CONCERN ERITREA PROGRAM

EMERGENCY WATER SUPPLY PROGRAM IN DEBUB ZONE

FINAL REPORT

(September 11, 2003– 31 January 2005)

SUBMITTED TO OFDA

June 2005

OFFICE OF U.S. FOREIGN DISASTER ASSISTANCE

FINAL REPORT
(11 SEPTEMBER 2003- 31 JANUARY 2005)

COVER SHEET

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Date: June 2005
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Program Title: Emergency Water Supply Program in Debub Zone, Eritrea

OFDA Grant Number: DFD-G-00-03-00124-00

Country/Region: Eritrea, Horn of Africa

Type of Disaster/Hazard: War and Drought

Time Period Covered by the Report: 11 September-31 January 2005

I. INTRODUCTION

Concern carried out an assessment of the water needs of the communities in ten kebabis in Senafe and Adikeih sub zones in Debub Zone. Concern's field observations and community needs highlighted a serious shortage of clean drinking water in the 10 kebabis of Senafe and Adikeih sub zones. The water usage in these kebabis was significantly below the Sphere Minimum Standard of 15 liters of water per person per day. To address these needs Concern initiated to undertake construction of wells, ponds and water tanks in all target kebabis.

Collection of water is the job of women and young children and the daily task is difficult, time consuming and a great burden because of the topography and the lack of roads. Due to the distance, the time required the lack of water availability and hardship of the task, water use is very low in the project area. This has led to hygiene problems. Time taken to collect water is also negatively affecting the nutritional status as time needed to care for small children and their need for small and frequent meals is being taken in collecting water.

During the water assessment, community members highlighted the shortage of water containers, which along with most of their assets were taken during the last war. Currently the people collect water with small jerry cans or with water bladders, which are shared between a numbers of households. Usually the community members store water in the same containers they use to transport it, leaving them very restricted in the amount of water they can store in their houses and they are unable to carry more water until they have emptied their containers.

Concern submitted a concept note and subsequently a project proposal for emergency water supply in five kebabis in Senafe Sub zone in Debub zone, which was approved by OFDA in September 2003. The proposal was for construction/ rehabilitation of ten wells and five ponds in the program area, which would benefit 4,201 households comprising 15,693 individuals. The project received an extension in April 2004, following submission of another similar proposal to undertake construction of ten water structures in Adikeih sub zone to benefit 1956 households (8202 individuals). The duration of the proposal hence was from September 2003 to January 2005.

Although the original proposal had planned certain types of water structures, based on the assessments and ground realities, the proposed structures had to be changed. In all cases the changes were from construction or rehabilitation of hand dug wells to boreholes. Thus by January 2005, Concern had intervened in the construction of twenty drinking water structures and three ponds as against the construction of twenty wells and five ponds. Some of the work had to be continued beyond the end of the project period date[1] due to a number of reasons such as fuel and material shortages, which were beyond the scope of the program. However, despite long delays and a number of technical difficulties the project was able to accomplish most of the project results. Another important output of the project was distribution of jerry cans two per household for all households in the Senafe and Adikeih program areas. A summary of the project results are given in the following table:

Table: 1 List of planned and actually completed water structures

Sub Zone	Planned	Accomplished
Senafe	4 new hand dug wells	2HDWs
	1 new borehole	6BH
	5 rehabilitation of old dug wells	2 rehab HDWs

[1] The construction of three ground tanks and the platforms for the boreholes in Adikeih were completed only as of May 2005. Further, based on the water test report in early June all wells were chlorinated and will be formally handed over to the authorities and communities before the end of June.

Adikeih	4 new Hand dug wells	0
	3 new Boreholes	7 BH
	3 Ground Tanks	3 Ground Tanks

This report is divided into three sections. The first two sections will narrate the activities and results separately for Senafe and Adikeih sub zones and the third part is an annex containing tables showing detailed information related to the impact of the project in the two sub zones.

III. ACTIVITIES AND RESULTS:

SECTION A: PROJECT ACTIVITIES IN SENAFE SUB-ZONE:

1. PROJECT GOAL

To mitigate the negative effects of the 2002 – 2003 droughts induced emergency on the communities in Debub zone

2. PROJECT OBJECTIVES

To increase access to safe and adequate drinking water in 5 kebabis of Senafe Sub zone through provision of wells, ponds and promotion of safe and hygienic practices in water use.

