

Annual Report of the Water Management Committee

Ram Lal Anand College

Academic Year: 2023-24

Date: 20th August, 2024

Introduction

The Water Management Committee was established to promote sustainable water usage and management practices within the college campus. This report outlines the activities, achievements, and challenges faced during the academic year.

Objectives

- To ensure efficient water usage across the campus.
- To raise awareness about water conservation among students and staff.
- To monitor and maintain water quality.
- To implement water-saving technologies.

Activities Conducted

The committee organized workshops and seminars on water conservation, Groundwater Management, Rainwater harvesting structure and distributed informational materials on best practices for water usage.

Water Audits: The committee members carried out a comprehensive water audit to evaluate current usage and identify areas for improvement, compiling a list of several actionable items. Subsequently, they analyzed the data to recommend changes that could help reduce water consumption and wastage.

The **RO Water System** at the college produces a substantial amount of wastewater, which is stored in ground-level tanks and then redistributed to overhead tanks on the roof. This reused water is utilized for toilet flushing, routine cleaning and maintenance on campus, and for other purposes. This practice fosters sustainability and promotes responsible water management within the college.

Infrastructure Improvements: The cleaning and maintenance of the rainwater harvesting structures involved two strategically placed recharge pits: one on the college front lawn and the other near the main entrance gate, each measuring 4.5 m in length, 2 m in width, and 2.5 m in height, with a combined capacity of 22,500 liters. Additionally, three recharge wells linked to both Pit 1 and Pit 2 were cleaned to enhance water penetration and groundwater recharge.

The entire maintenance and cleaning task were carried out by a team from **WATER SOLUTIONS**, a government-approved company located at 421, Sector 42, Gurgaon.

Monitoring and Reporting: A system for regular monitoring of drinking water quality was established, involving testing to assess various biotic and abiotic parameters to ensure that the water meets safety standards and is safe for consumption. The testing was conducted by **ASIA ENVIRO LAB** (An ISO 9001:2015, 14001:2015, 45001:2018 Certified and CPCB Government recognised Lab).

Achievements

- Reduced overall water consumption by [percentage] compared to the previous year.
- Increased student participation in water conservation initiatives leading to minimal wastage of water.
- Successfully implemented rainwater harvesting systems, contributing to groundwater recharge.
- Received positive feedback from the college administration for our initiatives.

Challenges

- Limited budget for infrastructure upgrades.
- Need for ongoing education to maintain student engagement in water conservation efforts.
- Occasional maintenance issues with existing water systems.

Future Plans

- Installed **water-efficient fixtures** in restrooms and labs.
- Expand the **rainwater harvesting initiative** to more areas on campus.
- Increase collaboration with other departments to integrate water management into the curriculum.
- Installing a **sewage water treatment plant** which is vital for the college's water management, effectively treating wastewater and converting it into reusable water, thus promoting sustainability and reducing environmental impact. By recycling treated water for irrigation and toilet flushing, the college significantly lowers water consumption. The plant also safeguards the health of students and staff, serves as an educational resource for environmental science and engineering students, and ensures compliance with environmental regulations, fostering a culture of conservation and responsibility within the college community.
- Prepare a half-yearly/annual report on water usage and conservation effort for the college administration.

Conclusion

The Water Management Committee has made significant strides in promoting sustainable water usage at Ram Lal Anand College. We remain committed to our goals and will continue to seek innovative solutions to enhance water conservation efforts on campus.

Submitted by:

Dr. Ravish Lal
Convenor
Water Management Committee
Email ID: ravishlal.geology@rla.du.ac.in

Dr. Swagata Karmarkar
Co- Convenor
Water Management Committee
Swagata@rla.du.ac.in

List of Activities

1. **Area Estimation:** The area suitable for potential rainwater harvesting on the college campus was estimated using GIS software and Google Maps.



The general slope in this area is toward the southeast, causing all rainwater to flow as surface runoff toward the rainwater harvesting structure. Although the college is located on the Delhi-Aravalli ridge and has limited soil cover, the recharge potential is quite high due to the secondary porosity of the quartzite rocks.

2. Rooftop Survey and Rainwater Calculation

Conduct a survey of rooftops to assess their capacity for rainwater collection and calculate potential yield.



