

# **Reports on Use of Energy Efficient Equipments, Waste Management and Water Conservation (Guru Nanak College Budhlada)**

## **Report on Energy Efficient Equipments**

### **USE OF SOLAR ENERGY LIGHTS and SENSOR BASED LIGHTS**


#### **Introduction:**

World's energy demand is growing fast because of population explosion and technological advancements. It is therefore important to go for reliable, cost effective and everlasting renewable energy source for energy demand arising in future. Solar energy, among other renewable sources of energy, is a promising and freely available energy source for managing long term issues in energy crisis. Solar industry is developing steadily all over the world because of the high demand for energy while major energy source, fossil fuel, is limited and other sources are expensive. In today's climate of growing energy needs and increasing environmental concern, alternatives to the use of non-renewable and polluting fossil fuels have to be investigated. One such alternative is solar energy. Solar energy is quite simply the energy produced directly by the sun and collected elsewhere, normally the Earth. The sun creates its energy through a thermonuclear process that converts about 650,000,000 tons of hydrogen to helium every second. The process creates heat and electromagnetic radiation. The heat remains in the sun and is instrumental in maintaining the thermonuclear reaction. The electromagnetic radiation (including visible light, infra-red light, and ultra-violet radiation) streams out into space in all directions. Only a very small fraction of the total radiation produced reaches the Earth.

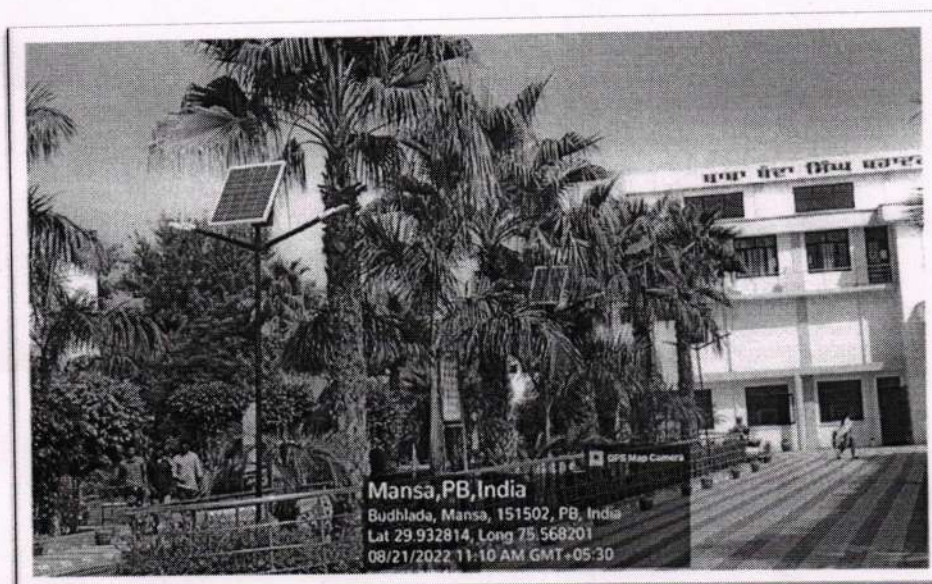
#### **Report on Solar Lights**

Guru Nanak College Budhlada is one of the prime institutions contributing in the Environmental and Social prosperity by inculcating the practical knowledge to aware the individuals regarding the importance of renewable sources of energy. A great effort has been made to tackle the energy crisis issues through the installation and functioning of ultimate source of energy i.e. solar lights and Sensor Based lights. As a prime institute Guru Nanak College Budhlada initiated a activity to adopt eco-friendly lifestyle by the consumption of energy through solar source for which solar appliances have been installed in college campus.



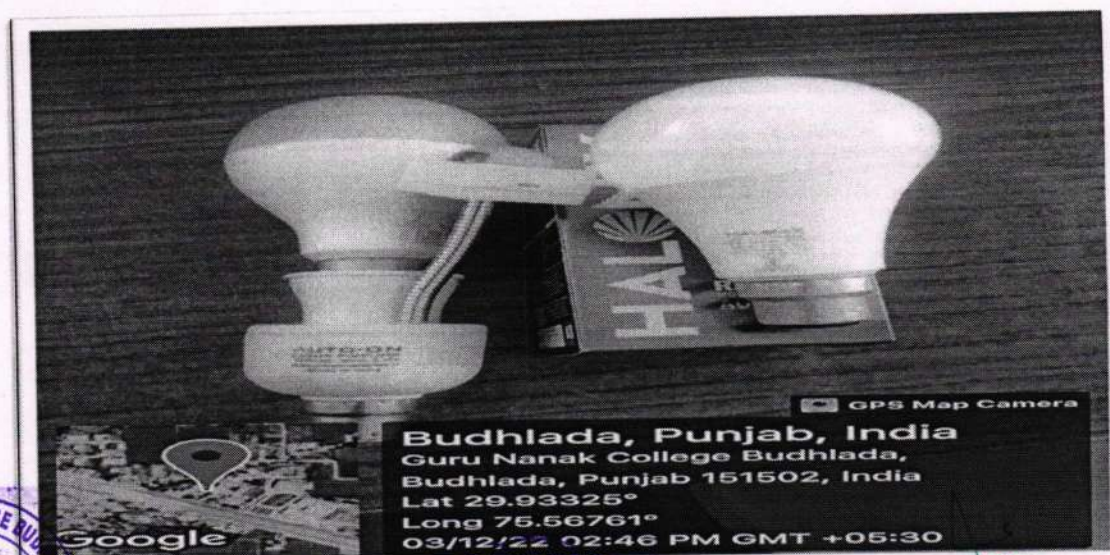
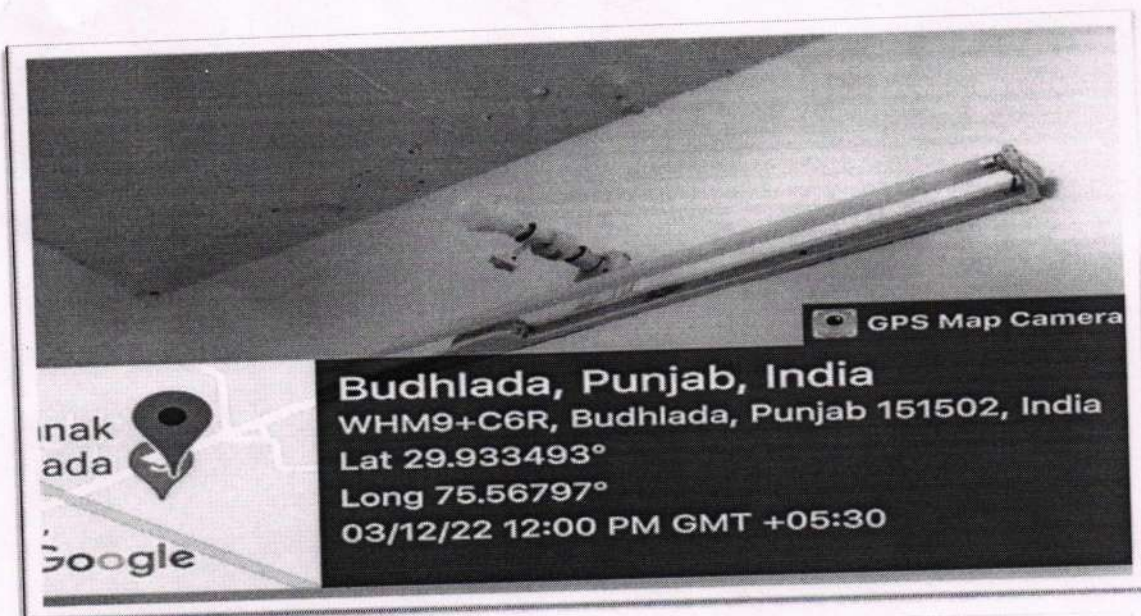
  
