

7. 1. 4 WATER CONSERVATION FACILITIES AVAILABLE IN THE INSTITUTION

- **Rain water harvesting**
- **Bore well recharge**
- **Waste water recycling**
- **Maintenance of water bodies and distribution system in the campus**



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1. RAIN WATER HARVESTING STRUCTURES AND UTILIZATION IN THE CAMPUS

Method followed: "Rajasthan Paar method"

- For the improvement of ground water level and to utilize the rain water, SCE is putting efforts towards creating one of best water resource management. As an initiation we adopted "Rajasthan Paar method" which is famous for ground water table recharging method

Location:


- SCE campus has 4 block named Administrative block, Academic block, Civil block , Faraday laboratory block , one Canteen, one Girls hostel building and 2 work shop building
- Each block decorated with 2 recharge pit, so totally 6 reaching well present

Construction Details of Recharge well:

- Recharge well with 1.2m dia and 10 m depth and capacity is about 4000 L
- Cement ring are provided throughout the depth
- Using charcoal, sand, salt and gravel filtration bed are constructed
- The mouths of these pipes are covered with netlon mesh to prevent any remaining solid waste from entering the recharge well.
- The recharge well covered with an RCC slab.
- In case of too much rain, an overflow pipe on the other side of the recharge well is provided.

Working Procedure:

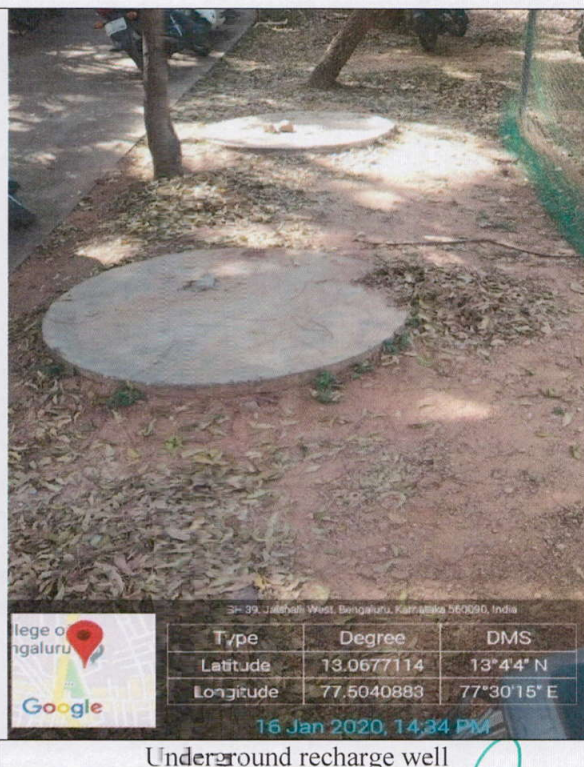
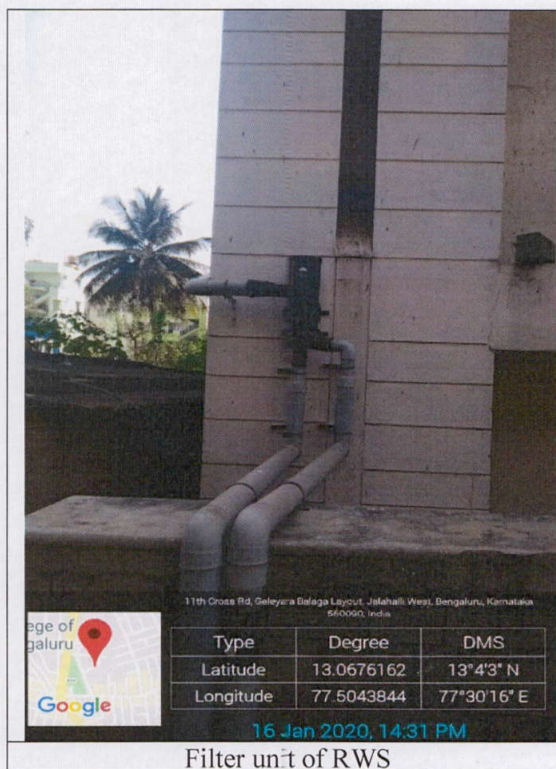
- Roof top area will collect the rain water
- Collected rain water will filter by filtering unit
- Filtered water will allowed to the recharge pit