GPS Coordinates of the Ram Lal Anand College, University of Delhi

Google Earth - Edit Placemark

Name:	<input type="text" value="Ram Lal Anand College"/>	<input type="button" value="⊙"/>
Latitude:	<input n"="" type="text" value="28°34'42.72"/>	
Longitude:	<input e"="" type="text" value="77° 9'39.14"/>	
Description Style, Color View Altitude		
<input type="checkbox"/> Center in View		
Latitude:	<input n"="" type="text" value="28°34'43.19"/>	
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Tilt:	<input type="text" value="10.000000°"/>	
Date/Time:	<input type="text" value="None"/>	<input type="button" value="▼"/>

Total College Campus Area

Google Earth - Edit Polygon

Name:

Description	Style, Color	View	Altitude	Measurements
Perimeter:			718	Meters
Area:			21,328	Square Meters

Name:

Description	Style, Color	View	Altitude	Measurements
Perimeter:			73.7	Meters
Area:			316	Square Meters

1. Principal Block

Name:

Description	Style, Color	View	Altitude	Measurements
Perimeter:			72.6	Meters
Area:			282	Square Meters

2. College Canteen

Name:

Description	Style, Color	View	Altitude	Measurements
Perimeter:			79.1	Meters
Area:			381	Square Meters

3. Library

Name:

Description	Style, Color	View	Altitude	Measurements
Perimeter:			89.6	Meters
Area:			370	Square Meters

4. Stats/Comp Block

Name:

Description	Style, Color	View	Altitude	Measurements
Perimeter:			54.8	Meters
Area:			185	Square Meters

5. Amphitheatre

6. Micro/Geo/BMS/Maths and other departments

Name:

Description	Style, Color	View	Altitude	Measurements
Perimeter:			255	Meters
Area:			1,172	Square Meters

Name:

Description	Style, Color	View	Altitude	Measurements
Perimeter:			87.6	Meters
Area:			456	Square Meters

7. Activity Room

Rainwater Harvesting Calculation:

- Rainwater harvested per day per 100 square meters: **98 liters**
- Number of rainy days this season: **26 days**
- Total area of the college campus: **21,328 square meters**
- Total rooftop area: **316 + 282 + 381 + 370 + 185 + 1172 + 456 = 3,162 square meters**

Rainwater harvesting on campus liters per season = [(Rainwater Harvesting Per day per 100 sq. meters of the region) x (Number of rainy days in rainy season this year) x (Area of the Rooftop in sq. meters)]/ 100

Rain water harvesting on campus ltrs per season = (98 x 26 x 3162) / 100

= 8056776/100

= 80,567.76 ltrs per season


3. **Preparation of Board for Rainwater Harvesting Structure:** Efforts are underway to develop and install display boards that will highlight the rainwater harvesting structure, including its pits and recharge wells, at designated locations. These boards aim to present the technical specifications of the rainwater harvesting system and emphasize the significance of rainwater conservation, raising awareness among stakeholders.

4. **Procurement of Basic Instrumentation:** The committee has listed the necessary tools for measuring water quality and quantity, ensuring effective monitoring such as a water level sounder, water meter to measure and record routine consumption, TDS, pH, EC meters etc. and its acquisition has been initiated for the purchase.



5. **Water Consumption Measurement Plan:** The Water Consumption Measurement Plan mainly focuses on accurately assessing the total water usage across the Ram Lal Anand College campus to meet the new fire safety requirements of approximately 40,000 liters. This initiative involves the installation of monitoring systems to track water consumption in various facilities, laboratories at various Departments and canteen. By analyzing this data, the water management committee aims to identify patterns, optimize usage, and ensure sufficient water availability for fire safety needs. Ultimately, this plan will enhance the college's overall water management strategy while promoting responsible usage among the campus community.

6. **Three-Tier Training for Students and Faculty:** The college, in collaboration with the Central Groundwater Board (CGWB), organized a Tier-III training program on 'Groundwater Management and Rainwater Harvesting for Groundwater Recharge' for students and faculty. This program focused on rainwater harvesting techniques, recharge structures, and the future needs for water sustainability. The training took place at the Amphitheater of Ram Lal Anand College on November 29, 2023. Dr. Prabhas Pande (Convenor) and Dr. Ravish Lal (Co-convenor) of the Water Management Committee actively participated in the training program and sought the cooperation of experts from the CGWB to extend their expertise in water sustainability at the college for an extended period.



