

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE, CHENNAI.**

Original Application No.213 of 2015 (SZ)

C.P. Senthil

...Applicant

Versus

TNPCB,
Rep, by its Chairman,
Chennai and Ors.

...Respondent(s)

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Advocate for the Respondent: TNPCB

Tr. Sai Sathya Jith, Advocate

INDEPENDENT REPORT OF SEWAGE TREATMENT PLANT (STP) AT M/s. ELYSIUM PROPERTIES INDIA PVT LTD AS PER THE DIRECTION OF NGT(SZ) DATED APRIL 06, 2022 IN THE MATTER OF ORIGINAL APPLICATION NO. 213 OF 2015

1.0 Background

The National Green Tribunal (NGT) Southern Zone, Chennai in the matter of Original Application No.213 of 2015 in case of Sh.C.P.Senthil Vs Tamilnadu Pollution Control Board and 2 others issued an order dated 04/10/2021, stating that:

“...The 3rd respondent has filed their objection to the joint committee report.

It is seen from the objection submitted by the 3rd respondent to the joint committee report that they have already engaged IIT Madras to study the existing STP and offer suggestions for upgradation of the present Sewage Treatment Plant (STP) to make it more environment friendly and comply with the prescribed norms, they want two months time for submitting the report.

It is seen from the report submitted by the Tamil Nadu Pollution Control Board that on account of certain modifications made project proponent, inlet and outlet norms of the Sewage Treatment Plant (STP) conform to the standards provided. This was seriously opposed by the counsel for the applicant stating that there is no possibility of improvement in the inlet water quality, as no upgradation has been done by them as suggested by the committee so far and he wanted that the same has to be considered by the joint committee appointed by this Tribunal and get further report in this regard.

Since, the 3rd respondent also filed objection to the joint committee report, we feel that it is necessary to direct the Joint Committee to inspect the Sewage Treatment Plant (STP) in question again and on the basis of the temporary measures taken by them as mentioned in the report submitted by the Pollution Control Board which was referred to above, whether there was any improvement in the inlet and outlet norms of the water which is being discharged from the Sewage Treatment Plant (STP), so as to continue with the STP till the further study regarding upgradation is done as suggested by the IIT Madras based on their study.

As regards the environmental compensation and other aspects are concerned, we are not expressing any opinion at this stage, as if any show cause notice has been issued by the Pollution Control Board, then it is for the 3rd respondent to appear before them and submit their Page 9 of 10 explanation and in turn, it is for the Pollution Control Board to take appropriate decision on the same.

The joint committee is directed to inspect the Sewage Treatment Plant (STP) in question and submit a further report regarding the improvement (if any) found on the basis of the improvements said to have been made by the 3rd respondent which was extracted in the report submitted by the Tamil Nadu Pollution Control Board and submit a report to this Tribunal on or before 10.11.2021 by e-filing in the form of Searchable PDF/ OCR Supportable PDF and not in the form of Image PDF along with necessary hardcopies to be produced as per Rules.

In the meantime, the 3rd respondent is also directed to approach the IIT Madras to expedite the study for providing proper design for upgradation of the Sewage Treatment Plant (STP) to meet the situation and for applying to the Pollution Control Board for renewal of their consent.

Further, if the 3rd respondent files any application, it is for the Pollution Control Board to consider and pass appropriate orders in accordance with law, as allowing the STP to continue without Consent to

placing the subject before ZLCCC meeting held on 29/09/2014. Subsequently consent under both the Acts was renewed upto 30/06/2017. At present there is no valid consent to operate from the TNPCB.. The unit has not yet submitted the application for renewal of consent through online.

Meanwhile, frequent complaints have been received from the residents as well as Flushing Meadows Home Owner's Association regarding the improper operation & maintenance of the STP , disposal of untreated /partially treated sewage and intolerable bad smell/odour and noise during the operation of the compressor & the pumps installed in the STP and requested suitable action.

One of the residents namely Thiru.C.P.Senthil has filed an application vide Original Application No.213/2015 before the Hon'ble National Green Tribunal, Chennai included Chairman, TNPCB as 1st respondent, DEE, Coimbatore North as 2nd respondent and Managing Director, M/s. Elysium Properties India P Ltd as 3rd respondent and prayed the following.

