

ETHIOPIAN WATER TECHNOLOGY CENTER (EWTEC) PROJECT
ETHIOPIAN WATER RESOURCES (MoWR)
AND
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

THE CONSTRUCTION OF COMMUNITY WATER SUPPLY SYSTEM IN KUNO KERTAFA AND DOBENA BATI



COMPLETION REPORT

APRIL 2007

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Plc.**

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1 INTRODUCTION

In accordance with the Contract for the Construction of Community Water Supply Systems in Kuno Kertafa and Dobena Bati dated 9th February 2007, between the Client:

Ethiopian Water Technology Centre (EWTEC);

And the Consultant:

AG-Consult Consulting Hydrogeologists and Engineers;

The Consultant started the work on February 9, 2007 and completed on March 31st 2007.

1.1 DESCRIPTION OF THE PRESENT REPORT

This report describes about the constructed systems and its facilities and asbuilt drawings of the community water supply system at Kuno Kertafa and Dobena Bati.

1.2 BACK GROUND INFORMATION

1.3 PROJECT LOCATION

Kuno kertefa village is located about 15 km from Butajira town
Dobona Bati village is is located about 10 km from Butajira town

1.4 OBJECTIVE OF THE PROJECT

The project objective is to promote appropriate technology through demonstration for water use by the Ethiopian Water Technology Center (EWTEC). Under the present construction the objective was to demonstrate rope pump technology (both motorized and manual rope pumps)

1.5 NUMBER AND TYPE OF SCHEME CONSTRUCTED

Three rope pumps are installed in the two villages. The following are the constructed facilities;

- One motorized rope pump at Kuno Kertafa ,
- One manual rope pump for household use at Kuno Kertafa,
- One manual rope pump for community water supply at Dobena Bati

1.6 WELL CAHARCTERISTICS

The following is summary of the wells wehere the above pumps are installed.

At Kuno Kertefa

- Deep well is drilled by the EWTEC

- Depth:-163m
SWL:-11.4m
- Traditional hand dug well
Depth:-12.8m
SWL:-10.7m

At Dobana Bati

- hand dug well is constructed by the owner
- Depth:-14.9m
- SWL:-13.9m

2 DESIGN AND CONSTRUCTION

2.1 SURVEYING AND DESIGN

The Ethiopian Water Center and AG consultant Hydrologist and Engineers carried out surveying and small water scheme design

2.2 WATER SUPPLY SCHEME CONSTRUCTION AND SUPERVISION

The supervision is carried out by the Ethiopian Water Technology Center and the construction work is done by AG consultant Hydrologist and Engineers

2.3 COMMUNITY PARTICIPATION

The community participated by providing the land plot for the facilities ,trench excavation, back filling for the pipe line and fence work.

2.4 CONSTRUCTED FACILITIES

2.4.1 Project site Kuno Kertefa

Work started:- February 8\2007
Work Finished:- March 26\2007

2.4.1.1 Facilities constructed during the implementation of the project

Pipe work:-

Total Pipe work:-

Total pipe laid length

3\4 GSP;-	<u>2.3m</u>
1\1\2' GSP;-	<u>30m</u>
1\2" PVC;-	<u>9.6m</u>
1' PVC;-	<u>35.5 m</u>

Reservoir:-

Type of reservoir:- steel 3mm thick
Qty. One
Capacity:- 2000lt (2m3)

Accessories:-

- Outlet and drainage gate valves
- Pipe stand which is braced with angle iron

Water point:-

Qty. one
Construction materials;- masonry and concrete
Accessories :-four water taps
Water meter and other fittings

Cloth washing basin:-

Qty. one
Construction materials;- masonry and concrete
Accessories :-two water taps

Drip irrigation facilities

Qty three
Accessories :- three water taps
Three plastic water buckets
90m length drip pipe for three plot

Hand wash basin

For clinic toilet
Qty. one
Construction materials;- concrete
Accessories :- water tap and drainage facilities
For clinic office :-
Qty. one
Construction materials :- ceramic
Accessories :- water tap and drainage facilities

Laboratory sink:

Qty. one
Construction materials aluminum
Accessories :- water tap and drainage facilities

Installation of pump

Qty. one
Type of pump:- engine driven rope pump
Accessories :-

- PVC pipe and fittings
- Concrete slab (1pc)
- Concrete pipe (3pcs)
- 1" pistons, nylon rope and turning point



Photo 1, Constructed Public Fountain at Kuno Kertafa



Photo 2. Construction of Public Fountain At Kuno Kertafa



Photo 3. 2m³ steel elevated tanker constructed at Kuno Kertafa



Photo 4. Gathering at the public fountain while testing the system



Photo 5. View of the Motorized rope pump and the steel tanker



Photo 6. Washing basin



Photo 7. Sink for hand washing installed in the clinic



Photo 8. Drip irrigation installed at Kuno Kertafa Farmers Training

2.4.2 Ato Bulema Private Hand Dug Well at Kuno Kertafa Village

Pump installation:-

Type of pump:- common rope pump

Accessories:-

- PVC pipe and fittings
- Concrete slab (1pc)
- Concrete pipe (.5pcs)
- 3/4" pistons, nylon rope and turning point

Masonry work:-

Masonry protection was constructed in the upper part of the hand dug well in order to protect the well from collapsing and to keep the well diameter size convenient to fix concrete ring.



Photo 9. View of the hand dug well of Ato Bulema before installation of rope pump



Photo 10. View of the hand dug well of Ato Bulema after masonry work and installation of concrete ring



Photo 11. Installation of Rope pump at Ato Bulema dug well

2.4.3 Project Site: - Dobena Bati

According to the agreement and study initially it was planned to install electric driven motorized rope pump by increasing the depth of the well by about 5 m. However further digging found to be very difficult for dewatering and increase the depth with the existing diameter of the well. With the existing depth the discharge of the well could not support motorized rope pump. After many trials to increase the depth finally based on the discussion between EWTEC and AG – Consult the pump type was changed and common (manual) rope pump was installed.

- Work started to increase the depth well :-March,23\2007_ 25\2007
- Work Started:- March,26\2007
- Work Finshed:-March,31\2007

2.4.3.1 Constructed facilities

Total pipework:-

Pipe laid length:-
1\2”GSP:-3m
1”PVC:-22m

Reservoir:-

Type of reservoir;- Steel 3mm thickness
Qty. :-One
Reservoir capacity:-500lt (0.5m3)

Accessories:-

- Outlet and drainage gate valves
- Pipe stand

Water point:-

Qty. :- One
Construction materials;- masonry and concrete
Accessories :-Two water taps and other fittings

Drip irrigation facilities

Qty :- Three
Accessories :-

- Three water taps
- Three plastic water buckets
- 90m length drip pipe for three plot

Pump installation:-

Type of pump:- common rope pump
Accessories :-

- PVC pipe and fittings
- Concrete slab (1pc)
- Concrete pipe (2.5pcs)
- 3\4” pistons, nylon rope and turning point



Photo 12. Trial to increase the depth of Dobena Biati Dug well



Photo 12. The owner of the well entering the well for deepening its depth



Photo 13. Removing dewatering pump after unsuccessful trial



Photo 14. Construction of Dobena Bati community water supply with common rope pump



Photo 14. The owner of the well pumping using the installed rope pump



Photo 15. The owner of the well pumping using the installed rope pump



Photo 16. Women at the Dobena Bati Public fountain while fetching water



Photo 17. Women at the Dobena Bati Public fountain while fetching water



Photo 17. Drip irrigation installed at Dobena Bati

2.5 ASBUILT DRAWINGS

The following figure 1 and 2 shows the as built drawings for Dobena Bati and Kuno Kertafa Community Water Supply facilities using motorized and common rope pump.

