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Rainwater Harvesting Analysis for Bahria Enclave and Shah Allah Ditta

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Introduction:

Rainwater harvesting has emerged as an essential strategy for addressing water scarcity, particularly in urban areas facing rapid population growth and climate variability. As the global climate crisis intensifies, the frequency of extreme weather events, including both droughts and floods, is increasing, creating a need for alternative water sources. Rainwater harvesting, particularly in cities like Islamabad, serves as a sustainable solution for reducing dependence on groundwater while offering resilience against fluctuating water supply systems.

In Islamabad, the challenge of maintaining a consistent water supply is exacerbated by irregular rainfall patterns, especially during the monsoon season. Rainwater harvesting, particularly from rooftops, can alleviate this issue by capturing runoff, storing it for use during drier periods, and minimizing runoff during heavy rains. This becomes crucial in microclimates like those in Bahria Enclave and Shah Allah Ditta, where rainfall intensity and timing can vary significantly due to their contrasting geographical positions. **Bahria Enclave**, located in a lower basin area, experiences stronger rainfall, especially during peak storms, whereas **Shah Allah Ditta**, situated near the Margalla Hills, experiences earlier or lighter precipitation.

The **Monsoon Rainfall Synchronization** Report highlights how rainfall events are shared between these two locations, but the intensity and distribution vary, particularly during peak rainfall events. This report's findings lay the groundwork for understanding how rainwater harvesting systems can be optimized for both locations.

By analyzing rainfall events over daily, monthly, and yearly intervals, we can design rainwater harvesting systems that maximize water capture while minimizing overflow, ensuring sustainable water supply throughout the year.

Comparative Rainwater Harvesting Analysis for Bahria Enclave and Shah Allah Ditta

Rainwater harvesting offers a viable solution to address water scarcity by capturing and storing rainfall. To design effective systems, understanding the rainfall patterns and distribution in different areas is crucial. In this analysis, we compare the rainwater harvesting potential of Bahria Enclave and Shah Allah Ditta, based on monthly rainfall data. The analysis includes rainy days, cumulative rainfall events, highest 24-hour rainfall, and total monthly rainfall. This will help us determine the appropriate storage tank sizes for each location, ensuring maximum water capture with minimal overflow.

Table no 1: Bahria Enclave Monthly Rainfall Analysis

Month	Rainy Days	Cumulative Rainfall Events	Highest 24hr Rainfall (mm)	Total Monthly Rainfall (mm)
January	1	0	0.6	0.6
February	6	1	61.6	104.4
March	7	1	25.0	38.8
April	4	0	14.6	33.0
May	10	1	19.2	50.4
June	6	2	121.0	207.0
July	14	6	105.0	470.0
August	16	6	86.2	361.4
September	5	1	34.2	77.2
October	2	0	44.2	76.2
November	1	0	0.4	0.4
December	0	0	0.0	0.0

Table no 2: Shah Allah Ditta Monthly Rainfall Analysis

Month	Rainy Days	Cumulative Rainfall Events	Highest 24hr Rainfall (mm)	Total Monthly Rainfall (mm)
January	1	0	0.2	0.2
February	4	1	31.6	55.6
March	4	0	41.8	56.2
April	4	1	8.4	13.0
May	10	1	21.6	92.6
June	10	3	42.4	77.0
July	16	5	142.4	470.2
August	17	6	80.0	279.6
September	5	1	39.8	67.4
October	2	0	28.2	35.8
November	1	0	0.2	0.2
December	0	0	0.0	0.0

Comparative Analysis of Rainwater Harvesting Potential

Based on the monthly rainfall analysis:

- Bahria Enclave experiences higher rainfall intensity and longer cumulative rainfall events compared to Shah Allah Ditta. For instance, Bahria Enclave recorded a high of 121 mm in June and 470 mm in July, whereas Shah Allah Ditta had its highest rainfall in July with 142.4 mm.
- **Rainy Days:** Both locations share many synchronized events, however number of the rainy days in Shah Allah Ditta were comparatively more than Bahria Enclave which showed its fragmented pattern.
- **Cumulative Events:** The cumulative rainfall events are spread throughout the monsoon months in both locations, with Shah Allah Ditta receiving more extended rainfall events, and Bahria Enclave showing more intense events (e.g., June, July, August).