1. To Direct the 3rd respondent to remove the STP illegally established in the layout Flushing Meadows, Globus gardens situated at SF No.36/1K , 37 kaikoapalayam village, Vellanaipatty panchayat, Annur Taluk, Coimbatore District.
2. To Direct the 1st & 2nd respondent to initiate action against the 3rd respondent who had indulged in the act of causing pollution in the above said area & water channel (PWD canal) and
3. To Pass any further or other order or orders as this Hon'ble Tribunal may deem fit & proper in the interest of justice.

The counter affidavit has been filed by the Board and the case is still pending before the Hon'ble NGT, Chennai.

The Chairman, TNPCB, Chennai has issued show cause Notice to the unit M/s. Elysium properties India Pvt. Ltd for " why the Board shall not levy and recover the environmental Compensation as suggested by the Joint Committee of Rs. 2,51,80,000/- (Rupees two crores, fifty one lakhs and eighty thousand only) and thereon Rs. 20,000/- (twenty thousand) each day of non compliance from 19/08/2020 onwards till compliance is achieved against you for the non compliance of the recommendations of the Joint Committee on 09/03/2017" and directed to reply within 15 days vide the Chairman's Proc.No. T11/TNPCB/LAW/LAWII/NGT/001621/CBN/Show Cause Notice/2020 dated: 21/11/2020. The unit has furnished reply to the Chairman, TNPC Board, Chennai vide its letter dated 01/01/ 2021 and the remarks on the unit's reply was already submitted to the Board vide this office letter dated 08/02/2021.

In the mean time, The Chairman, TNPCB, Chennai has issued instructions to the unit M/s. Elysium properties India Pvt. Ltd to conduct a study through IIT, Chennai/Center for Environmental Studies, Anna University/ NEERI, Chennai etc., on the operation of the sewage treatment plant and any modification in the existing STP is required so as to make the STP more conducive to improve its operation to meet the situation vide the Chairman's Lr.No. T2/TNPCB/LAW/LAWII/NGT/ F.1621/CBN/2021 dated: 16/04/2021.

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3.0 Evaluation of the performance of STP by IITM at EFM:

The IITM has conducted evaluation of the performance of STP at M/s.Elysium Flushing Meadows (EFM) on 28.08.2021 & 22.09.2021 and has collected samples for analysis. The characteristics of waste water samples collected at different treatment units of STP is presented as below

Report of analysis of sample collected on 28.08.2021

Sl. No	Parameter	S 1	S 2	S 3	S 4	S 5	S 6	S 7	S 8
1	pH	7.12	7.32	7.41	7.35	7.45	7.43	7.43	7.62
2	EC	446	718	735	776	775	778	758	827
3	Turbidity	53.6	262	267	266	44	42.4	49.6	21.9
4	TS	612	1068	1052	1008	748	732	764	740
5	TSS	296	349	348	192	68	68	90	40
6	TDS	316	600	604	648	584	536	556	600
7	COD	339	531	326.4	275.2	93.3	90	82	57.6
8	BOD	150	200	118	227.5	73.6	70.4	41.6	30
9	DO	0.82	0.14	0.91	-	-	-	-	4.02
10	TN	29.5	48.0	51.6	49	52.7	51.0	51.8	52.1
11	Nitrates	1.1	0.6	2.5	2.6	2.7	3.8	2.2	1.9
12	Ammonium	12.5	14	14.2	14.3	14.5	14.2	14.5	11.9
13	Phosphates	3.6	11.6	11.4	11.0	31.5	31.8	33.1	40.8
14	Chlorides	95.6	109.9	119.6	115.0	103.1	109.9	115.3	143.6
15	Sulphates	12.7	52.2	51.1	46.6	38.6	41.5	43.9	46.0
16	Sodium	49	50.2	40.9	44.3	42.6	44.7	45.9	41.3
17	Potassium	7.2	6.9	6.3	7	6.4	5.9	6.4	5.9
18	Calcium	4.1	4.3	3.5	3.5	4.6	4.6	3.6	4.5
19	Magnesium	7.4	6.1	5.9	6.4	6.5	5.9	6.3	5.4
20	Residual Chlorine		BDL				BDL	BDL	BDL
21	TC		>1600						>1600
22	FC		>1600						>1600

Note: S1- Before Screening, S2- After Screening, S3-Aeration Tank outlet, S4- Secondary Clarifier outlet, S5-Filter feed tank outlet, S6-PSF outlet, S7- ACF outlet, S8-Treated water tank out let.

