



## A REPORT ON “VISIT TO WASTE WATER TREATMENT PLANT”, SINGANPORE, SURAT



Civil Engineering Department of SNPIT&RC had organized a visit for the students of 6<sup>th</sup> Semester, under the guidance of Prof. Sandip Mistry at “Sewage Treatment Plant”, Singanpore, Surat on 09/03/2018 under the subject of Water & Waste Water Engineering.

Total 128 students visited along with two faculty members, **Prof. Sandip Mistry** and **Prof. Nikunj Ashiyani**; guided by the Executive Engineers of sewage treatment plant **Mrs. Neha Saran** and **Mr. Chinmay Yagnik**, who also explained about the operations and functions of different units.

The main agenda for arranging this visit was to enhance the practical and field knowledge of the students, to relate the theoretical concepts with real time problems and solutions, and most importantly to give them the exposure to sewage treatment plant setup where in they are going to be eventually working as civil site engineers.

The basis of civil engineering in environment industry is wastewater treatment activities and various unit processes carried out in specialized equipment. After studying various treatment

activities and unit processes in semester sixth, the visit helped students to correlate theoretical concepts with large scale water treatment works. The waste water deals with the treatment of various types of waste water, sludge, inert materials, composting, energy generation by methane gas, material management and application of treatment equipment and safety precautions. These activities are formed under supervision of environmental engineer, plant engineer and laboratory contractors. During visit, students have visited the treatment plant design, design components and operation of equipment manuals and drawings where-in both professors and plant supervisor helped them to understand the same in depth.

The plant was designed for 100 MLD, but the capacity was not enough so they have extended the plant with additional 55 MLD. 100 MLD is semi automatic plant and 55 MLD is based on SCADA (Supervisory control and data acquisition) system.

The term sewage is used to indicate the liquid wastes from the community (waste water from household activities), which is transported from gutter to pumping station and then from pumping station to sewage treatment plant.

Surat Municipal Corporation has totalled 10 sewage treatment plant and about 52 sewage pumping station. Singanpore is one of the main treatment plants of total S.T.P.

The sludge is then returns to sludge thickener, and then to the digester for the gas generation and at last converted into the drying cakes (fertilizers). The heat energy (gas) is been converted into electric energy. The plant use this electric energy, (approx.40-50%) energy bill is been saved by this.

Singanpore sewage treatment plant has capacity of 100 million litres per day. The Singanpore S.T.P. has 3 pumping station Katargam, Paras, and Singanpore. Gujarat Pollution Control Board has given norms for maintaining the value of oxygen demand. Normally, the value of C.O.D. should be less than 100 mg/l; B.O.D should be less than 20mg/l and suspended solid should be less than 30 mg/l.

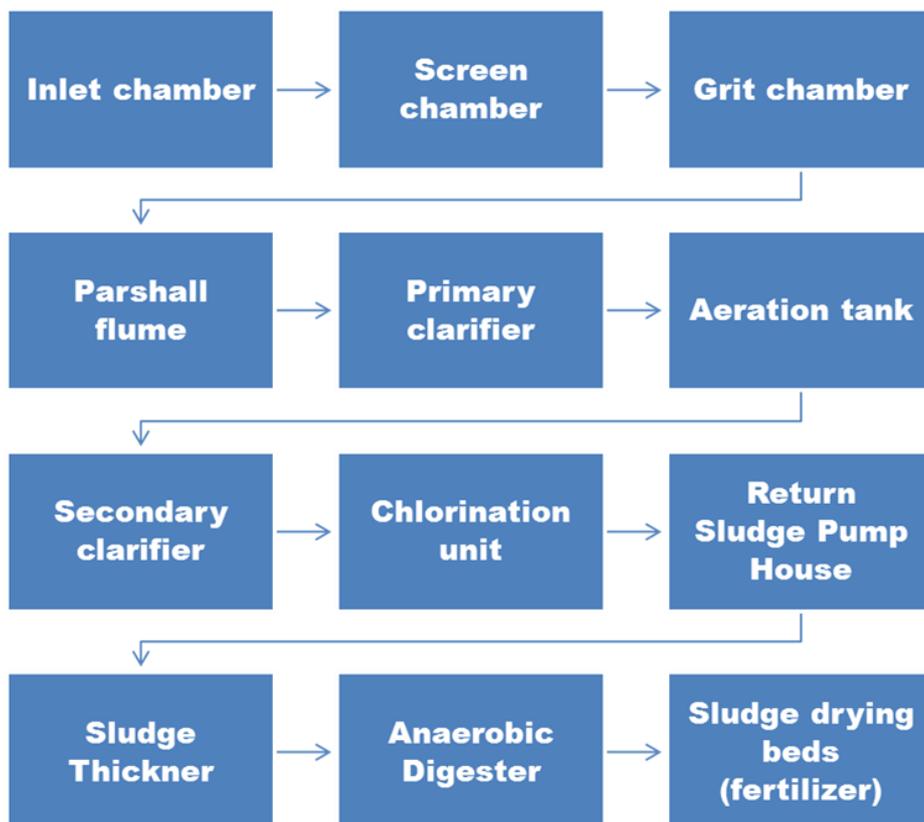
Sewage contains impurities like soluble and insoluble. The sewage treatment plant water is not used directly in any use. The water is given treatment for further application.