Table no 3: Bahria and Shah Allah Ditta Rainfall Harvesting Analysis May

Date	Rainfall (mm)	Ave Catchment area (sqm)	Total Runoff (liters)	Tank 5000l filled %	Overflow	Tank 14000l filled%	Overflow	Tank 20,000l filled%	Overflow
1-May-25	2.60	250	585	11.7	0	4.2	0	2.9	0
4-May-25	1.60	250	360	7.2	0	2.6	0	1.8	0
8-May-25	19.20	250	4320	86.4	0	30.9	0	21.6	0
11-May-25	5.00	250	1125	22.5	0	8.0	0	5.6	0
18-May-25	0.80	250	180	3.6	0	1.3	0	0.9	0
24-May-25	6.60	250	1485	29.7	0	10.6	0	7.4	0
27-May-25	3.40	250	765	15.3	0	5.5	0	3.8	0
29-May-25	7.20	250	1620	32.4	0	11.6	0	8.1	0
30-May-25	2.20	250	495	9.9	0	3.5	0	2.5	0
31-May-25	1.80	250	405	8.1	0	2.9	0	2.0	0
Total Rainy Days	10								
Total Precipitation	50.4								

Date	Rainfall (mm)	Ave Catchment area (sqm)	Total Runoff (liters)	Tank 5000l filled %	Overflow	Tank 14000l filled%	Overflow	Tank 20,000l filled%	Overflow
1-May-25	5.00	250	1125	22.5	0	8.0	0	5.6	0
4-May-25	0.80	250	180	3.6	0	1.3	0	0.9	0
8-May-25	18.20	250	4095	81.9	0	29.3	0	20.5	0
11-May-25	10.60	250	2385	47.7	0	17.0	0	11.9	0
18-May-25	3.00	250	675	13.5	0	4.8	0	3.4	0
24-May-25	16.40	250	3690	73.8	0	26.4	0	18.5	0
27-May-25	4.00	250	900	18	0	6.4	0	4.5	0
29-May-25	21.20	250	4770	95.4	0	34.1	0	23.9	0
30-May-25	10.40	250	2340	46.8	0	16.7	0	11.7	0
31-May-25	3.00	250	675	13.5	0	4.8	0	3.4	0
Total Rainy Days	10								
Total Precipitation	92.60								

Table no 4: Bahria and Shah Allah Ditta Rainfall Harvesting Analysis june

Date	Rainfall (mm)	Ave Catchment area (sqm)	Total Runoff (liters)	Tank 5000l filled %	Overflow	Tank 14000l filled%	Overflow	Tank 20,000l filled%	Overflow
3-Jun-25	0.20	250	45	0.9	0	0.3	0	0.2	0
7-Jun-25	0.80	250	180	3.6	0	1.3	0	0.9	0
21-Jun-25	27.00	250	6075	100	1075	43.4	0	30.4	0
22-Jun-25	52.80	250	11880	100	6880	84.9	0	59.4	0
25-Jun-25	112.80	250	25380	100	20380	100.0	11380	100.0	5380
26-Jun-25	13.40	250	3015	60.3	0	21.5	0	15.1	0
Total Rainy Days	6								
Total Precipitation	207								

Date	Rainfall (mm)	Ave Catchment area (sqm)	Total Runoff (liters)	Tank 5000l filled %	Overflow	Tank 14000l filled%	Overflow	Tank 20,000l filled%	Overflow
4-Jun-25	0.60	250	135	2.7	0	1.0	0	0.7	0
13-Jun-25	0.60	250	135	2.7	0	1.0	0	0.7	0
21-Jun-25	5.60	250	1260	25.2	0	9.0	0	6.3	0
22-Jun-25	3.80	250	855	17.1	0	6.1	0	4.3	0
23-Jun-25	9.00	250	2025	40.5	0	14.5	0	10.1	0
25-Jun-25	4.60	250	1035	20.7	0	7.4	0	5.2	0
26-Jun-25	40.40	250	9090	100	4090	64.9	0	45.5	0
28-Jun-25	0.20	250	45	0.9	0	0.3	0	0.2	0
29-Jun-25	11.20	250	2520	50.4	0	18.0	0	12.6	0
30-Jun-25	1.00	250	225	4.5	0	1.6	0	1.1	0
Total Rainy Days			10						
Total Precipitation			77						

