

Green Audit Report



Manoharbai Shikshan Prasarak Mandal's
Mahatma Gandhi Arts, Science & Late N. P. Commerce College
Armori, Dist. –Gadchiroli.441208

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Green Audit Report

on

GROUND WATER OCCURANCES IN CAMPUS

Submitted to

Internal Quality Assurance Cell

Submitted by

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Head

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Mahatma Gandhi Arts, Science & Late N.P. Commerce College, Armori

2020-2021

A REPORT ON GROUNDWATER OCCURANCE IN CAMPUS OF MAHATMA GANDHI ARTS, SCIENCE AND LATE N.P. COMMERCE COLLEGE, ARMORI, TALUKA ARMORI, DISTRICT GADCHIROLI

1. INTRODUCTION

The requirement of the fresh water supply in any educational institute is inevitable. To become self-sufficient in concern to water resources, bore wells or dug wells are quite usual in educational campus. The bore well is the most efficient tool to access the groundwater resources underneath, hence are preferred over dug wells. The approach towards access and usage of groundwater at definite location comes under the management of water resources. The evaluation of groundwater resource for any educational campus is very important for the proper management of it. Hence, the present report is drafted to evaluate the groundwater resource of the institute as under;

2. GENERAL INFORMATION

Name of the institute –

Mahtma Gandhi Arts, Science and Late N. P. Commerce College Armori,

Political Location –

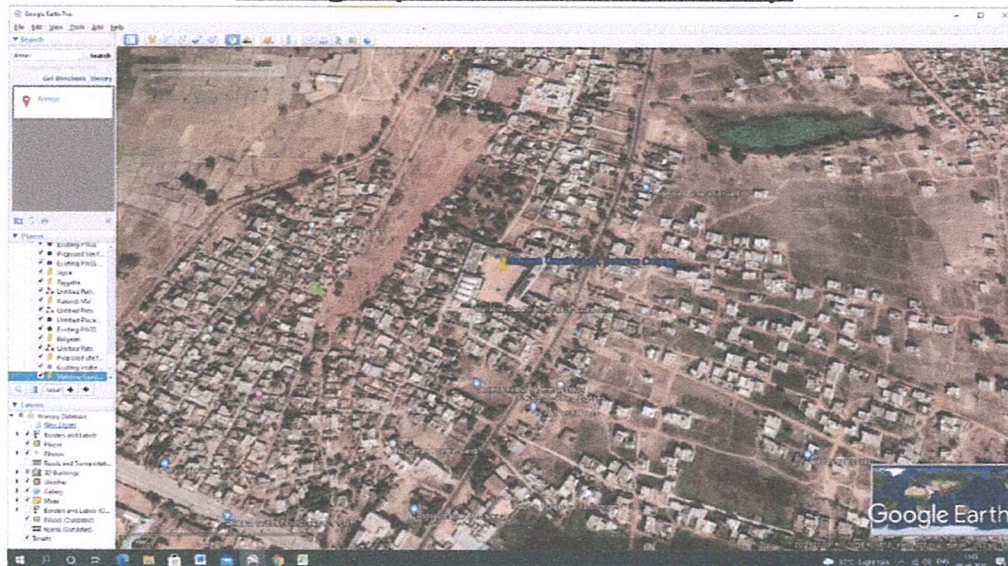
Wadsa Road, Armori, Dist. – Gadchiroli, Maharashtra – 441208.

Geographical location – 20°28'27" N 79°58'45" E

Number of bore wells – 04

Evaluation Duration – 2017-18 to 2020-21.

Geographic Location Map



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3. METHODOLOGY

The literature review was done to recognize the feasible methods for accessing the groundwater level of the bore-wells with the help of available resources. The other details including the general groundwater level and principal aquifers in Armori taluka were referred from the GSDA data. The groundwater level data has been collected by direct observation at respective bore-well for every selected session of the assessment years. The direct observation includes the measurement of the groundwater level within the bore-well with the help of measuring tape. The measurements were taken for pre- and post-monsoons of the respective years and noted accordingly. The data obtained was then complied and possible interpretations were deduced.

