



M.V.P. SAMAJ's

**Karmaveer Shantarambapu Kondaji Wavare Arts,
Science and Commerce College, CIDCO, Nashik
(Maharashtra)**

**Internal Quality Assurance Cell
(IQAC)**

WATER AUDIT- 2020-21



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INDEX

Sr. No.	Particulars	Page No.
1	Preface	4
2	Acknowledgement	5
3	Introduction	6
4	Objectives of water Audit	7
5	Water Supply units in campus	11
6	Drinking water quality in the campus	18
7	Student Awareness Programs	22
8	Summary	26
9	Suggestions and Recommendations	26
10	References	28



Water Audit Team – 2020-2021

Sr.No.	Names	Audit Member
1	Mr Mangesh A. Sakurikar	External
2	Prin. J. D. Sonkhaskar	Internal
3	Dr. D. N. Pawar (IQAC)	Internal
4	Dr. M. S. Patil (Coordinator)	Internal



Preface

Report of water audit of the **MVP'S KSKW Arts, Science and Commerce College, Uttamnagar, CIDCO, Nashik-08** was framed in the period of July 2019 to June 2020.

The goal of this audit is to express an opinion on the scientific framework that categorizes all water use in the organization, leakages and point of water losses.

Data was collected for each water storage capacity and supply of the campus. The work is completed by considering how many water storage, supply and purification units are accessible to each individual related to organization. Total water consumption was taken in to consideration.

We really appreciate the effort put by MVP'S management for creating awareness of water Audit, through this, we have been cleared the vision of Institution. We really appreciate for various efforts taken by the college.



College Main Building

Acknowledgement

We are very much thankful to **Principal Dr. J. D. Sonkhaskar and Dr. D.N.Pawar, IQAC coordinator, NAAC** for motivating us and giving us the opportunity for water audit. We would like to express our sincere thanks to Mr.MangeshSakurikar,Director,Shanmukha Laboratoriesfor providing us water analysis report. We extend our gratitude towards all respected office staff, who have taken part in this audit survey etc. of MVP'S KSKW Arts, Science and Commerce College, Uttamnagar, CIDCO, Nashik-08. We tried our best to present this water audit report as per requirements of college and our expertise work.



College New Building



Introduction of Water Audit

Water is a precious natural resource with almost fixed quantum of availability. Declaring water conservation a national mission, in June 2003, the Prime Minister of India, appealed to all countrymen to collectively address the problem of alarmingly progressive water shortage, by conserving every drop of water and suggested for conducting water audit for all sectors of water use. With continuous growth in country's population, per capita availability of water has been reduce to alarming stage, whereas with ever-rising standard of living of people, all around rapid industrialization and urbanization, demand of fresh water is going up continuously. In an educational institute's water is used for laboratory, bathroom, urinals, hostel, canteen, etc. This should need to measure balance of input water to output water. This water proportion is low at the end of the water distribution networks because of the leakages, overflow, and losses through valve. So it is need to water audit of this entire water distribution system. This should save the money to unaccounted water flow and this conserve water used into lesser extent period. An educational institutes need to care about water distribution from start to end. And need to attention at minimum water losses through distribution network. The study indicates that the unaccounted for water and leaks are responsible for the wastage of water. Preventive measures should be taken for reducing the total water flow. The distribution system should be checked for integrity and leaks from time to time to maintain efficiency of the system and to reduce water losses.. Therefore, Water audit is an effective management tool for minimizing losses, optimizing various uses and thus enabling considerable conservation of water. Water is a natural resource; all living organisms depend on water. While freely available in many natural environments, in human settlements potable(drinkable) water is less readily available. Groundwater depletion and water contamination are taking place at an alarming rate. Hence it is essential to examine the quality and usage of water in the college. Water auditing is conducted for the evaluation of facilities of raw water intake and determining the facilities for water treatment and reuse. The concerned auditor investigates the relevant method that can be adopted and implemented to balance the demand and supply of water.

"Water Audit is a qualitative and quantitative analysis of water consumption to identify means of reducing, reusing and recycling of water"



Objectives:

- To utilize water resources effectively and more efficiently.
- To keep check on unwanted excess usage of water.
- To determine water losses and leakages path.
- To identify meter record inaccuracies
- To identify priorities area which need immediate attention for control and maintenance
- For planning of water storage and supply.
- For cost-benefit study related to optimum recovery of water loss.

