TAMIL NADU POLLUTION CONTROL BOARD

Action Plan on Rejuvenation of River Vasista Manivilundhan to Thiyaganur Stretch (Priority-I)

CONTENTS

Comprehensive Report on Prevention and Control of Pollution in River Vasista (Priority-I): An Action Plan for Rejuvenation

1.0 Introduction.

The Hon'ble National Green Tribunal (NGT) Principal Bench took Suo-Moto Cognizance of news report appeared in "The Hindu" authorized by Shri. Jacob Koshy titled "More River Stretches are now critically polluted – CPCB" and issued directions in para 50(i) to (x) vide its Original Application No. 673/2018 dated: 20.09.2018

1. All States and Union Territories are directed to prepare action plans within two months for bringing all the polluted river stretches to be fit at least for bathing purposes (i.e., BOD < 3 mg/L and FC < 500 MPN/100 ml) within six months from the date of finalisation of the action plans.

2. The action plans may be prepared by a four-member Committee comprising,

   a. **Director, Environment**

   b. **Director, Urban Development**

   c. **Director, Industries**

   d. **Member Secretary, TNPCB**

   This Committee will also be the Monitoring Committee for execution of the action plan. The Committee may be called as **"River Rejuvenation Committee" (RRC)**. The RRC will function under the overall supervision and coordination of Principal Secretary, Environment & Forest, Govt. of Tamilnadu.

3. The action plan will include components like identification of polluting sources including functioning/ status of STPs/ETPs/CETP and solid waste management and processing facilities, quantification and characterization of solid waste, trade and sewage generated in the catchment area of polluted river stretch. The action plan will address issues relating to; ground water extraction, adopting good irrigation practices, protection and management of

Flood Plain Zones (FPZ), rain water harvesting, ground water charging, maintaining minimum environmental flow of river and plantation on both sides of the river. Setting up of biodiversity parks on flood plains by removing encroachment shall also be considered as an important component for river rejuvenation. The action plan should focus on proper interception and diversion of sewage carrying drains to the Sewage Treatment Plant (STP) and emphasis should be on utilization of treated sewage so as to minimize extraction of ground or surface water. The action plan should have speedy, definite or specific timelines for execution of steps. Provision may be made to pool the resources, utilizing funds from State budgets, local bodies, State Pollution Control Board/Committee and out of Central Schemes.

4. The Action Plans may be subjected to a random scrutiny by a task team of the CPCB.

5. The Chief Secretaries of the State and Administrators/ Advisors to Administrators of the Union Territories will be personally accountable for failure to formulate action plan, as directed.

6. All States and Union Territories are required to send a copy of Action Plan to CPCB especially w.r.t Priority I & Priority II stretches for approval.

7. The States and the Union Territories concern are directed to set up Special Environment Surveillance Task Force, comprising nominees of District Magistrate, Superintendent of Police, Regional Officer of State Pollution Control Board and one person to be nominated by District Judge in his capacity as Chairman of Legal Services Authority on the pattern of direction of this Tribunal dated 07.08.2018, in *Original Application No. 138/2016 (TNHRC), "Stench Grips Mansa's Sacred Ghaggar River (Suo-Motu Case).*

8. The Task Force will also ensure that no illegal mining takes place in riverbeds of such polluted stretches.

9. The RRC will have a website inviting public participation from educational institutions, religious institutions and commercial establishments. Achievement and failure may also be published on such website. The

Committee may consider suitably rewarding those contributing significantly to the success of the project.

10. The RRCs will have the authority to recover the cost of rejuvenation in Polluter Pays Principle from those who may be responsible for the pollution, to the extent found necessary. In this regard, principle laid down by this Tribunal in order dated 13.07.2017 in O.A No. 200 of 2014, M.C. Mehta Vs. U.O.I will apply. Voluntary donations, CSR contribution, voluntary services and private participation may be considered in consultation with the RRC.

Based on the directions of Hon'ble NGT (PB) vide its Original Application No. 673/2018 dated: 20.09.2018 the Principal Secretary (Environment & Forest) has convened the River rejuvenation committee meeting on 14.11.2018 regarding the directions issued by the Hon'ble NGT (PB) to prepare action plan for the rejuvenation/restoration of polluted river stretches in Tamil Nadu with the heads of the following departments:

1. Municipal Administration and Rural development and its line departments,
2. Chennai Metro Water Supply and Sewage Board.
3. Tamil Nadu Water Supply and Drainage Board.
4. Environment & Forest.
5. Central Pollution Control Board, Bangalore.
6. Tamil Nadu Pollution Control Board.

In the meeting it was decided to evolve the detailed action plan for the rejuvenation/restoration of polluted river stretches in Tamil Nadu. The minutes of the meeting was communicated to the above departments requesting certain details with action plan for the rejuvenation/restoration of polluted river stretches in Tamil Nadu. Remainder was also communicated to the above departments.

As per the Hon'ble NGT (PB) directions in its Original Application No. 673/2018 dated: 20.09.2018, Four member River Rejuvenation Committee (RRC) was constituted in Tamil Nadu and Government Order (G.O.) was issued by the Environment and Forest (EC.1) Department vide G.O. (D) No. 372 dated: 26.12.2018 (copy enclosed) to execute and to review the action plan for the Rejuvenation/Restoration of water along the polluted river stretches in Tamil Nadu as

ordered by the Hon'ble National Green Tribunal, Principal Bench. River Rejuvenation Committee (RRC) members are as follows:

1. Industries Commissioner.
2. Commissioner, Municipal Administration.
3. The Director of Environment.
4. The Member Secretary, Tamil Nadu Pollution Control Board.

The RRC will function under the overall supervision and coordination of Principal Secretary, Environment and Forests Department, Government of Tamil Nadu.

2.0 Introduction about the River Vasista:

River Vasista Originates from Puzhuthikuttai dam and Pappanaickenpatti Dam flow through Pethanaikenpalayam, Attur, Deviyakurichi, Manivilundhan, Thalaivasal and Aragalur and enters into Villupuram District (map enclosed).

In Salem District the River flows over a stretch of approximately 74 KM from the Pappanaickenpatti Dam and approximately 13 KM from Puzhuthikuttai dam. River Vellaru which originates from Jarugumalai R.F confluence with the River Vasista at Kundu ManiyanKaradu.

River Chitraru which originates from Pethanaickenpalayam lake confluence with the River Vasista at Narasingapuram. River Vasista and River Swedha flowing together at Ayan Peraiyur Village and forms River Vellar which finally confluences in Bay of Bengal at Parangipettai.

The Vellar system consists of the Vasista and Sweata Nadi, which drain two parallel valleys running east and west in Attur taluk, former carrying off the drainage of Kalrayan Hills and the latter carrying the drainage of Kolli Hills and Pachamalais.

