BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
SOUTHERN BENCH, CHENNAI

Original Application No. 199 of 2021(SZ)
& I.A No.96 of 2022 (SZ)

In the matter of:

Sri. Shankar Narayanan Bala Krishnan & 21 Ors

…… Applicants

Versus

State of Telangana & 9 Ors

……Respondent(S)

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Place: Chennai

Date: 14.07.2024

DEPONENT

H.D. VARALAXMI, M.Tech
Regional Director
CENTRAL POLLUTION CONTROL BOARD
(MoEF & CC Govt. of India)
Regional Directorate (Chennai)
2nd Floor, 77-A, South Avenue Road,
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ACTION TAKEN REPORT IN COMPLIANCE TO HON'BLE NGT ORDER DATED 29/04/2024 IN ORIGINAL APPLICATION NO. 199 OF 2021 (SZ) & I.A NO 96 OF 2022 (SZ) IN THE MATTER OF SRI SHANKAR NARAYANA BALA KRISHNA, TELANGANA AND ORS. VS STATE OF TELANGANA REP BY ITS CHIEF SECRETARY, HYDERABAD AND ORS.

CENTRAL POLLUTION CONTROL BOARD
Parivesh Bhawan, East Arjun Nagar, Delhi-110032

July, 2024

1.0 BACKGROUND

Central Pollution Control Board (CPCB) submitted its report on 16.04.2024 in compliance to Hon'ble NGT (SZ) Chennai order dated 01.02.2024 in Original Application No. 199 of 2021 (SZ) & I.A No. 96 of 2022 in the matter of Sri Shankar Narayana Bala Krishna, Telangana and Ors. Versus State of Telangana, Rep. by its Chief Secretary, Hyderabad & Ors. The Hon'ble NGT (SZ) heard the matter on 29.04.2024 and issued following directions to CPCB:

"6. *Therefore, we direct the CPCB to do the required study in the interest of the nation to address the issue of leachate from the dumping yards in various states to come out with an appropriate guideline and also issue appropriate directions to the SPCBs, in particular to the Telangana SPCB with regard to the case in hand."*

2.0 ACTION TAKEN BY CPCB

In compliance to Hon'ble NGT Orders dated 01.02.2024 & 29.04.2024, CPCB inspected Jawaharnagar capped dumpsite and M/s Hyderabad Integrated Municipal Solid Waste Facility at Jawaharnagar village, Shameerpet Mandal, Medchal-Malkajgiri District to assess the current status of solid waste facilities, leachate management and also to verify the adequacy of leachate collection system as informed by GHMC vide its letter dated March 30, 2024 to TSPCB.

2.1 Site visit by CPCB

A team of following officials from CPCB / Telangana SPCB and Greater Hyderabad Municipal Corporation (GHMC) inspected the Jawaharnagar capped dumpsite and M/s Hyderabad Integrated Municipal Solid Waste facility at Jawaharnagar village, Shameerpet Mandal, Medchal-Malkajgiri District on July 01, 2024:

- Sh. B Vinod Babu, Scientist F, CPCB, Delhi
- Sh. G. Rambabu, Scientist E, CPCB, Delhi
- Smt. Poornima B M, Scientist D, CPCB RD Chennai
- Smt. B R Soni, Scientist B, CPCB, RD Chennai
- Sh. R. Sreenivasa Reddy, Executive Engineer, Solid Waste Management, Greater Hyderabad Municipal Corporation, Hyderabad

- Dr. M. Praveen Kumar, Senior Environmental Engineer, Telangana State Pollution Control Board, Hyderabad
- Sh. Rajendar, Environmental Engineer, Telangana State Pollution Control Board, Medchal District
- Smt. Bhanushree, Deputy Executive Engineer, Solid Waste Management, Greater Hyderabad Municipal Corporation, Hyderabad

2.2 Observations

2.2.1 Overview of the Solid Waste Management Facility at Jawaharnagar

Details of Solid Waste Processing facility and the observations of inspecting team is as given below:

The capped dumpsite is a part of the M/s Hyderabad Integrated Municipal Solid Waste Management Facility of the Greater Hyderabad Municipal Corporation (GHMC).

i. M/s Hyderabad Integrated Municipal Solid Waste Management Project is the only facility to manage the entire solid waste generated from entire GHMC. The premises of the facility including the capped dumpsite, is spread over an area of 339 acres. The site receives about 8,100 Metric Ton (MT) of solid waste per day.

ii. The M/s Hyderabad Integrated Municipal Solid Waste Management Project is operated by M/s Re Sustainability Ltd., on the behest of Greater Hyderabad Municipal Corporation (GHMC) since the year 2012.

iii. After commencement of operation by M/s Re Sustainability Ltd., scattered and un-scientific open dump of about 12 lakh MT of solid waste, spread across 313 acres of land was shifted to an area of 125 acres of land and about 214 acres of land was reclaimed for other solid waste management facilities.

iv. As per information provided by GHMC, 8,100 TPD of solid waste generated from GHMC area and other urban local bodies (ULBs) is received at HIMSWM Project The site comprises of the following features/operations;

   a. Capped landfill of size 125 acres
   b. Compost plants of capacity 3 x 680 TPD (~ 2000 TPD)
   c. Trommels capacity for solid waste processing – 19x35 TPH and 2x50 TPH with total capacity of 15300 TPD (as informed 20 hrs operation time)
   d. Waste segregation facility (called as RDF unit of 5000 TPD)

e. Land-fill gas collection system in capped area (155 bore-holes and flare stacks) – Gas handling, concentration and bottling unit of 750 KL of methane per day.

f. Waste to Energy (WTE) Plant – 24 MW capacity; another unit of 24 MW capacity is under construction.

