INVERSITY BAREILLY BUILDING VIBRANT PERSONALITIES

7.1.4 Water conservation facilities available in the Institution



7.1.4.1 Rainwater Harvesting

With the increase in population the demand for fresh water is also increasing. Extraction of water from the ground to meet the needs of people has led to the lowering of ground water table. To deal with this problem Invertis University, Bareilly installed rainwater harvesting (RWH) system to reduce the dependency on ground water and use the captured rainwater for daily needs. RWH is the collection and storage of rain, rather than allowing it to run off. Rainwater is collected from a roof-like surface and redirected to a tank, cistern, deep pit (well, shaft, or borehole), aquifer or a reservoir with percolation.

Type: Roof top harvesting

Location: Invertis University, Bareilly



Fig.1. Invertis University

Calculation of catchment area:

Roof top area that will be contributing to the storage is 2465 m².

Selection of runoff coefficient:

For any catchment runoff coefficient is the ratio of the volume of water that runs off a surface to the volume of rainfall that falls on the surface. It depends on the type of material. Its value for concrete roof is taken as 0.80, which means that 80% of rainfall falling on that surface can be collected.

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Determination of rainfall in Bareilly region:

Monthly rainfall data of Bareilly.

Month	Rainfall (mm)	
January	22.9	
February	25.3	
March	14.5	. ef
April	8.9	
May	19.3	
June	106.4	
July	307	
August	290.9	
September	186.1	
October	44.9	
November	3.9	
December	9.7	
Total	1039.6	

Computation of rainfall water harvested:

Volume of water harvested = Total catchment area (m^2) x Total annual rainfall (m) x Runoff Coefficient

Volume of water harvested = $2465 \times 1.0396 \times 0.8$

 $= 2050.0912 \text{ m}^3$

To store the rainfall water a suitable tank is constructed inside the campus premise which is connected to the catchment area via down take pipes. This water is used for various activities like gardening, washing etc.

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Fig.2. Conduit to carry rainwater from roof to tank.



Fig.3.Underground rainwater tank.

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.1.4.3 Construction of tanks

The world is focusing on sustainable development so that the over exploitation of natural resources can be prevented. One such natural resource is fresh water, which is depleting at a faster rate and is a matter of grave concern.

Invertis University took a step ahead to preserve this natural resource. Here at Invertis University we have rain water harvesting system for harvesting the rooftop rain water and the surface runoff is harvested to recharge the ground water. For this the provision is made to collect the runoff water through the drains. The retained water is infiltrated to the ground and the ground water gets recharged.



Fig.1. Underground tank for water

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7.1.4..5 Maintenance of Water bodies and Distribution system in the campus



INVERTIS UNIVERSITY, BAREILLY

The University has internal member team for maintenance of water bodies and distribution system committee. List of committee members are below.

Maintenance of Water bodies and Distribution system Committee			
S. No.	Constitution		Designation
1	Sh. L. P. Mishra	Director Administration, IU	Chairman
2	Mr. Atul Johri	Staff	Co coordinator
3	Ms. Shally Sharma	Staff	Member
4	Ms. Arti jaswal	Staff	Member

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Invertis University Water Distribution Systems

Today, a water supply system consists of infrastructure that collects, treats, stores, and distributes water between water sources and consumers.,

Many efforts on the development of a water supply system have been made through for sustainable water supply. However, the complexity of system limited the site specific application at the first era. As water demands pressures raise increasingly on the existing water supply system, many studies attempted to develop a general water supply system to assist decision makers to design more reliable systems for a long range operation period. The purpose of distribution system is to deliver water to consumer with appropriate quality, quantity and pressure. Distribution system is used to describe collectively the facilities used to supply water from its source to the point of usage.

Water quality should not get deteriorated in the distribution pipes

- It should be capable of supplying water at all the intended places with sufficient pressure head.
- The layout should be such that no consumer would be without water supply, during the repair of any section of the system.
- It should be fairly water-tight as to keep losses due to leakage to the minimum.
- It should be capable of supplying the requisite amount of water during firefighting

Inspection prior to reassembly

- Check the water tank for leakage/damage.
- Wash and clean all the parts with mixture of kerosene oil and water.
- Check the stand assembly level with spirit level.
- Check the coupler for broker threads.
- Clean the flanges and spout pipe for crack and leakage. vertis Universi

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Maintenance Cell Report 2020

Common Trouble shooting for centrifugal pumps

S.no.	Problems	Probable cause	Remedy
1	Pumps motor fails to start	Blown fuse of open circuit breaker motor of starting	Replace fuse or reset circuit breaker, replace and consult supplier/electrician check packing and loosen open pump and remove dirt
2	water not delivered	Pump has lost its priming leaks in pipe or suction pipe no water in the source due to over pluming collapse of well casing or screens clogging of well screens	Repeat priming seal the leaks deepening of source consult well driller and get it cleaned
3	Pump is not running properly	Low yield in well air leaks in suction pipe partial clogging of well screens impeller is worn out obstruction of foot valve	Well deepening pull drop pipe from well and seal the leaks consult well driller and get it cleaned clean/replace impeller clean foot valve
.4	Noise in pump	Bearing or other part are loose pump motor is loosely mounted low level of water in well air in suction pipe	Tighten or replace parts tighten the mounting reduce pumping rate repair air leaks
5	Damage base coupling	coupling got broken	Base coupling to be changed
6	Urinal blockage	Some garbage was collected in the tank	Pressure machine to be used

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7	water is not coming properly	Internal pipe got damaged	Pipe to be fixed
8	Water is not coming in wash basin	Wash basin tap got damaged	Wash basin tap to be repaired
9	Three phase motor is not working	Banding motor got fused	Banding of motor to be prepared
10	Cleaning tanks	Taps got slipped	New taps to be fixed
11	Cleaning tanks	Dirt /fungus adhere to tanks wall	Call the tank cleaners and clean the tanks
12	Installation of pipes /taps	Need for new installation as per requirement	Call the plumber and install the devices
13	Water is over flowing	Over flow pipe got damaged	New over flow pipe to be arranged
14	water tank leakage	Tank pipe got damaged	New pipe to be arranged
15	water is flowing in wash basin	Tap got loosen	New tap to be arranged
16	water is not coming in the washroom	pipe line got chocked	use of pressure machine
17	Damage cistern	cistern pipe got broken	New cistern pipe to be fixed
18	Blockage urinal	Some garbage was collected in the wall of tank	Tank to be cleaned
19	Seepage issue in chambers	Tank got damaged	New tank to be arranged



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20	Installation of taps	Need for new installation	Call the plumber and install the taps
21	Pumps motor fails to start	Blown fuse of open circuit breaker motor of starting	Replace fuse or reset circuit breaker ,replace and consult supplier/electrician check packing and loosen open pump and remove dirt
22	Noise in pump	Bearing or other part are loose pump motor is loosely mounted low level of water in well air in suction pipe	Tighten or replace parts tighten the mounting reduce pumping rate repair air leaks

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