BEFORE THE NATIONAL GREEN TRIBUNAL

PRINCIPAL BENCH NEW DELHI

APPLICATION NO.276/2013

M.A. NO. 59 OF 2014
IN
ORIGINAL APPLICATION No. 20 of 2014

ASHWANI KUMAR DUBEY **PETITIONER**

VS

UNION OF INDIA & ORS. **RESPONDENTS**

AND

JAGAT NARAYAN VISWAKARMA & ORS. **PETITIONER**

Vs.

UNION OF INDIA & ORS **RESPONDENTS**

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S. S. Bala

(S.S.Bala)
Scientist 'E'

Delhi
November 07th, 2014

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1. I, Sib Sankar Bala, s/o Late Shri Harendra Nath Bala, working as Additional Director (Scientist 'E') in Central Pollution Control Board, Parivesh Bhawan, East Arjun Nagar, Delhi – 110032 do hereby solemnly affirm and declare as under:

2. That I, in the capacity of the Additional Director (Scientist 'E') of the Central Pollution Control Board (CPCB), am fully conversant with the facts of the case and hence competent to swear this affidavit.

The Seal of the Oath Commissioner SEEMA KUMARI (ADV) Sl.No. 24/2013 Delhi Court 12/06/2013

That this Hon'ble Tribunal vide its order dated 25.08.2014 has constituted a Core Committee for Monitoring of potential hazards of Industrial development in Singrauli area and 05 Sub–Committees for quantification of Industrial pollution and impact assessment on Water, Air, Soil and Health in and around Singrauli Area.

3. That Hon'ble Tribunal vide its order dated 01.10.2014 has directed that the acting Chairman of CPCB need not act as Chairman of the Committee constituted vide order, dated 25.08.2014.

4. That in compliance of this Hon'ble National Green Tribunal's orders, dated 25.08.2014 and 01.10.2014, the first meeting of Core-Committee was convened on October 16, 2014 under the chairmanship of Dr. Rashid Hasan, Adviser, Ministry of Environment, Forests & Climate Change (MoEF &CC). The Core committee nominated following members of the Core Committee as Convenor of the each Sub-Committees:

Sr. No.	Committee	Convenor and Secretaries
1	**Sub-Committee I (Quantification of Industrial Impacts)**	**Convenor** : Member secretary, CPCB **Secretary** :I/c Zonal Office, CPCB, Lucknow& Bhopal
2	**Sub-Committee-2 (Pollution Potential of water resources)**	**Convenor** : Director, NIH, Roorkee **Secretary** : MS, UPPCB
3	**Sub- Committee -3 (Potential Impact of pollution on land resources)**	**Convenor** : Director, ICFRE, Dehradun **Secretary** : MS, MPPCB
4	**Sub-Committee 4 (Potential Impact of pollution on air quality)**	**Convenor** : Member Secretary, CPCB **Secretary** : I/c PCI-II, CPCB, Delhi with field monitoring by ZO CPCB Lucknow& Bhopal
5	**Sub– Committee 5 (Potential Impact of pollution on Health)**	**Convenor** : Nominee of KGMC, Lucknow **Secretary** : MS ,UPPCB

5. That core committee has selected Dr Tapan Chakrabarti, Former Director, NEERI, Nagpur to be the Chairman of the Core Committee unanimously. Henceforth, all the meetings of the Core Committee will be chaired by Dr. Tapan Chakrabarti.

6. That based upon the decisions taken in the meeting of the Core Committee held on 16.10.2014, the Interim Report of the Core Committee on "Monitoring of Potential Hazards of Industrial Development in Singrauli Area" has been prepared and is enclosed as **ANNEXURE.**

7. That following decisions were taken by the Core Committee in the meeting held on October 16, 2014:

a) An interim report based on monitoring data collected by CPCB and available secondary data may be prepared and submitted to Hon'ble NGT with a request for extension of time by six months for submission of final report. Refer Page 5 & 6 of the Interim Report.

b) The concerned Central/State Pollution Control Board will hold meeting of sub committees in consultation with convenor of the Committee and work out monitoring plan as per TOR within 15 days after receiving the minutes and initiate action in time bound manner. Refer page 6 of the Interim Report.

c) The members of the Core committee may visit Singrauli area in order to make preliminary assessment of pollution in the area. Refer page 6 of the Interim Report.

d) A stake holder consultation meet may be oraganised at Singrauli. Refer page 6 of the Interim Report.

e) Both SPCBs (UP& MP) will make necessary arrangements for transfer of funds to CPCB to organise meeting and payment of TA/DA and sitting fee to expert members of the Core Committee as per the order of Hon'ble NGT. Refer page 6 of the Interim Report.

8. That in compliance of directions of the Hon'ble National Green Tribunal, the Sub-Committee-1 on "Quantification of Industrial Impacts" (to be coordinated by the Member Secretary, CPCB) met on 24.09.2014. Preliminary information w.r.t. Inventory of Existing industries and Pollution Load generation has been collected by UPPCB & MPPCB for District Sonebhadra, UP and District Singrauli, MP. Further, working approach and methodology for execution of each task was finalised. The copy of the minutes of the meeting of the sub-committee – 1 held on 24.09.2014 is enclosed as Annexure – V of the Interim Report.

9. That the Sub - Committee 4 on Potential Impact of pollution on air quality (to be coordinated the Member Secretary) met on October 20, 2014. The sub-committee evaluated existing Ambient Air Quality Monitoring network in Singrauli Area and decided the following:

I. UP & MP pollution Control Boards will upgrade the existing NAAQMS immediately for monitoring of 09 parameters viz: PM_{10}, $PM_{2.5}$, SO_2, NO_2, NH_3, O_3 ,As, Ni, & P. **(Action : UP & MPPCB)**

II. Existing AAQ monitoring network in both the districts of UP & MP will also be expanded to get representative air quality status of Singrauli area**(Action : UP & MPPCB)**

III. SPCBs shall ensure that AAQ monitoring data are received on regular basis at regular intervals, number of parameters monitored, performance of monitoring stations and quality of data reported. **(Action : UP & MPPCB)**

IV. Data generated through NAAQMS and study conducted by the M/s Bhagwathi Ana Labs, Hyderabad will be compiled and interim report will be prepared for the information of Hon, NGT. **(Action : CPCB, UP & MPPCB)**

V. NEERI/IIT, Kanpur and local agencies/NGOs will be involved for regular monitoring of AAQ at selected locations **(Action : CPCB, UP & MPPCB)**

VI. A map indicating monitoring stations of air, water and soil quality may be prepared jointly by UP & MP PCB_S**(Action : UP & MPPCB)**

VII. Continuous monitoring system for Hg monitoring atleast for three locations should be installed (covering both Districts of UP & MP) in Singrauli area on polluter pay principle **(Action : UP & MPPCB)**.

VIII. Participation of local level Institutions having experience and knowledge of the area like BanwasiSewa Ashram may be sought. Such agency can also be involved in monitoring activities.

10. That as per order of Hon'ble NGT dated 25.08.2014 the Core committee has to submit its report within four weeks from the date of order. It is submitted that the completion of tasks assigned to sub-committees would require at least three months after holding the first meeting of the respective Sub-Committees. Accordingly, it was decided in the Core Committee that an interim report based on available secondary data may be prepared and submitted to Hon'ble NGT. Accordingly, the Interim Report of the Core Committee is being submitted for consideration of Hon'ble National Green Tribunal.

11. That it in view of the magnitude of the work of the Committees, it is submitted for consideration of Hon'ble Green Tribunal that ***extension of six months time may be given for completing the activities assigned for each of the sub-committee and Core Committee.*** However, the actions to be taken by both the state Pollution Control Boards for prevention of Pollution will continue.

The Seal of the Oath Commissioner

S. S. Bda

DEPONENT

VERIFICATION :

7.NOV 2014

Verified at Delhi on this 7th day of November, 2014 that the contents of the above affidavit are correct to the best of my knowledge and belief and nothing has been concealed thereon.

S. S. Bda

DEPONENT

I identify the deponent who has signed / thumb impression in my presence.

CERTIFIED THAT THE DEPONENT
Shri/Smt./Km. ..... Harendra Nath Bala
S/o,W/o,D/o Sh. .....
Identified by Sh. S. L. Sethi
has solemnly affirmed at Delhi
on.....
that the contents have been
read over & explained to him/her are true & correct
to his/her knowledge.

7.NOV

Oath Commissioner, KKD Court, Delhi

7.NOV

ANNEXURE

INTERIM REPORT OF THE CORE COMMITTEE CONSTITUTED BY THE HON'BLE NATIONAL GREEN TRIBUNAL (NGT), NEW DELHI FOR "MONITORING OF POTENTIAL HAZARDS OF INDUSTRIALDEVELOPMENT IN SINGRAULI AREA"

[In the Matter of OA No. 276 of 2013 & M.A. No. 59 of 2014 in O.A. No. 20 of 2014) Ashwani Kumar Dubey Vs Union Of India and Ors And Jagat Narayan Viswakarma & Ors. Vs. Union of India & Ors.]

November 2014

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I : The Ambient air, water & ground water quality data of Singrauli (CPA) (sampled and analysed by M/s Bhagwathi Ana Labs, Hyderabad during January –February 2014)

II-A: The composition and Terms of Reference (TOR) of Core & sub-committees as per order of the Hon'ble National green Tribunal, dated 25.08.2014

II-B: Direction of Hon'ble National Green Tribunal (NGT) dated October 01, 2014

III: Copy of action plan for Singrauli and updated implementation status made available by the U.P. Pollution Control Board and M.P. Pollution Control Board .

IV: Information with respect to production capacity, fuel consumption, emission & effluent data for industries located in Dist. Sonebhadra, UP & Dist .Singrauli, MP

V; Minutes of the meeting of Sub - Committee-1 on Quantification of Industrial impacts

1. Singrauli Area

The area in the north eastern part of Singraui District in the state of MP and the adjoining southern part of Sonebhadra District in the state of Uttar Pradesh is collectively known as Singrauli.

Approximately 4328 square km. in District Sonebhadra in UP and 5672 sq.km in District Singrauli in MP is surrounded by Sakti Nagar, Rihand Nagar, Vindhyanagar, Dudhichua, & Dala, Amlori, Nigahi, Jayant, and Jhingurda and river Sone makes the boundary of the Singrauli problem area.

Singrauli is a major power hub due to availability of coal. Present installed capacity of power generation is 12000 MW. Besides Thermal Power Plants, Aluminium Industry, Chemical Industry, Mining Industries, Cement Plants & Stone Crushers are major industries in Singrauli Area. The details of industries located in Singrauli are given in Table below:

S.No.	Industry Category	Sonebhadra (U.P.)	Singrauli (M.P.)	Total number of Industries
01	Thermal Power Plant	06	04	10
02	Coal Mines	05	09	14
03	Cement Plant	01	00	01
04	Steel / Sponge Iron	00	01	01
05	Stone Crusher Cluster (nos)	01 (264 nos)	00 (41- not in cluster)	305
06	Explosive (SMS Bulk)	00	08	08
07	Chemical	02	10	12
08	Aluminium	01	01	02
	Total	**279**	**74**	**353**

2.0 Singrauli - Critically Polluted Area (CPA)

Due to the industrialization of the area, environmental problems with respect to air & water pollution, solid waste management have been reported since last two decades. After detailed environmental study and based on Comprehensive Environmental Pollution Index (CEPI), CPCB has identified Singrauli as one of the critically polluted area (CPA) in the year 2010. An industry specific action plan suggesting short & long term action points for control of industrial pollution in Singrauli area was prepared. The implementation of action plan is monitored by the UP & MP Pollution Control Board and the respective District administration periodically.

3.0 Environmental Status of Singrauli area

In order to update status of environmental quality and assess CEPI of the area, CPCB and SPCBs are regularly monitoring the air, water quality besides assessing the compliance of emission of effluent standards by the respective industries and coal mines. The data collected by CPCB on environmental quality w.r.t air, water quality in Singrauli (CPA)

through the monitoring carried out by M/s Bhagwathi Ana Labs, Hyderabad during January –February 2014 is given **Annexure I**. The status of environmental quality in Singrauli area is mentioned below:

3.1 Ambient Air quality

The concentration of PM10 & PM 2.5 was found to be in the range of 55-251 & 26-70 ug/m^3 against the limit of 100 & 60 ug/m^3 respectively. The concentrations of all other pollutants, viz; SO_2. NO_2, As, Ni, Pb, NH_3, O_3, CO & Benzene were found to be within the prescribed limits of NAAQS.

3.2 Surface Water Quality

The concentration of mercury was found to be less than 0.001 mg/l in all the samples (permissible limit of mercury for drinking water is 0.001 mg/l as per BIS 10500). While concentration of all other pollutants like pH, TSS, COD, BOD, TDS, SO_4, Chlorides, Pb, Ni, As etc were found to be within the prescribed limits of drinking water.

3.3 Ground water Quality

The concentration of mercury was found to be less than 0.001 mg/l respectively in all the samples. The permissible limit of Hg for drinking water is 0.001 mg/l as per BIS 10500. While, concentration of all other pollutants like pH, TSS, COD, BOD, TDS, SO_4, Chlorides, Pb, Ni, As etc were found to be within the prescribed limits of drinking water.

4.0 Issues raised by the applicants

Shri Ashwani Kumar Dubey & Jagatnarayan Viswkarma filed applications against Union of India& Ors under section 18(1) read with section 14 of National Green Tribunal Act, 2010. Applicants main concern were that the rapid development of Power & Coal industries in the City (Waidan) and area adjacent thereto has resulted in acute air, water and noise pollution which is causing serious health problems to the residents of the locality. Further, unplanned industrial activities in Singrauli/Sonebhadra region comprising part of UP and MP have resulted in to the creation of another man made environmental havoc due to the emission of heavy metals, flash from coal mines, toxic emissions from hazardous industries and stone crushing industries. The people, animals, the flora and fauna is getting seriously affected by the critical level of pollution in the area.

5. Order of Hon'ble National Green Tribunal (NGT)

Hon'ble National Green Tribunal (NGT) vide its order dated August 25, 2014 In the Matter of OA No. 276 of 2013 & M.A. No. 59 of 2014 in O.A. No. 20 of 2014) Ashwani Kumar Dubey Vs Union Of India and Ors and Jagat Narayan Viswakarma & Ors. Vs. Union of India & Ors. constituted a Core Committee & 05 Sub- Committees for quantification of industrial impacts, assessment of potential impact of pollution on water resources, land resources & air quality and assessment of potential impact on human health with respect to Singrauli area (both UP & MP). The composition and Terms of Reference (TOR) of Core & sub-committees as defined by the Hon'ble Tribunal are mentioned in **Annexure II-A**.

6. Available information

6.1 Copy of action plan for Singrauli and updated implementation status made available by the U.P. Pollution Control Board and M.P. Pollution Control Board (**Annexure III**).

6.2 Information with respect to production capacity, fuel consumption, emission & effluent data for industries located in Dist. Sonebhadra, UP & Dist, Singrauli, MP**(Annexure IV)**.

