

**BEFORE THE NATIONAL GREEN TRIBUNAL SOUTHERN ZONE AT CHENNAI**

Interlocutory Application No. 21 of 2025

in

Original Application No. 6 of 2025

Paani Earth Foundation

A registered trust

Rep by its trustee Madhuri Mandava ...Applicant/Proposed Respondent

**AND**

Tribunal on its own motion in News item titled "Mercury cancer-causing pesticide found in Arkavathy river water samples" appearing in the Deccan Herald dated 22.11.2024"

**WITH**

Karnataka State Pollution Control Board

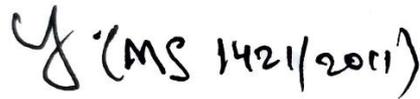
Represented by Member Secretary and 4 Ors. ...Respondents/Respondents

**MEMO FILED BY THE APPLICANT  
CONTENTS**

Sl. No.	Date	Description	Pg. No.
1.	28.03.2025	Memo filed by the Applicant	1-3
2.	24.01.2025 (Received)	Letter to CPCB (2 <sup>nd</sup> Respondent)	4-5
3.	24.01.2025 (Received)	Letter to BWSSB	6-8
4.	11.02.2025	Email to CPCB, MoEFCC (3 <sup>rd</sup> Respondent)	9-10
5.	19.02.2025	Email to KSPCB (1 <sup>st</sup> Respondent), CPCB, MoEFCC	11-19
6.	06.03.2025	Email to BWSSB	20-21

//Certified to be true copies of the respective originals//

Dated at Chennai on this the 28<sup>th</sup> day of March, 2025



Through

Yogeshwaran A.

Counsel for the Applicant

Ph : 9566254546

Email : yogeshwaranadv@gmail.com

## **BEFORE THE NATIONAL GREEN TRIBUNAL (SOUTHERN ZONE)**

### **CHENNAI**

(Under Section 18(1) of the National Green Tribunal Act, 2010)

I.A. No. 21 of 2025

in

Original Application No. 6 of 2025

Paani Earth Foundation

A registered trust

Rep by its trustee Madhuri Mandava ...Applicant/Proposed Respondent

### **AND**

Tribunal on its own motion in News item titled "Mercury cancer-causing pesticide found in Arkavathy river water samples" appearing in the Deccan Herald dated 22.11.2024"

### **WITH**

Karnataka State Pollution Control Board

Represented by Member Secretary and 4 Ors. ...Respondents/Respondents

### **MEMO FILED BY THE APPLICANT**

It is respectfully submitted as follows:

1. The subject O.A. was instituted on the basis of a news report in the Deccan Herald which reported on the study conducted by the Applicant herein on the pollution of the Arkavathy river.
2. The Applicant trust is committed to engaging with all stakeholders as well as the government to protect the rivers of Southern Karnataka, particularly the Cauvery, the Arkavathy and the Vrishabhavathy.

## 2

3. After publishing the said report dated 16.01.2025, the Applicant sent representations regarding the report to the following government bodies in the hope that appropriate action would be taken to protect the Arkavathy from further pollution:

a. Central Pollution Control Board (CPCB) – letter received on 24.01.2025  
The representation contained numerous recommendations to strengthen the National Water Quality Monitoring Programme (NWMP), and a request for an audit of the existing monitoring stations under the NWMP, among others

b. Bengaluru Water Supply and Sewerage Board (BWSSB) – letter received on 24.01.2025

The Applicant trust was invited to the office of the BWSSB on 19.02.2025 to discuss their concerns about the impact of pollutants on the Arkavathy.

c. CPCB, Ministry of Environment, Forest and Climate Change (MoEFCC) – email dated 11.02.2025

A representation reiterating the points raised in the previous representation sent to the CPCB was sent

d. Karnataka State Pollution Control Board (KSPCB), CPCB – email dated 19.02.2025

The representation was accompanied by a note prepared by the Applicant trust on the Water Quality Monitoring Framework / NWMP, and deficiencies to be addressed to improve the water quality of waterbodies in Karnataka

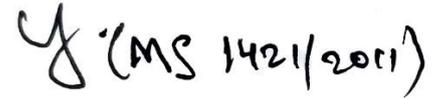
e. BWSSB – email dated 06.03.2025

The Applicant trust wrote to the BWSSB expressing their commitment to be involved in the proposed plan to restore a stretch of the Arkavathy

Copies of the above representations have been annexed with this memo.

It is prayed that this Hon'ble Tribunal may be pleased to take this memo on record, and pass such orders as may be fit, proper and necessary in the interest of the case, and thus render justice.

Dated at Chennai on this the 28<sup>th</sup> day of March, 2025

 (MS 1421/2011)

Yogeshwaran A  
Counsel for Applicant

To,  
 The Chairman  
 Central Pollution Control Board  
 Parivesh Bhawan, East Arjun Nagar  
 Delhi - 110032

*Copy Submitted to regional  
 director, CPCB regional office,  
 Bengaluru*

**Subject:** Strengthening NWMP Monitoring Network and Implementation to Address Critical Pollution Sources

Dear Sir/Madam,

We, at Paani.Earth, recently conducted a comprehensive study of water and sediment quality in the Arkavathi River in collaboration with the International Centre for Clean Water (ICCW), IIT Chennai. The findings from this study are deeply concerning, highlighting rampant pollution across critical sites in the river basin.

### Key Findings

- **Emerging and Persistent Contaminants:** Alarming levels of pollutants, including heavy metals (Hexavalent Chromium 36x permissible limits), pesticides (DDT 75x limits), and industrial pollutants like Polycyclic Aromatic Hydrocarbons (PAHs, 497x EPA standards), were detected.
- **Impact on Human Health and Ecosystems:** Contaminants entering irrigation systems are likely bioaccumulating in crops and aquatic species, posing a serious risk to public health.

These findings underscore the urgent need to strengthen the National Water Monitoring Program (NWMP) to adequately capture and address such critical pollution trends.

### Recommendations for Strengthening NWMP

1. **Expand Parameters Monitored:** Include emerging contaminants such as PAHs, pesticides, and phthalates in NWMP testing protocols.
2. **Unique Identification of Pollutants:** Standardize parameters using their **CAS Registry Numbers** (a universal identifier for chemical substances). This will enhance the ability to correlate findings with international standards and aid in consistent benchmarking.
3. **Upgrade Monitoring Infrastructure:** Increase the density of monitoring stations, particularly near critical pollution hotspots like industrial clusters and agricultural zones.
4. **Comprehensive Source Identification:** Collaborate with scientific institutions for isotopic and source apportionment analysis to identify industrial versus agricultural pollution sources accurately.

