A Note on Hussain Sagar Lake, River Musi And STPs

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Abstract- *Hussain Sagar Lake was built in 1562 A.D. during the reign of Quli Qutub Shah (1550-1580) the fourth ruler of Qutub Shahi dynasty. The lake water was utilized for irrigation and drinking needs upto 1930. The lake joins the twin cities of Hyderabad and Secunderabad and adds historical aesthetic dimension to the twin cities. Gradually the lake became receptacle of sewage and industrial effluents from the catchment areas. To improve the lake water quality by preventing pollutants entering into the lake both point source & non-point sources of pollution. Interception & diversion of dry weather flows, improvement of Nalas in catchment area.*

Keywords- Hussain Sagar lake, Musi River, Nallahs, Sewage Treatment Plants.

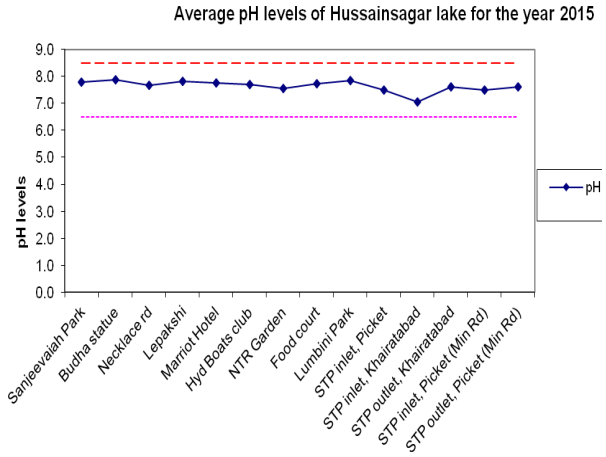
I. INTRODUCTION

Hussainsagar Lake was built in 1562 AD and it was a source for drinking water up to 1930. After that the city has grown-up and it could not cater to the drinking water needs of public due to increased urbanization. The lake was polluted during period 1980-1995 due to influx of sewage from various nallahs like Banjara nallah, Balkampet nallah, Picket nallah and Yousufguda nallah and industrial effluents along with domestic sewage in Kukatpally nallah.

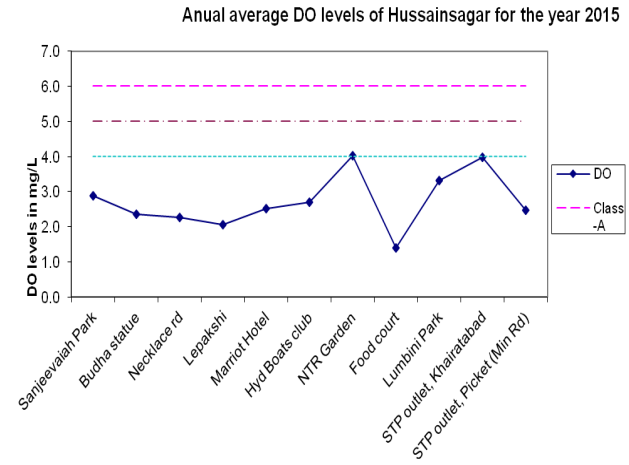
The State Government has taken various steps in the year 1997 to intercept the sewage and effluent and diversion works taken-up at K&S main near Fathenagar so as to divert to Musi River.

II. RESEARCH AND RESULTS

The Pollution Control Board has been carrying continuous monitoring of Hussain Sagar Lake at 6 stations and also STP inlet and outlet. The samples were collected on monthly basis and analysed for physico chemical parameters. The analysis of Hussain Sagar lake water for the parameters monitored on a regular basis are pH, TDS, COD, BOD, DO, Nitrates, Phosphates etc. The data for the above parameters have been prepared for the year 2015 by taking yearly averages for each parameter (Annexure-I & II).