3. GEOGRAPHIC AREAS OF THE ACTIVITY

5 kebabis of Senafe sub zone (Zigfet, Nedwe, Ruba natsa, and Mai tera), Debub zone in the Central Highlands of Eritrea.

4. NUMBER OF BENEFICIARIES TARGETED

The beneficiaries are the total population of the 5 target kebabis. A total of 4,201 Households, 15,693 individuals.

5. EXPECTED RESULTS

? Hydro – geological survey undertaken in the target areas

? 5 new hand-dug or drill wells excavated in each of the target kebabis

? 5 existing open topped wells rehabilitated in the target kebabis

? 5 ponds constructed to provide a source of water for livestock

? Capacities of community water committees built

? 2 technicians from each kebabi are trained in hand pump maintenance

? Capacities of MoLG built at local level

? Water containers of various types distributed to all beneficiaries households

? Hygiene education carried out with the help of MoH staff in all 5 kebabis giving communities a greater understanding of hygiene and sanitation issues.

6. INDICATORS AND PERFORMANCE BASELINE DATA

A. Indicators established for the program

? Available drinking water will increase from 5-8 liters/ person/ day to 13-19 liters/per/day
? Amount of water potentially available for livestock will increase by 7,500 m3.
? Communities have the capacity to maintain and repair wells and pumps themselves.
? Time taken to collect water is reduced to between 10 and 60 minutes for all beneficiaries.
? Prevalence of water borne disease in the community and especially among children is reduced and better hygiene practices promoted.

B. Performance Baseline Data

Concern carried out water needs assessments in the target areas in early 2003. The results of this assessment showed that there was a dire need for a water program in this area both through increasing water supply and through increasing awareness of sanitation and hygiene issues. The results are summarized below:

? There were a total of 35 water sources in the 5 kebabis

? The population of this area had access to only 5-8 liters of water/person/ day.

? All communities put new water sources as one of the priority needs of this area.

? Existing water sources range from 20 minutes to 2.5 hours walk from villages.

? Only 4 wells (11%) are functioning normally and accessible but were overused and water was shared with livestock.

? 7 wells (20%) were either not functioning or seasonal.

? 5 wells were open topped but with possibility for rehabilitation

? 13 water sources (37%) were ponds or streams and shared with livestock.

? 1 previously used well is now across the border in Ethiopia and therefore inaccessible.

? 18 of the 35 water sources (51%) were described as unhygienic by the community members.

7. PROJECT RESULTS

The emergency water supply program in Senafe was started in September 2003. Work on the project started almost immediately after the proposal was approved and continued up to the end of the project. The following explains the work accomplished under each of specific outputs during the project period.

Objective
To increase access to safe and adequate drinking water in 5 kebabis of Senafe Sub zone through provision of wells, ponds and promotion of safe and hygienic practices in water use.

i. Provision of Wells

To support the water needs assessment carried out in February 2003, Concern commissioned a hydro geological survey of the target area using a local hydro geological consultant. The purpose of the survey was to recommend potential sites for new wells and see whether it is possible to excavate hand dug wells or drill wells.

Based on this assessment, it was planned to under take construction of five new wells and rehabilitation of five existing perennial open topped wells in the five target kebabis. Following this Concern initiated construction work on five new hand dug wells (in Zigfet, Monoksoito, Ruba Natsa and Maitera) and rehabilitation of one existing open topped well (in Nedwe). However the work on three new hand dug wells and one old existing well (Nedwe, Monoksoito, Ruba natsa and Maitera) was interrupted due to hard surface which made it impossible for manual digging work. Subsequently, the new well construction in Zygfet became dangerous due to the loose surface and it was inadvisable for workers to continue with manual digging inside the well. Thus it was decided to change all these five water points into boreholes. Subsequently, a Geophysical survey based on the hydro geological survey was undertaken in these five sites.

Overall, the proposed plan was changed from planned construction of four new hand dug wells, one borehole and rehabilitation of five old hand dug wells to eight new wells (two hand dug wells and six bore wells) and rehabilitation of two old hand dug wells, which is summarized in the table below.

