

ENVIRONMENT AUDIT REPORT

FOR

ABHILASHI UNIVERSITY











YEAR 2021

आनंद

Committee for Environment Audit of Abhilashi University

The following committee has been involved in planning, Mentoring, Surveying, Analyzing Report preparing and recommending the necessary changes related to the Environment Audit of Abhilashi University Campuses in 2021.

Committee Designation	Name , Designation& Institution	Signature
External/Expert	Dr. Alok Sagar Gautam Lead Auditor Environment Management System ( EMS)	 
Advisor/ Expert	Dr. Abhishek Soni Assistant Professor, School of Pharmacy Abhilashi University, Chail-Chowk H.P. 175028	
Team Leader	Dr. Mohinder Singh Keith Assistant Professor, School of Basic Science Abhilashi University, Chail-Chowk H.P. 175028	
Members	Dr. Reetika Assistant Professor, School Of Agriculture Abhilashi University, Chail-Chowk H.P. 175028	
	Er. Abhay Dhiman Assistant Professor, School of Engineering Abhilashi University, Chail-Chowk H.P. 175028	
	Mr. Mahinder Singh Verma, Pradhan, Gram Panchayat Chachyot	
	Ms. Nandini, student B.Sc. Agriculture, 4 <sup>th</sup> Semester School of Agriculture Abhilashi University, Chail-Chowk H.P. 175028	

## 1: Executive Summary

Educational institutions now a day are becoming more sensitive to environmental factors and more concepts are being introduced to make them eco-friendly. To preserve the environment within the campus, various viewpoints are applied by the several educational institutes to solve their environmental problems such as promotion of the energy savings, recycle of waste, water reduction, water harvesting etc... The activities pursued by the university can also create a variety of adverse environmental impacts. Environmental auditing is a process whereby an organization's environmental performance is tested against its environmental policies and objectives. environmental audit is defined as an official examination of the effects a University has on the environment. As a part of such practice, internal audit is conducted to evaluate the actual scenario at the campus.

The audit process involved in the Initial Data Collection, field survey and Site walk through the core. This was followed by staff and student interviews, collection of data, review of records, observation of practices and observable outcomes. The baseline data collected from Abhilashi University, were analyzed and conclusion were finalized.

आलोक्षक

## 2. Objectives of Environmental Audit

Environmental audit in the Abhilashi University were conducted to track the below mention objective:

- (a) Determination of environmental management information systems and equipment.
- (b) Determination of the quality of water, air and soil.
- (c) Verification of the compliance with the relevant national, local or other laws and regulations.
- (d) Minimization of the human exposure to risks from environmental, health and safety problems:
  - To reduce waste,
  - To promote environmental awareness.
  - To improve production safety and health.
  - To place environmental information to public.

The Environment audit was initiated under the core committee from 22 July, 2021.





# ABHILASHI UNIVERSITY

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Ref. No. AU/Acad-118/2020-21/656

Dated: 01/07/2021

## NOTIFICATION

The Hon'ble Vice Chancellor is pleased to constitute "Environment Committee". The following persons have been nominated in this committee:

S.No.	Name	Designation/ School	Committee Designation
1.	Dr. Abhishek Soni.	Assistant Professor, School of Pharmacy	Chairman
2.	Mr. Mahinder Singh Verma	Pradhan, Gram Panchayat Chachyot.	Member
3.	Dr. Reetika	Assistant Professor, School of Agriculture	Member
4.	Dr. Mohinder Singh Kaith	Assistant Professor, School of Basic Sciences	Member
5.	Er. Abhay Dhiman	Assistant Professor, School of Engineering	Member
6.	Arpit Sharma	Student, B. Pharmacy, 4 <sup>th</sup> Semester, School of Pharmacy	Student Member
7.	Ms. Nandini	Student, B. Agriculture, 4 <sup>th</sup> Semester School of Agriculture	Student Member

  
Registrar

### Copy to:

1. PA to Hon'ble Chancellor, Pro Chancellor and Vice Chancellor.
2. All the concerned,
3. Guard File.



### **3. Resource Management:**

The resources include air water, energy and other raw materials. The environmental Audit will provide data to the management on the efficient use of resources per unit production, and thereby, help reduce resource consumption and waste minimization.

### **4. Methodology**

The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. The criteria, methods and recommendations used in the audit were based on the identified risks. The methodology includes: preparation and filling up of questionnaire, physical inspection of the campus, observation and review of the document, interviewing responsible persons and data analysis, measurements and recommendations. The methodology adopted for this audit was a three-step process comprising of:

Data Collection – In preliminary data collection phase, exhaustive data collection was performed using different tools such as observation, survey communicating with responsible persons and measurements.

Following steps were taken for data collection:

- Site Visit
- Data about the general information was collected by observation and interview.
- The power consumption of appliances was recorded by taking an average value in some cases.

*Signature*

Data Analysis - Detailed analysis of data collected include: calculation of energy consumption, analysis of latest electricity bill of the campus, Water consumption, Waste Generation and Greenery Management.

Recommendation – On the basis of results of data analysis and observations, some steps for reducing power and water consumption were recommended. Proper treatments for waste were also suggested. Use of fossil fuels has to be reduced for the sake of community health.

The above target areas particular to the University was evaluated through questionnaire circulated among the students for data collection.

The following data collected for the following areas during the assessment.

1. Water Management
2. Air quality Check
3. Waste Management

#### **5. Auditing for Water Management**

Water is a natural resource; all living matters depend on water. While freely available in many natural environments, in human settlements potable (drinkable) water is less readily available. We need to use water wisely to ensure that drinkable water is available for all, now and in the future. A small drip from a leaky tap can waste more than 180 litres of water to a day; that is a lot of water to waste - enough to flush the toilet eight times! Aquifer depletion and water contamination are taking place at unprecedented rates. It is therefore essential that any environmentally responsible institution should examine its water use practices. Water auditing is conducted for the evaluation of

*B. Prasad*

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. It is therefore essential that any environmentally responsible institution examine its water use practices.

### 5.1 Water Usage

S. No	Description	Girl's Hostel	Boy's Hostel	Depart mental	University Gen-campus
1	Water Consumption (in KL) – Drinking	318.7	277	105	200
<b>Per Person (in Liters)</b>		<b>20.6</b>	<b>20.7</b>	<b>7.8</b>	<b>23.8</b>

S. No	Description	Girl's Hostel	Boy's Hostel	Departme ntal	University Gen-campus
1	Water Consumption (in KL) – Domestic Usage	2873	2817	3559	7151
<b>Per Person (in Liters)</b>		<b>215</b>	<b>210</b>	<b>534</b>	<b>266</b>

3/1/2019



### **5.2. Quality Analysis of Water:**

Water testing is carried out to meet the regulatory requirements and adhere to the safety procedures that are needed for pollutant-free water. This is a broad concept that involves several procedures to analyze and evaluate the quality of water.