5. **Analysis of River Sediments:** It is well-established that the water quality in the Arkavathi River and its tributaries changes throughout the day, making the current one-time grab sampling method insufficient to capture the true state of pollution. We urge that river sediments be analyzed to understand the real extent of contamination. Sediments act as a sink for persistent pollutants, and their analysis can reveal long-term pollution trends and sources that are not apparent from water sampling alone.

### Request for Immediate Action

We urge CPCB to take cognizance of these findings and initiate steps to:

- Conduct a detailed audit of existing monitoring stations under NWMP and identify gaps.
- Ensure NWMP's implementation aligns with CPCB's own guidelines for identifying and arresting pollution sources as well take into consideration our recommendations
- Convene a roundtable discussion with stakeholders, including scientific bodies like ICCW, ATREE, and research organizations, to devise actionable plans for pollution abatement.

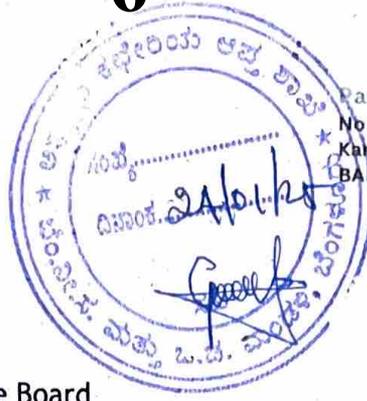
Paani.Earth is committed to supporting CPCB in enhancing NWMP's effectiveness and addressing pollution at its roots. We look forward to your response and are ready to collaborate on any steps forward.

Thank you for your attention to this urgent matter.

Thanking you,

Paani.Earth Team

(Please feel to reach out to us on [paaniearth@gmail.com](mailto:paaniearth@gmail.com) or 9900178564 (Madhuri Mandava) or 8884913889 (Khushbu K Birawat)



To,  
The Chairman  
Bangalore Water Supply and Sewerage Board  
Cauvery Bhavan

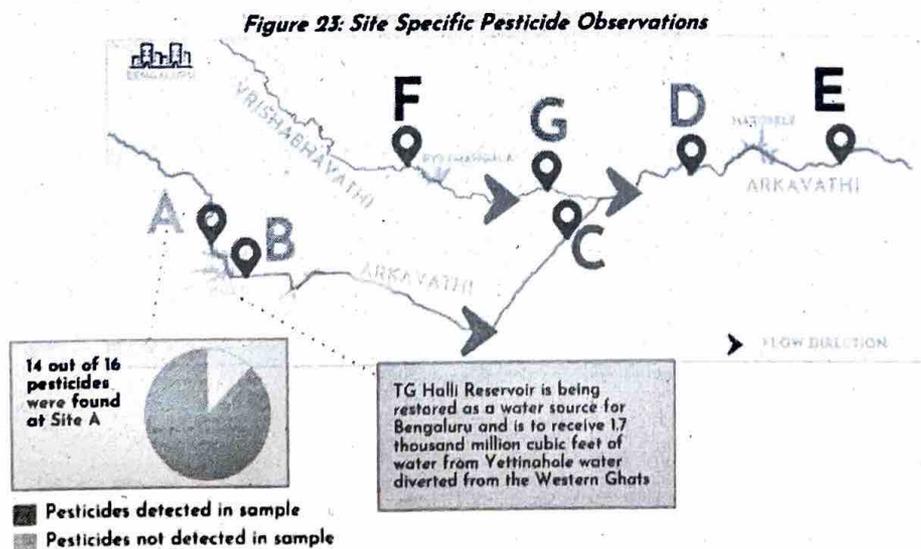
**Subject:** Urgent Action to Address Pollution at a Testing Site (Referred to as Site A in Our Study)  
Upstream of TG Halli Reservoir

Dear Sir/Madam,

We, at Paani.Earth, bring to your immediate attention critical findings from our collaborative study (see Annexure A) with the International Centre for Clean Water (ICCW), IIT Chennai, highlighting alarming pollution levels at a testing site (referred to as Site A in our study) upstream of the TG Halli reservoir. These findings reveal severe exceedances of international standards for key pollutants, posing a serious threat to public health and environmental sustainability.

### Key Findings from the Study about Site A

- **Pesticides:** 14 out of 16 tested pesticides, including banned substances like Lindane and Endosulfan sulfate, were detected. DDT levels are 75x above permissible limits.



- **PAHs and Hazardous Pollutants:** High levels of polycyclic aromatic hydrocarbons (PAHs) such as Dibenz[a,h]anthracene, which is 497x above US EPA standards and a known carcinogen.
- **Heavy Metals:** Mercury in sediments is 16x above Canada's Sediment Quality Guidelines, with alarming levels of Hexavalent Chromium (Cr(VI)) in both water and sediments. Cr(VI) is 100x above EU Water Quality Standards, indicating ongoing industrial discharges into the Arkavathi River.

These waters are blended with Cauvery water and supplied to Bengaluru residents, posing direct health risks (Indian Express, 14 Sep 2024). Additionally, the Arkavathi River's water is extensively used for downstream irrigation, despite being unfit for agricultural use as per Canadian standards. Contaminants like Hexavalent Chromium and pesticides are most likely entering the food chain via vegetables, fruits, and milk produced using these waters.

#### Concerns about existing treatment infrastructure:

The lean-season flow into the TG Halli reservoir is 163 MLD, far exceeding the MEIL STP's 20 MLD capacity (see Annexure B). This renders the current treatment infrastructure ineffective against both biological and persistent emerging contaminants, allowing polluted water to flow directly into the reservoir. These waters also feed into the Manchanabele Reservoir, where piping is underway to supply Bengaluru Urban residents with untreated water for domestic use.

#### We request that the following actions be taken immediately:

1. **Organize a Brainstorming Session:** Engage scientific experts from WELL Labs, ATREE, ICCW, and other institutions along with Bangalore Apartments Federation (BAF) to develop actionable solutions. Paani.Earth is committed to supporting BWSSB in this effort.
2. **Other Suggested Measures:**
  - **Arrest Industrial Wastewater Outflows:** Collaborate with the Karnataka State Pollution Control Board to stop industrial wastewater from Peenya mixing with domestic sewage.



Paani Earth Foundation  
No B 18 Patterns, Good Earth Malhar  
Kambipura, Kumbalgodu Gollahalli B.O,  
BANGALORE, Karnataka, INDIA – 560074

- **Decentralized Treatment:** Implement sewage treatment systems in upstream towns like Nelamangala to reduce pollutant loads before discharge into the Arkavathi River.
- **Optimize Existing Infrastructure:** Redirect domestic sewage to the 20 MLD STP via pipelines, minimizing reliance on untreated river water.

