | Sat |  |  | Discussion | Inland Transportation | Departure Japan | Discussion | Market Reserch |  |  |
| 10/2 | Sun |  |  | Data Collection | Inland Transportation | Arrive Ethiopia | Inland Transportation | Data Collection |  |  |
| 10/3 | Mon |  |  | Discussion | AWRDB Meeting | JICA Report | S/V for Social Survey | Market Reserch |  |  |
| 10/4 | Tue |  |  | Discussion | Preparation | Discussion | S/V for Social Survey | Market Reserch |  |  |
| $10 / 5$ | Wed |  |  | Inland Transportation | Sellection of Drilling | Inland Transportation | SN for Social Survey | Inland Transportation |  |  |
| 10/6 | Thu |  |  | Field Survey | Sellection of Drilling | Selection Dilling Point | S/V for Social Survey | Field Survey |  |  |
| 10/7 | Fri |  |  | Field Survey | Sellection of Drilling | Selection Dilling Point | S/V for Social Survey | Field Survey |  |  |
| 10/8 | Sat |  |  | Inland Transportation | \|nland Transportation | Inland Transportation | S/V for Social Survey | Inland Transportation |  |  |
| 1019 | Sun | Departure Japan | Departure Japan | Departure Ethiopia | Reporting | Reporting | S/V for Social Survey | Departure Ethiopia |  |  |
| 10/10 | Mon | Arrive Ethiopia | Arrive Ethiopia | Arrive Japan | Selection Dililing Point | Selection Dilling Point | S/V for Social Survey | Arrive Japan |  |  |
| 10/11 | Tue | JICA Report | JICA Report |  | Selection Dirliling Point | Selection Dilling Point | S/V for Social Survey |  |  |  |
| 10/12 W | Wed | AWRDB, BoFED | AWRDB, BoFED |  | Selection Dililing Point | Selection Dilling Point | S/V for Social Survey |  |  |  |
| 10/13 | Thu | Field Survey | Field Survey |  | Selection Dililing Point | Selection Dilling Point | Inland Transportation |  |  |  |
| 10/14 | Fri | Field Survey | Field Survey |  | Selection Dililing Point | Selection Dilling Point | JICA Report |  |  |  |
| 10/15 | Sat | Field Survey | Field Survey |  | Reporting | Reporting | Reporting |  |  |  |
| 10/16 | Sun | Reporting | Reporting |  | Reporting | Reporting | Departure Ethiopia |  |  |  |
| 10/17 | Mon | AWRDB, BoFED | AWRDB, BoFED |  | SN for GP | Data Collection | Arrive Japan |  |  |  |
| 10/18 | Tue | MD Signing | MD Signing |  | S/V for GP | Data Collection |  |  |  |  |
| 10/19 | Wed | Inland Transportation | Data Collection |  | Field Survey | Data Collection |  |  |  |  |
| 10/20 | Thu J | JICA Report | Data Collection |  | Field Survey | Data Collection |  |  |  |  |
| 10/21 | Fri | Arrive Japan | AWRDB Meeting |  | S/V for GP | Data Collection |  |  |  |  |
| 10/22 | Sat |  | Field Survey |  | S/V for GP | Data Collection |  |  | Departure Japan |  |
| 10/23 | Sun |  | Field Survey |  | S/V for GP | Reporting |  |  | Arrive Ethiopia |  |
| 10/24 | Mon |  | Field Survey |  | S/V for GP | Data Collection |  |  | Inland Transportation |  |
| $10 / 25$ | Tue |  | Field Survey |  | Field Survey | SN for Driling |  |  | AWRDB Meeting |  |
| 10/26 | Wed |  | AWRDB Meeting |  | Field Survey | SN for Drilling |  |  | SN for Driling |  |
| 10/27 | Thu |  | AWRDB Meeting |  | Field Survey | SN for Drilling |  |  | SN for Drilling |  |
| $10 / 28$ | Fri |  | JICA Report |  | Reporting | SN for Drilling |  |  | SN for Driling |  |
| $10 / 29$ | Sat |  | Departure Ethiopia |  | Reporting | SN for Drilling |  |  | SN for Drilling |  |
| 10/30 | Sun |  | Arrive Japan |  | Inland Transportation | Reporting |  |  | SN for Drilling |  |
| 10/31 | Mon |  |  |  | Reporting | SN for Drilling |  |  | SN for Drilling |  |
| 11/1 | Tue |  |  |  | Departure Ethiopia | SN for Drilling |  |  | S/V for Drilling |  |
| 11/2 | Wed |  |  |  | Arrive Japan | SN for Drilling |  |  | SN for Drilling |  |
| 11/3 | Thu |  |  |  |  | SN for Drilling |  |  | S/V for Drilling |  |
| 11/4 | Fri |  |  |  |  | SN for Drilling |  |  | SN for Drilling |  |
| 11/5 | Sat |  |  |  |  | SN for Drilling |  |  | SN for Drilling |  |
| 11/6 | Sun |  |  |  |  | Reporting |  |  | SN for Drilling |  |
| $11 / 7$ | Mon |  |  |  |  | SN for Drilling |  |  | SN for Drilling |  |
| 11/8 | Tue |  |  |  |  | SV for Drilling |  |  | SV for Drilling |  |
| 11/9 W | Wed |  |  |  |  | SN for Drilling |  |  | SN for Drilling |  |
| 11/10 | Thu |  |  |  |  | SN for Drililing |  |  | S/V for Driling |  |
| 11/11 | Fri |  |  |  |  | SN for Drilling |  |  | SN for Drilling |  |
| 11/12 | Sat |  |  |  |  | SN for Drilling |  |  | SN for Drilling |  |
| 11/13 | Sun |  |  |  |  | Reporting |  |  | SN for Drilling |  |
| 11/14 | Mon |  |  |  |  | SN for Drilling |  |  | SN for Drilling |  |
| 11/15 | Tue |  |  |  |  | SN for Driling |  |  | SN for Drilling |  |
| $11 / 16 \mathrm{~W}$ | Wed |  |  |  |  | SN for Drilling |  |  | S/V for Drilling |  |
| 11/17 | Thu |  |  |  |  | SN for Drilling |  |  | SN for Drilling |  |
| 11/18 | Fri |  |  |  |  | SN for Drilling |  |  | JICA Report |  |
| 11/19 | Sat |  |  |  |  | SN for Drilling |  |  | Departure Ethiopia |  |
| 11/20 | Sun |  |  |  |  | Reporting |  |  | Arrive Japan |  |
| 11/21 | Mon |  |  |  |  | SN for Drilling |  |  |  |  |
| 11/22 | Tue |  |  |  |  | SN for Drilling |  |  |  |  |
| $11 / 23 \mathrm{~W}$ | Wed |  |  |  |  | SN for Drilling |  |  |  |  |
| 11/24 | Thu |  |  |  |  | SN for Drilling |  |  |  |  |
| 11/25 | Fri |  |  |  |  | SN for Drilling |  |  |  |  |
| $11 / 26$ | Sat |  |  |  |  | SN for Drilling |  |  |  |  |
| 11/27 | Sun |  |  |  |  | Reporting |  |  |  |  |
| 11/28 | Mon |  |  |  |  | SN for Drilling |  |  |  |  |
| 11/29 | Tue |  |  |  |  | SN for Drilling |  |  |  |  |
| 11/30 | Wed |  |  |  |  | SN for Drilling |  |  |  |  |
| $12 / 1$ | Thu |  |  |  |  | SN for Drilling |  |  |  |  |
| $12 / 2$ | Fri |  |  |  |  | SN for Drilling |  |  |  |  |
| 12/3 | Sat |  |  |  |  | SN for Drilling |  |  |  |  |
| 1214 | Sun |  |  |  |  | Reporting |  |  |  |  |
| $12 / 5$ | Mon |  |  |  |  | SN for Drilling |  |  |  |  |
| $12 / 6$ | Tue |  |  |  |  | SN for Drilling |  |  |  |  |
| 1277 | Wed |  |  |  |  | SN for Drilling |  |  |  |  |
| 1218 | Thu |  |  |  |  | SN for Drilling |  |  |  |  |
| 12/9 | Fri |  |  |  |  | SN for Drilling |  |  |  |  |
| 12/10 | Sat |  |  |  |  | SN for Drilling |  |  |  |  |
| 12/11 | Sun |  |  |  |  | Reporting |  |  |  |  |
| $12 / 12$ | Mon |  |  |  |  | SN for Drilling |  |  |  |  |
| 12/13 | Tue |  |  |  |  | SN for Driling |  |  |  |  |
| 12/14 | Wed |  |  |  |  | SN for Drilling |  |  |  |  |
| 12/15 | Thu |  |  |  |  | SN for Drilling |  |  |  |  |
| 12/16 | Fri |  |  |  |  | SN for Drilling |  |  |  |  |
| 12/17 | Sat |  |  |  |  | SN for Drilling |  |  |  |  |
| 12/18 | Sun |  |  |  |  | Reporting |  |  |  |  |
| 12/19 | Mon |  |  |  |  | SN for Drilling |  |  |  |  |
| $12 / 20$ | Tue |  |  |  |  | SN for Drililing |  |  |  |  |
| 12/21 | Wed |  |  |  |  | SN for Drilling |  |  |  |  |
| $12 / 12$ | Thu |  |  |  |  | SN for Drilling |  |  |  |  |
| $12 / 23$ | Fri |  |  |  |  | $\mathrm{SN} /$ for Drilling |  |  |  |  |
| 12/24 | Sat |  |  |  |  | SN for Driling |  |  |  |  |
| 12/25 | Sun |  |  |  |  | Reporting |  |  |  |  |
| $12 / 26$ N | Mon |  |  |  |  | SN for Drilling |  |  |  |  |
| $12 / 27$ | Tue |  |  |  |  | SN for Drilling |  |  |  |  |
| $12 / 28$ | Wed |  |  |  |  | SN for Drilling |  |  |  |  |
| $12 / 29$ | Thu |  |  |  |  | SN for Drilling |  |  |  |  |
| $12 / 30$ | Fri |  |  |  |  | SN for Drilling |  |  |  |  |
| 12/31 | Sat |  |  |  |  | SN for Drilling |  |  |  |  |