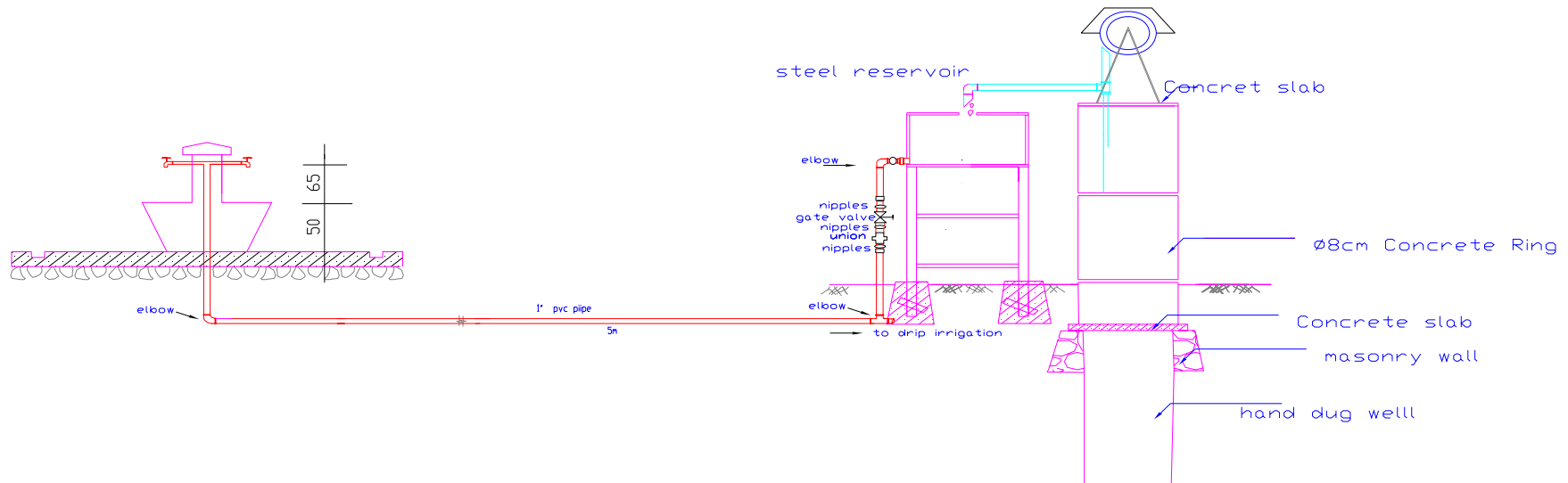


Fig 1. Dobena Bati As built drawing

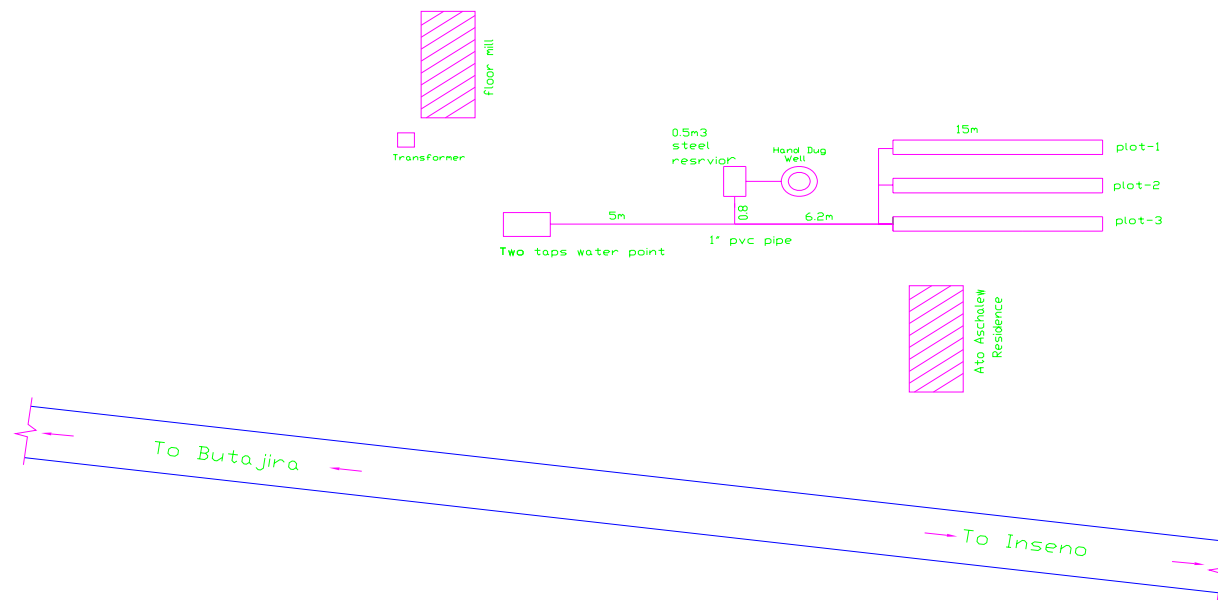


Fig 2. Dobena Bati Layout plan

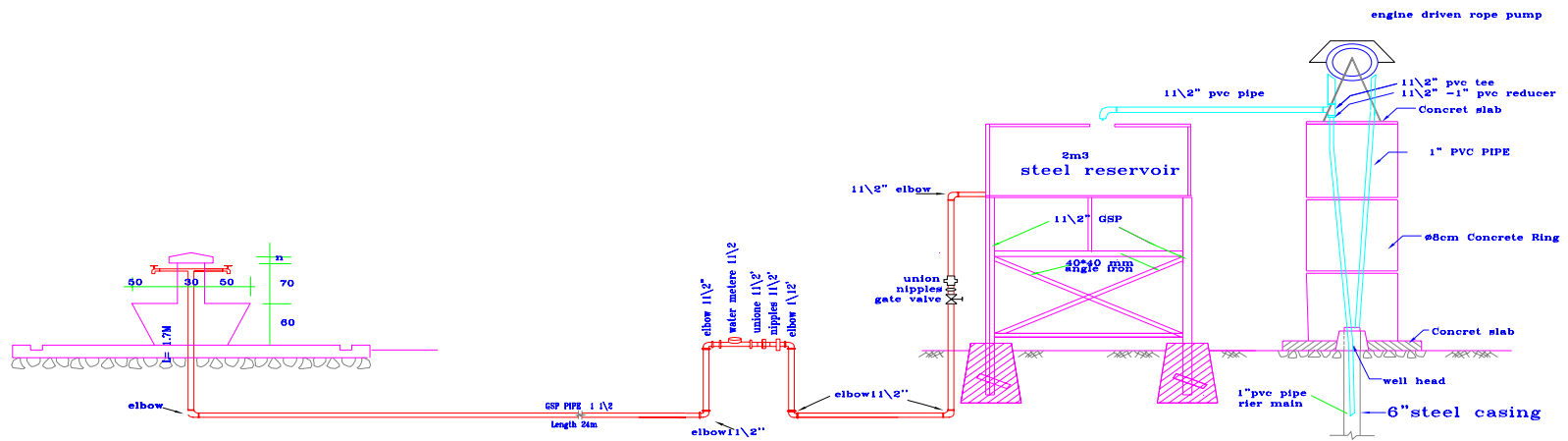


Fig 3. Kuno Kertafa as built drawing

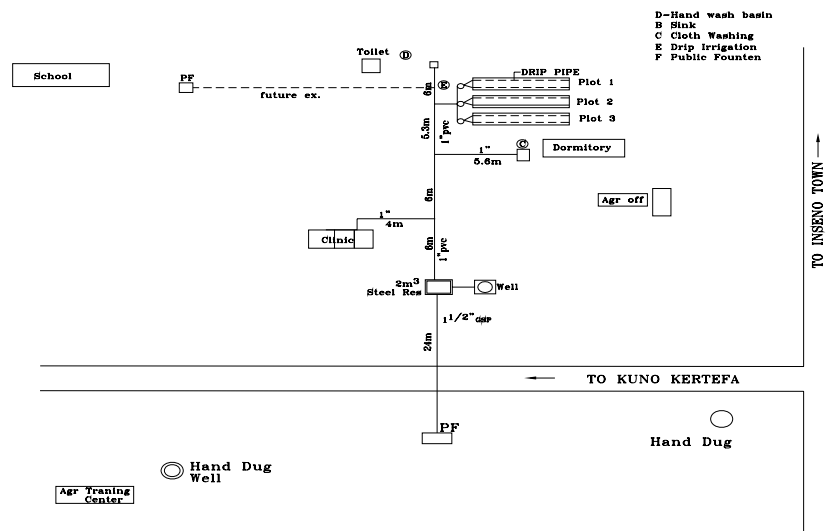


Fig 4. Kuno Kertefa Lay out plan

APPENDIX

Constructed Material Quantity

Pipe and fittings list

Project site:- Dobona Bati

			FACILITIES				
			WATER POINT	RESERVIOR:	IRRIGATON	Rope pump	
Item No	Description	Unit	Quantity				TOTAL
1	GSP Pipe 1\2:"	m	0.5				0.5
2	GSPsocket 1\2:"	pcs	2				2
3	Gate valve 1"	pcs		2			2
4	Reducer 11\2:"\ 1"	pcs		2			2
5	Water tap 1\2"	pcs	2		3		5
6	PVC Pipe 1\2'	m			2		2
7	PVC Pipe 3\4"	m				17	17
8	PVC Pipe 1"	m		24.5	4.1	20	47.4
9	PVC Pipe 1\2'	m				3	3