6.2 Data collected by CPCB on environmental quality w.r.t air, water quality & flyash management in Singrauli (CPA) through the monitoring carried out by M/s Bhagwathi Ana Labs, Hyderabad during January –February 2014 (**Annexure I**)

7.0 Action taken by the Core Committee

Proceeding of the Core Committee and sub Committees:

7.1 Core Committee : As per the direction of Hon'ble National Green Tribunal (NGT) dated October 01, 2014 (**Annexure II-B**), the first meeting of Core Committee was convened on October 16, 2014 under the chairmanship of Dr Rashid Hasan, Adviser, Ministry of Environment, Forests & Climate Change (MoEF &CC). The Core committee nominated following members of the Core Committee as Convenor of the each of Sub-Committees:

Sr. NO.	Committee	Convenor and Secretaries
1	**Sub-Committee I (Quantification of Industrial Impacts)**	**Convenor** : Member secretary, CPCB **Secretary** : I/c Zonal Office, CPCB, Lucknow & Bhopal
2	**Sub-Committee- 2 (Pollution Potential of water resources)**	**Convenor** : Director, NIH, Roorkee **Secretary** : MS, UPPCB
3	**Sub- Committee -3 (Potential Impact of pollution on land resources)**	**Convenor** : Director, ICFRE, Dehradun **Secretary** : MS, MPPCB
4	**Sub-Committee 4 (Potential Impact of pollution on air quality)**	**Convenor** : Member Secretary, CPCB **Secretary** : I/c PCI-II, CPCB, Delhi with field monitoring by ZO CPCB Lucknow& Bhopal
5	**Sub– Committee 5 (Potential Impact of pollution on Health)**	**Convenor** : Nominee of KGMC, Lucknow **Secretary** : MS ,UPPCB

Considering the suggestions and observations of the members and to proceed further, following actions were decided by the Committee:

a) An interim report based on monitoring data collected by CPCB and available secondary data may be prepared and submitted to Hon'ble NGT with a request for extension of time by six months for submission of final report**(Action : MoEF& cc and CPCB)**

b) The concerned Central/State Pollution Control Board will hold meeting of sub committees in consultation with convenor of the Committee and work out monitoring plan as per TOR within 15 days after received of minutes and initiate action in time bound manner **(Action: CPCB/ UPPCB/MPPCB)**

c) The members of the Core committee may visit Singrauli area in order to make preliminary assessment of pollution in the area.**(Action: CPCB/ UPPCB/MPPCB)**

d) A stake holder meet/ consultation may be oraganised at Singrauli **(Action: CPCB/ UPPCB/MPPCB)**

e) Both SPCBs (UP& MP) will make necessary arrangements for transfer of funds to CPCB to organise meeting and payment of TA/DA and sitting fee to expert members of the Core Committee as per the order of Hon'ble NGT**(Action: UPPCB/MPPCB)**.

The core committee has selected Dr Tapan Chakrabarti, Former Director, NEERI, Nagpur to be Chairman of the Core Committee unanimously. Henceforth, all the meetings of the Core Committee will be chaired by Dr Chakrabarti.

7.2 Sub –Committee: The proceedings of the sub –committees 2 (Potential impact of pollution on water resources) , 3 (Potential impact of pollution on land resources) & 5 (Potential impact of pollution on Health) are yet to be initiated by the respective conveners nominated by Core committee on October 16, 2014 However, proceedings of the Sub-Committee -1 (Quantification of Industrial impacts) & 4 (Potential impact of pollution on air quality) which are to be convened by Central Pollution Control Board (CPCB) have been initiated. The meeting of the respective sub committees was held on September 24, 2014 & October 20, 2014 respectively. The following decisions taken in the meetings to proceed further as per TOR of the respective Sub- Committees:

7.2.1 Sub- Committee-I : Quantification of Industrial impacts

As per TOR of the sub-committee, preliminary information w.r.t Inventory of Existing industries and Pollution Load generation has been collected by UPPCB & MPPCB for District Sonebhadra, UP and District Singrauli, MP. The same has been submitted to the sub- committee. Further, working approach and methodology for execution of each task was finalised. The minutes of the meeting of the sub-committee held on September 24, 2014 are given in **Annexure V**.

7.2.2 Sub-Committee- 4: Potential Impact of pollution on air quality

As per TOR, Ambient air quality sampling (PM2.5, PM10,SOX,NOX, CO, Hg) in the project area based on appropriately designed sampling methodology is to be carried out as per the guidelines of CPCB.

Evaluation of Existing AAQ Monitoring Network in Singrauli Area:
Presently, total 05 AAQ monitoring stations (03 in MP & 02 in UP) are being operated under National Ambient Air Quality Monitoring programme. NAAQM stations located in MP area have facility for monitoring of only PM_{10} & $PM_{2.5}$ only while stations located in UP area have facility for monitoring of PM_{10} & $PM_{2.5}$, SO_2 and NO_2. It was informed that out of 12 notified

pollutants under NAAQS, only 09 pollutants can be monitored manually while pollutants like CO, Benzene and Benzo-Pyrene can only be monitored using instruments as per the reference methods specified in the notification. UP & MP pollution Control Boards were asked to upgrade the NAAQMS immediately for monitoring of all 09 parameters using defined monitoring protocol. In addition to 05 AAQ monitoring stations under NAAQM programme, about 32 more AAQ monitoring stations (manual & continuous both) are being operated by the industries in Singrauli area. The data generated through these stations can also be evaluated to assess the ambient air quality in the area and for future studies. Besides, these stations can be used for monitoring of ambient air quality after verifying calibration of instruments used for the monitoring.

Following was decided:

I. UP & MP pollution Control Boards will upgrade the NAAQMS immediately for monitoring of 09 parameters viz: PM_{10}, $PM_{2.5}$, SO_2, NO_2, NH_3, O_3 ,As, Ni, & P. (**Action : UP & MPPCB)**

II. Existing AAQ monitoring network in both the districts of UP & MP will be expanded to get representative air quality status of Singrauli area**(Action : UP & MPPCB)**

III. SPCBs shall ensure that AAQ monitoring data are received on regular basis at regular intervals, number of parameters monitored, performance of monitoring stations and quality of data reported. **(Action : UP & MPPCB)**

IV. Data generated through NAAQMS and study conducted M/s Bhagwathi Ana Labs, Hyderbad will be compiled and interim report will be prepared for the information of Hon, NGT. **(Action : CPCB, UP & MPPCB)**

V. NEERI/IIT, Kanpur and local agencies/NGOs will be involved for regular monitoring of AAQ at selected locations **(Action : CPCB, UP & MPPCB)**

VI. IIT, Kanpur and NEERI will prepare a project either jointly or separately on assessment of assimilative carrying capacity of Singrauli area including remedial measures for the existing industrial installations and the same may be considered by Core Committee for recommendations to Hon,ble NGT for appropriate orders. **(Action : NEERI & IIT, Kanpur)**

VII. A map indicating monitoring stations of air, water and soil quality may be prepared jointly by UP & MP PCB_S**(Action : UP & MPPCB)**

VIII. Continuous monitoring system for Hg monitoring atleast for three locations should be installed (covering both Districts of UP & MP) in Singrauli area on polluter pay principle **(Action : UP & MPPCB)**.

IX. Participation of local level Institutions having experience and knowledge of the area like Banwasi Sewa Ashram may be sought. Such agency can also be involved in monitoring activities.

The next meeting of the sub-Committee to review the progress will be held on November 15, 2014 at UPPCB, Lucknow .

8.0 Suggestions:

Based on the information made available about Singraili area particularly with respect to environmental quality and implementation status action of Action Plan of Singrauli, the committee observed that action plan can be improved by identifying the gaps based on the

field study as per TOR of the Sub – Committees and identifying the problems of the area. Accordingly, following suggestions were made by the Committee to modify the action plan for improvement in environmental quality in Singrauli area:

I. There is a need to prepare action plan for minimisation impact of pollutants on health and agriculture based on the findings of the Sub-committee 5 & 3.
II. Evaluate the action plan based on pollution load before and after its implementation. This will help in identifying the gaps and consideration of additional parameters. In addition, a source apportionment study in Singralui area to identify contribution in terms of pollution load from different activities in the area is also required.
III. Assess pollution level in the area which will be the base for assessing impact on the health of people of the area.
IV. Manual for safety & Health for industrial workers prepared by NIOH should be implemented this will be helpful in minimising the impact on health of the workers.
V. Measures like in situ coal gasification and promoting IGCC technology in new/ expansion units of the thermal power plants, use of beneficiated coal and reuse of mine water and ash pond effluent may be considered to prevent pollution in Singrauli area.

9.0 Extension of time for submission of final Report

As per order of Hon'ble NGT dated October 01, 2014, Core committee shall submit its report within four weeks. The completion of tasks assigned to sub-committees would require at least three months after holding the first meeting of the respective Sub-Committees which will be convened after this meeting only. It is likelyhood that Sub- committees can only initiate field studies earliest by November 10, 2014 and will be completing by mid of – February 2015. Thereafter, synthesis of data and preparation of final report by Core committee will require further atleast one month. Accordingly, it was suggested that an interim report based on available secondary data may be prepared and submitted to Hon'ble NGT. Therefore, it was decided that to pray ***Hon'ble NGT for extension time by six months for completing the activities assigned through TOR of each of the subcommittee and Core Committee in holistic manner.*** Meanwhile, actions to be taken by the both the state Pollution Control Boards for prevention of Pollution will continue.

ANNEXURE - I

MONITORING, SAMPLING AND ANALYSIS

of

AMBIENT AIR QUALITY, SURFACE WATER QUALITY AND GROUND WATER QUALITY

in

IDENTIFIED CRITICALLY POLLUTED AREA (CPAs)

SINGRAULI

AMBIENT AIR QUALITY MONITORING RESULTS

S.No.	Pollutants	AAQ – 1 Executive club, NTPC Colony, Shakti nagar			AAQ – 2 GM Office, NCL, Dudhichau, Khadia,			NAAQ Standards (2009)
		1st Round	2nd Round	3rd Round	1st Round	2nd Round	3rd Round	
		31.01.2014	03.02.2014	05.02.2014	07.02.2014	10.02.2014	12.02.2014	
I.	**Particulate Pollutants**							
1.	PM_{10} ($\mu g/m^3$)	122	107	135	152	187	138	100 ($\mu g/m^3$)
2	$PM_{2.5}$ ($\mu g/m^3$)	54	47	36	53	69	41	60 ($\mu g/m^3$)
3	Arsenic (ng/m^3)	1.1	1.6	<1	2.3	1.9	3.7	06 (ng/m^3) (Annual)
4	Nickel (ng/m^3)	6.4	5.7	8.2	5.8	6.9	6.2	20 (ng/m^3) (Annual)
5	Lead ($\mu g/m^3$)	0.08	0.12	0.15	0.06	0.08	0.11	1.0($\mu g/m^3$) (24 hours)
6	Benzo (a) Pyrene (ng/m^3)	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	01 (ng/m^3) (Annual)
II.	**Gaseous Pollutants**							
7	SO_2 ($\mu g/m^3$)	18.6	20.3	19.4	22.4	23.8	21.6	80 ($\mu g/m^3$) (24 hours)
8	NO_X ($\mu g/m^3$)	25.4	26.1	24.2	37.8	40.1	38.1	80 ($\mu g/m^3$) (24 hours)
9	NH_3 ($\mu g/m^3$)	6.2	6.4	5.8	5.8	6.1	5.2	400 ($\mu g/m^3$) (24 hours)
10	O_3 ($\mu g/m^3$)	10.2	10.8	12.8	11.8	13.4	12.8	100 (8 hours) & 180 ($\mu g/m^3$) (1 hour)
		11.8	16.4	13.8	13.7	15.8	16.2	
		10.7	10.9	15.8	16.4	15.7	18.2	
11	CO (mg/m^3)	< 2	< 2	< 2	< 2	< 2	< 2	02 (8 hours) & 04 mg/m^3 (1 hour)
		< 2	< 2	< 2	< 2	< 2	< 2	
		< 2	< 2	< 2	< 2	< 2	< 2	
12	Benzene ($\mu g/m^3$)	< 3	< 3	< 3	< 3	< 3	< 3	05 ($\mu g/m^3$) (Annual)

AMBIENT AIR QUALITY MONITORING RESULTS

S.No.	Pollutants	AAQ – 3 Expert hostel, Khadia colony, NCL			AAQ – 4 Senior Transit Camp, NCL, Bina			NAAQ Standards (2009)
		1st Round	2nd Round	3rd Round	1st Round	2nd Round	3rd Round	
		31.01.2014	03.02.2014	05.02.2014	31.01.2014	03.02.2014	05.02.2014	
I.	**Particulate Pollutants**							
1.	PM_{10} ($\mu g/m^3$)	251	187	172	148	119	125	**100 ($\mu g/m^3$)**
2	$PM_{2.5}$ ($\mu g/m^3$)	58	61	53	59	42	46	**60 ($\mu g/m^3$)**
3	Arsenic (ng/m^3)	1.6	2.9	1.4	2.3	1.4	3.9	**06 (ng/m^3) (Annual)**
4	Nickel (ng/m^3)	6.1	5.8	8.4	6.2	5.9	6.8	**20 (ng/m^3) (Annual)**
5	Lead ($\mu g/m^3$)	0.04	0.08	0.02	0.02	0.04	0.07	**1.0($\mu g/m^3$) (24 hours)**
6	Benzo (a) Pyrene (ng/m^3)	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**01 (ng/m^3) (Annual)**
II.	**Gaseous Pollutants**							
7	SO_2 ($\mu g/m^3$)	19.8	20.7	23.4	12.8	16.7	14.2	**80 ($\mu g/m^3$) (24 hours)**
8	NO_X ($\mu g/m^3$)	34.2	28.6	29.5	27.4	29.7	30.1	**80 ($\mu g/m^3$) (24 hours)**
9	NH_3 ($\mu g/m^3$)	14.7	15.2	14.1	16.7	16.2	18.2	**400 ($\mu g/m^3$) (24 hours)**
10	O_3 ($\mu g/m^3$)	6.4	6.8	7.3	5.9	6.8	9.4	**100 (8 hours) & 180 ($\mu g/m^3$) (1 hour)**
		5.9	7.4	9.2	6.7	7.5	10.8	
		5.7	6.3	8.4	7.9	8.8	6.7	
11	CO (mg/m^3)	< 2	< 2	< 2	< 2	< 2	< 2	**02 (8 hours) & 04 mg/m^3 (1 hour)**
		< 2	< 2	< 2	< 2	< 2	< 2	
		< 2	< 2	< 2	< 2	< 2	< 2	
12	Benzene ($\mu g/m^3$)	< 3	< 3	< 3	< 3	< 3	< 3	**05 ($\mu g/m^3$) (Annual)**