3.0 Source of Pollution in river stretch:

The main sources of Pollution in river Vasista is mainly due to the discharge of domestic sewage into the river generated from the local bodies viz Attur & Narasingapuram Municipalities, Pethanaickenpalayam, Yethapur & Belur Town Panchayats, at present said local bodies do not have treatment sytems to handle the sewage.

4.0 Industrial source:

Sago units were located along the banks of the River. These units were issued with Consent order for the treatment and disposal of trade effluent for on land for irrigation. 27 such units located near the River Vasista as below:

Sl. No	Area	Industry Name	Consent validity	Trade effluent quantity in KLD	Disposal
1	Ammampalayam	S.S.SAGO INDUSTRIES	31/3/2026	200	On Land for Irrigation
2	Ammampalayam	SRI VENKATESWARA RICE AND SAGO FACTORY	31/3/2027	200	On Land for Irrigation
3	Ammampalayam	SRI MAHALAKSHMI SAGO FACTORY	31/3/2018	200	On Land for Irrigation
4	Ammampalayam	SRI PALANIMURUGAN SAGO FACTORY	31/3/2023	150	On Land for Irrigation
5	Ammampalayam	KALAI STARCH INDUSTRIES	30/6/2018	150	On Land for Irrigation
6	Ammampalayam	NALLIAPPA SAGO FACTORY	31/3/2018	12	On Land for Irrigation
7	Ammampalayam	SIVA INDUSTRIAL STARCH AND SAGO FACTORY	31/3/2019	12	On Land for Irrigation
8	Ammampalayam	SREE BALAMURUGAN SAGO INDUSTRIES	31/3/2019	150	On Land for Irrigation
9	Ammampalayam	SRI SARASWATHI SAGO FACTORY	31/3/2021	150	On Land for Irrigation
10	Ammampalayam	SHRI RAJAMANIKANDAN MILLS	31/3/2019	150	On Land for Irrigation
11	Ammampalayam	ARUL MURUGAN STARCH INDUSTRIES	31/3/2026	150	On Land for Irrigation
12	Ammampalayam	SRI VENKATACHALAPATHI SAGO FACTORY	31/3/2027	60	On Land for Irrigation

13	Kattukottai	THILLAIKARASI SAGO FACTORY	31/3/2020	200	On Land for Irrigation
14	Kattukottai	SANKAR SAGO FACTORY	31/3/2022	175	On Land for Irrigation
15	Kattukottai	SRI SDK SAGO FACTORY	31/3/2020	200	On Land for Irrigation
16	Kattukottai	SRI SIVASAKTHI SAGO FACTORY	31/3/2008	150	On Land for Irrigation
17	Manivilundan	THIRUMURUGAN SAGO FACTORY	31/3/2022	100	On Land for Irrigation
18	Manivilundan	KUMARAVEL SAGO FACTORY	31/3/2018	100	On Land for Irrigation
19	Narasingapuram	SRI MURUGAN SAGO FACTORY	31/3/2023	12.5	On Land for Irrigation
20	Narasingapuram	SRI VELMURUGAN SAGO FACTORY	31/3/2024	130	On Land for Irrigation
21	Kallanatham	SAKTHI SAGO FACTORY	31/3/2028	12	On Land for Irrigation
22	Thiyaganur	KAMAL SAGO FACTORY	31/3/2020	150	On Land for Irrigation
23	Nathakkarai	N.S.D. SAGO FACTORY	31/3/2016	150	On Land for Irrigation
24	Nathakkarai	SRI VELMURUGAN SAGO FACTORY	31/3/2020	200	On Land for Irrigation
25	Attur	SRI SRINIVASA SAGO FACTORY	31/3/2022	100	On Land for Irrigation
26	Attur	JAYAMURUGAN SAGO FACTORY	31/3/2016	200	On Land for Irrigation
27	Attur	SRI RAMAVILAS SAGO AND STARCH INDUSTRIES	31/3/2023	12	On Land for Irrigation

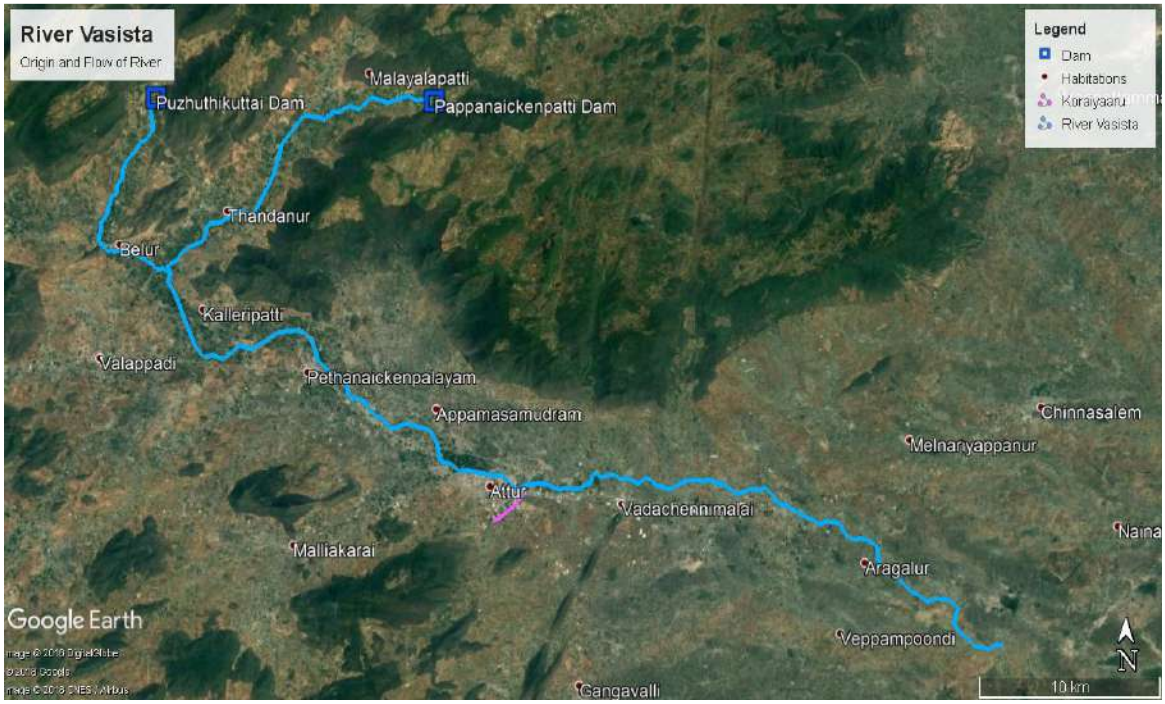

Fig 1: Map showing the origin and the drains connecting River Vasista

Sewage Outfall Points	Solid wastes dumping	Sewage Generation	Solid wastes Generation
1.Belur Outfall Point (OF1) 2.Yethapur Outfall Point(OF2) 3.Pethanaickenpalayam Outfall Point (OF3) 4. Appamasamudram Outfall Point (OF4) 5. Vinayagapuram Outfall Point (OF5)	1.Belur Bridge(SWM 1) 2.Yethapur (SWM 2) 3.Pethanaickenpalayam (SWM 3) 4. Appamasamudram Outfall Point (SWM 4)	1.Belur-0.51 MLD 2.Yethapur -1.164 MLD 3.Pethanaickenpalayam -1.591 MLD 4. Narasingapuram -1.109 MLD 5. Attur-8.858 MLD	1.Belur-1.345 TPD 2.Yethapur -0.210 TPD 3.Pethanaickenpalayam -2.823 TPD 4. Narasingapuram -8.54 TPD 5. Attur-24 TPD