Everyone who is affected by the water industry must test water sources. This could be the governmental organizations trying to regulate the quality of water to protect us from the health risks involved with using chlorinated water or it could be homeowners trying to ensure that the water is suitable for consumption.

Water, whether it is meant for business purposes, agriculture, domestic purposes, or is used by public municipalities and private homeowners must be tested regularly in order to keep the source of water safe and free from environmental risks and potential health disorders.

### **5.3. Important to test the quality of water:**

In the whole world, a majority of the people rely on the private water supply. This includes ponds, dugouts, and wells. A superior quality of water is crucial to the economic, health, and social well-being of the people. Monitoring the quality of your water and testing it regularly is very important to maintain reliable and safe water sources and eliminate the potential health risks related to water contamination.

When the water is tested it offers the knowledge; we require to address the problem that is currently involved with the water quality. It will also ensure that the water quality is protected from every potential cause of contamination and an appropriate approach is involved with the treatment system.

श्रीमती

It is vital to check the suitability of the water quality before its use. It can be for irrigation, livestock watering, drinking, or spraying. It will also help you in making an informed decision about how to use the water and what should be done about its purity

Parameter	Unit	Test Remarks		
Physical & Chemical		girl's hostel	Boy's hostel	University Campus
☒ Colour	Pt. Co scale	3	15	Colorimetric
☒ pH	Pt. Co scale	6.50	6.5-8.5	Electrometric
☒ Turbidity	FTU	1	5	Turbidity
☒ Aluminum	mg/l	below 0.20	0.2	AAS
☒ Copper	mg/l	below 0.03	1.0	AAS
☒ Iron Total	mg/l	below 0.04	0.3	AAS
☒ Sodium	mg/l	96.93	200	AAS
☒ Zinc	mg/l	0.047	5	AAS
☒ Chloride	mg/l	140.41	250	Argentometric
☒ Flouride	mg/l	0.09	1.5	Colorimetric
☒ Nitrate	mg/l	below 0.11	10	Colorimetric
☒ Sulphate	mg/l	below 0.94	400	Turbidimetric
☒ Arsenic	mg/l	below 0.001	0.05	AAS

*Signature*

☒ Cyanide	mg/l	below 0.01	0.1	Colorimetric
☒ Lead	mg/l	below 0.01	0.05	AAS
☒ Mercury	mg/l	below 0.001	0.001	AAS
☒ Total Hardness	mg CaCO <sub>3</sub>	95.49	500	AAS
<b>Bacteriological:</b>				
☒ Total Bacteria	per ml	6.9 x 10 <sup>2</sup>	1.0 x 10 <sup>2</sup>	Pour Plate
☒ E. Coli	per 100 ml	nil	nil	Filtration

#### 5.4 Recommendations:

As per above report of water analysis and recommendation of analysisist water of university campus were safe for drinking.

##### 5.4.1 Common Recommendations- Water:

Drip irrigation for gardens to minimize water consumption.

Awareness programs on water conservation to be conducted.

**Install display boards to control over wastage of water.**

##### 5.4.2 Specific Recommendations:

The average Water consumption per person 404 liter/ per person/ Year. Steps to be implemented to reduce the water consumption.

#### 6. Auditing for air Quality:

Air quality standards are generally **health-based guidelines** which seek to establish the concentrations of air pollutants to which the public can be exposed throughout their lifetime without significant adverse effects at a population level.

By 

Pollutants	Concentration of air
CO	339.59 ppb
NO <sub>2</sub>	8.54 ppb
O <sub>3</sub>	35.35 ppb
SO <sub>2</sub>	2.29 ppb
PM <sub>10</sub>	38.91 ug/m <sup>3</sup>
PM <sub>2.5</sub>	19.73 ug/m <sup>3</sup>

#### 6.1 Recommendations:

As per above report of air quality, there are no limitations and air quality is best for outdoors.

#### 7. Auditing for Waste Management:

Waste management (or waste disposal) includes the processes and actions required to manage waste from its inception to its final disposal. This includes the collection, transport, treatment and disposal of waste, together with monitoring and regulation of the waste management process and waste-related laws, technologies, economic mechanisms.

Waste can be solid, liquid, or gaseous and each type has different methods of disposal and management. Waste management deals with all types of waste, including industrial, biological, household, municipal, organic, biomedical, radioactive wastes. In some cases, waste can pose a threat to human health. Health issues are associated throughout the

*Bhim Singh*

entire process of waste management. Health issues can also arise indirectly or directly. Directly, through the handling of solid waste, and indirectly through the consumption of water, soil and food. Waste is produced by human activity, for example, the extraction and processing of raw materials.<sup>14)</sup> Waste management is intended to reduce adverse effects of waste on human health, the environment, planetary resources and aesthetics

### **7.1. Auditing for Waste Management**

Pollution from waste is aesthetically displeasing and results in large amounts of litter in our communities which can cause health problems. Plastic bags and discarded ropes and strings can be very dangerous to birds and other animals. This indicator addresses waste production and disposal, plastic waste, paper waste, food waste, and recycling. Solid waste can be divided into two categories: general waste and hazardous waste. General wastes include what is usually thrown away in homes and schools such as garbage, paper, tins and glass bottles. Hazardous waste is waste that is likely to be a threat to health or the environment like cleaning chemicals and petrol. Unscientific landfills may contain harmful contaminants that leach into soil and water supplies, and produce greenhouse gases contributing to global climate change.

Furthermore, solid waste covering Bio Degradable, Non Bio Degradable and Bio Medical wastes. These wastes are either in to recycling or reuse or combination of both. Thus, the minimization of solid waste is essential to a sustainable University. The auditor diagnoses the prevailing waste disposal policies and suggests the best way to combat the problems. It is therefore essential that any environmentally responsible institution examine its waste processing practices.

Signature

## 8. Waste Generation

S. No	Description	Girl's Hostel	Girl's Hostel	Canteen	Hospital	Labs	Remarks
1	Bio Degradable- Other than Food (in kgs)	0.5	0.5	0.5	--	--	
2	Bio Degradable - Food Waste (in kgs)	5	5	2	--	--	

### Recommendations for Waste Management:

- Establishing environmental policy for the overall University
- Conduct more seminars and group discussions on environmental education / Conservation of Water
- Establish bio gas plant.
- Practice of waste segregation at source to be initiated.