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## **Use of LED bulbs/ power efficient equipment**

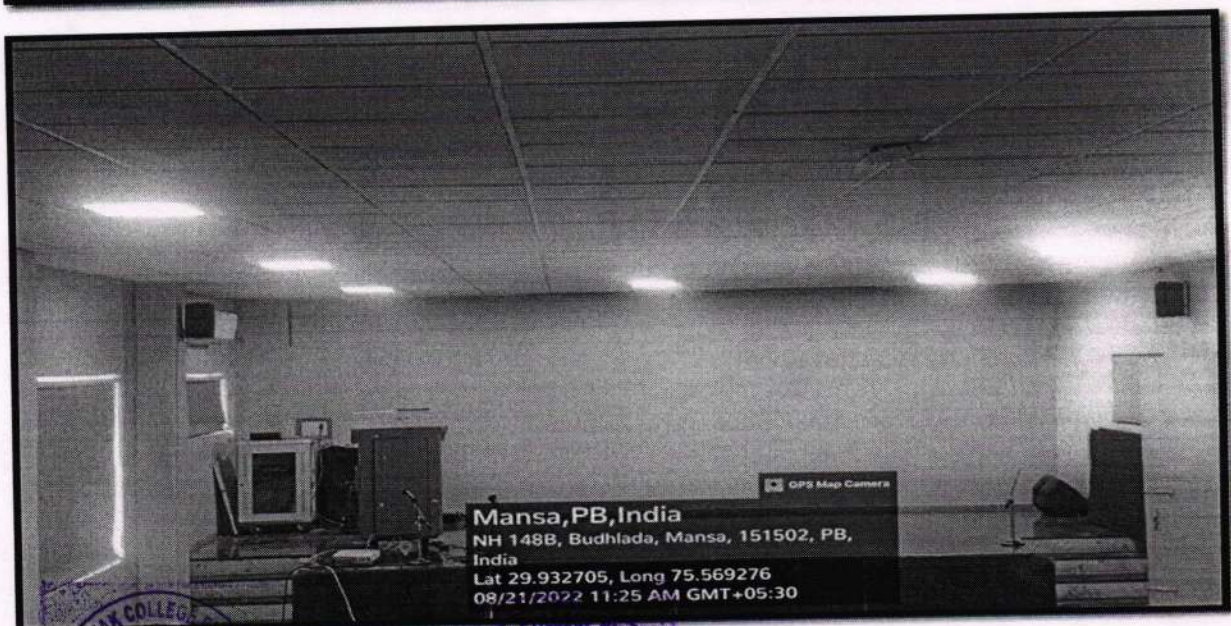
### **Use of LED Bulbs in the College**


A LED lamp is an item for consumption that uses a Light-emitting diode and that is assembled into a street lamp or a light bulb. LED lamps last much longer, and are more efficient than luminous lamps. Unlike luminous lamps, most LED lamps do not need to "warm up" before they emit the full quantity of light in our everyday life. By replacing 40 watt florescent tube by 9 watt LED tube or 14 watt T-Bulb we can save approximately Rs.1116 per year. LED lighting fixtures are more beneficial for saving energy and to conserving the environment. These lighting solutions help a lot in maintaining campus security, providing better quality light, improving student safety, and giving facility managers a sense of peace that comes with purchasing long-lasting products. LED light bulbs last much longer and consume far less energy. The high efficiency and directional nature of LEDs makes them ideal for many uses. LEDs are increasingly common in street lights, parking garage lighting, walkway and other outdoor area lighting, refrigerated case lighting, modular lighting, and task lighting. Natural light is the best and most important light to incorporate in the classroom. Natural sunlight provides physical and physiological benefits to both students and teachers alike. The truth is that LED lights are directional, which means that they are excellent for use as reading lights. The electric light bulb has been called the most important invention since man-made fire. The light bulb helped to establish social order after sundown, extended the workday well into the night, and allowed us to navigate and travel safely in the dark. Without the light bulb, there would be no nightlife. As solid-state light sources, LEDs have very long lifetimes and are generally very vigorous. The main reason that LEDs use so much less electricity than incandescent lighting is that they don't produce light in the same way. This process doesn't use a filament and creates little heat, instead relying on a property of semiconductors to generate light. LED lights are up to 80% more efficient than traditional lighting such as fluorescent and incandescent lights. 95% of the energy in LEDs is converted into light and only 5% is wasted as heat. Less energy use reduces the demand from power plants and decreases greenhouse gas emissions. LED tubes are much more efficient on your energy costs as well as your carbon footprint on the environment. There's nothing more sustainable than Energy.



