

# ***“A Visit To Water Treatment Plant***

***by B.E. V Semester Civil Engineering Students for the Academic Year 2019-20***  
***I Semester on***

***Date:22/August/2019***

***Location: khammadanam Water***  
***treatment plant***







## PURPOSE OF VISIT

Our main purpose for this visit was to give the practical knowledge about how raw water is treated and how water is distributed in different villages. By this visit students can be familiar with industrial environment and get knowledge of different units of water treatment plant. Also in 5th semester subject like Environmental Engineering requires knowledge about how components of Water Treatment plant are constructed, so it is very much convenient to see all the practical components in real time work environment.

B. E V semester C1 and C2 students of Civil Engineering Department visited khammadanam water treatment plant on 22 August 2019 along with faculty Dr. A. Manjunath, Mr. A. Sanjay kumar, Mrs. Shweta Kaushik, Mr. S. Praveen, Mrs. Shilpa Mishra. This plant has a capacity of 48 MLD , pumping water to 313 habitates as a project under Mission Bhagiratha of Telangana state govt which was established on 6 August 2016 with a budget of 43791 crores.

Surprisingly we came to know that our alumini of 2012 batch student Ms. D. Roopa is working as Assistant Engineer.





## WHAT WE LEARN?

On 22th August , 2019 at 11.30 am students reached at Khammadanam water treatment plant, Shadnagar. At starting Ms. Roopa gave the basic knowledge about treatment process, she explained to students about the water, how it is treated at the Water Treatment Plant to remove sediment, bacteria, and other impurities. Roopa madam explained the process in a step by step procedure.

### Water Sources

Raw water is obtained from Ellore reservoir.

### Aeration

Water is aerated to remove dissolved gases, murkiness and unpleasant odours in it.



### Rapid Mixing

Once it arrives at the plant, the pH is adjusted and water is rapidly mixed with aluminum sulfate (alum), a coagulant that helps the impurities stick together to form bigger particles called floc

Chlorine is also added to water for the pre-chlorination process in which bacteria is killed in this process.



## **Flocculation**

After rapid mixing, the water flows into flocculation basins, where the flow of water is slowed and the floc has time to grow bigger.

## **Sedimentation**

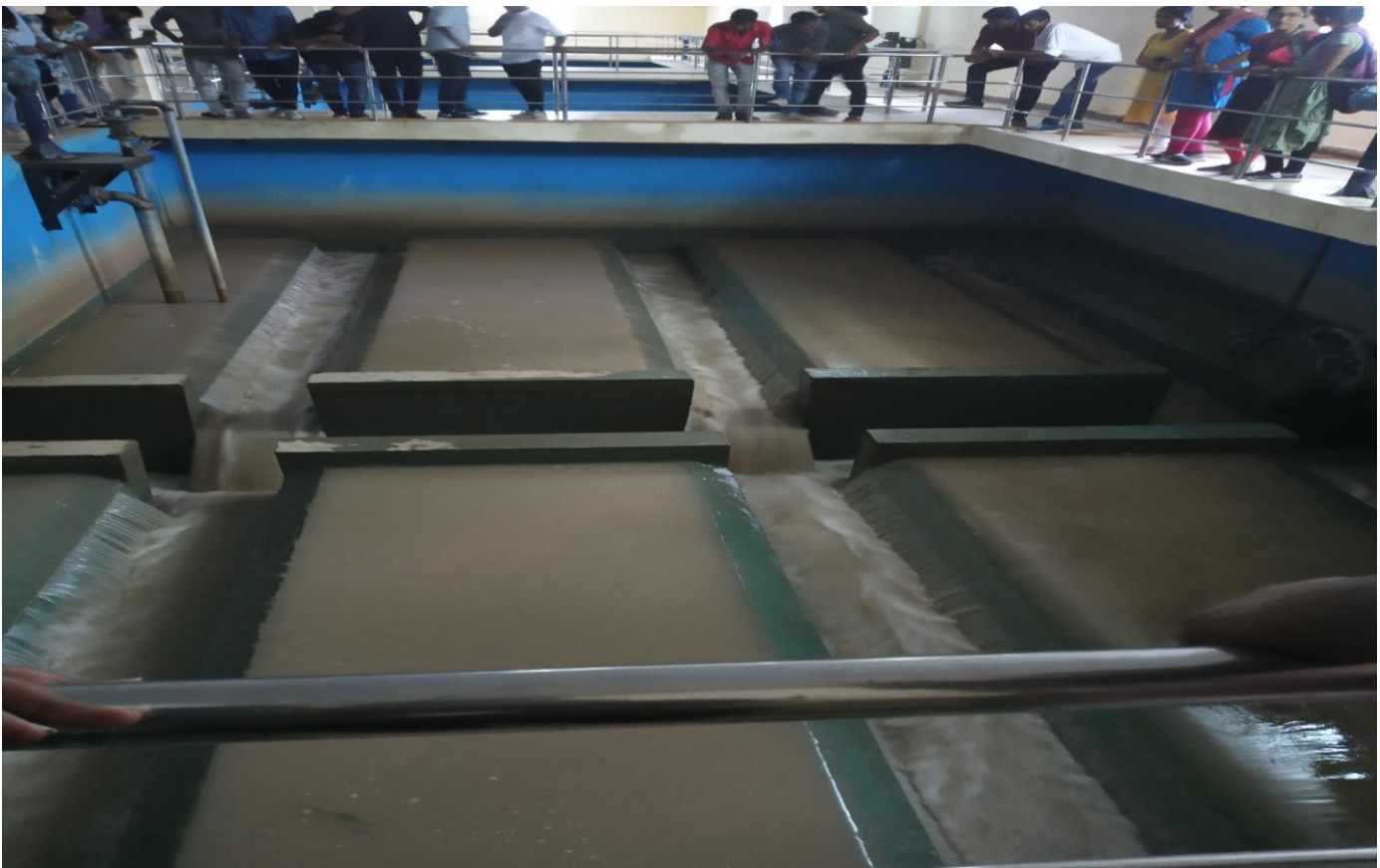
Next, the water flows into sedimentation basins, where the heavy floc particles sink to the bottom and are removed.