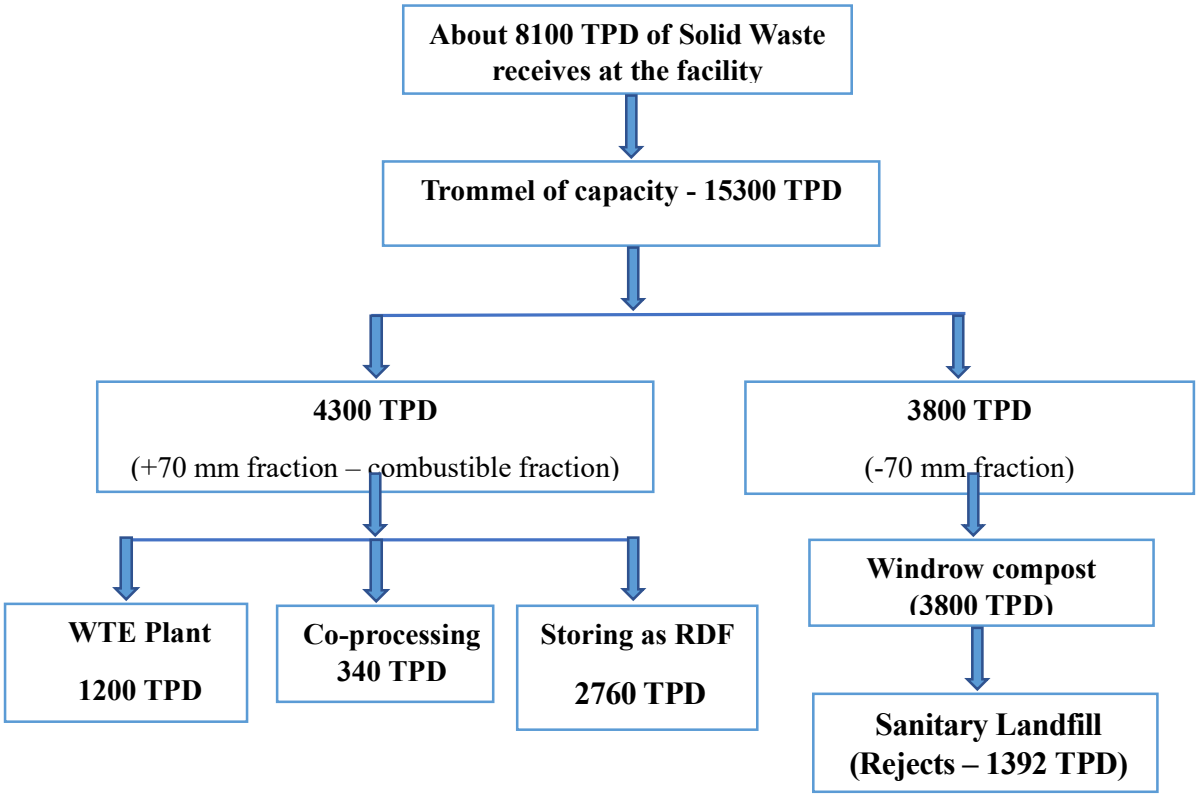
g. Leachate collection and treatment systems (1nos- 01 MLD capacity) for 533 KL per day of leachate generation

h. Plastic Waste recycling facility (capacity – 1000 TPD)

i. Active dumping of semi-processed solid waste (un-utilized RDF)

j. Sanitary landfill (27 acres) for rejects/inert materials

Flow diagram for treatment of solid waste generation of 8100 TPD



vi. The incoming waste to the facility is not segregated, thus unit receives mixed waste, which is passed through Trommels to separate larger fractions (+70 mm) (4300 TPD) of solid waste called as RDF. A fraction of said RDF or semi-processed solid waste is being utilized in 24 MW capacity WTE Plant (about 1200 TPD) for electricity generation and 340 TPD of RDF is being sent to cement industry. Hence, the total utilization of RDF per day at present is about 1540 TPD and remaining 2760 TPD is stored in temporary covered dumps within the premises.

vii. It is observed that excess (un-utilizable) semi-processed solid-waste was initially stored at one identified location within the premises, which is 11 lakh MT stored in 61 acres of land near to RDF processing facility, located in west direction of processing plant and a total height of this is about 60m. It was observed that an active storage of semi-processed solid waste has taken place between the capped sites and also above the capped areas. It was also observed that a temporary cap of 1.5mm HDPE sheet is laid over the levelled mounds of solid waste. At present 68,17,487 MT of un-utilized semi processed waste is stored in the processing facility.

viii. Accumulated semi-processed waste (RDF) in last 12 years is given in below Table 1:

Table 1: Quantity of semi processed solid waste (RDF) temporarily stored at Jawaharnagar site

S. No.	**Period**	**Description**	**RDF Quantity (in MT)**
1.	February, 2012 to March, 2015	RDF Generation	10,95,758.0
		RDF supplied to the Cement plants	(-)6,759.0
		Net storage at west side of the processing plant (A)	**10,88,999.0**
2	April, 2015 to September, 2023	RDF Generation	69,69,758.19
		RDF supplied to the WTE plants	(-)15,46,226.0
		RDF supplied to the Cement plants	(-)1,32,081.5
		Net storage at East & South side of the processing plant (B)	**52,91,450.69**
3	October, 2023 to March, 2024	RDF Generation	765,588.79
		RDF supplied to the WTE plants	(-)2,97,525.0
		RDF supplied to the Cement plants	(-)31,026.50
		Net storage at North side of the processing plant (C)	**4,37,037.29**
Total Quantity stored (A+B+C)			**68,17,486.99**

The data in the above table is clearly indicating inadequacy of solid waste treatment facility to process the entire quantity of waste being disposed at the said site.

The processing capacity of trommels is 15300 TPD, considering 20 hrs operation time. The existing trommels can hence process 8100 TPD of waste in 11-12 hrs. 4300 TPD of +70mm size fraction (Refused derived fuel (RDF)) and 3800 TPD of -70mm fraction is generated upon processing of 8100 TPD of mixed waste in the trommels. The HIMSWM Project has capacity to process 1200 TPD of RDF in the WTE Plant. Additional 340 of RDF is being sent to Cement industry. Accordingly, only 1540 of RDF is utilized, and the remaining 2760 TPD of RDF (+70 mm) is stored in the HIMSWM Project. Further, 3100 TPD of -70 mm fraction is processed in the Compost plant. However, the compost plant processing capacity is only 2000 TPD. Hence, the remaining 1800 TPD of -70mm fraction is stored in HIMSWM Project. In view of above, only 3540 TPD (43.7%) of the total received waste 8100 TPD is fully utilized and the remaining 4560 TPD (56.3%) of semi-processed waste (2760 TPD of +70 mm fraction and 1800 TPD of -70 mm fraction) accumulates in the HIMSWM Project premises. Additionally, 1390 TPD of rejects is generated during processing of 2000 TPD of -70 mm fraction in the composting facility which is disposed of the Sanitary landfill (SLF) located in HIMSWM Project.

ix. In the year 2012, a sanitary landfill was constructed in an area of about 13 acres which was closed in 2019. In the year 2020, another landfill was constructed in 27 acres of land at the south side of processing facility and which is presently in operation. Three cells were constructed, out of which two cells are closed and one cell is currently operational. About 1390 TPD of rejects/ inert material and residue generated from leachate treatment plants is disposed in the sanitary landfill. The SLF can be utilized for disposal of waste for only next six months as per the available capacity of the SLF.

x. It is observed that the entire area of Jawaharnagar waste processing has been utilized and scope for expansion is limited. As explained in above paras, there is no additional storage space, and the semi-processed waste is being stored in spaces between capped sites and above the capped sites leading to additional quantity of leachate being generated from the dumpsite.

xi. The details of land utilized with area is given in Table 2 below and a map showing the same is attached as ***Annexure 1***.