Benefits:

Water audit improves the knowledge and documentation of your water sources and the distribution system, associated problem and risk areas and a better understanding of what is happening to the water after it leaves the source point. It helps in analysing water related risk and opportunities as part of sustainability strategy

Water Audit leads to:

- Reduced water losses
- Enhance water conservation
- Improved financial performance
- Create green image
- Satisfy regulatory norms
- Enhance natural resources conservation for sustainable society
- Improved reliability of supply system & distribution system
- Better safeguard to public health and property and Improved public relations





About Institute

Sr. No.	Particulars	Details
1	Name of the Institute:	Maratha Vidya Prasarak Samaj's Karmaveer Shantarambapu Kondaji Wavare Arts ,Science and Commerce College, CIDCO,
2	Address:	Uttamnagar, Nashik-422008 Maharashtra State, India.
3	Affiliation:	Affiliated to Savitribai Phule, Pune University,Pune-07 ID No. PU/NS/ASC/047/1993
3	Year of Establishment:	June 1993
5	NAAC Accreditation:	NAAC REACCREDITED "A" GRADE with CGPA 3.20 (Third Cycle)
6	Contact:	Phone : 0253-2391110, FAX : 0253-2372210 Email : cidcocollegenasik@rediffmail.com Website : www.cidcocollegenasik.com
4	Courses Offered:	XI th and XII th Arts , Commerce & Science
		B. A./B.Com./B.Sc., B. Sc. (Computer Science)
		B. Voc. 1.Electrical Appliances Maintenance & Repairing 2.Food Technology 3.Diploma in Sustainable Agriculture 4.Diploma In Sericulture 5.Diploma In Medical Technology



		6.Diploma In English for practical purposes 7.Degree & Diploma In Sports & Yoga 8.Certificate course in Web Designing
		M. Sc.: Physics, Chemistry, Computer Science, Geography, Botany & Zoology
		M.Com. M.A Economics, Hindi, English, Marathi ,History



Water Supply units in campus

Water is a key driver and is vital to development of Biodiversity, Agriculture, Humans as well as the Economy. With recent experiences across the world and in India, the water scarcity and security is emerging issues. The state of Maharashtra has also faced severe impact of the water scarcity in the recent past. Therefore water management is a crucial step of sustainable development and it also has been made an integral part of the Sustainable Development Goals (SDGs). Unplanned urban growth and economic development has placed unprecedented pressures on natural resources especially on water. Increasing demand for the water in urban areas such as Nashik highlights the necessity of the overall water management.

Water Supply in the campus

Sr. No.	Department	UGT capacity in litre	No. of times filled	Water storage/usage (m ³ /day)
1	New Building terrace water tank	5,000.00	1.00	90.00
2	Second floor new building aqua plant	100.00	2.00	40.00
3	Old building terrace water tank	15,000.00	2.00	270.00
4	Aqua plant for staff in staff room	100.00	2.00	40.00
5	RCC water tank	20,000.00	2.00	360.00
6	Ground area gents toilet water tank	2500.00	2.00	100.00
7	Ground area ladies toilet water tank	2500.00	2.00	100.00
8	Ground area ladies toilet water tank	2500.00	2.00	100.00
		Total Water Usage:-	30,400 litre	