Table no 5: Bahria and Shah Allah Ditta Rainfall Harvesting Analysis July

Date	Rainfall (mm)	Ave Catchment area (sqm)	Total Runoff (liters)	Tank 5000l filled %	Overflow	Tank 14000l filled%	Overflow	Tank 20,000l filled%	Overflow
1-Jul-25	15.00	250	3375	67.5	0	24.1	0	16.9	0
2-Jul-25	36.80	250	8280	100	3280	59.1	0	41.4	0
5-Jul-25	18.20	250	4095	81.9	0	29.3	0	20.5	0
6-Jul-25	86.80	250	19530	100	14530	100.0	5530	97.7	0
8-Jul-25	16.20	250	3645	72.9	0	26.0	0	18.2	0
9-Jul-25	75.00	250	16875	100	11875	100.0	2875	84.4	0
10-Jul-25	4.00	250	900	18	0	6.4	0	4.5	0
15-Jul-25	6.60	250	1485	29.7	0	10.6	0	7.4	0
16-Jul-25	35.60	250	8010	100	3010	57.2	0	40.1	0
17-Jul-25	82.20	250	18495	100	13495	100.0	4495	92.5	0
21-Jul-25	2.60	250	585	11.7	0	4.2	0	2.9	0
22-Jul-25	12.40	250	2790	55.8	0	19.9	0	14.0	0
23-Jul-25	34.40	250	7740	100	2740	55.3	0	38.7	0
29-Jul-25	1.40	250	315	6.3	0	2.3	0	1.6	0
30-Jul-25	42.80	250	9630	100	4630	68.8	0	48.2	0
Total Rainy Days			15						
Total Precipitation			470						

Date	Rainfall (mm)	Ave Catchment area (sqm)	Total Runoff (liters)	Tank 5000l filled %	Overflow	Tank 14000l filled%	Overflow	Tank 20,000l filled%	Overflow
1-Jul-25	30.20	250	6795	100	1795	48.5	0	34.0	0
2-Jul-25	16.40	250	3690	73.8	0	26.4	0	18.5	0
4-Jul-25	0.60	250	135	2.7	0	1.0	0	0.7	0
5-Jul-25	0.40	250	90	1.8	0	0.6	0	0.5	0
6-Jul-25	23.00	250	5175	100	175	37.0	0	25.9	0
7-Jul-25	9.00	250	2025	40.5	0	14.5	0	10.1	0
9-Jul-25	54.60	250	12285	100	7285	87.8	0	61.4	0
10-Jul-25	3.80	250	855	17.1	0	6.1	0	4.3	0
14-Jul-25	1.80	250	405	8.1	0	2.9	0	2.0	0
15-Jul-25	4.40	250	990	19.8	0	7.1	0	5.0	0
16-Jul-25	29.00	250	6525	100	1525	46.6	0	32.6	0
17-Jul-25	124.80	250	28080	100	23080	100.0	14080	100.0	8080
21-Jul-25	81.40	250	18315	100	13315	100.0	4315	91.6	0
22-Jul-25	31.20	250	7020	100	2020	50.1	0	35.1	0
23-Jul-25	44.60	250	10035	100	5035	71.7	0	50.2	0
30-Jul-25	15.00	250	3375	67.5	0	24.1	0	16.9	0
Total Rainy Days			16						
Total Precipitation			470.20						