AMBIENT AIR QUALITY MONITORING RESULTS

S.No.	Pollutants	AAQ – 5 Guest house, NCL Amlori colony, Near Shiv mandir			AAQ – 6 Officers club, NCL, Kakri colony			NAAQ Standards (2009)
		1st Round	2nd Round	3rd Round	1st Round	2nd Round	3rd Round	
		07.02.2014	10.02.2014	12.02.2014	31.01.2014	03.02.2014	05.02.2014	
I.	**Particulate Pollutants**							
1.	PM_{10} (µg/m^3)	109	94	88	157	139	167	100 (µg/m^3)
2	$PM_{2.5}$ (µg/m^3)	46	38	33	73	45	68	60 (µg/m^3)
3	Arsenic (ng/m^3)	1.8	3.9	<1	1.6	1.9	1.7	06 (ng/m^3) (Annual)
4	Nickel (ng/m^3)	6.4	5.9	9.4	5.8	6.7	4.2	20 (ng/m^3) (Annual)
5	Lead (µg/m^3)	0.04	0.07	0.03	0.07	0.09	0.05	1.0(µg/m^3) (24 hours)
6	Benzo (a) Pyrene (ng/m^3)	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	01 (ng/m^3) (Annual)
II.	**Gaseous Pollutants**							
7	SO_2 (µg/m^3)	13.8	16.9	15.4	20.4	21.7	18.2	80 (µg/m^3) (24 hours)
8	NO_X (µg/m^3)	26.4	22.8	19.6	38.4	27.9	31.5	80 (µg/m^3) (24 hours)
9	NH_3 (µg/m^3)	20.1	18.6	19.2	7.8	8.1	9.8	400 (µg/m^3) (24 hours)
10	O_3 (µg/m^3)	6.4	6.9	7.8	8.4	6.9	10.3	100 (8 hours) & 180 (µg/m^3) (1 hour)
		8.9	6.7	10.4	9.5	8.1	9.6	
		8.5	9.5	9.7	10.6	9.5	10.9	
11	CO (mg/m^3)	< 2	< 2	< 2	< 2	< 2	< 2	02 (8 hours) & 04 mg/m^3 (1 hour)
		< 2	< 2	< 2	< 2	< 2	< 2	
		< 2	< 2	< 2	< 2	< 2	< 2	
12	Benzene (µg/m^3)	< 3	< 3	< 3	< 3	< 3	< 3	05 (µg/m^3) (Annual)

AMBIENT AIR QUALITY MONITORING RESULTS

S.No.	Pollutants	AAQ – 7 Hindalco colony (Hanuman mandir) Renusagar			AAQ – 8 III type colony, Anpara			NAAQ Standards (2009)
		1st Round	2nd Round	3rd Round	1st Round	2nd Round	3rd Round	
		25.01.2014	27.01.2014	29.01.2014	25.01.2014	27.01.2014	29.01.2014	
I.	**Particulate Pollutants**							
1.	PM_{10} (µg/m^3)	64	73	55	178	144	132	**100 (µg/m^3)**
2	$PM_{2.5}$ (µg/m^3)	29	32	38	55	44	45	**60 (µg/m^3)**
3	Arsenic (ng/m^3)	<1	<1	<1	1.6	2.9	2.1	**06 (ng/m^3) (Annual)**
4	Nickel (ng/m^3)	2.9	3.4	3.2	6.4	5.2	6.9	**20 (ng/m^3) (Annual)**
5	Lead (µg/m^3)	0.06	0.07	0.05	0.14	0.19	0.09	**1.0(µg/m^3) (24 hours)**
6	Benzo (a) Pyrene (ng/m^3)	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**01 (ng/m^3) (Annual)**
II.	**Gaseous Pollutants**							
7	SO_2 (µg/m^3)	11.5	13.8	9.9	18.2	18.1	16.9	**80 (µg/m^3) (24 hours)**
8	NO_X (µg/m^3)	22.6	24.1	19.6	28.4	24.6	24.8	**80 (µg/m^3) (24 hours)**
9	NH_3 (µg/m^3)	10.2	10.8	9.4	10.7	12.7	11.6	**400 (µg/m^3) (24 hours)**
10	O_3 (µg/m^3)	6.4	5.9	5.8	10.4	10.9	11.4	**100 (8 hours) & 180 (µg/m^3) (1 hour)**
		8.1	5.9	6.7	11.4	11.2	15.2	
		5.9	6.8	9.2	9.7	6.8	10.4	
11	CO (mg/m^3)	< 2	< 2	< 2	< 2	< 2	< 2	**02 (8 hours) & 04 mg/m^3 (1 hour)**
		< 2	< 2	< 2	< 2	< 2	< 2	
		< 2	< 2	< 2	< 2	< 2	< 2	
12	Benzene (µg/m^3)	< 3	< 3	< 3	< 3	< 3	< 3	**05 (µg/m^3) (Annual)**

AMBIENT AIR QUALITY MONITORING RESULTS

S.No.	Pollutants	AAQ – 9 Guest house, NCL colony, Jingurda			AAQ – 10 Experts Hostel, Jayant, NCL Project			NAAQ Standards (2009)
		1st Round	2nd Round	3rd Round	1st Round	2nd Round	3rd Round	
		07.02.2014	10.02.2014	12.02.2014	07.02.2014	10.02.2014	12.02.2014	
I.	**Particulate Pollutants**							
1.	PM_{10} ($\mu g/m^3$)	92	85	78	177	140	129	**100 ($\mu g/m^3$)**
2	$PM_{2.5}$ ($\mu g/m^3$)	49	32	28	57	67	52	**60 ($\mu g/m^3$)**
3	Arsenic (ng/m^3)	<1	<1	<1	2.7	1.2	1.8	**06 (ng/m^3) (Annual)**
4	Nickel (ng/m^3)	3.9	4.8	3.1	6.4	2.8	6.9	**20 (ng/m^3) (Annual)**
5	Lead ($\mu g/m^3$)	0.04	0.05	0.09	0.04	0.06	0.03	**1.0($\mu g/m^3$) (24 hours)**
6	Benzo (a) Pyrene (ng/m^3)	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**01 (ng/m^3) (Annual)**
II.	**Gaseous Pollutants**							
7	SO_2 ($\mu g/m^3$)	14.8	16.4	15.9	16.4	18.5	19.2	**80 ($\mu g/m^3$) (24 hours)**
8	NO_X ($\mu g/m^3$)	24.3	21.8	25.6	30.8	28.6	27.3	**80 ($\mu g/m^3$) (24 hours)**
9	NH_3 ($\mu g/m^3$)	18.4	18.2	15.6	22.8	21.1	20.6	**400 ($\mu g/m^3$) (24 hours)**
10	O_3 ($\mu g/m^3$)	6.9	8.5	9.2	8.4	8.6	10.4	**100 (8 hours) & 180 ($\mu g/m^3$) (1 hour)**
		6.4	5.8	7.2	10.6	10.1	8.4	
		8.4	6.7	8.6	9.5	8.6	10.7	
11	CO (mg/m^3)	< 2	< 2	< 2	< 2	< 2	< 2	**02 (8 hours) & 04 mg/m^3 (1 hour)**
		< 2	< 2	< 2	< 2	< 2	< 2	
		< 2	< 2	< 2	< 2	< 2	< 2	
12	Benzene ($\mu g/m^3$)	< 3	< 3	< 3	< 3	< 3	< 3	**05 ($\mu g/m^3$) (Annual)**

AMBIENT AIR QUALITY MONITORING RESULTS

S.No.	Pollutants	AAQ – 11 NCL Area (Near Police station), Jayant.			AAQ – 12 Guest House Sector-B, Dudichua, NCL Project			NAAQ Standards (2009)
		1st Round	2nd Round	3rd Round	1st Round	2nd Round	3rd Round	
		07.02.2014	10.02.2014	12.02.2014	07.02.2014	10.02.2014	12.02.2014	
I.	**Particulate Pollutants**							
1.	PM_{10} ($\mu g/m^3$)	128	112	147	163	190	135	**100 ($\mu g/m^3$)**
2	$PM_{2.5}$ ($\mu g/m^3$)	52	68	45	59	66	70	**60 ($\mu g/m^3$)**
3	Arsenic (ng/m^3)	2.4	1.8	1.2	3.1	2.1	1.8	**06 (ng/m^3) (Annual)**
4	Nickel (ng/m^3)	3.1	5.7	4.4	6.7	5.8	9.1	**20 (ng/m^3) (Annual)**
5	Lead ($\mu g/m^3$)	0.03	0.05	0.09	0.04	0.07	0.05	**1.0($\mu g/m^3$) (24 hours)**
6	Benzo (a) Pyrene (ng/m^3)	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**01 (ng/m^3) (Annual)**
II.	**Gaseous Pollutants**							
7	SO_2 ($\mu g/m^3$)	17.1	20.4	16.4	15.9	16.4	18.3	**80 ($\mu g/m^3$) (24 hours)**
8	NO_X ($\mu g/m^3$)	30.1	28.9	27.6	26.8	30.1	24.5	**80 ($\mu g/m^3$) (24 hours)**
9	NH_3 ($\mu g/m^3$)	6.4	5.9	8.7	6.1	7.4	10.2	**400 ($\mu g/m^3$) (24 hours)**
10	O_3 ($\mu g/m^3$)	6.4	10.4	9.1	10.4	7.4	8.6	**100 (8 hours) & 180 ($\mu g/m^3$) (1 hour)**
		14.8	15.1	8.6	17.4	16.9	12.5	
		5.4	6.1	8.7	5.4	6.1	6.7	
11	CO (mg/m^3)	< 2	< 2	< 2	< 2	< 2	< 2	**02 (8 hours) & 04 mg/m^3 (1 hour)**
		< 2	< 2	< 2	< 2	< 2	< 2	
		< 2	< 2	< 2	< 2	< 2	< 2	
12	Benzene ($\mu g/m^3$)	< 3	< 3	< 3	< 3	< 3	< 3	**05 ($\mu g/m^3$) (Annual)**

AMBIENT AIR QUALITY MONITORING RESULTS

S.No.	Pollutants	AAQ – 13 Gust house, NCL residential colony, Nighai			AAQ – 14 NTPC Vindhyanagar residential colony (NH 2)			NAAQ Standards (2009)
		1st Round	2nd Round	3rd Round	1st Round	2nd Round	3rd Round	
		07.02.2014	10.02.2014	12.02.2014	14.02.2014	17.02.2014	19.02.2014	
I.	**Particulate Pollutants**							
1.	PM_{10} (µg/m^3)	107	92	84	103	98	72	**100 (µg/m^3)**
2	$PM_{2.5}$ (µg/m^3)	39	34	29	39	31	26	**60 (µg/m^3)**
3	Arsenic (ng/m^3)	<1	<1	<1	<1	<1	<1	**06 (ng/m^3) (Annual)**
4	Nickel (ng/m^3)	3.4	2.9	4.7	2.8	6.4	5.6	**20 (ng/m^3) (Annual)**
5	Lead (µg/m^3)	0.06	0.08	0.04	0.02	0.07	0.05	**1.0(µg/m^3) (24 hours)**
6	Benzo (a) Pyrene (ng/m^3)	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**01 (ng/m^3) (Annual)**
II.	**Gaseous Pollutants**							
7	SO_2 (µg/m^3)	16.4	15.2	19.5	14.1	13.6	16.5	**80 (µg/m^3) (24 hours)**
8	NO_X (µg/m^3)	30.2	30.9	27.3	30.8	31.2	37.6	**80 (µg/m^3) (24 hours)**
9	NH_3 (µg/m^3)	14.6	19.4	12.7	5.9	6.1	9.7	**400 (µg/m^3) (24 hours)**
10	O_3 (µg/m^3)	7.6	9.4	10.5	6.9	7.9	10.4	**100 (8 hours) & 180 (µg/m^3) (1 hour)**
		20.1	17.6	12.9	18.7	19.4	16.8	
		6.7	8.1	5.8	6.9	8.4	7.3	
11	CO (mg/m^3)	< 2	< 2	< 2	< 2	< 2	< 2	**02 (8 hours) & 04 mg/m^3 (1 hour)**
		< 2	< 2	< 2	< 2	< 2	< 2	
		< 2	< 2	< 2	< 2	< 2	< 2	
12	Benzene (µg/m^3)	< 3	< 3	< 3	< 3	< 3	< 3	**05 (µg/m^3) (Annual)**

AMBIENT AIR QUALITY MONITORING RESULTS

S.No.	Pollutants	AAQ – 15 Main Market, NTPC Rihandnagar, Bijpur			AAQ – 16 Renukeswar mandir, Hindalco colony, Renukoot			NAAQ Standards (2009)
		1st Round	2nd Round	3rd Round	1st Round	2nd Round	3rd Round	
		07.02.2014	10.02.2014	12.02.2014	25.01.2014	27.01.2014	29.01.2014	
I.	**Particulate Pollutants**							
1.	PM_{10} (µg/m^3)	135	119	97	136	164	119	**100 (µg/m^3)**
2	$PM_{2.5}$ (µg/m^3)	42	48	33	41	34	37	**60 (µg/m^3)**
3	Arsenic (ng/m^3)	1.4	1.7	1.2	<1	<1	<1	**06 (ng/m^3) (Annual)**
4	Nickel (ng/m^3)	5.1	3.4	6.2	5.4	6.9	4.7	**20 (ng/m^3) (Annual)**
5	Lead (µg/m^3)	0.08	0.05	0.07	0.10	0.06	0.08	**1.0(µg/m^3) (24 hours)**
6	Benzo (a) Pyrene (ng/m^3)	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**01 (ng/m^3) (Annual)**
II.	**Gaseous Pollutants**							
7	SO_2 (µg/m^3)	12.8	16.6	15.8	15.2	16.9	12.5	**80 (µg/m^3) (24 hours)**
8	NO_X (µg/m^3)	22.8	26.2	23.2	21.4	24.9	20.8	**80 (µg/m^3) (24 hours)**
9	NH_3 (µg/m^3)	19.8	17.6	20.1	6.8	5.9	9.4	**400 (µg/m^3) (24 hours)**
10	O_3 (µg/m^3)	12.7	11.7	14.3	6.9	8.4	10.5	**100 (8 hours) & 180 (µg/m^3) (1 hour)**
		19.4	16.9	18.3	9.8	10.4	9.5	
		6.8	5.7	9.4	5.8	6.2	8.4	
11	CO (mg/m^3)	< 2	< 2	< 2	< 2	< 2	< 2	**02 (8 hours) & 04 mg/m^3 (1 hour)**
		< 2	< 2	< 2	< 2	< 2	< 2	
		< 2	< 2	< 2	< 2	< 2	< 2	
12	Benzene (µg/m^3)	< 3	< 3	< 3	< 3	< 3	< 3	**05 (µg/m^3) (Annual)**