Table 2: the original plan and the revised status of construction of wells in Senafe

Well Type	**Original Plan**	**Revised Actual work**
New Hand Dug Well	**4**	**2**
New Bore Holes	**1**	**6**
Rehabilitation of (Old) hand dug wells	**5**	**2**
Total Structures	**10**	**10**

The following table summarizes the impact of the water project in Senafe in relation to the baseline assessment had been carried out prior to the beginning of the project.

Table 3: Table showing impact of the project intervention

No	Base line data	Impact indicators
1	There were a total of 35 water sources in the 5 kebabis	There are now a total of 44 water sources in the 5 kebabis which is a 38% increase (The project added 6 new boreholes, 2 new HDWs and one pond.)
2	The population of this area had access to only 5-8 liters of water/person/ day	Available drinking water has increased from 5-8 liters/person/day to 8-18 liters/per/day
3	Existing water sources ranged from 20 minutes to 2.5 hours (150 minutes) walk from villages.	Existing water sources now range from 10 minutes to 1 hours walk from villages i.e., time taken to collect water is reduced to between 10 and (2.2hrs) 130 minutes for all beneficiaries
4	Only 4 wells (11%) were functioning normally and accessible but were overused and water was shared with livestock.	There are now 14 wells functioning. which is a 350% increase
5	5 wells are open topped but with possibility for rehabilitation	Two of them are now rehabilitated
6	13 water sources (37%) are ponds or streams and shared with livestock	Two of them are rehabilitated and one new pond constructed
7	A total of 18 water sources (51%) are described as unhygienic by the	Ten water structures, 8 new ones and two rehabilitated which are safe and hygienic. All

	community members.	these water sources were tested for chemical and biological safety and where necessary chlorinated.
8	The amount of water potentially available for livestock will increase by 7,500 m^3.	The potential water holding capacity in the project area (for livestock) has increased by 4,127 m^3. The initial plan was to construct 5 ponds. Out of these only 3 are constructed, because the sites selected for the construction of two ponds found to be not suitable by the MOA experts.
9	Communities will have the capacity to maintain and repair wells and pumps themselves.	▪ Separate water management committees were organized for each of the ten water structures; ▪ Training in the maintenance and operation of pumps was given for two farmers in each of the ten water structures. ▪ Separate toolkit for each structure was provided

ii. Construction/ Rehabilitation of ponds and micro dams

Concern proposed to undertake construction of five ponds in selected areas, where maximum run off of water could be harvested and which would benefit communities in all 5 kebabis. These ponds were mainly aimed at providing access to drinking water for the livestock in the area. Each of the proposed ponds will have the capacity to hold approximately 1,500 m3 of water. Initially the ponds will be for animal drinking water only but if the water yield is good then at a later stage it may be possible to undertake small scale irrigation.

Three of the kebabis (Zigfet Monoksoito and Ruba natsa) gave priority for the rehabilitation of existing micro dams and requested Concern to rehabilitate them instead of excavating new ponds. Two of them (Zigfet and Monoksoito) have been rehabilitated and these micro dams have now additional water holding capacities of 1,692 and 870 m3. The cost for the rehabilitation of the micro dam in Rubanatsa found to be beyond the budget limit of the project and could not be realized. The construction of one new pond in Maitera kebabi with a capacity of 1,565 m3 has been completed. The sites selected in different times for the construction of new pond in Nedwe Kebabi were found to be unsuitable; hence the construction of this pond in Nedwe could not be realized. The three completed water structures started to hold some amount of water from July-August 2004 rains, but the amount of rain was not satisfactory.

Table 4: Table showing progress on Pond/ micro dam rehabilitation/ digging work

Kebabi	**Location of the pond**	**Achievements**	**# of beneficiary households**
Zigfet	Mesarha: Micro dam rehabilitation	**Work completed.** Cumulative person days 3482. 353 farmers including five foremen worked on the dam. Work has resulted in adding 1692 cum volume to the water holding capacity of the dam.	679
Monokseito	Tsagat: Micro dam rehabilitation	**Work completed.** A total of 1,182 person days (205 farmers including foremen) of work accomplished. The total volume excavated is 870.25 cum	809

Mai Tera	Mai tsaeda: New pond	**Work completed.** A total of 3,091 person days (200 farmers and 2 foremen) participated. The total volume excavated is 1,565 cum	1,270

iii. Hygiene Education

The Hygiene Educator was recruited on a temporary basis[2] and carried out her awareness sessions with the communities during her four months time with Concern according to the plan.

