



MEENAKSHI SUNDARARAJAN ENGINEERING COLLEGE

363, Arcot Road, Kodambakkam, Chennai – 24
Approved by AICTE & Affiliated to Anna University
email Id: principal@msec.edu.in
Website : www.msec.edu.in

Criterion VII – Institutional Values and Best Practices

7.1 Institutional Values and Social Responsibilities

7.1.4 Water conservation facilities available in the Institution

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7.1.4 Water conservation facilities available in the Institution

Rainwater harvesting & Bore well /Open well recharge:

Rain water harvesting system involves gathering of rainwater that runs from roof top, garden, road and playground. This is done to preserve the runoff water. This is one of the best solutions to tackle the present water crisis.

Objectives of rainwater harvesting:

- Recharge the groundwater sources.
- Reduce the loss of water by runoff.

Water is the most natural resource that is essential in life, always in high demand. Hence, keeping in view, rain water harvesting system can be considered as the best solution for fighting against water scarcity in campus. The rain water runoff harvested from roof top, garden, playground and other open lands is used to recharge the underground water potential and also reduce flood risk and improve living condition.

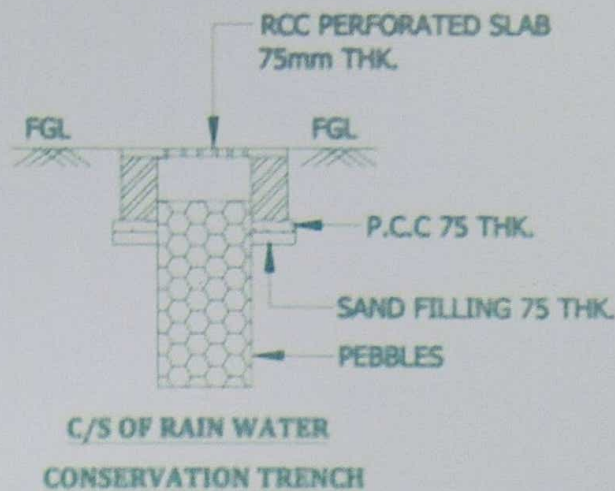


Fig. 1 : Rain water Conservation Trench

The rain water conservation trenches as shown in the above figure are provided around the campus. This is one of the easiest and most effective means of harvesting rainwater. This conservation trench is about 10 feet height and also 5 feet width and 5 feet breadth in size, is filled with pebbles about a height of 7 feet. The trench is covered with perforated slabs wherever necessary. The rain water runoff collected in the trench is treated by the pebbles and the water enters into the ground in such a way that the groundwater potential is recharged. Closed canals are provided continuously around the campus to collect the rainwater runoff and discharged into the conservation trenches. These canals are provided continuously, i.e. excavated in the ground and then closed by perforated concrete slabs. During heavy rainfall, (more than the average rainfall) the excess rain water flows through the canal and enters into the conservation trench, the excess water that gets overflowed will be collected in a sump that is constructed

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in the nearby trench. The water collected in the sump could be lifted to an overhead tank.

The average rainfall of Chennai city is 120 cm (Regional Meteorological Centre, Chennai). With this rainfall, our land comprising of 5 acres, harvests nearly 20 million litres of water per year. (against the total requirement of 160 million litres per year, nearly 12.5% requirement achieved by rain water harvesting system) This water directly enters in to the ground and enhances the quality and quantity of the existing ground water potential.

This type of ground water recharge improves our ground water potential, makes our garden green and provides a good environment to our students and staff. So our campus has well established system to make a sustainable environment.

Through Rain water harvesting

100 cm rain fall

Height of rain fall: **100 cm = 1m**

Area: **5 acres = 20234.28 metre square**

Volume = area * height

= 1 m * 20234.28 metre square

= 20234.28 meter cube

= 20234.28 * 1000 (convert meter cube to litres)