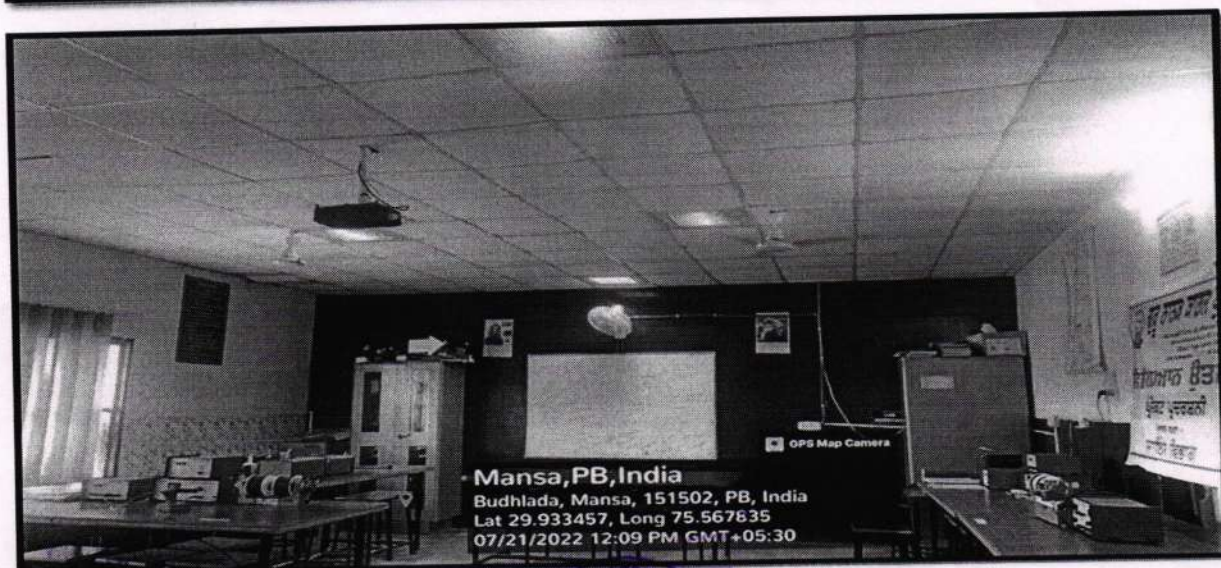
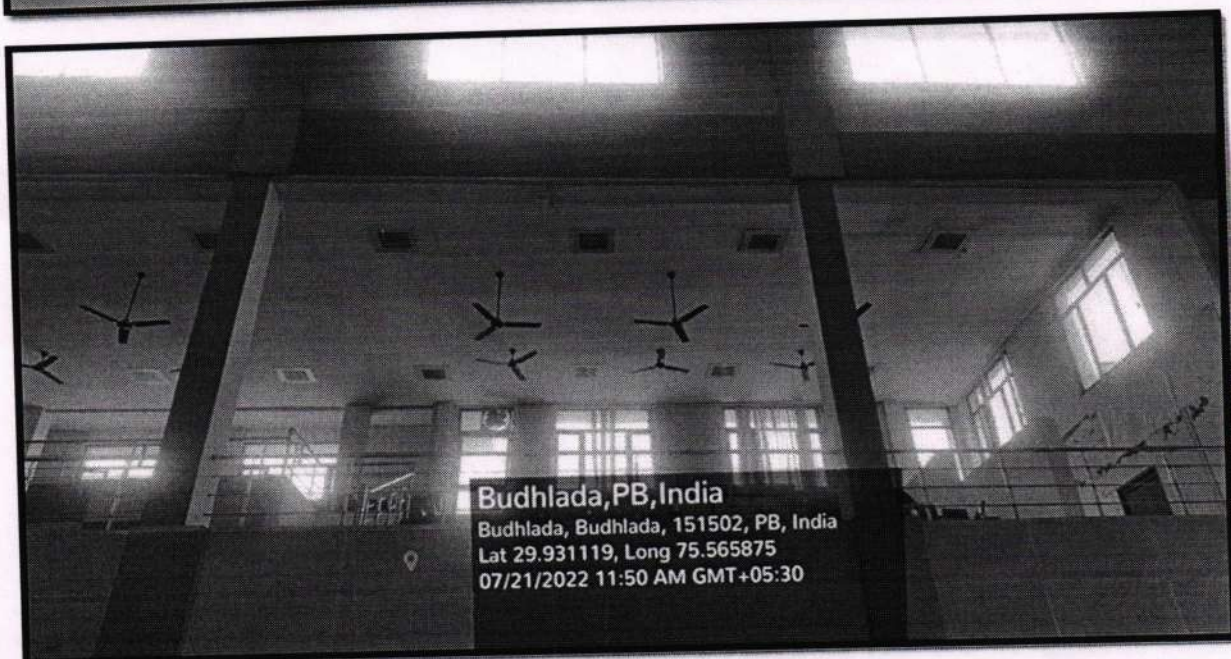
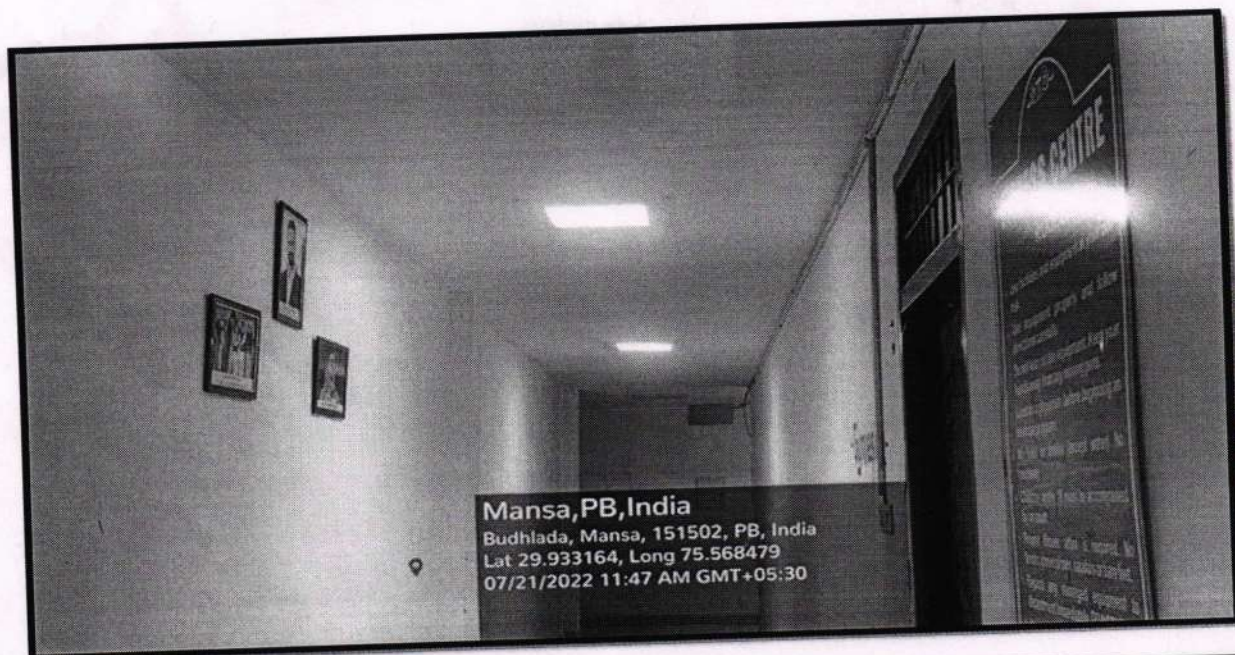
  
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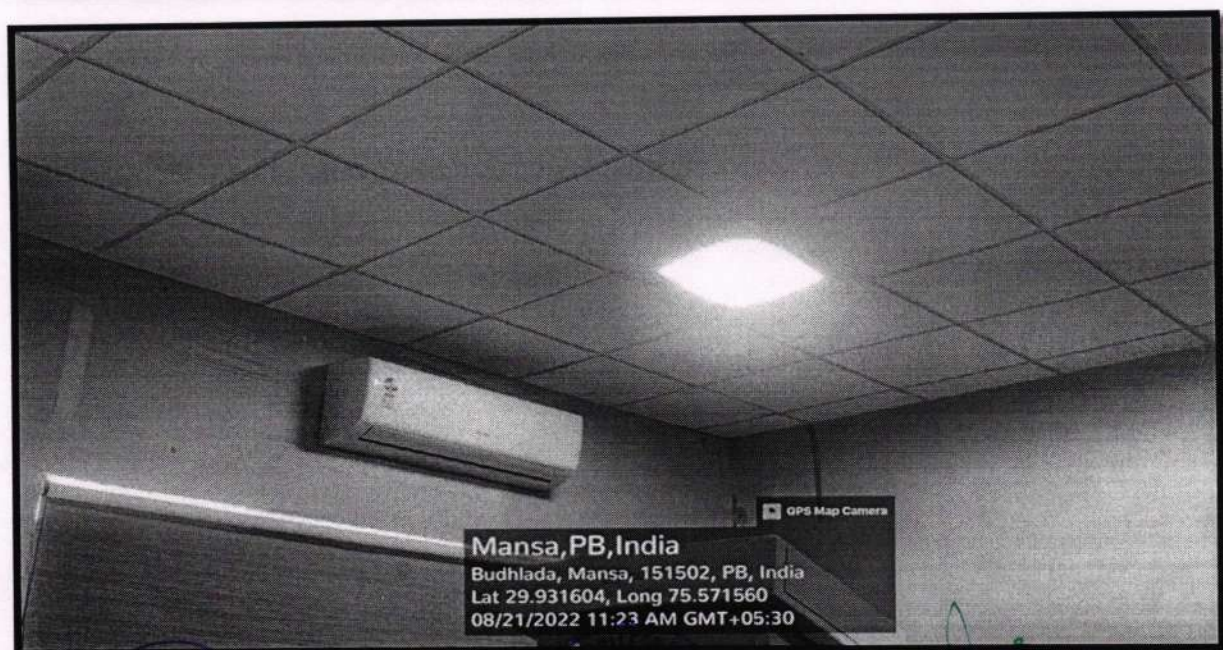
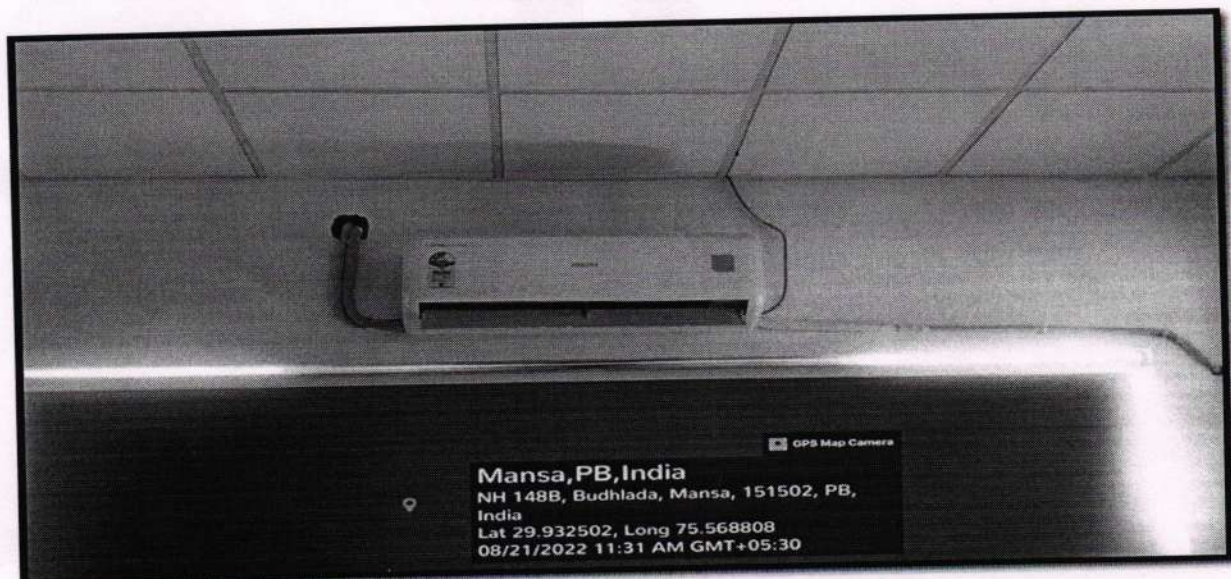