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Maintenance, Tips and Precautions

- Before digging the recharge well, ensure there is no 'soak away' pit or toilet pit nearby. The well should be at least 20 feet away from the pit.
- Recharge well should be as far as possible from the foundation of the building. It should be at least as far from the foundation as the depth of the foundation – this is only a thumb rule.
- Locating the recharge well appropriately so as to get water to it without leading to basement seepage is important in this context.
- Ensure that no power cable or sewage pipe passes close the recharge well.
- Catchment should be clean and pollution-free, whether it is the rooftop, plot or storm water drain.
- There should be no sanitary leakage into the SWD. Else this water would enter the recharge well.
 - ✓ During rain, there should be rainwater in sufficient quantities in the SWD
 - ✓ De-silt the recharge well every five years
- Regularly monitor water levels and quality.



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2. BORE WELL AND WELL RECHARGE:

Method : Bore-well recharge technique

Location: Near cricket net practice area and near to the girls hostel

Construction Details of Recharge well:

- A pit with 6 x 4 x 6 feet is constructed around the bore well to gather the runoff water from the monsoonal rains.
- The bottom of this pit is lined with filtration material to a depth of 2 feet – layers of 40 mm stones, 20 mm and 6 mm size.
- The casing is wrapped with nylon mesh so solids cannot enter the casing pipe.
- Cement rings with 3 feet diameter cement rings are placed around the bore well casing and the spaces between them are filled with cement and pit is then filled with 20mm stones.
- A 3 inch feeder pipe is fitted to the pit.
- During rainy season the water flows from the pit into the first empty well where it percolates down through the filtration material and subsequently up into the second well around the borewell casing. It then enters through the slits and filters down into the underlying aquifer where it is stored for the following dry season.

Maintenance, Tips and Precautions

- Chemical and bacteriological examination of borewells: Chemical and bacteriological examination of the water from bore wells shall be done once in every year.
- A tap shall be provided on the rising main of the borewell so samples of borewell water can be collected regularly.
- Yield test: Yield of borewell shall be checked once in a year.
- Redevelopment of bore wells in service: Redevelopment of borewells shall be taken as a regular exercise of maintenance and it should normally be done when the yield reduces to 60 to 70% of the bore well's original yield.
- Taking water level measurements on a regular basis will help in identifying if borewell is experiencing any of the following problem stressing the well by over-pumping and depleting the aquifer



