Arsenic in tubewell water and health consequences: Mitigation component

Interim report

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Backgrounds

BRAC jointly with ICDDR,B, is implementing the project on arsenic in tubewell water and health consequences in Matlab upazila. BRAC is responsible for carrying out the mitigation component of the project. The mitigation component aims at providing safe water options in arsenic affected areas in Matlab through a participatory process with the villagers.

Installation and assessment of safe water options are major activities of the project. The main options promoted are: treatment of surface water with community-based Pond Sand Filter (PSF) and home-based *Bishuddhya* filter; collection of rainwater in Rain Water Harvesters (RWH); treatment of arsenic contaminated groundwater with home-based three-pitcher filters, Alcan filters, Safi filters (Table1). It may be noted that the options installed in Matlab are based on BRAC's previous experience of providing alternative safe water options to other arsenic exposed populations of the country.

Table 1: Safe water options distributed in Matlab

Safe water options	Total number of options	Total families covered
Household based option		
Three pitcher filter	99	99
Alcan filter	148	148
Safi filter	24	24
Bishudhha filter	66	66
Rainwater harvester (RWH)	40	40
Community-based option		
Pond sand filter (PSF)	12	1200 (100/PSF)
Total	**389**	**1577**

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These options are being assessed on several criteria: initial and running costs; ease of implementation, running and maintenance; continuity and flow of supply; arsenic removal capacity; susceptibility to bacteriological contamination; and acceptability to the community.

All options have their own strengths and limitations. None of the options is as easy as fetching tubewell water. At present, PSFs are proving most popular as people of Matlab are traditionally habituated using surface water both for drinking and cooking purposes. Besides, presence of iron in tubewell water is also another major reason for using surface water. The next popular option, as villagers indicated, RWH and Alcan filter. The only drawback of Alcan filter is that it needs replacement of media every two years, which costs Tk 600. Except this, community acceptability and technical viability of this option are highly satisfactory. To overcome this problem we are providing small earthen saving pots with Alcan filters and advising the users to deposit at least one taka every day so that the users can get the full amount at a time without difficulty to replace the media.

An exercise has been made to assess the provided options. Table 2 shows ratings of each of these factors on a scale of 1 to 5. The maximum possible is 45 and a higher rating indicates more potential.

Table 2 **Preference of the alternative safe water options**

	PSF	RWH	Alcan filter	3-pitcher filter	*Bishuddhya* filter	Safi filter
Initial Cost	1	2	2	5	3	2
Running Costs	4	5	1	3	4	3
Ease of implementation	3	3	4	2	4	2
Technical effectiveness	4	3	5	4	4	1
Maintenance required ?	4	4	3	2	3	1
Monitoring required?	4	3	2	1	2	1

Continuity of supply	4	2	5	4	4	2
Susceptibility to bacteriological contamination	3	4	4	2	2	3
Social acceptability	5	4	4	2	2	1
Total	**32**	**30**	**30**	**25**	**28**	**16**

It is also observed that PSF has become popular among communities followed by the RWH and the Alcan filters.

Providing safe water option to the exposed population

The number of total exposed families in Block A, B, and C is 10,512. In these blocks the number of total families getting safe water (including green marked tubewells) is 5,824 (55%), of which 13 percent is getting safe water from different alternative water sources provided by BRAC (Table 3).

Table 3 Arsenic exposed population covered by different safe water options

Block	No. of total Population	No. of total families	No. of total exposed families	No of families getting safe water from green marked tubewells	No of families getting safe water from alternative safe water options	Total families under safe water coverage	Families yet to cover with safe water
A	28743	5748	4023	2711	478	3189	843
B	26937	5387	3770	1419	525	1944	1826
C*	20900	4180	2926	247	574	821	2105
Total	**76,580**	**15,315**	**10,719**	**4,377 (41)****	**1,609(15)**	**5,986 (56)**	**4,733 (44)**

Figures within parentheses indicate percentage

*Small part of Block D and comparison area are also included

**Before testing tubewell water for arsenic contamination in Matlab, it was observed that about three families shared one tubewell. The number of families covered by green marked tubewells were calculated based on this statistic. But recently we conducted a survey in several villages of Matlab with the aim to know the number of users of green marked tubewells (arsenic-free). According to the survey, the number of users of green tubewell has increased from three to seven,

which indicates most of the exposed families are at least trying to collect water from different available safe water sources, primarily from the green marked tubewells.

Support for pregnant women and patients

It has been decided that pregnant women will get highest priority in terms of providing safe water options and accordingly we are ensuring the distribution of safe water options to pregnant women. The next priority has been given to the people who are affected with the arsenicosis disease. The field workers of BRAC visited the identified patients several times to bring them under safe water coverage, but it was a difficult and time-consuming task. Since almost all the patients were economically poor it was difficult to get 20% contribution money from them.