Without immediate intervention, the persistent contaminants at this site will continue to undermine Bengaluru's water safety and public health. **We urge BWSSB to take swift action and coordinate a dialogue with experts to identify both interim and long-term solutions.**

Thanking you,

Paani.Earth Team

(Please feel to reach out to us on [paaniearth@gmail.com](mailto:paaniearth@gmail.com) or 9900178564 (Madhuri Mandava) or 8884913889 (Khushbu K Birawat)



## Strengthening NWMP Monitoring Network and Implementation to Address Critical Pollution Sources

1 message

Paani Earth Foundation <paaniearth@gmail.com>

Tue, Feb 11, 2025 at 6:42 PM

To: ccb.cpcb@nic.in, jcb.cpcb@nic.in, "Secretary (MoEF)" <secy-moef@nic.in>

Dear Sir/Madam,

We, at Paani.Earth, recently conducted a [comprehensive study of water and sediment quality in the Arkavathi River in collaboration with the International Centre for Clean Water \(ICCW\), IIT Chennai](#). The findings from this study are deeply concerning, highlighting rampant pollution across critical sites in the Arkavathi river basin.

### Key Findings

- **Emerging and Persistent Contaminants:** Alarming levels of pollutants, including heavy metals (Hexavalent Chromium 36x permissible limits), pesticides (DDT 75x limits), and industrial pollutants like Polycyclic Aromatic Hydrocarbons (PAHs, 497x EPA standards), were detected.
- **Impact on Human Health and Ecosystems:** Contaminants entering irrigation systems are likely bioaccumulating in crops and aquatic species, posing a serious risk to public health.

These findings underscore the urgent need to strengthen the National Water Monitoring Program (NWMP) to adequately capture and address such critical pollution trends.

### **Recommendations for Strengthening NWMP**

1. **Expand Parameters Monitored:** Include emerging contaminants such as PAHs, pesticides, and phthalates in NWMP testing protocols.
2. **Unique Identification of Pollutants:** Standardize parameters using their **CAS Registry Numbers** (a universal identifier for chemical substances). This will enhance the ability to correlate findings with international standards and aid in consistent benchmarking.
3. **Upgrade Monitoring Infrastructure:** Increase the density of monitoring stations, particularly near critical pollution hotspots like industrial clusters and agricultural zones.
4. **Comprehensive Source Identification:** Collaborate with scientific institutions for isotopic and source apportionment analysis to identify industrial versus agricultural pollution sources accurately.
5. **Analysis of River Sediments:** It is well-established that the water quality in the Arkavathi River and its tributaries changes throughout the day, making the current one-time grab sampling method insufficient to capture the true state of pollution. We urge that river sediments be analyzed to understand the real extent of contamination. Sediments act as a sink for persistent pollutants, and their analysis can reveal long-term pollution trends and sources that are not apparent from water sampling alone.

### **Request for Immediate Action**

We urge CPCB to take cognizance of these findings and initiate steps to:

- Conduct a detailed audit of existing monitoring stations under NWMP and identify gaps.

- 10
- Ensure NWMP's implementation aligns with CPCB's own guidelines for identifying and arresting pollution sources as well take into consideration our recommendations.
  - Convene a roundtable discussion with stakeholders, including scientific bodies like International Centre Clean Water (ICCW), Ashoka Trust for Research in Ecology and the Environment (ATREE) to devise actionable plans for pollution abatement.

Paani.Earth is committed to supporting CPCB in enhancing NWMP's effectiveness and addressing pollution at its roots. We look forward to your response and are ready to collaborate on any steps forward.

Thank you for your attention to this urgent matter.

We have submitted a copy of this letter (see attached) along with a copy of the study report to the Regional Director, J. Chandra Babu, at the CPCB Office in Bengaluru and appreciate his willingness to engage in a discussion and acknowledge the issue.

Thanking you,

Paani.Earth Team

[Paani.Earth](#)

---

 **Acknowledgement\_CPCB\_Representation\_24Jan2025.pdf**  
871K



## Strengthening NWMP Monitoring and Implementation to Address Critical Pollution Sources

1 message

Paani Earth Foundation <paaniearth@gmail.com>

Wed, Feb 19, 2025 at 2:28 PM

To: ccb.cpcb@nic.in, jcb.cpcb@nic.in, "Secretary (MoEF)" <secy-moef@nic.in>, chairman@kspcb.gov.in, memsecy@kspcb.gov.in

To,  
The Chairman  
Central Pollution Control Board  
Parivesh Bhawan, East Arjun Nagar  
Delhi - 110032

CC:

The Regional Director  
Central Pollution Control Board, Bengaluru

CC:

The Chairman  
Karnataka State Pollution Control Board

CC:

Member Secretary  
Karnataka State Pollution Control Board

### Subject: Strengthening NWMP Monitoring and Implementation to Address Critical Pollution Sources in Arkavathi River Basin

Dear Sir/Madam,

We, at **Paani Earth Foundation**, recently conducted a **comprehensive study** of **water and sediment quality** in the **Arkavathi River** in collaboration with the **International Centre for Clean Water (ICCW), IIT Chennai**. The results reveal **alarming pollution levels** across key sites, posing an **immediate threat to water security, public health, and aquatic ecosystems**.

#### Background & Urgency

This letter follows our **earlier submission** to CPCB, presented in person to the **CPCB Regional Director on January 24, 2025**, and submitted via email on **February 11, 2025**. In that communication, we raised concerns about **pollution trends and gaps in monitoring**.

This letter provides **additional evidence and recommendations** to **strengthen the National Water Monitoring Programme (NWMP)** and **address critical pollution sources more effectively**.

#### Key Findings from Arkavathi River Pollution Study

Our study detected extremely high levels of toxic pollutants, exceeding both Indian and international guidelines, with severe implications for human health and ecosystems:

- **Pesticides:** Heptachlor and DDT detected at 25,022 times the United States Environmental Protection Agency (EPA) guidelines.

12

- **Heavy Metals:** Mercury in sediments found at 26 times Canada's Sediment Quality Guidelines.
- **Industrial Pollutants:** Polycyclic Aromatic Hydrocarbons (PAHs), including Dibenz[a,h]anthracene, found at 3,076 times EPA safety limits.
- **Nutrient Overload:** Phosphorus levels causing eutrophic conditions at all sites, leading to severe aquatic ecosystem degradation.

These findings underscore the failure of the current NWMP monitoring framework to capture emerging pollution trends and hotspots and implement corrective actions to improve the water quality.

