

“Jal Shakti Abhiyan: Catch the Rain, 2022”

Report on Rain Water Harvesting & Water Conservation in Thapar Institute of Engineering and Technology (Deemed to be University) Campus

Thapar Institute of Engineering and Technology (Deemed to be University) is located at Bhadson Road, Patiala, Punjab and spans over an area of 249.13 acres. It is recognized among the premier technical education of the country and the best of its kind in the North region of India. The total plot area of the project is 10,08,194.06 sq.m. (or 249.13 acres). The Institute comprises of Boys Hostel, Girl Hostel, residential blocks, learning center, etc. The Institute is also planning to propose additional buildings i.e. Guest house, sports centre, etc.

The source for drinking water is primarily groundwater with considerable prospects for storm water harvesting. The collection of rainwater termed as rainwater harvesting (RWH) is of considerable significance in impending decades to eradicate water related issues due to escalating population. RWH is a simple technique or process by which rainwater is conserved before surface runoff, infiltration and contamination. There are two prevalent RWH techniques, surface runoff rainwater harvesting (SRWH) and rooftop rainwater harvesting (RRWH). In SRWH, rainwater as surface runoff are collected in pits, recharge shafts and structures and in RRWH, rainwater is collected directly from roof structures of building, transported and stored in tanks or directed to aquifers.

Following measures have been taken as water conservation strategy under the campaign theme **“Catch the Rain where it falls, when it falls”**:

- 31 Rain Water Harvesting structures have been proposed so as to augment rainwater harvesting. Out of these, 22 RWH structures have already been constructed to tap the rainwater. Total 11 no. of Rain water recharging pits with dual bore will be provided for proposed buildings for artificial rain water recharge within the project premises to retain the optimized amount of water.
- Rainwater recharging done from roof top area is used to recharge aquifer. With annual average rainfall of 677 mm, total runoff available is 472 m³/hr.
- The design of storm water management system to reduce the discharge rate (post construction) with respect to pre-construction discharge rate which has imperviousness less than 50%, by collection of the storm water in the pond/collection tank and then reuse the water for landscaping and air-conditioning needs.

- In order to prevent pollution of the air with dust and particulate matter, STP treated water is used in sprinklers.
- There is ample amount of open area to maintain natural storm water flows by promoting infiltration.
- Reuse of storm water for non-potable uses such as landscape irrigation, toilet and urinal flushing & custodial uses.
- There is provision of dual plumbing in toilets for reuse of STP treated water for flushing purposes.
- STP treated water is also used for the irrigation of vast green area in the institute premises.
- STP treated water is used for sprinkling in synthetic track and play ground.
- For construction purposes, only STP treated water is used.
- In addition, students and staff members are encouraged to value water and use it judiciously.

Design of rain water harvesting structures, pictures of the recharge pits, roof top rainwater harvesting, sprinklers using STP treated water for dust settling in playground, synthetic track, construction purposes, etc. at the premises are attached below.