= 20234280 litres

= **20 Million litres**



Fig. 2 : RAIN WATER HARVESTING

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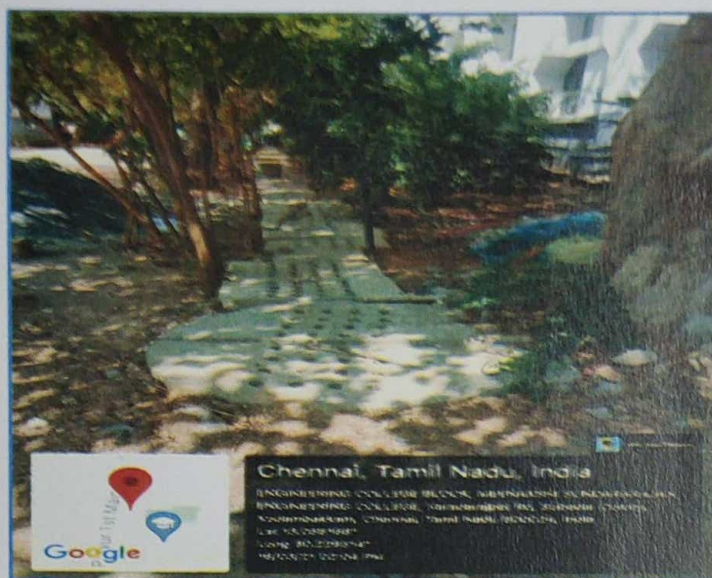


Fig. 3: RAIN WATER HARVESTING

Maintenance of water bodies and distribution system in the campus

Collected water Samples from the bore wells located in the college premises, and the water quality is tested once in six months. Manual sampling with a plastic container in compliance with established standard norms was adopted. The samples are labeled for identification. Ground Water Board guidelines are observed in sample preservation with minimum possible time lapse between collection and analysis.

Details of Sampling Locations

Bore well : Main block and Near the ground

Analysis of Samples

Analysis of the collected water samples are done in accordance with the procedures suggested in the **Standard Analytical Procedure Manual for water samples** which is based on **Standard Methods for the Examination of Water and Wastewater** 19th edition, APHA, AWWA, wef 1995 (alkalinity-titrimetrically, pH-potentiometrically, $\text{HCO}_3^- + \text{CO}_3^{2-}$ - calculation from pH and alkalinity, DO-iodometrically, BOD-bottle incubation for 5days at 20°C , COD-open reflux, Ca and total hardness-EDTA titrimetric, Mg-calculation from total hardness and Ca, NO_3^- & PO_4^{3-} -spectrophotometric, Cl-argentometric titrimetric, total dissolved solids- calculation from conductivity).

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S.NO.	Parameter	Method	Instrument/Equipment
1	Temperature	Laboratory method	0.1 0 scale thermometer
2	pH	Electrometric	pH meter
3	Turbidity	Electrometric	Turbidity Meter
4	Total solids	Evaporation	
5	Hardness, Ca	Titration with EDTA	
6	Alkalinity	Titration with Sulphuric acid	
7	Chloride	Titration with Silver nitrate	
8	Na, K	Flame Photometric	Flame photometer
9	Nitrate, Phosphate	Spectrophotometric abs. UV, Vis.	UV-Vis. Spectrophotometr

Analysis Outcome :

The collected water sample is analysed in accordance with standard procedures and assessed for its drinking requirements

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Analysis Report of Water Sample 2017-18

Date : 20/6/2017

Chemical
Sample Collection was done from the bore wells located in our college premises and the water quality is tested once in six months. Manual sampling with a plastic container in compliance with established standard norms was adopted. Labels were used to prevent sample misidentification. Sample preservation was done in tune with Ground Water Board guidelines with minimum possible time lapse between collection and analysis.

S.NO.	Parameter	Standard limit	Tested Value (BORE WELL)
1	Temperature	-	35 degree c
2	pH	6.5-8.5	7.6
3	Turbidity	5-10 NTU	4 NTU
4	Total solids	500-2000 mg/l	180
5	Hardness, Ca	300 (mg CaCO ₃ /l)	114
6	Alkalinity	200 – 600 (mg CaCO ₃ /l)	85
7	Chloride	250mg/l	70 mg/l
8	Na, K	100 mg/l, 10mg/l	36,8 (mg/L)
9	Nitrate	45 mg/l	22 mg/l

Details of Sampling Locations

Bore well: Main block and near the ground

Inference: The water is tested for all the basic parameters and it is found to be within the standard desirable limit of drinking water (BIS IS: 10500:1991).