| Date |  | JICA | Takeshi Nakano | Kenji Shinoda | Hisayuki Ukishima | Yusuke Oshika | Yosuke Yamamoto | Shinichi Ogawa | Masatoshi Tanaka | Kosuke Kikuchi |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\begin{aligned} & \text { Chief Consultant/ } \\ & \text { Water Supply aciilty } \\ & \text { Panning } \end{aligned}$ | Sub Chief Consultant/ Water Supply Facility Design/ Pipeline Design/ Operation and Maintenance Planning | Hydrogeology 1/ Groundw ater Development Panning 1 Panning 1 | $\begin{array}{c\|} \text { Hydrogeology } 21 \\ \text { Groundw ater Development } \\ \text { Planning 2 } \end{array}$ $\text { Planning } 2$ | Environmental Social Consideration | Construction Planning / Focourement Planning / Cost Estimation <br> Estimation | Test Well Drilling Supervision | Coordinator |
| 4/20 | Fri |  |  |  |  | Inland Transportation |  |  |  |  |  |
| 4/21 | Sat |  |  |  | GP Preparation |  |  |  |  |  |
| 4/22 | Sun |  |  |  | Data Collection |  |  |  |  |  |
| 4/23 | Mon |  |  |  | Field Survey |  |  |  |  |  |
| 4/24 | Tue |  |  |  | Field Survey |  |  |  |  |  |
| 4/25 | Wed |  |  |  | Field Survey |  |  |  |  |  |
| 4/26 | Thu |  |  |  | Data Collection |  |  |  |  |  |
| 4/27 | Fri |  |  |  | Data Collection |  |  |  |  |  |
| 4/28 | Sat |  |  |  | Data Collection |  |  |  |  |  |
| 4/29 | Sun |  |  |  | Inland Transportation |  |  |  |  |  |
| 4/30 | Mon |  |  |  | AWRDB Meeting |  |  |  |  |  |
| 5/1 | Tue |  |  |  | Data Collection |  |  |  |  |  |
| 5/2 | Wed |  |  |  | Data Collection |  |  |  |  |  |
| 5/3 | Thu |  |  |  | Meeting |  |  |  |  |  |
| 5/4 | Fri |  |  |  | Meeting |  |  |  |  |  |
| 5/5 | Sat |  |  |  | Inland Transportation |  |  |  |  |  |
| 5/6 | Sun |  |  |  | Field Survey |  |  |  |  |  |
| 5/7 | Mon |  |  |  | S/V for Drilling |  |  |  |  |  |
| 5/8 | Tue |  |  |  | S/V for Drilling |  |  |  |  |  |
| 5/9 | Wed |  |  |  | S/V for Drilling |  |  |  |  |  |
| 5/10 | Thu |  |  |  | S/V for Drilling |  |  |  |  |  |
| 5/11 | Fri |  |  |  | S/V for Drilling |  |  |  |  |  |
| 5/12 | Sat |  |  |  | S/V for Drilling |  |  |  |  |  |
| 5/13 | Sun |  |  |  | Inland Transportation |  |  |  |  |  |
| 5/14 | Mon |  |  |  | AWRDB Meeting |  |  |  |  |  |
| 5/15 | Tue |  |  |  | S/V for Drilling |  |  |  |  |  |
| 5/16 | Wed |  | Departure Japan |  | Inland Transportation |  |  |  |  |  |
| 5/17 | Thu |  | JICA Report |  | JICA Report |  |  |  |  |  |
| 5/18 | Fri |  | Meeting |  | Departure Ethiopia |  |  |  |  |  |
| 5/19 | Sat |  | Inland Transportation |  | Arrive Japan |  |  |  |  |  |
| 5/20 | Sun |  | Inland Transportation |  |  |  |  |  |  |  |
| 5/21 | Mon |  | AWRDB Meeting |  |  |  |  |  |  |  |
| 5/22 | Tue |  | Inland Transportation |  |  |  |  |  |  |  |
| 5/23 | Wed |  | Meeting |  |  |  |  |  |  |  |
| 5/24 | Thu |  | Departure Ethiopia |  |  |  |  |  |  |  |
| 5/25 | Fri |  | Arrive Japan |  |  |  |  |  |  |  |
| 5/26 | Sat |  |  |  |  |  |  |  |  |  |
| 5/27 | Sun |  |  |  |  |  |  |  |  |  |
| 5/28 | Mon |  |  |  |  |  |  |  |  |  |
| 5/29 | Tue |  |  |  |  |  |  |  |  |  |
| 5/30 | Wed |  |  |  |  |  |  |  |  |  |
| 5/31 | Thu |  |  |  |  |  |  |  |  |  |
| 6/1 | Fri |  |  |  |  |  |  |  |  |  |
| 6/2 | Sat |  |  |  |  |  |  |  |  |  |
| 6/3 | Sun |  |  |  |  |  |  |  |  |  |
| 6/4 | Mon |  |  |  |  |  |  |  |  |  |
| 6/5 | Tue |  |  |  |  |  |  |  |  |  |
| 6/6 | Wed |  |  |  |  |  |  |  |  |  |
| 6/7 | Thu |  |  |  |  |  |  |  |  |  |
| 6/8 | Fri |  |  |  |  |  |  |  |  |  |
| 6/9 | Sat |  |  |  |  |  |  |  |  |  |
| 6/10 | Sun |  |  |  |  |  |  |  |  |  |
| 6/11 | Mon |  |  |  |  |  |  |  |  |  |
| 6/12 | Tue |  |  |  |  |  |  |  |  |  |
| 6/13 | Wed |  |  |  |  |  |  |  |  |  |
| 6/14 | Thu |  |  |  |  |  |  |  |  |  |
| 6/15 | Fri |  |  |  |  |  |  |  |  |  |
| 6/16 | Sat |  |  |  |  |  |  |  |  |  |
| 6/17 | Sun |  |  |  |  |  |  |  |  |  |
| 6/18 | Mon |  |  |  |  |  |  |  |  |  |
| 6/19 | Tue |  |  |  |  |  |  |  |  |  |
| 6/20 | Wed |  |  |  |  |  |  |  |  |  |
| 6/21 | Thu |  |  |  |  |  |  |  |  |  |
| $6 / 22$ | Fri |  |  |  |  |  |  |  |  |  |
| 6/23 | Sat |  |  |  |  |  |  |  |  |  |
| 6/24 | Sun |  |  |  |  |  |  |  |  |  |
| 6/25 | Mon |  |  |  |  |  |  |  |  |  |
| 6/26 | Tue |  |  |  |  |  |  |  |  |  |
| $6 / 27$ | Wed |  |  |  |  |  |  |  |  |  |
| 6/28 | Thu |  |  |  |  |  |  |  |  |  |
| 6/29 | Fri |  |  |  |  |  |  |  |  |  |
| 6/30 | Sat |  |  |  |  |  |  |  |  |  |
| $7 / 1$ | Sun |  |  |  |  |  |  |  |  |  |
| $7 / 2$ | Mon |  |  |  |  |  |  |  |  |  |
| 7/3 | Tue |  |  |  |  |  |  |  |  |  |
| $7 / 4$ | Wed |  |  |  |  |  |  |  |  |  |
| 715 | Thu |  |  |  |  |  |  |  |  |  |
| 716 | Fri |  | Departure Japan |  |  |  |  |  |  |  |
| 717 | Sat |  | Arrive Ethiopia |  |  |  |  |  |  |  |
| 718 | Sun |  | Inland Transportation |  |  |  |  |  |  |  |
| 719 | Mon |  | AWRDB Meeting |  |  |  |  |  |  |  |
| $7 / 10$ | Tue |  | Technical Notes |  |  |  |  |  |  |  |
| $7 / 11$ | Wed |  | Inland Transportation |  |  |  |  |  |  |  |
| $7 / 12$ | Thu |  | JICA Report |  |  |  |  |  |  |  |
| $7 / 13$ | Fri |  | Departure Ethiopia |  |  |  |  |  |  |  |
| 7/14 | Sat |  | Arrive Japan |  |  |  |  |  |  |  |
| 7/15 | Sun |  |  |  |  |  |  |  |  |  |
| 7/16 | Mon |  |  |  |  |  |  |  |  |  |
| 7/17 | Tue |  |  |  |  |  |  |  |  |  |