Fig:2 River Vasista – Sewage outfall points and Solid waste dumping locations

Sewage Outfall Points – 5 Locations				
Sl. No.	Sewage Out-fall Location	Name of the Local Body	GPS Co-ordinates	
			Latitude	Longitude
1	Vinayagapuram	Attur Municipality	11°36’9”N	78°35’10”E
2	Appamasamudram	Narasingapuram Municipality	11°36’25”N	78°34’25”E
3	Pethanaickenpalayam	Pethanaickenpalayam Town Panchayat	11°39’3”N	78°30’47”E
4	Yethapur	Yethapur Town Panchayat	11°39’38”N	78°28’29”E
5	BelurBridge	Belur Town Panchayat	11°42’18.3”N	78°24’47”E
Solid Waste Dumping Points – 4 Locations				
Sl. No.	Sewage Out-fall Location	Name of the Local Body	GPS Co-ordinates	
			Latitude	Longitude
1	Appamasamudram	Narasingapuram Municipality	11°36'25"N	78°34'25"E
2	Pethanaickenpalayam	Pethanaickenpalayam Town Panchayat	11°39'14"N	78°30'41"E
3	Yethapur	Yethapur Town Panchayat	11°39'37.78" N	78°28'29.03"E
4	BelurBridge	Belur Town Panchayat	11°42'18.3"N	78°24'47"E

Photographs Showing the Sewage Out-fall Points

River Vasista – Vinayagapuram (Attur Municipality) – 11°36'9"N 78°35'10"E

River Vasista – Appamasamudram (Narasingapuram Municipality) – 11°36'25"N 78°34'25"E

River Vasista - Pethanaickenpalayam Town Panchayat – 11°39'3"N 78°30'47"E

River Vasista Yethapur Town Panchayat – 11°39'38"N 78°28'29"E

River Vasista - Belur Town Panchayat - 11°42'18.3"N 78°24'47"E

Photographs Showing the Solid Waste Dumping Points

River Vasista – Appamasamudram (Narasingapuram Municipality) – 11°36'25"N 78°34'25"E

River Vasista – Pethanaickenpalayam Town Panchayat – 11°39'14"N 78°30'41"E

River Vasista – Yethapur Town Panchayat – 11°39'37.78"N 78°28'29.03"E

River Vasista – Belur Town Panchayat – 11°42'18.3"N 78°24'47"E

4.1 District/Area wise details of Industries

Sl. No.	Taluk	LARGE				MEDIUM				SMALL				Total
		Red	Orange	Green	White	Red	Orange	Green	White	Red	Orange	Green	White	
1	Attur	2	3	1	0	0	0	0	0	7	181	28	1	**223**
2	Pethanaickenpalayam	0	1	0	0	0	0	1	0	0	12	7	0	**21**
3	Vazhappadi	4	9	3	0	1	3	1	0	13	67	24	2	**127**
	** **Total** **	**6**	**13**	**4**	**0**	**1**	**3**	**2**	**0**	**20**	**260**	**59**	**3**	**371**

4.2 Details of industries located in the taluks where the River passes:

Type of units	Valappady	Pethanaickenpalayam	Attur	Total
Sago industries, Dairy, Milk Chilling, Stone Crusher and Stone quarries	223	21	127	371

5.0 Inspection Team Members:

Inspection team was formed by Tamil Nadu Pollution Control Board including Engineers and Scientists for inspection, sample collection and analysis of samples along the entire stretch as per the Hon'ble NGT (PB) directions in its original application number 673/2018 dated 20.09.2018.

Sl. No.	Polluted River Stretch	Jurisdiction Office	Name of the Team Members Tvl	Designation
1	VasistaRiver Thathiampati to T.Konagapadi- Priority- 1	O/o DEL, Hosur.	S. Dhanapal	Deputy CSO
2		O/o, DEL, Dindukkal	M. Sakthivel	Deputy CSO
3		O/o, AEL, Salem	Gopal	Field Assistant

6.0 Sample collection details in the River Vasista

Details of sample collection from industries:

Due to non-availability of Raw materials the Sago units were not under operation and no samples were collected from the industries. Effluent samples were collected from the M/s. Hatsun Agro Products Ltd (Milk Chilling Plant) located in Thalaivasal.

7.0 River water and drain samples, Ground water samples collected details with live photograph along the River stretch (Bore well, dug well etc.,)

During 4th of January, 2019 the team constituted for sample collection has collected 8 samples from River Vasista to study the pollution impact, of which 3 samples were collected in the river stretch and 5 ground water samples were collected at certain salient points mainly covering before and after confluence of sewage. Details of sampling locations with date of sampling are given in the table below**.**

Sl. No.	Point of collection	GPS coordinates		Date of sample collection
1	Anaimedu Reservoir	11°46'29.1"N	78°25'46.9"E	03/01/2019
2	Ethapur (BW) Down	11°39'31.6"N	78°28'37.1"E	03/01/2019

	stream			
3	Pethanaickenpalayam (OW) Down stream	11°39'21.5"N	78°30'44.9"E	03/01/2019
4	Attur -Down Stream	11°35'48.6"N	78°37'08.4"E	03/01/2019
5	Manivizhandan Village (BW) Down Stream	11°35'51.7"N	78°42'57.7"E	03/01/2019
6	Thalaivasal River – Down Stream	11°35'10.4"N	78°45'04.8"E	03/01/2019
7	Aragalur (OW) –Down Stream	11°33'49.2"N	78°47'35.5"E	03/01/2019
8	Chitheri (OW)-Down stream	11°31'57.8"N	78°50'00.3"E	03/01/2019