AMBIENT AIR QUALITY MONITORING RESULTS

S.No.	Pollutants	AAQ – 17 Guest house, Dalla town ship, Dalla			AAQ – 18 Guest house , Obra colony, Obra			NAAQ Standards (2009)
		1st Round	2nd Round	3rd Round	1st Round	2nd Round	3rd Round	
		25.01.2014	27.01.2014	29.01.2014	25.01.2014	27.01.2014	29.01.2014	
I.	**Particulate Pollutants**							
1.	PM_{10} ($\mu g/m^3$)	162	136	122	202	170	156	**100 ($\mu g/m^3$)**
2	$PM_{2.5}$ ($\mu g/m^3$)	62	49	42	41	56	39	**60 ($\mu g/m^3$)**
3	Arsenic (ng/m^3)	<1	<1	<1	3.1	2.4	1.9	**06 (ng/m^3) (Annual)**
4	Nickel (ng/m^3)	6.1	5.8	7.9	6.4	5.4	7.8	**20 (ng/m^3) (Annual)**
5	Lead ($\mu g/m^3$)	0.03	0.07	0.01	0.07	0.09	0.04	**1.0($\mu g/m^3$) (24 hours)**
6	Benzo (a) Pyrene (ng/m^3)	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**01 (ng/m^3) (Annual)**
II.	**Gaseous Pollutants**							
7	SO_2 ($\mu g/m^3$)	14.1	12.7	10.8	16.4	17.9	12.6	**80 ($\mu g/m^3$) (24 hours)**
8	NO_X ($\mu g/m^3$)	28.5	24.9	22.7	21.4	23.8	20.8	**80 ($\mu g/m^3$) (24 hours)**
9	NH_3 ($\mu g/m^3$)	20.1	18.6	19.4	6.4	5.9	8.2	**400 ($\mu g/m^3$) (24 hours)**
10	O_3 ($\mu g/m^3$)	6.4	9.7	10.5	6.9	5.9	8.7	**100 (8 hours) & 180 ($\mu g/m^3$) (1 hour)**
		18.4	16.9	20.7	16.8	19.4	18.2	
		4.9	5.7	6.1	6.8	5.4	8.9	
11	CO (mg/m^3)	< 2	< 2	< 2	< 2	< 2	< 2	**02 (8 hours) & 04 mg/m^3 (1 hour)**
		< 2	< 2	< 2	< 2	< 2	< 2	
		< 2	< 2	< 2	< 2	< 2	< 2	
12	Benzene ($\mu g/m^3$)	< 3	< 3	< 3	< 3	< 3	< 3	**05 ($\mu g/m^3$) (Annual)**

SURFACE WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	SW – 1 : Balia Nala Dn Stream, near Bridge, Shaktinagar			Test Method
			1st Round 01.02.2014	2nd Round 04.02.2014	3rd Round 06.02.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	5	5	5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.69	7.72	7.70	IS 3025: Part – 11
2	E C	µS/cm	240	262	224	IS 3025: Part – 14
3	Oil & Grease	mg/l	< 1	< 1	< 1	IS 3025: Part – 39
4	Suspended Solids	mg/l	18	14	16	IS 3025: Part – 17
5	Dissolved Oxygen	mg/l	6.8	7.0	6.9	IS 3025: Part – 38
6	Chemical Oxygen Demand	mg/l	20	16	20	IS 3025: Part – 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	5	4	4	IS 3025: Part – 44
8	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
9	Nitrate-Nitrogen as N	mg/l	1.13	1.35	1.02	APHA 4500 – NO_3.B
10	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	1.13	1.35	1.02	By Calculation
11	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
12	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
13	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
14	Fluoride as F	mg/l	0.40	0.40	0.30	IS 3025: Part – 60
15	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
16	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
17	Sodium Absorption Ratio (SAR)	-	0.63	0.68	0.57	By Calculation
18	Total Coliforms	MPN/100ml	22	26	17	IS 1622
19	Fecal Coliforms	MPN/100ml	2	2	2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.02	0.02	0.02	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.01	0.02	0.01	APHA 3111 – B
19	Iron as Fe	mg/l	0.18	0.16	0.18	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 57

SURFACE WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	SW – 2 : Balia Nala Up Stream, near Bridge, Kadia colony			Test Method
			1st Round 01.02.2014	2nd Round 04.02.2014	3rd Round 06.02.2014	
I	**Simple Parameters**					
1	Appearance	-	Grey	Grey	Grey	-
2	Colour (Hazen Units)	-	30	25	30	IS 3025: Part – 4
3	Odour (Smell)	-	Un-Agreeable	Un-Agreeable	Un-Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.79	7.82	7.75	IS 3025: Part – 11
2	E C	µS/cm	592	614	640	IS 3025: Part – 14
3	Oil & Grease	mg/l	3	4	4	IS 3025: Part – 39
4	Suspended Solids	mg/l	128	140	112	IS 3025: Part – 17
5	Dissolved Oxygen	mg/l	3.6	3.7	4.0	IS 3025: Part – 38
6	Chemical Oxygen Demand	mg/l	82	92	78	IS 3025: Part – 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	20	21	18	IS 3025: Part – 44
8	Nitrite-Nitrogen as N	mg/l	0.01	0.01	0.01	APHA 4500 – NO_2.B
9	Nitrate-Nitrogen as N	mg/l	1.13	1.35	1.69	APHA 4500 – NO_3.B
10	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	1.14	1.36	1.70	By Calculation
11	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
12	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
13	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
14	Fluoride as F	mg/l	0.70	0.70	0.70	IS 3025: Part – 60
15	Sulphides as S	mg/l	0.2	0.2	0.2	IS 3025: Part – 29
16	Dissolved Phosphates as P	mg/l	0.36	0.42	0.34	APHA 4500 – P.D
17	Sodium Absorption Ratio (SAR)	-	0.79	0.82	0.98	By Calculation
18	Total Coliforms	MPN/100ml	50	33	26	IS 1622
19	Fecal Coliforms	MPN/100ml	14	9	4	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	0.52	0.64	0.50	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	7.8	8.7	8.4	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	4.8	5.6	5.3	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.06	0.07	0.07	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.03	0.03	0.04	APHA 3111 – B
19	Iron as Fe	mg/l	0.92	0.84	0.96	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	0.11	0.10	0.10	IS 3025: Part – 57

SURFACE WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	SW – 3 : Lake water near Senior Transit Camp, NCL, Bina			Test Method
			1st Round 01.02.2014	2nd Round 04.02.2014	3rd Round 06.02.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	5	5	5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.62	7.58	7.46	IS 3025: Part – 11
2	E C	µS/cm	742	730	706	IS 3025: Part – 14
3	Oil & Grease	mg/l	< 1	< 1	< 1	IS 3025: Part – 39
4	Suspended Solids	mg/l	14	18	15	IS 3025: Part – 17
5	Dissolved Oxygen	mg/l	6.1	6.3	6.2	IS 3025: Part – 38
6	Chemical Oxygen Demand	mg/l	12	16	14	IS 3025: Part – 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	3	4	3	IS 3025: Part – 44
8	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
9	Nitrate-Nitrogen as N	mg/l	2.71	2.48	2.03	APHA 4500 – NO_3.B
10	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	2.71	2.48	2.03	By Calculation
11	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
12	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
13	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
14	Fluoride as F	mg/l	0.50	0.60	0.50	IS 3025: Part – 60
15	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
16	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
17	Sodium Absorption Ratio (SAR)	-	0.82	0.74	0.71	By Calculation
18	Total Coliforms	MPN/100ml	26	34	21	IS 1622
19	Fecal Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.03	0.02	0.02	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.01	0.01	0.01	APHA 3111 – B
19	Iron as Fe	mg/l	0.09	0.08	.010	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	0.13	0.11	0.12	IS 3025: Part – 57

SURFACE WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	SW – 4 : Kava nala, Anpara			Test Method
			1st Round 01.02.2014	2nd Round 04.02.2014	3rd Round 06.02.2014	
I	**Simple Parameters**					
1	Appearance	-	Light Brown	Light Brown	Light Brown	-
2	Colour (Hazen Units)	-	10	15	10	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.65	7.70	7.79	IS 3025: Part – 11
2	E C	µS/cm	580	562	538	IS 3025: Part – 14
3	Oil & Grease	mg/l	1	2	1	IS 3025: Part – 39
4	Suspended Solids	mg/l	28	32	26	IS 3025: Part – 17
5	Dissolved Oxygen	mg/l	5.6	5.5	5.7	IS 3025: Part – 38
6	Chemical Oxygen Demand	mg/l	22	18	24	IS 3025: Part – 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	5	4	5	IS 3025: Part – 44
8	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
9	Nitrate-Nitrogen as N	mg/l	0.45	0.34	0.34	APHA 4500 – NO_3.B
10	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	0.45	0.34	0.34	By Calculation
11	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
12	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
13	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
14	Fluoride as F	mg/l	0.60	0.50	0.50	IS 3025: Part – 60
15	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
16	Dissolved Phosphates as P	mg/l	0.14	0.11	0.13	APHA 4500 – P.D
17	Sodium Absorption Ratio (SAR)	-	1.12	1.06	0.98	By Calculation
18	Total Coliforms	MPN/100ml	70	60	40	IS 1622
19	Fecal Coliforms	MPN/100ml	<2	<2	<2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	0.19	0.15	0.18	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	2.5	2.1	2.2	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	1.4	1.1	1.3	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.02	0.02	0.02	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.01	0.01	0.01	APHA 3111 – B
19	Iron as Fe	mg/l	0.12	0.15	0.10	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	0.11	0.12	0.12	IS 3025: Part – 57

MONITORING, SAMPLING AND ANALYSIS FOR AMBIENT AIR QUALITY, SURFACE WATER AND GROUND WATER QUALITY IN THE IDENTIFIED 10 CRITICALLY POLLUTED AREA (CPA's) UNDER PHASE – 1 PROGRAMME
SINGRAULI – UTTAR PRADESH

SURFACE WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	S W – 5 : Rihand river near Kohadowal village			Test Method
			1st Round 01.02.2014	2nd Round 04.02.2014	3rd Round 06.02.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	10	10	10	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.48	7.43	7.42	IS 3025: Part – 11
2	E C	µS/cm	134	130	129	IS 3025: Part – 14
3	Oil & Grease	mg/l	2	1	1	IS 3025: Part – 39
4	Suspended Solids	mg/l	32	44	36	IS 3025: Part – 17
5	Dissolved Oxygen	mg/l	5.9	6.0	6.0	IS 3025: Part – 38
6	Chemical Oxygen Demand	mg/l	16	12	12	IS 3025: Part – 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	4	3	3	IS 3025: Part – 44
8	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
9	Nitrate-Nitrogen as N	mg/l	0.45	0.34	0.34	APHA 4500 – NO_3.B
10	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	0.45	0.34	0.34	By Calculation
11	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
12	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
13	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
14	Fluoride as F	mg/l	0.30	0.30	0.30	IS 3025: Part – 60
15	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
16	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
17	Sodium Absorption Ratio (SAR)	-	0.45	0.35	0.36	By Calculation
18	Total Coliforms	MPN/100ml	17	14	9	IS 1622
19	Fecal Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.01	0.01	0.01	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.03	0.02	0.02	APHA 3111 – B
19	Iron as Fe	mg/l	0.14	0.12	0.12	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 57

SURFACE WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	SW – 6 : Surya Nala, near police station bridge, Vindhyanagar			Test Method
			1st Round 09.02.2014	2nd Round 11.02.2014	3rd Round 13.02.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	5	5	5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.47	7.40	7.82	IS 3025: Part – 11
2	E C	µS/cm	352	322	338	IS 3025: Part – 14
3	Oil & Grease	mg/l	1	1	1	IS 3025: Part – 39
4	Suspended Solids	mg/l	14	12	12	IS 3025: Part – 17
5	Dissolved Oxygen	mg/l	5.8	5.9	5.9	IS 3025: Part – 38
6	Chemical Oxygen Demand	mg/l	14	10	10	IS 3025: Part – 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	3	2	2	IS 3025: Part – 44
8	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
9	Nitrate-Nitrogen as N	mg/l	2.03	2.26	2.48	APHA 4500 – NO_3.B
10	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	2.03	2.26	2.48	By Calculation
11	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
12	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
13	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
14	Fluoride as F	mg/l	0.50	0.40	0.50	IS 3025: Part – 60
15	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
16	Dissolved Phosphates as P	mg/l	0.24	0.30	0.28	APHA 4500 – P.D
17	Sodium Absorption Ratio (SAR)	-	0.92	0.86	0.89	By Calculation
18	Total Coliforms	MPN/100ml	11	9	6	IS 1622
19	Fecal Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	0.40	0.46	0.42	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.01	0.01	0.01	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.01	0.01	0.01	APHA 3111 – B
19	Iron as Fe	mg/l	0.15	0.14	0.13	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 57

SURFACE WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	SW – 7 : Rihand Reservoir near Baliyari village upstream			Test Method
			1st Round 09.02.2014	2nd Round 11.02.2014	3rd Round 13.02.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	5	5	5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	6.92	6.90	7.24	IS 3025: Part – 11
2	E C	µS/cm	504	502	488	IS 3025: Part – 14
3	Oil & Grease	mg/l	< 1	< 1	< 1	IS 3025: Part – 39
4	Suspended Solids	mg/l	10	12	12	IS 3025: Part – 17
5	Dissolved Oxygen	mg/l	6.2	6.4	6.3	IS 3025: Part – 38
6	Chemical Oxygen Demand	mg/l	10	8	10	IS 3025: Part – 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	2	2	3	IS 3025: Part – 44
8	Nitrite-Nitrogen as N	mg/l	0.02	0.02	0.02	APHA 4500 – NO_2.B
9	Nitrate-Nitrogen as N	mg/l	1.81	1.92	1.92	APHA 4500 – NO_3.B
10	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	1.83	1.94	1.94	By Calculation
11	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
12	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
13	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
14	Fluoride as F	mg/l	0.40	0.40	0.40	IS 3025: Part – 60
15	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
16	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
17	Sodium Absorption Ratio (SAR)	-	1.32	1.36	1.14	By Calculation
18	Total Coliforms	MPN/100ml	4	6	4	IS 1622
19	Fecal Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.01	0.01	0.01	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.01	0.01	0.01	APHA 3111 – B
19	Iron as Fe	mg/l	0.10	0.09	0.10	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 57

SURFACE WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	SW – 8 : Kanchana nallah near chauhan cold storage, Kachni			Test Method
			1st Round 09.02.2014	2nd Round 11.02.2014	3rd Round 13.02.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	5	5	5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.94	7.98	7.96	IS 3025: Part – 11
2	E C	µS/cm	416	419	382	IS 3025: Part – 14
3	Oil & Grease	mg/l	< 1	< 1	< 1	IS 3025: Part – 39
4	Suspended Solids	mg/l	18	14	16	IS 3025: Part – 17
5	Dissolved Oxygen	mg/l	6.2	6.0	6.2	IS 3025: Part – 38
6	Chemical Oxygen Demand	mg/l	10	14	12	IS 3025: Part – 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	2	3	3	IS 3025: Part – 44
8	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
9	Nitrate-Nitrogen as N	mg/l	1.13	0.90	1.35	APHA 4500 – NO_3.B
10	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	1.13	0.90	1.35	By Calculation
11	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
12	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
13	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
14	Fluoride as F	mg/l	0.40	0.40	0.40	IS 3025: Part – 60
15	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
16	Dissolved Phosphates as P	mg/l	0.12	0.10	0.10	APHA 4500 – P.D
17	Sodium Absorption Ratio (SAR)	-	0.88	0.76	0.85	By Calculation
18	Total Coliforms	MPN/100ml	600	900	700	IS 1622
19	Fecal Coliforms	MPN/100ml	11	17	14	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	0.16	0.15	0.16	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	1.4	1.8	1.4	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	1.1	1.4	1.0	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.01	0.01	0.01	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.01	0.01	0.01	APHA 3111 – B
19	Iron as Fe	mg/l	0.09	0.10	0.09	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 57