4. LOCAL GEOLOGICAL SUCCESSION

As per the geological data obtained from state and central agencies, the northern part of the Gadchiroli district is dominated by Archean rocks (granite gneisses, schist). As per central groundwater board's Ground Water Information: Gadchiroli District 2013 report (GWI 2013), these rocks cover an area of about 12470 sq.km. i.e., about 81% of the total area of the district in the entire northern, eastern, western and central parts. The topping of its weathered product can be observed throughout the area.

Archean rocks in Gadchiroli:	Basic intrusive and Quartz Pegmatite veins, Granite and Pyroxene Gneisses, Pyroxenite banded Magmatite, Quartzite and other unclassified metamorphics
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Table 1: Geology of Archean rocks in the northern part of Gadchiroli.

5. LOCAL PRINCIPAL AQUIFER

The GWI 2013 has confirmed the Gneissic rock of Archean as the principal aquifer of the region where the campus is located. The Gneiss, being hard and compact nature has developed the secondary porosity like fractures, jointing, etc. by the process of weathering. The yield of such aquifer is entirely controlled by the thickness of weathered zone. The un-weathered zone does not prove to be an aquifer and hence, the bore well executed finish into failure.



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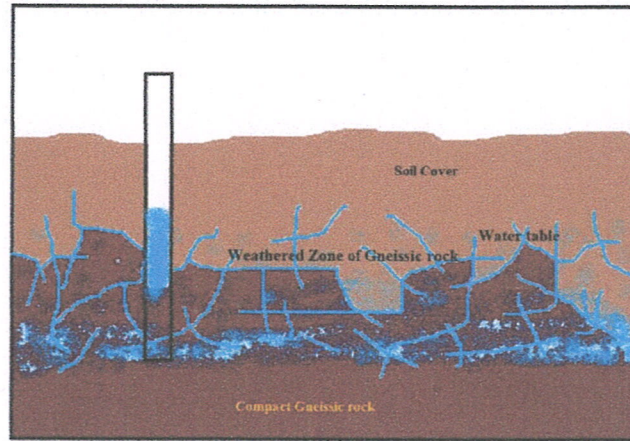


Figure 1: Cross Section of the Principal Aquifer under Campus.

6. BORE WELL DESCRIPTION AND WATER TABLE DATA

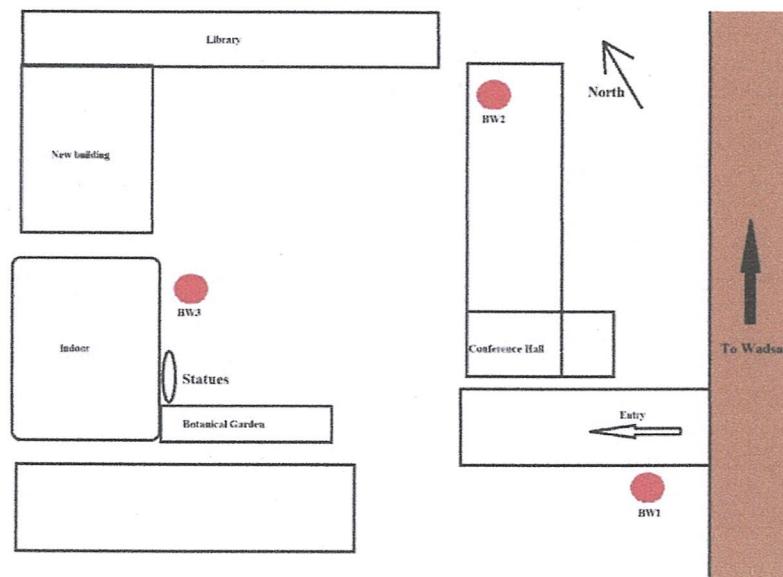


Figure 2: Locations of Bore wells under observation in campus.

Bore well no.	Year of making	Depth (m.)	Water Table Depth Level (m.)							
			2017-18		2018-19		2019-20		2020-21	
			Pre	Post	Pre	Post	Pre	Post	Pre	Post
GW-1	1982	76.2	10.3	7.4	10.2	7.4	10.2	7.1	9.8	6.0
GW-2	2003	60.96	11.1	7.6	10.9	7.4	10.7	7.4	10.1	6.9
GW-3	2014	76.2	24.1	22.3	25.3	21.7	25.2	21.1	23.9	20.8
GW-4	2010	Failure	-	-	-	-	-	-	-	-

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Table 2: Water table observations made during the assessment period.