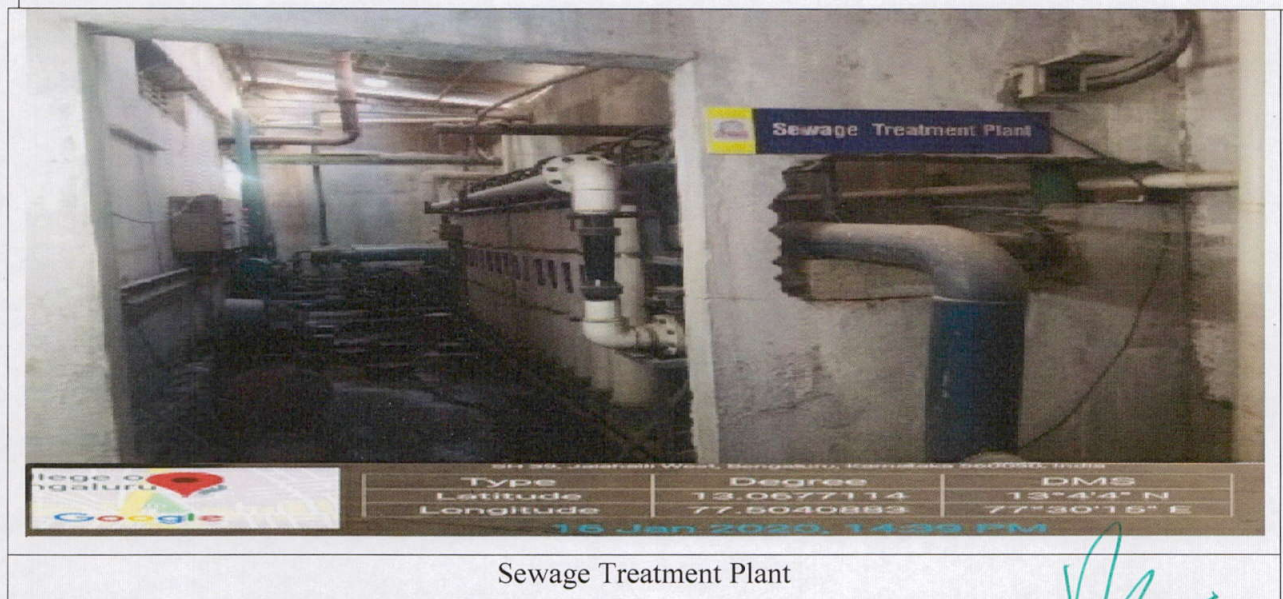
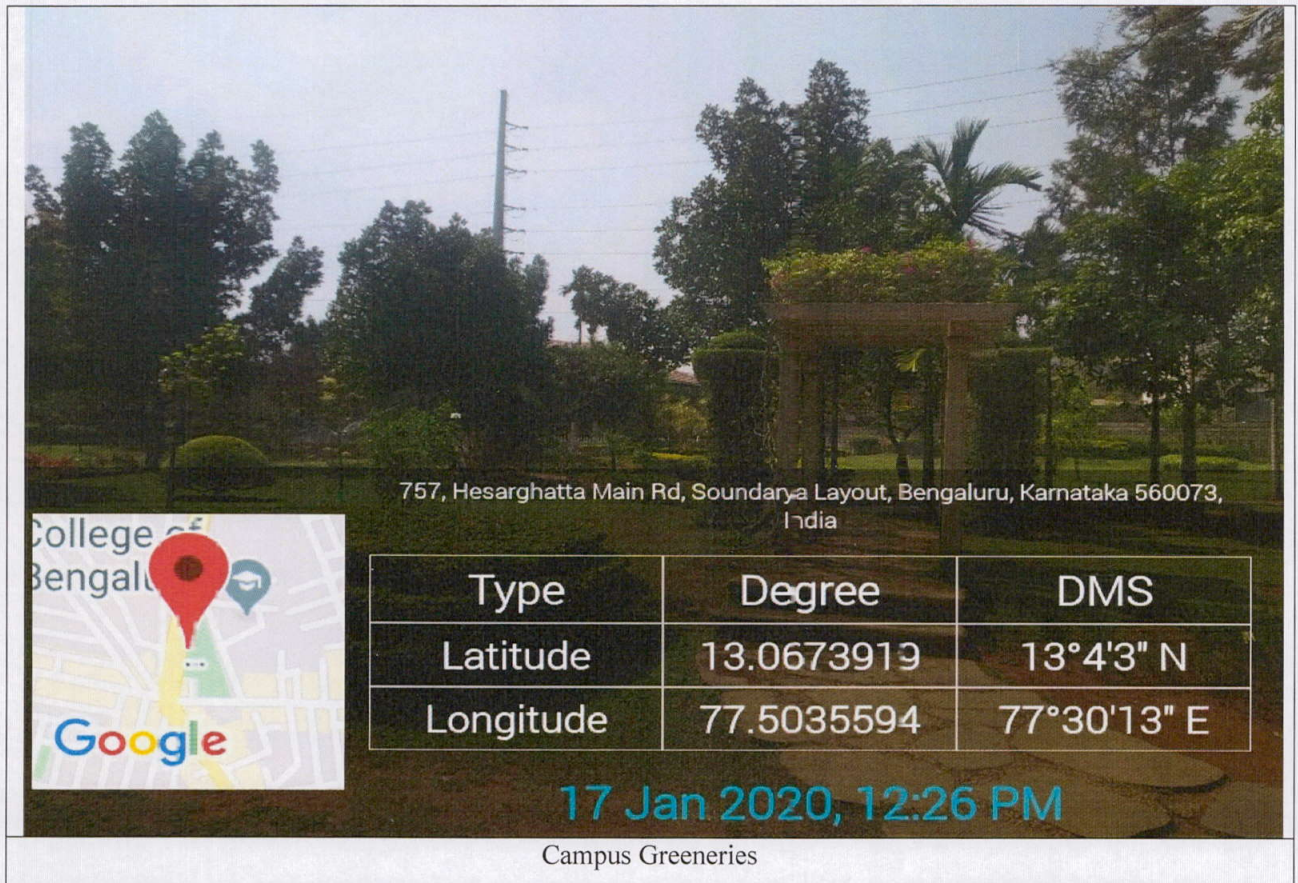
Construction of Recharge well

