

Water Conservation, Harvesting and Re-cycling: (STP)

A Sewage Treatment Plant (STP) plays a vital role in wastewater management by treating domestic and commercial sewage before it is discharged into the environment or reused. The primary objective of an STP is to remove physical, chemical, and biological contaminants from wastewater, ensuring that the treated water meets environmental standards. The treatment process generally includes preliminary treatment, where large solids, grit, and grease are removed; primary treatment, where suspended solids settle in sedimentation tanks; secondary biological treatment using technologies such as the Moving Bed Biofilm Reactor (MBBR), and Sequential Batch Reactor (SBR), where microorganisms degrade organic pollutants; followed by secondary clarification and tertiary treatment involving filtration and disinfection to produce high-quality treated water. The sludge generated during treatment is further processed through thickening, dewatering, and safe disposal or beneficial reuse.

Water recycling through an STP is an effective approach to reducing the demand for freshwater resources. Treated wastewater can be safely reused for non-potable purposes such as landscape irrigation and gardening.

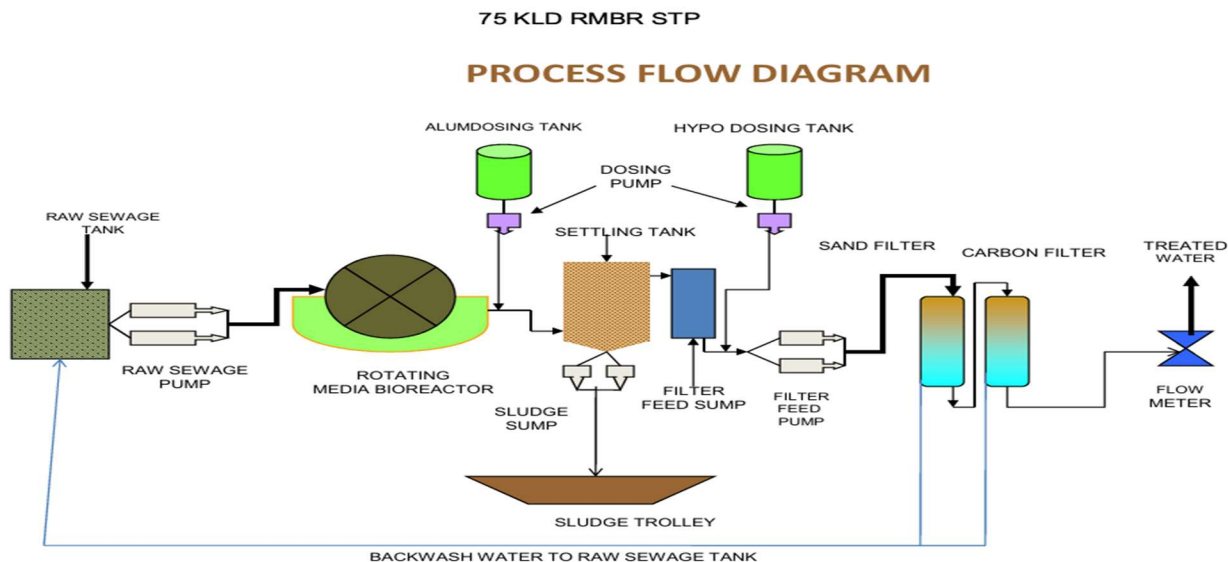
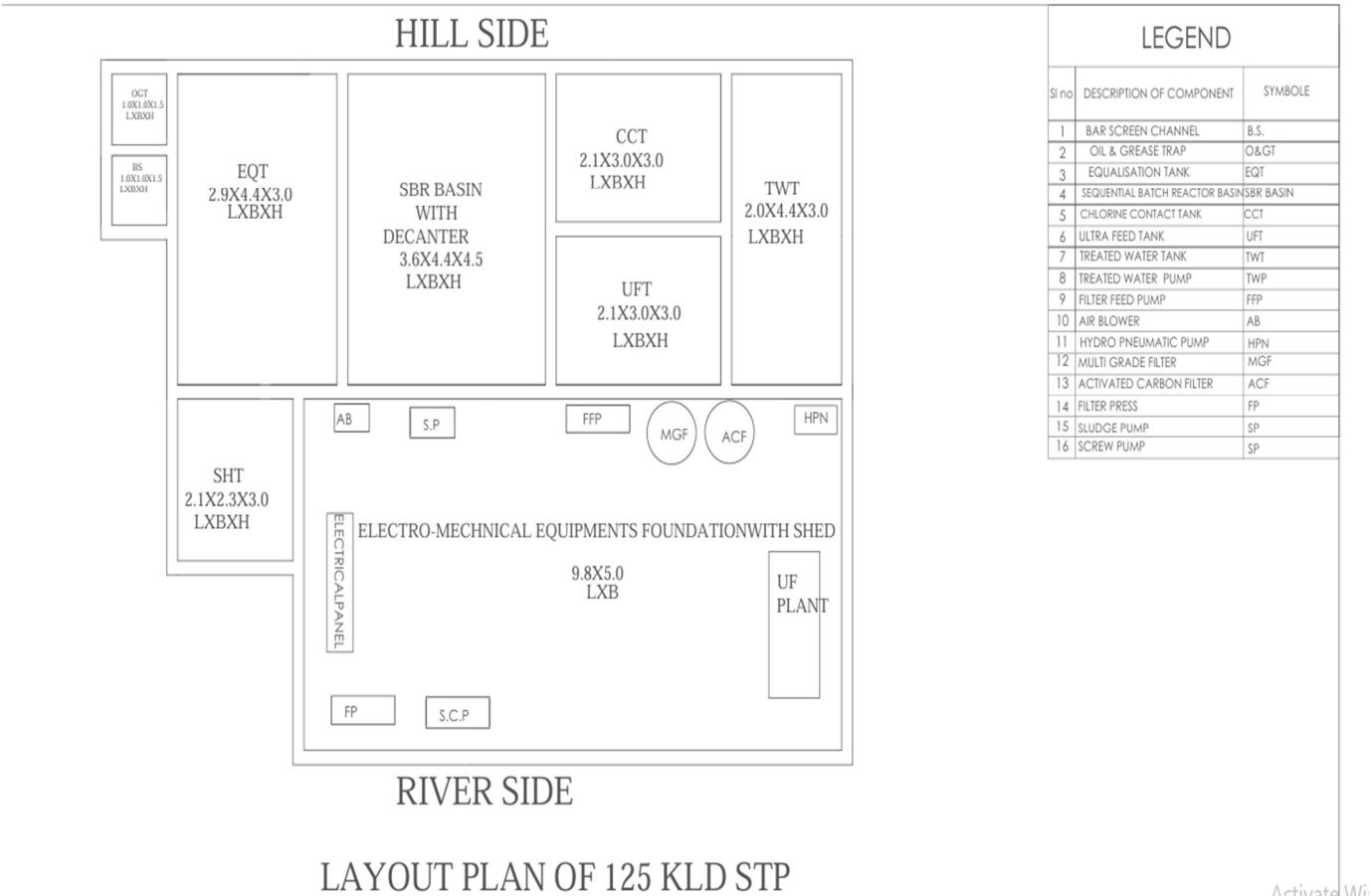