## ENTRANCE GATE OF TREATMENT PLANT



### About 100 MLD conventional treatment plant & 55 MLD Advanced Treatment Plant

Singaperumalpur 100 MLD sewage treatment plant is passed through various unit operation and process, which are shown as under.



Singapore 55 MLD sewage treatment plant is passed through some advance unit operation and process viz; Inlet chamber, screen chamber, Jetta grit chamber, S.B.R. Tank etc. The following units' functions are described as per actual visit on site:

### **SCREEN CHAMBER:**



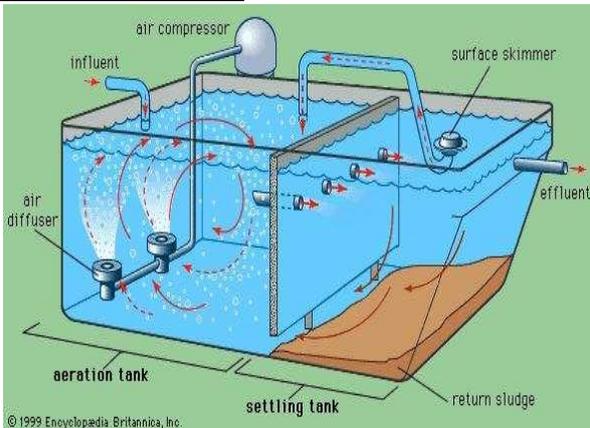
- To remove floating solids this may clog the pumps at the treatment plants.
- To remove solids from the sewage this will form ugly sludge banks.

### **JETTA GRIT CHAMBER:**



- The grit chamber is used to remove grit, consisting of sand, gravel, cinder, or other heavy solids materials that have specific gravity much higher than those of the organic solids in wastewater.

### **AERATION TANK:**

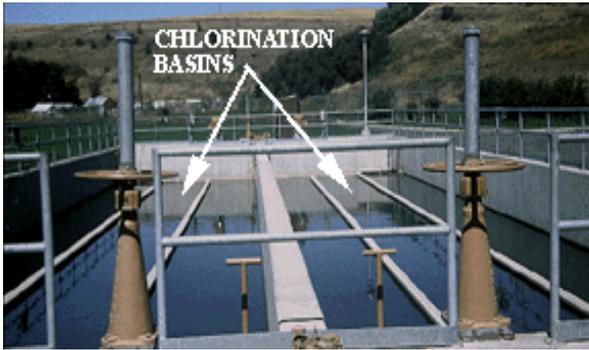


- Aeration in an activated sludge process is based on pumping air into a tank, which promotes the microbial growth in the wastewater.

- It is used to provide the oxygen content to the small micro-organism for the better operation of the treatment.

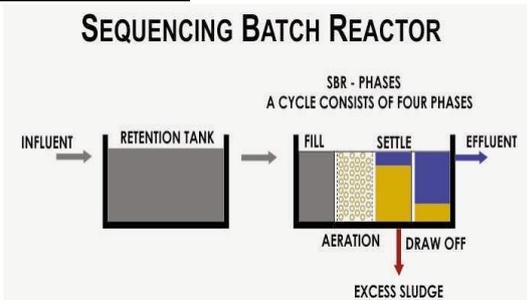
- It increases the dissolved oxygen content in the waste water.

### CHLORINATION TANK:



-Sewage chlorination is used to prevent the spread of waterborne diseases such as cholera, dysentery, and typhoid.

### S.B.R SYSTEM:



-Sequencing batch reactors (SBR) or sequential batch reactors are a type of activated sludge process for the treatment of wastewater.

-SBR reactors treat wastewater such as sewage or output from anaerobic digesters or mechanical biological treatment facilities in batches.

### SEDIMENTATION TANK(CLARIFIER):



-A **sedimentation tank** allows suspended particles to **settle** out of water or **wastewater** as it flows slowly through the **tank**, thereby providing some degree of purification.

### PARSHALL FLUMES:



-Parshall flumes are also used to measure the flow of partially treated waters between various treatment processes within the plant.

### THICKNER:



Sludge Thickening. Wastewater treatment plants commonly use thickening devices to increase the solids concentration at the end of a particular process step within the activated sludge process.

### **BELT FILTER PRESS:**



The belt filter is used for solid/liquid separation processes.

### **DIGESTER:**



Digesters are used to stabilize the solids that are removed from the during treatment.

**“SMC plants are service departments but not profit making organization”**

The acknowledgement would remain incomplete without the mentioning the gratitude to SMC officer **Mr. Ketan Mehta**, who made this visit successful by sharing their wealth of experience and knowledge with our students. Department would also like to appreciate **Dr. Neeraj D. Sharma** (Principal, SNPIT&RC) and the management of VBT for permitting us for Sewage Treatment visit at the plant of SMC.