Annexure-I



Annexure-II

There are five major nallahs which flow into the Hussainsagar Lake:

1. Balkapur Nallah, 2.Banjara Nallah, 3.Yousufguda Nallah, 4.Kukatpally Nallah and 5. Picket Nallah. The Banjara Nallah, the Balkapur Channel, Picket, Yousufguda Nallah and Kukatpally Nallah carry storm water along with domestic effluents. The Kukatpally nallah flows through industrial areas of Kukatpally, Balanagar and joins Jeedimetla Nallah at Fathenagar. The Jeedimetla Nallah flows from Suraram Colony and passing through Jeedimetla industrial estates and confluences at Dhobi Ghat at Fathenagar with

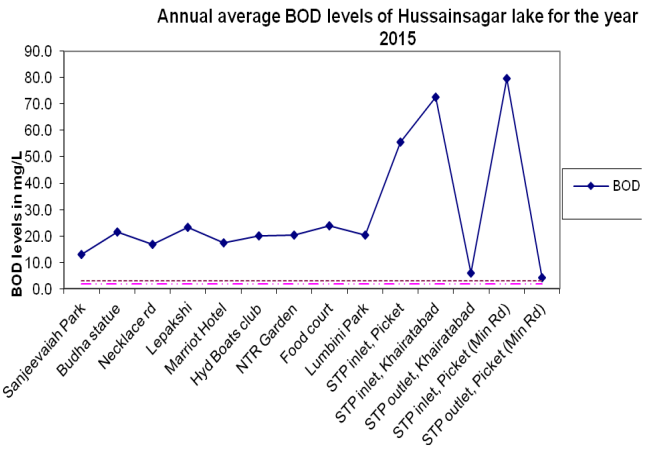
Kukatpally Nallah. The combined Nallah will flow towards the Hussainsagar Lake.

The said nallah is diverted at Necklace Road, I&D structure and flows through the pipeline to Amberpet STP.

The Board has taken persistent efforts to arrest the illegal discharges into the nallah by directing all the industries to lift their effluents to the common CETP after pre-treatment. Also, some of the industries were encouraged to go for advanced technologies like Zero Liquid Discharge Systems.

The small scale industries are lifting the effluents after pre-treatment to Common Effluent Treatment Plants (CETP) such as JETL, PETL and IDPL for treatment and final disposal.

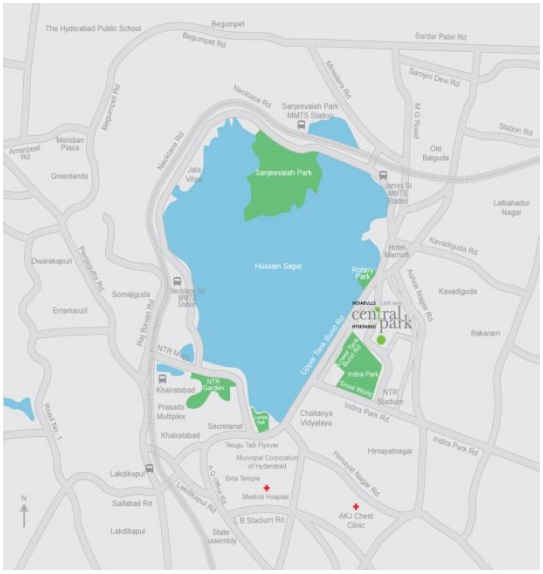
The Kukatpally nallah receives sewage from two main nallahs i.e., Jeedimetla nallah and Kukatpally nallah both of which are passing through IDAs and confluences at Dobhighat near Fathenagar and diverted at K&S main nallah. The surplus from weir may reach Begumpet nallah at Hyderabad Public School and diverted at Prakashnagar and may reach Hussainsagar through Kukatpally nallah during peak hours. The Kukatpally and Jeedimetla nallah and combined nallah water quality is regularly monitored by PCB. It may be noted that the characteristics of untreated sewage due to high COD and BOD **(Annexure-III)** which is exceeding general discharge standards.



Annexure-III

Occasional high levels of TDS or COD may be due to illegal discharges from industries which were totally controlled from Dec., 2014 onwards due to various steps taken by TSPCB.