Report of analysis of sample collected on 22.09.2021

S. No	Parameter	Before screening S 1	After screening S 2	Aeration tank S 3	Treated water tank outlet S 8
1.	pH	6.52	6.49	6.73	7.65
2.	EC	586	602	782	1121
3.	Turbidity	67	190	598	7.8
4.	TS	486	954	4880	1143
5.	TSS	89	335	2870	26
6.	VSS	58	321	1830	18
7.	TDS	477	533	2035	1117
8.	DVS	167	133	408	87
9.	DFS	310	400	1627	1031
10.	TVS	224	454	2239	97
11.	SFS	5.3	93	870	8
12.	TFS	262	500	2641	1047
13.	SVS	83	242	2000	18
13.	COD	214	442	3024	24
14.	BOD	93	226	126.3	29.7
16.	TN	32.6	32.6	91.4	27.5
17.	Nitrates	1.03	1.01	2.70	4.52
18.	Ammonium	23.8	36.3	81.6	29.1
19.	Phosphates	13.8	14.7	126.7	7.13
20.	Ca ²⁺	16	32	22.4	128
21.	Mg ²⁺	37.4	24	52.8	32.64
22.	Residual Chlorine	-	-	-	BDL
23.	TC	26x10 ⁶	-	-	7000
24.	FC	26x10 ⁴	-	-	900

Table 1. Standards prescribed by TNPCB for sewage disposal

Parameters	Standards (Applicable to all mode of disposal)			
	Mega and Metropolitan Cities	Class I Cities	Others	Deep Marine Outfall
pH	5.5 - 9.0	5.5 - 9.0	5.5 - 9.0	5.5 - 9.0
BOD	10	20	30	30
TSS	20	30	50	50
COD	50	100	150	150
TN	10	15	-	-
TP	1.0	1.0	1.0	-
FC	Desirable- 100 Permissible- 230	Desirable- 230 Permissible- 1000	Desirable- 1000 Permissible- 10,000	Desirable- 1000 Permissible- 10,000

Note:

- (i). Mega-Metropolitan Cities have population more than 1 crore, Metropolitan Cities- Population more than 10 Lakhs and Class-I Population more than 1 Lakh.
- (ii). All values are in mg/l except pH and Fecal Coliform (in MPN/100mL).
- (iii). The study is classified under others category according to TNPCBs norms.

4.0 Observation and Recommendations of IITM:

A team from IIT Madras visited the STP of Elysium Flushing Meadows and collected the samples from different units of STP. The following major observations were found out based on field visit and detailed analysis of the STP samples.

1. The size of various treatment units adopted in the STP are adequate to treat the wastewater generated in Elysium Flushing Meadows. Therefore, no change in dimensions/sizing of the unit are required for the existing treatment units.
2. The pH, BOD, COD and TSS values of the treated wastewater (i.e., effluent from the STP) is below the disposal standards prescribed by TNPCB.
3. The Fecal Coliforms (FC) in the treated wastewater was >1600 MPN/100 mL, which is due to insufficient hypochlorite dosage. However, the level of FC is lesser than permissible value of 10,000 MPN/100 mL.

4. The treatment units were not effective in achieving the nitrification process and due to which ammonia concentration is almost similar in the inlet and outlet wastewater.
5. Phosphate concentration in the treated water is higher than the inlet concentration, which might be because of the leaching of ions from PSF and ACF.
6. There were no signs of the usage of sludge drying beds that has to be used for drying the screenings and excessive sludge from ASP.
7. The measured noise levels at different residential locations closer to the STP are well within the limits prescribed by TNPCB.

Based on the overall findings, the following recommendations are given for the improvement of the treated water quality and the overall performance of the STP:

1. The conductivity as well as the TDS of the wastewater were increasing after the filtration process, which may be due to the leaching of ions from the PSF and ACF. Therefore, (a) PSF must be maintained properly to sustain the quality of the filtrate, which can be done by making frequent and appropriate backwashing of the filter bed, and (b) ACF should be cleaned chemically or refilled with new adsorbent to maintain the quality of the filtered water.
2. Suitable dosage of hypochlorite must be given to the effluent after ACF to maintain the minimum residual chlorine dosage of 1 ppm. A chlorine contact time of 20 to 30 min must be ensured to reduce the level of FC in the STP effluent.
3. Although the treated wastewater is meeting majority of the disposal standards, the detailed solids analysis (TSS, TDS, TFS and TVS) along with other parameters revealed that the present treatment plant failed to achieve the CPHEEO standard for gardening. Therefore, along with already suggested measures, appropriate units such as ultrafiltration (UF) should be added in the tail end of the STP to improve the quality of the treated wastewater.
4. Electromagnetic flow meter should be installed at the inlet and the outlet of the STP. Moreover, a dedicated book of records for the STP should be maintained.
5. Units such as secondary settler, filtration holding tank and effluent tank should be provided with platforms for improving the ease of access for monitoring purpose.
6. The scrap/unwanted materials stored in the storage room should be cleared from the instrumentation/panel room, and suitable fire-fighting devices should be equipped within the STP.