### Critical Gaps in NWMP Implementation (Based on Findings from the Arkavathi River Basin, Likely Reflecting Similar Gaps in Most Indian River Basins)

The effectiveness of NWMP is severely compromised due to:

- **Limited Parameters Monitored:** Emerging contaminants such as PAHs, phthalates, microplastics, and heavy metals remain excluded from routine NWMP assessments, though the CPCB guidelines 2017 have prescribed the analysis of these emerging contaminants.
- **Inadequate Coverage of Industrial and Agricultural Hotspots:** For example, NWMP does not monitor the Kumbalghodu industrial area, despite its severe pollution impact on the Vrishabhavathi River.
- **Outdated Water Quality Standards:** Water quality assessment relies on limited parameters (BOD, DO, pH, EC, SAR, Ammonical Nitrogen, Boron, and Total Coliform), ignoring several critical pollutants like Hexavalent Chromium for suitability of water for irrigation and other uses.
- **Absence of Public Access to Water Use Maps:** The 2015 CPCB Water Use Map remains unavailable to the public, restricting transparency and accountability in tracking river degradation.
- **Inadequate Sampling Methods:** One-time grab sampling fails to capture daily pollution fluctuations. and Sediment analysis is not conducted, despite river sediments being long-term pollution sinks
- **Missing interpretation of findings:** NWMP reports are not interpreted to identify pollution sources or take corrective action.

### Immediate Actions Required

We call upon CPCB to take urgent action by:

1. **Enforcing CPCB's Own Water Quality Monitoring Guidelines (2017):** The guidelines remain unnotified and unenforced, leading to weak implementation.
2. **Organize a Multi-Stakeholder Roundtable:** Bring together scientific experts (ICCW, ATREE, etc.), civil society organizations like Paani Earth Foundation, and the Pollution Control Board to strengthen the NWMP. This should include revising monitoring protocols, establishing a mechanism for interpreting findings, and address all the gaps in the current NWMP framework
3. **Publishing the CPCB Water Use Map:** Ensure full public access to historical and current data on river water use classification.
4. **Expanding NWMP Monitoring Parameters:** Include PAHs, pesticides, phthalates, heavy metals, and conduct sediment analysis to identify persistent pollution trends.
5. **Public access to granular Data:** Publish complete monthly water quality datasets from all NWMP stations

### The Cost of Inaction

Experts such as Dr. Sharachandra Lele, Dr. Priyanka Jamwal (ATREE), and Dr. Mahesh Menon have consistently highlighted the absence of ambient water quality standards, inadequate monitoring, and weak enforcement as major causes of India's escalating river pollution crisis.

If these **systemic failures** are **not urgently addressed**, we risk:

- **Worsening water security crises** for millions of people.
- **Irreversible damage** to river ecosystems and biodiversity.
- **Severe public health impacts** due to **toxic contaminants entering food chains**.

To illustrate the deficiencies in NWMP monitoring, we are attaching a case study on the Arkavathi River Basin, Karnataka:

Attachment:

[Water Quality Monitoring \(Case Study – Arkavathi Basin, Karnataka\): Deficiencies to be Addressed for Improving the Water Quality of Waterbodies in Karnataka](#)

We request CPCB's **formal response within 30 days**, outlining the steps being taken to address these issues.

Paani Earth Foundation is committed to supporting NWMP reforms and ensuring India's rivers are restored and protected. We look forward to collaborating with CPCB to achieve these goals.

Sincerely,

Madhuri Mandava

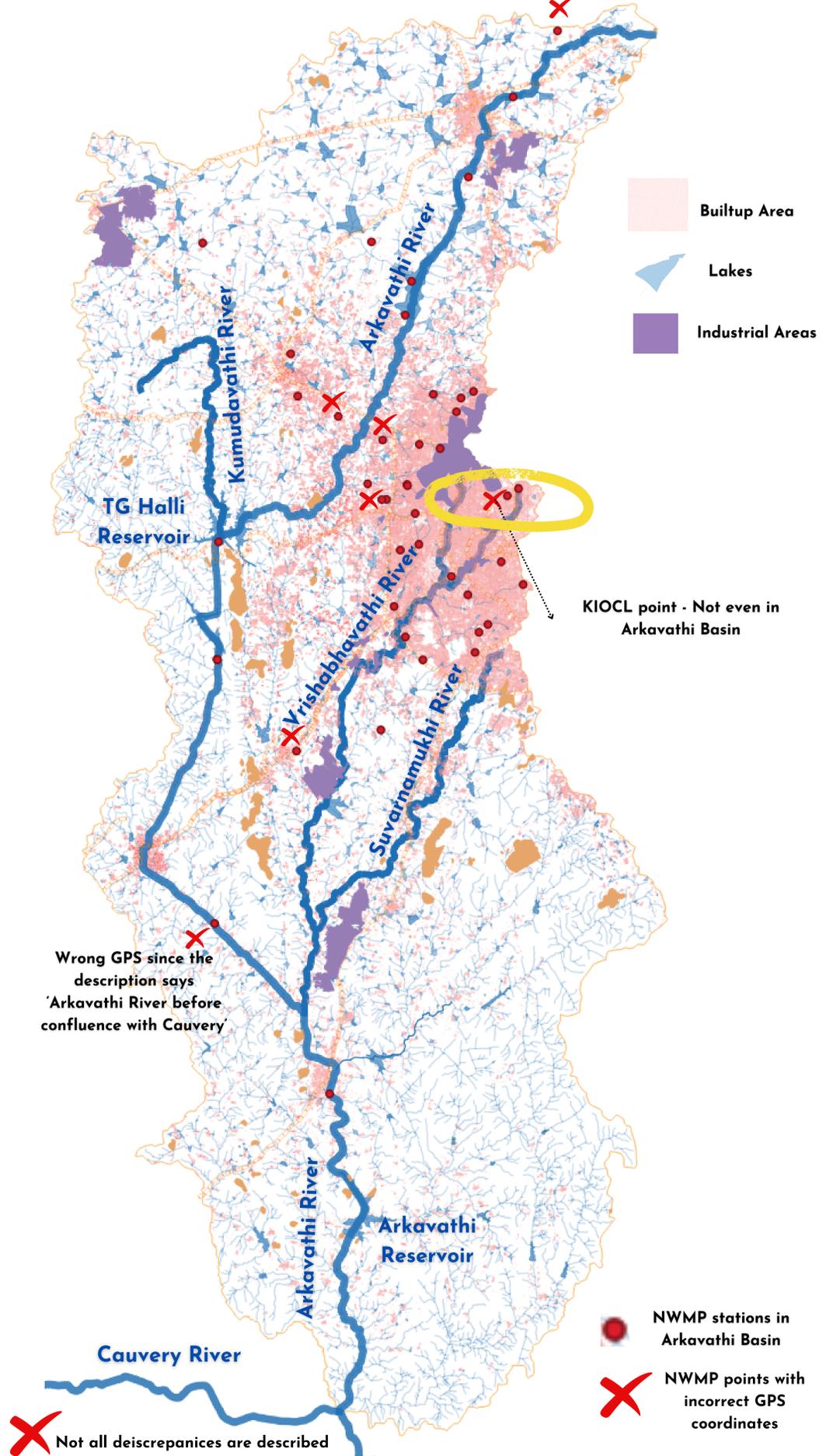
Trustee, Paani Earth Foundation

<https://paani.earth/>

**Water Quality Monitoring (Case Study - Arkavathi Basin, Karnataka): **Deficiencies to be Addressed** for Improving the Water Quality of Waterbodies in Karnataka**