Ram Lal Anand College
 (University of Delhi)

The Department of
GEOLOGY
 invites students for a
 one day training program on

**GROUND WATER MANAGEMENT AND
 RAIN WATER HARVESTING TO RECHARGE
 GROUND WATER**

by
Central Ground Water Board (CGWB)
 (Ministry of Jal Shakti)

<p>📅 29 November 2023</p> <p>🕒 9 - 5 pm</p> <p>📍 Amphitheatre</p>	<ul style="list-style-type: none"> Lectures by eminent scientists from the organisation Field visit to Water Conservation structures Certificates will be given to the participants
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Teacher In-Charge
Dr. Sarbari Nag
Principal
Prof. Rakesh Kumar Gupta

GOVERNMENT OF INDIA
 Ministry of Jal Shakti
 Central Ground Water Board, GWD, New Delhi

एक दिवसीय प्रशिक्षण कार्यक्रम / Tier III Training Programme

प्रमाण पत्र / Certificate

This is to certify that **श्री. रविशंकर गुप्ता** has successfully completed the training course on "Groundwater Management & Rainwater Harvesting to Recharge Groundwater" held on 29.11.2023 at Ram Lal Anand College, New Delhi.

Name: **श्री. रविशंकर गुप्ता**
 Dept: **GEOLOGY**
 Date: **29.11.23**

(Signature)
 Office in Charge

GOVERNMENT OF INDIA
 Ministry of Jal Shakti
 Central Ground Water Board, GWD, New Delhi

एक दिवसीय प्रशिक्षण कार्यक्रम / Tier III Training Programme

प्रमाण पत्र / Certificate

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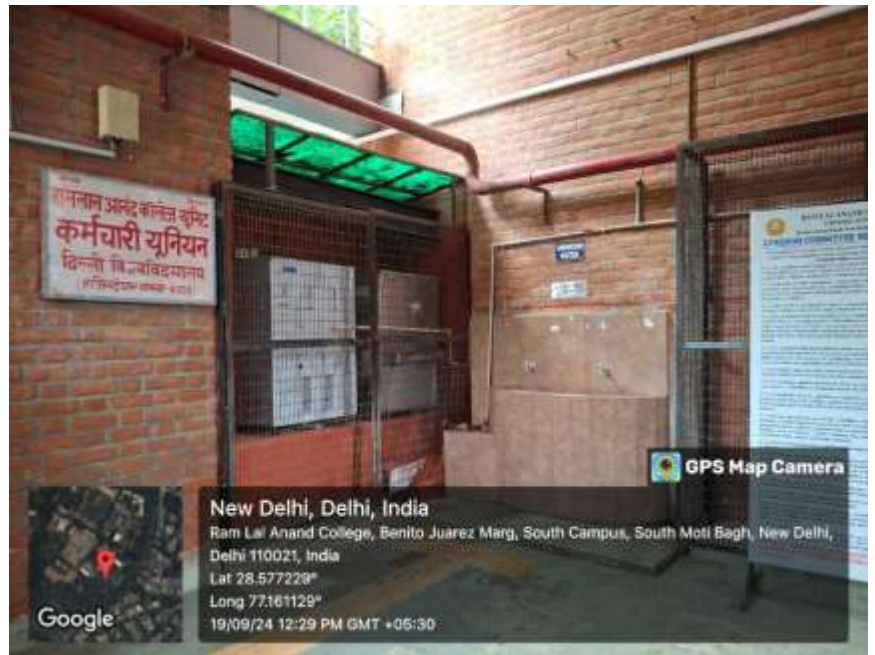
Name: **श्री. प्रदीप कुमार शर्मा**
 Dept: **GEOLOGY**
 Date: **29.11.23**

(Signature)
 Office in Charge



Tier III Training by CGWB
 on Ground Water Management
 and Rain Water Harvesting
 to Recharge Groundwater
 on 29th November, 2023

Drinking Water Cooler Facility at Ram Lal Anand College



Rain Water Harvesting Structure Pit 1 (College Front Lawn)