Table no 6: Bahria and Shah Allah Ditta Rainfall Harvesting Analysis August

Date	Rainfall (mm)	Ave Catchment area (sqm)	Total Runoff (liters)	Tank 5000l filled %	Overflow	Tank 14000l filled%	Overflow	Tank 20,000l filled%	Overflow
2-Aug-25	25.80	250	5805	100	805	41.5	0	29.0	0
3-Aug-25	1.40	250	315	6.3	0	2.3	0	1.6	0
5-Aug-25	33.60	250	7560	100	2560	54.0	0	37.8	0
6-Aug-25	53.40	250	12015	100	7015	85.8	0	60.1	0
7-Aug-25	3.40	250	765	15.3	0	5.5	0	3.8	0
10-Aug-25	7.80	250	1755	35.1	0	12.5	0	8.8	0
13-Aug-25	0.80	250	180	3.6	0	1.3	0	0.9	0
14-Aug-25	38.40	250	8640	100	3640	61.7	0	43.2	0
15-Aug-25	30.80	250	6930	100	1930	49.5	0	34.7	0
17-Aug-25	70.80	250	15930	100	10930	100.0	1930	79.7	0
18-Aug-25	5.60	250	1260	25.2	0	9.0	0	6.3	0
19-Aug-25	6.20	250	1395	27.9	0	10.0	0	7.0	0
23-Aug-25	69.80	250	15705	100	10705	100.0	1705	78.5	0
24-Aug-25	10.80	250	2430	48.6	0	17.4	0	12.2	0
29-Aug-25	1.00	250	225	4.5	0	1.6	0	1.1	0
30-Aug-25	1.80	250	405	8.1	0	2.9	0	2.0	0
Total Rainy Days	**16**								
Total Precipitation	**361.4**								

Date	Rainfall (mm)	Ave Catchment area (sqm)	Total Runoff (liters)	Tank 5000l filled %	Overflow	Tank 14000l filled%	Overflow	Tank 20,000l filled%	Overflow
2-Aug-25	80.00	250	18000	100	13000	100.0	4000	90.0	0
3-Aug-25	25.60	250	5760	100	760	41.1	0	28.8	0
4-Aug-25	0.40	250	90	1.8	0	0.6	0	0.5	0
6-Aug-25	5.00	250	1125	22.5	0	8.0	0	5.6	0
7-Aug-25	7.40	250	1665	33.3	0	11.9	0	8.3	0
8-Aug-25	50.80	250	11430	100	6430	81.6	0	57.2	0
13-Aug-25	2.00	250	450	9	0	3.2	0	2.3	0
14-Aug-25	0.60	250	135	2.7	0	1.0	0	0.7	0
15-Aug-25	7.80	250	1755	35.1	0	12.5	0	8.8	0
17-Aug-25	63.80	250	14355	100	9355	100.0	355	71.8	0
18-Aug-25	10.80	250	2430	48.6	0	17.4	0	12.2	0
19-Aug-25	0.20	250	45	0.9	0	0.3	0	0.2	0
23-Aug-25	8.60	250	1935	38.7	0	13.8	0	9.7	0
24-Aug-25	9.20	250	2070	41.4	0	14.8	0	10.4	0
29-Aug-25	2.80	250	630	12.6	0	4.5	0	3.2	0
30-Aug-25	0.20	250	45	0.9	0	0.3	0	0.2	0
31-Aug-25	4.40	250	990	19.8	0	7.1	0	5.0	0
Total Rainy Days	**17**								
Total Precipitation	**279.60**								

Rainwater Harvesting Potential and Daily Consumption Impact on Tank Overflow

In this section, we analyze the rainwater harvesting potential at Bahria Enclave and Shah Allah Ditta, considering both rainfall intensity and daily water consumption. The aim is to understand how different tank sizes (5,000 liters, 14,000 liters, and 20,000 liters) perform in terms of overflow during peak rainfall months, particularly during the monsoon season. We also consider the daily water consumption for 4 people (approximately 600 liters/day), which impacts the storage capacity of the tanks and the overflow rates.