## Filtration

Now the water travels through large filters made of sand, gravel, and anthracite. Filtration removes any remaining microscopic particles and microorganisms.

Backwash water contains the solids removed from the filters, and contractors. The floc particles are separated out in settling tanks and clarifiers.





The clean water from the clarifier is DE-chlorinated (removal of chlorine from water) using sodium bi sulphate before it is distributed to villages.

### **Disinfection**

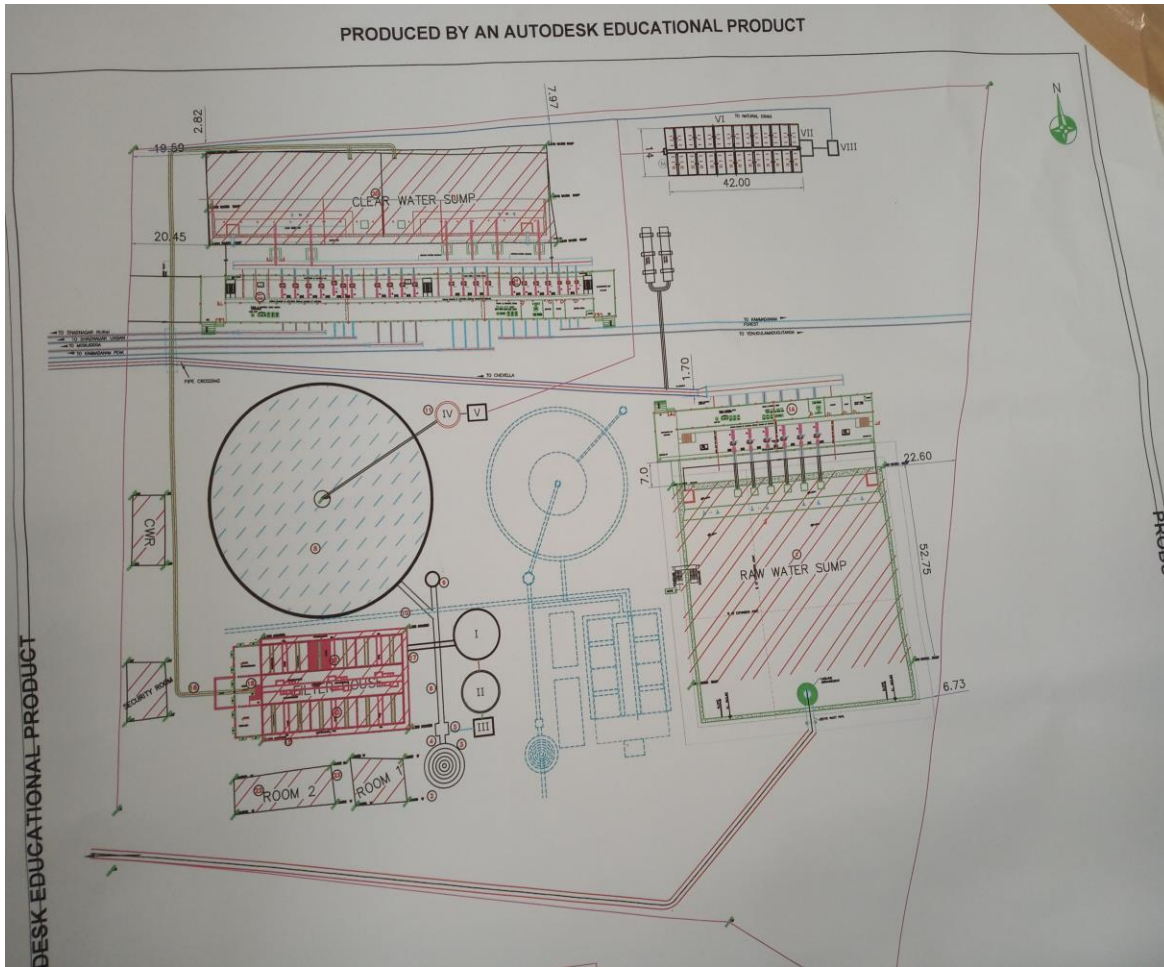
Finally, the water is disinfected to protect it against bacteria. chlorine dioxide and a combination of chlorine and ammonia called chloramines are used to disinfect the water.