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## PLANTATION DRIVE WITHIN CAMPUS



आत्मोत्थान

## BEYOND CAMPUS ENVIRONMENT PROMOTION ACTIVITIES



### स्वयं सेवकों ने की स्कूल और जलस्रोतों की साफ-सफाई



स्कूल परिसर में सफाई करती एनएसएस के स्वयं सेवक।

सुदूरगढ़, 3 जून (उमेश यादव) : अभिलक्षणी विश्वविद्यालय में एनएसएस के छात्र दिवसीय शिविर का समापन कार्यक्रम एनएसएस द्वारा किया गया। एनएसएस के स्वयंसेवकों ने मुख्यशिविर का समापन किया। वहीं मुख्यशिविर में एनएसएस के स्वयंसेवकों द्वारा सात दिन किए सामाजिक कार्यों के लिए, सफाई से और स्वयंसेवकों को जल संरक्षण के लिए लोगों को जागरूक करने के लिए आह्वान किया। केपरा एनएसएस कार्यकारी अधिकारी अशोक सोनी ने बताया कि 7

दिवसीय शिविर में 60 स्वयंसेवकों ने भाग लिया। स्वयंसेवकों द्वारा इस शिविर में प्राकृतिक जल स्रोतों की सफाई, स्कूल, अस्पताल, कैंपस, बस्ता एवं प्रयोगशाला की सफाई, जल दान, स्थानीय लोगों के साथ शिखारी का आदान-प्रदान, निष्कलता प्रतिस्पर्धा, निष्कल निदान प्रतियोगिता के साथ-साथ विभिन्न विषयों पर व्याख्यान का आयोजन भी किया गया। समापन समारोह में स्वयंसेवकों और आभोजक समिति की प्रत्यक्ष पर भी शक्ति मंत्र।

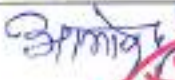





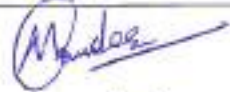

विश्वविद्यालय



## Conclusion

The environment audit assists in the process of monitoring and verifying the performance in the environmental arena and is fast becoming an indispensable aid to decision making in the environment. The audit reports assist in the process of attaining an eco-friendly approach to the sustainable development of the University. Hope that the results presented in the green auditing report will serve as an opportunity to improving the environment related practices and resource usage at the university as well as new activities and innovative practices. A few recommendations are added to the waste management using eco-friendly and scientific techniques. This may lead to the prosperous future in context of Green Campus and thus sustainable environment and community development. It has been shown frequently that the practical suggestions, alternatives, and observations that have resulted from audits have added positive value to the audited organization. An outside view, perspective and opinion often helps staff who have been too close to problems or methods to see the value of alternative approaches. An environment audit report is a very powerful and valuable communications tool to use when working with various stakeholders who need to be convinced that things are running smoothly and systems and procedures are coping with natural changes and modifications that occur.

अभिषेक

Committee Designation	Name , Designation& Institution	Signature
External/Expert	Dr. Alok Sagar Gautam Lead Auditor Environment Management System ( EMS)	 
Advisor/ Expert	Dr. Abhishek Soni Assistant Professor, School of Pharmacy Abhilashi University, Chail-Chowk H.P. 175028	
Team Leader	Dr. Mohinder Singh Keith Assistant Professor, School of Basic Science Abhilashi University, Chail-Chowk H.P. 175028	
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	Mr. Mahinder Singh Verma, Pradhan, Gram Panchayat Chachyot	
	Ms. Nandini, student B.Sc. Agriculture, 4 <sup>th</sup> Semester School of Agriculture Abhilashi University, Chail-Chowk H.P. 175028	

**ENERGY AUDIT REPORT**  
**FOR**  
**ABHILASHI UNIVERSITY**

**YEAR-2021**



## AUDIT TEAM

 <b>Mr. O. P. Shukla</b> ( M. Tech)	 <b>Dr. Devender Sharma,</b> Professor School of Engineering Abhilashi University, Chail-Chowk H.P. 175028	 <b>Dr. Pankaj Saklani,</b> Associate Professor School of Ayurveda Abhilashi University, Chail-Chowk H.P. 175028	 <b>Dr. Sunita</b> Assistant Professor School of Management Abhilashi University, Chail-Chowk H.P. 175028	 <b>Er. Rachita Sharma</b> Asst.Prof. School Of Engineering Abhilashi University, Chail-Chowk H.P. 175028	 <b>Ms. Shikha,</b> Student Abhilashi University, Chail-Chowk H.P. 175028
<b>Lead-Energy Auditor</b>	<b>Internal Expert</b>	<b>Member-1</b>	<b>Member-2</b>	<b>Member-3</b>	<b>Member-4</b>

**OMPRAKASH SHUKLA**  
Certified Energy Auditor BEE  
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## Executive Summary

Energy Audit is a major association in the entire administration succession. Energy review endeavors to adjust the complete energy inputs with its utilization and serves to recognize all the energy streams in the framework and measures energy uses as per its discrete capacity. It fills in as a powerful device in characterizing and seeking after exhaustive energy the board programs. It adopts a specialized strategy towards a persistent improvement in energy use, as opposed to monetary review which stresses to keep up with routineness. Energy review gives reply to the inquiries - what to do, where to begin, at what cost and for what benefits? Energy review is a methodology that will recognize how energy is being utilized in our office and assists with distinguishing viable and savvy measure that will decrease energy use, lower working expense and help in lessen ozone depleting substance discharges. The energy review process includes investigation, study and examination of energy streams completed basically for energy protection in a structure or gathering of structures of an association or of a modern plant with the end goal of limiting the energy utilization without contrarily influencing the solace level and efficiency of the inhabitants and clients. It is the initial phase in distinguishing chances to diminish energy costs and carbon impressions.

Energy Audit of all of the campuses of Abhilashi University started as an initiative of the department of Engineering and Management. However, a more formal survey was done during the June 2017 to July 2018 academic year. Formal data collection from the campuses was carried out by the team during September-November 2020. This formal internal energy audit was conducted to seek opportunities to improve the energy efficiency of the campus, reduce energy consumption while maintaining or improving human comfort, health and safety-related aspects. Beyond simply



### **1.0 Introduction:**

Background Energy audit is an inspection, survey and analysis of energy flows carried out primarily for energy conservation in a building or group of buildings of an organization or of an industrial plant with a view to minimizing the energy consumption without negatively affecting the comfort level and productivity of the occupants and users. It is the first step in identifying opportunities to reduce energy expenses and carbon footprints. The energy audit is a survey and an analysis of energy flows for energy conservation in a building. It includes a system or a process to minimise the amount of energy input into the system without negatively affecting the output. The energy audit survey was completed by Department of Engineering and Management. All data collected from each classroom, laboratory, administration block, boys and girls hostel. The work is completed by considering, how much tubes, fan, A.Cs, electronic instruments, etc in each room. How much was participation of each component in total electricity consumption.

This audit report is the vision to make the campus of Abhilashi University energy efficient. Making the campus energy efficient will not only help the University reduce its expenses but also helps us fulfill our moral responsibility of not wasting this precious resource, which is scarcely available to rest of the people of the country. We are confident that the results that will come out of this exercise are bound to be of interest to everyone and can be the first step to make Abhilashi University campus energetically the most efficient campus in India.