10	PVC socket 1" one side threded	pcs		2			2
11	PVC socket 1\2" one side threded		2				2
12	PVC Tee 1"	pcs		1	1		2
13	PVC Tee 1\2'	pcs				1	1
14	PVC elbow 1"	pcs	1	1	2		4
15	PVC elbow 1" one side threded	pcs		1			1
16	PVCreducer 1'-1\2'	pcs	2		3		5
17	PVCreducer 11\2'-3\4"	pcs				1	1

Pipe and fittings list

Project site:- Kuno Kertfa

FACILITIES

Item No	Description	Unit	Quantity						TOTAL
			WATER POINT	RESERVIOR:	CLINIC	IRRIGATON	CLOTH WASHING	TOILET HAND WASH	
1	GSP Pipe 1 1/2:"	m	26.3	3.3					29.6
2	GSP Pipe 3/4"	m	1.2						1.2
3	GSPsocket 1 1/2:"	pcs		3					3
4	GSP socket 3/4:"	pcs	6						6
5	GSP nipple 1 1/2:"	pcs	2	2					4
6	GSP nipple 1"	pcs		1					1
7	GSP union 1 1/2:"	pcs	1	1					2
8	GSP elbow 1 1/2:"	pcs	5	2					7
9	water meter 1 1/2:"	pcs	1						1
10	Tee 1 1/2:" *1 1/2:"	pcs	1	1					1
