"Analysis on Waste Water Treatment Plant for Samarth Engineering Building and Samarth Hostel"

Bhalerao Avinash Kalidas ,Chaskar Pratiksha Ashok ,Jadhav Shrutika Balshiram ,Shinde Ashwini Narayan , prof.Khating Ashwini Aniruddha ,Prof.Dighe Bhushan Nanasaheb.

Bhalerao Avinash Kalidas,Civil Engineering,Samarth college of Engineering & Management,Belhe.

Chaskar Pratiksha Ashok, Civil Engineering,Samarth college of Engineering & Management,Belhe.

Jadhav Shrutika Balshiram, Civil Engineering,Samarth college of Engineering & Management,Belhe.

Shinde Ashwini Narayan, Civil Engineering,Samarth college of Engineering & Management,Belhe.

Prof. Khating Ashwini Aniruddha, Civil Engineering,Samarth college of Engineering &Management,Belhe.

Prof. Dighe Bhushan Nanasaheb, Civil Engineering,Samarth college of Engineering &Management,Belhe

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Abstract- The waste water generated in bathrooms and sinks primarily consists of water used for personal hygiene, cleaning, and various household activities. This waste water typically contains a mixture of soap, shampoos, oils, dirt, and organic materials. Waste water from bathroom sinks and basins is commonly known as 'gray water,' which is distinct from 'black water' due to its generally low levels of human waste. Proper treatment and management of bathroom waste water are essential for reducing environmental pollution, conserving water resources, and promoting sustainable water practices. In areas experiencing water shortages, the recycling or reuse of gray water for non-potable purposes, such as irrigation or toilet flushing, is a common strategy. It is crucial to ensure that waste water treatment systems are capable of handling the varying quality of water and adhere to environmental regulations for reuse. The waste water from bathrooms and sinks, mainly categorized as gray water, plays a significant role in residential and urban water management. Effective treatment and management are vital to prevent environmental harm and enable the safe reuse of water. By enhancing treatment technologies and implementing sustainable water practices, bathroom waste water can be effectively managed, thereby contributing to water conservation efforts and environmental protection.

***Key Words*:** Waste water, Grey water, Waste water treatment plant

1.INTRODUCTION :

The management of waste water in bathroom basins requires a comprehensive understanding of its characteristics, origins, and treatment methods. Waste water from bathroom basins is the water that is expelled after various activities, including handwashing, face washing, shaving, or brushing teeth. This water often contains residues from soap, dirt, hair, cleaning agents, and occasionally small amounts of oil or other pollutants. The sources of waste water in bathroom and basins,Waste water treatment is a crucial process that eliminates

contaminants from this waste water, rendering it safe for either reuse or discharge into natural water bodies.

2. OBJECTIVE:

1.To dispose off the waste in such away that there is no harm to mankind.
2.To reuse/recycle/recover waste.
3.To minimize the health hazards by safe handling
4.By landfill or by composting.

3.LITERATURE REVIEW:

3.1.Afreen Nishat & Mohammad Yusuf Team(2023)(08) These contaminants are harmful because they are non-biodegradable and toxic, including detergents and personal care products. They can disrupt living beings' functions and cause severe damage. Therefore, waste water treatment is necessary to remove these contaminants and protect the environment. The growing population exacerbates the issue by causing water scarcity and decreasing groundwater levels, making

waste water treatment crucial in meeting the water demand of the population. The review critically examines various waste water treatment technologies, including physical, chemical, and biological methods. It discusses the limitationsof each approach and highlights contemporary trends in waste water treatment.

3.2 Dushyanth V Babu R, Srikantha H :- (2018) (02-06) Waste water treatment is defined as process that is used to remove from the sewage or waste water rand change into effluents which can return to water cycles with the acceptable effect on environment or reuse for the various purpose (known as water reclamation). The amounts of the waste i.e. normally released into atmosphere is decrease as results of thw waste water treatments, thereby enhance environment health. As result, governments eliminate health risk associate with the air emissions, as well as the water depletion cause by the pollution.

4.METHODOLOGY:

1. Collection of waste water from the samarth engineering building Treated waste water is utilized in the Samarth college campus for gardening and flushing purposes. The process is outlined in the flow chart below:

and boys' hostel.

2.Test on collected waste water.

3. Different treatment methods for the waste water.

4. Test on treated water.

5. Results.

Fig.4.1.Treatment unit

Fig.4.2. WTP Model

1) Pebbles - In waste water treatment plants, pebbles act as a reliable filtration medium, successfully trapping larger particles and sediments.

2) Sand - Sand improves water quality by removing larger particles and decreasing turbidity.

3) Coal - Coal is used to remove color and odor, effectively reducing undesirable smells.

4) Cotton - Cotton is used to absorb oils and fats from waste water, while also filtering out fine impurities and reducing bacterial counts.

4.2 Test on Collected Waste Water.

a) pH test

The waste water from bathing tends to have a pH between 6.71-11.50. The pH levels. particulates, high levels of alkalinity are common problems in waste water

b) Hardness

the hardness of waste water can fluctuate based on its sources of the typical hardness of untreated waste water is approximately 4856 mgl whereas the average hardness following sedimentation is about 3784 mgl in contrast the hardness of waste water from bathrooms and basin is the lowest recorded at 119mg/l.

Fig.4.3 Hardness test

c) Turbidity

In the context of waste water, turbidity denotes the clouded appearance of the water, which results from suspended solids, organic substances, microorganisms, and various particulate materials. Turbidity is quantified in Nephelometric Turbidity Units (NTU).

We are performed tests on this model using one liter of waste water.

Table -1 Untreated waste water:-

Test	Result
pH	8.5
Hardness	65mg/l
Turbidity	10 NTV

- Table -2 Treated waste water:-

Test	Result
pH	7.5
Hardness	65mg/l
Turbidity	200NTV

5.CONCLUSION:

1. The process of treating waste water is crucial for safeguarding public health, protecting the environment, and promoting sustainable water management practices.

2. Decrease in Pollutants: Elimination of suspended solids, organic materials, pathogens, and toxic substances.

3. Environmental Safeguarding: Treated waste water reduces pollution and its effects on aquatic ecosystems, thereby supporting biodiversity and maintaining water quality.

4. Water Reclamation: Enhanced treatment processes enable the reuse of waste water for purposes such as irrigation and toilet flushing.

6.FUTURE SCOPE:

We recommend this plant for Samarth Engineering College and Samarth Hostel. However, it has the potential for future expansion to encompass the entire campus, including other institutes and dining facilities, provided that suitable locations and designs are established.

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