



Navgan Shikshan Sanstha Rajuri's(N)
MRS.KESHARBAI SONAJIRAO KSHIRSAGAR ALIAS KAKU
Arts, Science And Commerce College, Beed.

NAAC reaccredited with "A" grade (3.18 CGPA as per new RAF) & ISO 21001:2018 certified



Rain Water Harvesting: Structure and Utility

Rain Water Harvesting: Structure and Utility

➤ Introduction

As the scarcity of water is rapidly increasing everyday particularly during the summer season, the demand for water in the college campus also substantially increased. Therefore college has installed three rooftop rain water harvesting systems in the college campus.

➤ Design of proposed catchment area:

The catchment of water harvesting system is the rooftop that receives rainfall directly and drains the water system. The existing roof is made use of to collect rainwater. Therefore the rooftop is swept and cleaned regularly for collecting the water to its maximum purity.

From the design of the terrace floor, we calculated total rooftop area of our college.

System-1: Area of the rooftop of hall number 55, 56, 57 = 3872 sq. ft.

System-2: Area of the rooftop of hall number 58, 59, 60, 61, 62 = 5075 sq. ft.

System-3: Area of the rooftop of girls hostel = 3444 sq. ft.

Total area of proposed catchment = 12391 sq. ft.

➤ Design of transportation system:

For transporting the rain water from the catchment area in this project we have used Polyvinyl chloride (PVC) pipes and fittings. For the collection purpose, we are using pipes ranging 2.5 - 3 inches diameter. A care has been taken that the first spell of rain is flushed out and does not enter the system. This is done since the first spell of rain carries a relatively larger amount of pollutants from the air and catchment surface. The water is transferred to the special kind of filters which removes the leaves, dust, small twigs and other organic matter. In case of system-1, filtered water is then allowed to flow into the bore well near boys parking slot. In case of system-2, filtered water is transferred into the bore well in the staff parking slot and in case of system-3 rain water from girl's hostel rooftop is transferred into specifically designed dug well near the bore well of girls hostel.

➤ Approximate amount of water percolated under the ground per year:

The average monsoon rainfall in the area is approximately 666 mm per year. From average rainfall and the total surface of rooftop catchment area for each system, we have calculated the amount of water percolated under the ground per year which is given as below.

- ❖ System-1= 2,32,000 litres of water
- ❖ System-2= 3,04,000 litres of water
- ❖ System-3= 2,06,000 litres of water

2. Borewell /Open well recharge:

Total area of the college campus is about nearly 3 acres, on that only area of 40% on total area was developed as academic zones and the balance area is about 60 % on total area was earmarked for greenery. The college campus depends on ground water for all its needs and the daily need of water in the campus is around 10,000 liters approximately. To compensate the mentioned daily need we had constructed 2 number of bore wells with different depths as per the sub soil water position and all are recharge regularly with harvesting and soak pits.

3. Construction of tanks and bunds

As the water crisis continues to become severe, there is a dire need of reform in water management system and revival of traditional systems. As a part of revival to traditional wisdom, in this institute we built 2 ground tanks to collect and storage the water for reuse on-site.

4. Waste water recycling:

In this institute, separate hostel is constructed and this is accommodating around 100 girls. Almost 3000 liters of water demand is for hostel for smooth functioning. Total water demands is being meet extract from ground water through bore wells and these are recharged with ground tanks and harvesting pits. Total waste water produced from these hostels treated with waste water treatment plant. The waste water after treatment is proposed to be utilized effectively for gardening purpose. This will incidentally drastically reduce the usage of fresh water.

5. Maintenance of water bodies and distribution system in the campus:

The college campus depends on ground water for all its needs and the daily need of water in the campus is around 10,000 liters approximately. The ground water is pumped into storage tanks located at different places in the campus. There are 8 overhead storage tanks in the campus. The water is distributed through well laid pipe network. Drinking water after treating in RO plant is supplied. Water for all other purpose is supplied through another set of distribution pipes. Entire distribution system is well supervised by maintenance committee to ensure that there are no leakages and wastages of precious water through joints and valves.

ISO 14001:2015 Certificate Of Registration

Geotek Global Certification Pvt. Ltd.

hereby certify that the organization

Navgan Shikshan Sanstha, Rajuri (N.)

Mrs. Kesharbai Sonajirao Kshirsagar

Alias Kaku Arts, Science & Commerce College, Beed

Address : Beed 431122, Maharashtra, India

has implemented and maintains an **Environmental Management System** for

Scope :

To Evolve and Impart Comprehensive Higher Education to the Students of Under Graduation, Post-Graduation, Diploma Courses, Certificate Courses & Doctoral Degrees in Arts, Commerce & Science.