The following activities were performed by the hygiene educator in all target Kebabis:-
-Visit was made to assess the overall activities of the health facility and to observe the over all situation of water and relevant information was gathered.
- Group discussions in health issues was held with the community leaders, water committees and community health workers
- An introduction of the importance of health education was given to the community leaders and other representatives. Water hygiene awareness was also given to 370 communities Members (190 women).
- Health education regarding water hygiene is given to 304 community members (190 were women).

The contract for Hygiene Educator was terminated as she failed to produce release papers from the Ministry of Health. Hence there was no activity related to hygiene education after her termination.

iv. Provision of Water Containers

There was a plan to provide water containers to the beneficiaries depending on their needs. As per the need of the community, 8,336 jerry cans with a capacity of 20 liters each have been purchased and distributed to 4,201 house holds in the five target Kebabis. Each household was provided with two jerry cans.

v. Construction of showers and washing cabinets

As part of the sanitation activities, Concern decided to use the budget from the project for the construction of model showers and washing cabinets in part of the completed wells. The shower is designed to accommodate two (separated by a partition) and the washing cabinet 6 users. The construction of showers and washing cabinets started in three sites (Embabidehan, Ruba natsa and Monoksoito) towards the end of the project period and the construction work is now fully completed. Through the construction of these structures, the communities in these three villages have access for washing their bodies and clothes in a safe manner regularly.

[2] Although the hygiene educator was recruited with the intention of making a permanent staff given the fact that watsan is an integral part of Concern Eritrea programs, she did not have a release paper from the MoH, which meant that her contract with Concern had to be terminated. Due to mobilisation and the requirement of MoH for all graduates from health related schools to only work within MoH, there were no qualified personnel available at the time of the project.

SECTION B: PROJECT ACTIVITIES IN ADI KEIH SUB-ZONE:

1. GEOGRAPHIC AREAS OF THE ACTIVITY

5 kebabis of Adikeih sub-zone (Sibiraso, Safira, M/Zula, Egila and Karibosa), Debub zone in the Central Highlands of Eritrea.

2. NUMBER OF BENEFICIARIES TARGETED

The beneficiaries are the total population of the 5 target kebabis. A total of **1,956** households, **8,202** individuals.

Table 5: Number of households and population of target kebabis, Adikeyh sub-zone

Kebabi	Households			Population		
	Male headed	Female Headed	Total	Males	Females	Total
Egila	307	215	522	1004	984	1998
Mesegelezula	196	45	191	441	529	970
Safira	381	256	637	1351	1345	2696
Karibosa	97	70	167	419	423	842
Sibiraso	219	220	439	837	859	1696
Total	**1150**	**806**	**1956**	**4052**	**4150**	**8202**

3. OVERALL OBJECTIVE

To mitigate the negative effects of the 2002-2003 droughts induced emergency on the communities in Debub zone.

Specific Outputs

a) ***Access to safe drinking water in 5 kebabis of Adikeih Sub zone increased through provision of wells and water reservoirs***
b) ***Safe and hygienic practices in water use promoted.***

4. EXPECTED RESULTS

- Hydro – geological survey undertaken in the target areas
- 10 water structures constructed or rehabilitated (two in each of the target kebabis).These can be wells, rain water harvesting tanks, bore holes or development of springs.
- Capacities of community water committees built
- 2 technicians from each kebabi are trained in hand pump maintenance
- Capacities of MoLG built at local level
- Water containers of various types distributed to all beneficiary households
- Hygiene education carried out with the help of Hygiene Educator in all 5 kebabis giving communities a greater understanding of hygiene and sanitation issues.