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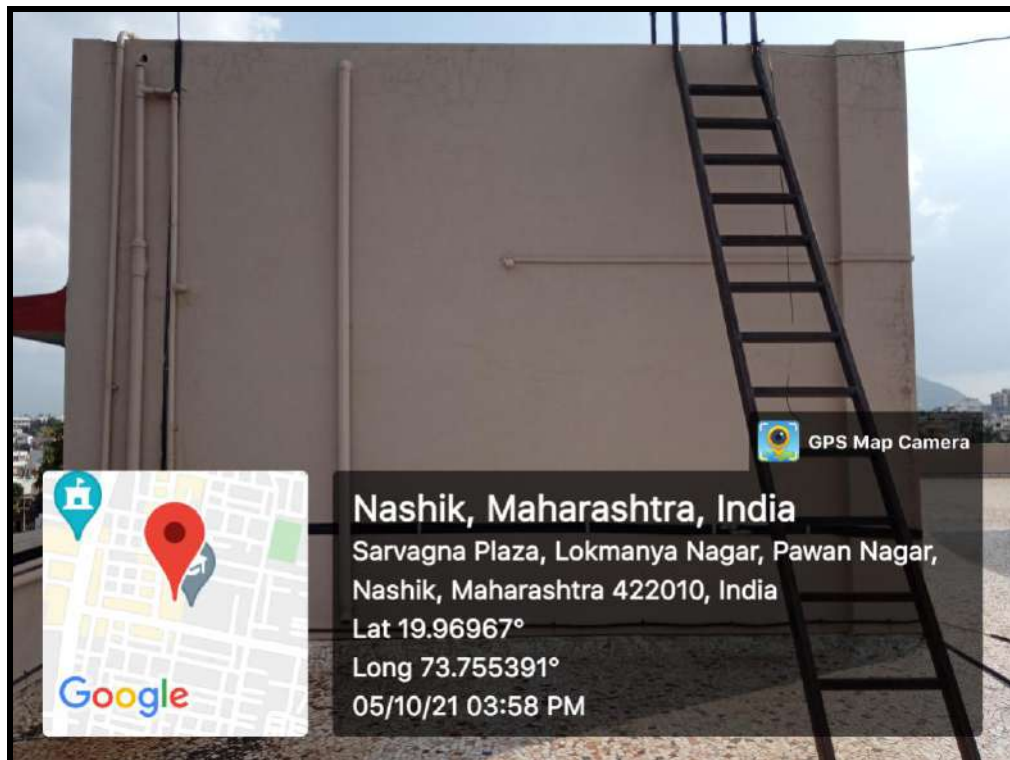
Old building terrace water tank-1