### **2.0 Objectives and Methodology:**

As per the Bureau of Energy Efficiency, Energy Audit is the key to a systematic approach for decision-making in the area of energy management. It attempts to balance the total energy inputs with its use, and serves to identify all the energy



### 3.0 Committee for Energy Audit

To move ahead an internal committee of three members has been constituted for initiated the Energy Audit of the University and also to assist the external auditor.



## ABHILASHI UNIVERSITY

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website: [www.abhilashiuniversity.in](http://www.abhilashiuniversity.in)

Ref. No. AU/Acad-120/2020-21/CS 8

Dated: 06/07/2021

The Hon'ble Vice Chancellor is pleased to constitute "Energy Committee". The following persons have been nominated in this committee:

S.No.	Name	Designation/School	Committee Designation
1.	Dr. Devender Sharma	Associate Professor, School of Engineering	Chairman
2.	Dr. Pankaj Saklani	Associate Professor, School of Ayurveda	Member
3.	Dr. Sunita	Assistant Professor, School of Management	Member
4.	Er. Rachita Sharma	Assistant Professor, School of Engineering	Member
5.	Mr. Mr. Paras	Student, B. Agriculture, 4 <sup>th</sup> Semester, School of Agriculture	Student Member
6.	Ms. Shikha	Student, B.Sc-B.Ed, 4 <sup>th</sup> Semester, School of Basic Sciences	Student Member

  
Registrar

Copy to:

1. PA to Hon'ble Chancellor, Pro Chancellor and Vice Chancellor.
2. All the concerned.
3. Guard File.



#### 4.0 Experimental and data collection:

The constituted internal audit under the supervision of external lead auditor started the audit from dated 21 Oct 2021. All required data is collected by Department of Engineering and Management In buildings, in every room, how much fans, tubes, fans, computer, instrument AC, etc will these is measured. According to survey following data is collected.

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#### 4.1 Details of Electrical Load Patterns

S. No	Department/Block	Bulbs	Holder	No. Of Tube lights	No of AC	No of Fans	No of Projectors	No of Printers	LCD	Geyser
1.	Zoology	-	95	45	-	1	1	-		
2.	BAMS	12	158	113	-	30	1	10		
3.	Pharmacy	5	36	56	1	16	2	2		
4.	Agriculture	2	141	53	-	6	1	-		
5.	BPT	4	28	33	1	8	-	-		
6.	Engineering and Management	2	87	63	-	1	-	-		
7.	Basic Science and Humanities	2	47	49	-	1	2	-		
8.	Administration building	35	48	33	2	18	-	5		
9.	Library									
10.	Girls Hostel	36	165	115	-	110	-	-	2	16
11.	Boys Hostel	40	-	44	-	49	-			
12.	Street Lights									
<b>Total Quantity</b>		<b>138</b>	<b>805</b>	<b>604</b>	<b>4</b>	<b>240</b>	<b>7</b>	<b>17</b>	<b>2</b>	<b>16</b>

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10	Oct2017	24920
11	Nov2017	18520
12	Dec2017	47450
Total power consumption on yearly basis		251970
Average power consumption in monthly		20,997.5

### Year2018

S. No	Month	Consumption (units)
1	Jan2018	32820
2	Feb2018	10130
3	Mar2018	24110
4	April 2018	31680
5	May 2018	22450
6	June2018	8538
7	July2018	18630
8	Aug 2018	7060
9	Sept2018	34100
10	Oct2018	12962
11	Nov2018	27903
12	Dec2018	20150
Total power consumption on yearly basis		250533
Average power consumption in monthly		20877.75

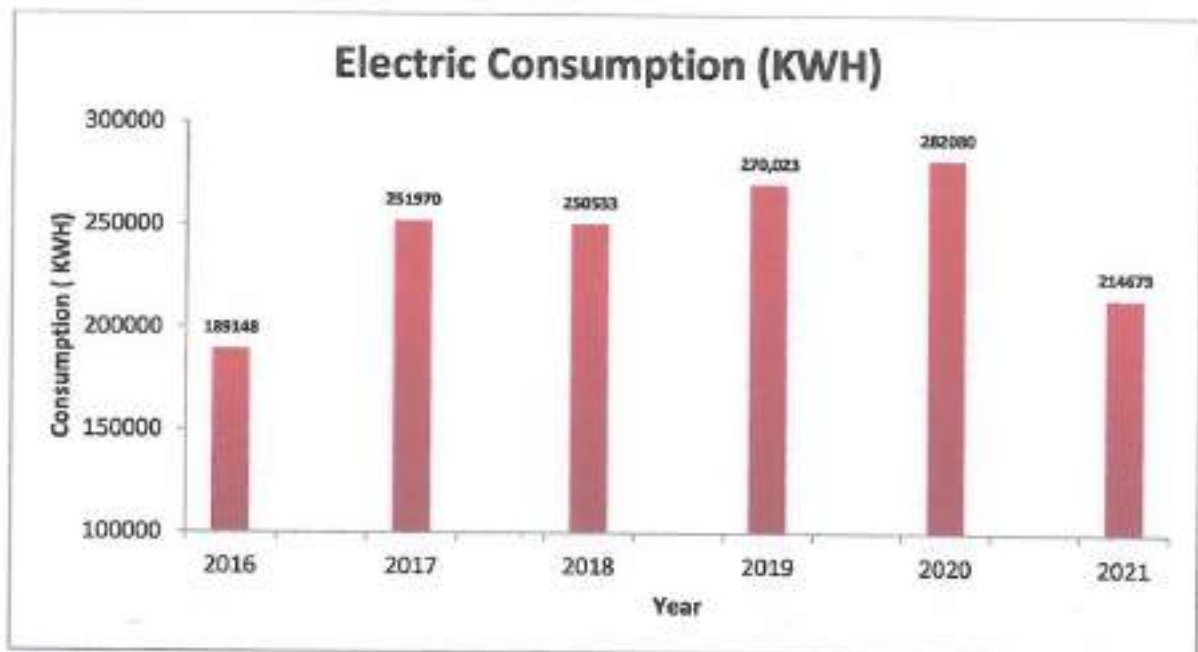


5	May 2020	101875
6	June 2020	24450
7	July 2020	7510
8	Aug 2020	15030
9	Sept 2020	23310
10	Oct 2020	12855
11	Nov 2020	25630
12	Dec 2020	27920
Total power consumption on yearly basis		282,080
Average power consumption in monthly		23,506.666

**Year 2021**

S. No	Month	Consumption (units)
1	Jan 2021	-
2	Feb 2021	56867
3	Mar 2021	49887
4	April 2021	41842
5	May 2021	-
6	June 2021	48661





#### 4.4 Use of LED Lights for saving the power



**Administrative Block**



**Finance Office**



**Office-1**



**Office-2**



**LED Street lights**

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**Conclusion:**

In conclusion, data generated in energy audit are useful for to understand the energy distribution and utilization of University. The University needs maximum **1,89, 148** KW of electricity (2016). In other words University needs **Average power consumption in monthly 15762.33**Units.