Till May 2003, provision for safe water was ensured for 330 patients. The current source of safe drinking and cooking water is presented in Table 4. The patients covered under the green marked tubewell not necessarily own these tubewells; some of the patients are sharing these tubewells with their neighbours. BRAC staff repeatedly asked these poor patients to get alternative safe water options but still they did not show their interest mainly because of their financial constraints. Table 4 shows that almost 89% of the patients collected cooking water from pond/river, which is a common practice in rural Bangladesh. It was also observed that nine patients collected water from tubewells re-installed in more depth where there is no arsenic. It has been observed that this technique is becoming more popular among relatively well-off families.

Table 4 Sources of drinking and cooking water of the patients

Water sources	Block A		Block B		Block C		Total number drinking	Total number cooking
	Drinking	Cooking	Drinking	Cooking	Drinking	Cooking		
Three Pitcher	03	00	4	00	00	00	07	00
Alcan filter	12	00	20	00	03	00	35	00
Safi filter	01	00	00	00	00	00	01	00
Bishudhya filter	21	00	09	00	00	00	30	00
RWH	01	01	01	00	00	00	02	01
PSF	01	00	07	00	00	00	08	00

Green TW	95	33	72	01	13	00	180	34
Boiling pond/river water	11	117	43	156	4	20	58	293
Re-Installed TW in more depth	8	2	1	00	00	00	09	02
							330	330

Villages with high arsenic level

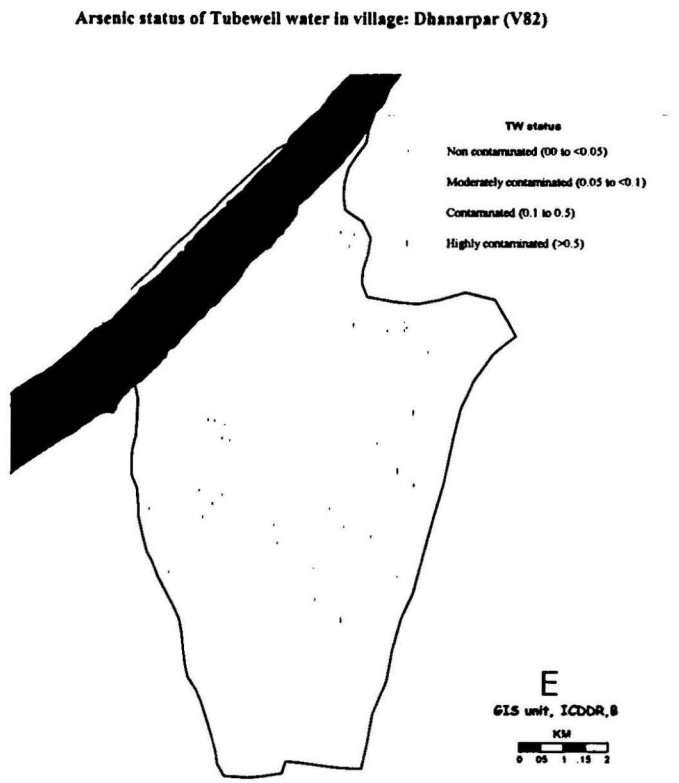
The next priority, in terms of providing safe water options, has been given to the villages where 50% or more tubewells were found to be contaminated. Within the village, poor families are given priority in the distribution of home-based options. The community-based options are constructed in the places where most of the tubewells are contaminated.

Apart from providing mitigation options based on government approved criteria mentioned above, we are also considering the following criteria.

Using GIS map of the villages, we are trying to target areas where concentration of red marked tubwells are more than the other areas. Using this effective strategy we are planning to maximize the coverage of safe water options in the project areas (Figure 1).

We are also trying to cover the highest exposed families (e.g.100 ppb-500ppb and above) under safe water coverage on priority basis.

Figure 1 Village-wise arsenic concentration map



Community involvement in project implementation

Sustainable development cannot be achieved without involving local community in the planning and development processes. The people of the project areas are involved in implementing the project. Multiple meetings at village level are held at different stages of the project to inform and involve the community. At these meetings potential safe water options are discussed. The villagers decide where the community-based systems would be best located and then commit to maintaining the system.

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Village meetings are held in the villages where contamination level is high.

1. The first meeting is organized to tell villagers about the arsenic problem and to inform them of ensuing testing of tubewells.

2. The next meeting is organized just after completing the tubewell testing to share the test results with the villagers.

   At this meeting the potential safe water options are also discussed. The following topics are covered: different alternative safe water options and their relative merits, approximate costs of different options; methods of operation and maintenance of the safe-water options; and sites for the chosen alternative safe-water options.

   Taking into account the opinion of the villagers, BRAC proceeds with constructing or providing different alternative safe water options with at least 20% contribution from the community. The community decides where the system would be best located and then commits to maintaining the system.

3. The third meeting is organized at the time of construction or distribution of the alternative safe water options to motivate the villagers to use the option and encourage community participation in the process of obtaining safe water.

4. The final meeting is organized after construction or distribution of the alternative safe water options to inform about the monitoring, operation and maintenance and again to raise awareness level of the villagers.