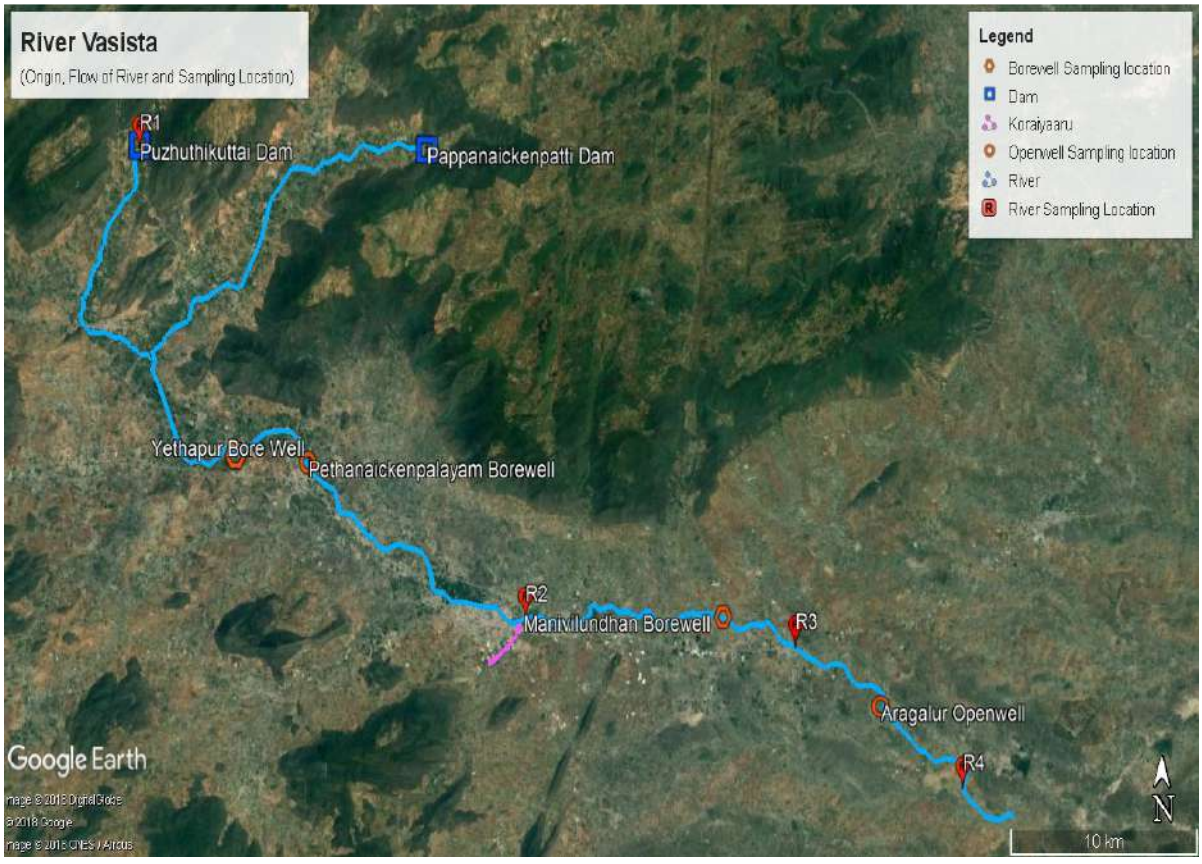

Fig 2: Map showing the origin and the drains connecting River Vasista

Photographs taken during sampling

Sampling location in Anaimedu Reservoir

Sampling location in Ethapur (BW) Down stream

Sampling location in Pethanaickenpalayam (OW) Down stream

Sampling location in Attur -Down Stream

Sampling location in Manivizhandan Village (BW) Down Stream

Sampling location in Thalaivasal River – Down Stream

Sampling location in Aragalur (OW) –Down Stream

8.0 Status of water quality of river water in the study area.

River water samples are collected from River Vasista at three locations (i.e Anaimedu Reservoir, Auttur (Down-Stream) and Thalaivasal River (Down-Stream). Water quality monitoring results for eight samples collected from River Vasista is given in the table below - for general parameters and heavy metals.

Sl. No	Sample No.	Point of Collection	DO	Faecal * Coli form	BOD	Cu	Zn	Pb	Cd	Ni	Mn	Fe	T.Cr	Status of compliance with respect to WQC limit
			mg/l	MPN/ 100Ml	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	
1	1736	Anaimedu Reservoir	7.0	11	7.5	<0.0015	<0.0015	<0.015	<0.0008	0.332	<0.1	<0.05	<0.05	Complied except BOD
2	1739	Auttur (Down Stream)	NIL	$170x10^4$	342	1.99	<0.0015	<0.015	<0.0008	0.455	<0.1	<0.05	<0.05	Not complied
3	1741	Thalaivasal River (Down Stream)	6.9	140	4	<0.0015	0.0042	<0.015	<0.0008	0.188	<0.1	<0.05	<0.05	Complied except BOD
Water quality criteria (WQC) limit for Bathing			**≥ 5 mg/l**	**≤ 500 MPN/100 ml**	**≤ 3 mg/l**	-	-	-	-	-	-	-	-	-

9.0 Status of water quality of ground water in the study area

Ground water samples were collected at five locations (i.e. Ethapur (Down-stream) Bore well, PethanaickenPalayam (Down-stream) Open well, Manivizhandhan Village (Down-stream) Bore well, Open well Aragallur (Down-stream)& Open well Chitheri (Down Stream) by the Inspection team. Ground water sample collected from afore-said location was analysed in TNPCB laboratory. Water Quality Monitoring Results of ground water sample collected by the Inspection team is given in the table below

Sl. No	Sample No.	Point of Collection	SO4	F	O&G	Cu	Zn	Pb	Cd	Ni	Mn	Fe	T.Cr	Status of compliance with respect to WQC limit
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	
1	1737	Ethapur (Down stream) Bore well	149	0.484	< 1	0.098	<0.0015	<0.015	<0.0008	0.049	<0.1	<0.05	<0.05	Cu & Ni not Complied
2	1738	PethanaickenPalayam (Down stream) Open well	115	0.397	< 1	<0.0015	<0.0015	<0.015	<0.0008	0.088	<0.1	0.074	<0.05	Nickel not complied
3	1740	Manivizhandhan Village (Down stream) bore well	115	0.253	< 1	<0.0015	<0.0015	<0.015	<0.0008	0.033	<0.1	0.074	<0.05	Nickel not complied
4	1742	Open well Aragallur (Down stream)	131	0.541	< 1	<0.0015	<0.0015	<0.015	<0.0008	0.082	<0.1	0.084	<0.05	Nickel not complied
5	1743	Open well Chitheri (Down Stream)	113	0.282	< 1	<0.0015	<0.0015	<0.015	<0.0008	0.088	<0.1	0.065	<0.05	Nickel not complied
IS10500-2012 Drinking water specifications-Acceptable limit (in mg/l)			**200**	**1.0**	**0.5 ***	**0.05**	**5**	**0.01**	**0.003**	**0.02**	**0.1**	**0.3**	**0.05**	**Complied**

10.0 Assessment of Compliance of the effluents/sewage discharge norms by the industries in study area.

The Report of analysis of the treated trade effluent samples collected from M/s. Hatsun Agro Products Ltd located at Thalaivasal reveals that the unit achieves the discharge standards prescribed by the Board. ROA of treated trade effluent and ground water samples collected around M/s. Hatsun Agro Products Ltd located at Thalaivasal are enclosed in Annexure-1.