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## Power Efficient Air Conditioners



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## **Reports on facilities for the management of Degradable and Bio-degradable Waste in the Institution**

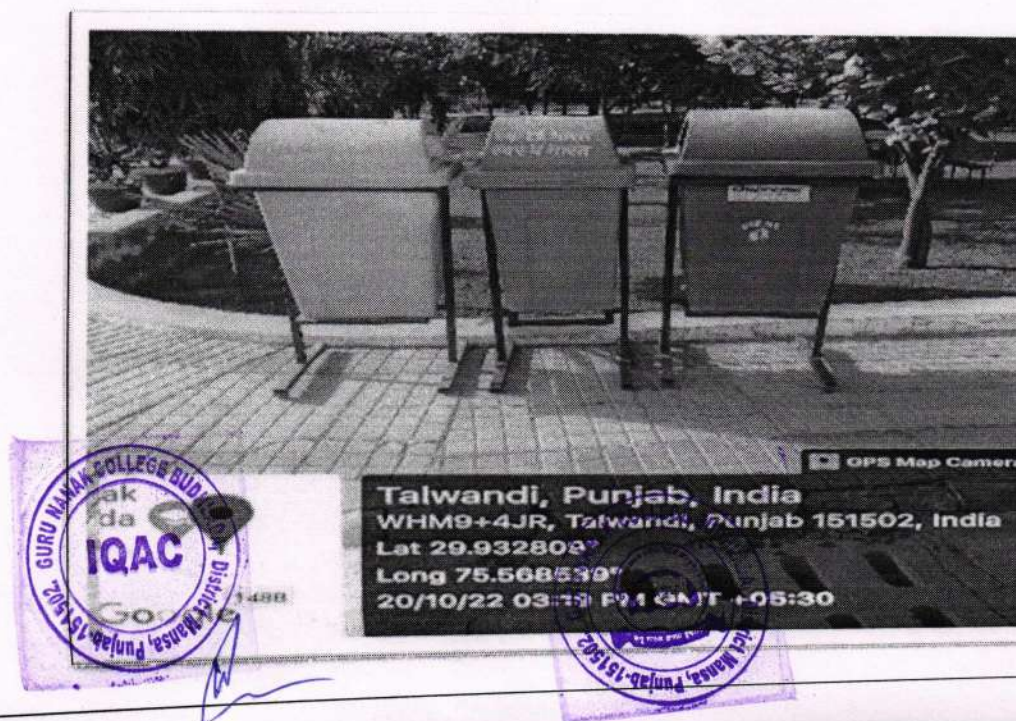
### **REPORT ON SOLID WASTE MANAGEMENT**

Guru Nanak College, Budhlada is assuring minimum waste production in campus for that college makes many efforts on many fronts like plastic banned, collection and segregation degradable and non-degradable waste, liquid waste and e-wastage. The college has formed Waste Management and Campus Cleanliness Committee that is regularly watching and planning to control the production of solid, liquid and other form of waste. In the institution, each and every department as well as administrative office use, to dump small waste, bins located at various places. In college surroundings different colored bins are arranged for waste collection and then waste is segregated in biodegradable and non-degradable. College has strongly banned single use of plastic.

Mostly wastage produced in college is in the form of biodegradable like paper wastage and biomass residue. Paper waste is sold that is used in recycling the materials, and biomass residue is collected in a pit to produce compost by the use of bio-decomposer that is managed by Department of Agriculture and Waste Management Campus Cleanliness Committee.

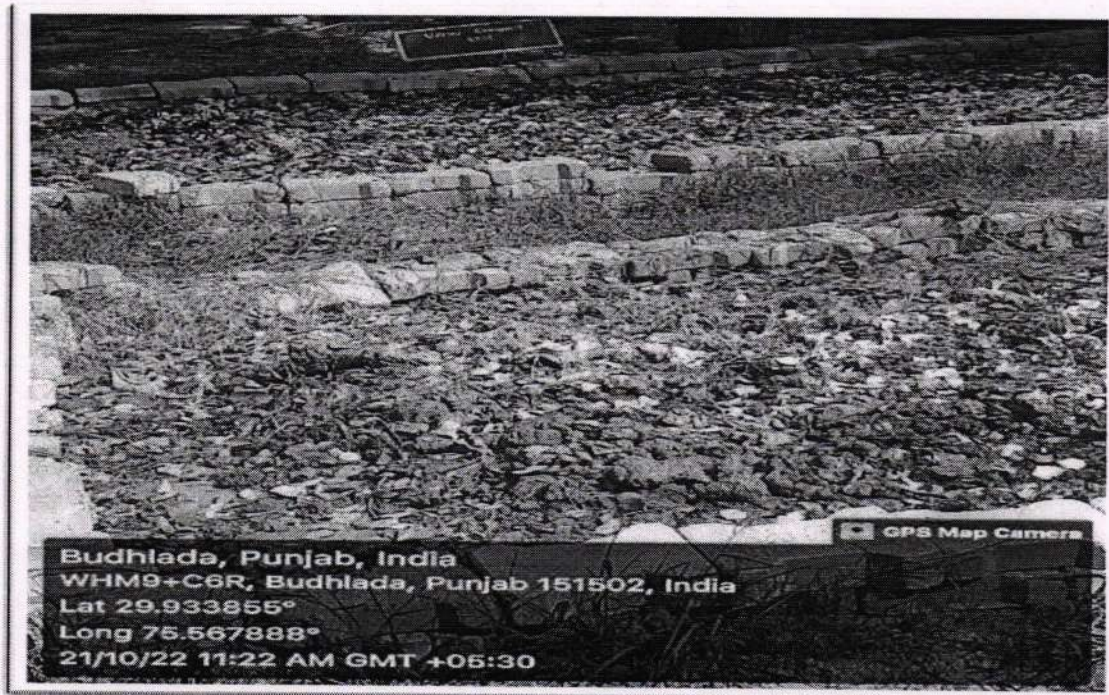
Our instruction is continuously making effort towards minimum waste production and maximum management to solve the problem of waste that causes many types of health hazardous pollution in environment. The various departments continuously organize many awareness activities for waste management. Institution approaches low cost technique to ensure waste management, like composting and vermin-composting.