(2) Explanation of Draft Report

| Date |  | JICA | Takeshi Nakano | Kenji Shinoda | Hisayuki Ukishima | Yusuke Oshika | Yosuke Yamamoto | Shinichi Ogawa | Masatoshi Tanaka | Kosuke Kikuchi |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\begin{aligned} & \text { Chief Consultant / } \\ & \text { Water Supply Facilty } \\ & \text { Planning } \end{aligned}$ | Sub Chief Consultant / Water Supply Facility Design/Pipeline Design/ Operation and Maintenance Planning | $\begin{array}{\|c\|} \hline \text { Hydrogeollogy } 11 \\ \text { Groundwater Developonent } \\ \text { Planning } 1 \end{array}$ | $\begin{gathered} \text { Hydrogeology } 21 \\ \text { Groundwater Development } \\ \text { Planning } 2 \end{gathered}$ | Environmental Social Consideration | Construction Planning / Procurement Planning / Cost Estimation | Test Well Drilling Supervision | Coordinator |
| 11/1 | Thu |  |  |  |  |  |  |  |  |  |  |
| 11/2 | Fri |  | Departure Japan | Departure Japan |  |  |  |  |  |  |
| 11/3 | Sat |  | Arrive Ethiopia | Arrive Ethiopia |  |  |  |  |  |  |
| 11/4 | Sun | Departure Japan | Data Collection | Data Collection |  |  |  |  |  |  |
| 11/5 | Mon | Arrive Ethiopia | AWRDB Meeting | AWRDB Meeting |  |  |  |  |  |  |
| 11/6 | Tue | AWRDB Meeting | AWRDB Meeting | AWRDB Meeting |  |  |  |  |  |  |
| 11/7 | Wed | MD Signing | MD Signing | MD Signing |  |  |  |  |  |  |
| 11/8 | Thu | MoW Report | MoW Report | MoW Report |  |  |  |  |  |  |
| 11/9 | Fri | JICA \& EOJ Report | JICA \& EOJ Report | JICA \& EOJ Report |  |  |  |  |  |  |
| 11/10 | Sat | Arrive Japan | Arrive Japan | Data Collection |  |  |  |  |  |  |
| 11/11 | Sun |  |  |  |  |  |  |  |  |  |
| 11/12 | Mon |  |  |  |  |  |  |  |  |  |
| 11/13 | Tue |  |  |  |  |  |  |  |  |  |