***Note: This is not a comprehensive list, but an attempt to highlight key gaps in the NWMP implementation in the Arkavathi Basin. Our goal is to constructively contribute to improving the effectiveness of NWMP***

# NWMP POINTS IN ARKAVATHI RIVER BASIN AS PER CPCB RECORDS



## LACK OF PUBLIC ACCESS AND DATA INCONSISTENCIES

### Monitoring points in the Arkavathi River Basin

- Number of NWMP Stations in the Arkavathi Basin (as per CPCB records): 45
- Number of Water Quality Monitoring Stations (as per KSPCB Records obtained through RTI): 80

Only 42 monitoring points have publicly available data, meaning nearly half (48%) of NWMP data for the Arkavathi Basin remains inaccessible

### Monitoring points on Arkavathi River Main Line:

- NWMP (CPCB) records show 9 stations vs KSPCB records show 10 stations
- KSPCB Website reports that there are only 5 stations on the Arkavathi River Line - raising data consistency concerns

### Monitoring points on Vrishabhavathi River Main Line:

- NWMP has only 2 stations vs KSPCB monitors 19 locations - The 17 locations data is not in public domain

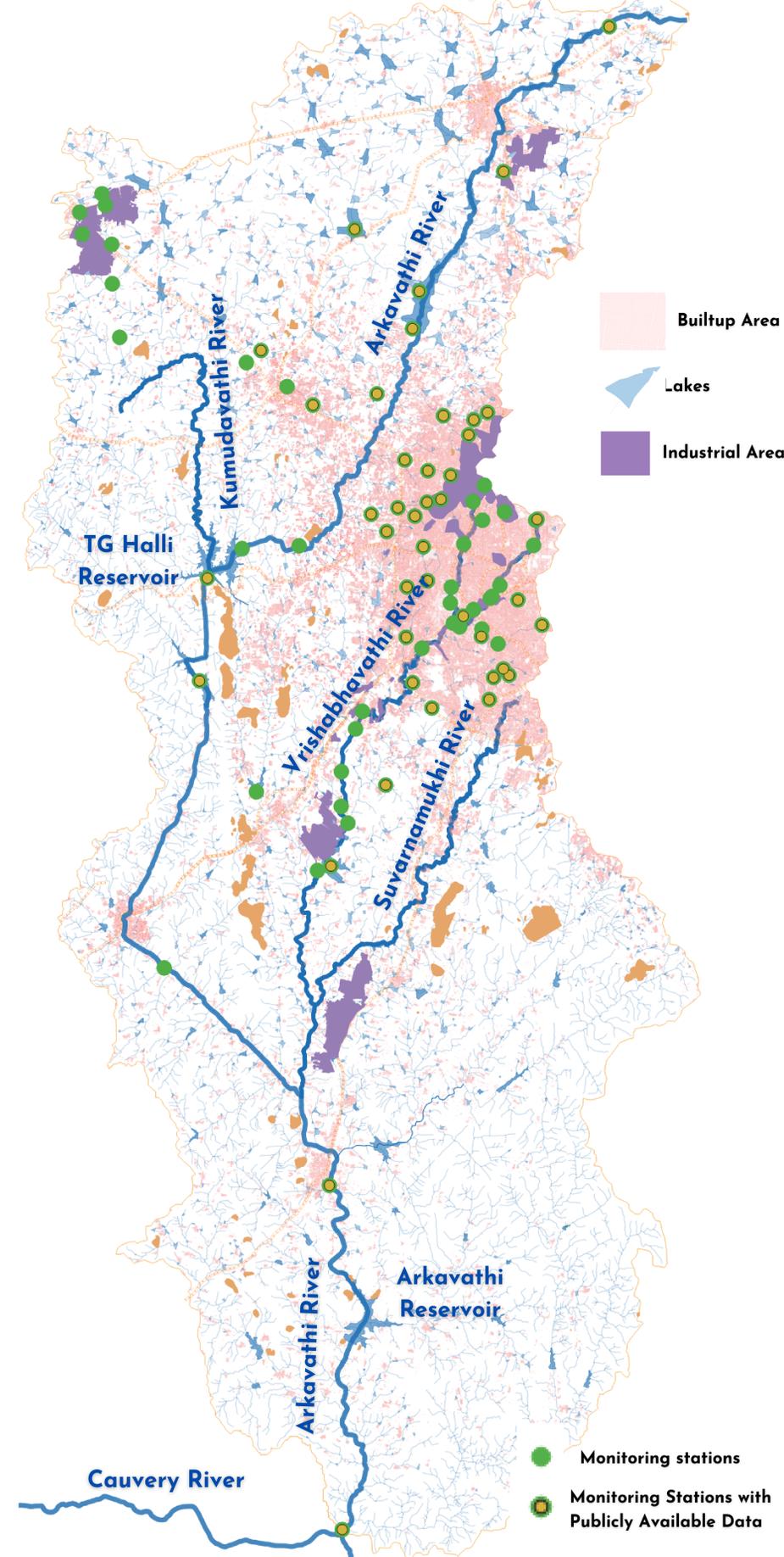
### Limited reporting of NWMP Data

- The NWMP data on the CPCB portal only reports yearly minimum and maximum values, which do not capture seasonal variations, pollution spikes, or real-time pollution trends.
- Until July 2023, the KSPCB website provided only water use classification without actual recorded values for all monitored parameters. While parameter details have been available for lake monitoring points since July 2023, they are still missing for

## Citizen Appeal for Strengthened Water Quality Monitoring

- Ensure accurate GPS coordinates are included as part of the NWMP reports to help the citizen understand the reports spatially and develop a holistic understanding
- make all water quality analysis reports (NWMP or not) publicly accessible
- Upload the complete monthly reports including all parameters to help citizens understand the pollution spikes and trends.