#### **Dustbins for Collection of Waste**

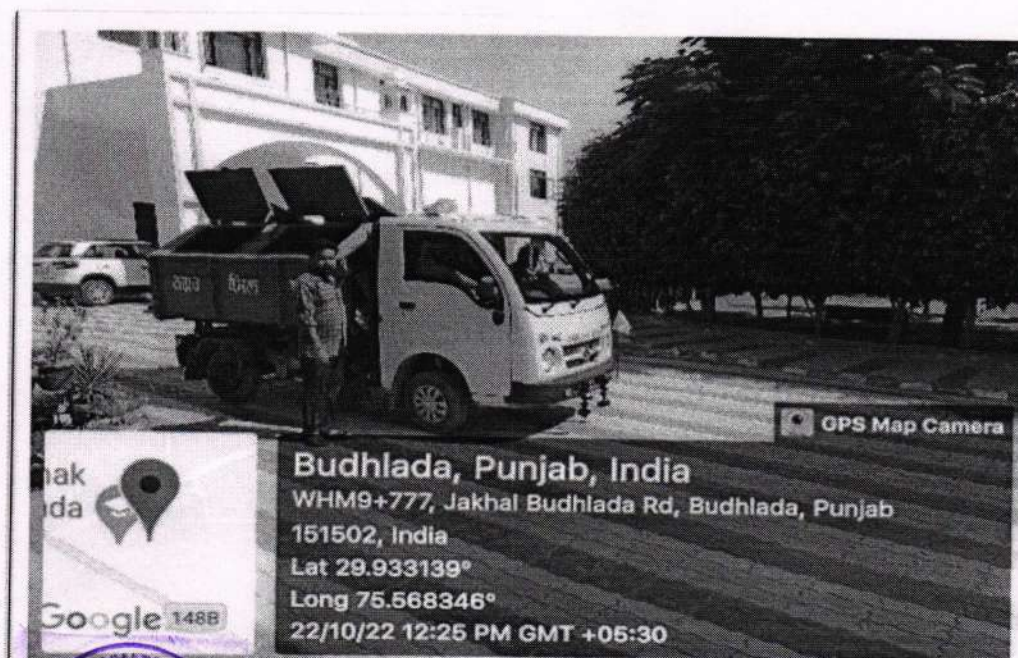




## Vermin Compost Pit

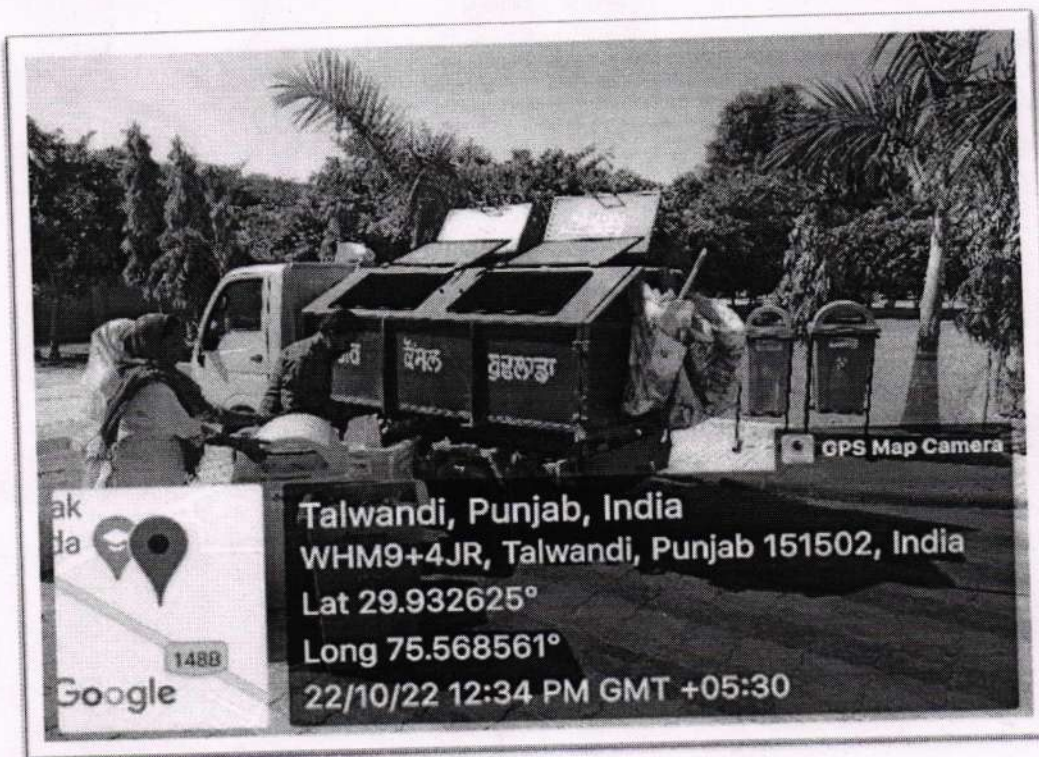


Waste Segregated and disposed off by Municipal Corporation



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### Report on Liquid Waste Management

Liquid waste that is generated in the institute falls into three following categories.

- i. Septic tank effluents from various sanitary blocks, water used for washing and cleaning of utensils etc. from canteen
- ii. Waste water from laboratories using chemicals
- iii. Waste water from RO plant

Guru Nanak College Budhlada has designed methods for the management of waste generated in the campus using the basic waste management strategy of 3R's: Reduce, Reuse and Recycle i.e., Reduce the amount of waste generated, Reuse everything to its maximum after proper segregation and cleaning and keeping things which can be Recycled aside and handed over to appropriate agencies. No classified hazardous waste is generated in the campus. The environmental policy of the institute is to achieve zero discharge and complete utilization of waste with well-designed strategies to make campus clean, hygienic and healthy.

As the college is located in semi-urban un-sewered area, waste water generated from the sanitary facilities is disposed off into septic tanks located at different places in the campus. Waste water coming from Reverse Osmosis (RO) and air conditioning systems is used for gardening, watering trees and in washroom areas etc. This practice has reduced the use of fresh water in college campus.



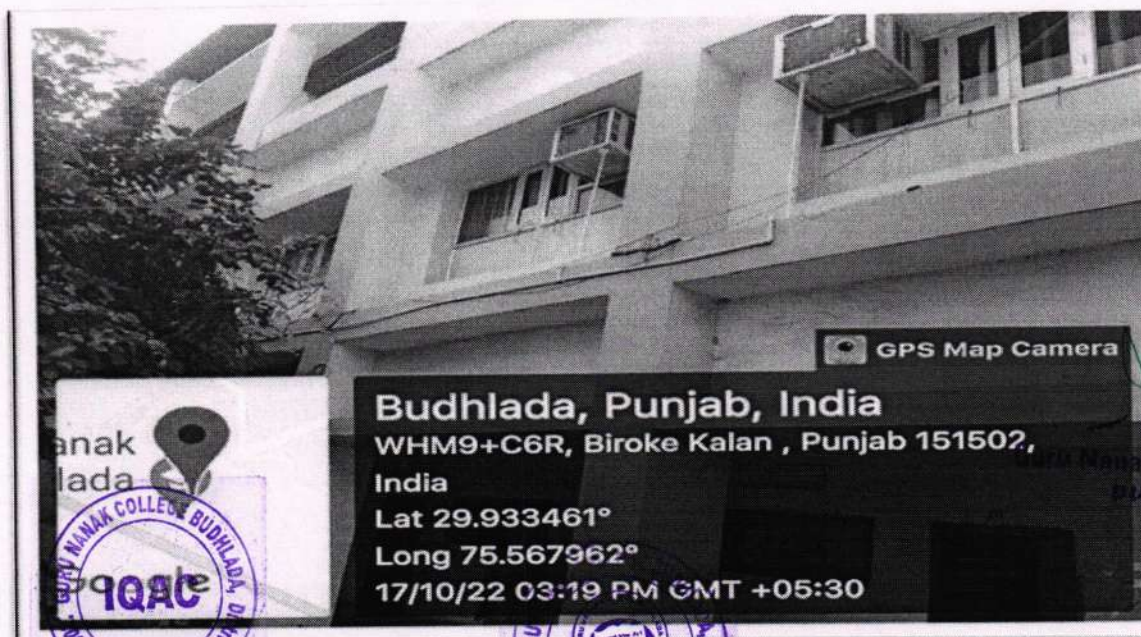
  
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Waste water produced from the laboratories is very small in quantity. The waste water coming from laboratories first it is sent to separating storage tanks and tested for its characteristics like acidic nature, smell, turbidity, total dissolved solid, Ph and Colour etc on a timely basis. Excess acidity is controlled by addition of alkaline medium to make it neutral nature. The laboratory waste water does not contain hazardous chemicals and periodical monitoring is done by the laboratory staff.