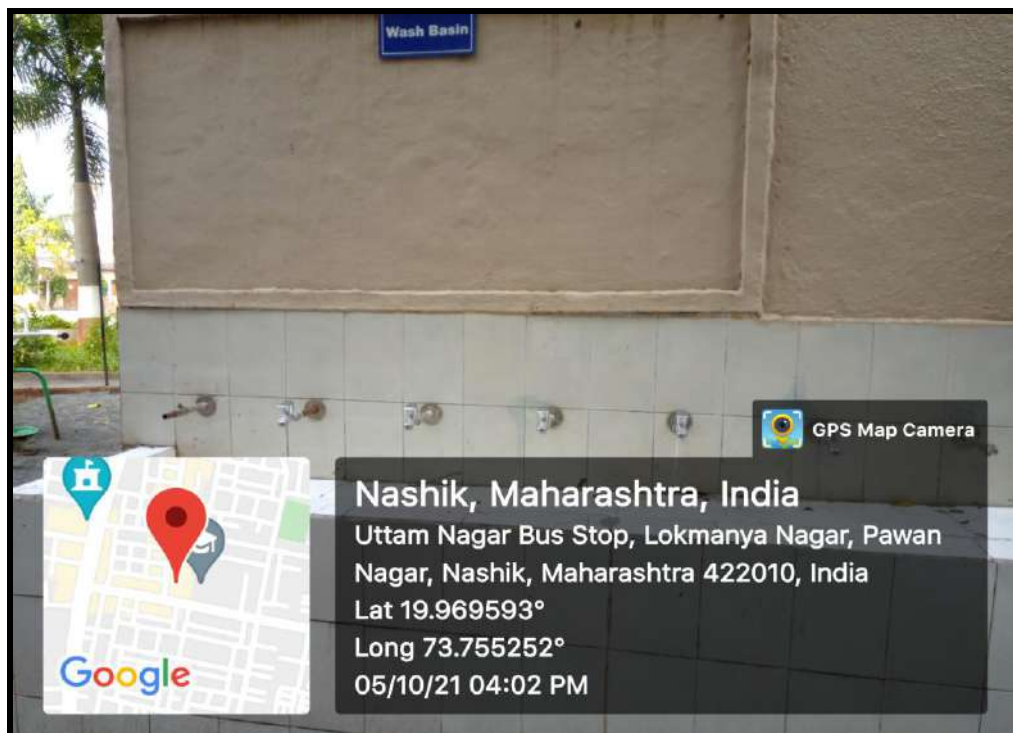
Old Building terrace water tank-2



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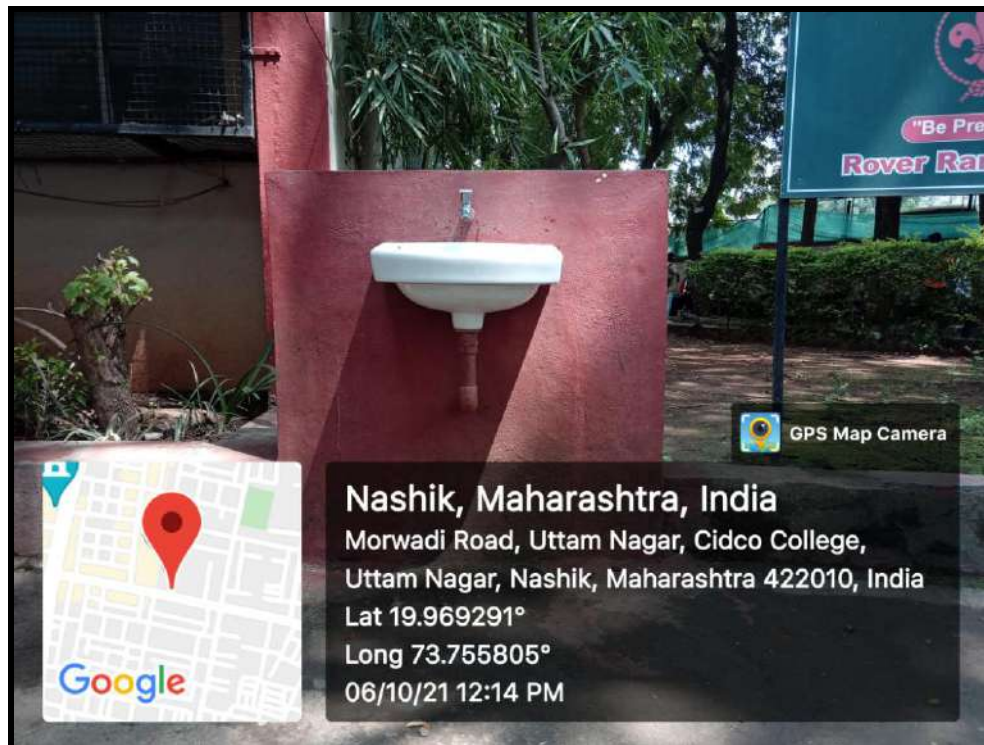
New Building RCC water tank



Tap water outlet in the college Campus



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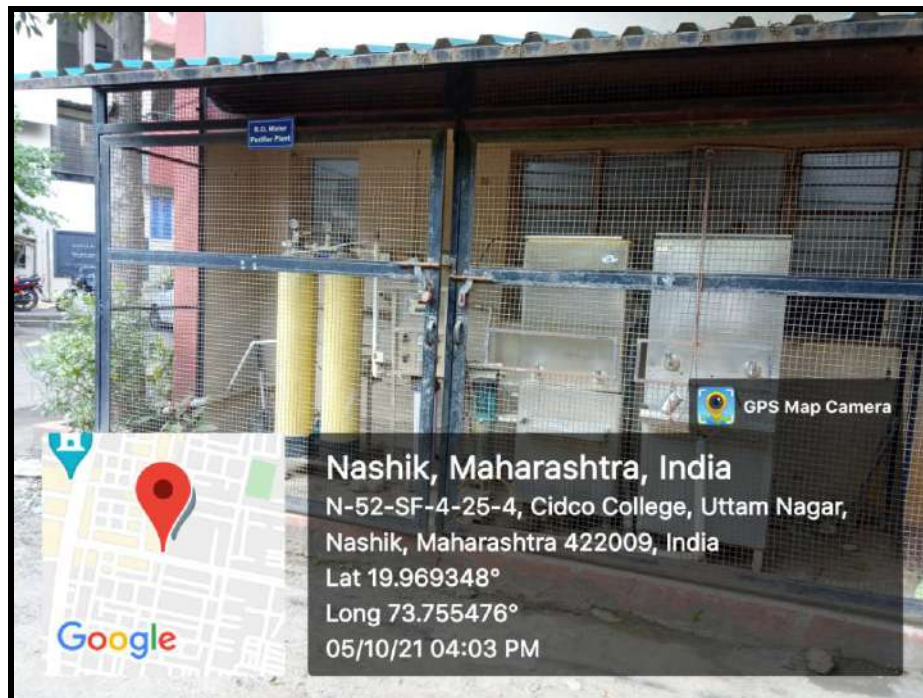
Tap water outlet in the college Campus