MMS
20/6/17
Lab In- Charge

M.Malini Gayathri

Assistant Professor

Department of Civil Engineering

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J.K.S.

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Analysis Report of Water Sample 2018-19

Date : 22/11/2018

Chennai

Sample Collection was done from the bore wells located in our college premises and the water quality is tested once in six months. Manual sampling with a plastic container in compliance with established standard norms was adopted. Labels were used to prevent sample misidentification. Sample preservation was done in tune with Ground Water Board guidelines with minimum possible time lapse between collection and analysis.

Details of Sampling Locations:

Bore well: Main block and near the ground

S.NO.	Parameter	Standard limit	Tested Value (BORE WELL)
1	Temperature	-	35 degree c
2	pH	6.5-8.5	7.8
3	Turbidity	5-10 NTU	4.7 NTU
4	Total solids	500-2000 mg/l	210
5	Hardness, Ca	300 (mg CaCO ₃ /l)	222
6	Alkalinity	200 – 600 (mg CaCO ₃ /l)	89
7	Chloride	250mg/l	85mg/l
8	Na, K	100 mg/l, 10mg/l	38.8 (mg/L)
9	Nitrate	45 mg/l	23 mg/l

Inference: The water is tested for all the basic parameters and it is found to be within the standard desirable limit of drinking water (BIS IS: 10500:1991).

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Analysis Report of Water Sample 2018-19

Date : 10/7/2018

Chemical

Sample Collection was done from the bore wells located in our college premises and the water quality is tested once in six months. Manual sampling with a plastic container in compliance with established standard norms was adopted. Labels were used to prevent sample misidentification. Sample preservation was done in tune with Ground Water Board guidelines with minimum possible time lapse between collection and analysis.

Details of Sampling Locations:

Bore well: Main block and near the ground

S.NO.	Parameter	Standard limit	Tested Value (BORE WELL)
1	Temperature	-	35 degree c
2	pH	6.5-8.5	7.7
3	Turbidity	5-10 NTU	5NTU
4	Total solids	500-2000 mg/l	210
5	Hardness, Ca	300 (mg CaCO ₃ /l)	230
6	Alkalinity	200 – 600 (mg CaCO ₃ /l)	89
7	Chloride	250mg/l	85mg/l
8	Na, K	100 mg/L, 10mg/l	38.8 (mg/L)
9	Nitrate	45 mg/l	22 mg/l

Inference: The water is tested for all the basic parameters and it is found to be within the standard desirable limit of drinking water (BIS IS: 10500:1991).

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Analysis Report of Water Sample 2018-19

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Date : 10/2/2019

Chennai

Details of Sampling Locations:

Bore well: Main block and near the ground

S.NO.	Parameter	Standard limit	Tested Value (BORE WELL)
1	Temperature		35 degree c
2	pH	-	7.7
3	Turbidity	6.5-8.5	5NTU
4	Total solids	5-10 NTU	212
5	Hardness, Ca	500-2000 mg/l	230
6	Alkalinity	300 (mg CaCO ₃ /l)	89
7	Chloride	200 - 600 (mg CaCO ₃ /l)	85mg/l
8	Na, K	250mg/l	38.8 (mg/L)
9	Nitrate	100 mg/l, 10mg/l	25 mg/l

Inference: The water is tested for all the basic parameters and it is found to be within the standard desirable limit of drinking water (BIS IS: 10500:1991).

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10/2/19

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Analysis Report of Water Sample 2019-20

Date : 15/12/2019

Chennai

Sample Collection was done from the bore wells located in our college premises and the water quality is tested once in six months. Manual sampling with a plastic container in compliance with established standard norms was adopted. Labels were used to prevent sample misidentification. Sample preservation was done in tune with Ground Water Board guidelines with minimum possible time lapse between collection and analysis.

Details of Sampling Locations:

Bore well: Main block and near the ground

S.NO.	Parameter	Standard limit	Tested Value (BORE WELL)
1	Temperature	-	35 degree c
2	pH	6.5-8.5	7.7
3	Turbidity	5-10 NTU	4.8NTU
4	Total solids	500-2000 mg/l	212
5	Hardness, Ca	300 (mg CaCO ₃ /l)	230
6	Alkalinity	200 – 600 (mg CaCO ₃ /l)	89
7	Chloride	250mg/l	85mg/l
8	Na, K	100 mg/l, 10mg/l	38,8 (mg/L)
9	Nitrate	45 mg/l	22 mg/l

Inference: The water is tested for all the basic parameters and it is found to be within the standard desirable limit of drinking water (BIS IS: 10500:1991).