Water conservation has become the need of the day. Rainwater harvesting is a way to capture the rainwater at the time of downpour, store that water above the ground or charge the underground water and use it later. The Institution has significant provisions for rainwater harvesting. The rainwater is collected and used for watering the plants.

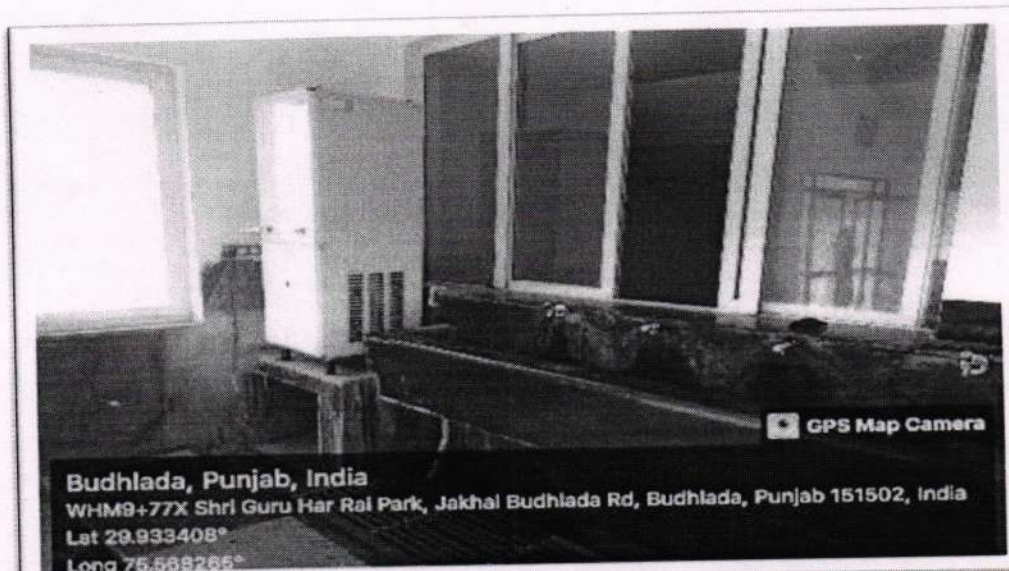
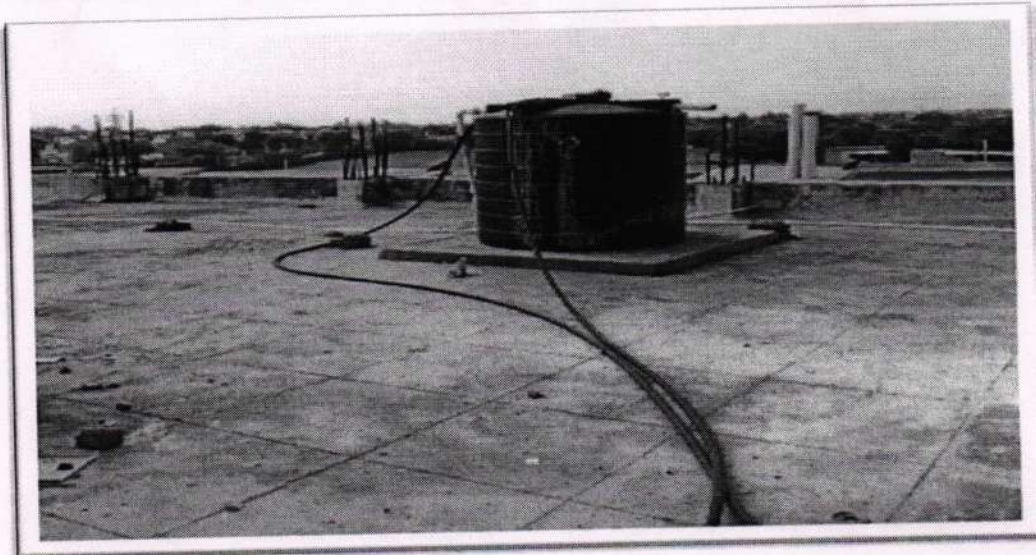
#### Periodic Monitoring of Laboratory Effluents



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Waste Water collected from RO system is used for irrigation of Green Belt



Waste Water Sewerage Maintenance in College



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WHM9+C6R, Budhlada, Punjab 151502, India  
Lat 29.933855°  
Long 76.567888°  
27/10/22 11:25 AM GMT +05:30


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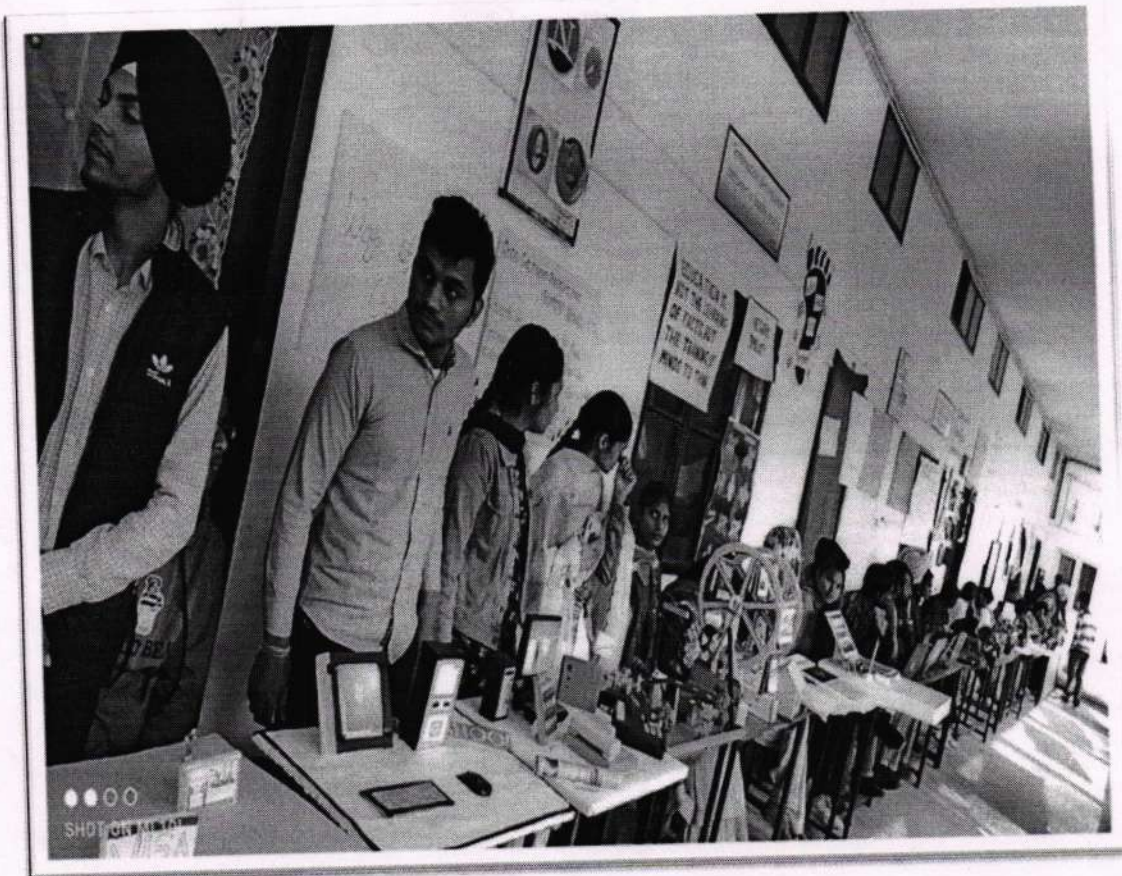
## E-WASTE MANAGEMENT