- **Whether there is any flow of sewage in upstream of the sampling point.**

The main source of pollution in River Vasistanadhi from Belur to Aragalur stretch is sewage from local bodies and municipal solid wastes. The River passes through Belur, Ethapur Town Panchayat and Pethanaickenpalayam Town Panchayat at the periphery and receives municipal wastewater from the adjoining habitations. Major contribution of sewage is from Narasingapuram and Attur Municipality. In summer months the river is completely dry. The municipal solid waste generated from the adjacent local bodies dumped at the banks of the river in haphazard manner. There are sago units and rice mills are located in the River banks. There is no industrial effluent discharge into the River.

Sago units were located along the banks of River. These units were issued with Consent order for the treatment and disposal of trade effluent for on land for irrigation.

Details on Consent / Authorization issued by the Board for the establishment of the STP / Solid waste facility

a. Sewage Treatment Plant - Nil

b. Solid Waste Facility - Nil

c. Narasingapuram and Attur Municipality has provided decentralized micro composting centres across the city to manage the bio degradable solid wastes. Attur Municipality and Narasingapuram Municipality have applied for the authorization.

- **Status on the ground reality of the STPs and Waste processing facilities provided by the local body for handling sewage and solid waste.**

a. Sewage Treatment Plants- No STPs were provided by the local bodies located along the River Stretch.

b. Solid Waste Management-
Narasingapuram and Attur Municipality has provided decentralized micro composting centres across the city to manage the bio degradable solid wastes.

11.0 Status of Sago industries located along the River bank with consent details, waste water generation and final mode of industrial effluent discharge:

Details already furnished in point No. 4.0

11.1 Operation status of ETPs

Basically the sago units located in these areas has provided ETP with the following components for the treatment of their trade effluent.

1. Collection Tank
2. Anaerobic Digestor
3. Aeration tank
4. Settling Tanks
5. Treated water sump
6. Sludge drying beds

These units operate and maintain the ETPs for the Bio-Gas generation and they are being utilised for Sago Roasting and use in customised biogas D.G sets and the treated effluent are utilized for irrigation purposes.

12.0 Status of installation and operation status of Online Continuous Effluent Monitoring Systems (OCEMS)

The unit M/s. Hatsun Agro Products Ltd located at Thalaivasal is at a distance of 1.1km from the River Vasista. The unit has provided Online Continuous Effluent Monitoring System (OCEMS) and it is continuously monitored by TNPCB.

13.0 General observations and recommendations of the inspection team

S. No.	Name of the unit and address	Online stack monitors			Online effluent parameters	
	Others	Stack attached to	Required	Provided	Required	Provided
1	Hatsun Agro Product Ltd, Milk Powder Division, Attur Main Road, Karipatti Village, Vazhappadi Taluk, Salem Dist	8TPH Coal Boiler	SPM SOx NOx Hg	SPM	BOD pH COD TSS Flow	BOD pH COD TSS Flow
2	Hatsun Agro Product Ltd, Milk Powder Division, Attur Main Road, Karumapuram Village, Vazhappadi Taluk, Salem Dist	8 TPH F.O and 3TPH Wood Boiler (Common stack)	-	SPM	BOD pH COD TSS Flow	BOD pH COD TSS Flow
3	Hatsun Agro Product Ltd, Dairy Division, Aatupannai, Periyeri Attur Taluk, Salem District.	3 TPH Wood Boiler (Common stack)	-	SPM	BOD pH COD TSS Flow	BOD pH COD TSS Flow

It is recommended that the Narasingapuram Municipality, Attur Municipality and other Town Panchayats, which are located along the stretch of the River Vasista, should provide STP to the entire quantity of the Sewage.

14.0 Recommendations- Action plan of the River stretch

Proposed Short Term and Long Term Action Plan for Rejuvenation of River Vasistanadhi:

Sl. No.	Description of Source	Action Plan for Rejuvenation of River Vasistanadhi	Organisation/ Agency Responsible for Execution of the Action Plan	Time Target
1.	Industrial Pollution Control	No industrial discharge	TNPCB	-
2.	Sewage Treatment and Disposal plan	❖ **Salem District** ❖ **Narasingapuram Municipality** • No. of sewage outfall identified: 3 Location • Population: 26000 • Qty of Sewage generated: 1.28 MLD • Status of UGSS: Not Provided • Status of STP: Not Provided • Present Mode of Disposal: The black water is collected in septic tanks by individual households. • **Plan of Action:** • In order to treat the black water, it is proposed to **cluster with Attur FSTP** and co-treated. • To handle the **sullage water** discharged through **3 no. of major channels** which confluence with the river stretch, it is proposed to provide in-situ treatment methodology by	Municipal Administration	

		providing Screen, Grit followed by Horizontal planted gravel filter which will treat the sullage and discharge the treated water into the water course. • The ULB has prepared detailed estimate for establishing liquid waste treatment facility at a cost of **Rs100.45lakh**. This fund is proposed to be tied up with **Capital grant fund** 2019-20 and is expected to be completed by **October 2019.**		Oct-2019
		❖ **Attur Municipality** • No. of sewage outfall identified: 1 Location • Population: 65200 • Qty of Sewage generated: 4.45 MLD • Status of UGSS: Not Provided • Status of STP: Not Provided • Present Mode of Disposal: The black water is collected in septic tanks by individual households. • **Plan of Action:** • In order to treat the black water, construction of **40 KLD Fecal Sludge Treatment Plant** work is taken up and is in progress at an estimated cost of **Rs. 4.41 Crore** and it will be completed before **31.12.2019** under **IUDM 2018-19 fund**.	Municipal Administration	

		• To handle the **sullage water** discharged through **3 no. of major channels** which confluence with the river stretch, it is proposed to provide **in-situ treatment** methodology by providing Screen, Grit followed by Horizontal planted gravel filter which will treat the sullage and discharge the treated water into the water course. • The ULB has prepared detailed estimate for establishing liquid waste treatment facility at a cost of Rs.165.70 lakh. This fund is proposed to tied up with **Capital grant fund 2019-20** and is expected to be completed by **October 2019.**		Oct-2019
		❖ **Pethanaickenpalayam Town Panchayat** • No. of sewage outfall identified: 1 Location • Population: 17678 • Qty of Sewage generated: 0.520 MLD • Status of UGSS: Not Provided • Status of STP: Not Provided • Present Mode of Disposal: • The black water is collected in septic tanks by individual households. • 0.660 MLD of Sullage water discharged into irrigation channel in	Directorate of Town Panchayat	

