MODULE IV : PROPOSED CHECK DAMS IN THE RIDGE AREA

1.0 The Gazetteers of Delhi show that there were 17 check dams in the NCT Delhi. These were mostly in the Ridge area and meant to capture the monsoon runoff from the slopes. Even as cultivated area receded and water supply from DWSSDU and tube wells obviated the need for many of these check dams the 1975 Gazetteer records that during 1970 – 71 1473 ha land was irrigated by these 'tank bunds' and by 1975 the area serviced had declined to 497 ha from 8 'tank bunds'. These were :

- Dera Bund
- Asola Bund
- Gadaipur Bund
- Sultanpur Bund
- Rajokri Bund
- Bijwasan Bund
- Deoli Adjoining Bund
- Fatehpur Beri Bund

2.0 Over time as significant edges of the Ridge area got urbanized the impoundment areas of these check dams acquired immense market value and got sold as 'farm house' land for rich suburban homes.

3.0 In the last decade and a half Dept. Of I & FC has constructed a few check dams at appropriate locations. However, there is scope for more. The SoI Regional Survey Map on 1 : 10,000 scale shows the contours in great detail at an interval of just 0.5m. On examination of these maps several potential sites emerge. A further scrutiny of the identified areas from Google satellite imagery shows that some of the sites are no longer practical as the areas have been built over or the flow gullies have been destroyed to make way for properties.

4.0 Even so the following sites emerge which are clear of buildings and are not on private lands. The locations are shown on the attached SoI [1:10,000] map sheets.

5.0 In many sites the storage capacity is far less than the runoff from the catchment. This is due to the gullied nature of the terrain. In these cases it is recommended that excavation work be carried out in the proposed pondage area to increase the storage capacity and thus the recharge capacity. To carry out excavation permission may be required from the Forest Dept. But this should not be difficult.

6.0 **Calculation Methodology :** The location of the checkdam is derived from the toposheet. Its watershed area **[C]** is determined from the toposheet i.e. between the checkdam and the highest contour of the catchment beyond which the runoff water would flow away into some other line of drainage. The monsoon season rainfall [48 cm] is considered and the runoff coefficient taken as 25% [p. 223, 'Hydrology and Water Resources Engineering, SK Garg,1996] Then :

Runoff Volume [Cu.M] = C x .48 x .25

In case the storage volume is less than runoff volume then there would be a spillover. The storage volume [for the purpose of this module] is determined by the height of the checkdam as estimated from the contour.

7.0 **Spread Calculation :** The checkdam height is assumed as 4m [sill to crest]. Given 0.5 m free board the area contained in the relevant contour line from the toposheet is approximately estimated. The spread would be at the maximum with the figure decreasing post monsoon.

8.0 **Volume Calculation :** The average depth of water at full spread is typically 1.5m – 2.0m in the area as per general gradients obtaining. The volume is derived by depth x full spread area.

9.0 The following table gives relevant details of each site :

S No	Site	Catchment Area [Sq.M.]	Runoff [Cu.M.]	Spread Sq.M. [Max.]	Storage Volume [Cu.M.] [Est.]	Remarks	Sheet No.
1	South of Aya Nagar	18,00,000	2,16,000	1,20,000	1,50,000		30
2	South of Aya Nagar	16,00,000	1,92,000	1,40,000	1,60,000		30
3	West of Chandan Hula	9,00,000	1,08,000	70,000	75,000		37
4	West of Fatehpur Beri	2,50,000	30,000	20,000	20,000		37
5	West of Fatehpur Beri	1,80,000	21,600	10,000	10,000		37
6	West of Fatehpur Beri	3,20,000	38,400	15,000	12,000		37
7	West of Fatehpur Beri	6,30,000	75,600	50,000	60,000		37
8	West of Fatehpur Beri	5,40,000	64,800	40,000	30,000		37
9	West of Fatehpur Beri	3,00,000	36,000	20,000	15,000		37
10	South of Fatehpur Beri	-	-	-	-	Nala Bundh	37
11	South of Fatehpur Beri	-	-	-	-	Nala Bundh	37
12	South of Fatehpur Beri	-	-	-	-	Nala Bundh	37
12A	North of Fatehpur Beri	-	-	-	-	Nala Bundh	37
12A	North of Fatehpur Beri	-	-	-	-	Nala Bundh	37

13	South of Fatehpur Beri	-	-	-	-	Nala Bundh	37
14	SW of Rajpur Khurd	2,50,000	30,000	15,000	20,000		37
15	West of Rajpur Khurd	7,00,000	84,000	50,000	70,000		37
16A	West of Rajpur Khurd	1,00,000	12,000	8,000	10,000		37
16B	West of Rajpur Khurd	1,00,000	12,000	8,000	10,000		37
16C	West of Rajpur Khurd	1,00,000	12,000	8,000	10,000		37
17	South of Sainik Farms	2,00,000	24,000	10,000	7,500		37
18	South of Sainik Farms	1,80,000	21,600	20,000	15,000		37
19	South of Sainik Farms	90,000	10,800	20,000	15,000		37
20	South of Sainik Farms	-	-	-	-	Nala Bundh	37
21	South of Sainik Farms	-	-	-	-	Nala Bundh	37
22	South of Sainik Farms	-	-	-	-	Nala Bundh	37
23	NW of Dhaula Kuan	1,20,000	14,400	12,000	10,000		28
24	NW of Dhaula Kuan	1,20,000	14,400	12,000	10,000		28
25	NW of Dhaula Kuan	-	-	-	-	Nala Bundh	28
26	NW of Dhaula Kuan	4,00,000	48,000	40,000	30,000		28
27	NW of Dhaula Kuan	80,000	9,600	15,000	7,500		28
28	NW of Dhaula Kuan	3,00,000	36,000	25,000	20,000		28
29	NW of Dhaula Kuan	-	-	-	-	Nala Bundh	28
30	South of Milakpur	-	-	-	-	Nala Bundh	29
31	South of Milakpur	-	-	-	-	Nala Bundh	29
32	South of Milakpur	-	-	-	-	Nala Bundh	29
33	SW of Jaunapur	12,00,000	1,44,000	60,000	90,000		31
34	West of Dera Mandi	3,00,000	36,000	12,000	12,000		38

35	South of Dera Mandi	1,60,000	19,200	14,000	11,500		38
35A	South of Dera Mandi	3,00,000	36,000	15,000	22,500		38
35B	South of Dera Mandi	2,60,000	31,200	9,000	13,500		38
35C	South of Dera Mandi	2,60,000	31,200	9,000	13,500		38
35D	South of Dera Mandi	3,20,000	38,400	10,000	15,000		38
36	South of Dera Mandi	1,00,000	12,000	4,000	6,000		38
		121,60,000	**14,59,200**	**8,61,000**			
	Total Storage Capacity				**9,51,000**		

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