Aqua plant for staff in staff room



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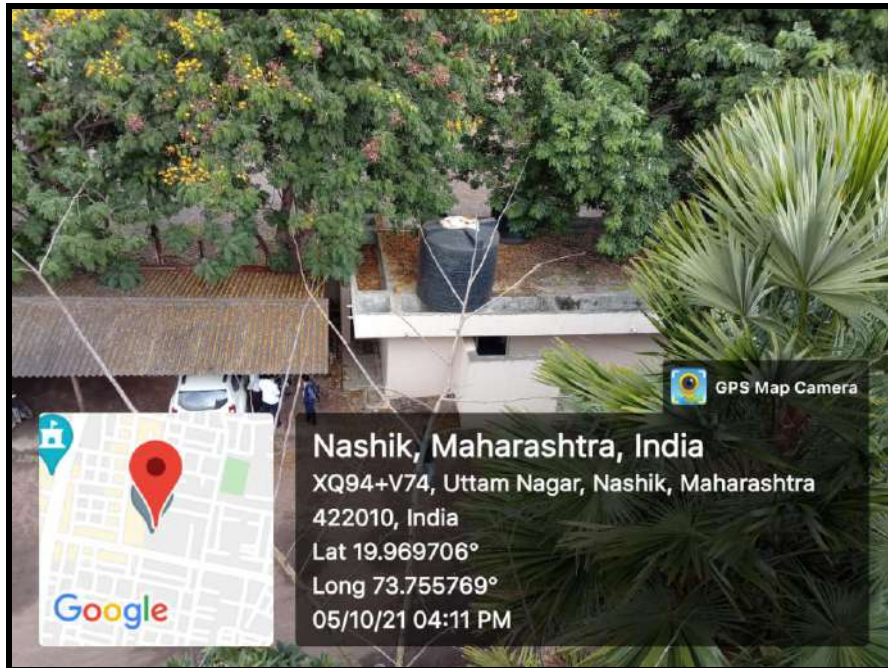
RO Water Plant for Students in the college campus



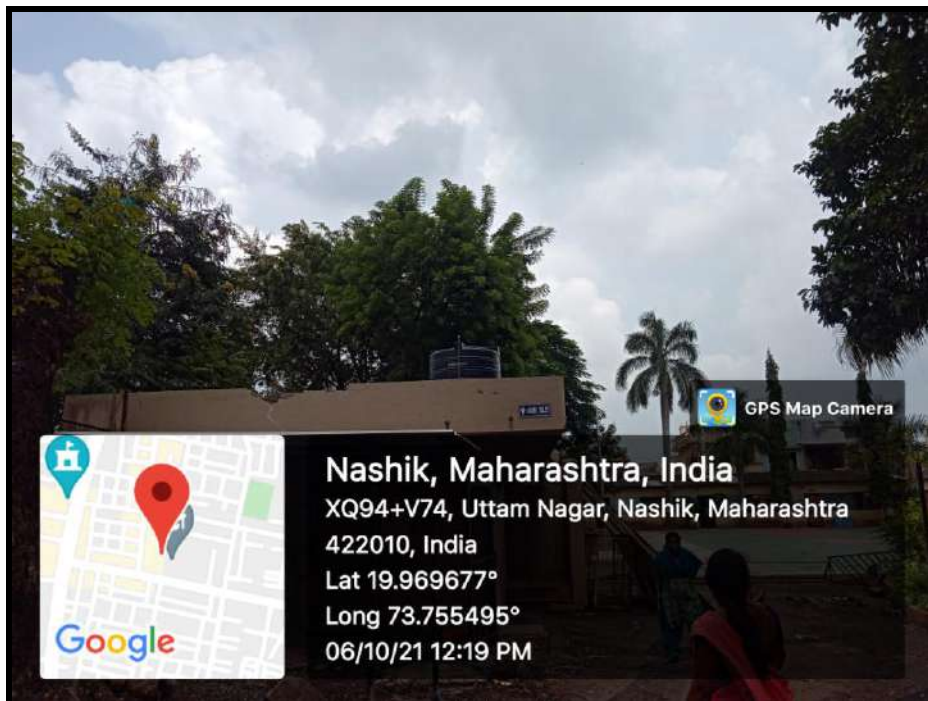
Second floor new building



Water Audit Report: 2020-21



Ladies Toilet



Gents Toilet





Drinking water quality in the campus

Quality of drinking water is important to our health and well-being. Monitoring the quality of water and testing is very important to maintain reliable and safe water sources. The analysis of water is aim to determine all water parameters providing quality potential health risks related to water contamination diseases.