## Appendix 3

## List of Parties Concerned in the Recipient Country

(1) Amhara Water Resource Development Bureau

| Getachew Jember | Bureau Head |
| :--- | :--- |
| Zemene Tsehay Bogale | Depute Bureau Head |
| Dagnenet Fanta | Water Supply Core Process Owner |
| Asrat Kassie | Water Engineer |
| Memgesha Sisay | Geophysist |
| Dereje Yeshaneh | Hydrogeologist |
| Berhane Mehari | Socio-economist |
| Mohammed Onmer | Environmentalist |

## (2) Amhara Bureau of Finance and Economic Development (BoFED)

Mesfin G/medhin Birru
Ayanaw Assaye
Worku Gashaw

Deputy Bureau Head
Population Core Process Expert
Budget Subsidy Formula Preparation and Administration Office
(3) Water Supply \& Sanitation Directorate, Ministry of Water \& Energy

| Kebede Gerba | State Minister |
| :--- | :--- |
| Yohannes Ghebremedhen | Director |

(4) Environment Protection, Land Administration and Use Authority (EPLAUA)

Melisachew Fentie Expert in EIA Report Review, Auditing \&Monitoring
(5) Woreda Staff

Mertule Maryam
Mekonnene Abebe
Guley Dargey
Anbelu Abete
Mekonnel Abebe
Temesgen Getenet
Head of Water Supply Service
Administrator of Woreda Office
Head of Water Utility Organization
Head of Water Supply Board
Municipality Administrator
Yetimen
Getu Bassie
Andarjee Tihahun
Aschale Alamerey
Mebt Astatek
Head of Woreda Office
Yetimen School Director
Administrator of Woreda Office
Vice Administrator of Woreda Office

## Keranyo

Mekuriam Meselu
Accountant of Water Committee
Tadese Zewudie
Chairman

## Lumame

Teshome Assefaw
Administrator of Woreda Office

Bezia Behailu
Dereje Yalew Bimer
Deguwale Dagne
Tilahun Shiferaw Borebor
Mulu Alem Anime
Waltenguse Admasu
Lewudu Gete
Wojel
Dereje Primary School Director / Responsible for Water Affairs
Sedie
Tsegaye Adugna
Dibo
Wuletaw Abdela
Amanuel

| Getema Much | Head of Water Office |
| :--- | :--- |
| Molla Eniyew | Electrician |
| Geknet Kassie | Public relation of Woreda Office |

Kuch
Walelign
Gobeze Maryam
Tesfaye
Sefineh
(6) Embassy of Japan

Takehiro Okubo
Daisuke Komori
(7) JICA Ethiopia Office

Koji Ota
Makoto Shinkawa
Atsushi Nakagawa
Hideshi Yamashita
Yukiyasu Sumi
Ephrem Fufa Leta

Generalist
Mazegaba Manager
Health Officer
Head of Water Resource Development Office
Head of Administrator Office
Administrator of Kebele Office
D/Administrator of Kebele Office

Chairman

Member of Water Committee

Public relation of Woreda Office

Municipality Head of Woreda Office

Head of Woreda Water Office
Municipality Office Manager

Minister-Counselor
Economic Division

Chief Representative
Senior Representative
Senior Representative
Representative (Administration / Accountant)
Project Formulation Advisor (Water Sector)
In-house Consultant for Water Sector

Appendix 4 Minutes of Discussions

## (1) Minutes of Discussions (October 18, 2011)

## MINUTES OF DISCUSSIONS <br> ON THE SECOND PREPARATORY SURVEY ON THE PROJECT FOR SMALL TOWN WATER SUPPLY IN SOUTHERN PART OF THE AMHARA REGIONAL STATE IN THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

Based on the results of the First Preparatory Survey, the Government of Japan decided to conduct the Second Preparatory Survey on the Project for Small Town Water Supply in Southern Part of the Amhara Regional State (hereinafter referred to as "the Project") and entrusted the survey to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Ethiopia the Second Preparatory Survey Team (hereinafter referred to as "the Team") headed by Yuji MARUO, Senior Advisor, JICA, and is scheduled to stay in the country from September $20^{\text {th }} 2011$ to February $21^{\text {st }} 2012$.

The Team held discussions with the officials concerned of the Government of Ethiopia and conducted a field survey in Amhara Regional State.

In the course of discussions and field survey, both sides confirmed the main items described on the attached sheets. The Team will proceed to further works and prepare the Preparatory Survey Report.

Bahir Dar, October $18^{\text {th }}, 2011$


## 1. Objective of the Project

The objective of the project is to improve access to safe water through the development of water supply schemes in small towns of the Amhara Regional State.

## 2. Target Sites

11 towns which is shown in the Annex-1 was selected as the target for the second preparatory survey based on the result of the first preparatory survey and analysis in Japan.

11 target towns are shown below.
East Gojam Zone (7): Mertule Maryam, Yetimen, Keranyo, Lumame, Wejele, Sadie, Dibo
West Gojam Zone (4): Gonj Kollela, Kuchie, Gebez Maryam, Kunzila

## 3. Responsible and Implementing Agency

3-1. The Responsible Agency and Implementing Agency is the Water Resources Development Bureau, Amhara Regional State (hereinafter referred to as "AWRDB").

3-2. The organization chart of the implementing agency is shown as Annex-2.

## 4. Japan's Grant Aid Scheme

4-1. The Ethiopian side understood the Japan's Grant Aid Scheme explained by the Team as described in Annex-3.

4-2. The Ethiopian side will take necessary measures as described in Annex-4 for smooth implementation of the Projects, as a condition for the Japan's Grant Aid to be implemented.

4-3. The Team will report to the Ethiopian side if there are any other undertakings of the Ethiopian side based on the result of this survey.
4-4. The Team explained that implementation of the Second Preparatory Survey is not a commitment of the approval of the Project.

## 5. Schedule of the Survey

5-1. The consultants will proceed to undertake further survey in Ethiopia until the end of February 2012.
5-2. If the Project is found feasible as the result of the Second Preparatory Survey, JCA will prepare the draft report in English and dispatch a mission in order to explain its contents around August 2012.
5-3. In case that the contents of the draft report are accepted in principle by the Ethiopian side, JICA will complete the final report and send it fothe-Ethiopian side around September


## 6. Test Borehole Drillings

The Team explained that the purpose of test borehole drilling is to confirm groundwater availability for the development of water supply schemes in the target sites. Those boreholes which are confirmed with sufficient yield and drinkable water quality will be converted to the production wells in the construction stage. Successful boreholes would be properly protected by the Ethiopian side until the commencement of the construction stage of the Project.

So far up to 23 test boreholes are planned to be drilled as far as survey duration and amount of budget allows. All 11 sites must have at least one test borehole. As for the remaining at most 12 test boreholes, both sides, after having the result of initial 11 test drillings, will discuss each other and put priorities on certain target sites to carry out additional test borehole drillings. The Ethiopian side agreed it.