Table 2: Land Utilization

S. No.	Description	Area (in acres)	Area distribution (in %)
1.	Dump Capping	123.86	36.53
2.	Sanitary Land Fill	27.53	8.12
3.	Compost plant	18.77	5.54
4.	Compost plant (CP3)	3.75	1.11
5.	Compost plant (CP4)	0.56	0.17
6.	RDF	61.08	18.02
7.	Leachate ponds, CBG, Boulders area	4.20	1.24
8.	Waste Treatment Facility	17.10	5.04
9.	Leachate Treatment Plant	3.43	1.01
10.	Auxiliary units	19.74	5.82
11.	Greenery & Plantation	58.98	17.40
Total		**339**	**100**

2.3 Leachate Management at Jawaharnagar

2.3.1 Sources of Leachate generation

The solid waste dumpsite and management facilities exists on a rocky hillock area with red sandy soil and boulders. The soil underneath the old dump area therefore has high permeability and has potential for groundwater contamination due to percolation of leachate from the solid waste dump. At present there are three distinct streams of leachate generation from the site that is;

(a) Seepage collected along the periphery of the old capped area as well as percolation of leachate to the Groundwater from the solid waste dump
(b) Semi-processed waste being stored in a lined area
(c) Fresh waste being dried for a period of ten days in the composting plant area, prior to trommelling on an unlined area

It was observed that the surface drainage in the area is towards north and north-east of the dumpsite. The Malkaram pond existing in northern side of pond is contaminated due to leachate from dumpsite which enter the pond both from surface as well as through underground seepage.

2.3.2 Leachate collection System

a. **Leachate collection from capped dumpsite**

GHMC has constructed five (05) leachate collection ponds (LCPs) for collecting the leachate generated from the capped site and additional two ponds were constructed with a storage capacity of 35300 KL. The details of LCPs are provided in **Table 3.** As informed by GHMC**,** that average per day leachate generation from the fresh solid waste processing facility is 533 KLwhile average leachate generation from capped dumpsite is 53 KL/day. It was also informed that, additionally an average of 47 KL per day of leachate is formed due to surface run-off from the premises. The month wise leachate generation as per information provided by GHMC is attached as ***Annexure 2***.

Table 3: Details of LCPs with capacity & location

S. No.	Ponds	Capacity (KL)	Location
1	Liner Pond 1	5000	CBG East Side
2	Liner Pond 2	5000	CBG East Side
3	Liner Pond 3	5000	CBG South Side
4	Liner Pond 4	5000	CBG South Side
5	Liner Pond 5	12000	South side (Near Karimika Nagar)
6	Liner Pond 6	2500	In LTP
7	CRS Liner Pond	800	South east side (Near Borewell 1)
	Total	**35300**	

There is no provision to collect leachate which is percolating down to the groundwater through the unlined base of the dumpsite.

b. Semi-processed waste is being stored in a lined area. The leachate is being collected through surface drainage system.
c. Fresh waste is being dried for a period of ten days in the composting plant area, prior to trommelling on an unlined area. This area is, however, not lined and there is no proper provision for collection of leachate from this area.

2.2.3 Leachate Treatment System

The GHMC facility has provided two leachate management facilities, for treatment and disposal of leachate.

a. Leachate collected from the capped site is treated in 01MLD capacity Leachate Treatment Plant (LTP). Leachate collected from Waste (Semi-processed) Storage area

is also treated in this LTP. The LTP consists of pre-treatment units with RO followed by Multiple Effect Evaporator (MEE) system. The RO permeate is used for green belt development whereas condensate from MEE is partly utilized in ash quenching of WTE plant, while the rest is disposed in natural storm water drain. As per the consent condition, issued by TSPCB, RO permeate is either to be reused or it can be used for gardening. It does not stipulate the conditions for usage/discharge of MEE condensate. Residue generated from this process, as per the direction/Authorisation of TSPCB, is being disposed through Waste to Energy Plant along with RDF.

b. The legacy leachate accumulated in the Malkaram pond due to rainfall runoff before the capping of dumpsite and due to seepages from capped dumpsite was earlier treated in RO of capacity 2MLD and the reject generated was stored in an artificially created leachate storage ponds, there are 05 artificial ponds out of which two ponds are lined and remaining three are unlined. Since October 2023, Low Temperature Mechanical Vapour Recompression (MVR) technology of 02MLD capacity is operating to treat the leachate collected in Malkaram pond and other 05 artificial ponds. The treated water (condensate) is disposed in natural storm water drain, which ultimately joins the Edula Cheruvu. The residue generated is disposed in sanitary landfill.

   During inspection, it was noticed that accumulated leachate in Malkaram pond of 28 acres of area has been treated in MVR plant. The pond was almost empty except for some water at the bottom which is under pumping for treatment. However, inspection team noticed active seepage of leachate into the pond from adjacent disposal site. In addition, the two artificial ponds (both unlined) namely pond 3(3.3 acres) and pond 4 (01acre) were cleared and the top soil of the pond was scrapped and dumped in the sanitary landfill. The ponds were filled with fresh soil. The RO reject is presently stored in two lined ponds and one unlined pond posing a risk of seepage /groundwater contamination. There is also a risk of overflow from storage ponds in case of heavy rains.

3.0 Quality of Leachate, groundwater & surface water in and around capped legacy waste site

During inspection, samples were collected from the piezometric wells (monitoring wells) located in & around the capped legacy waste, leachate from collection ponds, nearby ponds, and borewells outside the dumpsite to assess the present status of quality in groundwater & surface water. The

samples collected by the team has been given to one of the EPA recognized laboratory namely M/s B S Envi-Tech Pvt. Ltd., Tarnaka, Secunderabad, Telangana for analysis. The sampling locations are plotted in google earth map and shown in picture 1 below and the co-ordinates is shown in **table 4**. The analysis results for four parameters are given in **Table 5**.