Awareness development

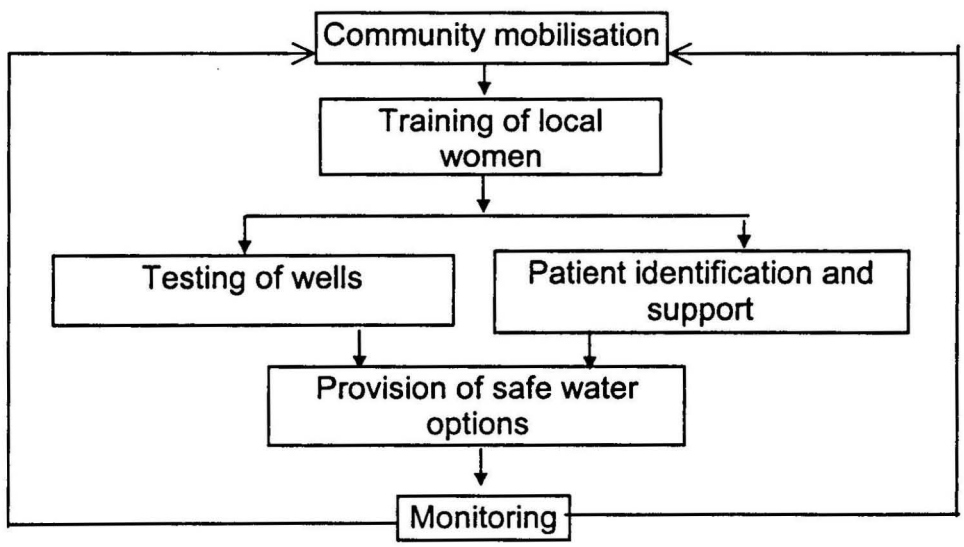
The arsenic problem is new in Bangladesh. Awareness and motivation on arsenic issues are done in two ways. Firstly, to make people understand that arsenic is a poison and secondly, that people should procure safe water at their own effort and cost.

A combination of approaches such as staging popular theatre, meetings, organizing workshops, and showing video are being used in raising awareness about arsenic contamination and the consequences of drinking arsenic contaminated water.

Village meetings, school meetings, and meetings with the local elected bodies are also conducted to inform people about the arsenic issues. To design a communication campaign workshops are conducted where representatives of different stakeholders participate. As a result of the project activities, the awareness level of the community increases significantly.

BRAC's action research on community-based arsenic mitigation includes some major components which are shown in the following flowchart (Figure 2).

Figure 2 Flowchart of the BRAC arsenic mitigation programme



Optimum use of local resources

The optimum use of the local resources in implementing the project is the driving force. Local village women with limited education are trained in developing local awareness, different safe water options and monitoring the use of options in Matlab upazila. Peoples' own evaluation is used to assess the different safe water options in the community. A group of local masons are trained to manufacture of different options.

Community participation of mitigation options

It has been decided that none of the alternative options distributed in the project areas will be free of cost. Community or individual (in the case of household-based option) will contribute at least 20% of the total cost of any option.

Sustainable use of the options

We have already involved our local office staff those who are working under the Water and Sanitation Programme in implementing and /or distributing different options. At the end of the project period the local programme people would be fully equipped and trained in monitoring the options and also in ensuring sustainable use of the options.

Ensuring safe drinking water supply

The monitoring of water quality treated by different technologies introduced in the project received utmost attention. A monthly water quality monitoring plan has been developed for checking both bacteria and arsenic contamination in the treated water. Arsenic concentration in treated water is being checked by field testing kits while bacterial contamination is tested in the ICDDR,B laboratory. The number of total tests is increasing with the increase in options distributed. We have also planned to check other heavy metals in pond and river water to see how far PSFs and Bishuddhya filters are able to treat these from raw water. Water quality monitoring results of different safe water options is presented in the Appendix 1.

From the water quality monitoring report it is observed that PSFs, Alcan filters, *Bishuddhya* filters, RWHs are showing satisfactory results in terms of treating raw water. Water quality monitoring report of the Safi filters is not that encouraging. As such, we have distributed only a few options and being monitored closely.

There was no provision in the project budget for water quality monitoring of the provided options. The expenses are met from the mitigation budget.

Families yet to cover with the rest mitigation budget

In Matlab DSS area, the number of total families is about 36,666 and the number of exposed families is about 25,666, considering 70% of the total number of tubewells are contaminated with arsenic >50 ppb. At the end, the project might be able to cover nearly 13% of the total exposed families through different alternative safe water options and about another 41% families from the same blocks have access from green marked tubewells. With the remaining mitigation budget the project might be able to provide safe water options to nearly 1,760 more exposed families (7% of the total exposed families). The different types of options with approximate proposed budget are presented in Table 5. At the end, the project might be able to cover only 13% of the total exposed families through different alternative safe water options. Therefore, the estimated budget and types of options to cover the rest exposed 22,329 families (87%) are presented in Table 6.