Methodology Adopted

The methodology adopted to conduct the Water Audit of the Institution had the following components

Onsite Visit

The water samples from two buildings and two tap water sources were taken. The sample collection, preservation, and analysis were done in the scientific manner as prescribed by the standard procedures.

Water Quality assessment

Water samples were collected and analyzed for its quality parameters. The samples includes water which are the main water source of the college campus . The samples were collected, preserved and transported to school of Environmental Sciences and analyzed for various physio-chemical parameters. The major parameters analyzed include dissolved oxygen, acidity, alkalinity, chloride, hardness, pH, conductivity, total dissolved solids and salinity. The results are presented in the Table 1 The results are comparable with the values of drinking water standards prescribed by different agencies.



Interpretation of Water analysis report

The concentration is the amount of a given substance (weight) in a specific amount of water (volume). The most common concentration unit used is milligrams per liter (mg/l), which, in water, is approximately equal to one part per million (ppm). Many compounds are measured in smaller concentrations, such as micrograms per litre or parts per billion (ppb).

In both the water sample (Old and New building) analysis report indicates that the observed value of most of the water parameters is within the range of standard grade specification so it recommends the water quality as potable i.e it is safe for drinking purpose .The concentration of metals like Nickel, Boron, Lead, Zinc, Manganese, Iron, Calcium, Magnesium, Sodium, Potassium, Cadmium is observed in very minor level.

All water has some form of bacteria in it. The presence of bacteria does not mean the water is unsafe to drink. Only disease-causing bacteria known as pathogens lead to disease. Water test results include total coliform bacteria. Total coliform bacteria are a group of several kinds of bacteria commonly found in the environment, including soil, vegetation and untreated surface water. They also are found in the intestinal tract of warm-blooded animals, including humans.

A laboratory reported total coli form bacteria 6 MPN /100 ml indicating the presence of coli form bacteria. So both the water tanks were chlorinated by addition of sodium hypochlorite solution (NaOCl). In particular, chlorination is used to prevent the spread of waterborne diseases such as cholera, dysentery, and typhoid. This method is used to kill bacteria, viruses and other microbes in water.



Water Audit Report: 2020-21

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TEST CERTIFICATE

Sample ID: N211457	Report NO : SL/ADS/SFPL/NABL/2021/3166
Name And Address of Customer :	Report Date : 27.09.2021
KARMAVEER SHANTARAMBAPU KOBDAJI WAVARE ARTS, SCIENCE & COMMERCE COLLEGE, CIDCO ADDRESS : UTTAM NAGAR, NASHIK	
Sampling Done by	Laboratory
Sampling Location	SHANMUKHA LAB
Sample Quantity And packing	1 Ltr
Sampling Procedure	WATER ANALYSIS
Other Reference	8308366068

Sample Description /Type	DRINKING WATER (Group : water)
Date : Receipt of Sample	21.09.2021
Cust. Ref. : 9741/2021-22 DATE : 21.09.2021	Ref By: Mr. SHIRISH SHWALE SIR
Date: start of Analysis	22/09/2021
Date : Completion of Analysis	26/09/2021

CHEMICAL TESTING :