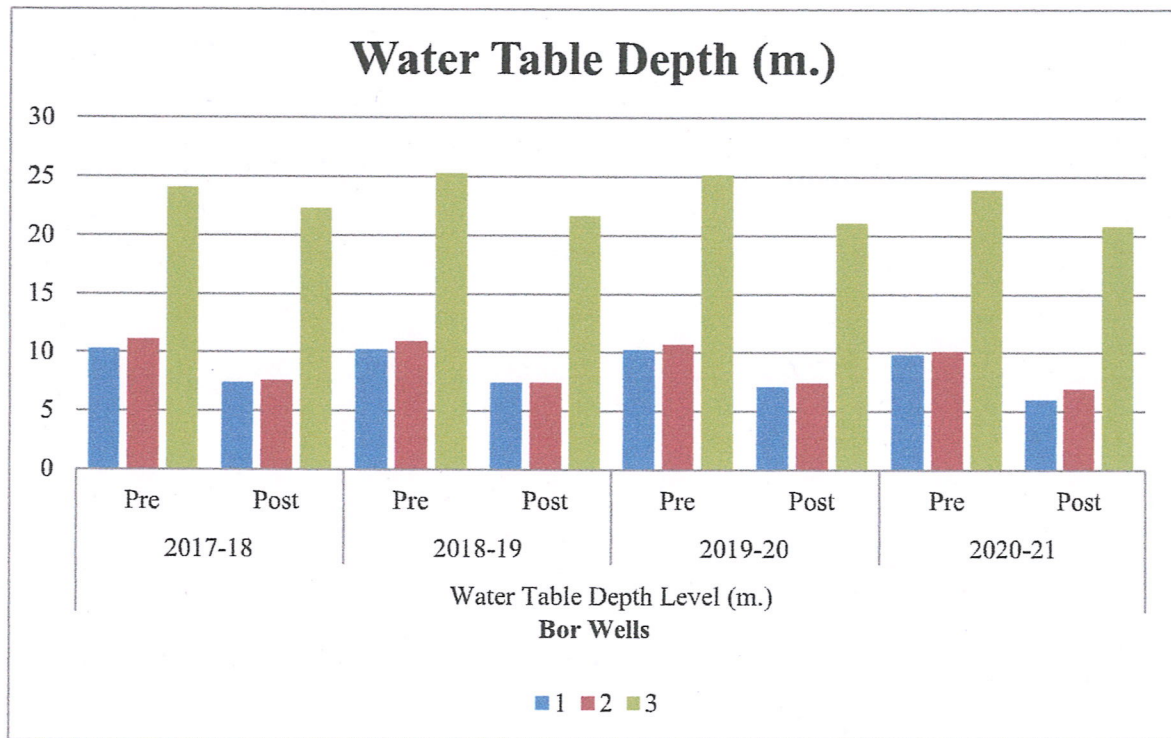


Figure 3: Graph representing water table depths from 2017-18 to 2020-21.

7. CONCLUSION

- The principal aquifer system below the campus is in the Gneissic rocks.
- The type of porosity is of secondary in nature.
- It may be stated here that there may be higher degree of weathering and secondary fractures in parent rocks is prevailing in northern and western parts of campus and is justifiable directly in the higher groundwater storage and shallow static water level in the northern and western parts.
- The aquifer type is unconfined one and is strictly localized one.
- Among the evaluated bore-wells, the GW1 and GW2 are showing more or less same pre-monsoon and post monsoon level indicating same aquifer system where as in the GW-3 both the static water levels are slight deeper indicating existence of local second aquifer in the study area. The ground water is occurring in localized condition in third bore well.
- The first 2 bore wells is having good productive aquifer. The bore wells are having yield in between 2500-3000 lits/hr. The last one is having yield in between 300-500 lits/hr. The richness in groundwater resource in first 2 bore well is indicative of availability of good secondary permeability and intense weathering (fractures and its connectivity).