Table no 7: Bahria and Shah Allah Ditta Rainfall Events Analysis with added Daily Consumption Impact May

Date	Rainfall (mm)	Ave Catchment area (sqm)	Total Runoff (liters)	After Daily Consumtion	Tank 5000l filled %	Overflow	Tank 14000l filled%	Overflow	Tank 20,000l filled%	Overflow
1-May-25	2.60	250	585	0	0	0	0.0	0	0.0	0
4-May-25	1.60	250	360	0	0	0	0.0	0	0.0	0
8-May-25	19.20	250	4320	3720	74.4	0	26.6	0	18.6	0
11-May-25	5.00	250	1125	525	10.5	0	3.8	0	2.6	0
18-May-25	0.80	250	180	0	0	0	0.0	0	0.0	0
24-May-25	6.60	250	1485	885	17.7	0	6.3	0	4.4	0
27-May-25	3.40	250	765	165	3.3	0	1.2	0	0.8	0
29-May-25	7.00	250	1575	975	19.5	0	7.0	0	4.9	0
30-May-25	2.40	250	540	0	0	0	0.0	0	0.0	0
31-May-25	1.80	250	405	0	0	0	0.0	0	0.0	0
Total Rainy Days		10								
Total Precipitation		50.40								

Date	Rainfall (mm)	Ave Catchment area (sqm)	Total Runoff (liters)	After Daily Consumption	Tank 5000l filled %	Overflow	Tank 14000l filled%	Overflow	Tank 20,000l filled%	Overflow
1-May-25	5.00	250	1125	525	10.5	0	3.8	0	2.6	0
4-May-25	0.80	250	180	0	0	0	0.0	0	0.0	0
8-May-25	18.20	250	4095	3495	69.9	0	25.0	0	17.5	0
11-May-25	10.60	250	2385	1785	35.7	0	12.8	0	8.9	0
18-May-25	3.00	250	675	75	1.5	0	0.5	0	0.4	0
24-May-25	16.40	250	3690	3090	61.8	0	22.1	0	15.5	0
27-May-25	4.00	250	900	300	6	0	2.1	0	1.5	0
29-May-25	21.20	250	4770	4170	83.4	0	29.8	0	20.9	0
30-May-25	10.40	250	2340	1740	34.8	0	12.4	0	8.7	0
31-May-25	3.00	250	675	75	1.5	0	0.5	0	0.4	0
Total Rainy Days		10								
Total Precipitation		92.6								

Table no 8: Bahria and Shah Allah Ditta Rainfall Events Analysis with added Daily Consumption Impact June

Date	Rainfall (mm)	Ave Catchment area (sqm)	Total Runoff (liters)	After Daily Consumtion	Tank 5000l filled %	Overflow	Tank 14000l filled%	Overflow	Tank 20,000l filled%	Overflow
3-Jun-25	0.20	250	45	0	0	0	0.0	0	0.0	0
7-Jun-25	0.80	250	180	0	0	0	0.0	0	0.0	0
21-Jun-25	27.00	250	6075	5475	100	475	39.1	0	27.4	0
22-Jun-25	52.80	250	11880	11280	100	6280	80.6	0	56.4	0
25-Jun-25	112.80	250	25380	24780	100	19780	100.0	10780	100.0	4780
26-Jun-25	13.40	250	3015	2415	48.3	0	17.3	0	12.1	0
Total Rainy Days					6					
Total Precipitation					270					

Date	Rainfall (mm)	Ave Catchment area (sqm)	Total Runoff (liters)	After Daily Consumption	Tank 5000l filled %	Overflow	Tank 14000l filled%	Overflow	Tank 20,000l filled%	Overflow
4-Jun-25	0.60	250	135	0	0	0	0.0	0	0.0	0
13-Jun-25	0.60	250	135	0	0	0	0.0	0	0.0	0
21-Jun-25	5.60	250	1260	660	13.2	0	4.7	0	3.3	0
22-Jun-25	3.80	250	855	255	5.1	0	1.8	0	1.3	0
23-Jun-25	9.00	250	2025	1425	28.5	0	10.2	0	7.1	0
25-Jun-25	4.60	250	1035	435	8.7	0	3.1	0	2.2	0
26-Jun-25	40.40	250	9090	8490	100	3490	60.6	0	42.5	0
28-Jun-25	0.20	250	45	0	0	0	0.0	0	0.0	0
29-Jun-25	11.20	250	2520	1920	38.4	0	13.7	0	9.6	0
30-Jun-25	1.00	250	225	0	0	0	0.0	0	0.0	0
Total Rainy Days					10					
Total Precipitation					77.00					

Table no 9: Bahria and Shah Allah Ditta Rainfall Events Analysis with added Daily Consumption Impact July