Sr.No:	Parameter	Result	UNIT	Method
1	pH @ 25 °C	8.55		IS 3025(Part-11)1983 RA 2002
2	Total Dissolved Solids	106	PPM	IS 3025(Part-10)1984 RA 2002
3	Total Suspended Solids	265	PPM	IS 3025(PART-17):1984
4	Dissolved Oxygen	9.75	PPM	IS 3025 (Part-38):1989
5	Electrical Conductivity @ 25 °C	123.4	µsim/cm	IS 3025(Part-14) 2013
6	Boron As B	0.85	PPM	IS 3025 (Part-57) :2005
7	Calcium [as Ca]	15.1	PPM	IS 3025(Part 40)1991 RA 2014
8	Chloride [as Cl]	9.52	PPM	IS 3025(Part-32)1988 RA 2004
9	Iron [As Fe]	0.29	PPM	IS 3025(Part 53)2003 RA 2014
10	Magnesium [As Mg]	12.47	PPM	IS 3025(Part-46)1994 RA 2017
11	Nitrate [As NO ₃]	0.52	PPM	IS 3025(Part-34)1988
12	Sulphate[As SO ₄]	38	PPM	IS 3025(Part-24)1986 RA2004
13	Turbidity	0.1	NTU	IS 3025(Part-10)1984 RA 2007
14	Total Hardness[As CaCO ₃]	89	PPM	IS 3025(Part 21)1983 RA 2009
15	Cadmium As Cd	<0.10	PPM	IS 3025 (PART :47) : 1994
16	Copper as Cu	<0.100	PPM	IS 3025(Part 42)1992 RA 2003

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M. A. SAKURIKAR.

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E-mail : info@shanmukha.com, shanmukha_lab@rediffmail.com, support@shanmukha.com, accounts@shanmukha.com • Website : http://www.shanmukha.com



TEST CERTIFICATE

Sample ID: N211457	Report NO : SL/ADS/SFPL/NABL/2021/3166			
Name And Address of Customer :	Report Date : 27.09.2021			
	KARMAVEER SHANTARAMBAPU KOBDABI WAVARE ARTS,SCIECE &COMMERCE COLLAGE,CIDCO ADDRESS : UTTHAM NAGAR,NASHIK			
Sampling Done by	Laboratory	Sample Description /Type	DRINKING WATER (Group : water)	
Sampling Location	SHANMUKHA LAB	Date : Receipt of Sample	21.09.2021	
Sample Quantity And packing	1 Ltr	Cust.Ref. :9741/2021-22 DATE : 21.09.2021	Ref By: Mr.SHIVISH SHWALE SIR	
Sampling Procedure	WATER ANALYSIS	Date: start of Analysis	22.09.2021	
Order Reference	8308366068	Date : Completion of Analysis	26.09.2021	
CHEMICAL TESTING :				
Sr.No:	Parameter	Result	UNIT	Method
17	Sodium As Na	9.54	PPM	IS 3025 (PART 45) : 2009
17	Potassium As K	2.20	PPM	IS 3025 PART 45 : 1993 RA 2003
18	Hexa Chromium Cr ⁶	ABSENT	PPM	IS 3025 (PART 52):2003
19	Zinc As Zn	0.11	PPM	IS 3025 (PART 49) : 1994
20	Lead As Pb	<0.10	PPM	IS 3025(PART 47) : 1994
21	Aluminium As Al	<0.10	PPM	IS 3025 : (PART 55) : 2003
22	Manganese AS Mn	<0.10	PPM	IS 3025(PART 59):2006
23	Nickel As Ni	<0.10	PPM	IS 3025 (PART 54):2003
24	BOD	48.75	PPM	IS 3025(PART-44):1993
25	COD	95.26	PPM	IS 3025(PART:58):2006
26	E.coil	<10 ⁴ /100 ml	SHALL NOT DETECTED IN 100 ml	BS 102
27	TBC	<10 ³ /100 ml	SHALL NOT DETECTED IN 100 ml	BS 102

***** End of Certificate *****

Page: 2/ 2

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Student Awareness Programs

The activities about water conservation, pollution are conducted by arranging student awareness programs in which NSS, students from environmental science are actively participated.

Activities by students

Mahatma Gandhi Jayanti (Swachhata Hich Seva)

Mission of river Nandini clean-up aim at generating greater public participation towards Swachhata and mobilise people and reinforce janaandolan (mass movement) for sanitation to contribute to Mahatma Gandhi's dream of a Clean India.

Ganesh Idol Collection Programme

Environmental awareness was created with objectives of to reduce the quantity of polluting substances discharged into the environment, to increase the use of materials, to minimize the impact of all our activities on our surroundings.

Garbage Collection with Volunteers



Discussion on Cleanliness Drive with NMC Administration



Volunteer Photo with Member of MahanagarPalikaNashik



Photo With Member of Mahanagar Palika and CIDCO College Staff



Water Audit Report: 2020-21



Ganesh Idol Collection by the Volunteers

On the occasion of world water day, institute conducted water awareness quiz and awarded students and people about importance of Water. Gave certificate for actively Participation.

