

## Sewage Treatment Plant For Jalna City

Archana Vasave, Roshani Jadhav, Pushpa Jagdhane, Nikita Adhe, Samruddhi

Waidenshkar\*, Prof. P.T. Avhad\*\*

\*(Civil engineering, BAMU/MSS's CET Jalna  
vasavearchana5@gmail.com)

\*\* (Civil Engineering, BAMU/MSS's CET Jalna  
Email:pravinavhad85@gmail.com)

\*\*\*\*\*

### Abstract:

A Sewage remedy is pretty essential to acquire the home and business waste and gets rid of the material which pose damage for public. Its objectives to produce an environmentally- secure fluid waste flow( or treated effluent) and a strong waste (or dealt with sludge) appropriate for disposal or reuse ( normally a farm fertilizer). A look at on domestic wastewater characterization has been done observed by way of the layout of sewage treatment plant. The prevalling study includes the analysis of pH value, Total solids, Total suspended solids, Oil & greases, Chloride, BOD, & many others. The sampling of the home waste have been carried out in unique instances of the day to have an average records of the measured parameters, depending upon the values of those parameters, calculations are done for designing the exceptional units of a Sewage Treatment Plant & a Preliminary layout is prepared for the same.

**Keywords** —domestic wastewater, sewage treatment plant, water quality.

\*\*\*\*\*

### INTRODUCTION

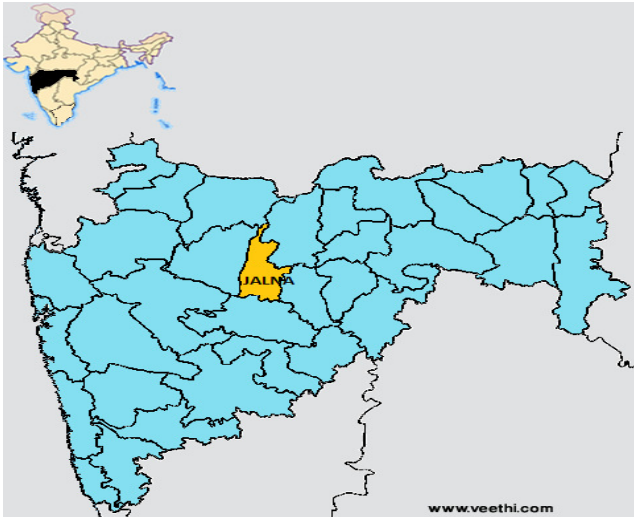
Pollution in its broadest experience includes all modification that curtail natural utility and exert deleterious impact on existence. The crisis caused by the swiftly developing population and industrialization with the resultant degradation of the environmental causes a grave threat to the pleasant of lifestyles. Degradation of water fine is the damaging alteration of the physical, chemical and organic houses of water that stops home, business, industrial, agricultural, recreational and other beneficial makes use of water, Sewage and sewage effluents are the main resources of water pollution. Sewage is especially composed of human fecal material, home wastes consisting of wash-water and business wastes. The developing environmental pollution wishes for decontaminating wastewater result in the look at of characterization of wastewater, especially home sewage. Sewage treatment plant is a facility

designed to receive the waste from domestic.business& commercial assets and to cast off materials that damage water first- rate and compromise public fitness & protection when discharged into water receiving structures. It consists of physical, chemical & organic procedure to eliminate various contaminants relying on its material, using superior generation, it is now viable to re-use sewage effluent for consuming water.

### STUDY AREA

Jalna district is approximately situated at the center part of Maharashtra state of Republic of India and in northern direction of Marathwada region. Specifically district lies between 19o1 north to 21o3 North Latitudes and 75o4 East to 76o4 East Longitude.Jalna city's Total population is 4,25,000 in 2022-2023.All domestic waste water are comes in the some sewers in dump in

the Kundalika & Sina River. It is harmful for all aquatic life and also for the human being. Because the waste water are highly polluted. And it is very harmful for environment also.



**FIG 2.1. STUDY AREA OF JALNA**

### **OBJECTIVES OF STUDY**

The objective of municipal and commercial wastewater remedy is to extract pollution, put off toxicants, neutralize coarse particles, kill pathogens in order that nice of discharged water is improved to reach the permissible stage of water to be discharged into water our bodies or for agricultural land. Remedy of water consequently ambitions at reduction of BOD, COD, Overall solids, nitrogen content material etc. of receiving water our bodies and prevention of biomagnification of poisonous materials in the natural surroundings.

**The objectives of this undertaking may be summarized as-**

- Bodily, chemical and organic characterization of wastewater.
- Composition with the prescribed general.
- Sewage water is recycled and used in agricultural land.
- To protect the environment social monetary and public health from the pollutants.