5. INDICATORS AND PERFORMANCE BASELINE DATA

In October 2003, Concern carried out a water supply and needs assessment in the 5 kebabis of Sub zoba Adikeih. The assessment was carried out by the front line development workers of Concern who are based at Kebabi level and the main focus of the assessment was to identify:

- existing water supply sources: (borehole, hand dug well, dam, pond, spring)
- average distance of the villagers to reach the water source
- status of construction of the water supply sources
- Condition and quality of the water supply

The results of this assessment showed that for this area only 5 wells functioned throughout the year for a total of 1,956 HHs, or 8,202 individuals. Of these 5 wells, 3 are open topped and unprotected and are shared with livestock. Apart from being very dangerous, there are a number of reports of children falling in-they are also very unsanitary. The 5 functioning wells range from 20 minutes to 1.5 hours traveling distance from the communities. It is the work of the women and young children in these communities to collect water. This daily collection of water is arduous, time consuming and a great burden. Due to the distance, time required, lack of availability of water and hardship of this task, water use is very low (5-8 liters per person per day only).

6. PROJECT RESULTS

The emergency water supply project in Adikeih was started in April 2004, when OFDA approved this proposal as an extension of the original Senafe project. Work on the project started almost immediately after the proposal was approved. The following explains the accomplishments of this project.

i. Hydro geological and Geo-physical survey and Bore wells

In November 2003, hydro geological survey was undertaken in the entire target Kebabis with the help of a local consultant. Based on this study the proposal had planned to construct four hand dug wells, three boreholes and three ground tanks[3] However, with the lessons learned from the Senafe experience, Concern commissioned a geo-physical survey of all the seven well sites. in the second half of July. Based on the survey findings, the consultant recommended five of them could be drilled and the other two, due to inaccessibility for the drilling rig had to be hand dug wells. This recommendation meant a change from the proposed structures. When Concern realized that the construction of the two hand dug wells would take much longer than the project period, it held discussions with the relevant communities in Safira and agreed to replace them with two boreholes in Sibiraso and Egila kebabis. In return, Concern agreed to undertake the construction of these two hand dug wells using its own finances. The geo-physical survey for the replacement of these two hand-dug well sites in Safira was under taken in August.

[3] Ground tanks are basically rain water harvesting structures, which reduce exploitation of groundwater and help in harnessing rainwater, which would otherwise result in runoff.

The following table shows the summary of the proposed and actual water structures in Adikeih.

Table 6: proposed and actually accomplished water structures in Adikeih sub zone

Type of water structure	Originally Proposed	Actually accomplished
Hand Dug Wells	4	0
Boreholes	3	7
Ground Tanks	3	3

The actual drilling work could not be started until towards the end of December owing to acute fuel shortages. Concern requested the Ministry of energy and mines to release the required fuel for the drilling work and managed to get an approval. Finally the drilling work in 7 sites was completed in January. In one site in Sibiraso after drilling 72mts the site had to be relocated due to lack of water and in the new site water was found at 62mts. In the remaining six sites one well in Lailey Saro (Sibiraso) failed completely even after drilling 108 mts. Out of the remaining five successful wells, one well in Egila has very low yields and during summer it was found that the water level goes down and is not accessible to the hand pump. The remaining four wells have adequate water. For details see the attached Annex.

ii. Community meetings:

Concern facilitated community meetings to elect and form new and appropriate water management committees and as a result one water management committee with 5 members has been formed in each water structure and, in total, 10 water management committees have been formed. Following this, the staff held meetings with the newly constituted water committees to discuss their role in the implementation of the project and community contribution. All committees expressed their commitment to ensure community participation especially in terms of providing locally available materials such as stone and gravel.

iii. Water Tanks

Sites for the construction of three water tanks (two in kebabi Karibosa and one in Kebabi Sibiraso) were selected and design and bill of quantity prepared. Tools for excavation were purchased. The excavation work started after an agreement was signed with the community contractors[4].

Table 7: Table Showing Progress in work of bore wells and water tanks in Adikeih Sub Zone

Kebabi	**Location of the well/ Water tank**	**Type of well**	**Achievements**	**Depth in meters and Yield in lit/ sec**
Sibiraso	Sibiraso	New Bore well	Work fully completed	62 and 0.4
		New borehole	Dry well (relocated to the above site)	72m no yield
	Laelay saro	New Bore well	Dry well	108 no yield
	Irid	Water tank	Work fully completed	200 m3
Karibosa	Guriile	Water tank	Work fully completed	200 m3

[4] Work was completed only as of May 2005, much beyond the end of the project period. Due to oversight the program failed to request in time for a no-cost extension.