Picture 1: Sampling locations at Google Earth Map

Table 4: Sampling location GPS Coordinates

S. No.	Description	Latitude	Longitude
Leachate Samples			
1	Leachate collection tank no 1	17°31′08″	78°35′28″
2	Malkaram Legacy leachate Pond	17°31′35″	78°35′28″
3	Leachate pond No. 9	17°31′19″	78°35′55″
4	Leachate Collection sump near Monitoring Bore Well No. 1	17°31′11″	78°35′47″
Treated Leachate samples			
5	MEE Condensate	17°31′03″	78°35′18″
6	MVRE Condensate	17°31′36″	78°35′42″
Ground water samples from piezometric wells			
7	Monitoring Bore Well No. 1	17°31′12″	78°35′07″

8	Monitoring Bore Well No. 2	17°31′18″	78°35′51″
9	Monitoring Bore Well No. 5	17°31′33″	78°35′25″
10	Monitoring Bore Well No. 10	17°31′07″	78°35′28″
11	Monitoring Bore Well No. 15	17°31′02″	78°35′19″
Ground water samples from nearby dumpsites			
12	Bore well near Malkaram	17°31′39″	78°34′53″
13	Bore well in dairy farm besides Legacy Leachate Pond	17°31′42″	78°35′36″
Surface water samples			
14	Malkaram Lake	17°31′44″	78°34′49″
15	Cherayala Lake	17°30′59″	78°37′27″

Table 5: Analysis results of Leachate, Ground & Surface Water

S. No.	Sampling location	Parameters			
		pH	Colour (Hazen units)	TDS (mg/L)	COD (mg/L)
Leachate samples					
1	Leachate collection pond no. 1	8.96	8300	22271	5635
2	Malkaram Legacy leachate pond	8.66	10460	20188	7857
3	Leachate pond no.9	8.14	3320	23338	6190
4	Leachate collection pond near monitoring bore well no.1	8.62	800	13280	2024
Treated leachate samples					
5	MEE Condensate	9.97	15	158	4960
6	MVR Condensate	10.24	60	276	114
Ground water samples from peizometric wells					
7	Monitoring bore well no. 1	8.35	470	4410	698
8	Monitoring bore well no.2	7.80	50	1287	99
9	Monitoring borewell no. 5	8.27	550	3815	675
10	Monitoring bore well no.10	8.71	790	3058	540
11	Monitoring bore well no.15	8.56	160	2268	401
Ground water samples from nearby dumpsite					
12	Bore well near Malkaram pond	6.96	Less than 5	738	26

13	Bore well in dairy farm besides legacy leachate artificial ponds	6.91	290	10092	1409
Surface water samples					
14	Malkaram Cheruvu	9.12	50	803	159
15	Cherayala Cheruvu	8.20	185	3850	476

The analysis results have been examined and following are the observations:

i. The groundwater of all monitoring bore wells (S. No. 7 to 11) are contaminated with respect to TDS & COD. Elevated levels of COD indicate that there is intrusion of leachate into the groundwater

ii. The bore well sample collected from the dairy farm adjacent to artificial ponds created for storing legacy leachates also shows higher concentration of TDS & COD. It was informed by owner of the farm that the bore well water is not used from past 06 years due to contamination.

iii. TSPCB collects the samples from monitoring wells & surface water bodies every month. The data from January, 2024 to May, 2024 were analysed and a trend graph has been prepared and same is attached as **Annexure 3.** The data/trend indicates that values of TDS & COD at monitoring wells is showing an increase in concentration since February, 2024 w.r.t COD, and concentration of TDS is increased from April, 2024 at monitoring well no. 1, similar trend noticed in well no. 5, w.r.t. COD concentration.

iv. The MEE condensate from the Leachate treatment plant of 01 MLD capacity, shows high concentration of COD, indicating that the treatment system is not efficient. It is partly utilized in ash quenching of WTE plant, while the rest is disposed in natural storm water drain. Conditions for discharge of MEE have not been stipulated in the Consent issued by TSPCB.

v. The MVR Condensate is to be discharged to inland surface water bodies as per the Consent issued by TSPCB. The analysis data shows that the MVR is meeting the norms for discharge into inland water bodies as per Schedule II B of SWM Rules for two monitored parameters -namely COD & TDS. It is, however, exceeding the norms stipulated for pH. The treated water (condensate) is disposed in natural storm water drain, which ultimately joins the Edula Cheruvu

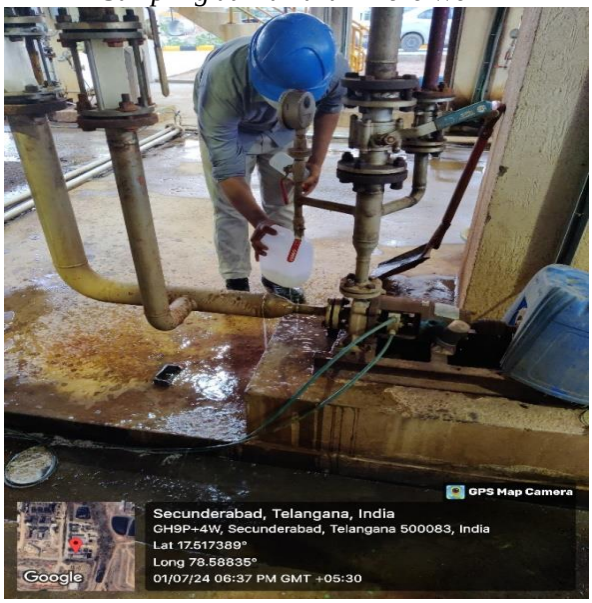
Sampling at Legacy Leachate Collection Sump No. 1

Sampling at Monitoring Bore Well No. 5

Sampling at Malkaram Legacy Leachate pond

Sampling at Malkaram Bore Well

Sampling at Bore Well in a dairy farm besides Malkaram Legacy Leachate pond



Sampling of MEE Condensate water

4.0 Conclusions and Recommendations

i. The Hyderabad Integrated Solid Waste Management Project at Jawaharnagar is not adequate for processing/utilizing entire received waste (8100 TPD) from Hyderabad city. The facility can utilize about 43.70% of waste against the generation of 8100 TPD and the rest 56.3% (i.e. 4560 TPD) is being accumulated in the processing facility as semi-processed waste. The semi-processed waste is being dumped in the available spaces in the premises of facility, including the spaces between the capped cells and also above the capped cells causing additional leachate generation.

ii. In compliance to Hon'ble NGT order dated December 7, 2017 in OA No. 780 of 2017 in the matter of Peddi Mohan Reddy & Ors VS. State of Telangana, (PB) Delhi; GHMC has identified three sites at Pyaranagar, Lakdaram and Khanapur for processing solid waste generated from GHMC area and to minimize the load on Jawaharnagar facility. Even after 07 years, the other processing facilities have not been made operational. GHMC may either develop these sites on priority, and manage the fresh waste in these facilities instead of accumulating it in HIMSWM Project or develop additional processing/utilization capacity at HIMSWM Project. GHMC to evaluate the same and take immediate actions in this regard. Further, GHMC to operationalize the WTE Plant being set up in HIMSWM Project and also identify additional avenues for processing of RDF accumulated (68.17 lac T) on its premises.

iii. Further, the other accumulated semi-processed waste in HIMSWM Project also needs to be processed/utilized on priority. Thereafter, the capped site is to be opened gradually in phase wise planned manner for biomining.

iv. The groundwater in an around the dumpsite is contaminated as per the analysis of ground water of all samples monitored during the inspection. Further, as per the monitoring carried out by TSPCB, increasing trend in concentration of COD & TDS has been observed in the groundwater collected from the said area, indicating contamination of the groundwater with leachate.