SURFACE WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	SW – 9 : Balia Nallah near Dudichua STP			Test Method
			1st Round 09.02.2014	2nd Round 11.02.2014	3rd Round 13.02.2014	
I	**Simple Parameters**					
1	Appearance	-	Greyish	Greyish	Greyish	-
2	Colour (Hazen Units)	-	40	35	50	IS 3025: Part – 4
3	Odour (Smell)	-	Un agreeable	Un agreeable	Un agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.53	7.58	7.69	IS 3025: Part – 11
2	E C	µS/cm	644	631	603	IS 3025: Part – 14
3	Oil & Grease	mg/l	3	3	3	IS 3025: Part – 39
4	Suspended Solids	mg/l	72	68	78	IS 3025: Part – 17
5	Dissolved Oxygen	mg/l	4.2	4.0	4.3	IS 3025: Part – 38
6	Chemical Oxygen Demand	mg/l	62	64	72	IS 3025: Part – 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	16	15	18	IS 3025: Part – 44
8	Nitrite-Nitrogen as N	mg/l	0.01	0.02	0.02	APHA 4500 – NO_2.B
9	Nitrate-Nitrogen as N	mg/l	2.93	3.16	3.39	APHA 4500 – NO_3.B
10	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	2.94	3.18	3.41	By Calculation
11	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
12	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
13	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
14	Fluoride as F	mg/l	0.50	0.50	0.60	IS 3025: Part – 60
15	Sulphides as S	mg/l	0.1	0.1	0.1	IS 3025: Part – 29
16	Dissolved Phosphates as P	mg/l	0.18	0.24	0.20	APHA 4500 – P.D
17	Sodium Absorption Ratio (SAR)	-	0.94	0.91	0.83	By Calculation
18	Total Coliforms	MPN/100ml	1400	1700	1100	IS 1622
19	Fecal Coliforms	MPN/100ml	130	140	90	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	0.25	0.32	0.26	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	6.4	5.9	7.3	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	4.5	4.2	5.0	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.02	0.02	0.02	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.04	0.03	0.03	APHA 3111 – B
19	Iron as Fe	mg/l	0.92	0.86	0.87	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	0.14	0.12	0.13	IS 3025: Part – 57

SURFACE WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	SW – 10: Rihand river,Singrauli to rihand nagar road under rail bridge			Test Method
			1st Round 15.02.2014	2nd Round 18.02.2014	3rd Round 20.02.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	5	5	5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	8.00	7.82	8.08	IS 3025: Part – 11
2	E C	µS/cm	418	408	390	IS 3025: Part – 14
3	Oil & Grease	mg/l	1	1	1	IS 3025: Part – 39
4	Suspended Solids	mg/l	14	12	14	IS 3025: Part – 17
5	Dissolved Oxygen	mg/l	5.4	5.6	5.5	IS 3025: Part – 38
6	Chemical Oxygen Demand	mg/l	24	16	22	IS 3025: Part – 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	4	3	4	IS 3025: Part – 44
8	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
9	Nitrate-Nitrogen as N	mg/l	0.79	0.68	1.02	APHA 4500 – NO_3.B
10	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	0.79	0.68	1.02	By Calculation
11	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
12	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
13	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
14	Fluoride as F	mg/l	0.40	0.40	0.40	IS 3025: Part – 60
15	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
16	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
17	Sodium Absorption Ratio (SAR)	-	0.95	1.09	1.06	By Calculation
18	Total Coliforms	MPN/100ml	600	300	400	IS 1622
19	Fecal Coliforms	MPN/100ml	9	4	7	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	1.4	1.7	1.5	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	1.0	1.1	1.0	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.01	0.01	0.01	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.01	0.01	0.01	APHA 3111 – B
19	Iron as Fe	mg/l	0.09	0.08	0.09	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 57

SURFACE WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	SW – 11 : Murdhwa Nallah			Test Method
			1st Round 26.01.2014	2nd Round 28.01.2014	3rd Round 30.01.2014	
I	**Simple Parameters**					
1	Appearance	-	Pale yellow	Pale yellow	Pale yellow	-
2	Colour (Hazen Units)	-	10	15	10	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.64	7.59	7.76	IS 3025: Part – 11
2	E C	µS/cm	520	528	518	IS 3025: Part – 14
3	Oil & Grease	mg/l	2	3	2	IS 3025: Part – 39
4	Suspended Solids	mg/l	46	48	54	IS 3025: Part – 17
5	Dissolved Oxygen	mg/l	4.3	4.2	4.4	IS 3025: Part – 38
6	Chemical Oxygen Demand	mg/l	78	84	72	IS 3025: Part – 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	18	20	19	IS 3025: Part – 44
8	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
9	Nitrate-Nitrogen as N	mg/l	0.79	0.90	0.56	APHA 4500 – NO_3.B
10	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	0.79	0.90	0.56	By Calculation
11	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
12	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
13	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
14	Fluoride as F	mg/l	0.80	0.80	0.80	IS 3025: Part – 60
15	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
16	Dissolved Phosphates as P	mg/l	0.18	0.18	0.17	APHA 4500 – P.D
17	Sodium Absorption Ratio (SAR)	-	0.92	0.96	0.84	By Calculation
18	Total Coliforms	MPN/100ml	800	1100	900	IS 1622
19	Fecal Coliforms	MPN/100ml	40	70	60	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	0.33	0.32	0.30	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	6.7	5.3	6.4	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	4.6	3.8	4.2	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.02	0.01	0.01	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.03	0.02	0.02	APHA 3111 – B
19	Iron as Fe	mg/l	0.14	0.16	0.15	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 57

SURFACE WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	SW – 12 : Rihand Reservior, Up Stream			Test Method
			1st Round 26.01.2014	2nd Round 28.01.2014	3rd Round 30.01.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	5	5	5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.61	7.67	7.64	IS 3025: Part – 11
2	E C	µS/cm	166	160	156	IS 3025: Part – 14
3	Oil & Grease	mg/l	< 1	< 1	< 1	IS 3025: Part – 39
4	Suspended Solids	mg/l	14	16	14	IS 3025: Part – 17
5	Dissolved Oxygen	mg/l	6.2	6.0	6.3	IS 3025: Part – 38
6	Chemical Oxygen Demand	mg/l	8	10	8	IS 3025: Part – 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	2	3	2	IS 3025: Part – 44
8	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
9	Nitrate-Nitrogen as N	mg/l	0.23	0.34	0.23	APHA 4500 – NO_3.B
10	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	0.23	0.34	0.23	By Calculation
11	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
12	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
13	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
14	Fluoride as F	mg/l	0.20	0.20	0.20	IS 3025: Part – 60
15	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
16	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
17	Sodium Absorption Ratio (SAR)	-	0.52	0.51	0.46	By Calculation
18	Total Coliforms	MPN/100ml	17	22	14	IS 1622
19	Fecal Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.01	0.01	0.01	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – B
19	Iron as Fe	mg/l	0.08	0.09	0.08	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 57

SURFACE WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	SW – 13 : Dongia Nallah			Test Method
			1st Round 26.01.2014	2nd Round 28.01.2014	3rd Round 30.01.2014	
I	**Simple Parameters**					
1	Appearance	-	Light yellow	Light yellow	Light yellow	-
2	Colour (Hazen Units)	-	15	20	15	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	8.15	8.20	8.23	IS 3025: Part – 11
2	E C	µS/cm	5980	5820	5890	IS 3025: Part – 14
3	Oil & Grease	mg/l	2	3	2	IS 3025: Part – 39
4	Suspended Solids	mg/l	46	48	39	IS 3025: Part – 17
5	Dissolved Oxygen	mg/l	3.7	3.5	3.6	IS 3025: Part – 38
6	Chemical Oxygen Demand	mg/l	72	80	64	IS 3025: Part – 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	17	18	15	IS 3025: Part – 44
8	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
9	Nitrate-Nitrogen as N	mg/l	1.92	2.03	2.03	APHA 4500 – NO_3.B
10	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	1.92	2.03	2.03	By Calculation
11	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
12	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
13	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
14	Fluoride as F	mg/l	0.80	0.80	0.80	IS 3025: Part – 60
15	Sulphides as S	mg/l	0.2	0.2	0.2	IS 3025: Part – 29
16	Dissolved Phosphates as P	mg/l	0.18	0.20	0.16	APHA 4500 – P.D
17	Sodium Absorption Ratio (SAR)	-	11.3	10.8	10.5	By Calculation
18	Total Coliforms	MPN/100ml	330	340	260	IS 1622
19	Fecal Coliforms	MPN/100ml	11	9	8	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	0.25	0.28	0.26	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	12	11	9.5	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	7.3	7.0	6.2	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.03	0.02	0.02	IS 3025: Part – 49
10	Nickel as Ni	mg/l	0.01	0.01	0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.01	0.02	0.02	APHA 3111 – B
19	Iron as Fe	mg/l	0.14	0.19	0.16	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	0.53	0.49	0.51	IS 3025: Part – 57

SURFACE WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	SW – 14 : Rihand Dam Down Stream			Test Method
			1st Round 26.01.2014	2nd Round 28.01.2014	3rd Round 30.01.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	5	5	5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.96	7.90	7.94	IS 3025: Part – 11
2	E C	µS/cm	135	138	141	IS 3025: Part – 14
3	Oil & Grease	mg/l	< 1	< 1	< 1	IS 3025: Part – 39
4	Suspended Solids	mg/l	14	12	16	IS 3025: Part – 17
5	Dissolved Oxygen	mg/l	5.9	6.0	6.1	IS 3025: Part – 38
6	Chemical Oxygen Demand	mg/l	8	10	8	IS 3025: Part – 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	2	2	2	IS 3025: Part – 44
8	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
9	Nitrate-Nitrogen as N	mg/l	0.23	0.23	0.23	APHA 4500 – NO_3.B
10	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	0.23	0.23	0.23	By Calculation
11	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
12	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
13	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
14	Fluoride as F	mg/l	0.30	0.30	0.30	IS 3025: Part – 60
15	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
16	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
17	Sodium Absorption Ratio (SAR)	-	0.44	0.47	0.38	By Calculation
18	Total Coliforms	MPN/100ml	220	260	210	IS 1622
19	Fecal Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – B
19	Iron as Fe	mg/l	0.08	0.09	0.08	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 57

SURFACE WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	SW – 15 : Sone River mid stream			Test Method
			1st Round 26.01.2014	2nd Round 28.01.2014	3rd Round 30.01.2014	
I	**Simple Parameters**					
1	Appearance	-	Pale yellow	Pale yellow	Pale yellow	-
2	Colour (Hazen Units)	-	10	10	10	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.98	8.01	8.10	IS 3025: Part – 11
2	E C	µS/cm	260	258	256	IS 3025: Part – 14
3	Oil & Grease	mg/l	< 1	< 1	< 1	IS 3025: Part – 39
4	Suspended Solids	mg/l	24	18	20	IS 3025: Part – 17
5	Dissolved Oxygen	mg/l	4.6	4.8	4.9	IS 3025: Part – 38
6	Chemical Oxygen Demand	mg/l	20	14	18	IS 3025: Part – 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	4	3	4	IS 3025: Part – 44
8	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
9	Nitrate-Nitrogen as N	mg/l	0.45	0.45	0.56	APHA 4500 – NO_3.B
10	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	0.45	0.45	0.56	By Calculation
11	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
12	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
13	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
14	Fluoride as F	mg/l	0.30	0.30	0.30	IS 3025: Part – 60
15	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
16	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
17	Sodium Absorption Ratio (SAR)	-	0.40	0.32	0.35	By Calculation
18	Total Coliforms	MPN/100ml	26	17	21	IS 1622
19	Fecal Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_5H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – B
19	Iron as Fe	mg/l	0.08	0.09	0.09	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 57

SURFACE WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	SW – 16 : Sone River upstream, near somnath mandir, gotheni			Test Method
			1st Round 26.01.2014	2nd Round 28.01.2014	3rd Round 30.01.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	5	5	5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	8.06	8.02	8.07	IS 3025: Part – 11
2	E C	µS/cm	274	263	256	IS 3025: Part – 14
3	Oil & Grease	mg/l	<1	<1	<1	IS 3025: Part – 39
4	Suspended Solids	mg/l	24	22	20	IS 3025: Part – 17
5	Dissolved Oxygen	mg/l	4.9	4.8	4.9	IS 3025: Part – 38
6	Chemical Oxygen Demand	mg/l	20	18	14	IS 3025: Part – 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	4	4	3	IS 3025: Part – 44
8	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
9	Nitrate-Nitrogen as N	mg/l	0.56	0.45	0.45	APHA 4500 – NO_3.B
10	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	0.56	0.45	0.45	By Calculation
11	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
12	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
13	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
14	Fluoride as F	mg/l	0.30	0.30	0.30	IS 3025: Part – 60
15	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
16	Dissolved Phosphates as P	mg/l	0.18	0.13	0.16	APHA 4500 – P.D
17	Sodium Absorption Ratio (SAR)	-	0.34	0.31	0.28	By Calculation
18	Total Coliforms	MPN/100ml	27	33	26	IS 1622
19	Fecal Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	0.28	0.15	0.24	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – B
19	Iron as Fe	mg/l	0.12	0.11	0.12	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 57

SURFACE WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	SW –17 : Sone River near toll Bridge			Test Method
			1st Round 26.01.2014	2nd Round 28.01.2014	3rd Round 30.01.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	5	5	5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	8.01	8.08	8.12	IS 3025: Part – 11
2	E C	µS/cm	257	260	272	IS 3025: Part – 14
3	Oil & Grease	mg/l	1	1	1	IS 3025: Part – 39
4	Suspended Solids	mg/l	16	14	18	IS 3025: Part – 17
5	Dissolved Oxygen	mg/l	5.0	4.9	4.8	IS 3025: Part – 38
6	Chemical Oxygen Demand	mg/l	14	10	12	IS 3025: Part – 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	3	2	3	IS 3025: Part – 44
8	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
9	Nitrate-Nitrogen as N	mg/l	0.45	0.45	0.56	APHA 4500 – NO_3.B
10	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	0.45	0.45	0.56	By Calculation
11	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
12	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
13	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
14	Fluoride as F	mg/l	0.30	0.30	0.30	IS 3025: Part – 60
15	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
16	Dissolved Phosphates as P	mg/l	0.12	0.10	0.10	APHA 4500 – P.D
17	Sodium Absorption Ratio (SAR)	-	0.35	0.37	0.45	By Calculation
18	Total Coliforms	MPN/100ml	120	140	170	IS 1622
19	Fecal Coliforms	MPN/100ml	6	9	12	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	0.18	0.15	0.16	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – B
19	Iron as Fe	mg/l	0.08	0.09	0.09	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 57

SURFACE WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	SW – 18 : Sone River Down Stream			Test Method
			1st Round 26.01.2014	2nd Round 28.01.2014	3rd Round 30.01.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	5	5	5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.80	7.76	7.72	IS 3025: Part – 11
2	E C	µS/cm	218	232	238	IS 3025: Part – 14
3	Oil & Grease	mg/l	1	1	1	IS 3025: Part – 39
4	Suspended Solids	mg/l	16	14	16	IS 3025: Part – 17
5	Dissolved Oxygen	mg/l	4.7	4.8	4.7	IS 3025: Part – 38
6	Chemical Oxygen Demand	mg/l	16	10	14	IS 3025: Part – 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	3	2	3	IS 3025: Part – 44
8	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
9	Nitrate-Nitrogen as N	mg/l	0.45	0.56	0.56	APHA 4500 – NO_3.B
10	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	0.45	0.56	0.56	By Calculation
11	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
12	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
13	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
14	Fluoride as F	mg/l	0.30	0.30	0.30	IS 3025: Part – 60
15	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
16	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
17	Sodium Absorption Ratio (SAR)	-	0.34	0.39	0.46	By Calculation
18	Total Coliforms	MPN/100ml	90	60	110	IS 1622
19	Fecal Coliforms	MPN/100ml	12	9	14	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	<1	<1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	<1	<1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – B
19	Iron as Fe	mg/l	0.09	0.09	0.10	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 57