	Imeau	Water tank	Work fully completed	200 m3
Mesegele Zula	Dekenamo	New Bore well	Work fully completed	54 and 2.5
	M/Zula	New Bore well	Work fully completed	73 and 0.3
Egila	Sanako	New Bore well	Work fully completed	50 and 0.5
	Adi ageb	New Bore well	Work fully completed	31 and 3
	Egila	New Bore well	Work fully completed	91 and 0.25

iv. Hygiene Education

Basic hygiene and sanitation awareness training has been given to 606 community members in three target Kebabis (Sibiraso, Karibosa and Safira) for two days with the help of a staff from the Ministry of Health.

v. Provision of Water Containers

Cumulatively 4,164 water jerry cans with the capacity of 20 liters were purchased and distributed to 2,082[5] beneficiary households benefiting all 8,202 people.

Table 8: Table showing impact of the project intervention

No	Base line data	Impact indicators
1	There were a total of 45 water sources in the 5 kebabis	There are now a total of 54 water sources in the 5 kebabis which is a 20% increase
2	The population of this area had access to only 5-8 liters of water/person/ day	Available drinking water has increased from 5-8 liters/ person/ day to 7.4-66.6 liters/per/day. Through Concern's intervention the average available drinking water for the kebabis is 18.7 lit/ sec
3	Existing water sources ranged from 20 minutes to 1.5 hours walk from villages.	Existing water sources now range from 10 minutes to 45 minutes walk from villages i.e., time taken to collect water is reduced to between 10 and 45 minutes for all beneficiaries
4	From the total water points only 10 water sources were wells. Out of this only 5 wells were functioning normally and accessible but were overused and water was shared with livestock.	There are now 11 wells functioning. The three ground tanks when it rains will be able to provide safe water.
5	A total of 39 water sources (87%) are described as unhygienic by the community members.	▪ Hygiene training was given to the community with the help of MoH staff. ▪ Water from all new wells was tested for chemical and bacteriological safety and chlorination was undertaken in all wells with faecal matter with the help of WRD
6	Communities will have the capacity to maintain and repair wells and pumps themselves.	▪ Water management committees were formed for all ten water structures ▪ Training in the maintenance and operation of pumps was given for two farmers in each water structure and the

[5] The initial figures of 1956 as the total households showed an increase when the actual distribution of jerry cans took place. But the total population remained the same.

		Communities have now the capacity to maintain and repair wells and pumps themselves. ▪ Tool kits were provided for each structure for speedy maintenance of the structure

8. CONSTRAINTS

A severe shortage of labor in these areas due to the mobilization of the people between 18 and 40 years for national service was a major problem. At village level, this means there are very few able bodied people to work. Women, children and old men carried out most work.

The construction of wells was started soon after the rainy season. This time was not favorable for digging wells since the water table at this time was very high and also farmers gave high priority for their agricultural operations.

Due to faulty recommendations, the project experienced significant waste of resources due to inappropriate technical support. The change from hand dug wells to bore holes accelerated work, but much time and money had been lost in pursuit of wrong technology.

Not much could be done with regard to the hygiene promotion beyond a brief stint by the hygiene educator, during which time she was able to undertake some hygiene education for all the communities and water committees in Senafe. Similar intense work could not be done in Adikeih.

In the middle of the project time it was not possible to get steel bars in the market. In response to the lack of steel bars, the project decided to use Gabion mesh in the construction of a hand dug well in Ruba Natsa. Meanwhile, Concern was able to obtain permission from the Ministry of Trade and import steel bars for most of its construction work including the wells in this project and this delayed the completion of the work on time.

9. BUDGET AND EXPENDITURE:

The total budget for the project was $413,255 (including NICRA). This included $186,499 approved for Senafe and $226,757 approved for Adikeih project. By the end of the project period Concern had spent a total of $411,890 leaving an unspent balance of $1,365.