# KSPCB MONITORING POINTS (COLLATED AS PER KSPCB RECORDS)



## 16 Key Discrepancies in Monitoring

As per the CPCB guidelines for water quality monitoring 2017, Section 4,(a) All the stations shall be a combination of Baseline, Trend, Flux (or Impact) stations and Hotspot stations and the stations have been defined as follows in the document

- (f) "Baseline Station": means the water quality monitoring location where there is no influence of human activities on water quality.
- (j) "Flux Station (or Impact Station)": means the location for measuring the mass of a particular pollutant on the main river stem for measuring the extent of pollution due to human interference or geological feature at any point of time and is necessary for measuring impact of pollution control measures adopted.
- (l) "Hotspot": means location/site where concentration of a particular parameter or a group of parameters, except bacteriological parameters, are beyond the permissible limits of drinking water quality as prescribed in the BIS code IS 10500:2012.
- (s) "Trend Station": means the monitoring location designed to show how a particular point on a watercourse varies over time due to both geogenic and anthropogenic activities.

**As per CPCB guidelines,**

**the stations should have been classified as Baseline, Flux, Hotspot and Trend BUT neither the NWMP data reported on CPCB website or KSPCB website or the File records obtain through RTI classify any of the monitoring points**

**As per CWC water quality reports, T Bekuppe station on Arkavathi River is classified as FLUX as shown below**

125	Cauvery Division, CWC, Bangalore	T.Bekuppe	Karnataka	Ramanagaram	Cauvery Basin	Cauvery Basin	Cauvery/Arkavathi	GDQ	Flux
-----	----------------------------------	-----------	-----------	-------------	---------------	---------------	-------------------	-----	------

As per the CPCB guidelines for water quality monitoring 2017, Section B of table 1 specifying frequencies and parameters for Surface water samples, the following micropollutants have to be analyzed for trend, flux and hotspot stations

- B. Micropollutants: For Trend, Flux/Impact, and Hotspot Stations
  - (i) Pesticides - Analyse once a year during the pre-monsoon period  
The following pesticides should be analyzed: Alachlor, Atrazine, Aldrin/Dieldrin, Alpha-HCH, Beta-HCH, Gamma-HCH (Lindane), Delta-HCH, Butachlor, Chlorpyrifos, 2,4-Dichlorophenoxyacetic acid, DDT (o,p' and p,p'-isomers of DDT, DDE, and DDD), Endosulfan (alpha, beta, and sulphate), Ethion, Isoproturon, Malathion, Methyl Parathion, Monocrotophos, and Phorate.
  - (ii) Toxic Metals - Analyse twice a year during pre-monsoon and post-monsoon periods

The toxic metals that should be analyzed include Arsenic [As (III) & As (V)], Aluminum (Al), Silver (Ag), Cadmium (Cd), Cobalt (Co), Copper (Cu), Chromium [Cr(III) & Cr(VI)], Iron (Fe), Lead (Pb), Manganese (Mn), Mercury (Hg), Molybdenum (Mo), Nickel (Ni), Selenium (Se), and Zinc (Zn). The selection of specific parameters may be based on local need.

- (iii) Polynuclear Aromatic Hydrocarbons (PAH), Polychlorinated Biphenyls (PCB), and Trihalomethanes (THM) - Analyse as per site-specific requirement

PAHs, PCBs, and THMs should be analyzed based on site-specific requirements to assess industrial and chemical pollution levels.

**The NWMP reports on the KSPCB nor the CPCB website report the monitoring of these micropollutants except for Lead, Total Chromium etc. So, do we infer that all stations are baseline in the Arkavathi Basin?**

As per the CPCB guidelines for water quality monitoring 2017, the following definitions for samples are provided

- (h) "Composite Sample (Time and Flow)": Time composite sample is a combination of multiple individual samples taken at pre-selected times from a particular location to represent the integrated composition of the water being sampled. Usually, all samples added to the composites are equal in volume, but flow-proportional composite samples collect amounts proportional to flow.
- (k) "Grab Sample" means a water quality sample collected at a particular time and place, representing only the composition of the source at that time and place.

- **The current monitoring is based on one-time grab sampling method, which fails to capture pollution variations over time. Studies by Ashoka Trust for Ecology and Environment (ATREE) have shown that pollution levels, especially heavy metals, increase significantly during nighttime due to industrial discharges.**

**Upon reviewing water quality data from both publicly available lake reports and river point data secured through RTI requests up to April 2022, it is evident that monitoring stations lack classification (e.g., baseline, hotspot, trend, flux) and pesticide and PAH and pesticide analysis pre-monsoon and post monsoon are not conducted**

### Citizen Appeal for Strengthening Water Quality Monitoring

- **Make data on the number and locations of hotspot, flux, trend, and baseline stations publicly available.**
- **Ensure pre-monsoon and post-monsoon analysis of micropollutants (pesticides, toxic metals, PAHs) at hotspot stations as per CPCB guidelines.**
- **Shift from single grab sampling to composite sampling methods to better detect pollution, especially from industrial discharges occurring at night.**

ANALYSIS REPORT

TC-5467

NAME OF THE LOCATION OF VALLEY: Venkatapura (Kaniminike) Village, Station Code: ABCDES