Table 5 Proposed options to be completed by the end of January 2004

Name of option	Total Number	Unit cost (Tk)	Total amount (Tk)	Community contribution (10% of the total cost)	Total project cost (Tk)	No. of families covered by safe water options
PSF	15	40,000	600000	60000	540000	1500
RWH	60	7,000	420000	42000	378000	60
Alcan (New)	150	3,000	450000	45000	405000	150
Bishuddhhya filter (New)	50	2,500	125000	12500	112500	50
Total					**1,435,000**	**1,760**

Table 6 Proposed budget to cover the rest exposed families in Matlab project area

Name of the option	Total Number	Unit cost in Tk.	Total amount (Tk)	Community contribution (10% of the total cost)	Total project cost (Tk)	Total coverage (THH)
Alcan	2931	3000	8,793,000	879,300	7,913,700	2931
PSF	171	40000	6,840,000	684,000	6,156,000	17100
RWH	850	7000	5,950,000	595,000	5,355,000	850
Bishudhaya Filter	1448	2500	3,620,000	362,000	3,258,000	1448
	7971		**31760000**	**6352000**	**22,682,700**	**22,329**

Way forward

It has been decided that the community will pay at least 20% of the total cost of any option selected by them. None of the options will be provided free to the community to add a sense of ownership and to ensure sustainable use of the provided options. We are facing difficulties and at the same time we are spending much more time than anticipated to collect 20% contribution money from the villagers. In fact, our field staff are visiting each person or community several times to motivate them to collect the contribution money. Villagers of Matlab project areas are always arguing with our field staff that ICDDR,B is providing different services free but you are asking for money. This has become one of the major problem for us to collect the contribution money. Many of the villagers still believe that the options will be distributed free at some point, as such they are waiting for that time. But in a recent meeting with ICDDR,B, it has been decided that

from now the contribution money will be reduced to either 10 or 5% depending on the socio economic condition of individuals. We are now expecting that the mitigation activities will move fast.

Appendix 1 Water quality test results of the provided options

Figure 3 Arsenic test results of Alcan filter (n=10)

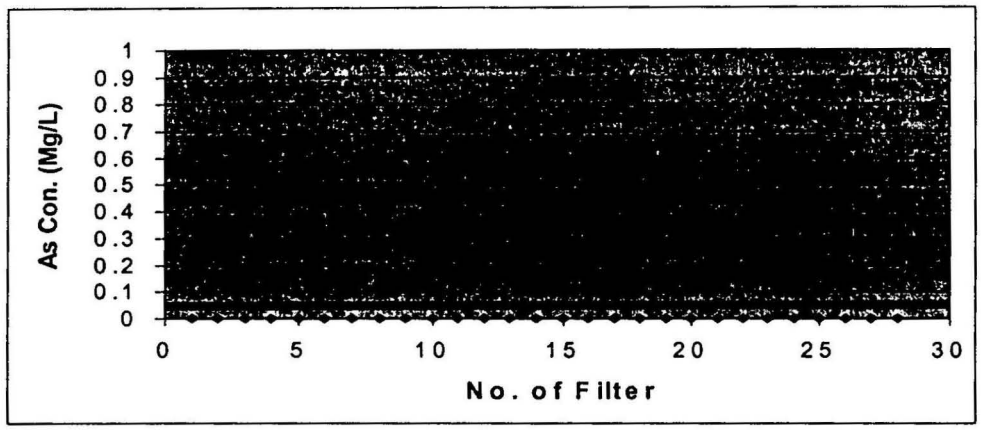


Figure 4 Arsenic test results of Safi filter (n=14)

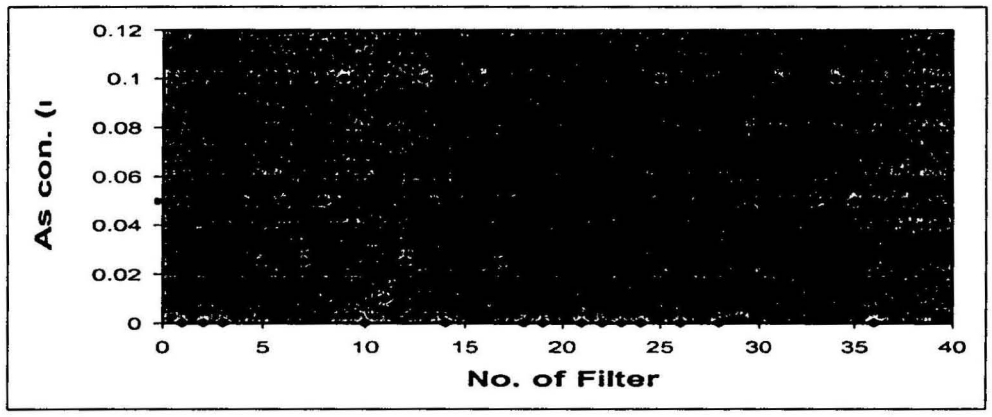


Figure 5 Arsenic test results of three pitcher filters (n=20)