v. The MEE condensate from the Leachate treatment plant of 01 MLD capacity, also shows high concentration of COD, indicating the inefficiency of the leachate treatment system. It is partly utilized in ash quenching of WTE plant, while the rest is disposed in natural storm water drain. Conditions for discharge of MEE have not been stipulated in the Consent issued by TSPCB. TSPCB shall immediately prescribe standards for treated leachate and

its utilization/discharge and GHMC shall also immediately conduct efficacy assessment of the leachate treatment system and improve its performance.

vi. The land-fill gas collection system may continue to operate till the time the capped cells are opened for bio-mining. It is observed that only 14% of the gas generated is utilized, while the remaining is flared. Efforts to be put to increase utilization of the gas and flaring of landfill gases shall be minimized by increasing the capacity of gas processing plant. The operator of Integrated Municipal Solid Waste Management Project shall explore the option of utilizing lean landfill gases for possible energy recovery through Waste to Energy Plants.

vii. Fresh waste is being dried for a period of ten days in the composting plant area, prior to trommelling on an unlined area. This area is however, not lined and there is no provision for collection of leachate from this area which has potential for contamination of both ground water as well as surface water bodies. GHMC shall ensure that the drying of waste is done on a lined area and with proper arrangement for collection of leachate from this sections and its conveyance to the leachate treatment plant.

viii. TSPCB has to assess the characteristics of the residue which is generated from MEE as well as the MVR to confirm whether or not, it is hazardous waste. It is to be disposed of as per provisions of HWM Rules 2016, if found to be hazardous waste.

ix. There has been active contamination of groundwater & surface water bodies around the GHMC facility due to the following reasons:

i. Seepage of un-quantifiable leachate, beneath the old capped area

ii. Drying of fresh waste on unlined surface

iii. Run-off from operational areas of various solid waste processing facilities.

d. Seepage from one unlined leachate storage ponds

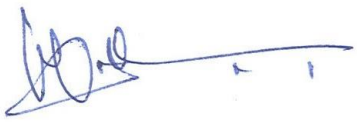
In this regard, GHMC shall achieve effective management of leachate as well as reduction in contamination level of groundwater during and after the bio-mining of the site by implementing the following measures;

- Temporarily covering the freshly dumped waste till the accumulated waste is processed at the facility
- Lining of the area used for drying of waste and making proper arrangement for collection of leachate from this sections and its conveyance to the leachate treatment plant should be made.

- Empty the unlined leachate storage pond (1 nos.) after treating the accumulated leachate. No artificial storage or guard ponds shall be operated without an impervious bottom and side liners (preferably of 1.5mm thick HDPE liner). Adequate measures, including construction of additional storage ponds, if required, to be taken up to prevent overflow from the leachate storage ponds considering monsoon season also.

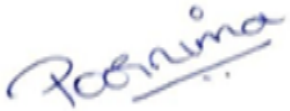
x. GHMC has to undertake projects for remediation of contamination in ground water and surface water bodies (ponds) in and around the HIMSWM Project. In this regard, Detailed Project Report be prepared engaging an expert agency, by detailing out extent of contamination of Ground water as well as the surface water bodies in and around the HIMSWM Project and identification of remediation technics based on techno-economical feasibility and receptor's health risk considerations for the site followed by execution of the same. The said remediation project be carried out under the supervision of Telangana SPCB through a Technical Expert Committee and be monitored by Department of Environment, Govt. of Telangana.

xi. It is humbly submitted that considering the activities involved in preparation of national guidelines for management of leachates from legacy dumpsites viz. inventorization of dumpsites in the country, leachate characterization, practices adopted for leachate collection & treatment, best available technology for leachate collection and treatment and also outlining approaches/steps required to assess extent of contamination of the ground & surface water bodies as well as the soil strata, if any, and their remediation; the Hon'ble NGT may grant three months time to CPCB for preparation of comprehensive guidelines for leachate management at the dumpsites.



B. Vinod Babu
Scientist F, CPCB - Delhi

G. Rambabu
Scientist E, CPCB - Delhi



Poornima B M
Scientist D, CPCB, RD - Chennai

Photographs during Inspection to Jawaharnagar capped site

Legacy Leachate flowing and stagnation

Leachate collection ponds

Leachate collection sump

Leachate flowing through collection pond

Leachate flowing in garland drains

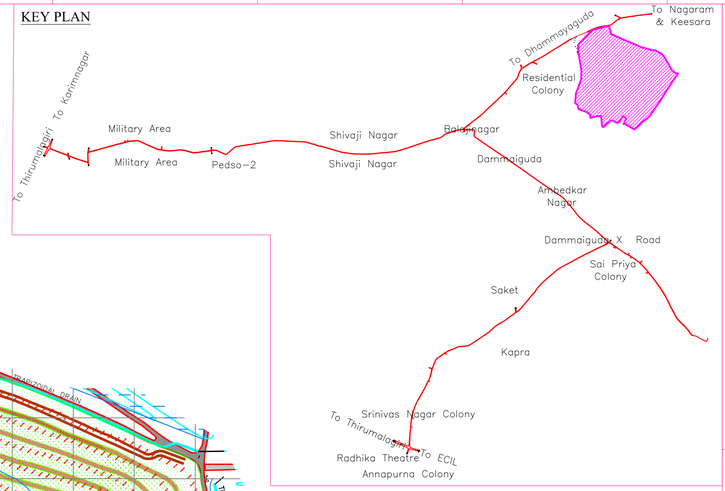
Unlined Legacy Leachate pond

Semi-processed waste dumped at site as RDF

Semi processed waste dumped over capped dumpsite

****

KEY PLAN



Annexure - I

GENERAL NOTES:

1. ALL DIMENSIONS IN MILLIMETERS, LEVELS & COORDINATES IN METERS UNLESS OTHERWISE STATED.
2. THE COORDINATES INDICATED IN THE DRAWING IS TO BE VERIFIED PROPERLY BEFORE EXECUTION.
3. DO NOT SCALE DRAWING. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
4. ANY DISCREPANCIES NOTED SHALL BE BROUGHT TO THE NOTICE OF THE ARCHITECT PRIOR TO EXECUTION.
5. ROAD WIDTH SHOWN ARE INCLUSIVE OF BERMS & STORM WATER DRAINS SHALL BE EXECUTED AS PER SITE GRADING.
6. THESE DRAWINGS ARE ONLY FOR APPROVAL, DEVELOPED FOR PRELIMINARY STAGE DESIGN.