Deep Bore well

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3) WASTE WATER RECYCLING

Treated effluent from the Sewage Treatment plant is used for plantation by sprinkling method and for campus road wash.



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4. MAINTENANCE OF WATER BODIES AND DISTRIBUTION SYSTEM IN THE CAMPUS

a) Water Purification Plant:

On focusing to the better water management and to reduce plastic water bottle usage, SCE installed water purifier plant in each block in the campus.

Method: RO Water Purifier

Location: At top floor of each block

Product Specification

Fully automatic high work efficiency with long life most of its upgradable at the 1000 litre per hour
1.membrane,hydronotic 2 .vessel 14,65 ,3.pump 2/22 cri 3.disitil pane

DESCRIPTIONS	CONTENT
Body Material	ABS Plastic, Stainless Steel
Purification Type	RO , UV
Water Source	Borewell Water, River Water
Purifier Type	Electric
Color	Blue
Features	Smart Indicators
Installation Type	Wall Mounted
Power Consumption (Watt)	11 W
Capacity Litre Per Hour	1000 LPH


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Maintenance, Tips and Precautions

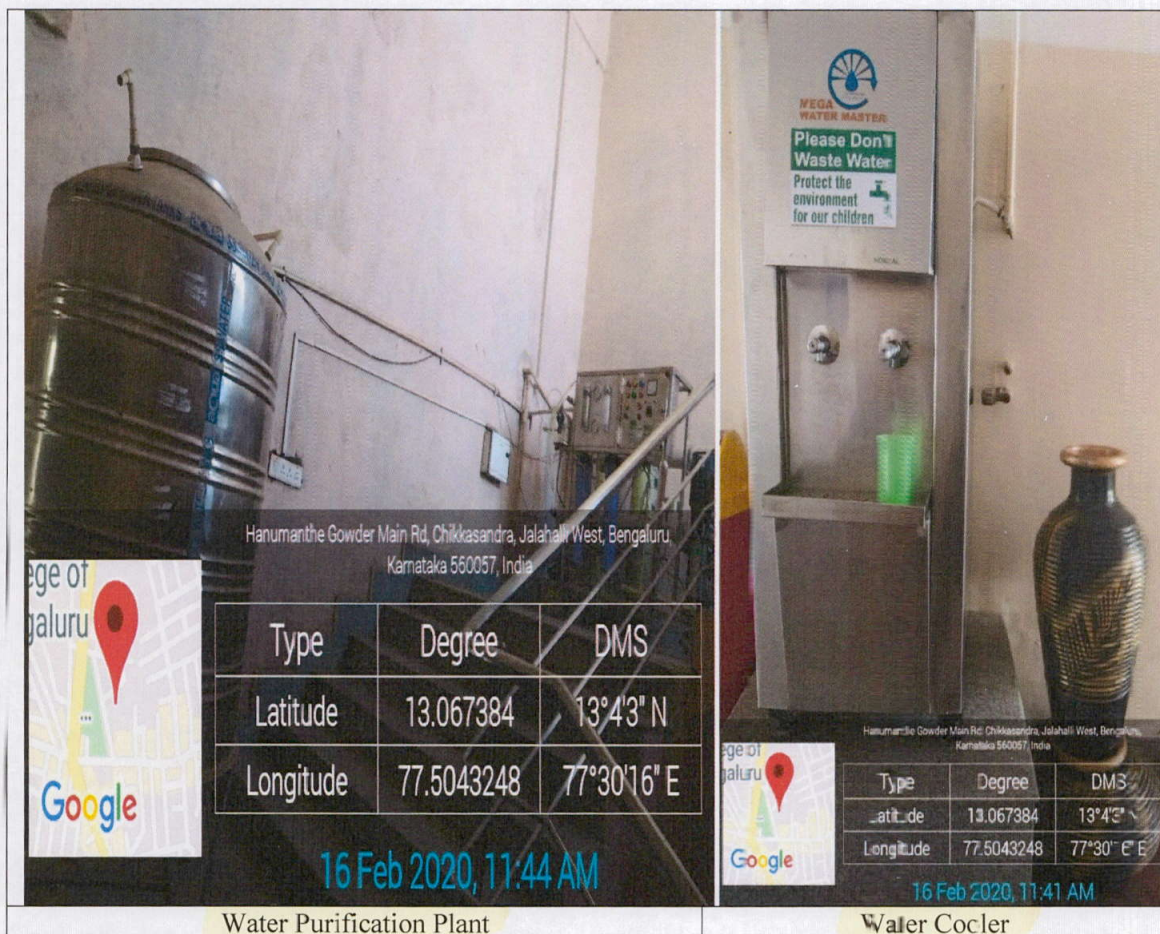
- Sequentially cleaning RO elements at A.B.E, or if system capable, clean and sanitize membranes in place, as needed
- Replace RO elements, as needed
- Change U.V. lights every 6 months, 9 months or yearly, depending on performance
- Replace sub-micron filters, replace carbon media when required
- Change vent filter on storage tank every 6 months
- Periodic full system sanitization including storage tanks and loops every 3, 6, or 12 months, depending on requirements and results of microbiological test procedure
- Any other water purification service required that is system specific