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15/12/19.

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Analysis Report of Water Sample 2019-20

Date : 22/01/2020

Chennai

Sample Collection was done from the bore wells located in our college premises and the water quality is tested once in six months. Manual sampling with a plastic container in compliance with established standard norms was adopted. Labels were used to prevent sample misidentification. Sample preservation was done in tune with Ground Water Board guidelines with minimum possible time lapse between collection and analysis.

Details of Sampling Locations:

Bore well: Main block and near the ground

S.NO.	Parameter	Standard limit	Tested Value (BORE WELL)
1	Temperature	-	35 degree c
2	pH	6.5-8.5	7.5
3	Turbidity	5-10 NTU	4.8NTU
4	Total solids	500-2000 mg/l	212
5	Hardness, Ca	300 (mg CaCO ₃ /l)	225
6	Alkalinity	200 – 600 (mg CaCO ₃ /l)	85
7	Chloride	250mg/l	85mg/l
8	Na, K	100 mg/l, 10mg/l	38,8 (mg/L)
9	Nitrate	45 mg/l	22 mg/l

Inference: The water is tested for all the basic parameters and it is found to be within the standard desirable limit of drinking water (BIS IS: 10500:1991).

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Analysis Report of Water Sample 2020-21

Date: 30/09/2021

Chennai

Sample Collection was done from the bore wells located in our college premises and the water quality is tested once in six months. Manual sampling with a plastic container in compliance with established standard norms was adopted. Labels were used to prevent sample misidentification. Sample preservation was done in tune with Ground Water Board guidelines with minimum possible time lapse between collection and analysis.

Details of Sampling Locations:

Bore well: Main block and near the ground

S.NO.	Parameter	Standard limit	Tested Value (BORE WELL)
1	Temperature	-	35 degree c
2	pH	6.5-8.5	7.5
3	Turbidity	5-10 NTU	4.8NTU
4	Total solids	500-2000 mg/l	212
5	Hardness, Ca	300 (mg CaCO ₃ /l)	225
6	Alkalinity	200 – 600 (mg CaCO ₃ /l)	85
7	Chloride	250mg/l	85mg/l
8	Na, K	100 mg/l, 10mg/l	38.8 (mg/L)
9	Nitrate	45 mg/l	22 mg/l

Inference: The water is tested for all the basic parameters and it is found to be within the standard desirable limit of drinking water (BIS IS: 10500:1991).

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7.1.4(5) DISTRIBUTION SYSTEM :



Fig. 5 : LOCATION: CIVIL BLOCK



Fig. 6 : LOCATION: HOSTEL BLOCK

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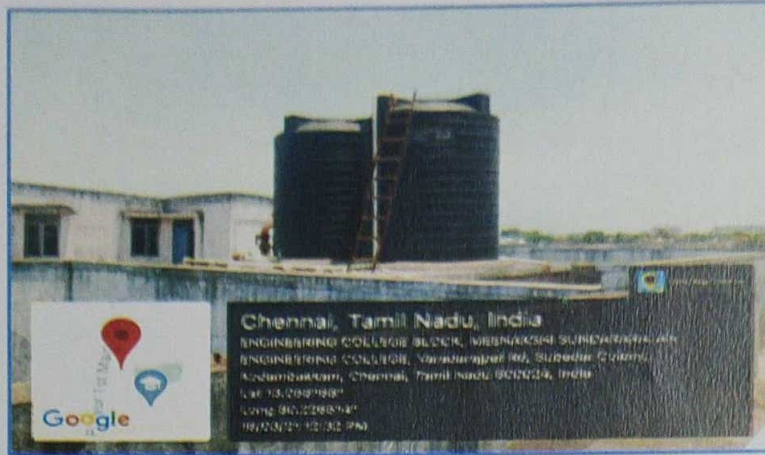


Fig. 7 : LOCATION: MECHANICAL BLOCK

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