REV:	DESCRIPTION	BY:	DATE

AREA STATEMENT:

REF. NO.	NOTATION	DESCRIPTION	AREA in 'acre'	'%'
1		DUMP CAPPING	123.86	36.53%
2		SANITARY LANDFILL (SLF)	27.53	8.12%
3		COMPOST PLANT	18.77	5.54%
4		COMPOST PLANT (CP3)	3.75	1.11%
5		COMPOST PLANT (CP4)	0.56	0.17%
6		REFUSE DERIVED FUEL (RDF)	61.08	18.02%
7		LEACHATE PONDS, CBG, BOULDERS AREA	4.20	1.24%
8		WASTE TO ENERGY (WtE)	17.10	5.04%
9		LEACHATE TREATMENT PLANT	3.43	1.01%
10		AUXILIARY UNITS	19.74	5.82%
11		GREENERY & PLANTATION	58.98	17.40%

CLIENT:
GREATER HYDERABAD MUNICIPAL CORPORATION (GHMC), HYDERABAD, TELANGANA

INDEPENDENT ENGINEER (IE):
ENVIRONMENT PROTECTION TRAINING AND RESEARCH INSTITUTE (EPTRI), HYDERABAD, TELANGANA.

CONCESSIONAIRE:
Re Sustainability Limited
11B, Level 11, Galaxy By Aurobindo, Hitech City Road, Knowledge City Road, Gachibowli, Hyderabad – 500 081, Telangana.

PROJECT TITLE:
HYDERABAD INTEGRATED MUNICIPAL SOLID WASTE LIMITED
JAWAHAR NAGAR, HYDERABAD, TELANGANA

DRAWING TITLE:
MASTER LAYOUT
PROCESSING & DISPOSAL (P & D) FACILITY, JAWAHAR NAGAR, HYDERABAD, TELANGANA

DRAWING NO: REEL/HIMSW/GHMC/JWR/GA/003 REV: 03

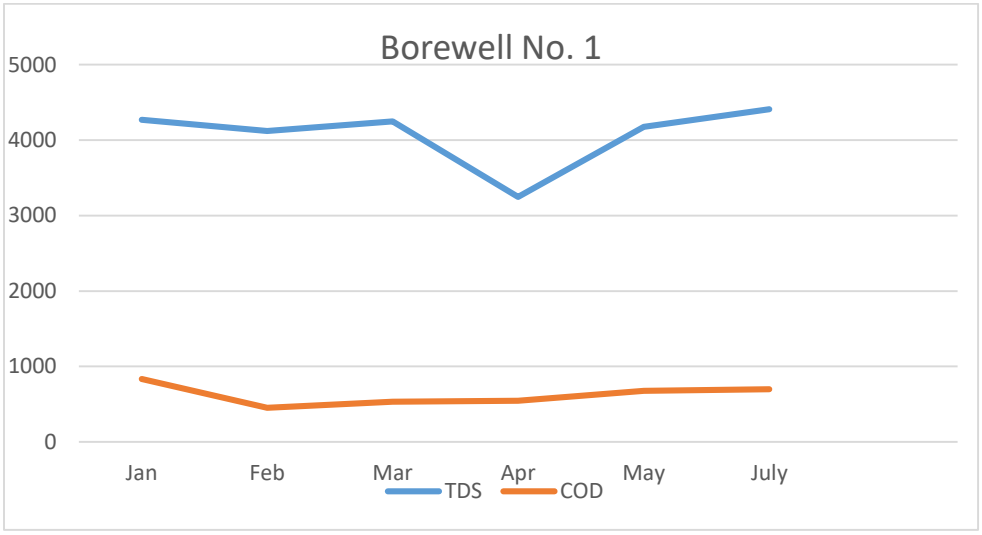
SHEET	A1;1 OF 1	APPROVED BY	SRINIVAS G.
SCALE	AS SHOWN	CHECKED BY	SARADHI S.
DATE	06.07.2024	DRAWN BY	SAI V.

Annexure - II

Leachate Generation HiMSW FY 23-24					
S. No.	**Month & Year**	**Leachate Generation Fresh KL**	**Leachate Generation Capped Dump KL**	**Rainfall Addn KL**	**Rainfall (mm)**
1	Apr-23	16813	1919	1891	146
2	May-23	16424	1771	531	41
3	Jun-23	18731	1746	1394	107.6
4	Jul-23	21934	1719	7678	592.7
5	Aug-23	12980	1593	391	30.2
6	Sep-23	19184	1629	4562	352.2
7	Oct-23	15536	1621	36	2.8
8	Nov-23	15895	1580	547	42.2
9	Dec-23	13193	1615	114	8.8
10	Jan-24	15601	1473	0	0
11	Feb-24	13629	1374	0	0
12	Mar-24	15042	1261	0	0
	Total	**194963**	**19299**	**17144**	**1324**
	Per Day	**533**	**53**	**47**	

