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Water conservation facilities and Watershed management available at Amity University Rajasthan

Mapping of Water Conservation Practices in Amity University Rajasthan



Lake



Sprinkler for Irrigation



Cooling Ducts

AUR campus has an in house sewage treatment plant. (STP). Water treated in the STP is used for cooling ducts, irrigating the campus greens and collection in the lake.



Surface Drain Pipe (Top View)
Roof Top Drain Pipe (inset)



Water Collection Pit

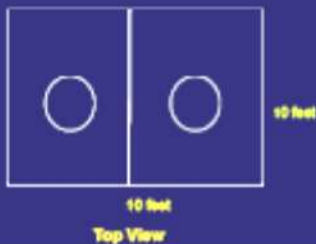


Surface Drain Pipe (Side View)



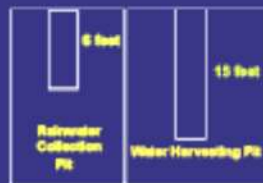
Borewell

On the rooftop of every building there are roof drains for removing water from roof surface (inset). The water from these roof drains and from surface drain pipes all across the campus is taken to rainwater collection pit and from there it gets transferred to water harvesting pit. Approximately 22 lac litres of water has been collected in the last one year of rainfall and recharged into the groundwater.



Top View

Water Collection Pit

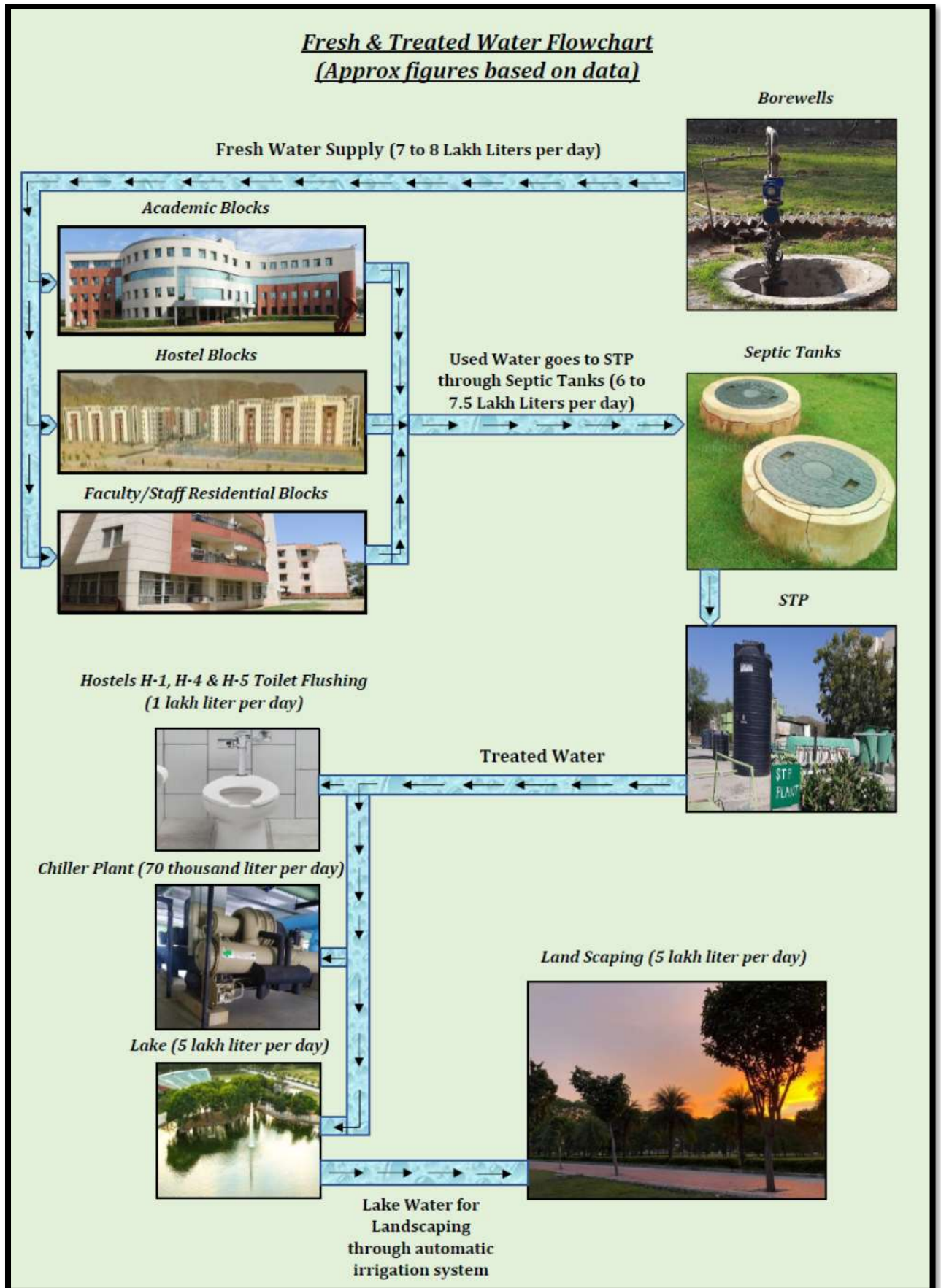


Side View



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Rainwater harvesting

- Rainwater harvesting is through lake and through 8 different recharge pits created indifferent areas of the campus to recharge groundwater.