On the occasion of 'World's Water Day' Conducted Quiz on the importance of Water to aware students and people of the society







Summary

The objective of the audit was to study the water utilization pattern of the college, identify the areas where water leakage and loss.

The salient observations and recommendations are given below:

- 1) MVP'S KSKW Arts, Science and Commerce College, Uttamnagar, CIDCO, Nashik uses water for drinking, washing and sanitation purpose which comes from Municipal Corporation
- 2) The campus buildings possess large terrace areas and paved as well as non-paved areas. Currently, none of the buildings have Rain Water Harvesting (RWH) System implemented. The campus has huge potential for Rain Water Harvesting. However, due to inadequate space, the RWH system is not implemented.
- 3) Operational efficiency and maintenance level of all water supply units is good
- 4) Frequent chlorination of water tanks was recommended.
- 5) Recycling of waste water can be done in future.

Suggestions and Recommendations:

Rainwater Harvesting Rainwater harvesting is the technique of collection and storage of rainwater at the surface or in sub-surface aquifers, before it is lost as surface runoff, which shows a declining trend in ground water levels and needs urgent attention to meet the growing needs for domestic purpose. A twin strategy of adopting simple artificial recharge techniques in rural areas like Percolation Tanks, Dugwell Recharge and Subsurface dykes and adopting Roof top rainwater harvesting in college areas, Some of the benefits of rainwater harvesting are as follows:

- i. Increases water availability.
- ii. Checks the declining water table
- iii. Improves the quality of ground water through the dilution of fluoride, nitrate and salinity.
- v. Is environmentally friendly.



Water Audit Report: 2020-21

Water Management the water sources are safe in terms of contamination. The water can be recharged with rainwater from rooftops of new building. Water can be harvested from the roof area of new building. Rainwater for laboratory purposes – Construction of a 10000L rainwater harvesting tank can satisfy the need of laboratory, especially in distillation units where water lost as coolant. The rain water from harvesting tank can be used as source water as well as coolant for the distillation unit. The rain water can also be used as source for drinking water. The coolant water can be recycled through a separate plumbing system. The capacity of distillation unit in the college is 1 L / hour. The amount of water used as coolant for 1L of distilled water is 60L. Annually, the unit require approximately 1500L of water as coolant and this much water can be saved with the construction of the harvesting tank. The NMC club can arrange awareness programmes for water conservation. There should be a proper monitoring of water consumption pattern in the campus. NMC can also conduct water quality monitoring during specific intervals.

Action Taken Report:

Sr. No	Suggestions By Water Audit Committee (2019-2020)	Action Taken by Institute (2020-2021)
1	Old building water content E.Coli Bacteria. Cleaning of Aqua plant for staff in staff room	Cleaned all Aqua plants in the Institute.
2	The auditor investigates the relevant method that can be adopted and implemented to balance the demand and supply of water.	Rain water harvesting System Is tried to be implemented



References

1. “Holmes Matthew (2007), “Water Use Auditing”, New Mexico Rural Water Association, pp 1-20 Energy Management, Audit and Conservation” by Barun Kumar De.
2. “Fanner V.P, Sturn R., J.Thornton (2007), “Evaluating Water Loss and Planning” Manual, Chapter -7, pp 75-93
3. “Rathi Dinesh (2005), “Water audit in National scenario” National conference on management conservation and sustainable development.
4. “Detail Project Report on Water Audit of Ahmadpur Municipal Corporation, Management under Sujal Nirmal Abhiyan, State Government of Maharashtra.
5. “Kunkel George (2007), “Evaluating Water Loss and Planning” Manual,Chapter-4,pp 35-49
6. K. K. Kamble (2018) ‘Water Audit for Water Distribution Networks in Educational Campus’ in International Journal of Research in Advent Technology, Vol.6, No.11, November E-ISSN: 2321-9637 pg no.2976-2979



Water Audit Report: 2020-21

WATER AUDITOR

Name of person completing this report: 1) Mr. Mangesh A. Sakurikar,

Director, Shanmukha Laboratory, Ambad, Nashik.


2) Dr. Mayura S. Patil

Coordinator, water Audit, KSKW ASC College

CIDCO, Nashik.

Audit time period:

14/06/2020 to 05/10/2021





Signature: 

Date completed: 27/09/2021

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