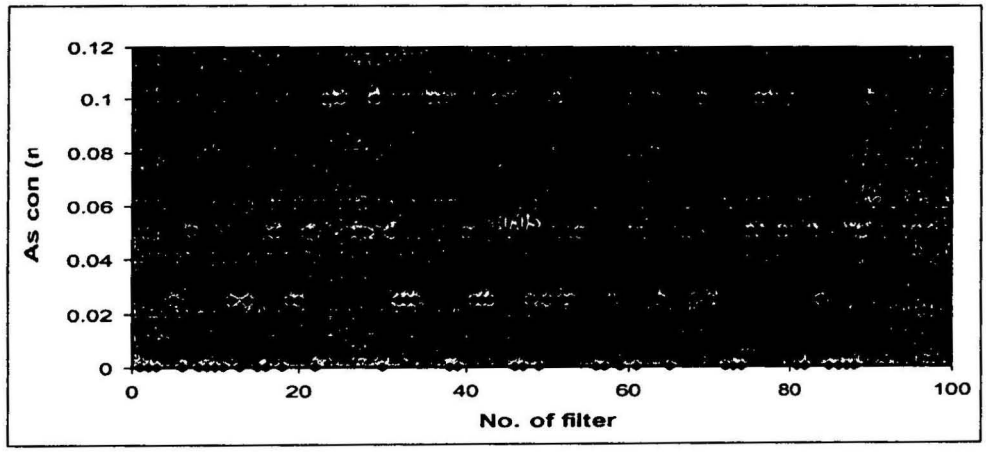


Figure 6 Bacteria test results of Safi filter (n=4)

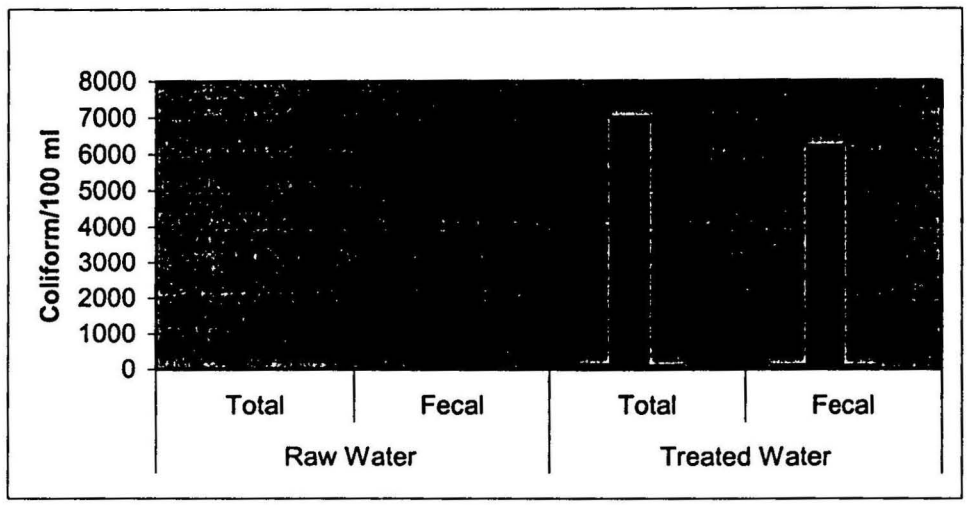


Figure 7 Bacteria test results of Bishuddhya filter (Treated water only, n=6)