- The rainwater collected in these pits from the roofs of the buildings and use for horticulture.
- One bore well recharge pit has been created near the main gate to harvest rainwater.



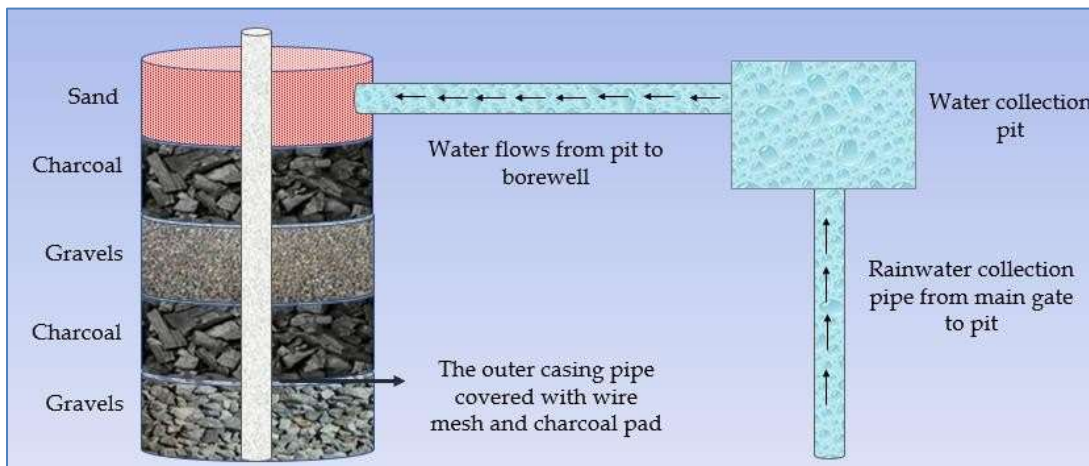
Rain Water Harvesting Through Recharge Pits at Amity University Rajasthan



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1. **Borewell Recharge:** The purpose of borewell recharge pit is to
 - a. Divert rainwater from low lying areas to prevent flooding
 - b. Provide a passage for rainwater from terraces of buildings and other structures
 - c. Channelise the water to a borewell through proper filtering, thus harvesting for future use
 - d. Recharge of dry borewells to prevent digging of new ones
 - e. Conservation of water through eco-friendly means
 - f. Ensures proper utilisation of rainwater which otherwise could stagnate and fester mosquitoes / harmful bacteria



Material & Diagram of Collecting and Recharge pits



Rainwater flows into the recharge pit



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2. Construction of tanks and bunds

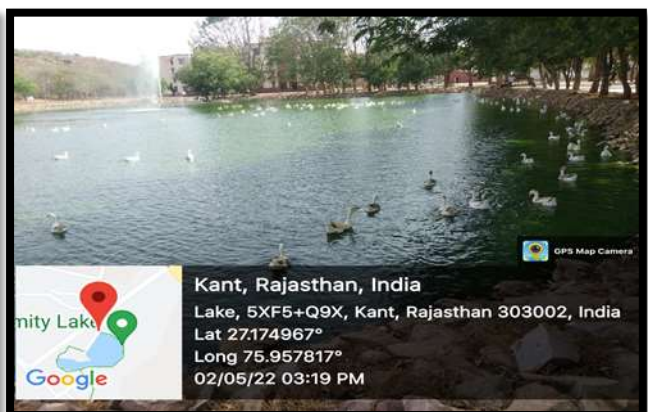
Source of fresh water is through Borewells. Water is stored in underground and overhead. The University has five Academic Blocks, one Student Resource Centre, five Hostel blocks, Six faculty blocks and one Staff quarter block with more than 3500 residents.