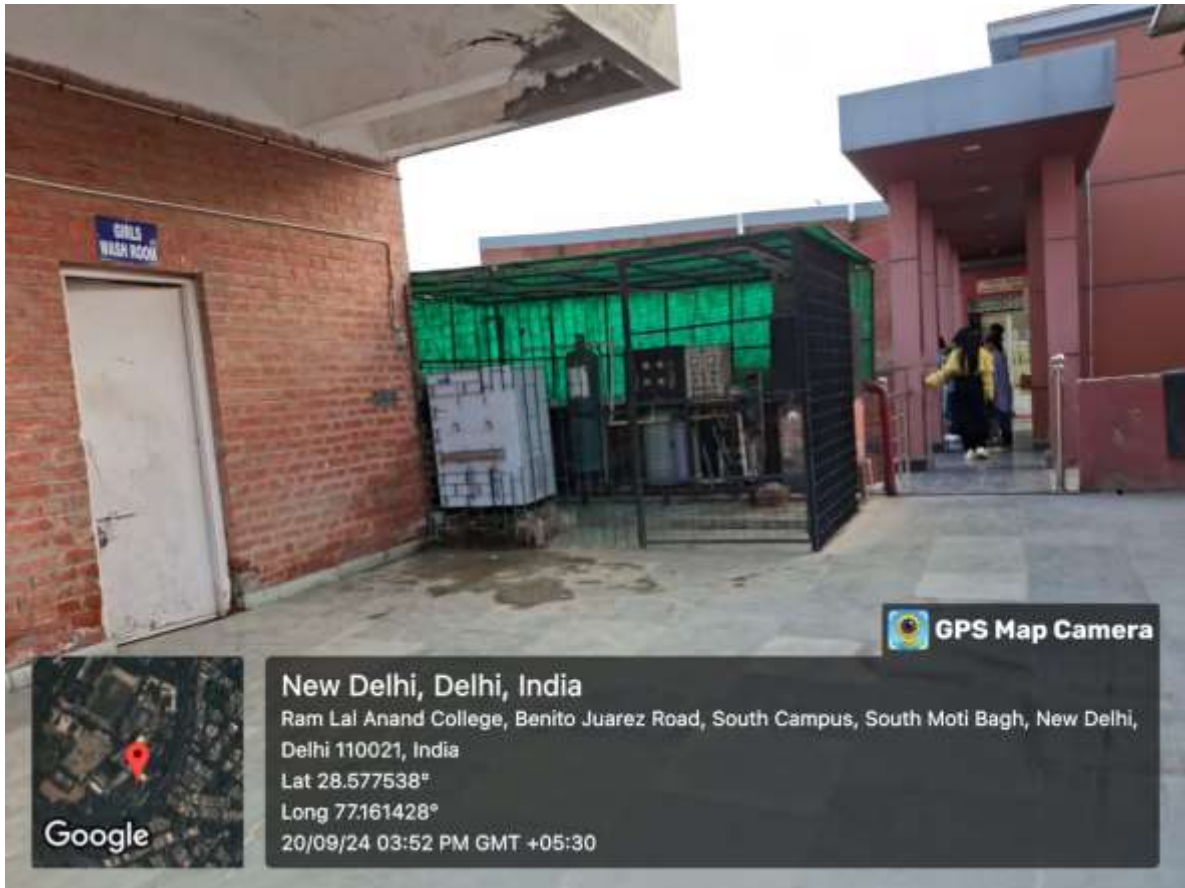
Groundwater Borewell



Rain Water Harvesting Structure Pit 2 (College Main Gate)



Drinking Water Treatment Plant (RO)





ASIA ENVIRO LAB

(An ISO 9001:2015, 14001:2015, 45001:2018 & CPCB Govt. Recognised Lab)

Job Description : Environmental Testing, ETP/STP Manufacturing, ETP/STP Plant Operation Pollution NOC Etc.

Lab - H1-837, Near Pollution Control Board, RIICO Industrial Area, Bhiwadi, Distt. Alwar (Rajasthan)-301019

Ph. No. : 01493-294022, 09694666022, Email : asiaenvirolab@gmail.com, Website : www.asiaenvirolab.com

Test Report

Report No.: AEL/RL/05082024/W/01	Reporting Date: 10/08/2024
Issued to: Ram Lal Anand College Benito Juraz Road, South Campus, University of Delhi, New Delhi-110021	Sample I'd : AEL/RL/050824/W/01 Date : 05.08.2024 Period of testing : 05.08.2024 to 10.08.2024

SAMPLE PARTICULARS:	
Type of the Sample	R.O. Water Sample
Date of Sample Receiving	05.08.2024
Point of Sample Collection	From R.O. Plant
Sample Collected By	Customer
Purpose of Analysis	Monitoring