If the any test boreholes are chy wells or yields insufficient amount, the Team will consult with relevant personnel of AWRDB for their advises what to do with these boreholes, ie to abandon the well or to install the casing and conduct pumping test.

## 7. Outline Design and Cost Estimation at the Preparatory Survey stage

The Team will make design and estimate the cost at those target sites in which test boreholes are proved to produce sufficient yield for the water supply schemes of the sites.

Those target sites in which test boreholes do not yield necessary amount or do not clear drinking water quality standard of the Ethiopia, the Team will explore springs which locate within the feasible distance for the Project as possible alternative water sources for the water supply scheme.

However, surface water is not considered as the alternative sources in this Project. Those target site in which either yield of borehole or discharge of springs are too small for the water supply scheme would be removed from the Project.
8. Major Contents of the Project at the Implementation stage

Both sides confirmed that the contents of the Project are as follows;
(1) Construction of water supply schemes

Construction of water supply schemes will be implemented at those sites in which test boreholes proved to produce sufficient yield for the respective water supply schemes.
(2) Human resources development activities (Soft component)

The Project will provide necessary trainings for appropriate operation, maintenance and management of water supply schemes targeting-staffs the Water Supplysivige Office (WSSO) which was selected to be implemented in the Project.


The final contents of the Project will be presented after the detailed analysis in Japan and will be decided by both sides during the explanation of draft final report.

## 9. Design Year and Water Coverage

Both sides already confirmed that design year of the Project was set as the year 2015 at the First Preparatory Survey, but the progress of Preparatory Survey has delayed by around one year, therefore, both sides agreed that revised design year would be set as the year 2016.

While making the outline design of the water supply scheme, the team intend to acquire $100 \%$ water coverage of projected water demand at the year of 2016 as much as safe yield of test boreholes exceeds the amount of demand. The Ethiopian side agreed with it.

## 10. Electric Resistivity Prospecting and Siting for Test Borehole

As it was agreed during the First Preparatory Survey, the Team would carry out electric sounding survey and siting for the test borehole drilling in close collaboration with AWRDB. For efficient execution of those works, since the Ethiopian side has got the better knowledge on hydrogeological condition in the sites, the Team requested to the Ethiopian side to always deploy appropriate personnel to work together with the Team during the execution of those works, and the Ethiopian side agreed.

## 11. Installation of Back Up Generator

The Team explained that in case of motor pump water supply scheme, operation and maintenance ( $O \& M$ ) cost is far cheaper to use the power of commercial grid if it is available than to be driven by generator. So that it is ЛCA's policy to use the power of commercial grid for the development of water supply schemes as much as possible. However the Ethiopian side requested the Team to install backup generator since blackout is frequent in those areas due to the chronicle power shortage. The Team explained that the Team will investigate present power supply condition and O\&M costs in each case at respective target sites, and will assess the appropriateness of the request.
In connection to this, the Team requested to the Ethiopian side that the extension of power line from the existing grid to the newly drilled borehole site must be carried out by the responsibility of the Ethiopian side until the beginning of the construction. And the Ethiopian side agreed


## 12. Undertakings by the Ethiopian side

The Team requested to the Ethiopian side to secure necessary amount of budget and to abide by undertakings listed below for the smooth implementation of the survey and the Project in addition to the major undertakings described in Annex-4.
(1) To provide the Team with available relevant data, information and materials necessary for the execution of the survey,
(2) To answer the Questionnaire presented by the Team,
(3) To ensure the safety and security of the Team,
(4) To secure any permissions for the Team to take photographs and to enter into private properties and restricted areas for proper execution of the survey,
(5) To allow the Team to bring back to Japan the necessary data, information, maps and materials related to the survey, in order to prepare the survey reports,
(6) To assign necessary number of counterpart personnel ( $\mathrm{C} / \mathrm{Ps}$ ) with its own expenses to the Team during their stay in Ethiopia to undertake the following activities:

- To make appointments and set up meetings with relevant authorities wherever the Team intends to visit,
- To collect the data and information,
- To conduct site survey,
- To inspect test drilling and pumping test,
(7) To secure lot of land necessary for newly constructed facilities including test boreholes, pipelines, distribution reservoirs and public taps,
(8) To take prompt action for exemption and refund of VAT in coordination with relevant departments,
(9) To install power line from the existing commercial grid to the new borehole sites before the commencement of the construction,
(10) To carry out environmental impact assessment (EIA) for the Project, if necessary, and to obtain approval from the relevant Authority until August 2012 and to bear the necessary expenses.
(11) To establish new WSSOs in the target sites as soon as the implementation stage starts,
(12) To protect test boreholes which are to be used as production boreholes until the commencement of the construction.

Annex:
Annex-1 Location Map of the Target Site
Annex-2 Organization Chart of the Implementation Agency
Annex-3 Japan's Grant Aid Scheme Annex-4 Major Undertakings to be taken by Each Gôvernment



Annex-2


[^0]
## Japan's Grant Aid Scheme

The Grant Aid Program provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. Grant Aid is not supplied through the donation of materials as such.

## 1. Grant Aid Procedure

1) Japan's Grant Aid Program is executed through the following procedures.

| Application | (Request made by a recipient country) |
| :--- | :--- |
| Survey | (Outline Design Survey conducted by JICA) |
| Appraisal \& Approval | (Appraisal by the Government of Japan and Approval by |
|  | $\quad$ Cabinet) |
| Determination of | (The Notes exchanged between the Governments of Japan |
| Implementation | and the recipient country) |

2) Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA to conduct a survey on the request. If necessary, JICA send a Preparatory Survey Team to the recipient country to confirm the contents of the request.

Secondly, JICA conducts the survey (Outline Design Survey), using Japanese consulting firms.
Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Programme, based on the Outline Design Survey report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Governments of Japan and the recipient country.

Finally, for the implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

## 2. Outline Design Survey

1) Contents of the Survey

The aim of the Outline Design Survey (hereinafter referred to as "the Survey"), conducted by IICA on a requested project (hereinafter referred to as "the Project"), is to provide a outline document necessary for the appraisal of the Project by the Government of Japan. The contents of the Survey are as follows:
a) confirmation of the background, objectives and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation
b) evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme, from the technical; social and economic points of view;
c) confirmation items a greet on by both parties concerning the outline concept of the Project;
d) preparation the outline design of the Project; and


e) estimation of costs of the Project.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Outline Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even through they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.
2) Selection of Consultants

For the smooth implementation of the Survey, JICA uses a consulting firm selected through its own procedure (competitive proposal). The selected firm participates the Survey and prepares a report based upon the terms of reference set by JICA.