		2 locations. **Plan of Action:** • Detailed project report have been prepared at an estimated cost of Rs 120.00 Lakhs for treatment and disposal of sullage water by Reed Bed Filter Technology under IUDM 2019-2020 fund. • Total number of household 4872. In which 3900 numbers having individual toilets. In addition to that 456 numbers of household covered under HFA Scheme. Balance 516 numbers of household using community toilets. Septic tank waste collected through private lorries to STP. STP maintained by Salem Corporation (Distance-35KM).		June-2020
		❖ **Yethapur Town Panchayat** • No. of sewage outfall identified: 1 Location • Population: 10968 • Qty of Sewage generated: 0.33 MLD • Status of UGSS: Not Provided • Status of STP: Not Provided • Present Mode of Disposal: • The black water is collected in septic tanks by individual households. • 0.330 MLD of Sullage water discharged into irrigation channel in 8 locations.	Directorate of Town Panchayat	

		Plan of Action: • Detailed project report have been prepared at an estimated cost of Rs 100.00 Lakhs for treatment and disposal of sullage water by Reed Bed Filter Technology under IUDM fund. • Total number of household 2729. In which 506 numbers having individual toilets. In addition to that 158 numbers of household covered under HFA Scheme. Balance 998 numbers of household 2065 using community toilets. Septic tank waste collected through private lorries to STP. STP maintained by Salem Corporation (Distance-30KM).		June-2020
		❖ **Belur Town Panchayat** • No. of sewage outfall identified: 1 Location • Population: 1617 • Qty of Sewage generated: 0.26 MLD • Status of UGSS: Not Provided • Status of STP: Not Provided • Present Mode of Disposal: • The black water is collected in septic tanks by individual households. • 0.260 MLD of Sullage water	Directorate of Town Panchayat	

		discharged into irrigation channel in 5 locations. **Plan of Action:** • Detailed project report have been prepared at an estimated cost of Rs 100.00 Lakhs for treatment and disposal of sullage water by Reed Bed Filter Technology under IUDM fund. ❖ Total number of household 2404. In which 1273 numbers having individual toilets. In addition to that 133 numbers of household covered under HFA Scheme. Balance 998 numbers of household using community toilets. Septic tank waste collected.		June-2020
		❖ **Manivilundhan Village Panchayat** • No. of sewage outfall identified: Nil • Population: 12115 • Qty of Sewage generated: 0.018 MLD • Status of UGSS: Not Provided • Status of STP: Not provided • Present Mode of Disposal: • Discharged into Soak pits. • **Plan of Action:** • Total nos. of habitations is 21 and has 3139 households. Now	Rural Development & Panchayat Raj	

		individual & community soak pits are proposed under MGNREGS 2019-2020. ❖ After construction of soak pits, there is no sewage water will be directly disposed into the river.		July-2019
		❖ **Thiyaganur Village Panchayat** • No. of sewage outfall identified: Nil • Population: 2234 • Qty of Sewage generated: 0.096 MLD • Status of UGSS: Not Provided • Status of STP: Not provided • Present Mode of Disposal: • Discharged into Soak pits. • **Plan of Action:** • Total nos. of habitations is 4 and has 655 households. Now individual & community soak pits are proposed under MGNREGS 2019-2020. After construction of soak pits, there is no sewage water will be directly disposed into the river.	Rural Development & Panchayat Raj	July-2019
3	Solid Waste Management and Disposal Plan	❖ **Salem District** ❖ **Narasingapuram Municipality** • No. of MSW dumping points identified: 1 • Population: 26000 • Qty of MSW Generated: Wet waste: 4 TPD Dry waste: 3 TPD	Municipal Administration	

		Total: 7 TPD MSW Collection – 94% MSW Segregation – 87% Present Treatment Method: Wet waste: Nil Dry waste: 3 TPD • Other saleable waste (Plastic, Rubber, Metal etc.,) of 1.8 Tonne sold out to the identified vendors & registers are being maintained. • The Non saleable Non Biodegradable waste of 0.9 TPD is stored in the earmarked location at MCC, Appamasamudhram. • Inert and Silt 0.3 TPD stored along with C&D waste. Used for Filling Low Lying Areas **Proposed Plan of Action:** • Wet Waste of 4 TPD are proposed as below: Micro Composting Plant – 3Nos. of 8 TPD (Will be completed before April 2019-SBM Funds) ❖ **Attur Municipality** • No. of MSW dumping points identified: Nil • Population: 65200 • Qty of MSW Generated: Wet waste: 10 TPD Dry waste: 8 TPD Total: 18 TPD MSW Collection – 90%	Municipal Administration	Apr-2019

		MSW Segregation – 84% Present Treatment Method: Wet waste: Nil Dry waste: 8 TPD • Other saleable waste (Plastic, Rubber, Metal etc.,) of 4.8 Tonne sold out to the identified vendors & registers are being maintained. • The Non saleable Non Biodegradable waste of 2.4 TPD is stored in the earmarked location at Thennakudipalayam. • Inert and Silt 0.8 TPD stored along with C&D waste. Used for Filling Low Lying Areas **Proposed Plan of Action:** • Wet Waste of 10 TPD are proposed as below: Micro Composting Plant – 5Nos. of 15TPD (Will be completed before April 2019-SBM Funds) ❖ **Pethanaickenpalayam Town Panchayat** • No. of MSW dumping points identified: 1 • Population: 17678 • Qty of MSW Generated: 2.83 TPD Source Collection & Segregation – Yes Treatment method: Windrow composting	Directorate of Town Panchayat	Apr-2019

		Present Mode of MSW Disposal: ○ Wet Waste of 1.330 TPD are processed by Windrow Composting method. ○ Dry Waste – 0.916 TPD ○ Recycable waste (plastic, metal, rubber etc., 0.150 TPD sold out to the identified vendors. ○ The Non Recycable waste of 1.330 TPD periodically disposed. ○ Inerts & Silt -0.580 TPD Used in Filling Low Lying Areas. **Plan of Action:** Work under progress at an estimate cost of RS.60 Lakh for Providing Protection Compound Wall and additional Windrow Platform with Shed under SBM fund. ❖ **Yethapur Town Panchayat** • No. of MSW dumping points identified: 1 • Population: 11626 • Qty of MSW Generated: 2.90 TPD Source Collection & Segregation – Yes Treatment method: Windrow & Vermi composting **Present mode of MSW Disposal:** • Wet Waste of 1.670 TPD are processed by Windrow Compost method.	Directorate of Town Panchayat	Dec-2020