## **5.0 Final Recommendations**

### **5.1 Recommendations wrt Metering:**

To get real time meter reading, an advance metering infrastructure needs to be put in place at Abhilashi University. Advanced metering infrastructure (AMI) can provide the necessary information to help improve energy efficiency and bring other operational benefits that will help university to manage costs more effectively. Separate feeders for light and power loads should be drawn for better load control and shedding.




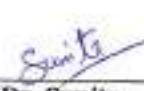

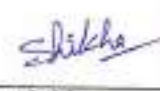
### **5.2 Recommendations wrt Lights and Fans**

- a) The occupancy/ motion sensors need to be provided in all the offices, class rooms, hostel rooms and wash rooms to switch off the lights when not in use.
- b) Photo sensors in combination with motion sensors need to be provided to control the corridor lights for its optimal use.
- c) In corridors wherever high power luminaries are used it should be replaced with lower power luminaries.
- d) Use a smart power strip so that you can easily switch off multiple devices at once when you're not using the computers.
- e) The location of the fixtures to be changed according to their best use.
- f) The individual switches to be provided to each



(.)Separate connection of office, Computer Lab. and classroom.

### AUDIT TEAM

					
<b>Mr. O. P. Shukla</b> (M. Tech)	<b>Dr. Devender Sharma,</b> Professor School of Engineering Abhilashi University, Chail-Chowk H.P. 175028	<b>Dr. Pankaj Saklani,</b> Associate Professor School of Ayurveda Abhilashi University, Chail- Chowk H.P. 175028	<b>Dr. Sunita</b> Assistant Professor School of Management Abhilashi University, Chail-Chowk H.P. 175028	<b>Er. Rachita Sharma</b> Asst.Prof. School Of Engineering Abhilashi University, Chail- Chowk H.P. 175028	<b>Ms. Shikha,</b> Student Abhilashi University, Chail- Chowk H.P. 175028
<b>Lead-Energy Auditor</b>	<b>Internal Expert</b>	<b>Member-1</b>	<b>Member-2</b>	<b>Member-3</b>	<b>Member-4</b>

**OMPRAKASH SHUKLA**  
Certified Energy Auditor BEE  
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GREEN AUDIT REPORT  
FOR  
ABHILASHI UNIVERSITY







YEAR-2021

अभिषेक

Committee for Green Audit of Abhilashi University

The following committee were involved in planning, Mentoring, Surveying, Analyzing Report preparing and recommending the necessary changes related to the Green Audit of Abhilashi University Campuses in the year 2021.

<b>Dr. Alok Sagar Gautam</b>	<b>Dr. Vinod Katoch</b>  Assistant Professor School of Ayurveda	<b>Dr. Jyoti Sondhi</b>  Assistant Professor School of Management	<b>Dr. Abhishek Soni</b>  Assistant Professor School of Pharmacy	<b>Ms. Pallavi Kumari</b>  Student, 4 <sup>th</sup> Sem. School of Pharmacy
<b>Lead Auditor Environment Management System ( EMS) External</b>	<b>Expert- Internal</b> 	<b>Internal Leader</b> 	<b>Member-1</b> 	<b>Member-2</b> 









## 1.0 INTRODUCTION:

Green Audit is the process of assessing the impact of an organization, process, and project on environment. Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of institute.

Abhilashi University recognizes the need to function all year round in a manner which minimizes its harmful environmental impact. University has already implemented the Green Policy which is based on three pillars.

- a) Environmental sustainability: The Green Policy must ensure sustainability of the environment.
- b) Economic viability: Economic viability options should be considered in the implementation of the Green Policy.
- c) Social acceptance: Social acceptance is a key to the success of the Green Policy and therefore, the social context of the community, faculty and students must be taken into consideration in the Green Policy.

It aims to analyze environmental practices within and outside of the concerned place, which will have an impact on the eco-friendly atmosphere. Green audit is a valuable means for a college to determine how and where they are using the most energy or water or other resources; the college can then consider how to implement changes and make savings. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Green impact on campus. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-enquiry is a natural and

Signature

necessary outgrowth of a quality educational institution. Thus, it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent. The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background, it becomes essential to adopt the system of the Green Campus for the institutes, which will lead for sustainable development and at the same time, reduce a sizable amount of atmospheric CO<sub>2</sub> from the environment. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through carbon footprint reduction measures.

## 2.0 OBJECTIVES

In recent time, the Green Audit of an institution has been becoming a paramount important for self-assessment of the institution which reflects the role of the institution in mitigating the present environmental problems. The college has been putting efforts to keep our environment clean since its inception. Therefore, the purpose of the present green audit is to identify, quantify, describe, and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies, and standards.

### **The main objectives of carrying out Green Audit are:**

- To map the Geographical Location of the college.
- To document the floral and faunal diversity of the college.
- To record the meteorological parameter of Chailchowk where college is situated.

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- To document the ambient environmental condition of weather, air, water and noise of the college.
- To document the waste disposal system.
- To estimate the Energy requirements of the college.
- To report the expenditure on green initiatives during the last five years.

### 3.0 GREEN AUDITING

The Abhilashi University (AU) has adopted the 'Green Campus' system for environmental conservation and sustainability. There are main three pillars i.e. zero environmental foot print, positive impact on occupant health and performance and 100% graduates demonstrating environmental literacy. The goal is to reduce CO<sub>2</sub> emission, energy and water use, while creating atmosphere where students can learn and be healthy. To verify the above mentioned objectives, the constituted committee has initiated the green audit from 28 October, 2021.



### 3.1 LAND USE PATTERN

Land use refers to man's activities and the various uses, which are carried on and derived from land. Viewing the earth from space, it is now very crucial in man's activities on natural resource. In situations of rapid changes in land use, observations of the Earth from space give the information of human activities and utilization of the landscape. Remote sensing and GIS techniques are now providing new tools for advanced land use mapping and planning. The collection of remotely sensed data facilitates the synoptic analyses of earth system, functions, patterning, and change in the local, regional as well as at global scales over time. Satellite imagery particularly is a valuable tool for generating land use map.