Date	Rainfall (mm)	Ave Catchment area (sqm)	Total Runoff (liters)	After Daily Consumtion	Tank 5000l filled %	Overflow	Tank 14000l filled%	Overflow	Tank 20,000l filled%	Overflow
1-Jul-25	15.00	250	3375	2775	55.5	0	19.8	0	13.9	0
2-Jul-25	36.80	250	8280	7680	100	2680	54.9	0	38.4	0
5-Jul-25	17.80	250	4005	3405	68.1	0	24.3	0	17.0	0
6-Jul-25	87.20	250	19620	19020	100	14020	100.0	5020	95.1	0
8-Jul-25	16.20	250	3645	3045	60.9	0	21.8	0	15.2	0
9-Jul-25	75.00	250	16875	16275	100	11275	100.0	2275	81.4	0
10-Jul-25	4.00	250	900	300	6	0	2.1	0	1.5	0
15-Jul-25	6.60	250	1485	885	17.7	0	6.3	0	4.4	0
16-Jul-25	35.60	250	8010	7410	100	2410	52.9	0	37.1	0
17-Jul-25	82.20	250	18495	17895	100	12895	100.0	3895	89.5	0
21-Jul-25	2.60	250	585	0	0	0	0.0	0	0.0	0
22-Jul-25	12.40	250	2790	2190	43.8	0	15.6	0	11.0	0
23-Jul-25	34.40	250	7740	7140	100	2140	51.0	0	35.7	0
29-Jul-25	1.40	250	315	0	0	0	0.0	0	0.0	0
30-Jul-25	42.80	250	9630	9030	100	4030	64.5	0	45.2	0
Total Rainy Days					15					
Total Precipitation					470					

Date	Rainfall (mm)	Ave Catchment area (sqm)	Total Runoff (liters)	After Daily Consumption	Tank 5000l filled %	Overflow	Tank 14000l filled%	Overflow	Tank 20,000l filled%	Overflow
1-Jul-25	30.20	250	6795	6195	100	1195	44.3	0	31.0	0
2-Jul-25	16.40	250	3690	3090	61.8	0	22.1	0	15.5	0
4-Jul-25	0.60	250	135	0	0	0	0.0	0	0.0	0
5-Jul-25	0.40	250	90	0	0	0	0.0	0	0.0	0
6-Jul-25	23.00	250	5175	4575	91.5	0	32.7	0	22.9	0
7-Jul-25	9.00	250	2025	1425	28.5	0	10.2	0	7.1	0
9-Jul-25	54.60	250	12285	11685	100	6685	83.5	0	58.4	0
10-Jul-25	3.80	250	855	255	5.1	0	1.8	0	1.3	0
14-Jul-25	1.80	250	405	0	0	0	0.0	0	0.0	0
15-Jul-25	4.40	250	990	390	7.8	0	2.8	0	2.0	0
16-Jul-25	28.80	250	6480	5880	100	880	42.0	0	29.4	0
17-Jul-25	125.00	250	28125	27525	100	22525	100.0	13525	100.0	7525
21-Jul-25	81.40	250	18315	17715	100	12715	100.0	3715	88.6	0
22-Jul-25	31.20	250	7020	6420	100	1420	45.9	0	32.1	0
23-Jul-25	44.60	250	10035	9435	100	4435	67.4	0	47.2	0
30-Jul-25	15.00	250	3375	2775	55.5	0	19.8	0	13.9	0
Total Rainy Days		16								
Total Precipitation		470.20								

Table no 10: Bahria and Shah Allah Ditta Rainfall Events Analysis with added Daily Consumption Impact August