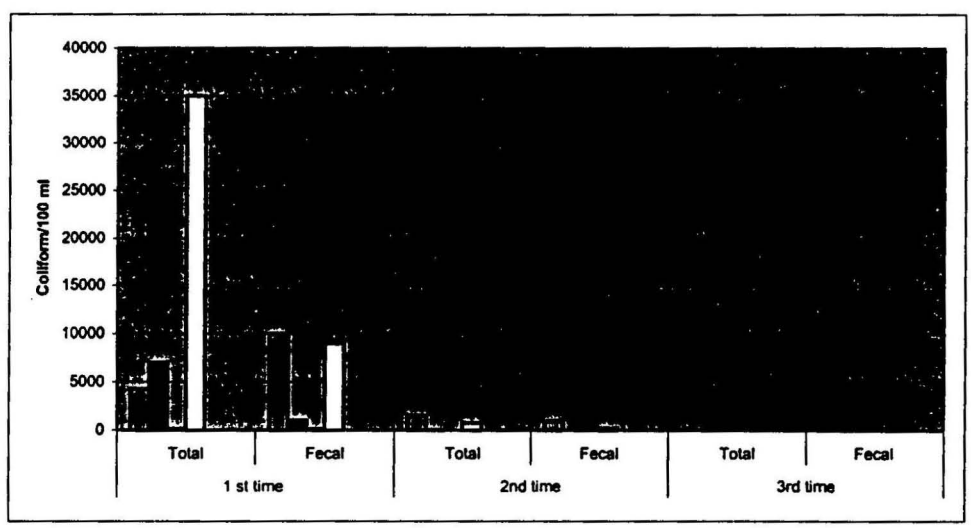


Figure 8 **Bacteria test result of PSF**

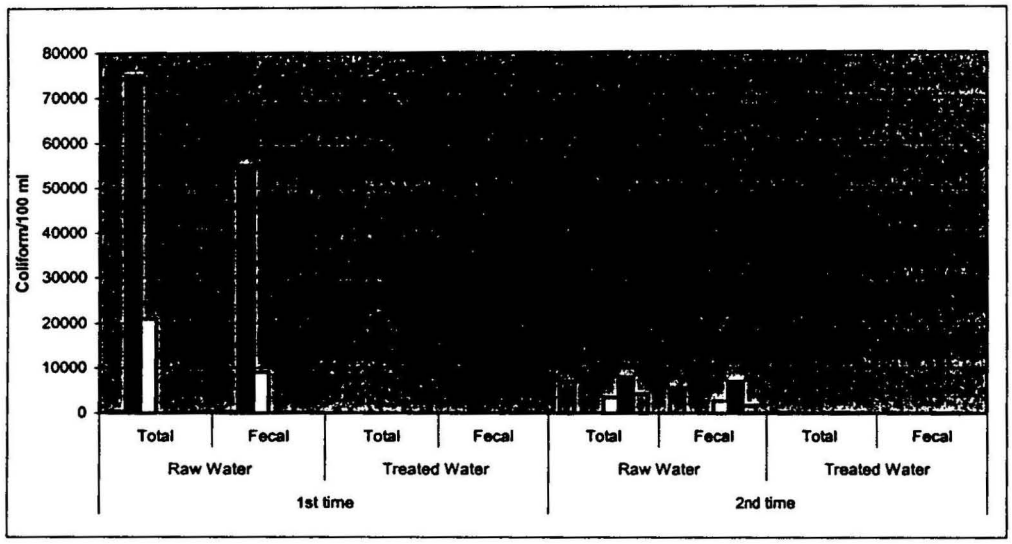


Figure 9 **Bacteria test results of RWH (n=6)**

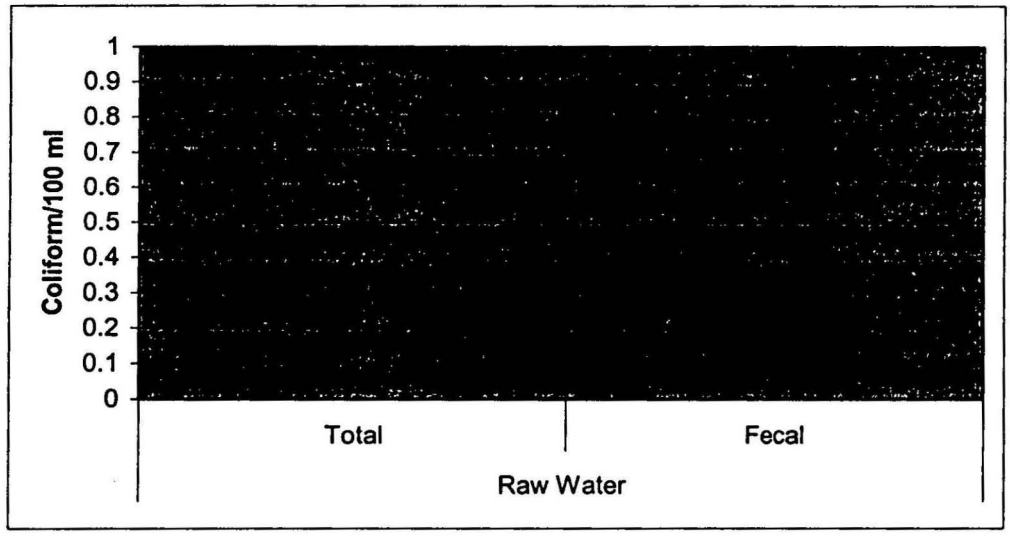


Table 7 Bacteria test results of Bishuddhya filters

Sl no.	1st time		2nd time		3rd time	
	Raw water Coliform	Treated water Coliform	Raw water Coliform*	Treated water Coliform	Raw water Coliform*	Treated water Coliform
1	34,000-Total 10,000-Fecal	43,000-Total 10,000-Fecal		1520- 950-		0- 0-
2	27,000-Total 200- Fecal	7000-Total 1000-Fecal		17- 14-		0- 0-
3	30,000-Total 3000-Fecal	160-Total 130-fecal		8- 5-		0- 0-
4	11,000-Total 300- Fecal	35,000-Total 9000-Fecal		740- 240-		0- 0-
5	-					0- 0-
6	-					0- 0-

* We did not supply raw water

Table 8 Bacteria test results of Safi filters

Sl no	Coliform	
	Raw water	Treated water
1	0-Total 0-Fecal	116- 98-
2	0-Total 0-Fecal	7000-Total 6200-Fecal
3	0-Total 0-Fecal	84-Total 75-Fecal
4	0-Total 0-Fecal	

Table 9 Bacteria test results of PSF

Sl no.	1st time		2nd time	
	Raw water Coliform	Treated water Coliform	Raw water Coliform	Treated water Coliform
1	330-Total 280- Fecal	0-Total 0-Fecal	7000- Total 5600- Fecal	112- Total 82- Fecal
2	75000-Total 55000- Fecal	0- Total 0- Fecal	Closed due to re-excavation of the pond	
3	21000-Total 9000- Fecal	0- Total 0- Fecal	Closed due to re-excavation of the pond	
4	Under construction		3500- Total 2700- Fecal	115- Total 54- Fecal
5	Under construction		8000- Total 7000- Fecal	90- Total 70- Fecal
6	Under construction		4300- Total 1700- Fecal	47- Total 0- Fecal