Annex 1: <u>Information on water structures constructed and their impact in sub zoba Senafe</u>

Note: BH Borehole; MD: micro dam; HDW: Hand dug wells
Water yield/ capacity is calculated based on yield estimates provided by the driller and taking an average of five hours of pumping per day.

No	Kebabi	Village	New water structures constructed by Concern	Yield/ Capacity of water structures constructed by Concern	Total # of beneficiaries	Water availability in liters/ person/ day from the new structures	Total Water required/ day in liters as per sphere standard (15lppd)	Water gap in liters/ day
1	Zegfet	Aromo	1 BH	1litres/ sec = 21,600 liters in 5 hours	1,408	15.3	21,120	-
		Zegfet	1 HDW maintenance	0.28 liters/ sec = 5,000 liters in 5 hours	340	14.7	5,100	100
		Mesareha	1 Micro Dam	1,692 m3	452	1,692 m3 for livestock	6,780lts	6,780lts for human consumption
		Adi Kuri	-		200	-	3,000	3,000
		Kelkel Melasa	-		175	-	2,625	2,625
Total Average for the Kebabi				***26,600 lit***	***2,575***	***8.9***	***38,625***	***12,505 = 4.86 l/head/ day***
2	Nedwe	Nedwe	1 BH	0.35 l/s = 6,300 liters in 5 hours	1,200	5.25	18,000	11,700
		Adi mebarek	1 BH	0.5 l/s = 9,000 liters in 5 hours	894	10.06	13,410	4,410
		Megdar Debena	-		263	-	3,945	3,945
Total Average for the Kebabi				***15,300 lit***	***2,357***	***6.5***	***35,355***	***20,055 = 8.5 li /head/ day***
3	Menoksoito	Menoksoito	1 Micro Dam	870 m3	311	870 m3 for livestock		
		Saesei	1 BW	0.75 l/s = 13,500 liters in 5 hours	420 (Monoksoito, Adi seraw & Adi bitso, Saisi) = 1,507	8.9 for Monoxeito and 8.9 for Saisi	6,300 (Monoxeito) 4,665 (Saisi)	2,562 (M) 1,897 (S)

		Kolet	1 HDW	2.06 m3/ hour = 10,300 liters in 5 hours	532 (Kolet, Geruna) = 1,056	9.8	7,980	2,766
No	Kebabi	Village	New water structures constructed by Concern	Yield/ Capacity of water structures constructed by Concern	Beneficiaries Population	Water availability in liters/ person/ day from the new structures	Total Water required/ day in liters as per sphere standard (15litres/per/day)	Water gap in lit
		Geruna	-		524	9.8	7,860	2,725
		Adi Bileno			440		6,600	6,600
		Adi Seraw	-		446	8.9	6,690	2721
		Adi Btsio			330	8.9	4,950	2013
Total Average for the Kebabi				***23,800***	***3,003***	***7.9***	***45,045***	***21,284 = 7.1 li/ person/ day***
4	Ruba Natsa	Embakom	1 maintenance	0.5 m3/ hour = 2,500 liters in 5 hours	1,153	2.2	17,295	14,795
		Aderho	1 HDW	2.0 m3/ hour = 10,000 liters in 5 hours	1,088	9.2	16,320	6,320
		Berkneha	-		579		8,685	8,685
		Embarhagoda	-		482		7,230	7,230
		Hadish Adi	-		306		4,590	4,590
Total Average for the Kebabi				***12,500***	***3,608***	***3.5***	***54,120***	***41,620 = 11.5 li/ person/ day***
5	Mai Tera	Kokobai	-		1,850		27,750	
		Emba bidehan	1 BH	0.5 l/s = 9,000 liters in 5 hours	1,080	8.3	16,200	7,200
		Serha	-		1,153		17,295	
		Mai Tsaeda	1 BH, 1 Pond	0.15 l/s = 2,700 liters in 5 hours, 1,565 m3	776	3.5 and 1,565 m3 for livestock	11,640	8,940
No	Kebabi	Village	New water structures constructed by Concern	Yield/ Capacity of water structures constructed by Concern	Beneficiaries Population	Water availability in liters/ person/ day from the new structures	Total Water required/ day (now) in liters as per sphere standard (15 liters/per/day)	Water gap in liters/ day