GROUND WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	GW – 1 : Near Bank, NCL Colony, Bina			Test Method
			1st Round 01.02.2014	2nd Round 04.02.2014	3rd Round 06.02.2014	
I	**Simple Parameters**					
1	Appearance	-	Pale yellow	Pale yellow	Pale yellow	-
2	Colour (Hazen Units)	-	10	10	10	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.39	7.40	7.49	IS 3025: Part – 11
2	E C	µS/cm	468	460	456	IS 3025: Part – 14
3	Oil & Grease	mg/l	< 1	< 1	< 1	IS 3025: Part – 39
4	Suspended Solids	mg/l	20	18	16	IS 3025: Part – 17
5	Chemical Oxygen Demand	mg/l	8	6	8	IS 3025: Part – 58
6	Bio-chemical Oxygen Demand (BOD)	mg/l	< 2	<2	< 2	IS 3025: Part – 44
7	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
8	Nitrate-Nitrogen as N	mg/l	0.23	0.23	0.23	APHA 4500 – NO_3.B
9	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	0.23	0.23	0.23	APHA 4500 –N.C
10	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
11	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
12	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
13	Fluoride as F	mg/l	0.50	0.50	0.50	IS 3025: Part – 60
14	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
15	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
16	Sodium Absorption Ratio (SAR)	-	1.24	1.22	1.21	By Calculation
17	Total Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
18	Fecal Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.02	0.03	0.02	APHA 3111 – B
19	Iron as Fe	mg/l	0.18	0.24	0.20	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 57

GROUND WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	G W – 2: Main Shopping Centre, NTPC colony, Shakti Nagar			Test Method
			1st Round 01.02.2014	2nd Round 04.02.2014	3rd Round 06.02.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	< 5	< 5	< 5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.86	7.85	7.80	IS 3025: Part – 11
2	E C	µS/cm	534	522	541	IS 3025: Part – 14
3	Oil & Grease	mg/l	< 1	< 1	< 1	IS 3025: Part – 39
4	Suspended Solids	mg/l	12	10	10	IS 3025: Part – 17
5	Chemical Oxygen Demand	mg/l	8	4	6	IS 3025: Part – 58
6	Bio-chemical Oxygen Demand (BOD)	mg/l	< 2	< 2	< 2	IS 3025: Part – 44
7	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
8	Nitrate-Nitrogen as N	mg/l	3.39	2.94	3.16	APHA 4500 – NO_3.B
9	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	3.39	2.94	3.16	APHA 4500 –N.C
10	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
11	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
12	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
13	Fluoride as F	mg/l	0.70	0.70	0.70	IS 3025: Part – 60
14	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
15	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
16	Sodium Absorption Ratio (SAR)	-	0.95	0.99	1.05	By Calculation
17	Total Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
18	Fecal Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.04	0.03	0.04	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.01	0.02	0.01	APHA 3111 – B
19	Iron as Fe	mg/l	0.09	0.08	0.09	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 57

GROUND WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	GW – 3 : Primary School, Dudichua			Test Method
			1st Round 09.02.2014	2nd Round 11.02.2014	3rd Round 13.02.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	< 5	< 5	< 5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.88	7.84	8.07	IS 3025: Part – 11
2	E C	µS/cm	906	924	880	IS 3025: Part – 14
3	Oil & Grease	mg/l	< 1	< 1	< 1	IS 3025: Part – 39
4	Suspended Solids	mg/l	< 10	< 10	< 10	IS 3025: Part – 17
5	Chemical Oxygen Demand	mg/l	4	6	4	IS 3025: Part – 58
6	Bio-chemical Oxygen Demand (BOD)	mg/l	< 2	< 2	< 2	IS 3025: Part – 44
7	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
8	Nitrate-Nitrogen as N	mg/l	2.71	3.16	3.16	APHA 4500 – NO_3.B
9	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	2.71	3.16	3.16	APHA 4500 –N.C
10	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
11	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.01	IS 3025: Part – 26
12	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
13	Fluoride as F	mg/l	1.0	1.0	1.0	IS 3025: Part – 60
14	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
15	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
16	Sodium Absorption Ratio (SAR)	-	2.82	2.47	2.64	By Calculation
17	Total Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
18	Fecal Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.04	0.03	0.03	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.01	0.01	0.01	APHA 3111 – B
19	Iron as Fe	mg/l	0.10	0.10	0.11	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	0.12	0.13	0.12	IS 3025: Part – 57

GROUND WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	GW – 4 : Khadia Colony (Minor Q.No.-M-219)			Test Method
			1st Round 01.02.2014	2nd Round 04.02.2014	3rd Round 06.02.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	< 5	< 5	< 5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.84	7.80	7.86	IS 3025: Part – 11
2	E C	µS/cm	524	530	533	IS 3025: Part – 14
3	Oil & Grease	mg/l	< 1	< 1	< 1	IS 3025: Part – 39
4	Suspended Solids	mg/l	< 10	< 10	< 10	IS 3025: Part – 17
5	Chemical Oxygen Demand	mg/l	4	4	4	IS 3025: Part – 58
6	Bio-chemical Oxygen Demand (BOD)	mg/l	< 2	< 2	< 2	IS 3025: Part – 44
7	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
8	Nitrate-Nitrogen as N	mg/l	0.23	0.34	0.34	APHA 4500 – NO_3.B
9	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	0.23	0.34	0.34	APHA 4500 –N.C
10	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
11	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
12	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
13	Fluoride as F	mg/l	0.70	0.70	0.70	IS 3025: Part – 60
14	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
15	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
16	Sodium Absorption Ratio (SAR)	-	1.04	1.08	1.11	By Calculation
17	Total Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
18	Fecal Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.04	0.05	0.04	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.01	0.01	0.01	APHA 3111 – B
19	Iron as Fe	mg/l	0.09	0.08	0.09	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 57

GROUND WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	GW – 5 : Kakri Colony near Q-MQ-7 (NCL Project)			Test Method
			1st Round 01.02.2014	2nd Round 04.02.2014	3rd Round 06.02.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	< 5	< 5	< 5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.70	7.68	7.62	IS 3025: Part – 11
2	E C	µS/cm	834	832	827	IS 3025: Part – 14
3	Oil & Grease	mg/l	< 1	< 1	< 1	IS 3025: Part – 39
4	Suspended Solids	mg/l	< 10	< 10	< 10	IS 3025: Part – 17
5	Chemical Oxygen Demand	mg/l	6	8	6	IS 3025: Part – 58
6	Bio-chemical Oxygen Demand (BOD)	mg/l	< 2	< 2	< 2	IS 3025: Part – 44
7	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
8	Nitrate-Nitrogen as N	mg/l	1.13	1.02	0.90	APHA 4500 – NO_3.B
9	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	1.13	1.02	0.90	APHA 4500 –N.C
10	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 -- NH_3.C
11	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
12	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
13	Fluoride as F	mg/l	0.70	0.70	0.70	IS 3025: Part – 60
14	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
15	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
16	Sodium Absorption Ratio (SAR)	-	1.88	1.77	1.84	By Calculation
17	Total Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
18	Fecal Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.02	0.02	0.02	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.01	0.01	0.01	APHA 3111 – B
19	Iron as Fe	mg/l	0.09	0.08	0.09	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	0.11	0.10	0.12	IS 3025: Part – 57

GROUND WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	GW –6 : Anpara Colony near DAV College			Test Method
			1st Round 26.01.2014	2nd Round 28.01.2014	3rd Round 30.01.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	< 5	< 5	< 5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.65	7.62	7.69	IS 3025: Part – 11
2	E C	µS/cm	565	570	567	IS 3025: Part – 14
3	Oil & Grease	mg/l	< 1	< 1	< 1	IS 3025: Part – 39
4	Suspended Solids	mg/l	< 10	< 10	< 10	IS 3025: Part – 17
5	Chemical Oxygen Demand	mg/l	4	6	4	IS 3025: Part – 58
6	Bio-chemical Oxygen Demand (BOD)	mg/l	< 2	< 2	< 2	IS 3025: Part – 44
7	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
8	Nitrate-Nitrogen as N	mg/l	2.26	2.48	2.26	APHA 4500 – NO_3.B
9	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	2.26	2.48	2.26	APHA 4500 –N.C
10	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
11	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
12	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
13	Fluoride as F	mg/l	0.70	0.70	0.70	IS 3025: Part – 60
14	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
15	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
16	Sodium Absorption Ratio (SAR)	-	1.18	1.26	1.22	By Calculation
17	Total Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
18	Fecal Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.02	0.02	0.02	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.02	0.01	0.01	APHA 3111 – B
19	Iron as Fe	mg/l	0.08	0.09	0.08	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 57

GROUND WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	GW – 7 : Near Q-SHF-176, NCL, Jhingurda (Near Shiv mandir)			Test Method
			1st Round 09.02.2014	2nd Round 11.02.2014	3rd Round 13.02.2014	
I	**Simple Parameters**					
1	Appearance	-	Reddish	Reddish	Reddish	-
2	Colour (Hazen Units)	-	100	100	100	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	6.63	6.69	6.98	IS 3025: Part – 11
2	E C	µS/cm	112	126	104	IS 3025: Part – 14
3	Oil & Grease	mg/l	< 1	< 1	< 1	IS 3025: Part – 39
4	Suspended Solids	mg/l	84	76	92	IS 3025: Part – 17
5	Chemical Oxygen Demand	mg/l	8	10	8	IS 3025: Part – 58
6	Bio-chemical Oxygen Demand (BOD)	mg/l	< 2	< 2	< 2	IS 3025: Part – 44
7	Nitrite-Nitrogen as N	mg/l	0.01	0.01	0.01	APHA 4500 – NO_2.B
8	Nitrate-Nitrogen as N	mg/l	1.13	1.02	1.13	APHA 4500 – NO_3.B
9	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	1.14	1.03	1.14	APHA 4500 –N.C
10	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
11	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
12	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
13	Fluoride as F	mg/l	0.20	0.20	0.20	IS 3025: Part – 60
14	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
15	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
16	Sodium Absorption Ratio (SAR)	-	1.57	1.45	1.39	By Calculation
17	Total Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
18	Fecal Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.96	0.92	0.89	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.20	0.20	0.18	APHA 3111 – B
19	Iron as Fe	mg/l	3.6	3.8	4.2	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 57

GROUND WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	GW – 8 : Near Coal Gate (outside of Renusagar Power Division Boundary)			Test Method
			1st Round 26.01.2014	2nd Round 28.01.2014	3rd Round 30.01.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	< 5	< 5	< 5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.57	7.60	7.66	IS 3025: Part – 11
2	E C	µS/cm	848	864	853	IS 3025: Part – 14
3	Oil & Grease	mg/l	< 1	< 1	< 1	IS 3025: Part – 39
4	Suspended Solids	mg/l	< 10	< 10	< 10	IS 3025: Part – 17
5	Chemical Oxygen Demand	mg/l	6	6	8	IS 3025: Part – 58
6	Bio-chemical Oxygen Demand (BOD)	mg/l	< 2	< 2	< 2	IS 3025: Part – 44
7	Nitrite-Nitrogen as N	mg/l	0.01	0.01	0.01	APHA 4500 – NO_2.B
8	Nitrate-Nitrogen as N	mg/l	7.90	8.35	8.13	APHA 4500 – NO_3.B
9	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	7.91	8.36	8.14	APHA 4500 –N.C
10	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
11	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
12	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
13	Fluoride as F	mg/l	0.80	0.80	0.80	IS 3025: Part – 60
14	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
15	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
16	Sodium Absorption Ratio (SAR)	-	2.24	2.26	2.27	By Calculation
17	Total Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
18	Fecal Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.18	0.21	0.23	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.02	0.02	0.02	APHA 3111 – B
19	Iron as Fe	mg/l	0.14	0.11	0.12	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	0.16	0.18	0.16	IS 3025: Part – 57

GROUND WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	G W – 9:Near shiv mandir, Amlori (NCL Project)			Test Method
			1st Round 09.02.2014	2nd Round 11.02.2014	3rd Round 13.02.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	5	5	5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.89	7.86	8.02	IS 3025: Part – 11
2	E C	µS/cm	1010	996	982	IS 3025: Part – 14
3	Oil & Grease	mg/l	< 1	< 1	< 1	IS 3025: Part – 39
4	Suspended Solids	mg/l	12	10	12	IS 3025: Part – 17
5	Chemical Oxygen Demand	mg/l	4	4	4	IS 3025: Part – 58
6	Bio-chemical Oxygen Demand (BOD)	mg/l	< 2	< 2	< 2	IS 3025: Part – 44
7	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
8	Nitrate-Nitrogen as N	mg/l	0.45	0.56	0.68	APHA 4500 – NO_3.B
9	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	0.45	0.56	0.68	APHA 4500 –N.C
10	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
11	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
12	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
13	Fluoride as F	mg/l	0.40	0.40	0.40	IS 3025: Part – 60
14	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
15	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
16	Sodium Absorption Ratio (SAR)	-	4.03	3.94	4.15	By Calculation
17	Total Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
18	Fecal Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.07	0.05	0.06	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.03	0.02	0.03	APHA 3111 – B
19	Iron as Fe	mg/l	0.15	0.13	0.14	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	0.24	0.19	0.18	IS 3025: Part – 57

GROUND WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	GW – 10 : Near Sabji mandi, NCL, Jayant, (Beside Police station)			Test Method
			1st Round 15.02.2014	2nd Round 18.02.2014	3rd Round 20.02.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	< 5	< 5	< 5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.80	7.72	7.94	IS 3025: Part – 11
2	E C	µS/cm	444	430	410	IS 3025: Part – 14
3	Oil & Grease	mg/l	< 1	< 1	< 1	IS 3025: Part – 39
4	Suspended Solids	mg/l	< 10	< 10	< 10	IS 3025: Part – 17
5	Chemical Oxygen Demand	mg/l	4	4	4	IS 3025: Part – 58
6	Bio-chemical Oxygen Demand (BOD)	mg/l	< 2	< 2	< 2	IS 3025: Part – 44
7	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
8	Nitrate-Nitrogen as N	mg/l	0.34	0.45	0.56	APHA 4500 – NO_3.B
9	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	0.34	0.45	0.56	APHA 4500 -N.C
10	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
11	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
12	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
13	Fluoride as F	mg/l	0.30	0.30	0.30	IS 3025: Part – 60
14	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
15	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
16	Sodium Absorption Ratio (SAR)	-	0.45	0.39	0.38	By Calculation
17	Total Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
18	Fecal Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.05	0.06	0.05	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.02	0.01	0.02	APHA 3111 – B
19	Iron as Fe	mg/l	0.14	0.12	0.13	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 57