Problems Solved by Water Service Technicians only:

- Insufficient water was being produced by the system
- Insufficient water pressure before/after the system
- The RO pump was drawing too much current
- The RO product water quality was below specification
- The final water quality was below specification
- Bacteria or other Organics were interfering with the process
- Filters were plugging too rapidly
- Hard water was getting to the RO Membranes
- Chlorine was present in the RO feed
- The Recovery rate of the RO was too low
- The water system became contaminated within days of sterilization



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b) Sprinkler for Landscape Greeneries:

Sprinkler irrigation system adopted for SCE landscape greeneries to ensure maximum water saving. Sprinkler irrigation system is also adaptable to nearly all irrigable soils since sprinklers are used for SCE landscape. Sprinklers provide efficient coverage for small to large areas and are suitable for use on all types of properties. Sprinkler Irrigation is a method of applying irrigation water which is similar to rainfall. Water is distributed through a system of pipes usually by pumping. All the products are made out of high strength & chemical resistance engineering plastics to achieve functional satisfaction and to maintain cost economics. It is then sprayed into the air and irrigated entire soil surface through spray heads so that it breaks up into small water drops which fall to the ground.

Maintenance, Tips and Precautions

The following are the general guidelines to identify and remove the common troubles in the sprinkler systems:

1) Pump does not prime or deliver water

- Air leak from the suction pipeline and all connections should be checked. All connections and flanges should be made air tight.
- The strainer of the foot valve should be checked for blockage.
- Check that the flap in the foot valve is free to open fully.
- Check the pump gland (s) for air leaks. If required repack the gland (s) using a thick grease to seal the gland satisfactorily.
- Check that the gate valve on the delivery pipe is fully closed during priming and opens fully when the pump is running.
- Check that the direction of rotation of the pump is correct.