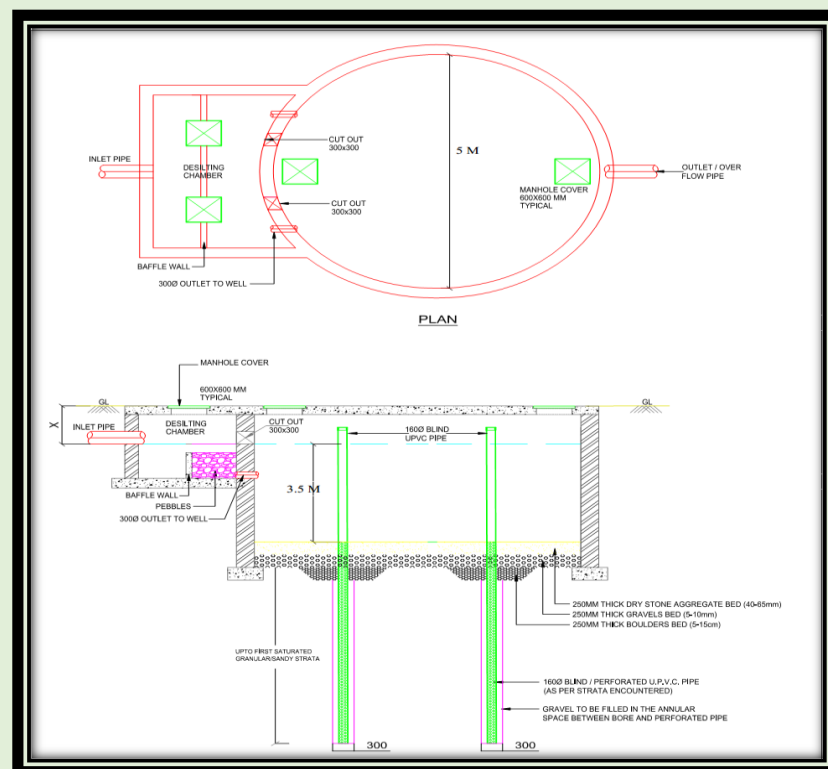


Fig. 1 Design of the Rain Water Recharging Pit

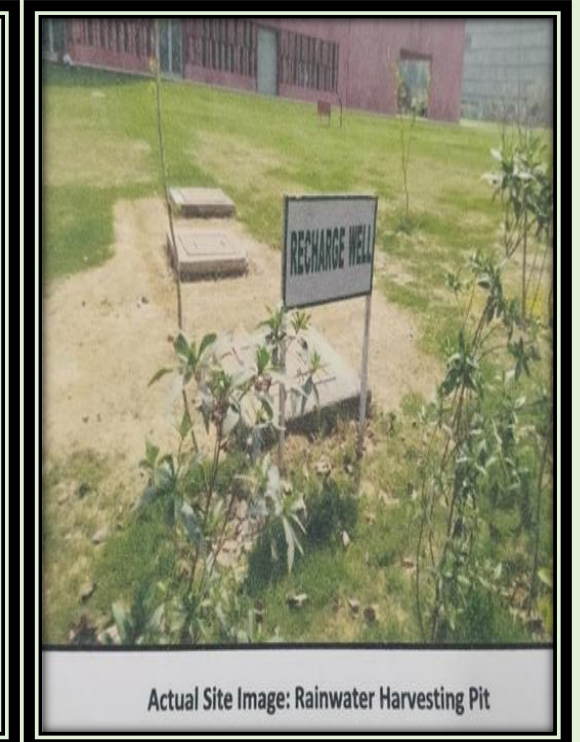
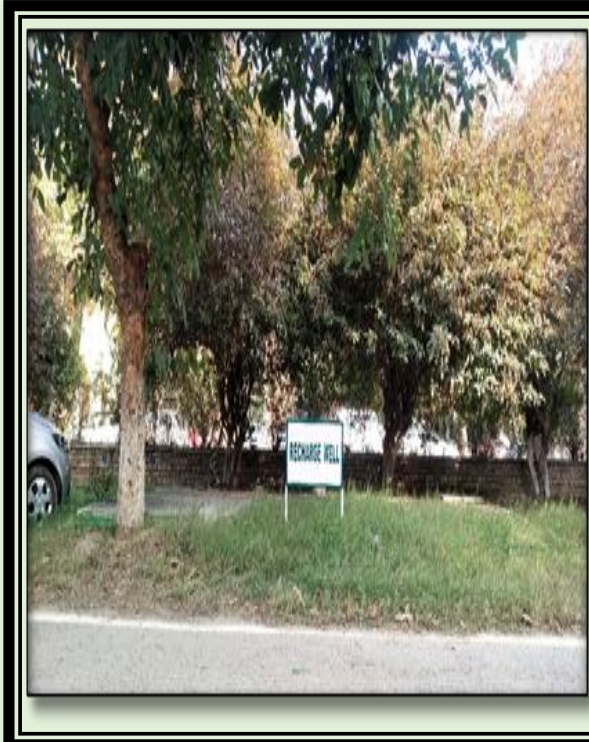


Fig.2 Rainwater Harvesting Structures/ Groundwater Recharge structures in the premises to Catch the Rain water and compensate for the groundwater extraction.