		• Dry Waste – 1.010 TPD • Recycable waste (plastic, metal, rubber etc., 0.24 TPD sold out to the identified vendors. • Inerts & Silt -0.420 TPD Used in Filling Low Lying Areas. **Plan of Action:** Work under progress at an estimate cost of RS.100 Lakh for Providing Protection Wall, Compound Wall, additional Windrow Platform with Shed, and Bio Mininig for disposal of Historical waste under SBM fund. ❖ **Belur Town Panchayat** • No. of MSW dumping points identified: 1 • Population: 9260 • Qty of MSW Generated: 1.75 TPD Source Collection & Segregation – Yes Treatment method: Windrow composting **Present mode of MSW Disposal:** • Wet Waste of 1.75 TPD are processed by Windrow Compost method. • Dry Waste – 0.300 TPD o Recycable waste (plastic, metal, rubber etc., 0.075 TPD sold out to the identified vendors.	Directorate of Town Panchayat	Dec-2019

		○ The Non Recycable waste of 0.225 TPD periodically disposed. ○ Inerts & Silt 0.410 TPD Used in Filling Low Lying Areas. **Plan of Action: Nil** MSW treatment facility provided. • Collection, segregation, treatment, disposal are under implementation in accordance with Municipal Solid Waste management Rules 2016. ❖ **Manivilundhan Village Panchayat** • No. of MSW dumping points identified: Nil • Population: 12115 • Qty of MSW generated: 4.84 TPD • Source Collection & Segregation – Yes • Treatment method: ➢ **Bio-Degradable Waste:** Dumped in the compost pits and Cow dung are being sprayed at regular intervals and it becomes manure after 30 days and sold to the farmers. ➢ **Non Bio – Degradable Waste:** Segregated glass, Plastic bottles, Covers, Iron, Aluminium foil sheets etc., once in 15 days and sold to the local merchants.	Rural Development & Panchayat Raj	- -

		• **Plan of Action: Nil** MSW treatment facility provided ❖ **Thiyaganur Village Panchayat** • No. of MSW dumping points identified: Nil • Population: 2234 • Qty of MSW generated: 0.89 TPD • Source Collection & Segregation – Yes • Treatment method: ➢ **Bio-Degradable Waste:** Dumped in the compost pits and Cow dung are being sprayed at regular intervals and it becomes manure after 30 days and sold to the farmers. ➢ **Non Bio – Degradable Waste:** Segregated glass, Plastic bottles, Covers, Iron, Aluminium foil sheets etc., once in 15 days and sold to the local merchants. • **Plan of Action: Nil** MSW treatment facility provided	Rural Development & Panchayat Raj	-
4.	Environmental Flow (E-flow) and Irrigation Practices	➢ Flow is only in the rainy season/Heavy rain. During the monsoon period at flood time the maximum flood discharge in the River is 3243 cusecs. Vasista river on Nov 2010 and May 2018. Vasista river is	PWD-WRD and Irrigation Department.	-

		polluted from Attur to Kattukottai stretch (7km) due to the Attur Municipal sewage wastes into the river.		
5.	Ground Water Quality	Generally the ground water quality is poor - Nickel and Copper level are above the prescribed standards.	State Ground Water Authority, CGWB	-
6.	Flood Plain Zone (FPZ)	➢ Plantation and Biodiversity parks will be formed after demarcation of FPZ and removal of encroachment with the help of Revenue Department.	PWD-WRD, Forest Department	-
7.	Encroachments along the river bank	➢ Demarcation of encroachments will be identified with the help of revenue department. Notice has been issued and some encroachments has been evicted. ➢ Name of reach : Attur to Thalaivasal ➢ Village: Narasingapuram ➢ No. of Encroachment: 271 ➢ Extent of encroachment (in Ha)- 7.51 ➢ Encroachment Evicted - 211. Encroachments identified with the help of revenue department. Notice has been issued and 211 Nos encroachments have been evicted in Vasista River and for balance notice has been issued.	PWD-WRD and Revenue Department	-

15.0 Conclusion:

River Vasista is not a Perennial River. There is no industrial effluent discharge into the River. Only sewage is discharged in certain areas from the local bodies viz Attur, Narasingapuram Municipalities, Pethanaicken palayam,Yethapur & Belur Town Panchayats.

River Vasista is categorized as polluted River stretch under priority-I. The report of analysis of the River Water collected at Anaimedu Reservoir, Auttur (Down-Stream) and Thalaivasal River (Down-Stream) reveals that the D.O level is nil and it also shows the presence of high level of Fecal Coliforms which is due to the sewage discharge from the above said local bodies.

The quality of River water can be improved with the following measures:

- ✓ Attur & Narasingapuram Municipalities, Pethanaickenpalayam, Yethapur & Belur Town Panchayats, shall provide treatment plants within the time frame as per the action plan and shall ensure that the entire sewage generated from the local body is treated and disposed off scientifically.
- ✓ Attur & Narasingapuram Municipalities, Pethanaickenpalayam, Yethapur & Belur Town Panchayats shall complete the establishment of the solid waste treatment facility within the time frame and shall ensure that the entire solid waste generated from the local body area including solid waste dumped along the River Bank is treated and disposed off scientifically.
- ✓ TNPCB shall ensure that no discharge of trade effluent from the Sago units at any point of time.
- ✓ PWD-WRD and Revenue Department shall ensure that no encroachments along the river banks.

ANNEXURE-I			
M/s. HATSUN AGRO PRODUCT LTD, DAIRY DIVISION,THALAIVASAL, DAIRY DIVISION,THALAIVASAL			
Treated Effluent ROA Report for the Month of September-2018			
S.No	**Parameters**	**Units**	**Treated Effluent**
1	pH		7.40
2	Total Suspended Solids	mg/l	16
3	Total Dissolved Solids	mg/l	996
4	Chloride	mg/l	380
5	Sulphate	mg/l	29
6	Oil & Grease	mg/l	<4
7	Biochemical oxygen Demand(BOD)	mg/l	23
8	Chemical Oxygen Demand(COD)	mg/l	96

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ANNEXURE-I

M/s. HATSUN AGRO PRODUCT LTD, DAIRY DIVISION,THALAIVASAL, Surrounding Sample ROA Report for the Month of June-2018