GNC works towards generating minimal e-waste by reusing it. Regular maintenance of electronic equipment and computers ensures longer life. E-waste bin is provided for the collection of the e-waste generated in college campus, which is given to the authorized agency for recycling and disposal. All the miscellaneous e-waste such as CDs, batteries, fluorescent bulbs, PCBs and electronic items are collected from every department and office and delivered for safe disposal. It is also used in practical purposes for Department of Computer Science. Useful parts of electronic gadgets like hard disk, CPU, monitors, mobile phone charger, CD drive etc. have been removed from the old computers for reuse. The electronic waste generated in the Institution is collected and kept in separate store room. After suitable time, the same is handed over to the authorized hazardous waste collection agency. Department of Computer Science regularly conducts workshops to aware and guide students and stakeholders for E waste management.



  
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## Report on Water Conservation

Guru Nanak College, Budhlada is located in Malwa region of Punjab that receives very less rainfall i.e. 429 mm per annum. In this region population density is high and have good agricultural practices throughout the year due to that consumption of water are very high. Our institution has taken incitation to conserve water for the balance of demand and supply and implemented some practices of water conservation like roof water collection and bore well construction to recharge a ground by the use of excess water during rainfall water to aware students and local community.

### Direct and Indirect Water Harvesting Facility

S. No.	Area specific	Area: m <sup>2</sup>	Grass area m <sup>2</sup>
1	Green belt Zone like lawn/plantation area	6347.25	6347.25
2	Open land (Play Ground)	8463	8463
3	Road/Paved area	2115.75	2115.75
4	Roof area of building	25389	25389
Total area		42315	



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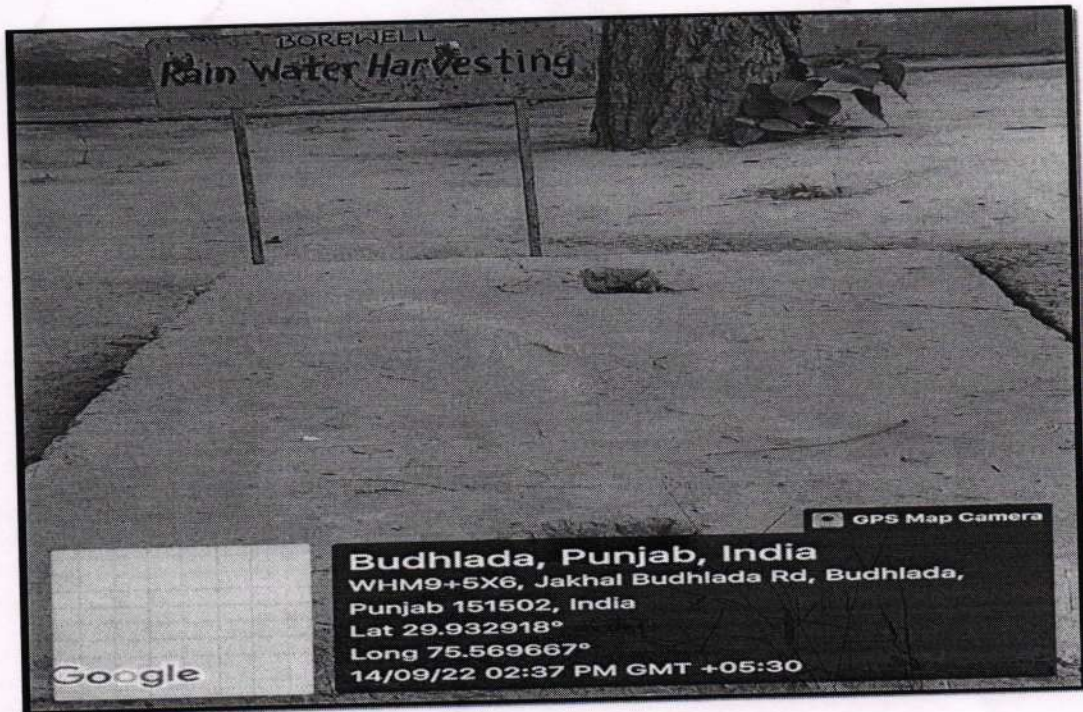
College administration is very precisely managing wastage of water on different levels like construction of low land area and underground drainage channel that is connected with every building for roof water harvesting and is finally discharged into ground water through bore well. Direct water conservation of roof area of 25389 m<sup>2</sup> is maintained to harvest water and is discharged into ground through bore well. Open area of 8463 m<sup>2</sup> is used to observe rainwater for the recharge of ground water. Green belt area of 6347.25 m<sup>2</sup> is used to conserve excess rainwater and other forms of surplus water. Cemented bricks with micro space in between adjoined also allow conserving excess water during rain. Recycling of water is done by collection of waste water from RO and is used in washroom/greenbelt for irrigation purpose. More than 30 water tanks are fitted with total storage of volume of water is 75000 lit that are circulated for drinking and other purpose. Water distribution is maintained properly through storage tank and pipe lines that are regularly maintained by college plumber. In the college premises high canopy tree like Neem, Pepal and Sesames are planted that cover ground and conserve soil moisture. College is strongly committed to do practices that assure water sustainability for future. Innovative practices like use of mulching/crop residue to conserve moisture in agriculture field are continuously demonstrated at Department of Agriculture. To reduce water loss from tap, instant off water saver type tap are installed on every drinking point. Institution has well planned infrastructure, and well developed two low area parks for the collection of water in rainy session and these are interconnected with harvesting channel. GI and polymer pipe network is used to circulate water in college premises to avoid leakage and wastage of water. The college has adopted micro irrigation system. Permanent Plumber staff is available. College has one bore well that is well designed in order to ensure safe deposal collected water in the form of runoff from open area like lawn/field/road as well as roof. The college organizes awareness programs time to time on water conservation practices. College has facility of bore well that is well designed to ensure safe disposal of water collected from roof tops and low land area during the rainy season.