Date	Rainfall (mm)	Ave Catchment area (sqm)	Total Runoff (liters)	After Daily Consumtion	Tank 5000l filled %	Overflow	Tank 14000l filled%	Overflow	Tank 20,000l filled%	Overflow
2-Aug-25	25.80	250	5805	5205	100	205	37.2	0	26.0	0
3-Aug-25	1.40	250	315	0	0	0	0.0	0	0.0	0
5-Aug-25	33.60	250	7560	6960	100	1960	49.7	0	34.8	0
6-Aug-25	53.40	250	12015	11415	100	6415	81.5	0	57.1	0
7-Aug-25	3.40	250	765	165	3.3	0	1.2	0	0.8	0
10-Aug-25	7.80	250	1755	1155	23.1	0	8.3	0	5.8	0
13-Aug-25	0.80	250	180	0	0	0	0.0	0	0.0	0
14-Aug-25	38.40	250	8640	8040	100	3040	57.4	0	40.2	0
15-Aug-25	30.80	250	6930	6330	100	1330	45.2	0	31.7	0
17-Aug-25	70.80	250	15930	15330	100	10330	100.0	1330	76.7	0
18-Aug-25	5.60	250	1260	660	13.2	0	4.7	0	3.3	0
19-Aug-25	6.20	250	1395	795	15.9	0	5.7	0	4.0	0
23-Aug-25	69.80	250	15705	15105	100	10105	100.0	1105	75.5	0
24-Aug-25	10.80	250	2430	1830	36.6	0	13.1	0	9.1	0
29-Aug-25	1.00	250	225	0	0	0	0.0	0	0.0	0
30-Aug-25	1.80	250	405	0	0	0	0.0	0	0.0	0
Total Rainy Days		16								
Total Precipitation		361.40								

Date	Rainfall (mm)	Ave Catchment area (sqm)	Total Runoff (liters)	After Daily Consumption	Tank 5000l filled %	Overflow	Tank 14000l filled%	Overflow	Tank 20,000l filled%	Overflow
2-Aug-25	80.00	250	18000	17400	100	12400	100.0	3400	87.0	0
3-Aug-25	25.60	250	5760	5160	100	160	36.9	0	25.8	0
4-Aug-25	0.40	250	90	0	0	0	0.0	0	0.0	0
6-Aug-25	5.00	250	1125	525	10.5	0	3.8	0	2.6	0
7-Aug-25	7.40	250	1665	1065	21.3	0	7.6	0	5.3	0
8-Aug-25	50.80	250	11430	10830	100	5830	77.4	0	54.2	0
13-Aug-25	2.00	250	450	0	0	0	0.0	0	0.0	0
14-Aug-25	0.60	250	135	0	0	0	0.0	0	0.0	0
15-Aug-25	7.80	250	1755	1155	23.1	0	8.3	0	5.8	0
17-Aug-25	63.80	250	14355	13755	100	8755	98.3	0	68.8	0
18-Aug-25	10.80	250	2430	1830	36.6	0	13.1	0	9.2	0
19-Aug-25	0.20	250	45	0	0	0	0.0	0	0.0	0
23-Aug-25	8.60	250	1935	1335	26.7	0	9.5	0	6.7	0
24-Aug-25	9.20	250	2070	1470	29.4	0	10.5	0	7.4	0
29-Aug-25	2.80	250	630	30	0.6	0	0.2	0	0.2	0
30-Aug-25	0.20	250	45	0	0	0	0.0	0	0.0	0
31-Aug-25	4.40	250	990	390	7.8	0	2.8	0	2.0	0
Total Rainy Days		17								
Total Precipitation		279.60								

The performance of different tank sizes (5,000 liters, 14,000 liters, and 20,000 liters) in managing the rainwater harvesting potential at Bahria Enclave and Shah Allah Ditta, taking into account rainfall intensity and daily water consumption (600 liters/day for 4 people) were analyzed.

- 5,000-liter Tanks: Both locations experienced excessive overflow during the peak rainfall months (e.g., June and July), as the smaller tank could not accommodate the large volume of collected water. This was particularly noticeable in Bahria Enclave, where rainfall intensity was higher.
- 14,000-liter Tanks: These tanks showed less overflow compared to the 5,000-liter tanks, but there was still significant overflow, especially in Bahria Enclave, where rainfall intensity exceeded the tank's capacity. These tanks are more suitable for Shah Allah Ditta, where rainfall is less intense.
- 20,000-liter Tanks: These tanks consistently showed minimal overflow and were the most effective in managing rainwater storage in both locations. The 20,000-liter tanks were especially suitable for Bahria Enclave, where larger volumes of water needed to be stored due to higher rainfall.

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