11	X- tee 1 1/2:" * 1 1/2:"	pcs	2						2
12	Gate valve 1 1/2:"	pcs		1					1
13	Gate valve 1"	pcs		2					2
14	Reducer 1 1/2:"\ 1"	pcs	2	2					2
15	Plug 3/4"	pcs	2	2					2
16	Water tap 3/4"	pcs	4	4					4
17	Water tap 1/2"	pcs			1	3	2	1	7
18	Flexable pipe	pcs			2				2
19	PVC Pipe 1/2'	m			1.8	4.8	1.6	1.6	9.8
20	PVC Pipe 3/4"	m						12	12
20	PVC Pipe 1"	m		24.5	6	4.1	6.8	6	47.4
21	PVC Pipe 1 1/2'	m						3	3
22	PVC Pipe 2'	m						3	3
23	PVC socket 1" one side threded	pcs		2					2
24	PVC Tee 1"	pcs			2	4	1		7
25	PVC Tee 1 1/2'	pcs						2	2
26	PVC elbow 1"	pcs		1	2	2	1	1	7
27	PVC elbow 1" one side threded	pcs		1					1
28	PVCreducer 1'-1 1/2'	pcs			2	3	2	1	8
29	PVCreducer 1 1/2'-1"	pcs						1	1
30	PVCreducer 1 1/2'-3/4"	pcs						1	1
31	PVCreducer 2"- 1'	pcs						1	1