Fig 1:

STP Plant (Based on MBBR technology) 75 KLD at IIT Mandi

125 KLD SBR STP



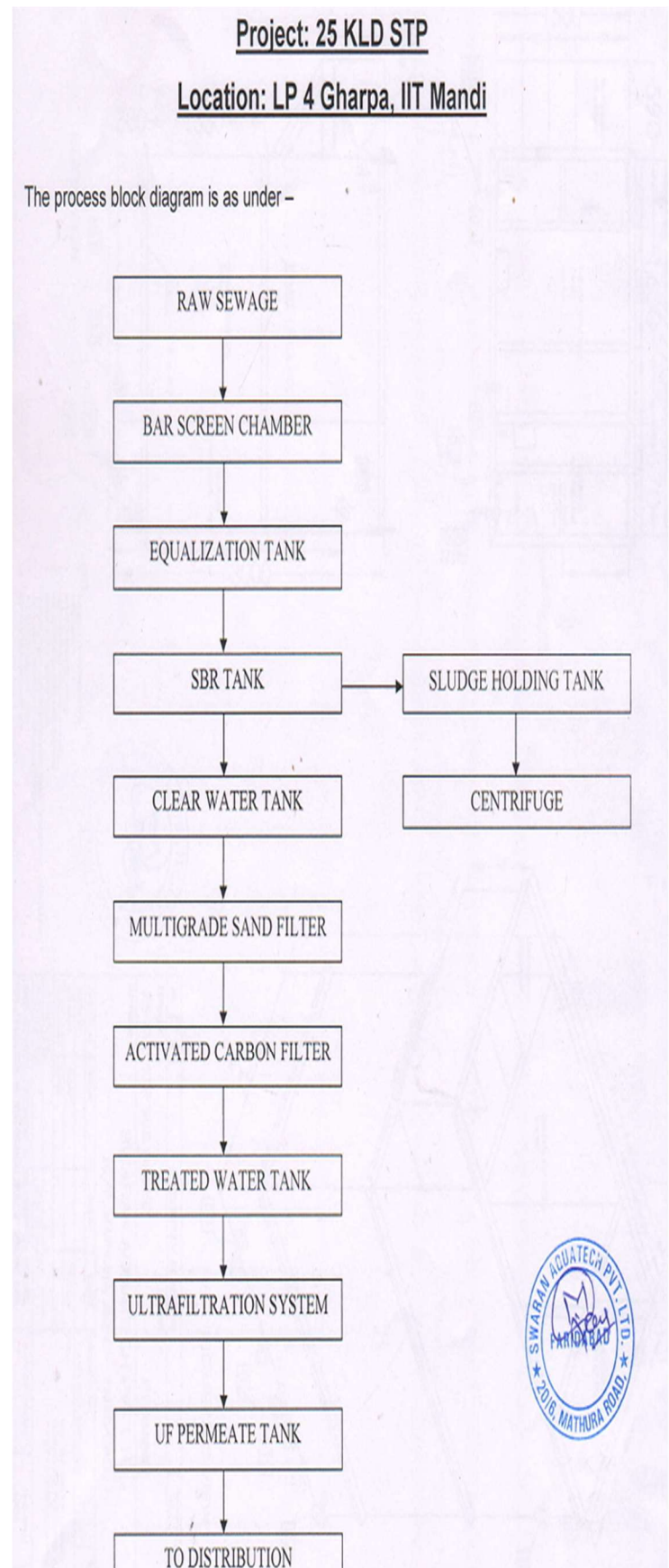


Fig 3: STP Plant (Based on SBR technology) 25 KLD at IIT Mandi



Fig 5: Recycled water for Sports Ground

Water Conservation, Harvesting and Recycling (Natural Water)

- **Background:** IIT Mandi is located in a hilly terrain where numerous seasonal streams and natural drainage channels generate substantial runoff during the monsoon season. At present, a significant portion of this runoff leaves the campus without being effectively utilized. Simultaneously, the demand for water for horticulture, landscaping, plantation, and other non-potable purposes continues throughout the year.

The campus also possesses several existing natural water ponds and storage structures, which collect runoff water during the rainy season. These ponds represent valuable water resources that can be developed and integrated into the campus water management system.

- **Objective:** To promote sustainable water management by utilizing existing natural water ponds for rainwater harvesting and supplying water for horticulture and landscaping, thereby reducing dependence on treated water and borewells.

- **Proposal:** Existing natural water ponds located across the IIT Mandi campus shall be rejuvenated and integrated into the campus irrigation system. Surface runoff and seasonal stream water will be stored in these ponds and pumped through a dedicated pipeline network for horticulture purposes. Additional ponds may be developed at suitable locations based on catchment availability.
- **Expected Benefits:**
- Conservation of rainwater within the campus.
 - Reduction in potable water consumption for irrigation.
 - Reduced dependence on groundwater.
 - Improved groundwater recharge and biodiversity.
 - Sustainable irrigation for landscaping and plantation activities.



(Natural water Pond near Natural Park)



(Natural Water pond behind A-11)



(Natural water pond near kiran aircraft)

Existing Natural Water Ponds at IIT Mandi Campus (Representative Photographs)