At the beginning of implementation after the Exchange of Notes, for the services of the Detailed Design and Construction Supervision of the Project, JICA recommends the same consulting firm which participated in the Survey to the recipient country, in order to maintain the technical consistency between the Outline Design and Detailed Design as well as to avoid any undue delay caused by the selection of a new consulting firm.
3. Japan's Grant Aid Scheme

1) Exchange of Notes ( $\mathrm{E} / \mathrm{N}$ )

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.
2) "The period of the Grant" means the one fiscal year which the Cabinet approves the project for. Within the fiscal year, all procedure such as exchanging of the Notes, concluding contracts with consulting firms and contractors and final payment to them must be completed.
However, in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.
3) Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However, the prime contractors, namely consulting, contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanes e-nationals" means persons of Japanese nationality or Japanese corporations controlled byprisons of Japanese nationality.) . . . marat $N$
4) Necessity of "Verification"

The Government of the recipient country
denominated in Japanese yen with Japanese


Government of Japan. This "Verification" is deemed necessary to secure accountability of Japanese taxpayers.
5) Undertakings required to the Government of the recipient country
a) to secure a lot of land necessary for the construction of the Project and to clear the site;
b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities outside the site;
c) to ensure prompt unloading and customs clearance at ports of disembarkation in the recipient country and internal transportation therein of the products purchased under the Grant Aid;
d) to exempt Japanese nationals from customs duties, internal taxes and fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts;
e) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such as facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work;
f) to ensure that the facilities constructed and products purchased under the Grant Aid be maintained and used properly and effectively for the Project; and
g) to bear all the expenses, other than those covered by the Grant Aid, necessary for the Project.
6) "Proper Use"

The recipient country is required to maintain and use the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign the necessary staff for operation and maintenance of them as well as to bear all the expenses other than those covered by the Grant Aid.
7) "Re-export"

The products purchased under the Grant Aid shall not be re-exported from the recipient country.
8) Banking Arrangement ( $\mathrm{B} / \mathrm{A}$ )
a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the verified contracts.
b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay issued by the Government of recipient country or its designated authority.
9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commission to the Bank.


FLOW CHART OF JAPAN's GRANT AID PROCEDURES


Major Undertakings to be taken by Each Government (Construction)

| No. | Items | To be covered by Grant Aid | To be covered by Recipient Side |
| :---: | :---: | :---: | :---: |
| 1 | to secure [a lot]/[lots] of land necessary for the implementation of the Project and to clear the [site]/[sites]; |  | - |
| 2 | To ensure prompt unloading and customs clearance of the products at ports of disembarkation in the recipient country and to assist internal transportation of the products |  |  |
|  | 1) Marine (Air) transportation of the Products from Japan to the recipient country | - |  |
|  | 2) Tax exemption and custom clearance of the Products at the port of disembarkation |  | - |
|  | 3) Internal transportation from the port of disembarkation to the project site | - |  |
| 3 | To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the purchase of the products and the services be exempted |  | - |
| 4 | To accord Japanese nationals whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work |  | - |
| 5 | To ensure that [the Facilities and the products]/[the Facilities]/ [the products] be maintained and used properly and effectively for the implementation of the Project |  | - |
| 6 | To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project. ${ }^{3} 1$ |  | - |
| 7 | To bear the following commissions paid to the Japanese bank for banking services based upon the B/A |  |  |
|  | 1) Advising commission of A/P |  | - |
|  | 2) Payment commission |  | - |
| 8 | To give due environmental and social consideration in the implementation of the Project. |  | - |

(B/A: Banking Arrangement, A/P: Authorization to pay)
; ${ }^{1}$ Details are specified in the article 12 of Minutes of Discussion.


## (2) Minutes of Discussions (February 17, 2012)

## MINUTES OF DISCUSSIONS

# ON THE SECOND PREPARATORY SURVEY <br> ON THE PROJECT FOR SMALL TOWN WATER SUPPLY <br> IN SOUTHERN PART OF THE AMHARA REGIONAL STATE IN THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA <br> (Additional Survey) 

From September 2011 to February 2012, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Second Preparatory Survey Team (hereinafter referred to as "the Team") on the Project for Small Town Water Supply in Southern Part of the Amhara Regional State (hereinafter referred to as "the Project") to Ethiopia. The Team carried out field survey which include 20 test well drillings at 11 target towns.

After having the result of the initial test well drillings, JICA decided to send Dr. Yuji MARUO to Ethiopia in order to consult with the Government of Ethiopia on some additional target towns at which the Team will conducts supplemental field survey including with some more test well drillings, from February $13^{\text {rd }}$ to February $21^{\text {st }} 2012$.

The Team, with Dr. Yuji Maruo and Mr. Dereje Yeshaneh made reconnaissance site visit at 7 (seven) candidate towns out of 8 (eight) candidate sites proposed by Ethiopian side for additional target towns (see attached map). After discussion both sides agreed that Bikolo and Amanuel were selected for additional target towns at which the Team will carry out at most three test well drillings at respective town together with other survey items as geophysical exploration, land survey and socio-economic survey.

Bahir Dar, February $17^{\text {th }}, 2012$


Dr. Yuji MARUO
Leader
Second Preparatory Survey Team Japan International Cooperation Agency



## (3) Technical Notes (July 10, 2012)

## TECHNICAL NOTES <br> ON THE SECOND PREPARATORY SURVEY ON THE PROJECT FOR SMALL TOWN WATER SUPPLY IN SOUTHERN PART OF THE AMHARA REGIONAL STATE IN THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

Based on the Minutes of Discussions signed on the 18th day of October 2011 and the 17th day of February 2012 between the Second Preparatory Survey Team (hereinafter referred to as "the Team") of Japan International Cooperation Agency (hereinafter referred to as "JICA") and Bureau of Water Resource Development, Amhara Regional State (hereinafter referred to as "AWRDB") on The Project for Small Town Water Supply in Southern Part of the Amhara Regional State (hereinafter referred to as "the Project"), the consultant members of the Team had a series of discussions and conducted field surveys from the 20th day of September 2011 to the 10th day of July 2012.
As a result of the discussions and the surveys, AWRDB and the Team (hereinafter referred to as "both sides") confirmed the technical conditions described in the attached sheets.

The detail of the contents of the Project shall be decided upon further surveys and discussion between both sides.


## ATTACHMENT

## 1. GENERAL

Both sides have agreed and confirmed the following items:

## 1-1 Candidate Sites

The thirteen (13) candidate sites shown below will be adopted.
Table 1: Name of Candidate Sites

| ID | Zone | Woreda | Town |
| :---: | :---: | :---: | :---: |
| 9 | East Gojam | Enebsie Sar Midir | Mertule Maryam |
| 10 |  | Enemay | Yetimen |
| 11 |  | Hulet Egu Enesie | Keranyo |
| 12 |  | Awabel | Lumame |
| 14 |  | Awabel | Wojel |
| 15 |  | Hulet Egu Enesie | Sedie |
| 16 |  | Enebsie Sar Midir | Dibo |
| - |  | Machakel | Amanuel |
| 24 | West Gojam | Gonji Kollela | Addisalem |
| 26 |  | Bure | Kuch |
| 27 |  | Quarit | Gobeze Maryam |
| 29 |  | Semen Achefer | Kunzila |
| - |  | Macha | Bikolo |

## 1-2 Population and Growth Rate

The population in 2012, and estimate for 2016 of the candidate sites, as shown below, will be adopted.