To take care about the Green Audit of the AU campus and also to assist the external Auditor following team were constituted :

Straight



# ABHILASHI UNIVERSITY

Chail Chowk, Tehsil Chaachyot, Distt. Mandi (H.P.)  
Phone: 01907-292-607, 611, 615 Fax: 01907-292-607  
Email: registrar.au@abhilashi.in, reg@abhilashi@gmail.com,  
website: www.abhilashiuniversity.in

Ref. No. AU/Acad-119/2020-21/464

Dated: 06/07/2021

## NOTIFICATION

The Hon'ble Vice Chancellor is pleased to constitute "Green Committee". The following persons have been nominated in this committee:

S.No.	Name	Designation/ School	Committee Designation
1.	Dr. Vinod Katoch	Associate Professor, School of Ayurveda	Chairman
2.	Dr. Jyoti Sondhi	Associate Professor, School of Management	Member
3.	Dr. Abhishek Soni	Assistant Professor, School of Pharmacy	Member
4.	Ms. Pallavi Kumari	Student, 4 <sup>th</sup> Semester, School of Pharmacy	Student Member
5.	Mr. Lokender	Student, 4 <sup>th</sup> Semester, School of Agriculture	Student Member

  
Registrar

### Copy to:

1. PA to Hon'ble Chancellor, Pro Chancellor and Vice Chancellor.
2. All the concerned.
3. Guard File.

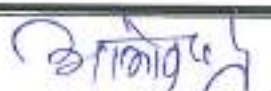
## 4.0 METHODOLOGY ADOPTED FOR LAND USE MAPPING

Three types of data that are GPS points, field survey data and Google earth data for Geo referencing have been used for the Green Audit work of Abhilashi University. Land use map of the study area have been prepared using the above three types of data with the help of Arc Gis Prosoftware.

## 5.0 DATA PROCESSING AND ANALYSIS

### 5.1 Land use map preparation is executed through the following steps:

Acquisition of data (Location: 31°34' 04N 77°01'15"E), Geo-coding and Geo referencing of satellite imageries by extracting the ground control points. Supervised classification was carried out with the aid of ground truth data collected during field survey. Scanning



and digitization of maps and editing of all the Geo referenced maps were done using GIS. Data manipulation and analysis and linking the spatial data with the attribute data for creation of topology was carried out using GIS software. Creation of GIS output in the form of land use map showing various land use have been prepared.

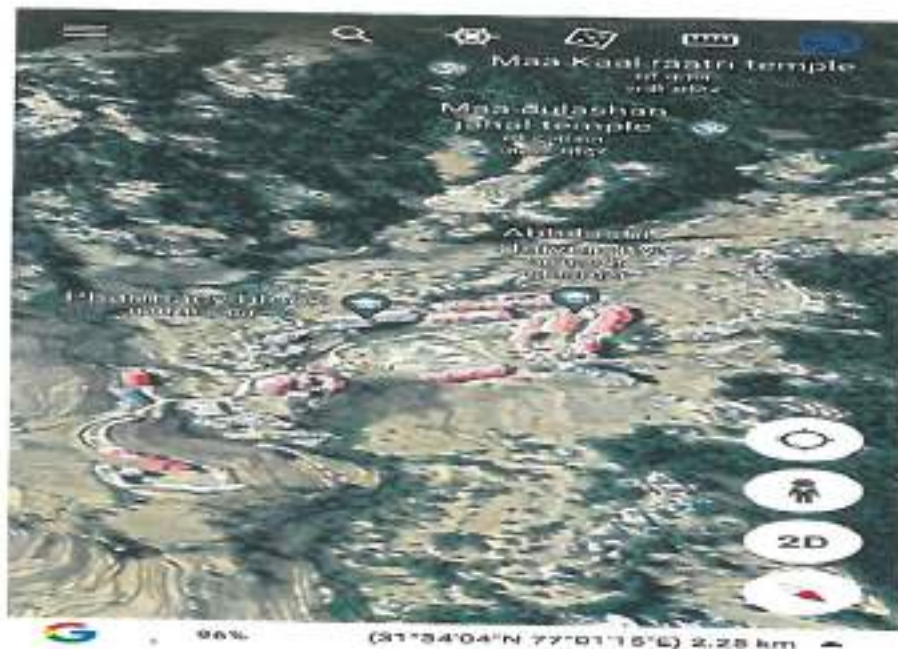


Photo-1: Aerial View Of College Campus Part-1(Source: Google Earth)



Photo - 2 : Aerial View Of College Campus Part-1(Source: Google Earth)

Signature

**5.2 LAND USE DATA OF AUM, CHAILCHOWK, MANDI, HIMACHAL PRADESH**

Categories of Land Use	Area
Land with the University(Total Land)	2003760m <sup>2</sup>
Ownership	50-04-18 Bighas
Lease	180-01-11
Built up area	24424 m <sup>2</sup>
Cultivation area for crops	1576872 m <sup>2</sup>
Herbal Garden for medicinal plants	5000 m <sup>2</sup>

**5.3 LAND USE (BUILT UP AREA) ANALYSIS:**

S. No.	Name Of Building/Block	Number of floors	Area sq. m.
1.	EXISTING(G+3) AYURVEDIC HOSPITAL AND ADMINISTRATIVE BLOCK--BLOCK-A	4	3100.00
2.	EXISTING (G+2) BLOCK-----BLOCK-B	3	2860.00
3.	EXISTING(G+2) AYURVEDIC COLLEGE AND RESEARCH CENTRE.....BLOCK--C	3	3850.00
4.	EXISTING ENGINEERING & TECHNOLOGY AND MANAGEMENT STUDIES BLOCK (G+2) & BLOCK-D	3	4290.00
5.	EXISTING (G+2) ENGINEERING & TECHNOLOGY..... BLOCK-E	3	1080.00
6.	EXISTING BLOCK PANCHAKARMA..... BLOCK-F	4	640.00
7.	EXISTING SCHOOL OF PHARMACY & SCIENCE DEPARTMENT..... BLOCK-G	4	4075.00
8.	EXISTING BLOCK BOYS	4	2360.00

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	HOSTEL..... BLOCK-H		
9.	EXISTING BLOCK GIRLS HOSTEL.....BLOCK-I	4	1781.00
10.	EXISTING BLOCK STAFF RESIDENCE.....BLOCK-J	4	388.00
TOTAL COVERED AREA OF EXISTING BUILDINGS/BLOCKS			24424

Built Up areas of Abhilashi University is 24424 m<sup>2</sup>.

## 6.0 FINDINGS

The Land use analysis Report is prepared by Er. Devender Sharma, Civil Engineering Department, Faculty of of Civil Engineering, AU Chailchowk, Mandi, Himachal Pradesh.

Abhilashi University is situated in a place which is rich in its biodiversity containing many herbal plants, trees, shrubs as well as small herbs also. Periodic plantation was also carried out time to time including their preservation and maintenance. Usage of land in AU is like that 78.69% of total area is occupied by agricultural land and plantation that generates a better and sustainable campus environment.

## 6.1 TREE DIVERSITY OF AU, CHAILCHOWK, MANDI, HIMACHAL PRADESH

AU is within the geo-position between latitude 31°34'04N and longitude 77°01'15"E in Chailchowk Distt-Mandi Himachal Pradesh. It encompasses an area of 92 Acres. The area is rich in its biodiversity containing many species of trees which are useful in many ways medicinal as well as biological point of view. Most of trees species are planted time to time through various programs such as World Environment day, World Forestry Day, Earth Day etc..