Topographical map of Hussain Sagar:



There are 124 numbers of electroplating units in Balanagar, Jeedimetla and Kukatpally areas along the Kukatpally Nallah, which were earlier discharging highly polluting Electroplating Effluents (containing heavy metals like Chromium, Cadmium etc.,) into Kukatpally Nallah. These effluents are ultimately joining the Hussain Sagar Lake. Now, the Electroplating units were collecting the effluents and are regularly sending them to the common effluent treatment plant, M/s. JETL for treatment and disposal. The TSPCB is also pursuing the units to shift away from Kukatpally nallah area to Automotive Park at Mupireddypalli, Kallakal, and Medak District. Till now, 80 units have been allotted plots and are in the process of shifting.

TSPCB is also monitoring the two STPs i.e., 20MLD STP at Khairatabad and also 30MLD STP at Picket nallah which is discharging treated water into Hussainsagar lake to maintain hydrological balance. It may be noted that the two STPs are meeting the standards of BOD for discharge into surface water bodies i.e., BOD <30 mg/l.

The following further steps were taken to increase the surveillance in Balanagar & Jeedimetla area:

a. Vehicle tracking system (GPRS) for movement of effluent tankers lifting the pre-treated effluent from industries to CETPs
b. TSPCB has put surveillance on industrial illegal discharges through night patrolling teams.
c. On-line manifest system for tracking the effluent tankers is implemented.
d. Continuous online analyzers for water quality is proposed to be installed at the confluence of Kukatpally and

Balanagar nallah at Fathenagar I&D structure within six months, so that continuous quality of sewage and status of illegal discharges is monitored.

River Musi and STPs and CETPs discharging in the river:

The treated effluents from CETPs i/e. M/s Jeedimetla Effluent Treatment Ltd., (JETL), Jeedimetla of 1500 KLD capacity, M/s Patancheru Enviro-tech Ltd., (PETL), Patancheru of 7500 KLD capacity & M/s IDPL, Balanagar of 150 KLD capacity joins K&S Main Pipeline at Fathenagar. These effluents flow through duplicate K&S main and join at Amberpet STP. At Amberpet STP (339 MLD) these treated effluents are mixed with Hyderabad city sewage water and are further treated, which finally joins River Musi.

The PCB regularly monitoring river Musi at 9 stations i.e., from upstream Gandipeta, RR District to Wadapally, Nalgonda District i.e., confluence point of river Musi with river Krishna at a stretch of 210km.

S. No.	Name of the station	Distance from Osmansagar, Gandipeta (fresh water source)
1	River Musi at Gandipeta reservoir	Starting point
2	Bapughat, Sangam	3km. where sewage joining the river
3	Moosarambagh	5km. from Osmansagar where lot of sewage nallahs will join and it is before STP Amberpet of 330MLD.
4	Nagole	13km. from the Osmansagar. Some sewage drains joins from Uppal area and an STP of 172MLD at Nagole constructed to treat the sewage.
5	Peerjadiguda	28km. from Osmansagar and the Musi river water is used for irrigation at this point by local farmers.
6	Pratapasingaram	32km. from Osmansagar and used for irrigation.
7	Pillaypalli	52km. from Osmansagar and used for irrigation by local farmers.
8	Rudravelli	61km. from Osmansagar and used for irrigation. Entry point in Nalgonda District.
9	Wadapally	218km. from Osmansagar. It confluences with river Krishna.

III. CONCLUSION

It may be noted that out of 1300 MLD (approx.) sewage generated, 670 MLD is treated in 3 STPs (another one at Attapur is under construction) and the balance is discharged into river Musi.

The monitoring data shows that pollutant parameter BOD is gradually reducing from Moosarambagh to Pillaypalli i.e., 50km. and regeneration of river Musi at Rudravelli point i.e., 60km. At Wadapally confluence of Musi River with River Krishna, the BOD levels are reached to the surface water quality criteria i.e., 3mg/l.