



## ROOFTOP RAINWATER HARVESTING SYSTEM (INSTITUTIONAL REPORT)

2025-26

An institutional report on the water harvesting framework implemented at the academic building is detailed below. This document outlines the system's structural components, operational flow, and institutional impact for academic management, quality assurance (IQAC), and green audit records.

### Administrative Summary

In alignment with institutional development goals and sustainable campus practices, Government Girls Degree College, Ahiraula, has established a functional Rooftop Rainwater Harvesting System (RRWHS) on its main academic building. Situated in a predominantly rural landscape, the institution leverages this system to mitigate groundwater depletion, manage seasonal monsoon run-offs efficiently, and serve as a practical model for ecological conservation for its students.

### **System Design and Technical Components**

The system utilizes the expansive rooftop area of the academic block as its primary catchment zone. The operational mechanism functions through a highly organized, step-by-step physical flow:

**A. Catchment & Collection:** Roof Level Area

Rainwater is collected across the reinforced cement concrete (RCC) roof of the main academic block. The surface is maintained with a calculated slope directing water toward designated drainage points equipped with leaf screens to block heavy debris.

**B. Conveyance Network:** Conduit Grid

A network of heavy-duty, high-grade pipes (Conduits) securely attached to the building exterior channels the collected water vertically downward, preventing structural dampness or soil erosion at the building base.

**C. First-Flush Diversion:** Initial Run-off Isolation

A first-flush valve mechanism is integrated into the vertical lines. This allows the very first spell of rain which typically carries atmospheric dust, dry leaves, and bird droppings to be flushed out completely before clean water enters the filtration unit.

**D. Filtration Media Chamber:** Physical Purification

The diverted, cleaner water flows into an on-site multi-layered filtration pit. This chamber features sequential layers of graded gravel, coarse sand, and activated charcoal, which physically strain out suspended solids and micro-particles.

**E. Groundwater Recharge Pit:** Sub-surface Infiltration

The filtered water is safely directed into a purpose-built recharge pit. Equipped with a perforated casing pipe, this pit allows the water to percolate smoothly into the sub-surface aquifers, actively elevating the local groundwater level.

## **Institutional & Ecological Impact**

**Key Takeaway:** The rainwater harvesting system turns seasonal monsoon precipitation into a long-term resource, counteracting the regional groundwater stress often experienced in rural sectors of eastern Uttar Pradesh, Azamgarh.

1. **Aquifer Rejuvenation:** By redirecting thousands of liters of annual run-off back into the earth, the system counteracts the drawdown caused by routine institutional and agricultural consumption nearby.
2. **Structural Preservation:** Channeling water directly into conduits reduces pooling along the building edges, protecting the foundation of academic building and outer walls from water logging and structural degradation.
3. **Educational Value:** The system functions as a live demonstration model for the student body. It bridges the gap between academic theory and practical environmental science, directly supporting the institution's vision of holistic development.

## **Maintenance and Quality Assurance Protocol**

To maintain optimal filtration efficiency and prevent clogging, the institution follows a strict seasonal protocol managed by the campus infrastructure committee:

- I. **Pre-Monsoon Cleansing:** Thorough sweeping and washing of the academic building roof catchment area, alongside inspecting PVC joints for leaks.
- II. **Filter Media Rejuvenation:** Regular cleaning and periodic replacement of the sand and charcoal layers in the filtration chamber to preserve high percolation rates.
- III. **Flushing Check:** Verifying that the first-flush valves operate smoothly before the onset of the heavy rainfall season.

## **The Outlook**

The water harvesting system at the main academic building underscores the institutional commitment to building a green, self-sustaining campus environment. Moving forward, the system provides a robust infrastructure baseline for upcoming National Assessment and Accreditation Council (NAAC) evaluation and green audits. It stands as an essential pillar of the institution's core mission: *Empowering Youth, Empowering Nation*.

  
IDP / IQAC Committee

  
Principal



Date: 19 September 2023