Table 2: Population (2012 and 2016)

| ID | Town | Population (2012) | Annual growth rate | Population (2016) |
| :---: | :---: | :---: | :---: | :---: |
| 9 | Mertule Maryam | 15,124 | 4.2\% | 17,829 |
| 10 | Yetimen | 3,289 |  | 3.877 |
| 11 | Keranyo | 2,101 |  | 2,477 |
| 12 | Lumame | 11,410 |  | 13,451 |
| 14 | Wojel | 3,188 |  | 3,758 |
| 15 | Sedie | 3,348 |  | 3,947 |
| 16 | Dibo | 2,129 |  | 2,510 |
| - | Amanuel | 10,768 |  | 12,694 |
| 24 | Addisalem | 5,247 |  | 6,186 |
| 26 | Kuch | 6,865 |  | 8,093 |
| 27 | Gobeze Maryam | 5,860 |  | 6,908 |
| 29 | Kunzila | 5,767 |  | 6,799 |
| - | Bikolo | 4,929 |  | 5,811 |
|  | Total | 80,025 | - | 94,340 |

The population data of Dibo does notexist, therefore, the population of Dibo has been calculated with average basic household Eate ( 4,2 head/household) after counting the number

of household from the satellite imagery data by the Team. The calculated population of Dibo in 2012 is 2,129 people.

## 1-3 Water Supply Basic Unit

Water supply basic unit will be adopted twenty (20) liters per capita per day ( $20 \mathrm{l} / \mathrm{c} / \mathrm{d}$ ).

## 1-4 Unit Integration

The units for the Project will be according to SI (International System).

## 2. RESULT OF THE SURVEYS

Both sides have agreed and confirmed the following items:

## 2-1 Social Condition Survey

Social condition surveys have been conducted at thirteen (13) sites.
The survey results will be utilized to confirm the willingness to accept new water supply project, and referred to calculate the water fee for operation and maintenance and to consider the organization and system for operation and maintenance for new water supply facilities.

## 2-2 Topographic Survey

Topographic surveys have been conducted at thirteen (13) sites.
The survey results will be utilized to plan and design the new water supply facilities.

## 2-3 Geophysical Survey

Geophysical surveys have been conducted at thirteen (13) sites.
The survey results were referred to decide test well drilling points.

## 2-4 Test Well Drilling

Test well drilling has been conducted at twenty five (25) points at twelve (12) sites except Bikolo, because test well at Bikolo has already been drilled by AWRDB.

The drilling results were that six (6) sites (Yetimen, Lumame, Wojel, Sedie, Dibo and Amanuel) were successful and six (6) sites (Mertule Maryam, Keranyo, Addisalem, Kuch, Gobeze Maryam and Kunzila) were unsuccessful.

The final drilling success rate was $24 \%$ ( 6 wells of 25 wells).


[^1]Table 3: Result of Test Well Drilling

| ID | Town | 1st test well | 2nd test well | 3rd test well | 4th test well |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 9 | Mertule Maryam | Unsuccessimf 9 | Diy hole |  |  |
| 10 | Yetimen | Successful |  |  |  |
| 11 | Keranyo | Diy frole | Unsuscessini 9 | Diy hole |  |
| 12 | Lumame | Diy hole | Unsuccessiul 7 | Successfil |  |
| 14 | Wojel | Successful |  |  |  |
| 15 | Sedie | Successful |  |  |  |
| 16 | Dibo | Successful |  |  |  |
| - | Amanuel | Successful | Dry hole |  |  |
| 24 | Addisalem | Diy hole | Diy hale |  |  |
| 26 | Kuch | Dry riole | Diy hale | Diy fale |  |
| 27 | Gobeze Maryam | Diy hole | Dis nole |  |  |
| 29 | Kunzila | Hnsuccessful 2 | Unsugresemil' 1 | Dy hole | Diy hole |
| - | Bikolo | Successful (Conducted by AWRDB) |  |  |  |
|  | Not sufficient yield Not sufficient water | uality |  |  |  |

Table 4: Result of Pumping Test

| ID | Town | Quantity (L/sec.) | Water source |
| :---: | :--- | ---: | :--- |
| 10 | Yetimen | 8.70 | Groundwater |
| 12 | Lumame | 8.86 | Groundwater |
| 14 | Wojel | 7.80 | Groundwater |
| 15 | Sedie | 8.90 | Groundwater |
| 16 | Dibo | 8.90 | Groundwater |
| - | Amanuel | 3.00 | Groundwater |

## 2-5 Existing Water Source Survey

Existing water source survey has been conducted at six (6) sites (Mertule Maryam, Keranyo, Addisalem, Kuch, Gobeze Maryam and Kunzila) to detect alternative water sources.

Two (2) sites (Mertule Maryam and Gobeze Maryam) have existing spring source with sufficient water quantity for planning of water supply facility scheme, however four (4) sites (Keranyo, Addisalem, Kuch and Kunzila) have no existing water source.

Table 5: Result of Existing Water Source Survey

| ID | Town | Quantity (L/sec.) | Water source |
| :---: | :---: | ---: | :---: |
| 9 | Mertule Maryam | 11.42 | Spring |
| 27 | Gobeze Maryam | 3.96 | Spring |

## 2-6 Water Quality Analysis

Water quality analysis has been conducted seventeen (17) points, eight (8) test drilling points, three (3) existing wells (Keranyo and Lumame) and six (6) spring source points (Mertule Maryam and Gobeze Maryam).

The value of Nitrate of first test well at Kunzilajexceeds Ethiopian water quality standards; therefore, this drilling point at Kunzila was evaluaged as unsuccessfubfor production well.

## 2-7 Water Supply Facility Plan

Based on test well drilling and water quality analysis, seven (7) sites (Yetimen, Lumame, Wojel, Sedie, Dibo, Amanuel and Bikolo) will be planned for water supply facility scheme by groundwater.

Based on existing water source survey and water quality analysis, a water supply facility schemes by spring water collection will be planned at two (2) sites (Mertule Maryam and Gobeze Maryam).

However, four (4) sites (Keranyo. Addisalem, Kuch and Kunzila) have been excluded from the Project because of no water source was found.