*Signature*



Few of the plants are found to be available in the AU Campus.

S.No	Sanskrit name	Botanical name	Family	Qty
1.	Haritaki	<i>Terminalia chebula</i>	Combretaceae	1
2.	Vibhitaki	<i>Terminalia bellirica</i>	Combretaceae	4
3.	Jalvetas	<i>Salix tetrasperma</i>	Salicaceae	4
4.	Karpur	<i>Cinnamomum camphora</i>	Lauraceae	7
5.	Balamkhira	<i>Kigelia africana</i>	Bignoniaceae	1
6.	Lokat	<i>Eriobotrya japonica</i>	Rosaceae	7
7.	Nirgundi	<i>Vitex negundo</i>	Verbinaceae	5
8.	Dadima	<i>Punicagranatum</i>	Punicaceae	46
9.	Oak tree	<i>Quercus glauca</i>	Fagaceae	2
10.	Talispatra	<i>Taxus baccata</i>	Taxaceae	1
11.	Kanchnara	<i>Bauhinia variegata</i>	Fabaceae	6
12.	Devadaru	<i>Cedrus deodara</i>	Pinaceae	18
13.	Amalaki	<i>Phyllanthus emblica</i>	Phyllanthaceae	3
14.	Daru haridra	<i>Berberis lycium</i>	Berberidaceae	4

(अभिज्ञान)

15.	Padmaka	<i>Prunus cerasoides</i>	Rosaceae	9
16.	Nimbuka	<i>Citrus limon</i>	Rutaceae	3
17.	Tailaparni	<i>Eucalyptus globules</i>	Myrtaceae	3
18.	Sinchitaka	<i>Malus domestica</i>	Rosaceae	3
19.	Tuda	<i>Morus alba</i>	Moraceae	3
20.	Karanja	<i>Pongamiapinnata</i>	Fabaceae	1
21.	Japakushum	<i>Hibiscus rosa sinensis</i>	Malvaceae	2
22.	Arjuna	<i>Terminalia arjuna</i>	Combretaceae	4
23.	Jambu	<i>Syzygiumcumini</i>	Myrtaceae	13
24.	Vansha	<i>Bambusaarundinaceae</i>	Poaceae	1
25.	Shirsha	<i>Albizialabbeck</i>	Mimosaceae	1
26.	Paravat	<i>Psidium guajava</i>	Myrtaceae	3
27.	Kadali	<i>Musa paradisiacal</i>	Musaceae	1
28.	Aksotaka	<i>Juglans regia</i>	Juglandaceae	3
29.	Phalgu	<i>Ficus palmata</i>	Moraceae	4
30.	Aruk	<i>Prunus persica</i>	Rosaceae	1
31.	Shalmali	<i>Salmaliamalabarica</i>	Malvaceae	1
32.	Curry patta	<i>Murrayakoenigii</i>	Rutaceae	1

श्रीमती

33.	Arishtaka	<i>Sapindustrifoliatus</i>	Sapindaceae	2
34.	Cycas	<i>Cycas rumphii</i>	Cycadaceae	7
35.	Rubber plant	<i>Ficus elastic</i>	Moraceae	1
36.	Changeri	<i>Oxalis corniculata</i>	Oxalidaceae	13
37.	Dhanvan	<i>Grewiatiliifolia</i>	Tiliaceae	1
38.	Erand	<i>Ricinus communis</i>	Euphorbiaceae	2
39.	Rudraksha	<i>Elaeocarpus ganitrus</i>	Elaeocarpaceae	1
40.	Vat	<i>Ficus benghalensis</i>	Moraceae	1
41.	Tejovati	<i>Zanthoxylumarmatum</i>	Rutaceae	1
42.	Japaniphal	<i>Diospyros kaki</i>	Ebenaceae	1
43.	Karkatshringi	<i>Pistaciaintegerrima</i>	Anacardiaceae	1
44.	Plum	<i>Prunus domestica</i>	Rosaceae	9
45.	Amra	<i>Mangiferaindica</i>	Anacardiaceae	1
46.	Aragvadha	<i>Cassia fistula</i>	Fabaceae	3
47.	Neem	<i>Azadirachtaindica</i>	Meliaceae	1
48.	Khadira	<i>Acacia catechu</i>	Mimosaceae	1
49.	Asvattha	<i>Ficus religiosa</i>	Moraceae	1

*Patil*

50.	Maidenhair	<i>Ginkgo biloba</i>	Ginkgoaceae	1
51.	Araucaria	<i>Araucaria heterophylla</i>	Araucariaceae	7
52.	Bottlebrush	<i>Callistemon citrinus</i>	Myrtaceae	10
53.	Silver oak	<i>Grevillea robusta</i>	Proteaceae	10
54.	Poplar	<i>Populus alba</i>	Salicaceae	5
	TOTAL			246



Pic-1



Pic-2



*Palmita*

Pic-3



Pic-4



Pic-5



Pic-6



Pic-7



Pic-8



*Handwritten signature or note in blue ink.*

Pic-9



Pic-10



Pic-11



Pic-12



Pic-13

Pic-14

आमकी



Pic16



Pic 17



Pic-19



Pic-21



Pic-22



Pic-23

अनिल



Pic-24



Pic-25



Pic-26



Pic-27



Pic-28



Indian Bull Frog (*Hoplobatrachus tigerinus*)

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## 7.0 SAMPLE WATER ANALYSIS REPORT - PORT TAP WATER (2021)

During the Audit, the water sample test has also been carried out to check the availability of the harmful chemical. The chemical testing report is enclosed herewith:

आमिर्करी

SAMPLE COLLECTED FROM GIRL'S HOSTEL

Lab: Pharmaceutical Analysis

Harmful bacteria, parasites, and viruses are invisible to the naked eye: so water which looks and tastes good may not necessarily be safe to drink. These microbes can exist in surface and groundwater supplies, and can cause immediate sickness in humans if not properly treated.

Certain chemical contaminants that are sometimes found in a water source can cause long term health problems that take years to develop. Frequent water testing will identify unsafe water and ensure that the treatment system is treating the water to a satisfactory level.