Based on the Reports, IITM's has concluded as below

The physical dimensions of the various treatment units existing at present in the STP are adequate to treat the wastewater generated in Elysium Flushing Meadows. The BOD/COD ratio of the raw/influent wastewater indicates the suitability of the biological process-based treatment scheme adopted in the STP of EFM. Moreover, the effluent coming out of the STP is meeting most of the standards prescribed by TNPCB except FC and total phosphorous. The standards can be met if the recommendations pertaining to chlorination, ACF and PSF are practiced systematically in everyday STP operation. Moreover, the measured noise levels at different residential locations closer to the STP are well within the limits prescribed by TNPCB.

5.0 Findings and recommendations of the Joint Committee (TNPCB and CPCB officials)

The Joint Committee has inspected the STP of EFM on 07/12/2021 and the samples were collected from Collection tank, Aeration tank, Treated water tank and Ground water seepage well and Bore well samples at southern and eastern side Park of EFM. The Report of analysis of the samples collected from the STP listed in Table 1 and Ground water (Bore Well) sample collected is listed in Table 2 is submitted as below:

Table 1

Sl. No	Parameter	Collection Tank	Aeration Tank	Treated Water Tank	Ground water seepage well
1	pH	7.90	7.87	7.66	7.74
2	TSS	50	32.0	14.0	14.0
3	BOD	22	14.0	3.0	2.0
4	COD	80	48.0	16.0	8.0
5	Ammonical Nitrogen	31.9	15.7	12.3	5.0
6	Total Nitrogen	1.0	2.69	1.87	2.91
7	Fecal Coliform	2100	230	4.5	7.8
8	Total Coliform	4300	790	17	26.0

All values are in mg/l except pH and Fecal Coliform (in MPN/100mL).

Table 2

S. No	Parameter	Bore Well at Eastern side	Bore Well at Southern side
1.	Colour	Less than 5	Less than 5
2.	pH	8.11	7.45

3.	TDS	1370	1880
4.	Chlorides	400	600
5.	Sulphates	209	280
6.	Total Residual Chlorine	< 1.0	< 1.0
7.	Nitrogen as Nitrate	1.86	1.93
8.	Fluoride	0.82	0.79
9.	Alkalinity	340	360
10.	Total Hardness	720	1230
11.	Calcium	108.2	152.3
12.	Magnesium	109.4	206.6
13.	Turbidity	< 1.0	< 1.0
14.	Total Iron	1.84	1.66
15.	Hexavalent Chromium	< 0.01	< 0.01
16.	Copper	0.2462	0.3488
17.	Zinc	0.5460	0.6188

The study is classified under others category according to TNPCBs norms.

1. The pH, BOD, COD and TSS values of the treated sewage water is below the disposal standards prescribed by TNPCB.
2. The Fecal Coliforms (FC) in the treated wastewater is lesser than permissible value of 10,000 MPN/100 mL.

6.0 Compliance of Joint Committee recommendation report dated 11.03.2022

The National Green Tribunal (NGT) Southern Zone, Chennai in the matter of Original Application No.213 of 2015 in case of Sh.C.P.Senthil Vs Tamilnadu Pollution Control Board and 2 others issued an order dated 06.04.2022, stating that:

“....The State Pollution Control Board is also directed to inspect the unit again and conduct discharge water analysis and also submit a report as to whether the recommendations made by the Joint Committee have been complied with by the 3rd Respondent, if not, what is the nature of action taken by them in this regard and also is there any improvement in the water quality discharged by the unit after treatment...”