Fig.3 Roof top rainwater harvesting pipelines for tapping rainwater.

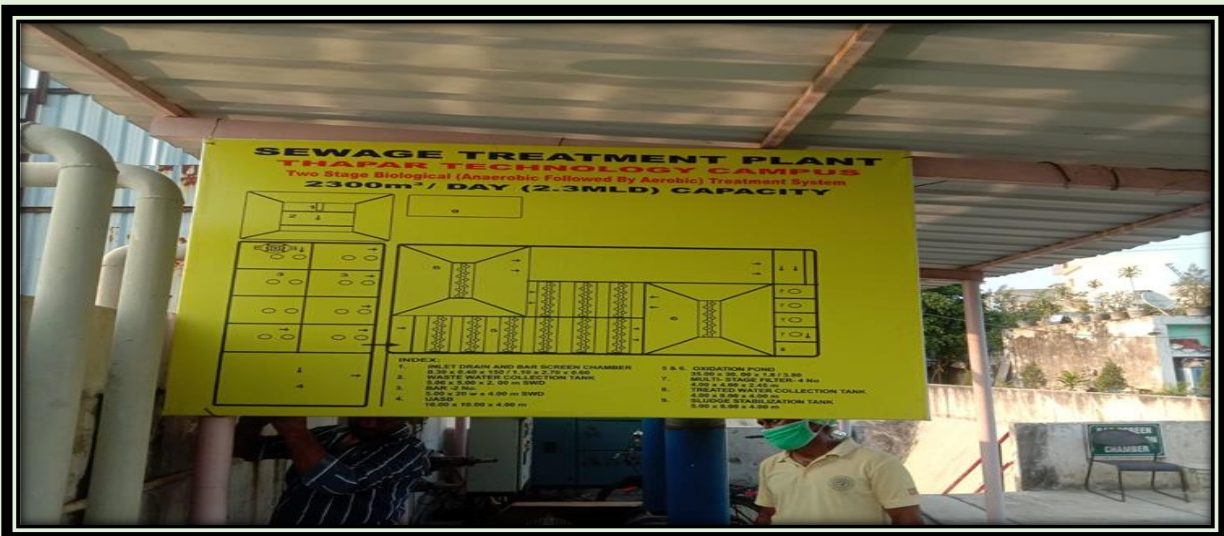


Fig.4 STP of capacity 2.3 MLD installed in the premises.

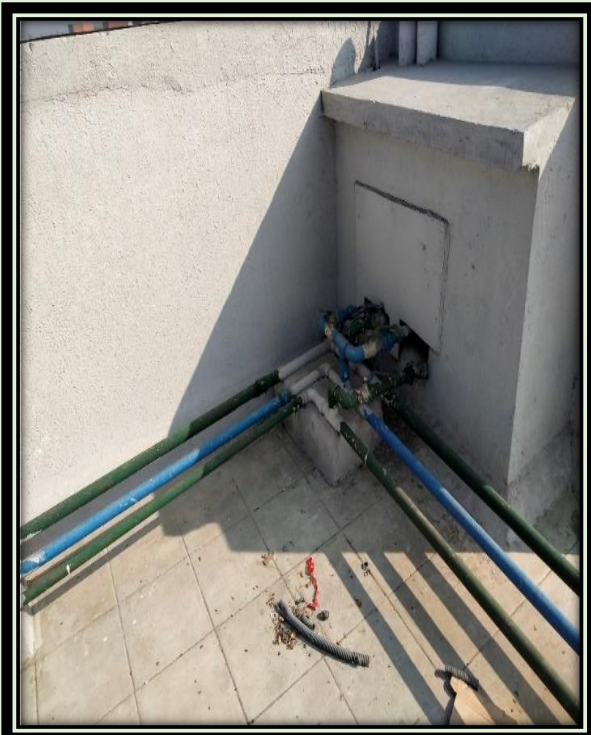


Fig.5 STP and dual plumbing for use of STP treated water for meeting flushing requirements in the campus.