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- The bore-well GW3 is comparatively weak resource of groundwater and this may be due the compact nature of aquifer rocks with very less connectivity with rest of the aquifer.
- Though the groundwater availability within the campus is sufficient, the artificial recharge of these bore wells is suggestive.

8. Groundwater flow maps.

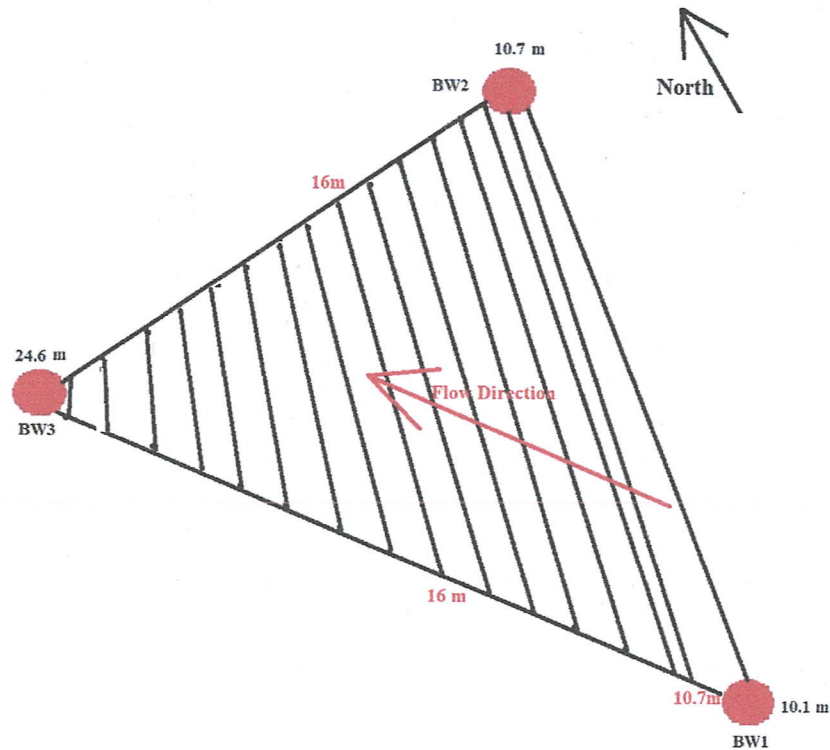
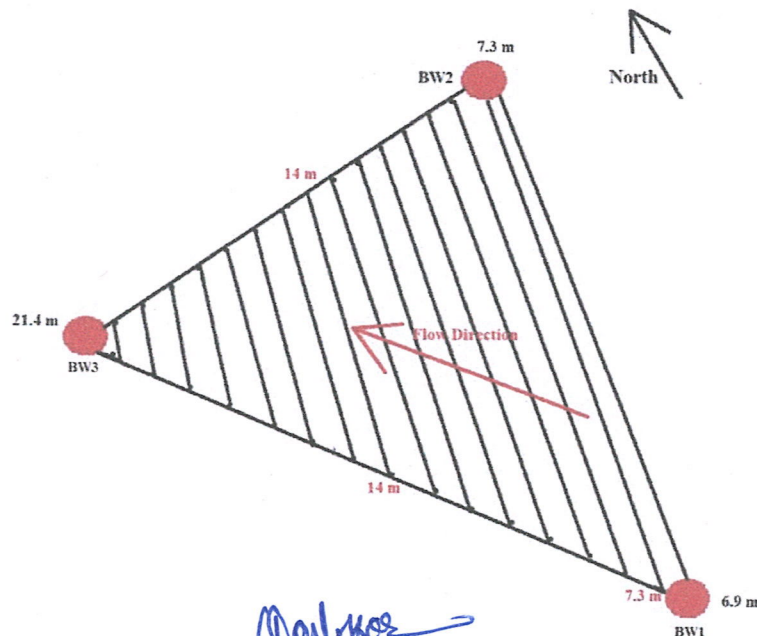


Figure 4: Web map of Ground water flow for pre-monsoon (Avg.) of 2017-18 to 2020-21.



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Figure 5: Web map of Ground water flow for post-monsoon (Avg.) of 2017-18 to 2020-21.



Plate 1: Dr. C. P. Dorlikar while collecting readings along with participating students.

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