Parameter	Unit	Test Remarks	Requirement	Methods
<b>Physical &amp; Chemical :</b>				
• Colour	Pt. Co scale	3	15	Colorimetric
• pH	Pt. Co scale	6.50	6.5-8.5	Electrometric
• Turbidity	FTU	1	5	Turbidity
• Aluminium	mg/l	below 0.20	0.2	AAS
• Copper	mg/l	below 0.03	1.0	AAS
• Iron Total	mg/l	below 0.04	0.3	AAS
• Sodium	mg/l	96.93	200	AAS
• Zinc	mg/l	0.047	5	AAS
• Chloride	mg/l	140.41	250	Argentometric
• Fluoride	mg/l	0.09	1.5	Colorimetric
• Nitrate	mg/l	below 0.11	10	Colorimetric
• Sulphate	mg/l	below 0.94	400	Turbidimetric
• Arsenic	mg/l	below 0.001	0.05	AAS
• Cyanide	mg/l	below 0.01	0.1	Colorimetric
• Lead	mg/l	below 0.01	0.05	AAS
• Mercury	mg/l	below 0.001	0.001	AAS
• Total Hardness	mg CaCO <sub>3</sub>	95.49	500	AAS
<b>Bacteriological:</b>				
• Total Bacteria	per ml	$6.9 \times 10^6$	$1.0 \times 10^6$	Pour Plate
• Coliform	per 100 ml	nil	nil	Filtration
• E. Coli	per 100 ml	nil	nil	Filtration
• Salmonella sp	per 100 ml	negative	negative	Filtration

Dean  
 School of Pharmacy  
 Abul Hasan Ali Nadwi University  
 Teh. Chachyol Dist. 12-12-14

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## SAMPLE WATER ANALYSIS REPORT - PORT TAP WATER (2021)

### SAMPLE WATER ANALYSIS REPORT - PORT TAP WATER (2021)

SAMPLE COLLECTED FROM BOY'S HOSTEL

Lab: Pharmaceutical Analysis

Harmful bacteria, parasites, and viruses are invisible to the naked eye; so water which looks and tastes good may not necessarily be safe to drink. These microbes can exist in surface and groundwater supplies, and can cause immediate sickness in humans if not properly treated.

Certain chemical contaminants that are sometimes found in a water source can cause long-term health problems that take years to develop. Frequent water testing will identify unsafe water and ensure that the treatment system is treating the water to a satisfactory level.

Parameter	Unit	Test Remarks	Requirement	Methods
<b>Physical &amp; Chemical:</b>				
• Colour	Pl. Co scale	5	15	Colorimetric
• pH	Pl. Co scale	5.50	6.5-8.5	Electrometric
• Turbidity	FTU	2	5	Turbidity
• Aluminum	mg/l	below 0.10	0.2	AAS
• Copper	mg/l	below 0.05	1.0	AAS
• Iron Total	mg/l	below 0.06	0.3	AAS
• Sodium	mg/l	94.93	200	AAS
• Zinc	mg/l	0.040	5	AAS
• Chloride	mg/l	148.41	250	Argentometric
• Fluoride	mg/l	0.07	1.5	Colorimetric
• Nitrate	mg/l	below 0.13	10	Colorimetric
• Sulphate	mg/l	below 0.93	400	Turbidimetric
• Arsenic	mg/l	below 0.002	0.05	AAS
• Cyanide	mg/l	below 0.03	0.1	Colorimetric
• Lead	mg/l	below 0.04	0.05	AAS
• Mercury	mg/l	below 0.001	0.001	AAS
• Total Hardness	mg CaCO <sub>3</sub>	99.49	500	AAS
<b>Bacteriological:</b>				
• Total Bacteria	per ml	$8.9 \times 10^4$	$1.0 \times 10^4$	Pour Plate
• Coliform	per 100 ml	nil	nil	Filtration
• E. Coli	per 100 ml	nil	nil	Filtration
• Salmonella sp	per 100 ml	negative	negative	Filtration

Dea  
School Pharmacy  
Arya University  
Teh. Chachyat, Dist. Mainpuri

Signature

## University Campus

### SAMPLE WATER ANALYSIS REPORT - PORT TAP WATER (2021)


SAMPLE COLLECTED FROM University Campus

Lab: Pharmaceutical Analysis

Harmful bacteria, parasites, and viruses are invisible to the naked eye, so water which looks and tastes good may not necessarily be safe to drink. These microbes can exist in surface and groundwater supplies, and can cause immediate sickness in humans if not properly treated.

Certain chemical contaminants that are sometimes found in a water source can cause long term health problems that take years to develop. Frequent water testing will identify unsafe water and ensure that the treatment system is treating the water to a satisfactory level.

Parameter	Unit	Test Remarks	Requirement	Methods
<b>Physical &amp; Chemical</b>				
• Colour	Pt Co scale	5	15	Colorimetric
• pH	Pt Co scale	4.50	6.5-8.5	Electrometric
• Turbidity	FTU	3	5	Turbidity
• Aluminum	mg/l	below 0.10	0.2	AAS
• Copper	mg/l	below 0.03	1.0	AAS
• Iron Total	mg/l	below 0.08	0.3	AAS
• Sodium	mg/l	91.93	200	AAS
• Zinc	mg/l	0.037	5	AAS
• Chloride	mg/l	149.41	250	Argentometric
• Fluoride	mg/l	0.07	1.5	Colorimetric
• Nitrate	mg/l	below 0.13	10	Colorimetric
• Sulphate	mg/l	below 0.92	400	Turbidimetric
• Arsenic	mg/l	below 0.002	0.05	AAS
• Cyanide	mg/l	below 0.05	0.1	Colorimetric
• Lead	mg/l	below 0.03	0.05	AAS
• Mercury	mg/l	below 0.001	0.001	AAS
• Total Hardness	mg CaCO <sub>3</sub>	96	500	AAS
<b>Bacteriological:</b>				
• Total Bacteria	per ml	$6.9 \times 10^7$	$10 \times 10^7$	Pour Plate
• Coliform	per 100 ml	Nil	Nil	Filtration
• E. Coli	per 100 ml	Nil	Nil	Filtration
• Salmonella sp	per 100 ml	negative	negative	Filtration

  
 Dear Signature  
 S. ...  
 A. ...  
 Tel. ...

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## Recommendation:

Following recommendation were given for the further improvement:

- (a) Maximize the proportion of waste that is recycled & minimize the quantity of non-recyclable refuse.
- (b) Reduce energy consumption, especially of energy derived from fossil fuels, in all university property.
- (c) Minimize consumption of water.
- (d) minimize the use of chemical pollutants both in university by students and staff, and in university grounds by gardeners.
- (e) Ensure that the students and faculties are encouraged to plant trees in the campus.
- (f) Ensure that the buildings conform to green standards.

  
**Dr. Alok Sagar**  
Gautam

  
**Dr. Vinod**  
Katoch

  
**Dr. Jyoti**  
Sondhi

  
**Dr. Abhishek**  
Soni

  
**Ms. Pallavi**  
Kumari

Assistant Professor  
School of Ayurveda

Assistant  
Professor School  
of Management

Assistant  
Professor School  
of Pharmacy

Student, 4<sup>th</sup>  
Sem. School of  
Pharmacy

Lead Auditor  
Environment  
Management  
System

Expert-Internal

Internal  
Leader

Member-1

Member-2

