To save the haor crops

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WE have passed this year's dangerous period for haor crops. The boro crops are saved, harvesting being completed by the 10th of May. The Sunamganj district shall alone produce boro rice worth Tk 600 crore and Netrokona Tk. 200 crore from the Bangladesh Water Development Board (BWDB) projects. As the flash flood did not arrive this time, it is expected that boro crops worth Tk 1000 crore in addition shall be harvested from other places of the haor areas, where BWDB has no embankments. The year 2005 was also good. The success on boro crops was similar to this year's. People, politicians and others appreciated BWDB for introducing new policy for maintenance of the embankments in 2005, by locally organised communities. But some local leaders mentioned that, if there would have arrived a flash flood of the magnitude of 2004, situation could be again of a total failure.

Flash floods of higher magnitude if arrived, could certainly inundate the near ripening boro crops in Sunamganj district overtopping the BWDB embankments. This happens because, these embankments are constructed with the crest levels 5.34 to 6.50 meter above mean sea level, to check early flash floods of low magnitude only. The year 2004 was bad, very bad to the crops in haors. Almost all the BWDB projects in Sunamganj having submersible embankments were gone under water by 16th April. The flood level in the Surma River near Sunamganj on that date was above 6.50m and continued to increase up to 8.08m level. The boro crops there needed only 15 to 30 days more to get harvested. Similar situation also occurred in some haors of Sylhet district. Chart 1 shows the Surma river water level fluctuations in the months of April and May 2004.

BWDB may appear to be in wrong decision to keep its embankments with the top levels vulnerable to flash floods. But this decision was taken in the sixties of the past century when the decision was definitely perfect. In those times the boro crops were used to get harvested before April, within the time for low magnitude flash floods. In those times there were only local variety boro crops in the haor areas with life span of 120 days. In the eighties the high yield variety boro crops arrived and gradually the hybrid variety of rice also arrived which has a life span of 140-150 days. This variety has higher production but cannot be harvested until the arrival of May.

High magnitude flash floods arrive in the haor areas occasionally in April. But it can happen in any subsequent years, e.g., in 2000, 2002 and 2004 it happened (see Chart 2). It didn't happen in 2001, 2003, 2005 and 2006. In case of high magnitude flash floods, there must be heavy rainfall either in the lower Meghalayas or in the Barak valley in India. In the year 2004, there was excessive rainfall in the first half of April all over the Barak valley and Cachhar district of India. It was so excessive that India had to postpone its national election activities going on there.

Question may arise, when the

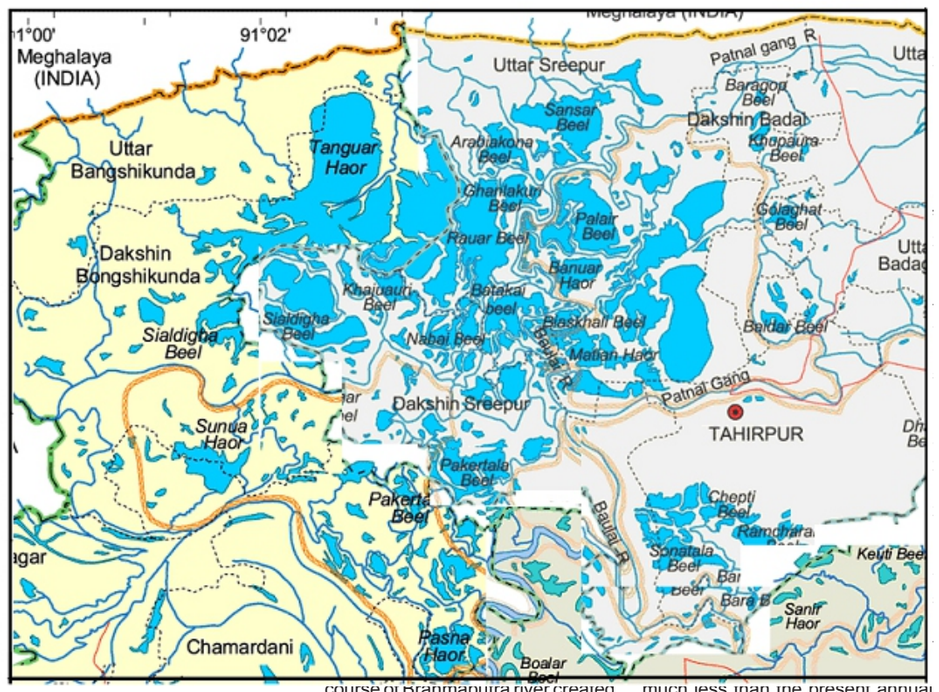

Figure 1. The Tangua Haor, the lowest pocket in Bangladesh.