  
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## Bore well



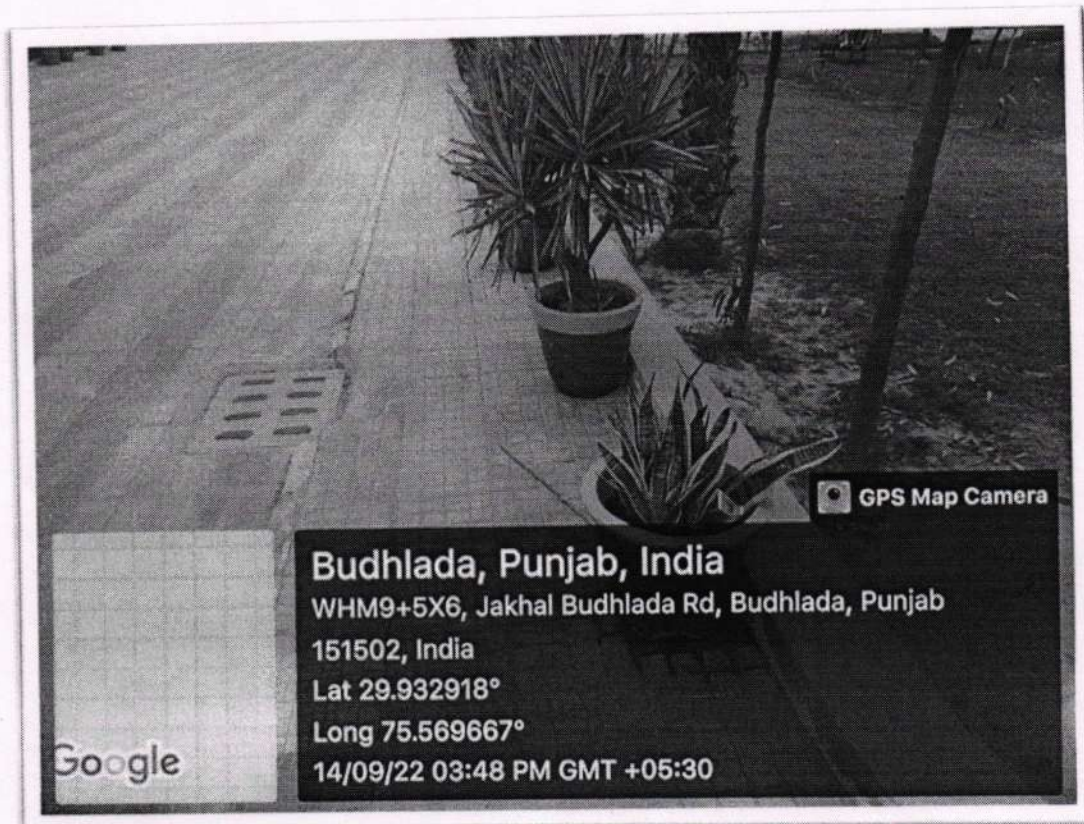
## Rainwater Harvesting

The institution has well constructed low land area/lawns and underground drainage channel that is connected with every building for harvesting of rain water through bore well.



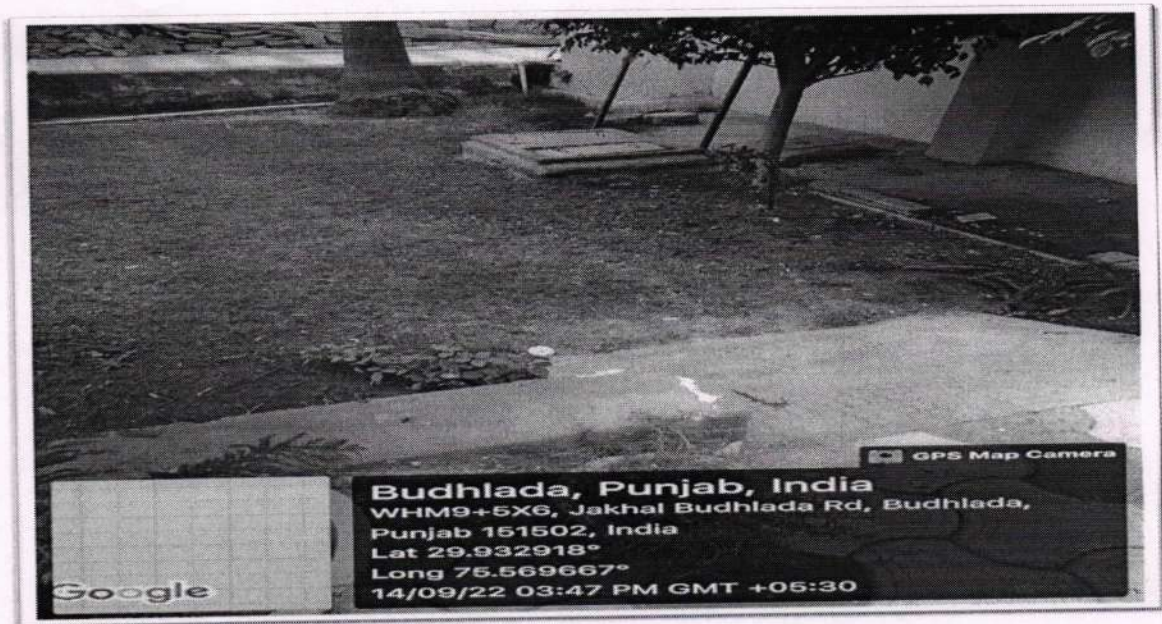
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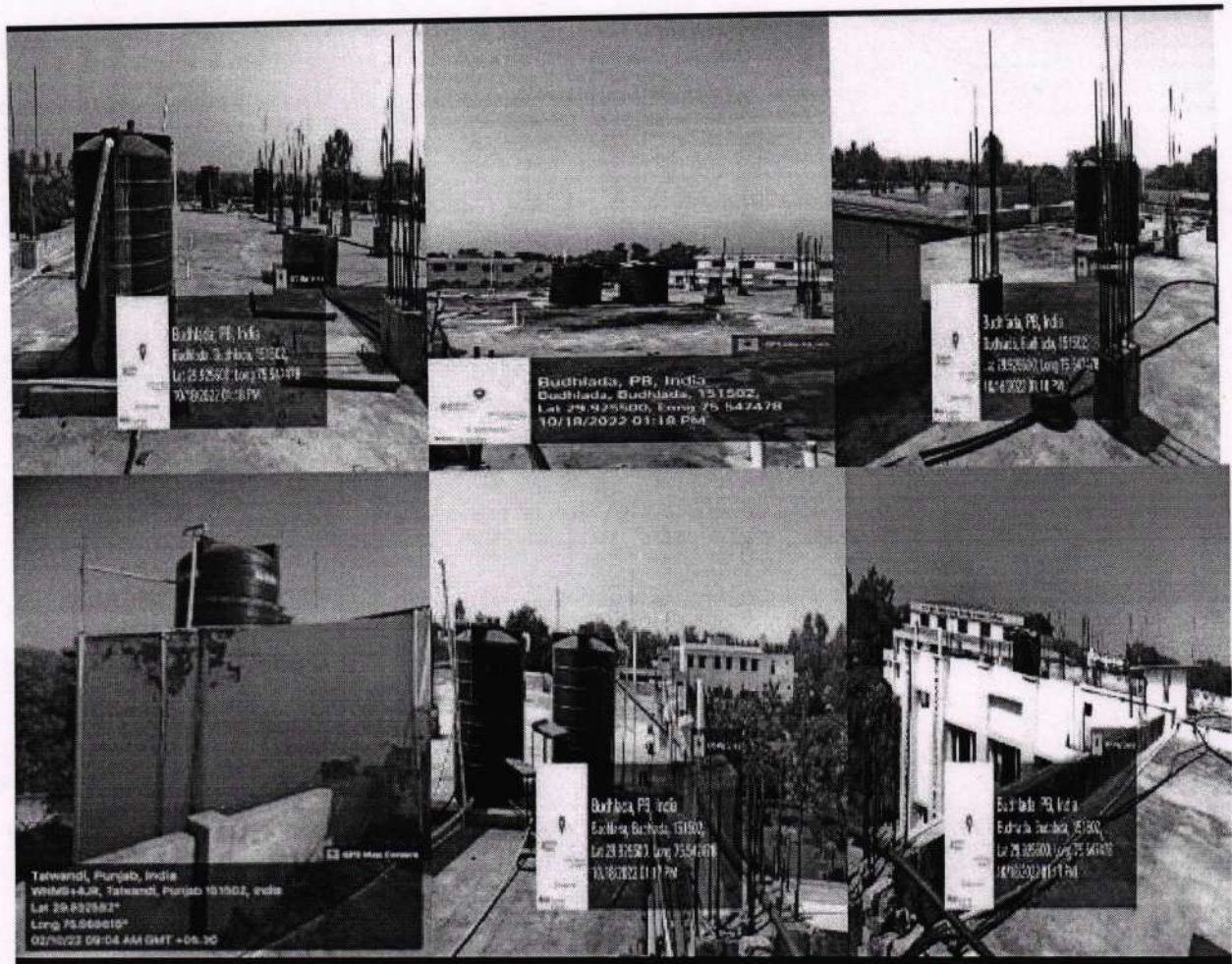


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### Water Collection Tanks at Various Places in Campus



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