DATE: 06.01.2021

SAMPLE COLLECTED BY: Smt. Purneta H.S. AEO

DATE OF COMMENCEMENT OF TEST: 22.12.2021

DATE OF COLLECTION: 21.12.2021

DATE OF COMPLETION OF TEST: 30.12.2021

DATE OF RECEIPT: 22.12.2021

PARTICULARS: V-Valley Sample

SAMPLE REPORT NO: WW-1817

SAMPLE NO: WW-1817

Sl. No	Parameters	Unit	Water Quality Criteria					Result	Test Method
			A	B	C	D	E		
1.	pH@25°C	-	6.5-8.5	6.5-8.5	6.5-9.0	6.5-8.5	6.9	IS 3025 (Part 11)	
2.	Dissolved Oxygen	mg/L	6	5	4	-	3.2	IS 3025 (Part 11)	
3.	Conductivity@25°C	µS/cm	-	-	-	-	2250	IS 3025 (Part 38)	
4.	Total Dissolved Solids	mg/L	-	-	-	-	1400	IS 3025 (Part 14)	
5.	Total Suspended Solids	mg/L	-	-	-	-	892	IS 3025 (Part 17)	
6.	Free Ammonia	mg/L	-	-	-	-	16	IS 3025 (Part 17)	
7.	Biochemical Oxygen Demand (3 days @ 20°C)	mg/L	2	3	3	-	0.02	APHA 23rd edition (4500 NH3-D)	
8.	Hexavalent Chromium as Cr <sup>6+</sup>	mg/L	-	-	-	-	6.8	IS 3025 (Part 44)	
9.	Fluoride as F	mg/L	-	-	-	-	BDL	APHA 23rd edition (4500 Cr B)	
10.	Nitrate Nitrogen as NO <sub>3</sub>	mg/L	-	-	-	-	1.8	IS 3025 (Part 40)	
11.	Sulfate as SO <sub>4</sub>	mg/L	-	-	-	-	15	IS 3025 (Part 34)	
12.	Boron as B	mg/L	-	-	-	-	26	IS 11624	
13.	Copper as Cu	mg/L	-	-	-	-	2.0	IS 3025 (Part 24)	
14.	Lead as Pb	mg/L	-	-	-	-	BDL	APHA 23rd edition (4500-B B)	
15.	Zinc as Zn	mg/L	-	-	-	-	0.05	IS 3025 (Part 24)	
16.	Cadmium as Cd	mg/L	-	-	-	-	0.02	IS 3025 (Part 24)	
17.	Iron as Fe	mg/L	-	-	-	-	0.074	APHA 23rd edition (31250)	
18.	Total Coliform	MPN/100ml	50	500	5000	-	3.21	APHA 23rd edition (9221 A, B, C, 9-60 to 9-75)	

REFERENCE: Class "E", As per Primary water quality Criteria - CPCB. Designated best use - Irrigation, Industrial cooling, Controlled Waste disposal.

Note: 1. Additional analysis report No: WW-1817A dated 06.01.2021 shall also be submitted for the inference of the sample tested.

2. The above results pertain only to the sample tested.

3. The report shall not be reproduced without the written approval of the laboratory.

4. Samples will be stored for a period of 15 days from the date of issue of report.

5. Decision Rule: "Statement of conformity applies only to analysis of results which meets the standards stipulated by regulatory authority".

6. BDL: Below Detection Level in mg/L.

Hexavalent Chromium as Cr<sup>6+</sup>: 0.05; Boron as B: 0.1.

Radha M. N.  
Authorized Signatory (Biological)

Hexavalent Chromium detection limit is 0.05 mg/L i.e Hexavalent Chromium if detected in concentration less than 50 µg/L will be reported as BDL

384	Chromium, hexavalent (Cr(VI))	µg/L	less than or equal to	8
-----	-------------------------------	------	-----------------------	---

Desirable limit as per Canadian Standards for Agricultural Water Use

According to Canadian agricultural water use guidelines, the permissible concentration of Hexavalent Chromium is less than 8 µg/L. However, the testing equipment used by KSPCB has a detection limit of 50 µg/L—more than six times higher than the safety threshold. This means contaminant levels between 8 and 50 µg/L are entirely unaccounted for in official reports, even though they exceed safe limits for irrigation.

Despite its well-documented toxicity, Hexavalent Chromium (Cr(VI)) is not even assessed as a parameter to determine whether water quality is fit for irrigation. This is a serious regulatory gap, especially considering that the Arkavathi Basin's water is extensively used for agriculture and the Hexavalent Chromium pollution from industrial sources in the catchment.

Our analysis across seven sites in the Arkavathi Basin confirmed widespread Hexavalent Chromium contamination. Measured concentrations ranged from 8 to 36 times the Canadian permissible limit for agricultural water use. Despite KSPCB frequently reporting 'Below Detection Limit' (BDL) for Cr(VI), our study detected significant contamination, revealing the shortcomings of current Indian water quality testing standards in identifying hazardous pollutants.

## Citizen Appeal for Strengthening Water Quality Monitoring

- Hexavalent Chromium is a highly toxic heavy metal known to bioaccumulate in crops and enter the food chain.
- Regulatory agencies must revise their monitoring framework to explicitly assess Hexavalent Chromium for irrigation water quality.
- Testing protocols need to adopt lower detection limits to ensure that even low concentrations of this dangerous pollutant are identified and addressed.
- Without these critical improvements, farmers and consumers remain unknowingly exposed to unsafe water, posing serious risks to food safety, human health, and soil quality.

## Need for developing Sediment Quality Standards

  
 ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಮಂಡಳಿ  
 ಕೇಂದ್ರ ಪರಿಸರ ಪ್ರಯೋಗಾಲಯ  
**Karnataka State Pollution Control Board**  
**Central Environmental Laboratory**

ಕ.ರಾ.ಮಾ.ನಿ.ಮಂ., "ನಿಸರ್ಗ ಭವನ",  
 7<sup>ನೇ</sup> ಡಿ ಮುಖ್ಯ ರಸ್ತೆ, ತಿಮ್ಮಯ್ಯ ರಸ್ತೆ,  
 ಶಿವನಗರ, ಬೆಂಗಳೂರು-೫೬೦೦೭೯.

K.S.P.C.B., "Nisarga Bhavan"  
 7<sup>th</sup> 'D' Main Road, Thimmaiah  
 Road, Shivanagar,  
 Bengaluru-560079.

**ANALYSIS REPORT**

Date: 22.12.2018

NAME OF THE VALLEY :	Venkatapura (Kaniminike) Village	Page 1 of 1	DATE OF COMMENCEMENT OF TEST: 22.11.2018
SAMPLE COLLECTED BY :	R.O.-Rajarajeshwarinagar	DATE OF COMPLETION OF TEST: 13.12.2018	
DATE OF COLLECTION :	20.11.2018	SAMPLE REPORT NO: R-1-2050	
DATE OF RECEIPT :	20.11.2018	SAMPLE NO : R-1-2050	
PARTICULARS :	V-Valley Soil Sample		

SI No.	Parameters	Unit	Result
1.	Copper	mg/kg	251
2.	Lead	mg/kg	366
3.	Zinc	mg/kg	132
4.	Nickel	mg/kg	23.0
5.	Total Chromium	mg/kg	72.0
6.	Cadmium	mg/kg	2.0
7.	Iron	mg/kg	7263
8.	Manganese	mg/kg	261

Note: 1. The above results pertain only to the sample tested.  
 2. The report shall not be reproduced without the written approval of Head of the laboratory.  
 3. Samples will be stored for a period of 15 days from the date of dispatch of report.  
 4. Test method as per the USEPA-3050B.

  
 Authorized Signatory (Chemical)  
 H.M. Shivakumar  
 Scientific Officer

o/c

**Given the absence of Indian Sediment Quality Standards, the measured concentrations of total chromium (72 mg/kg)\*, lead (366 mg/kg), copper (251 mg/kg), and zinc (132 mg/kg) are concerning** with exceedances of 93%, 945%, 603% and 7% exceedances of 93%, 945%, 603%, and 7% relative to the Canadian Sediment Quality Guidelines for Protection of Aquatic Life.