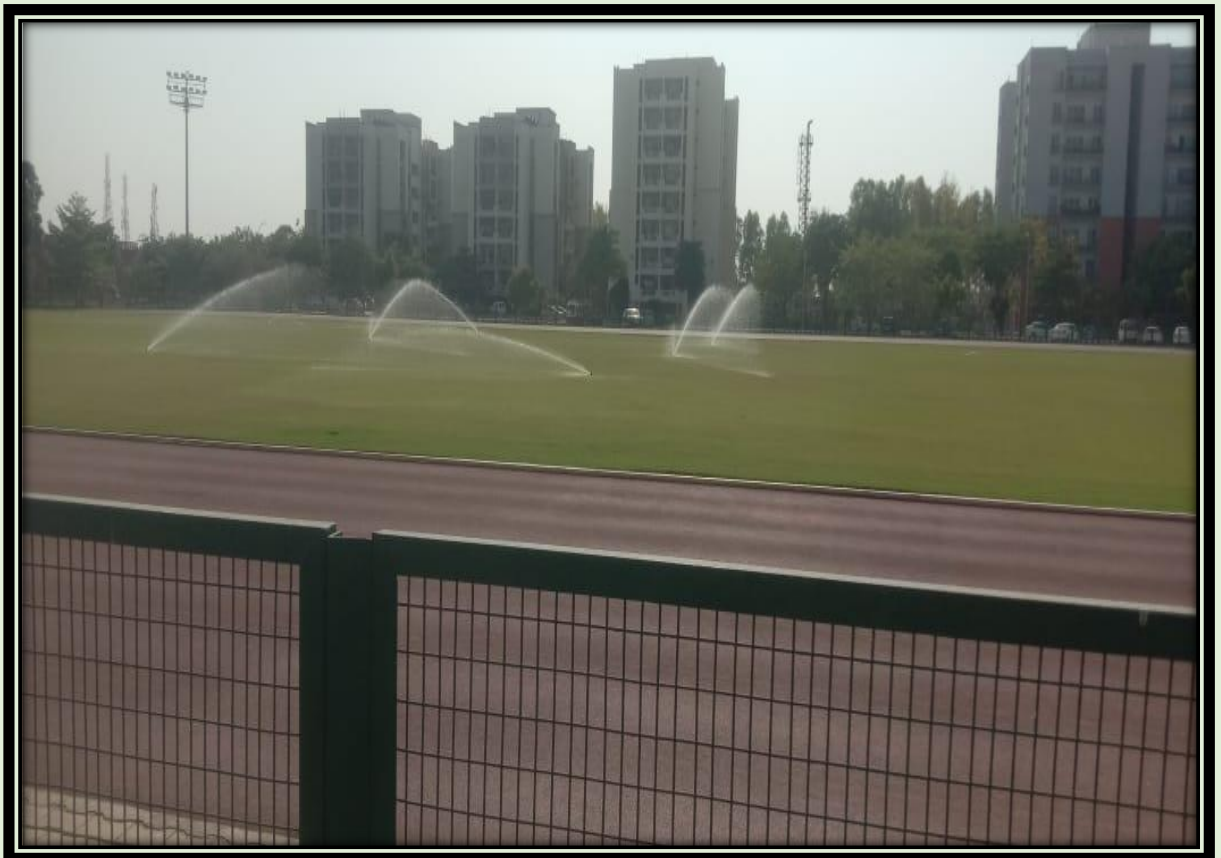


Fig.6 Sprinklers using STP treated water for irrigation of the lawn and dust settling on synthetic tracks in the campus.