Average for the Kebabi	***11,700***	***4,859***	***2.4 and 1,565 m3 for livestock***	***72,885***	***61,185 = 12.6 li/ person/ day***
Average for the five Kebabis	***86,300 liters/ day for human consumption and 4,127 m3 for livestock***	***16,402****	***5.3***	***246,030***	***159,730 = 9.7 li/ person/ day***

* = The population figure has increased by 439 from the original figure (the population figure during the project design was 15,963)

Annex 2: <u>Information on water structures constructed and their impact in sub zoba Adikeih</u>

No	Kebabi	Village	New water structures constructed by Concern	Yield/ Capacity of water structures constructed by Concern	Total # of targeted and reached beneficiaries	Water availability in liters/ person/ day from the new structures	Total Water required/ day in liters as per sphere standard (15litres/per/day)	Water gap in liters/ day
1	Egila	Egila	1 BH	0.25 liters/ sec = 4,500 liters in 5 hours	827	5.44	12,405	- 7,905
		Sanako	1 BH	0.50 liters/ sec = 9,000 liters in 5 hours	441	20.40	6,615	+ 2,385
		Adi ageb	1 BH	3.0 lit/ sec = 54,000 liters in 5 hours	1139	47.4	17,085	+ 36,915
		Sarwa			385	-	5,775	- 5,775
		Burka			255		3,825	- 3,825
		Adolay			270		4,050	- 4,050
		Ghediba			156		2,340	- 2,340
		Higagid			215		3,225	- 3,225
Total Average for the Kebabi				***67,500 lit***	***3,688***	***18.3***	***55,320***	***12,180 = + 3.3 l/head/ day***
2	Mesegele zula	Dekenamo	1 BH	2.5 l/s = 45,000 liters in 5 hours	132	341	1,980	+ 43,020
		M/ Zula	1 BH	0.3 l/s = 5,400 liters in 5 hours	192	28.1	2,800	+ 2,600
		Arigot			132	-	1,980	- 1,980
		Bohole			132	-	1,980	- 1,980
		Dengologolo			124	-	1,860	- 1,860
		Baiwa			88	-	1,320	- 1,320
		Tsahnene			60	-	900	- 900
Total Average for the Kebab I				***49,400 lit***	***860***	***58.6***	***12,900***	***+ 37,580 = + 43.7 li /head/ day***
3	Sibiraso	Sibiraso	1 BH	0.4 li/sec = 7,200 liters in 5 hours	564	12.8	8,460	- 1,260

		Laelay saro	1 BW (dry)		212	-	3,180	- 3,180
		Irid	1 water tank	200 m3 = 200,000 lit = 545 lit/day	100	5.5	1,500	- 955
		Alil	-		252	-	3,780	- 3,780
		Obkuya	-		52	-	780	- 780
		Entikako	-		108	-	1,620	- 1,620
		Asbato	-		80	-	1,200	- 1,200
No	Kebabi	Village	New water structures constructed by Concern	Yield/ Capacity of water structures constructed by Concern	Total # of targeted and reached beneficiaries	Water availability in liters/ person/ day from the new structures	Total Water required/ day in liters as per sphere standard (15litres/per/day)	Water gap in liters/ day
		Hitseito	-		152	-	2,280	- 2,280
Average for the Kebabi				***7,745 lit***	***1,520***	***5.1***	***22,800***	***- 15,055 = 9.9 li/ person/ day***
4	Karibosa	Gurile	1 water tank	200 m3 = 200,000 lit = 545 lit/ day	124	4.4	1,860	- 1,315
		Emeaw	1 water tank	200 m3 = 200,000 lit = 545 lit/ day	98	5.6	1,470	- 925
		Malablota	1 water tank	200 m3 = 200,000 lit = 545 lit/ day	100	5.5	1,500	- 955
		Karibosa			282	-	4,230	- 4,230
		Abai			64	-	960	- 960
		Sihat			26	-	390	- 390
Average for the Kebabi				***1,635 lit***	***694***	***2.4***	***10,410***	***- 8775 =12.6 lit/ person/ day***
Average for all kebabis				***126,280***	***6,762***	***18.7***	***101,430***	***+ 24,850 = + 3.7 lit/ person/ day***