**\*if the chromium form is hexavalent chromium it is significantly more toxic.**

### Citizen Appeal for Strengthening Water Quality Monitoring

Defining Sediment Quality Standards and including Sediment Analysis in the NWMP is crucial, given the direct impact of sediment pollutant concentrations on water quality. Notably, while a single grab sample analysis may not capture all toxic heavy metals, sediments serve as a historical archive of pollution

## Gaps in Water Quality Data on KSPCB Website

We appreciate the data reporting of NWMP data for all Bengaluru Lakes since July 2023. However, a quick analysis of water quality data from five locations—River Arkavathi at Tippagondanahalli Reservoir, Anchepalya Lake, Shivapura Tank, Karihobanahalli Lake, and Gangondanahalli Lake—has revealed the following critical gaps:

**Data Reporting Inconsistency** - In September 2023, water quality data for Anchepalya and Gangondanahalli was missing.

**Inconsistent Parameter Testing** - Some key parameters are not tested consistently. Example: Orthophosphate was tested in June 2024 but missing in September 2023.

**Heavy Metals Monitoring Violation** - As per CPCB guidelines, heavy metals should be tested twice a year (pre- and post-monsoon). However, they were analyzed only in October 2023 and October 2024 (once a year)

**BDL Misinterpretation** - The October 2024 report lists Cadmium as 0.00042 mg/L (BDL). Since the instrument can detect 0.00042 mg/L, why is it still reported as "Below Detection Limit"?

	Cadmium (mg/L)	Copper (mg/L)	Lead (mg/L)	Chromium Total (mg/L)	Nickel (mg/L)	Zinc (mg/L)	Iron (mg/L)	Manganese (mg/L)
e	0.00042(BDL)	0.00035(BDL)	0.00031(BDL)	0.00056(BDL)	0.00054(BDL)	0.059	0.36	0.00043(BDL)
	NA	NA	NA	NA	NA	NA	NA	NA
)	0.00042(BDL)	0.00035(BDL)	0.00031(BDL)	0.00056(BDL)	0.00054(BDL)	0.00059(BDL)	0.298	0.00043(BDL)
	0.00042(BDL)	0.00035(BDL)	0.00031(BDL)	0.00056(BDL)	0.00054(BDL)	0.045	1.449	0.00043(BDL)
	0.00042(BDL)	0.00035(BDL)	0.00031(BDL)	0.00056(BDL)	0.00054(BDL)	0.057	0.987	0.124
	0.00042(BDL)	0.00035(BDL)	0.00031(BDL)	0.00056(BDL)	0.00054(BDL)	0.043	0.895	0.00043(BDL)

Screenshot of Water Quality analysis report from October 2024

### Additional Issue:

The January 2023 water quality report link redirects to January 2024 data, further raising data reliability concerns.

## Citizen Appeal for Strengthening Water Quality Monitoring

**Implement the NWMP program as per the CPCB 2017 guidelines**

**Ensure consistent reporting of all tested parameters every month.**

**Clarify any exceptions or anomalies in reports to improve public understanding.**



## Request for active participation in the Arkavathi River Restoration Process

1 message

**Paani Earth Foundation** <paaniearth@gmail.com>

Thu, Mar 6, 2025 at 7:19 PM

To: chairman@bwssb.gov.in, cep@bwssb.gov.in

Bcc: "Madhuri Mandava (Mahesh)" <prasadmadhuri@gmail.com>, khushbu b <khushbu.k.birawat@gmail.com>

To,

The Chairman

Bangalore Water Supply and Sewerage Board (BWSSB)

CC:

Chief Engineer (Projects)

Subject: Request for active participation in the Arkavathi River Restoration Process

Respected Sirs,

We sincerely thank BWSSB for inviting us to a discussion on February 21, 2025, following our representation [submitted to the Chairman on January 24, 2025](#). We appreciate the opportunity to share our concerns.

We also extend our gratitude to Chalapathi ACE, Manjunath EE, and their team members for acknowledging the issues we raised. It is reassuring to see a shared recognition that industrial contamination is a serious concern. While the current dilution ratio of 1:20 may meet BIS 10500 standards, the continuous influx of persistent industrial chemicals such as pesticides and PAHs into our water supply presents long-term risks to public health. These contaminants accumulate over time, making it imperative to address this issue beyond dilution-based compliance and take proactive steps toward prevention and mitigation.

We understand that a Public-Private Partnership (PPP) model is being explored for the rejuvenation of the Arkavathi River from its origin to the Thippagondanahalli Reservoir. While we welcome this initiative, we firmly believe that its success and long-term sustainability depend on meaningful stakeholder participation, including citizen-led initiatives, researchers, and local communities.

### Our Work & Contributions

At [Paani.Earth](#), we are a citizen-driven river conservation initiative that integrates science, data, and community engagement to protect and restore rivers. Our work is rooted in rigorous research, both primary (on-ground data collection) and secondary (analysis of existing reports and datasets), which are available on our website.

- **Primary Research:** Conducted water quality testing, flow measurement studies, and spatial mapping of the Arkavathi and Vrishabhavathi river systems. Our independent sampling and analysis provide critical insights into pollution sources and river health.
- **Spatial Data & Mapping:** Created spatial datasets and interactive maps to visualize the stressors impacting water quality in the Arkavathi River Basin, sharing insights that could inform restoration efforts.
- **Community & Stakeholder Engagement:** Working to bridge the gap between scientific research and local knowledge, ensuring that citizen voices are central to the larger discourse on river restoration backed with

scientific data.

# 21

Our research-backed approach ensures that interventions are science-driven, transparent, and impactful. Given the extensive work done by scientific institutions such as ATREE and IISc, alongside citizen-led organizations like ours, it is imperative that these groups actively participate in the planning and execution of the Arkavathi River restoration process. We believe that a collaborative approach involving scientific institutions like ATREE, active citizen groups including ours **will ensure a holistic, scientifically sound, community centric restoration effort.**

Our Key Recommendation:

- **Incorporate Multi-Stakeholder Participation:** Establish a formal platform where citizen groups, researchers, and community representatives can actively contribute to the PPP consultation process. A diverse, inclusive decision-making approach will strengthen transparency, accountability, and the effectiveness of restoration efforts.

We would appreciate an opportunity to discuss this further and contribute meaningfully to the process. Please let us know a suitable time to meet.

Thanking you,

Paani.Earth Team

**Please reach out to us** on [paaniearth@gmail.com](mailto:paaniearth@gmail.com) or **9900178564 (Madhuri Mandava)** or **888493889 (Khushbu K Birawat)**