BWDB embankments cannot check the high magnitude flash floods in April, then what is the use of? Yes, there is that use, and its perfect use during February and March. To understand the phenomenon of water management in the haor areas, one must know that Sunamganj is the lowest pocket in our country. Some tectonic activity in the prehistory made this land sink 5 to 15 meters down, creating vast lowlands. The Dauki Fault all along the southern ends of Khasia and

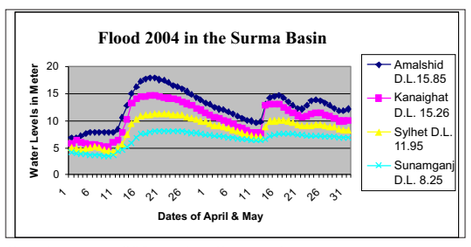

Chart 1 Flood 2004 in the Surma Basin

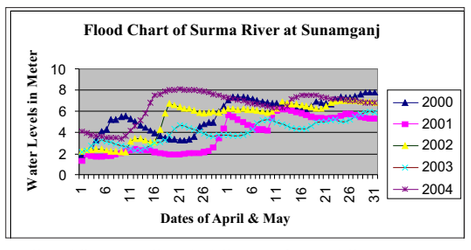

Chart 2. Flood Chart of Surma River at Sunamganj

Surma from the Barak river near Amalshid emerged to flow towards the haor areas. The Barak river in the downstream left its course of Shakhabarak and shifted towards the haor areas through the Bibiyana course.

Presently, the haors in Sunamganj have average ground level 2 to 4 meters above mean sea level. Before arrival of the rainy season, any summer downpour in this valley rushes towards the Tanguar Haor and inundates the lowlands of Sunamganj district. We know the average annual rainfall over Bangladesh is about 2300 mm. But in Rajshahi to the west it is about 1250 mm only, while in Sylhet to the northeast it is about 5000 mm. It is very likely that some showers may occur in the months of March which can inundate these haors.

A comparative picture of water levels at Sunamganj is given in Table 1. From this table we can see that the river water level on 1st April of 2004, 2005 and 2006 were 4.1, 5.35 and 2.00 meters, respectively. It means that, there were showers in 2004 and 2005 but no shower by March in 2006. By all those times the embankments were not overtopped and crops were saved. But in 2004, the flood arrived on 12th April and by 16th April it crossed 6 meters level to inundate the submersible embankments. In 2005 there was a similar rise of water level but it was highest 5.42 meter on 13th April. In 2006 the highest was 5.25 meter on 15th April. Both of which were within the scope of protection by regular or emergency dykes. The flood levels went down in the later parts of April in 2005 and 2006.

From those records and from Chart 2, we can clearly understand that there is every possibility of flood in Sunamganj areas by April 10 of such magnitude that can overtop the BWDB embankments and submerge the crops. Who is to be blamed for this? Definitely not BWDB. Because, the embankments of BWDB were meant for the local variety boro crops, those would have been harvested by March every year. The blame should go to the hybrid variety of rice which has life span of 140-150 days and harvest time up-to the 1st week of May. If we look at chart 2, we can find that it was possible to save the hybrid variety of rice in 2005 and 2006 when the river stages remained well below 6 meter level until the middle of May. But in 2004 it was not possible as the river stages went above 6.00 meter level by 16th April and remained above in the later periods.

Now the question is what should we do ? Shall we stay in the existing situation with high risk, or shall we try to find some remedial measures ? I shall opt for the later. Since the devastating flood of 2004, I was advocating the local administrators and farmers to go back to the local varieties. But it shall reduce our production capacity. Then how can we ensure our crops ? I understand, a changed design concept for BWDB embankments can do this job. Let us make our embankments much less than the present annual cost.

The proposal can be visualised through two sketches: The figure 2 shows the present scenario of the Haor maintenance works. Here the design level of the crest of the embankments are below the flood water level. For this, the embankments go under water every year and damaged, so need annual filling to regain their levels. The drainage or flushing closures are rebuilt every year. The figure 3 is the proposed scenario. According to this the closures and the embankments are above flood water levels so the construction cost shall be higher. But as the embankments are not submersible, they shall not need annual filling of present day volume. In total the project maintenance cost shall go down substantially and the crops shall be ensured against disaster.

I want to mention here that, some of the projects in haor areas have higher crest level embankments already and those projects did save the crops even in 2004. These are Zilkar Haor (East) in Sylhet and Joalbhanga Haor in Sunamganj districts. So, the proposal has examples and evidences. Nevertheless, if the proposal is accepted it can give one extra benefit to the Haor people. The embankments can be used for all season movement of the public. Some of these embankment can be selected for plying motorised vehicles by putting hard surface on them. The gaps of closures can be linked by bridges but they have to be made as additional structures and have to be open enough for facilitating quick drainage located away from the closures (see Figure 4).