Table 10 Bacteria test results of RHW (six months stored water)

Sl no	Coliform
	Raw water
1	0-Total 0-Fecal
2	0-Total 0-Fecal
3	0-Total 0-Fecal
4	0-Total 0-Fecal
5	0-Total 0-Fecal
6	0-Total 0-Fecal

Table 11. Monthly monitoring report of tubewell water based options (Arsenic)(Three Pitcher) January,03

Sl .no	Code	New Option Installation date	Month	Water quality result	
				Raw water	Treated water
01	V6003201-0	16.05.02	19.10.0201.1		0
			1.0201.12.02	.5	0
			08.01.03		0
			16.02.03		0.01
			25.03.03		0
			27.04.03		0
					0
02	V7214304-0	10.10.02	15.10.02		.025
			11.11.02	.5	0
			04.01.03		.05
			19.02.03		.05
			29.03.03		.01
			30.04.03		0.1
03	V5603406-0	02.09.02	08.09.02		0
			30.09.02		0
			30.10.02	.1--.5	0
			30.12.02		0
			20.02.03		.025
			30.03.03		0
			05.05.03		0
04	V6002401-0	26.05.02	27.08.02	.1-.5	.025
			24.09.02		0
			20.10.02		.025
			01.11.02		0
			30.12.02		0
			18.02.03		.01
			25.03.03		.025
			27.05.03		.025-.05
05	V6101301-0	30.05.02	25.08.02	.1-.5	.05
			03.06.02		0
			29.07.02		.025
			01.11.02		.025
			08.01.03		.05
			16.02.03		.05
			25.03.03		.1
			27.04.03		

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06	V1301701-0	05.09.02	03.10.02	.1–.5	0
			05.11.02		.1
			05.01.03		.1
			18.02.03		.1
			30.03.03		**
			05.05.03		**Gtw
07	V1002401-0	10.06.02	27.08.02	.1-.5	.1
			25.09.02		.05
			01.11.02		.05
			12.11.02		.05
			09.01.03		.1
			17.02.03		.05
			05.05.03		0
08	V1006102-0	08.06.02	27.08.02	.1-.5	0
			25.09.02		.05
			01.11.02		.025
			30.12.02		.025
			04.01.03		.025
			22.02.03		.05
			05.05.03		**RWH
09	V1000801-0	08.06.02	05.08.0226.0	.1-.5	.1
			8.02		.1
			09.01.03		.1
			24.02.03		.1
			30.03.03		.1**
			05.05.03		Gtw
10	V7217201-0	03.11.02	11.11.02	.1	0
			26.11.02		0
			04.01.03		.05
			23.02.03		.025
			29.03.03		.025
			05.05.03		.025
11	V3104001-0	05.07.02	27.08.02	.1-.5	.025
			25.09.02		.025
			19.10.02		.025
			02.11.02		.1
			30.12.02		.05
			18.02.03		.1-.5
			25.03.03		.05
			27.04.03		.025

12	V3201701-0	05.07.02	18.08.02	.1-.5	0
			25.09.02		0
			10.10.02		.025
			03.11.02		0
			30.12.02		.025
			08.01.03		.1
			20.02.03		.05
			25.03.03		.05
			27.04.03		.025
13	V7214304-0	08.10.02	15.10.02	.5	.025
			11.11.02		.025
			04.01.03		.05
			19.02.03		.025
			29.03.03		.05-.1
			30.04.03		.1
14	V3201701-0	11.07.02	18.08.02	.1-.5	0
			25.09.02		0
			10.10.02		.025
			03.11.02		0
			08.01.03		.1
			23.02.03		.05
			25.03.03		.05
			27.04.03		.025
15	V1301403-0	05.09.02	12.10.02	.1-.5	0
			05.11.02		.05
			10.11.02		.1
			30.12.02		.025
			22.02.03		.05
			30.03.03		.1**
			05.05.03		Gtw
16	V3107202-0	25.07.02	18.08.02	.1	0
			25.09.02		.05
			24.10.02		.05
			02.11.02		.025
			30.12.02		.1
			23.02.03		.1
			27.03.03		.05
			27.04.03		.05
17	V1301403-0	05.09.02	12.10.02	.1--.5	.025
			05.11.02		.025
			17.11.02		0
			26.11.02		0
			30.11.02		0
			20.02.03		.05
			30.03.03		**
			05.05.03		.05

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18	V1301402-0	05.09.02	12.10.02	.1-.5	.05
			05.11.02		.1
			17.11.02		.1
			26.11.02		.1
			30.12.02		.05
			19.02.03		.05
			30.03.03		.1
			05.05.03		.05
19	V5603501-0	26.08.02	27.08.02	.5	.1
			01.09.02		0
			30.09.02		0
			27.11.02		.05
			27.12.02		.025
			22.02.03		.05-.1
			05.05.03		**Pw
20	V3133101-0	27.08.02	26.09.02	.1--.5	0
			01.09.02		0
			26.10.02		0
			25.11.02		0
			31.12.02		.05
			04.01.03		.1
			24.02.03		.1
			27.03.03		.1
			07.05.03		**Gtw