### **LITERATURE REVIEW**

**Agyemang et. al. (1)** - Water quality assessment of a wastewater treatment plant in a

Ghanaian Beverage Industry. The research is aimed at assessing the performance of the waste water treatment plant in a beverage industry, sixteen water parameters was analyzed by collecting effluent and influent waste water sample of the treatment plant for a year and there average values were compared with EPA guidelines for beverage industries discharging into water bodies. Most of the effluents wastewater pollutants content met the set guidelines, while other were unacceptable.

**Clifford et. al. (2)** - Research development in the on-site treatment and waste water. The removal of nutrients and pathogens from onsite waste water is a challenge. While technologies exist to achieve this, combining suitable technologies with the necessity for low running and maintenances cost can prove a challenge the use of hybrid system with minimum mechanical part and electrical requirements could offer a solution. Where nutrient removal and disinfection are required, suitable monitoring mechanisms should be put in place for small communities the use of robust sensor could result in increases plant performance.

**Ramya et. al. (7)** - Design of Sewage Treatment Plant and Characterization of Sewage. Detailed study of domestic waste water characterization has been perform followed by the design of sewage treatment. The present study involves the analysis of pH value, total solids, total suspended solids, hardness, acidity, chlorides, BOD, DO and heavy metal such as iron, copper, zinc, nickel, chromium, lead, calcium, potassium, aluminum. A sewage treatment plant is quite necessary to receive the domestic and commercial waste and remove the material which cause harm for general public. Its objective is to produce an environmentally safe fluid waste stream and solid waste suitable for disposal or reuse.

**Tiwari et. al. (9)** - A study on the Waste Water Treatment Technology for Steel Industry, Recycle and Reuse. Conducted study on waste water treatment technology for steel industry recycle and reuse. The development of

innovative technologies for treatment of waste water from steel industries is a matter of alarming concern for us. Although many research papers have been reported on waste water pollution control studies, but a very few research works is carried out for treatment of waste water pf steel industries, especially in references to development of design of industrial effluent treatment plant ETP small system. Another beneficial aspect of this research work will recycle, reuse of water from steel industry.

**METHODOLOGY**

- **MEASUREMENT OF pH VALUE:**

Sample	pH(Raw)
1	7.1
2	7.3
3	7.1
4	7.0
Result-	7.125

The resultant raw sewage is-7.125

- **Determination of chloride content-**

Sample	RAW(mg/l)
1	114
2	96
3	93
4	89
Result-	98

Chloride content of raw sewage is-98mg/l

- **Determination of Nitrogen content-**

Sample	RAW(mg/l)
1	60
2	20
3	45
4	20
Result-	36.25

Determination of Nitrogen content-36.25mg/l

- **Determination of Presence of fats oils & Greases**

Sample	RAW(mg/l)
1	24.8
2	8.4
3	46.8
4	7.6
Result-	21.9

The resultant oil & greases in the sample-21.9mg/l

- **Measurement of BOD**

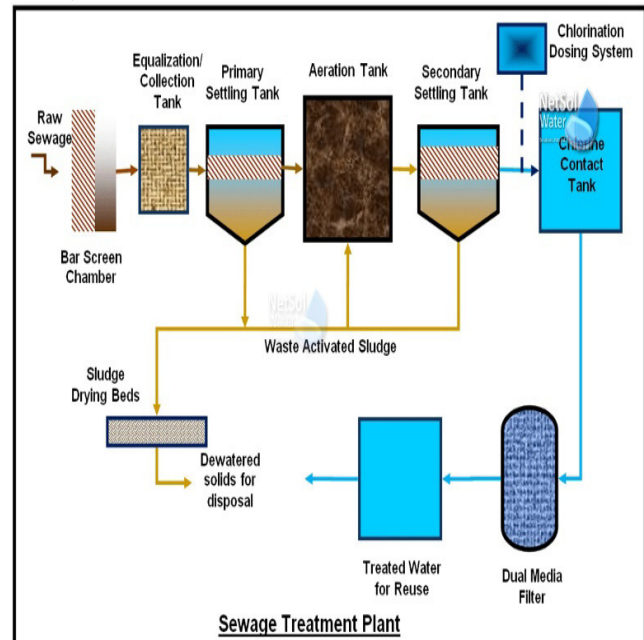
Sample	RAW(mg/l)
1	144
2	226
3	186
4	200
Result-	189