- Water is supplied to various buildings through a network of underground sumps and overhead tanks. Water from the borewell is pumped to the underground tanks, from the underground tanks it is pumped to the overhead tanks. There are a total of 34 overhead tanks (both RCC and Sintex) and 08 underground tanks. Plumbers work in shifts to ensure adequate supply to each building.
- Aquaguard are installed in water dispensers. Wastewater is channelled to STP plant and after treatment is utilized for flushing, horticulture and in chiller plants.
- One bore well recharge Tank has been created and other near the rear gate. This will help in collection and harvesting of rain water.

➤ **Water Harvesting Lake:**

A manmade water-harvesting lake contributing towards conservation of natural resources is located in the heart of Amity University Rajasthan. The artificial lake gets treated water from the Sewage Treatment Plant. Rainwater from terraces of buildings, and other low lying areas also flows to this lake. This water is used for horticulture, thus ensuring literally zero wastage of water. The artificial water harvesting lake created stores treated water for horticulture purposes. The lake water for horticulture is pumped from the lake for auto Irrigation system. It attracts beautiful migratory birds thus enhancing the biodiversity and overall ecosystem of the University campus.

Water Harvesting Lake at Amity University Rajasthan



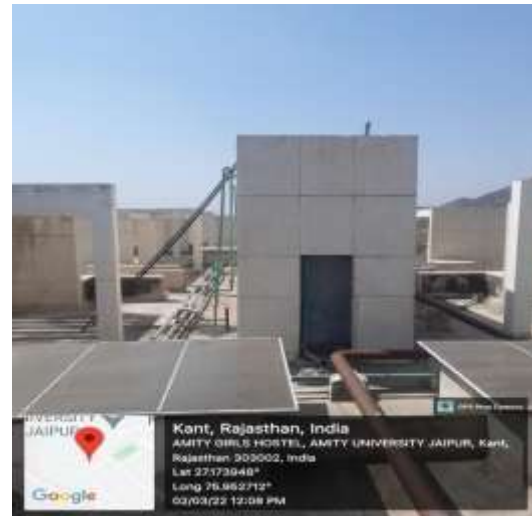


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Underground Tank



Overhead Tank

Wastewater Recycling

- The liquid waste generated in the campus is from sewage of labs, residential and canteen facilities, hostels and laundry. The above waste is treated through a Sewage Treatment Plant (STP) and Effluent Treatment Plant (ETP) of 7.5 lakh LPD available in the campus.
- Water after treatment, is sent to a treated water lake, from where it is used for horticulture through an auto irrigation system. Fountains in the lake ensure proper aeration and as the process of use is dynamic, stagnation does not occur negating bad odor.
- Carp fish are there in the lake which prevents any algae growth by consuming the same, thus keeping the lake clean.
- Treated water is also used for the cooling tower of chiller plants and for the flush system of four hostels.
- The sludge settled in STP is removed and is dried on drying beds and used as manure for the gardens. Therefore, the entire wastewater generated in the campus is treated and reused.



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Quality Standard		Parameters as desired	
Issued to	-	Green Wastetech, Sushant Lok-1, Gurgaon	
Kind atn.	-	Mr.	
Analysis no.	-	21122701	
Nature of Sample	-	Waste Water Sample marked Amity Jaipur, STP Outlet	
Sample received on	-	27 th December 2021	
Report Date	-	1 st January 2022	
Analysis Dates	-	27 th December to 1 st January 2022	
Sample Receipt	-	By Client	
Sample Packaging	-	Pet Bottle	
Sampling Method	-	Grab Sampling	