S.No	Parameters	Units	Piezometric Bore well (Near wood shed)	Piezometric Bore well (Irrigation Land)	Primary School(Openwell)	V.Senthilkumar (Openwell)	Gopal (Openwell)	Athiyappan (Openwell)
1	Conductivity	Number	1590	1850	760	1660	1080	1380
2	pH	mg/l	6.92	7.65	7.17	6.93	7.19	7.79
3	Total Dissolved Solids (TDS)	mg/l	948	1116	592	1128	672	836
4	Chloride as Cl	mg/l	149	427	202	496	173	248
5	Sulphate as SO4	mg/l	31	20	46	23	79	87
6	Biochemical oxygen Demand(BOD)	mg/l	<2	<2	<2	<2	<2	<2
7	Chemical Oxygen Demand(COD)	mg/l	16	16	16	16	16	16
8	Fluoride as F	mg/l	<1	<1	<1	<1	<1	<1
9	Total Hardness as CaCO3	mg/l	380	164	340	712	352	384
10	Calcium as Ca	mg/l	138	32	78	257	71	56
11	Magnesium as Mg	mg/l	9	20	35	17	42	59
12	Sodium as Na	mg/l	160	360	70	65	58	150
13	Potassium as K	mg/l	3	5	3	3	4	4
14	Iron total as Fe	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
15	Alkalinity as CaCO3	mg/l	296	240	148	84	128	156

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Annexure - II

SCHEDULE-VI: ENVIRONMENT (PROTECTION) RULES, 1986

(See rule 3A of E (P) Rules, 1986)

GENERAL STANDARDS FOR DISCHARGE OF ENVIRONMENTAL POLLUTANTS PART-A: EFFLUENTS

Sl. No.	Parameter	Standards			
		Inland Surface Water	Public Sewers	Land for Irrigation	Marine coastal areas
1	2	3(a)	3(b)	3 (c)	3 (d)
1	Colour and odour	See 6 of Annexure-I	-	See 6 of Annexure-I	See 6 of Annexure-I
2	Suspended solids mg/l Max.	100	600	200	(a) For process waste water -100 (b)For cooling water effluent 10 % above total suspended matter of influent
3	Particle size of suspended solids	shall pass 850 micron IS Sieve	-		(a) Floatable solids, max 3 mm. (b)Settleable solids, max 850 microns
4	[*Omitted*]				
5	pH value	5.5 to 9	5.5 to 9	5.5 to 9	5.5 to 9
6	Temperature	Shall not exceed 5^{o}C above the receiving water temperature	-	-	Shall not exceed 5^{o}C above the receiving water temperature
7	Oil and grease mg/l, Max	10	20	10	20
8	Total residual chlorine mg/l, Max	1.0	-	-	1.0
9	Ammonical nitrogen (as N) mg/l, Max	50	50	-	50
10	Total Kjeldahl nitrogen (as NH_3) mg/l, Max	100	-	-	100
11	Free ammonia [as NH_3] mg/l, Max	5.0	-	-	5.0
12	Biochemical Oxygen Demand (3 days at 27^{o}C)] mg/l, Max	30	350	100	100
13	Chemical Oxygen Demand, mg/l Max	250	-	-	250
14	Arsenic (as As) mg/l, Max	0.2	0.2	0.2	0.2
15	Mercury (as Hg), mg/l, Max	0.01	0.01	-	0.01
16	Lead (as Pb) mg/l Max	0.1	1.0	-	2.0
17	Cadmium (as Cd) mg/l, Max	2.0	1.0	-	2.0
18	Hexavalent Chromium (as Cr^{+6}) mg/l, Max	0.1	2.0	-	1.0
19	Total chromium (as Cr) mg/l, Max	2.0	2.0	-	2.0

Annexure - II

Sl. No.	Parameter	Standards			
		Inland Surface Water	Public Sewers	Land for Irrigation	Marine coastal areas
20	Copper (as Cu) mg/l Max	3.0	3.0	-	3.0
21	Zinc (as Zn) mg/l, Max	5.0	15	-	15
22	Selenium (as Se) mg/l Max	0.05	0.05	-	0.05
23	Nickel (as Ni) mg/l, Max	3.0	3.0	-	5.0
24	Omitted	*	*	*	*
25	Omitted	*	*	*	*
26	Omitted	*	*	*	*
27	Cyanide (as CN) mg/l ,Max	0.2	2.0	0.2	0.2
28	Omitted	*	*	*	*
29	Fluoride (as F) mg/l, Max	2.0	15	-	15
30	Dissolved Phosphates (as P) mg/l, Max	5.0	-	-	-
31	Omitted	*	*	*	*
32	Sulphide (as S) mg/l Max	2.0	-	-	5.0
33	Phenolic compounds [as C_6H_5OH] mg/l, Max	1.0	5.0	-	5.0
34	Radioactive materials				
	(a) Alpha emitters [Micro curie/ml] max	10^{-7}	10^{-7}	10^{-8}	10^{-7}
	(b) Beta emitters [Micro curie/ml] Max	10^{-6}	10^{-6}	10^{-7}	10^{-6}
35	Bio-assay test	90 % survival of fish after 96 hours in 100 % effluent	90 % survival of fish after 96 hours in 100 % effluent	90 % survival of fish after 96 hours in 100 % effluent	90 % survival of fish after 96 hours in 100 % effluent
36	Manganese (as Mn)	2 mg/l	2 mg/l	-	2 mg/l
37	Iron (as Fe)	3 mg/l	3 mg/l	-	3 mg/l
38	Vanadium (as V)	0.2 mg/l	0.2 mg/l	-	0.2 mg/l
39	Nitrate Nitrogen	10 mg/l	-	-	20 mg/l
40	Omitted	*	*	*	*

* Omitted by Rule 2 (d) (i) of the Environment (Protection) Third Amendment Rules, 1993 vide Notification No. G.S.R 801 (E), dated 31.12.1993

Annexure - III

Water Quality Criteria -Designated Best Uses of Water

Designated Best Use	Class	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	1.Total Coliforms Organism MPN/100ml shall be 50 or less 2. pH between 6.5 and 8.5 3. Dissolved Oxygen 6mg/l or more 4. Biochemical Oxygen Demand 5 days 20 °C, 2mg/l or less
Outdoor bathing (Organised)	B	1.Total Coliforms Organism MPN/100ml shall be 500 or less 2. pH between 6.5 and 8.5 3. Dissolved Oxygen 5mg/l or more 4. Biochemical Oxygen Demand 5 days 20 °C, 3mg/l or less
Drinking water source after conventional treatment and disinfection	C	1.Total Coliforms Organism MPN/100ml shall be 5000 or less 2. pH between 6 and 9 3. Dissolved Oxygen 4mg/l or more 4. Biochemical Oxygen Demand 5 days 20 °C, 3mg/l or less
Propagation of Wild life and Fisheries	D	1. pH between 6.5 and 8.5 2. Dissolved Oxygen 4mg/l or more 3. Free Ammonia (as N)-1.2 mg/l or less 4. Biochemical Oxygen Demand 5 days 20 °C, 2mg/l or less
Irrigation, Industrial Cooling, Controlled Waste disposal	E	1. pH between 6.0 and 8.5 2. Electrical Conductivity at 25 °C micro mhos/cm, maximum 2250 3. Sodium absorption Ratio Max. 26 4. Boron Max. 2mg/l
	Below-E	Not meeting any of the A, B, C, D & E Criteria