2. Sprinklers do not turn

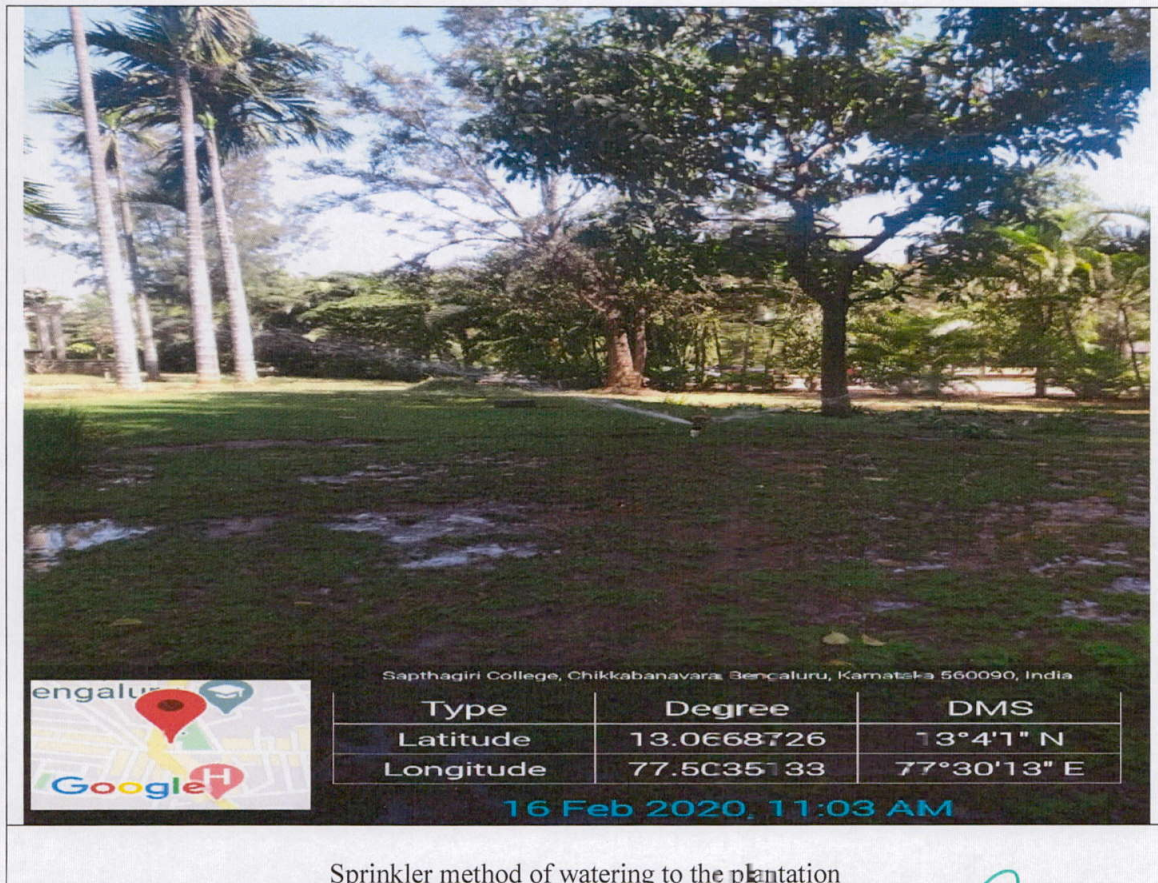
- The operation pressure of pump should be checked.
- Check that the nozzle is not blocked. Preferably unscrew the nozzle or use a small soft piece of wood to clear the blockage.
- Sprinkler bearing should be free and smooth. Sprinkler can usually be pushed down towards the riser pipes so that the water pressure flushes out the bearing. If the bearing is still stiff dismantle and then clean it. Oil, grease or any lubricant should not be used.
- The condition of washers at the bottom of the bearing should be checked and it should be replaced then, if found worn or damaged.
- The swing arm should be checked for free movement further the spoon which moves into the water stream is not bent by comparing it with a sprinkler which is operating correctly. If it is bent then very carefully bend it bring into position.

- Adjust the swing arm spring tension. Usually it should not be necessary to pull up the spring by more than about 6 mm.

3. Leakage from Coupler or Fittings

The sealing rings in the couplers and fittings are usually designed to drain the water from the pipes when the pressure is turned off. This ensures that the pipes are automatically emptied and ready to be moved. When the pump is first started and before the pressure has built up in the system the seals may give a little leakage. With full pressure in the system the couplers and fittings will be effectively leak-free. If, however, there is a leakage, check the following:

- There is no accumulation of dirt or sand in the groove in the coupler in which the sealing ring fits. Clean out any dirt or sand and refit the sealing ring.
- The end of the pipe going inside the coupler is smooth, clear and not distorted.
- In the case of fittings such as bends, tees and reducers ensure that the fitting has been properly connected into the coupler.




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