GROUND WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	GW – 11 : Saraswahraja Colony, Jayanth			Test Method
			1st Round 15.02.2014	2nd Round 18.02.2014	3rd Round 20.02.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	< 5	< 5	< 5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.54	7.53	7.76	IS 3025: Part – 11
2	E C	µS/cm	690	672	638	IS 3025: Part – 14
3	Oil & Grease	mg/l	< 1	< 1	< 1	IS 3025: Part – 39
4	Suspended Solids	mg/l	< 10	< 10	< 10	IS 3025: Part – 17
5	Chemical Oxygen Demand	mg/l	4	6	4	IS 3025: Part – 58
6	Bio-chemical Oxygen Demand (BOD)	mg/l	< 2	< 2	< 2	IS 3025: Part – 44
7	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
8	Nitrate-Nitrogen as N	mg/l	3.16	3.39	2.94	APHA 4500 – NO_3.B
9	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	3.16	3.39	2.94	APHA 4500 –N.C
10	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
11	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
12	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
13	Fluoride as F	mg/l	0.40	0.40	0.40	IS 3025: Part – 60
14	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
15	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
16	Sodium Absorption Ratio (SAR)	-	0.75	0.72	0.63	By Calculation
17	Total Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
18	Fecal Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.04	0.06	0.05	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.02	0.01	0.02	APHA 3111 – B
19	Iron as Fe	mg/l	0.10	0.09	0.10	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	0.16	0.13	0.12	IS 3025: Part – 57

GROUND WATER QUALITY RESULTS

Sl. No.	Test Parameters	UOM	GW – 12 : Near substation, Sector-B, Dudichua, NCL Project			Test Method
			1st Round 09.02.2014	2nd Round 11.02.2014	3rd Round 13.02.2014	
I	**Simple Parameters**					
1	Appearance	-	Colourless	Colourless	Colourless	-
2	Colour (Hazen Units)	-	< 5	< 5	< 5	IS 3025: Part – 4
3	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part – 5
II	**Regular Monitoring Parameters**					
1	pH	-	7.73	7.97	7.89	IS 3025: Part – 11
2	E C	µS/cm	628	594	588	IS 3025: Part – 14
3	Oil & Grease	mg/l	< 1	< 1	< 1	IS 3025: Part – 39
4	Suspended Solids	mg/l	< 10	< 10	< 10	IS 3025: Part – 17
5	Chemical Oxygen Demand	mg/l	6	4	4	IS 3025: Part – 58
6	Bio-chemical Oxygen Demand (BOD)	mg/l	< 2	< 2	< 2	IS 3025: Part – 44
7	Nitrite-Nitrogen as N	mg/l	< 0.01	< 0.01	< 0.01	APHA 4500 – NO_2.B
8	Nitrate-Nitrogen as N	mg/l	0.23	0.23	0.23	APHA 4500 – NO_3.B
9	Nitrite-Nitrogen and Nitrate-Nitrogen (NO_2+NO_3)	mg/l	0.23	0.23	0.23	APHA 4500 –N.C
10	Free Ammonia	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – NH_3.C
11	Total Residual Chlorine	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 26
12	Cyanide as CN	mg/l	< 0.02	< 0.02	< 0.02	IS 3025: Part – 27
13	Fluoride as F	mg/l	0.40	0.40	0.40	IS 3025: Part – 60
14	Sulphides as S	mg/l	< 0.1	< 0.1	< 0.1	IS 3025: Part – 29
15	Dissolved Phosphates as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
16	Sodium Absorption Ratio (SAR)	-	0.62	0.56	0.53	By Calculation
17	Total Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
18	Fecal Coliforms	MPN/100ml	< 2	< 2	< 2	IS 1622
III	**Special Parameters**					
1	Total Phosphorous as P	mg/l	< 0.1	< 0.1	< 0.1	APHA 4500 – P.D
2	Total Kjeldal Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – Norg. B
3	Total Ammonia (NH_4+NH_3)-Nitrogen	mg/l	< 1	< 1	< 1	APHA 4500 – NH_3
4	Phenolic Compounds as C_6H_5OH	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 43
5	Surfactants	mg/l	< 0.1	< 0.1	< 0.1	IS 13428
6	Organo-chlorine Pesticides	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
7	PAH	mg/l	Not Detected	Not Detected	Not Detected	EPA 525.2
8	PCB and PCT	mg/l	Not Detected	Not Detected	Not Detected	EPA 508
9	Zinc as Zn	mg/l	0.11	0.12	0.10	IS 3025: Part – 49
10	Nickel as Ni	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 54
11	Copper as Cu	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 42
12	Hexavalent Chromium as $Cr6^+$	mg/l	< 0.05	< 0.05	< 0.05	APHA 3500 - Cr. D
13	Total Chromium as Cr	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 52
14	Arsenic as As	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 37
15	Lead as Pb	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 47
16	Cadmium as Cd	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 41
17	Mercury as Hg	mg/l	< 0.001	< 0.001	< 0.001	IS 3025: Part – 48
18	Manganese as Mn	mg/l	0.03	0.04	0.03	APHA 3111 – B
19	Iron as Fe	mg/l	0.12	0.11	0.12	IS 3025: Part – 53
20	Vanadium as V	mg/l	< 0.01	< 0.01	< 0.01	APHA 3111 – D
21	Selenium as Se	mg/l	< 0.01	< 0.01	< 0.01	IS 3025: Part – 56
22	Boron as B	mg/l	0.11	0.10	0.11	IS 3025: Part – 57

ANNEXURE-II-1

BEFORE THE NATIONAL GREEN TRIBUNAL,
PRINCIPAL BENCH, NEW DELHI

Original Application No.276 of 2013
And
M.A. No.59 of 2014
In
Original Application No.20 of 2014

Ashwani Kumar Dubey Vs. Union of India & Ors.
And
Jagat Narayan Viswakarma and Ors. Vs. Union of India & Ors

CORAM : **HON'BLE MR. JUSTICE SWATANTER KUMAR, CHAIRPERSON**
HON'BLE MR. JUSTICE M.S. NAMBIAR, JUDICIAL MEMBER
HON'BLE MR. DR. D.K. AGRAWAL, EXPERT MEMBER
HON'BLE PROF. A.R. YOUSUF, EXPERT MEMBER
HON'BLE DR. R.C. TRIVEDI, EXPERT MEMBER

Present:	**Applicant:**	**Mr. M.Z. Choudhary, Mr. Avinnash Prasad and Mr. Ashwini K. Dubey, Advocates**
	Respondent No. 1:	**Mr. Vikas Malhotra and Mr. M.P. Sahay, Advocates & Ms. Seema Rao**
	Respondent No.3:	**Mr. Raman Yadav**
	Respondent No.4:	**Mr. Rajul Shrivastav, Advocatr for MPPCB**
	Respondent No.6&9:	**Mr. Raman Yadav & Mr. Atifsuh Rawardy, Advocates**
	Respondent No.7:	**Mr. Daleep Kumar Dhayani, Advocate and Mr. Vikas Singh, Advocate**
	Respondent No.10 to 12:	**Mr. Bharat Sangal, Advocate**
	Respondent No.13,15, 16 & 21:	**Mr. Syed Shahid, Advocate & Mr. Parag P. Tripathi, Senior Advocate**
	Respondent No.19&20:	**Mr. Pradeep Misra, Advocate**
	Respondent No.22	**Mr. Rajat Jariwal and Ms. Anisha Somal**
	Respondent No.23&27:	**Mr. Pawan Upadhyay and Mr. Sarvjit P. Singh**
	Respondent No.24:	**Mr. Harsh Sethi for VHS Legal**

	Date and Remarks	**Orders of the Tribunal**
	Item No. 17 & 18 August 25, 2014	None of the parties have filed any objection / suggestions to the proposed Committees and the ToR. The only prayer made is that the Chairman, Central Pollution Control Board be permitted to be substituted by the Member-Secretary of the CPCB. Ordered accordingly. Therefore we constitute the following Committees with the ToR as indicated as below. **<u>Monitoring of potential hazards of Industrial Development in Singrauli Area</u>** **<u>Core Team:</u>** **a.** Member Secretary, Central Pollution Control Board **b.** Member Secretary, Madhya Pradesh Pollution Control Board **c.** Member Secretary, Uttar Pradesh Pollution Control Board

d. Director of Indian Agricultural Research Institute
e. Director of Indian Council of Forestry Research and Education
f. Director of National Institute of Hydrology
g. Director of Indian Institute of Toxicology Research
h. Dr.I. M Mishra, Chemical Engineering, Department, IIT Roorkee
i. Dr.Vinod Tare, Professor Environmental Engineering, IIT Kanpur
j. Dr. T. Chakrabarti, Visvesvaraya National Institute of Technology, Nagpur.
k. Porf.KanchanChopra, Institute of Economic Growth.
l. Nominee of Director, All India Institute ofMedical Sciences
m. Nominee of Director, National Institute of Occupational Health, Ahemdabad.
n. Joint Director, EIADivision, Ministry of Environment and Forests.

Terms of Reference:

a) Conducting survey/s of all the industries (thermal power plants, coal mines, etc.) to assess the pollution caused by them as a result of their activities.
b) Synthesis of data compiled by Sub-Committee 1 to 5 for identifying causative factors- industry wise.
c) Suggesting remedial measures that are required for restoration of the environment and prevention of pollution in the area (both Uttar Pradesh & Madhya Pradesh)- industry wise.
d) To guide each of the sub-committee and seek progress of work on fortnightly basis. The core - team may nominate members of core-team based on their subject expertise to look into day to day affairs of sub-committees.
e) The Committee shall submit its final report directly to NGT within 3 months;

Note:
a. The expenditure in conducting the inspection, survey and studies will be met by the respective State Governments for the region and they may be permitted to recover it from the industrial units, thermal power and coal mines on pro-rata basis.
b. The non-Government members be given the sitting fees for the meetings/inspections, actual travelling expenses incurred by them as may be decided by the core-team.

Quantification of Industrial impacts
Sub-Committee-1

Terms of Reference:

- Inventory of existing industries – industry wise:
  a. Production: in terms of each product either per day or per month basis.
  b. Raw material used: In terms of each raw material including fuel and water per day & its source.
- Pollution load generation:
  a. Water- quantity of each of the significant pollutant per day before & after treatment.
  b. Air- quantity emission in terms of each pollutant per day.

c. Fly-ash-quantity per day.
d. Hazardous waste-quantity & type/day.
e. Others, if any – specify & quantify

- Compliance Status:
  a. Environmental Clearance conditions
  b. Forest Clearance conditions
  c. Consent conditions
- Adequacy of each of the pollution control measure/s.
- Daily basis Vehicular traffic census especially in and around residential clusters. Ambient air quality should also be monitored in the above residential areas.
- Vehicular census and their usages data to be used for quantification of pollution load generation from the vehicles (petrol and diesel driven separately).
- Overall working and deficiency, if any.

Team:

a. Zonal Officer of the Central Pollution Control Board, Lucknow and Bhopal.
b. Regional Officer of Madhya Pradesh State Pollution Control Board and Uttar Pradesh State Pollution Control Board.
c. Indian Institute of Toxicology Research, Lucknow.
d. Expert on Environmental Issues from Indian School Mines.
e. Regional Officer, Ministry of Environment and Forests Bhopal and Lucknow.
f. Member Secretary, Central Pollution Control Board to co-ordinate the entire work as per the ToR and follow Standard Sampling Methodology.

Potential impact of pollution on water resources
Sub-Committee-2

Terms of Reference:

- Water Quality Survey of the area
- Appropriate sampling methodology should be adopted to give representative picture of the entire area vis-à-vis location of industries.
- Inventory of sources (surface and groundwater sources) and their utilization status.
- Physical, chemical and micro-biological properties of surface and ground water sources with special reference to concentrationof heavy metals including mercury, and other hazardous waste, if any.

Team:

a. Representative of the Central Ground Water Authority having experience in Water Quality
b. Representative of the Ministry of Water Resources having experience in Water Quality
c. Representative of State Irrigation Department having experience in Water Quality
d. Representative of National Institute of Hydrology from Water Quality Laboratory

NATIONAL GREEN TRIBUNAL NEW DELHI

Potential impact of pollution on land resources
Sub-Committee-3

Terms of Reference:

- Representative samples of soil should be collected from areas reasonably away from the industries cluster apart from sampling in and around industries giving due regard to land use.
- General Types of Soil with specific reference to dumping sites and discharge point of effluent/s, nearby agriculture fields and forests.
- Physical and chemical properties of soil with emphasis on mercury and other relevant heavy metals, and soil fertility.

Team:

a. Representative of Indian Institute of Toxicology Research, Lucknow.
b. Representative of Central Pollution Control Board, Madhya PradeshState Pollution Control Board and Uttar Pradesh State Pollution Control Board not below the rank of Regional Officer.
c. An Expert of Soil Science from Indian Institute of Soil Science, Bhopal.
d. An Expert on ForestSoil from Indian Council of Forestry Research and Education, Dehradun.

Potential Impact of pollution on air quality
Sub-Committee- 4

Terms of Reference:

- Ambient air quality sampling (PM2.5, PM10,SO_x, NO_x, CO, Hg) in the project area based on appropriately designed sampling methodology as per the guidelines of CPCB.

Team:

a) Representative of the Central Pollution Control Board,
b) Representative of the Madhya Pradesh Pollution Control Board
c) Representative of the Uttar Pradesh Pollution Control Board
d) An expert on Air Quality from National Environmental Engineering Research Institute, Nagpur.
e) An expert on Air Quality from IIT, Kanpur.

Potential Impact of Pollution on Health
Sub-Committee-5

Terms of Reference And Team:

a) Base line data on socio-economic aspects, potential health hazards. Sample survey using standard statistically designed epidemiology Study.
b) On findings of this data, a team of experts comprising of Doctors from AIIMS, King Gorge Medical College, Lucknow to visit the area for conducting sample survey on health profiling of residents and workers.
c) A team of experts comprising of Doctors and Social Scientist to develop a questionnaire on health impact. This questionnaire to be used for all the survey.

d) Committee to have atleastone Doctor each from Uttar Pradesh and Madhya Pradesh apart from one Social Scientist from each of the state and involvePanchayati Raj Institutions for collection of primary data.

The above Committee shall submit its report to the Tribunal within one month from today. If the final report is not possible to be submitted on record, then place the interim report before the Tribunal for further directions on the next date of hearing.

List the matter for hearing on 26th September, 2014.

.....,CP
(Swatanter Kumar)

.....,JM
(M.S. Nambiar)

.....,EM
(Dr. D.K. Agrawal)

.....,EM
(Prof. A.R. Yousuf)

.....,EM
(Dr. R.C. Trivedi)

NATIONAL GREEN TRIBUNAL, NEW DELHI

ANNEXURE-II-B

BEFORE THE NATIONAL GREEN TRIBUNAL,
PRINCIPAL BENCH, NEW DELHI

M.A. No.59 of 2014
In
Original Application No.20 of 2014

IN THE MATTER OF:

Jagat Narayan Viswakarma & Ors.
Vs.
Union of India & Ors.