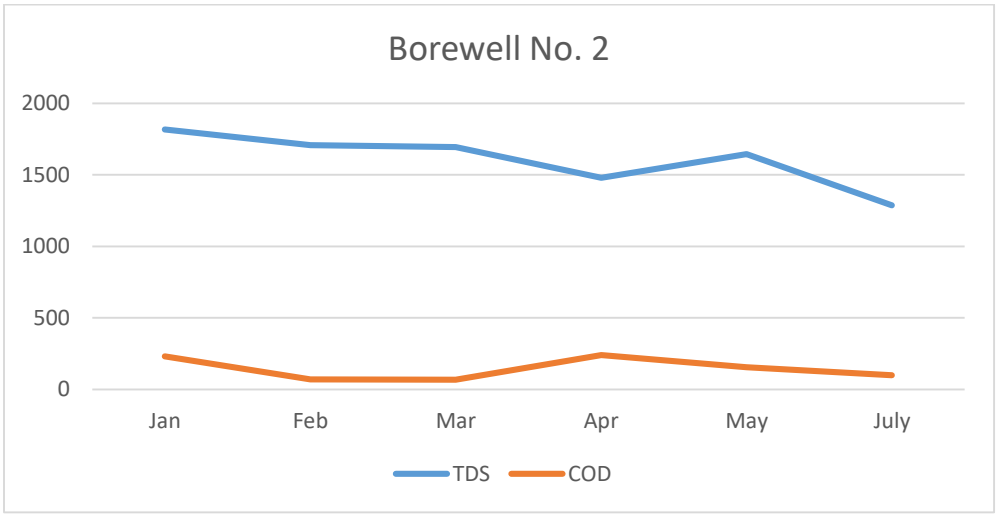
Annexure - III

TDS & COD TREND GRAPHS FOR GROUND AND SURFACE WATER SAMPLES TAKEN FROM BORE WELLS AND LAKES



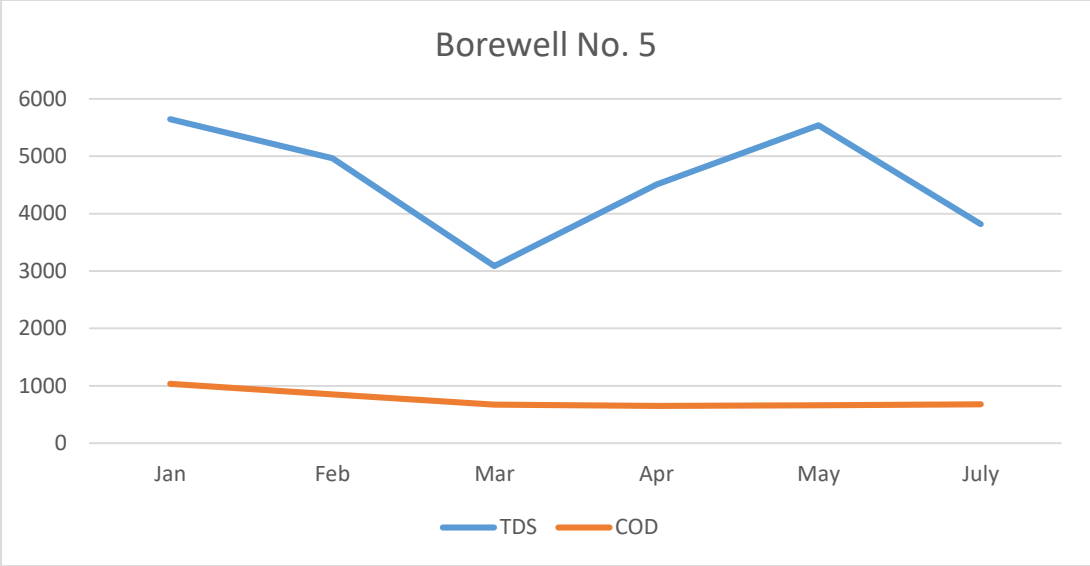
Note:

- TDS for the sample taken during Inspection from Bore Well No. 1 is 4410 mg/l. TDS graph is showing an increasing trend from the month of April.
- COD for the sample taken during Inspection from Bore Well No. 1 is 698 mg/l. COD graph is showing an increasing trend from the month of February.



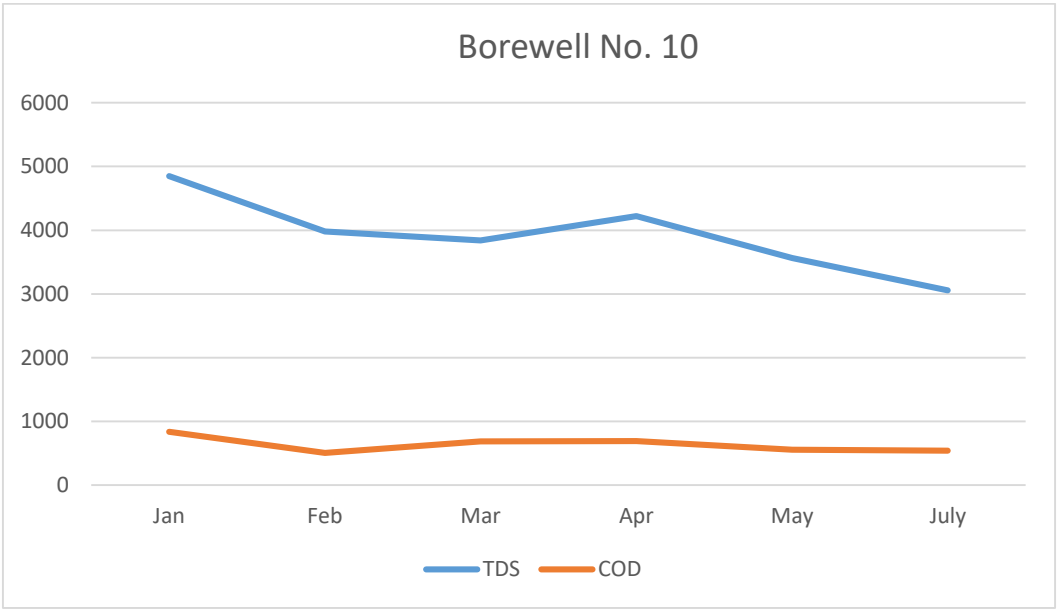
Note:

- TDS for the sample taken during Inspection from Bore Well No. 2 is 1287 mg/l. The % decrease in TDS as compared to May month is 21.76 %.
- COD for the sample taken during Inspection from Bore Well No. 2 is 99 mg/l. The % decrease in COD as compared to May month is 36.13 %.



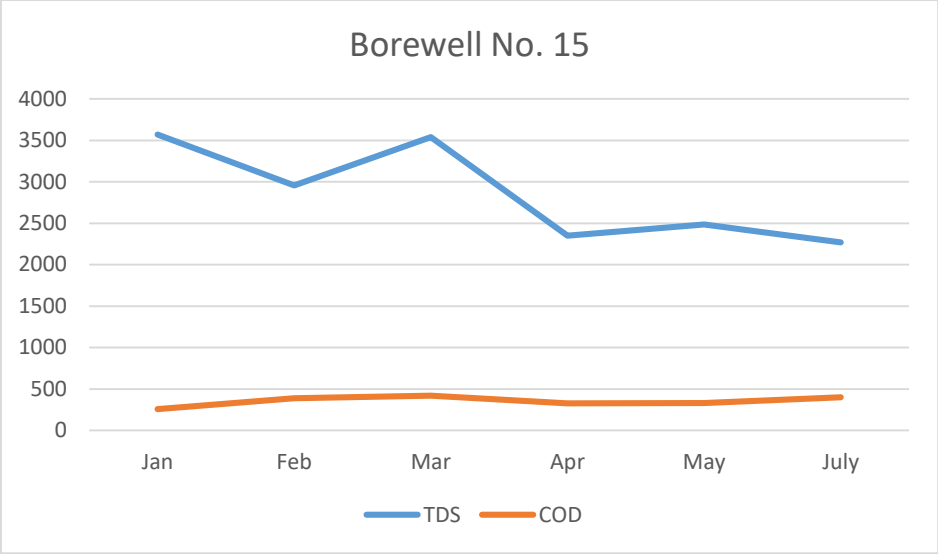
Note:

- TDS for the sample taken during Inspection from Bore Well No. 5 is 3815 mg/l. The % decrease in TDS as compared to May month is 31.15 %.
- COD for the sample taken during Inspection from Bore Well No. 5 is 675 mg/l. COD graph is showing an increasing trend from the month of February.