Table 6: Plan of Water Source for New Facilities

| ID | Town | Groundwater | Spring source | Water source |
| :---: | :--- | :---: | :---: | :---: |
| 9 | Mertule Maryam | Nons | Existing | Spring |
| 10 | Yetimen | Existing | - | Groundwater |
| 11 | Keranyo | Nons | None | Excluded |
| 12 | Lumame | Existing | - | Groundwater |
| 14 | Wojel | Existing | - | Groundwater |
| 15 | Sedie | Existing | - | Groundwater |
| 16 | Dibo | Existing | - | Groundwater |
| - | Amanuel | None | - | Groundwater |
| 24 | Addisalem | Nons | None | Excludad |
| 26 | Kuch | None | Existing | Excluded |
| 27 | Gobeze Maryam | Nons | None | Exring |
| 29 | Kunzila | Existing |  | Erelrden |
| - | Bikolo |  | Groundwater |  |

## 2-8 Environmental Impact Assessment (EIA)

Initial Environmental Examination (IEE) requires no action according to Amhara Environmental Impact Assessment (EIA) guideline, because the water supply quantity by new facilities will be planned less than $500 \mathrm{~m}^{3} / \mathrm{day}$. As the comprehensive result of evaluation, as shown in EIA guideline, there will be very low level of negative environmental impact caused by the construction, operation and maintenance of the water supply facilities in the Project.

## (1) Social Environmental Condition

In four (4) sites (Sedie, Dibo, Gobeze Maryam and Bikolo), the distribution reservoir will be planned in public land. Therefore, the problem of land acquisition is not expected to occur. In the other sites, there is no negative impact, because new facilities will be planned within the land of existing facilities.

## (2) Natural Environmental Condition

The bird family Ardeidae (Ciconia Ciconia) was confirmed topexist in Kuch. However, this species is categorized as the criteria of "least concern" according to IUCN (International Union for Conservation of Nature and Natural Resolurces) Red List of Threatened Species. Moreover, the Project is not expected to have an impact on this species. Therefore, there

would be no negative impact on the ecology and biodiversity.

## 3. FUTURE SCHEDULE

Both sides have agreed and confirmed that the survey results would be used for analysis in Japan, and then the Team will make Project designs and estimate Project cost. Then the result of plan and cost estimation for the Project will be reported and explained by the Team on October 2012.


## (4) Minutes of Discussions (November 7, 2012)

Minutes of Discussions
on
The Preparatory Survey
for
The Project for Small Town Water Supply in Southern Part of the Amhara Regional State in the Federal Democratic Republic of Ethiopia
(Explanation on Draft Report)

In October 2011, the Japan International Cooperation Agency (hereinafter referred to as "JCA") dispatched a Preparatory Survey Team on the Project for Small Town Water Supply in Southern Part of the Amhara Regional State (hereinafter referred to as "the Project") to the Federal Democratic Republic of Ethiopia (hereinafter referred to as "Ethiopia") and through discussion, field survey, and technical examination of the results in Japan, JICA prepared a draft report of the study.

JICA dispatched to Ethiopia the Draft Report Explanation Team (hereinafter referred to as "the Team "), which was headed by Dr. Yuji MARUO, Senior Advisor of JICA, from November $5^{\text {th }}-8^{\text {th }}$, 2012 to consult the Ethiopia authorities on the components of the draft report.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

Bahir Dar, November $7^{\text {th }}, 2012$


## ATTACHMENT

## 1. Components of the Draft Report

The Ethiopia side agreed and accepted in principle the components of the draft outline design explained by the Team.

## 2. Japan's Grant Aid scheme

The Ethiopia side understood the scheme of Japan's Grant Aid and would take the necessary measures and allocate necessary budget timely for smooth implementation of the Project, as a condition for the Japanese Grant Aid to be implemented. The Grant Aid Scheme and necessary measures were described in the Annex 3, and 4 of the Minutes of Discussions signed by both sides on October $18^{\text {th }}, 2011$ (hereinafter referred to as "the previous minute").
Both sides confirmed that the dispatch of the Team is not necessarily a commitment of the Project to be implemented and that the scope of the Project would be examined further by the Government of Japan for its approval as a Grant Aid.

## 3. Selected Sites

9 towns which are shown in the Annex-3 were selected as the project sites based on the result of the preparatory surveys and analysis in Japan.
9 selected sites are shown below.
East Gojam Zone (7): Mertule Maryam, Yetimen, Lumame, Wojel, Sedie, Dibo, Amanuel
West Gojam Zone (2): Gobeze Maryam, Bikolo

## 4. Responsible and Implementing Organization

4-1 The Responsible and Implementing Agency is the Amhara Water Resources Development Bureau (hereinafter referred to as "AWRDB").
4-2 The Organization chart of the implementing agency is shown as Annex-4.

## 5. Schedule of the Study

JICA will complete the final report in accordance with the confirmed items and send it to Ethiopia by the end of December, 2012.

## 6. Other Relevant Issues

## 6-1 Components of the Project

The project sites and components of the project are shown in Annex-1 and 2.

## 6-2 Project Cost Estimate

The Foxplained the estimated project cost to the Ethiopia side as shown in Annex-5. Both sides confirmed that this estimated cost was provisional and would be examined further by the Government of Japan for its, fifign approval. Furthermore, both sides confirmed that this estimated cost is confidential, ap shictld hexer de en duplicated in any forms or released to any other parties
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## 6-3 Securing Project sites

Both sides agreed that the Ethiopia side takes necessary measure for securing the project sites until commencement of the Project.

## 6-4 Technical Assistance

Both sides agreed that technical assistance by Japanese consultants will be carried out in order to strengthen the capacity of Water Management Organization (WMO) and Woreda water office in terms of O\&M of water supply facilities during the implementation period. The contents of technical assistance is shown in Annex-2.

## 6-5 Undertakings by the Ethiopia Side

(1) Allocation of Necessary Budget

The Ethiopia side agreed that it would allocate the necessary amount of budget timely (Annex-5) for smooth implementation of the Project, and would assign counterpart personnel by its own expense to the Japanese consultants during the implementation of the Project.

## (2) Tax Exemption and Custom Clearance

Both sides confirmed that the Ethiopia side shall take necessary measures to exempt Japanese nationals who will be engaged in the Project from all duties and related fiscal charges which may be imposed in Ethiopia with respect to local procurement under the verified contract.
Both sides also confirmed that the Ethiopia side shall take necessary measures to implement smooth custom clearance for the materials and equipment for the Project to be imported from Japan or third countries.

## (3) Environmental Impact Assessment (EIA)

As the result of evaluation conducted by the JICA Survey Team on the environmental condition of the project sites, there would be negligible environmental and social impacts from the Project according to the criteria of the Environmental Impact Assessment Procedural Guideline in Amhara regional state. The Ethiopia side also assured it.

## (4) Protection of Test Boreholes

The Ethiopia side agreed that the test boreholes drilled in the survey shall be protected safely by the Ethiopia side until the commencement of the Project.

## (5) Land use permission

Both sides confirmed that the entire land in Ethiopia is government owned under Ethiopian law, so that there is no obstacle in acquiring the land for construction of public faucets; reservoir tanks, generator houses, the collection chamber etc. Those construction sites have already been confirmed



[^0]:    Annex-2 Organization Chart of the Implementation Agency (Amhara Water Resource Development Bureau )

[^1]:    -2-