The TNPCB officials have inspected the STP of EFM on 12/05/2022 and the samples were collected from Collection tank, Aeration tank, Treated water tank and Ground water seepage well and Bore well samples at southern and eastern side Park of EFM. The Report of analysis of the samples collected from the STP listed in Table 3 and Ground water (Bore Well) sample collected is listed in Table 4 is submitted as below:

Table - 3

Sl. No.	Parameter	Collection Tank	Aeration Tank	Treated Water Tank	Ground water seepage well
1	pH	7.22	7.46	7.80	7.61
2	TSS	186	344	6	52
3	BOD	152	25	3	12
4	COD	616	216	56	32
5	Ammonical Nitrogen	25.2	8.4	5.6	11.2
6	Total Nitrogen	0.8	2.59	0.76	2.46
7	Total Phosphorus	<0.1	<0.1	<0.1	<0.1
8	Faecal Coliform	2500	2600	3.7	17
9	Total Coliform	5800	6300	15	39

All values are in mg/l except pH and Fecal Coliform (in MPN/100mL).

Table - 4

S. No	Parameter	Bore Well at Eastern side	Bore Well at Southern side
1.	Colour	<5.0	<5.0
2.	pH	7.44	7.38
3.	TDS	2918	3008
4.	Chlorides	850	800
5.	Sulphates	669	635
6.	Total Residual Chlorine	<1.0	<1.0
7.	Nitrogen as Nitrate	2.85	2.61
8.	Fluoride	1.6	1.55
9.	Alkalinity	284	320
10.	Total Hardness	1500	1200
11.	Calcium	280.6	200.4
12.	Magnesium	194.4	170.1

13.	Turbidity	<1.0	<1.0
14.	Total Iron	0.21	0.13
15.	Hexavalent Chromium	<0.01	<0.01
16.	Copper	0.5988	0.7412
17.	Zinc	0.8462	0.5122

The Joint Committee in its report dated 11.03.2022 has recommended in 4.0 Conclusion point no.b & c as follows

b. The BOD/COD ratio of the raw /influent waste water indicates the suitability of the biological process-based treatment scheme adopted in the STP of EFM. Moreover, the effluent coming out of the STP is meeting most of the standards prescribed by TNPCB except FC and total Phosphorous.

c. The standards can be met if the recommendations pertaining to chlorination, ACF and PSF are practiced systematically in everyday STP operation.

In compliance to the Joint Committee report, the unit has installed UV Disinfection system in the existing Sewage Treatment Plant. The ROA of treated sewage reveals that, all the parameters such as pH, TSS, BOD,COD, Total Nitrogen, Ammonical Nitrogen, Total Phosphorous ,Fecal Coli form are meeting the TNPCB standards prescribed by the Board.

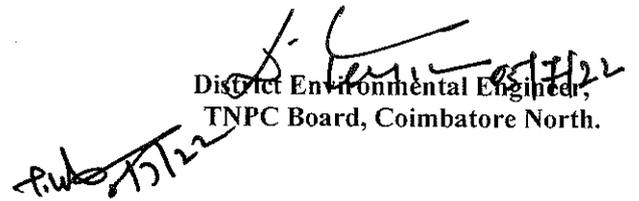
Parameters	Standards (Applicable to all mode of disposal)	
	Others	Treated water sample collected by TNPCB officials on 12.05.2022
pH	5.5 - 9.0	7.80
TSS	50	6
BOD	30	3
COD	150	56
Ammonical Nitrogen	-	5.6
Total Nitrogen	-	0.76
Total Phosphorus	1	<0.1
Fecal Coliform	Desirable- 230 Permissible- 1000	3.7

The study is classified under others category according to TNPCBs norms (Source:NGT (PB) order dated 30.04.2019 in O.A.No.1069/2018

As per the IITM's recommendations pertaining to chlorination, ACF and PSF, the unit has installed UV Disinfection system in the existing Sewage Treatment Plant.

7.0 Conclusion.

1. The unit has followed the recommendations ascertained by Joint Committee as well as IIT recommendation and the treated water analysis report shows that the parameters are within the standards prescribed by TNPC Board.
2. Hence, the unit may be directed to apply for renewal of consent to operate from TNPC Board under the Water and the Air Act subject to the outcome of the Hon'ble NGT order regarding the remittance of Environmental Compensation.


District Environmental Engineer,
TNPC Board, Coimbatore North.

**BEFORE THE HON'BLE NATIONAL
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C.P. Senthil

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**INDEPENDENT REPORT OF
SEWAGE TREATMENT PLANT (STP)
AT M/s. ELYSIUM PROPERTIES
INDIA PVT LTD AS PER THE
DIRECTION OF NGT(SZ) DATED
06.04.2022**

Advocate for the Respondent: TNPCB
Tr. C. Sai Sathya Jith
Chennai

Date: 12.07.2022

Date of hearing on: 13.07.2022