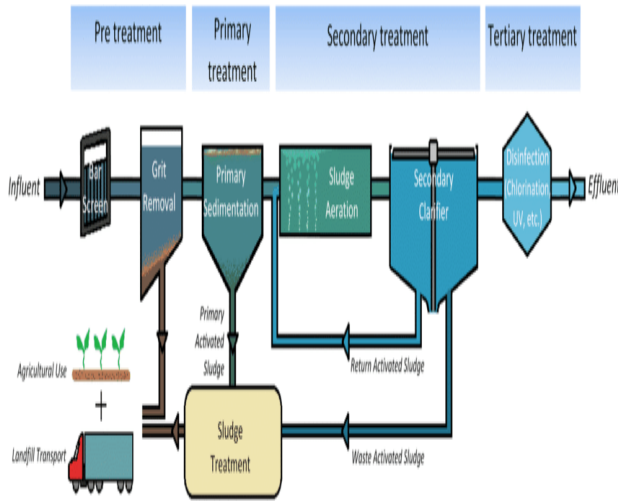
The resultant BOD sample is-189mg/l

**PROCESS INVOLVED IN SEWAGE TREATMENT PLANT**

Sewage can be treated in different ways, treatment process are often classified as-

- Preliminary Treatment
- Primary Treatment
- Secondary ( or Biological) Treatment
- Final Treatment





## RESULTS AND DISCUSSIONS

This deals with the Analysis and Design of sewage treatment plant for the population of Jalna city. The Jalna district is located at 19o1 north to 21o3 North Latitudes and 75o4 East to 76o4 East Longitude. The location of sewage treatment plant should be nearer to the point where sewage is disposed finally.

Sewage treatment by biological process generates liquid effluent and sludge. The liquid effluent can be returned to the environment, whereas the final sludge can be reused. Sewage sludge has a rich presence of organic matter, macronutrients, micronutrients, trace metals, organic micropollutants, and microorganisms.

## CONCLUSIONS

Within the present day control of wastewater by way of maximum cities, all of the ought to be involved in the water treatment process aren't taken into consideration, as it is obtrusive from the above literature evaluation. As a end result, this consequences into the mixing if exclusive wastewater in a place to cut charges or utilize the few available wastewater remedy flow.

- So, that its all conclusion is that the sewage treatment plant is very necessary in Jalna District.

- This treated water can be used for construction work, our main aim is that waste water treated and then we can use in our CIVIL's field in Construction work.
- Also this water can be use for irrigation purpose.

## ACKNOWLEDGMENT

We sincerely thanks Dr. S. K. Biradar Sir Principal, MSS'S College of Engineering & Technology, Jalna for their continuous encouragement & active interest in our progress that they gave throughout the work.

We express our sincere thanks to Prof. K.T. Kharjule, Head of the Civil Engineering Department for her support & guidance for doing the project.

We express our gratitude to our guide Prof. P. T. Avhad, Assistant professor of Civil Engineering Department for his guidance & care taken by her in helping us to complete the project work successfully. Throughout this project work, his useful suggestions & constant encouragement has gone a long way in helping us in completing in project.

Finally we would like to acknowledge with gratitude for the encouragement & support given by my friends & parents.

## REFERENCES

- 1) Manual on water supply and treatment, C.H.E.E.O., Ministry of Urban Development; Government of India, New Delhi.
- 2) Manual on Sewerage and Sewage Treatment, C..H.E.E.O., Ministry of Urban Development; Government of India, New Delhi.
- 3) Jayshree Dhote, Sangita Ingole (2012); Review on Wastewater Treatment Technologies Published in International Journal of Engineering Research and Technology. pp 2-5.
- 4) Sci Tech Encyclopedia (2007) <http://www.answer.com/topic/sewagetreatment>
- 5) A.K. Jain; Environmental Engineering, Khanna Publishing House.

- 6) S.K. Garge; Water supply and Sewage Disposal Engineering Vol 1&2, Khanna Publications.
- 7) Ms. S. Ramya, Aswani Krishna, Athulya babu, Harsha K Rajan, 'Design of Sewage Treatment Plant and characterization of Sewage'
- 8) Shrirang Vrushali and Chatterjee Kaustav, 'Sewage Treatment and reuse - A step towards water conservation'.
- 9) H. A. Sayeswara, Mahesh Anand Goudara and R. Manjunath, 'Water quality evaluation and phytoplankton diversity of Hosahalli pond, Shivamogga, Karnataka, India'.
- 10) Brownell, R.P. Chemical-biological treatment of surfactant wastewater. Proceedings of the 30th Industrial Waste Conference, Purdue University, Lafayette, IN, 1975, Vol. 30, 1085.
- 11) Sewage disposal and air pollution Engineering - S. K. Garg (Khanna publication).
- 12) Waste water Engineering - Dr. B.C. Punmia (Laxmi publication).
- 13) Waste water Treatment and Disposal - Dr. Shyam R. Asolekar 2005.
- 14) Industrial Waste water Treatment - A.D. Patwardhan.
- 15) Central pollution control board - The treatment of domestic waste water in situation referred to in section 27B of the environmental protection act (86/2000), as stated in act 196/2011.