TEST RESULTS:						
Sr. No.	Parameters	Unit	Results	Drinking Water Specifications (As per IS-10500)		Test Protocol
				Desirable Limits	Permissible Limits in the absence of better alternate source	
1	Colour	Hazen	<5	5 max.	15 max.	APHA 23 rd Ed., 2120 B
2	Odour	--	Agreeable	Agreeable	Agreeable	IS-3025(P-5)
3	Taste	--	Agreeable	Agreeable	Agreeable	IS-3025(P-8)
4	Turbidity	NTU	<0.1	1 max.	5 max.	APHA 23 rd Ed., 2130 B
5	pH	--	7.02	6.5 - 8.5	No relaxation	APHA 23 rd Ed., 4500 H B
6	Total Hardness, (as CaCO ₃)	mg/l	46.8	200 max.	600 max.	APHA 23 rd Ed., 2340 C
7	Iron, (as Fe)	mg/l	<0.02	0.30 max.	No relaxation.	APHA 23 rd Ed. P-3111, A, B, C
8	Chloride, (as Cl)	mg/l	22.0	250 max.	1000 max.	APHA 23 rd Ed., 4500 Cl B
9	Residual Free Chlorine	mg/l	N.D.	0.20 max.	1 max.	APHA 23 rd Ed., 4500 Cl
10	Calcium (as Ca)	mg/l	11.5	75 max.	200 max.	APHA 23 rd Ed., 3500 Ca A
11	Magnesium, (as Mg)	mg/l	4.4	30 max.	100 max.	APHA 23 rd Ed., 3500 Mg B
12	Total Dissolved Solids	mg/l	154.0	500 max.	2000 max.	APHA 23 rd Ed., 2540 E
13	Sulphate, (as SO ₄)	mg/l	6.7	200 max.	400 max.	APHA 23 rd Ed., 4500 SO ₄ E
14	Fluoride, (as F)	mg/l	0.12	1.0 max.	1.5 max.	APHA 23 rd Ed., 4500
15	Total Alkalinity, (as CaCO ₃)	mg/l	2.9	200 max.	600 max.	APHA 23 rd Ed., 2320 A
16	Chromium Total, (as Cr)	mg/l	<0.02	0.05 max.	No relaxation.	APHA 23 rd Ed. P-3111, A, B, C
17	HexaChromium, (as Cr+6)	mg/l	N.D.	0.05 max.	No relaxation.	APHA 23 rd Ed., 3500 Cr B
18	Nitrate, (as NO ₃)	mg/l	2.74	45 max.	No relaxation.	IS-3025(P-34)

Note: 1. The result listed refers only to the tested samples and applicable parameters.

2. Sample will be destroyed one month from the date of issue of test certificate.

3. Any complaints about this report should be communicated within 7 days of issue of this report.

4. The report is not to be reproduced wholly or in part and can not be used as an evidence in the Court of law and should not be used in any advertising media without our special permission in writing.



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19	Zinc,(as Zn)	mg/l	< 0.02	5 max.	15 max.	APHA 23rd Ed. P-3111,A,B,C
20	Phenolic Compounds, (as C ₆ H ₅ OH)	mg/l	N.D.	0.001 max.	0.002 max.	APHA 23 rd Ed.5530
21	Copper,(as Cu)	mg/l	<0.02	0.05 max.	1.50 max.	APHA 23rd Ed. P-3111,A,B,C
22	Manganese,(as Mn)	mg/l	<0.02	0.10 max.	0.30 max.	APHA 23rd Ed. P-3111,A,B,C
23	Silver (as Ag)	mg/l	<0.02	0.1 max.	No relaxation	APHA 23rd Ed. P-3111,A,B,C
24	Aluminum, (as Al)	mg/l	<0.01	0.03 max.	0.20 max.	APHA 23rd Ed. P-3111,A,B,C
25	Ammonia (as total ammonia-N)	mg/l	N.D.	0.5 max.	No relaxation	IS 3025 (P-34)
26	Nickel (as Ni)	mg/l	<0.02	0.02 max.	No relaxation	APHA 23rd Ed. P-3111,A,B,C
27	Lead,(as Pb)	mg/l	N.D.	0.01 max.	No relaxation	APHA 23rd Ed. P-3111,A,B,C
28	Cadmium,(as Cd)	mg/l	N.D.	0.003 max.	No relaxation	APHA 23rd Ed. P-3111,A,B,C
29	Molybdenum (as Mo)	mg/l	< 0.01	0.07max	No relaxation	APHA 23rd Ed. P-3111,A,B,C
30	Boron, (as B)	mg/l	< 0.2	0.5 max	1.0 max	APHA 23 rd Ed.4500 B C
Bacteriological Test Results						
31	Coli form organisms /100 ml	--	Absent	Shall not be detectable in any 100 ml sample		IS-15185:2016 (R-2021)
32	E-Coli/ 100 ml	--	Absent	Shall not be detectable in any 100 ml sample		IS-15185:2016 (R-2021)

Remarks- N.D- Not Detectable


Checked By


Authorized Signatory

- 1
1. The result listed refer only to the tested samples and applicable parameters.
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Rain water Harvesting Structure Cleaning and Maintenance