In the end, I must express my hope on the reporting of some farmers of Kishoreganj district in a seminar held on 27th April 2006 at BIAM, Dhaka, that they have developed a variety of boro rice called Sri-45 which has similar yield of the hybrid ones, but has shorter life span. With this variety they expect to harvest their crops by the end of March. This is very much encouraging. We have been encouraged earlier by the discovery of 'Haridhan' a pest resistant, drought resistant, high yielding local variety of rice by a farmer Haripada Kapali of Jhenaidah. These are the real works that are taking our nation ahead with hope amid lots of high sounding rhetorics of development.

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Table 1.Water levels of the Surma River in Meters above Mean Sea Level at Sunamganj

April	2000	2001	2002	2003	2004	2005	2006
1	1.86	1.26	2.24	2.12	4.1	5.35	2.02
2	1.98	1.9	2.28	2.35	3.92	5.13	2.08
3	2.2	1.81	2.32	2.7	3.78	4.91	2.1
4	3.29	1.74	2.39	3.05	3.71	4.65	2.15
5	4.08	1.74	2.4	3.23	3.63	4.4	2.32
6	4.3	1.78	2.35	3.18	3.52	4.18	2.45
7	5.2	1.81	2.26	3.06	3.53	4.04	2.48
8	5.2	1.9	2.18	2.92	3.48	3.98	2.45
9	5.48	2.05	2.15	2.76	3.38	3.97	2.4
10	5.53	2.2	2.16	2.62	3.64	4.4	2.4
11	5.33	2.35	3.16	2.48	4.2	5.02	2.55
12	5.05	2.36	3.46	2.34	4.6	5.26	4
13	4.74	2.35	3.4	2.3	5.1	5.42	5
14	4.42	2.34	3.22	2.53	5.85	5.29	5.35
15	4.15	2.3	3.06	2.77	6.88	5.1	5.25
16	3.9	2.14	3.05	2.96	7.56	4.97	5.08
17	3.66	2.04	4.25	3.08	7.57	4.8	4.93
18	3.48	1.94	5.8	3.25	7.83	4.66	4.78
19	3.36	1.86	6.78	3.8	8	4.52	4.56
20	3.32	1.85	6.58	4.32	8.06	4.34	4.36

Data: Department of Hydrology, BWDB.

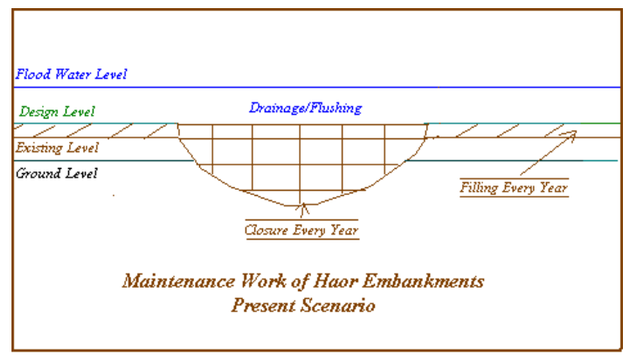

Figure 2. Present Scenario of the BWDB embankments in haors

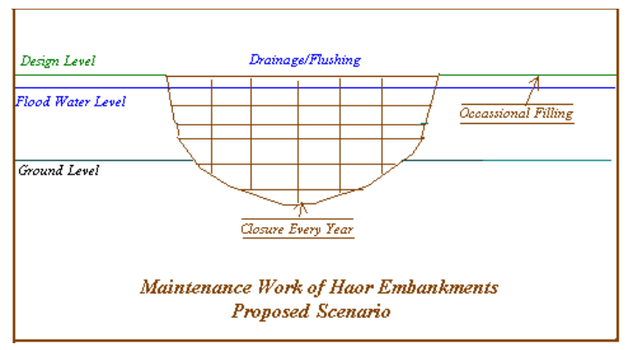

Figure 3. Proposed Scenario of the BWDB embankments in Haors

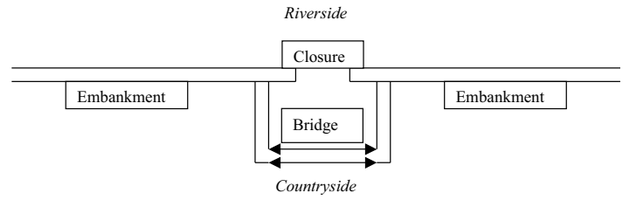

Figure 4. Proposed Location of Bridges