PARAMETER	LIMITS	RESULTS	TEST METHOD	LIMIT		LAND FOR REGULATION
				INDIAN SURFAGE	PUBLIC SEWER	
Organics						
Chemical Oxygen Demand	mg/l	16	IS 3025 PART 39	250	-	-
BOD for 03 days at 27°C	mg/l	5.2	IS 3025 PART 44	30	350	100
Physical						
pH	LIQUID	7.43	IS 3025 PART 11	5.5-9.0	5.5-9.0	5.5-9.0
Total Suspended Solids	mg/l	4.4	IS 3025 PART 17	100	600	200
Total Dissolved Solids	mg/l	523	IS 3025 PART 16	2100	2100	2100
Chemical						
Oil & Grease	mg/l	0.26	IS 3025 PART 39	10	20	10

Remarks: The no. of parameters tested is 06 only. The report is issued subject to the terms & conditions as mentioned over leaf.

Chemist: _____ Authorized Signatory

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Sewage Treatment Plant (STP) at Amity University Rajasthan

Water Testing Report

Wastewater Recycling

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- Water after treatment, is sent to a treated water lake, from where it is used for horticulture through an auto irrigation system. Fountains in the lake ensure proper aeration and as the process of use is dynamic, stagnation does not occur negating bad odor.



Fountain in the lake for manual aeration.



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- Carp fish are there in the lake which prevent any algae blooms by consuming the same, thus keeping the lake Un-eutrophicated.
- Treated water is also used for the cooling tower of chiller plants and for the flush system of four hostels (Hostel-1, 2, 4 & 5).
- The sludge settled in STP is removed and is dried on drying beds and used as manure for the gardens. Therefore, the entire wastewater generated in the campus is treated and reused.
- An average data of treated water through STP and ETP from 2019 to 2021 is mentioned (Table-04).

Efficient utilization of treated STP year wise

Amity University STP & ETP 2019 to 2021												
Treated Water Lake (Ltr.) Per Day Treated Water Chiller (Ltr.) Per Day Treated Water Flushing for Hostel (Ltr.) Per Day ETP Water for Lake (Ltr.) Per Day												
2019				2020				2021				
Lake	Chiller	Flushing	ETP to Lake	Lake	Chiller	Flushing	ETP to Lake	Lake	Chiller	Flushing	ETP to Lake	
572354	0	0	17064	395806	0	65225	10935	134193	0	14709	741	
587964	0	0	18428	374775	0	70285	11821	171071	0	12857	3750	
488967	0		17032	938580	0	33354	5032	295806	8612	29032	8709	
436200	39935		17066	620066		14833	933	22366	10133	45966	4700	
439129	54433	24033	13548	57612	0	12741	0	140645	0	18838	0	
240533	48935	50064	10400	121400	11400	14133	0	44333	0	18033	0	
299935	37900	39200	8967	63774	0	12516	0	128612	0	14419	0	
237033	33161	200129	10700	103322	3290	10838	1290	29354	0	14354	0	
339258	38433	154266	10193	37933	0	22900	1300	101000	0	2110	0	
194709	20129	119516	8870	140032	0	37580	1548	99258	8774	15290	8548	
106233	1700	134833	5161	139333	0	16233	3433	78333	0	22800	5733	
419677	0	80064	5548	135741	0	14709	1161					
Average	465141			292151				140451				



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- Parameters of the treated water has been validated by third party external test periodically



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Certificate of Analysis

Quality Standard		Parameters as desired				
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Test report of waste/treated water by external agency.



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Maintenance of water bodies and distribution system in the campus

- The University has five Academic Blocks, one Student Resource Centre, Five Hostel Blocks, Six faculty Blocks, One Staff Quarters Block.
- AUR has total 13 Nos. of borewell located at various locations.
- All borewells are fitted with water flow meters for measurements of daily water consumption. This helps in monitoring and control of water usage.
- Water from borewell first goes to underground tanks. From underground tanks, water is pumped to overhead tanks of academic/hostel blocks.
- Water coolers with aquaguards are fitted in all the hostels and academic blocks for drinking water.
- There are 50 overhead tanks (both RCC and Sintex) and 08 underground tanks.
- Overhead tanks supply water to all occupants of buildings. All the overhead tanks are fitted with water level indicator and alarming units for ease of information to the plumbers for switching On/off, thus avoiding spillage and wastage of water.
- There are total 10 plumbers of Amity University who will take care of the maintenance work.
- There is a complaint register for all the residents, they write their complaint in the register which will be rectified by these plumbers.