Remarks- (**)- Stopped , Candle Changed,

Gtw- green tubewell water

RWH- Rain water hervester

Pw- pond water

Table 12 Monthly monitoring report of tubewell water based options(Arsenic) (Activated Alum Filter Tow Buket)

January,03

Sl .no	Code	New Option Installation date	Month	Water quality result	
				Raw water	Treated water
1	H0000403	10.09.02	10.09.02	.1-.5	0
			19.11.02		0
			01.01.03		0
			29.03.03		0
			05.04.03		0
2	V6200902-0	03.07.02	31.07.02	.1-5	0
			27.08.02		0
			17.10.02		0
			25.11.02		0
			02.01.03		0
			30.03.03		0
			03.05.03		0
3	V6200406-0	06.07.02	31.07.02	.1-.5	0
			27.08.02		0
			24.11.02		0
			02.01.03		0
			30.03.03		0
			03.05.03		0
4	V3201701-0	15.07.02	28.07.02	.1-.5	0
			18.08.02		0
			25.09.02		0
			04.01.03		0
			25.03.03		0
			27.04.03		0
5	VH0000401-0	23.11.02	23.11.02	.1--.5	0
			02.01.03		0
			29.03.03		0
			05.0503		0
6	VH0000403-0	14.12.02	14.12.02	.1-.5	0
			02.01.03		0
			29.03.03		0
			05.05.03		0
7	V9505501-0	26.11.02	26.11.02	.1--.5	0
			07.01.03		.05
			26.03.03		0
			06.05.03		0

(Activated Alum Filter Steel)

8	V1006001-0	11.12.02	11.12.02 06.01.03 30.03.03 05.05.03	.1--.5	0 0 .025 0
9	V5900803-0	14.12.02	14.12.02 07.01.03 30.03.03 06.05.03	.1-.5	0 0 .025 0
10	V5900805-0	14.12.02	14.12.02 07.01.03 30.03.03 06.05.03	.1--.5	0 0 0 0

Table 13 Monthly monitoring report of tubewell water based options (Arsenic)

(Safi Filter)

January, 03

Sl .no	Code	New Option Installation date	Month	Water quality result	
				Raw water	Treated water
1.		18.12.02	18.12.02	.1--.5	0
			02.01.03		0
			24.02.03		.025
			29.03.03		.1-.5**
2.	V6200901-0	17.09.02	17.09.02	.1--.5	0
			17.10.02		.05
			25.11.02		.025
			02.01.03		.05
			23.02.03		.05
			31.03.03		.05
			7.05.03		.05
3.	V3101501-0	17.09.02	17.09.02	.1--.5	.025
			17.10.02		.05
			01.01.03		.1
			20.02.03		.025
			31.03.03		.025
			7.05.03		.025
4.	V3118902-0	23.10.02	24.10.02	.1--.5	0
			04.11.02		.01
			16.11.02		.025
			02.12.02		.1
			05.01.03		.1-.5
			16.02.03		.05-.1
			29.03.03		.05
			27.05.03		**Gtw
5.	V3119003-0	23.10.02	24.10.02	.1--.5	.05
			04.11.02		.1
			16.11.02		.025
			02.12.02		.1-.5
			03.01.03		.1-.5
			16.02.03		.1
			29.03.03		.1-.5
			27.04.03		**Gtw
6.	V3119002-0	10.11.02	11.11.02	.1--.5	.025
			02.12.02		.1-.5
			07.01.03		.1-.5
			16.02.03		.1
			29.03.03		.1-.5
			27.04.03		**Gtw

7.	V5902602-0	24.10.02	24.10.02	.1--.5	0
			05.11.02		0
			01.01.03		.1
			23.02.03		0
			03.03.03		0
			06.05.03		**Gtw
8.	VDX001207	24.11.02	24.11.02	.1--.5	0
			04.01.03		.05
			18.02.03		.05-.1
			30.03.03		.025
			05.05.03		.1
9	VH0000401	25.11.02	25.11.03	.1-.5	0
			06.01.03		.05
			22.02.03		.05
			29.03.03		.1
			05.05.03		.05-.1
10	V1301201-0	02.12.02	02.12.02	.1-5	.05
			30.12.02		.1
			23.02.03		.05
			30.03.03		.05
			05.05.03		**Alcan
11.	V1301201-0	02.12.02	02.12.02	.1-.5	.05
			01.01.03		.05
			22.02.03		.05
			03.03.03		.05
			05.05.03		.05
12.	V1301901-0	25.12.02	01.01.03	.1-.5	.1
			22.02.03		.1
			03.03.03		.1
			05.04.03		.025*
13.	V56007007-0	16.12.02	01.01.03	.1-.5	.05
			23.02.03		.05
			30.03.03		.1-.5
			05.05.03		.1-.5**
14.	V56007007	16.12.02	01.01.03	.1-.5	0
			20.02.03		.05
			30.03.03		.05
			05.04.03		.025**