### **Distribution**

The clean water is then distributed by Gravity system into villages by gravity.



# Layout of Water Treatment Plant:



**LEGEND**

1	RAW WATER RESERVOIR	1	60.0 M x 60.0 M x 4.20 M SWD + 0.75 FREE BOARD
1A	RAW WATER PUMP ROOM	1	32.0 M x 16.0 M
2	RAW WATER INLET PIPE (MS LINED)	1	1.00 M DIA
3	CASEDE AERATOR	1	8.50 M DIA WITH 1.00M WIDTH LAUNDRER x 0.85M SWD + 0.50 FREE BOARD
4	RAW WATER OUTLET CHANNEL	1	1.75M x 1.00 M SWD + 0.30 FREE BOARD
5	STILLING CHAMBER	1	4.00 LENGTH x 3.00 M WIDTH x 3.50M SWD + 0.30 FREE BOARD
6	MEASURING CHANNEL	1	1.75M x 1.00 M SWD + 0.30 FREE BOARD
7	FLASH MIXER	1	3.30 M DIA x 5.00 SWD + 0.50 FREE BOARD
8	CLARIFLOCCULATOR		
a)	CLARIFIER ZONE	1	61.00 M DIA x 3.50 M SWD + 0.30 FREE BOARD
b)	FLOCCULATOR ZONE	1	23.00 M DIA x 3.50 M SWD + 0.30 FREE BOARD
9	BYPASS CHANNEL	1	1.75M x 1.00 M SWD + 0.30 FREE BOARD
10	CLARIFIED WATER CHANNEL	1	2.00M x 1.00 M SWD + 0.30 FREE BOARD
11	SLUDGE WELL	1	1.80M DIA x 3.50 M SWD + 0.75 FREE BOARD
12	FILTER HOUSE (12NO.s)	6X2	7.40 M x 5.80 SINGLE BED (TWIN BEDS 6 NOS OF SIZE 7.40 x 12.60 M INCLUDING CENTRAL CHANNEL WIDTH)
13	PIPE GALLERY	1	6.00 M x 38.30 M LONG
14	OPERATIONAL PLAT FORM	1	6.00 M x 38.30 M LONG
15	FILTER INLET CHANNEL	1	1.75M x 1.00 M SWD + 0.30 FREE BOARD
15A	FILTER INLET CHANNEL (OTHER SIDE)	2	0.90M x 1.00 M SWD + 0.30 FREE BOARD
16	CLEAR WATER CHANNEL	2	0.90M x 1.00 M SWD + 0.30 FREE BOARD
17	BACKWASH WATER CHANNEL	1	0.70M x 1.00 M SWD(MIN.DEPH)
18	UTILITY BUILDING (LOBBY, OFFICE, TOILET, MCC, AIR BLOWER & LAB)	1	38.30 M x 21.30 M x 3.50 M TOTAL HT.
19	WASH WATER TANK	1	16.00 M DIA x 3.00M SWD + 0.30 FREE BOARD
20	CLEAR WATER RESERVOIR	1	93.0 M x 20.0 M x 3.00 M SWD + 0.75 FREE BOARD
21	CWR PUMP HOUSE	2	32.0 M x 12.0 M
22	CHEMICAL HOUSE	1	18.0 M x 10.0 M x 3.5 Ht.
23	CHLORINE HOUSE	1	25.0 M x 7.00 M x 4.50 Ht.

AN AUTODESK EDUCATIONAL PRODUCT





**Electrical Mains for the operation of pumps:**



Chlorine house





## Dimensions:

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