An audit was performed and proof has been furnished that the management system fulfils the requirements of international standard detailed below ...

Standard	: ISO 14001:2015
Certificate No.	: 21.GGCS.IN.140182
Certification Date	: 31 st January 2022
Cert. Expiry Date	: 30 th January 2025



Geotek Global
Certification Pvt. Ltd.

Reg. No. IN/EMS20/0512



International Management
Accreditation Board

A handwritten signature in black ink, appearing to read 'K. Sonajirao', is written over a circular stamp.

Chief Executive Officer

Geotek Global Certification Pvt. Ltd.
102, Raj Legacy, Near Bramband Phase 5, CH. GB Road,
Thane (West), Pin 400607, Maharashtra, India

Geotek Global Certification Pvt. Ltd. is accredited by International Management Accreditation Board (Singapore)
51, Goldhill Plaza, #07-10/11, Singapore 308900

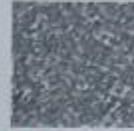
The continual validity of the certificate is conditional to compliance with the terms and the conditions of Geotek Global Certification Pvt. Ltd. - Certification Scheme Regulation. Validity of the certificate may be verified on following websites : www.geotek.co.in and accreditation body's website : www.imab.com

ASSURE QUALITY

MANAGEMENT CERTIFICATION SERVICES PVT. LTD.

COMPLIANCE VERIFICATION

This is to certify that
Navgan Shikshan Sanstha Rajuri (N.)



MRS. KESHARBAI SONAJIRAO KSHIRSAGAR

ALIAS KAKU ARTS, SCIENCE & COMMERCE COLLEGE

Beed - 431122 - Maharashtra

India

Has been assessed and found to be in accordance with the requirements of detailed below

Green Audit

Reference A064 latest revision

**To Evolve and Impart Comprehensive Higher Education to the
Students of Under Graduation, Post-Graduation, Diploma Courses,
Certificate Courses & Doctoral Degrees in Arts, Commerce & Science**

Certificate Number: AB00AA/00AB:0222

Originally Registered: 02 Feb. 2022 Latest Issue: 02 Feb. 2022 Originally Expiry Date: 01 Feb. 2025

Validity of this certificate is subject to annual surveillance audit to be done successfully on or before of
22 Jan. 2023 & 22 Jan. 2024 respectively. In case if surveillance audit is not allowed to be conducted;
this certificate shall be suspended/withdrawn.



Joginderpal

For AQMCS PVT LTD

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Rain Water Harvesting:



GPS Map
Camera Lite

XPPX+CW4, Datta Nagar, Beed, Maharashtra 431122, India

Latitude
18.985778333333332°

Longitude
75.74997333333334°

Local 04:04:15 PM
GMT 10:34:15 AM

Altitude 515 meters
Saturday, 12.08.2023

Bore well Recharge Plant:



GPS Map
Camera Lite

XQP2+853, Navghan College Rd, Kranti Colony, Datta Nagar, Beed,
Maharashtra 431122, India

Latitude
18.98578666666667°

Longitude
75.75054333333333°

Local 04:00:58 PM
GMT 10:30:58 AM

Altitude 516 meters
Saturday, 12.08.2023

Waste water recycling Plant :





GPS Map
Camera Lite

XQP2+H3X, Datta Nagar, Beed, Maharashtra 431122, India

Latitude
18.986531666666668°

Longitude
75.75005333333334°

Local 11:56:00 AM
GMT 06:26:00 AM

Altitude 517 meters
Monday, 14.08.2023



GPS Map
Camera Lite

XQP2+H3X, Datta Nagar, Beed, Maharashtra 431122, India

Latitude
18.986418333333333°

Longitude
75.75041°

Local 11:39:32 AM
GMT 06:09:32 AM

Altitude 517 meters
Monday, 14.08.2023



XQP2+H3X, Datta Nagar, Beed, Maharashtra 431122, India

Latitude
18.986545°

Local 11:58:09 AM
GMT 06:28:09 AM

Longitude
75.74991833333334°

Altitude 517 meters
Monday, 14.08.2023





All the information mentioned above is true, hence certified.


Co-Ordinator
Internal Quality Assurance Cell
Mrs. K.S.K. College, Beed, (M.S.)




Principal
N.S.S.R.(N.) Mrs.Kesharbai
Sonajirao Kshirsagar Alias Kaku
Arts, Science and Commerce
College, Beed.