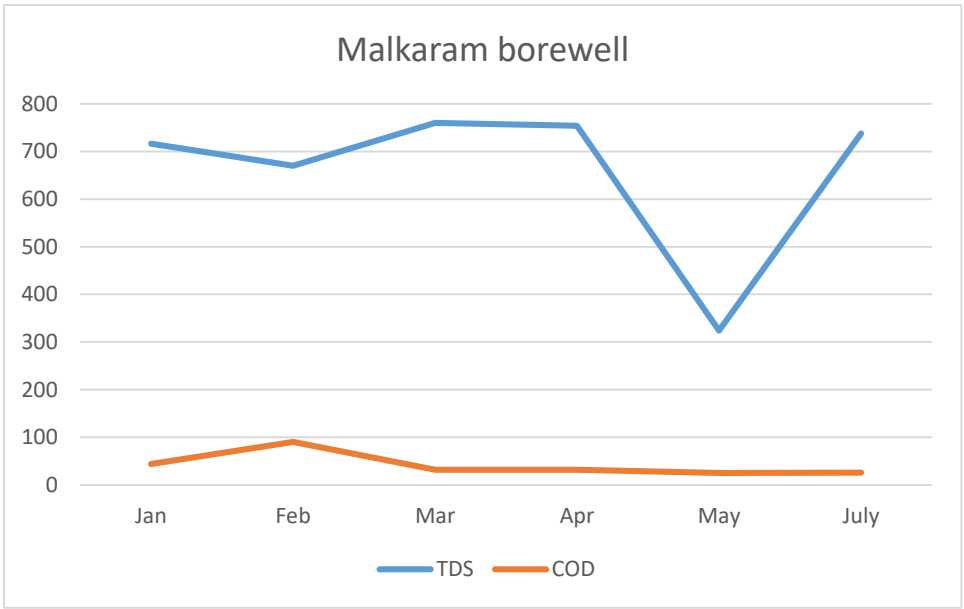
Note:

- TDS for the sample taken during Inspection from Bore Well No. 10 is 3058 mg/l. TDS graph is showing decreasing trend from the month of March.
- COD for the sample taken during Inspection from Bore Well No. 10 is 540 mg/l. COD graph is showing decreasing trend from the month of April.



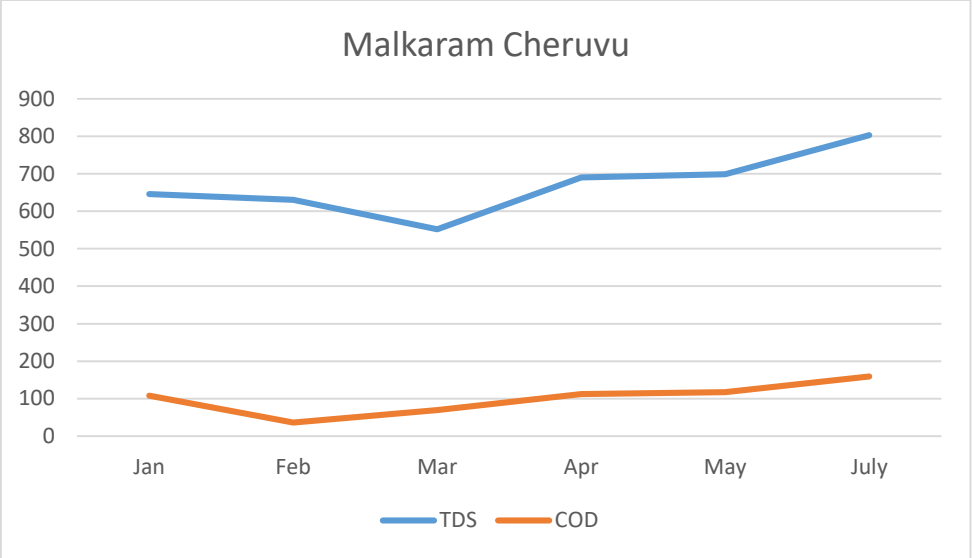
Note:

- TDS for the sample taken during Inspection from Bore Well No. 15 is 2268 mg/l. The % decrease in TDS as compared to May month is 8.8%
- COD for the sample taken during Inspection from Bore Well No. 15 is 401 mg/l. The % increase in COD as compared to May month is 21.14%



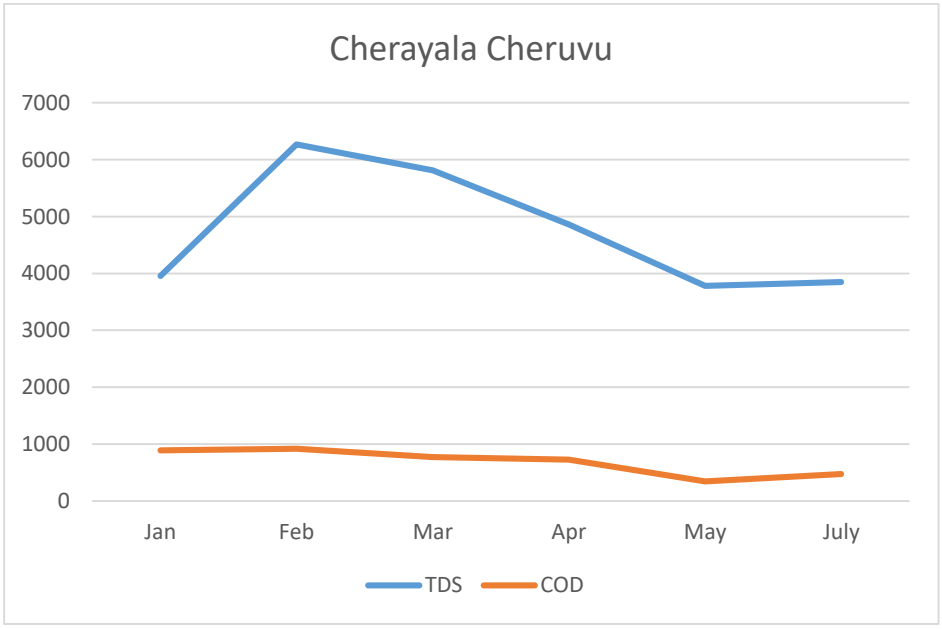
Note:

- TDS for the sample taken during Inspection from Malkaram Bore Well is 738 mg/l. The % Increase in TDS as compared to May month is 127.7%
- COD for the sample taken during Inspection from Malkaram Bore Well is 26 mg/l. COD graph is showing decreasing trend from the month of April.



Note:

- TDS for the sample taken during Inspection from Malkaram cheruvu is 803 mg/l. TDS graph is showing increasing trend from the month of April.
- COD for the sample taken during Inspection from Malkaram cheruvu is 159 mg/l. COD graph is showing increasing trend from the month of March.



Note:

- TDS for the sample taken during Inspection from Cherayala cheruvu is 3850 mg/l. COD graph is showing decreasing trend from the month of February.
- COD for the sample taken during Inspection from Cherayala cheruvu is 476 mg/l. COD graph is showing decreasing trend from the month of February.