CORAM : HON'BLE MR. JUSTICE SWATANTER KUMAR, CHAIRPERSON
HON'BLE MR. JUSTICE U.D. SALVI, JUDICIAL MEMBER
HON'BLE DR. D.K. AGRAWAL, EXPERT MEMBER
HON'BLE PROF. A.R. YOUSUF, EXPERT MEMBER

Present:	**Applicant :**	**Mr. M.C. Mehta, Advocate**
	Respondent No. 1 :	**Ms. P. Batra Singh, Adv. and Mr. R. Pankaj, Scientist**
	Respondent No. 3:	**Mr. Rajkumar, Adv. with Mr. S.L. Gundli, SLO**
	Respondent No. 4:	**Mr. Daleep Kr. Dhayani, Adv. and Mr. Pradeep Misra, Adv.**
	Respondent No. 5:	**Ms. Savitri Pandey, Adv. for State of U.P.**

	Date and Remarks	**Orders of the Tribunal**
	Item No. 1 October 1, 2014	The Learned Counsel appearing for the MoEF submits that it may not be practically feasible for the acting Chairman of the Central Pollution Control Board (CPCB) to act as the Chairman of the Committee as he has too many portfolios and he may not be able to justify and devote the time in compliance of the Orders of the National Green Tribunal. The Learned Counsel appearing for the MoEF has placed before us the office circular dated 22nd September, 2014 showing the hierarchy of the constituted Committee. She makes a statement that the Chairman would be the senior most member of the core team and all other officers would fully co-operate and ensure that a technically sound and correct Report is placed before the Tribunal. In view of the statements made, we amend our earlier Order to direct that the acting Chairman of the

NATIONAL GREEN TRIBUNAL, NEW DELHI

		CPCB need not act as the Chairman of the Committee. .....,CP (Swatanter Kumar) .....,JM (U.D. Salvi) .....,EM (Dr. D.K. Agrawal) .....,EM (Prof. A.R. Yousuf)

NATIONAL GREEN TRIBUNAL, NEW DELHI

STATUS OF COMPLIANCE OF ACTION PLAN FOR CONTROL OF POLLUTION IN CRITICALLY POLLUTED AREA SINGRAULI –UTTAR PRADESH (DIST. SONEBHADRA)

as on 30.09.2014

1. NTPC - SHAKTI NAGAR, DISTT. SONBHADRA

A – Short Term Action Points

Sl. No.	Action Points	Compliance Status	Time Target
1.	An action plan to achieve PM emission of 100mg/Nm^3	Feasibility study completed. ESP will be retrofitted. Contract has been awarded on 14.11.2013 for retrofitting of ESPs. Work schedule 62 months.	Dec.,2015
2.	Provision of dry ash collection system.	**Stage-I** – Dry ash collection system is installed in two unit of 200 MW. Further, work has awarded in June'10 for DAES installation in all units of Stage-II. **Stage-II** – (2x500 MW) Civil work for compressor house & Silo is in progress. Materials are being received at site. Reported to be completed by 31.12.14	March, 2014 (delayed)
3.	Linking of data of CEMS with CPCB/UPPCB Network (sever) will be carried out with in six months.	The Data have been linked with corporate office of NTPC, Delhi for further connection to CPCB Network. Data shall be linked to UPPCB in line with TNPCB experience.	Complied
4.	Two (02) continuous Ambient Air Quality Monitoring Stations are commissioned and the same will be linked with CPCB/UPPCB network within six month.	AAQMS Data have been linked with CPCB Network. Further data shall be linked to UPPCB for which arrangement required at UPPCB.	Complied
5.	Hazardous Waste shall be treated and disposed properly.	HW Waste is being send to TSDF and sold to registered recyclers through MSTC.	Complied
6.	Proper Management of Bio-Medical Waste generated from Hospital of NTPC Units shall be ensured.	Complied.	Complied

ANNEXURE III

B – Long Term Action Points

Sl.No.	Action Points	Compliance Status	Time Target
1	Road maps for 100% fly ash utilization by Dec., 2014.	NTPC mentioned difficulties in 100% utilization by Dec., 2014. They stated that studies have shown it can be utilized in active over burden dump in Coal Mines. It was decided that NTPC will submit self contained proposal to MoEF and the Joint Secretary, MoEF will write letter to Ministry of Coal/Power in this regard.	Dec.,2014
2	Continuous operation and maintenance of APCS & oil spillage treatment.	Continuous operation & maintenance of APCS & Oil spillage treatment is being carried out regularly	Complying
3	Complete recirculation of new ash pond over flow to achieve zero discharge	AWRS installation work of new ash pond is in progress (Over flow lagoon and civil work of treatment system completed. Treatment system rectifier hydro test in progress Pipe pedestal for recirculation pipe, Pump house work, pipe laying work is in progress & material received at site). Work delayed due to closure of Dala stone crushers resulting non-availability of aggregate. Reported to be completed by Dec., 2014	31.03.2014 (delayed)
4	Possibility should also be explored for co-processing of oil bearing sludge in cement kilns.	The industries are carrying out co-processing of oil bearing sludge in their own boilers.	Complying

2.0 NTPC - RIHAND, DISTT. SONBHADRA

A – Short Term Action Points

Sl. No.	Action Points	Compliance Status	Time Target
1.	An action plan to achieve PM emission of 100mg/Nm^3	Work awarded to M/s. Hitachi Plant Technologies Ltd., Japan on 01.03.2013. Work in progress.	Dec., 2015
2.	Provision of dry ash collection system.	100% dry ash collection system is in operation for stage-II (2x500 MW) and provision is made for dry ash collection system in stage-III.	Complied
3.	Linking of CEMS data of CPCB/UPPCB Network will be carried out within six months.	Possibility of linkage with CPCB network is being examined by NTPC Corporate IT department, keeping in view the feasibility & operational security of thermal power plant.	(delayed)
4.	Linking of CAAQMS with CPCB/UPPCB network within six month.	AAQMS Data has already been linked with CPCB net work from 28.07.2010.	Complied
5.	Facilities shall be installed for control and treatment of Oil spillage.	Complied.	Immediately
6.	Hazardous Waste shall be treated and disposed properly.	Complied. Hazardous Waste is being sold to registered recyclers through MSTC.	Immediately
7.	Proper Management of Bio-Medical Waste generated from Hospital of NTPC Units shall be ensured.	Complied.	Immediately
8.	Ensuring of COC of 5 in cooling Tower	Optimized to 2.5. (need to be expedited)	To be Complied

B – Long Term Action Points

Sl. No.	Action Points	Compliance Status	Time Target
1.	Road maps for 100% fly ash utilization by 2014.	NTPC Rihand has already submitted time bound action plan to utilize 100% dry ash up to the year 2013-14.	Immediately
2.	Continuous operation and maintenance of APCS & oil spillage treatment.	Continuous operation & maintenance of APCS & Oil spillage treatment is being carried out regularly.	Immediately
3.	The possibility should also be explored for co-processing of oil bearing sludge in cement kilns.	The industries have been asked to explore the possibility for co-processing of oil bearing sludge in cement Klins.	--

3.0 U.P.R. VIDYUT UTPADAN NIGAM LTD., OBRA, SONBHADRA.

A - Short term action points

Sl.No.	Action Points	Compliance Status	Time Target
1.	Complete recycle of ash pond effluent.	Work is in progress (Obra) (Civil Work - 95% Completed, ,Mechanical - Completed. & Electrical - 70% Completed)	March, 2014 (delayed)
2.	Provision of dry ash collection system.	Provision of dry ash collection system in Unit Nos. 1, 2 , 9, 10,11,12 & 13 has been made and fly ash is being lifted by M/s. J.P. Associates.	April, 2014 (delayed)
3.	High Oil spillage has been observed in the drain. Up-gradation of ETP shall be completed within 2 years by Obra TPS.	E.T.P. Construction work completed under commissioning. - All the Oil trap pit (11 nos.) have been constructed.	-
4.	Use of low sulphur auxiliary fuel in Obra TPP	Obra Thermal Power Station has been asked to use low sulphur auxiliary fuel.	-
5.	Installation of Opacity meters	Order has been placed for installation of Opacity meter in unit no. 1 & 2 of OTPS " A". Opacity meter has been installed in unit No. 9 after R&M work. In the remaining units i.e. in units no. 10, 11, 12 & 13 of OTPS "B" the opacity meter will be installed with the R&M work in phased manner.	April, 2014 (delayed)

B - Long term action points

Sl. No.	Action Points	Compliance Status	Time target
1.	Installation and renovation of ESPs to achieve PM emission of 100 mg/NM^3	The R & M work in Unit nos. 1, 2 & 9 has been completed and time bound "Action Plan" for Unit 10, 11, 12 & 13 has been submitted. The work order for installation of ESP's has already been placed with BHEL.	Dec., 2014
2.	Road map for 100% fly ash utilization by 2014.	M/s. J.P. Associates has already started the work for installation of dry ash extraction system for 5x200MW	Dec., 2014
3.	To control fugitive emissions from ash dyke area, action plan may be prepared including the possibility of installation of high concentration slurry disposal systems.	OTPS "A" has submitted the time bound action plan.	Dec., 2014
4.	Complete recirculation of new ash pond over flow to achieve zero discharge	AWRS installed & under commissioning.	March, 2014 (delayed)

4.0 U.P.R. VIDYUT UTPADAN NIGAM LTD., ANPARA, SONBHADRA.

A - Short term action points

Sl.No.	Action Points	Compliance Status	Time Target
1.	Complete recycle of ash pond effluent.	. Approx. 75 % work completed.	December, 2014
2.	Provision of dry ash collection system.	**3x210 MW, ATPS, Anpara:-** Nigam have decided to install their own DFAES. For this invitation of EXPRESSION OF INTEREST from the firms using Ash is under process. **2x500 MW, BTPS, Anpara:-** Dry Fly Ash collection system has already been provided. Tender for Ash collection under process.	December, 2015 December, 2014
3.	Install Opacity meters in all 5 stacks & data should be linked with CPCB/UPPCB network.	Opacity meter has been installed in four units i.e. 1,3,4 & 5 and in units No. 2, is expected to be installed shortly. Linkage to CPCB/UPPCB network is yet be provided	Oct, 2014. (delayed)

B - Long term action points

Sl. No.	Action Points	Compliance Status	Time target
1.	Installation & renovation of ESPs to achieve PM emission of 100 mg/NM^3	M/s BHEL have carried conditional assessment, site survey & internal inspection of ESP of Unit no 1 in June- 12 for achieving the desired SPM level. The report by M/s BHEL has been submitted and will do the performance evaluation test soon. Similarly same action shall be taken for Unit no. 2 & 3. On the basis of report.	Dec., 2014
2.	Road map for 100% fly ash utilization by 2014.	**"B" – TPS (2x500 MW):- M/s JP Associate** has lifted the ash upto 14th June, 2012 and after that firm has withdrawn themselves from the work. After this, a fresh tender had been floated for engaging a firm for complete O&M of DFAES and lifting of ash. But no firm participated and again tender has been floated. Best efforts are being done in this matter by the UPRVUN Ltd.	Dec., 2014
3.	To control fugitive emissions from ash dyke area, action plan may be prepared including the possibility of installation of high concentration slurry disposal systems.	ATPS has submitted the time bound action plan.	Dec., 2014
4.	Complete recirculation of new ash pond over flow to achieve zero discharge	AWRS is under construction.	Jan., 2015

5. HINDLACO INDUSTRIES LTD. (CAPTIVE POWER PLANT)

A - Short term action points

Sl.No.	Action Points	Compliance Status	Time Target
1.	Installation of CAAQMS in collaboration with M/s. LANCO Anpara Power Co.	CAAQMS installed. Commissioning in progress.	Complied

2.	Complete recycle of ash pond over flow.	Ash Water Recovery System (AWRS) has already been installed and effluents after treatment is recycled and reused in the process.	Complied
3.	Continuous operation and Maintenance of Air & Water Pollution Control System	All Air and water pollution control system are working well. Performance results of ESP, STP, & ETP are being sent regularly to UPPCB.	Complied

B - Long term action points

Sl.No.	Action Points	Compliance Status	Time Target
1.	Road map for 100% fly ash utilization by 2014. Action plan for 100% fly ash utilization to be provided to CPCB	Fly ash off take for cement industries had gone to 38.96% to 50.51% in FY 2008-2009 and FY 2009-2010 respectively. Further, Hindalco has entered into Long Term Agreement with cement industries for lifting, disposal and unitization of fly ash for next five years with M/s. J.P. Cement, Prism Cement, Hyderabad Industries Ltd., Birla Corporation and other cement companies. This has resulted into utilization of fly ash of about 70% fly ash generated in FY 2010-2011.	Dec., 2014
2.	Provision of dry ash collection system.	Dry Ash collection system has been installed in all the units and sent to Cement manufacturer.	Complied

6. HINDLACO INDUSTRIES LTD. (ALUMINUM DIVISION)

A - Short term action points

Sl. No.	Action Points	Compliance Status	Time Target
1.	Up gradation / retrofitting in baking furnace	Retrofitting Job of Baking Furnaces No.3 & 4 has been completed and stabilized. A new Baking furnace has been installed in place of old Baking Furnace 1&2 to achieve desired results.	Complied
2.	Action Plan with clear time line should be chalked out in respect of furnace No. 3 & 4 to achieve the PM emission (< 50mg/Nm3).	Industry has completed retrofitting work of furnace 3&4 (PM 86 – 96 mg/Nm^3) and stabilized except in case of furnace No. 5 (PM 36 – 46 mg/Nm^3). Industry has installed a new baking furnace No. 6 in place of backing furnace No. 1 & 2 to achieve PM emission < 50 mg/Nm^3.	-

3.	Installation of one CAAQMS in collaboration with Aditya Birla Chemicals Limited & Hi- Tech Carbon Limited.	CAAQMS has already been installed at Renukeshwar Mandir, Renukoot jointly with M/s Hi-Tech Carbon and M/s Aditya Birla Chemicals (Kanoria Chemicals Limited) on March 30, 2011. Real time data transmission to CPCB server has been established.	Complied
4.	Monitoring of Fluoride in all Stack.	On – line monitoring of PM and F performed in all pot – line stacks is in place.	Complied
5.	Monitoring of Fluoride emission in pot room and roof top.	Fluoride emission monitoring system is already in operation and data is being reported to Regulatory Authorities (Ministry, Central And State) regularly.	Complied
6.	Monitoring of PAH and HC in Anode Baking stack.	PAH and HC monitoring conducted by certified lab once in a year.	Complied
7.	Monitoring of Ground water (at least two locations) near the Red mud Pond, for Fe, F, CN & reporting of data to CPCB & UPPCB.	Three Piezo wells are identified by CGWB Officials at Hindalco established. Half yearly monitoring is being done by certified lab regularly. M/s IITR, Lucknow collected samples in the month of November/ December, 2013	Complied

B - Long term action points

Sl.No.	Action Points	Compliance Status	Time Target
1.	Utilization of Red Mud.	There is no economical process for utilization of Red Mud word-wide till date. Currently red-mud is disposed as 60-70% solids and partially utilized in soil conditioning/plantation. Till now the industry is using red mud for reclaiming land by filling and developing plantation called "Sanjeevani Project" in patches on used disposal sites. Proposal from Alumimium Association of India is still awaited.	

7. ADITYA BIRLA CHEMICALS (INDIA) LIMITED, RENUKOOT

A - Short term action points

Sl. No.	Action Points	Compliance Status	Time Target
1.	Treatment of brine sludge to reduce mercury concentration in the leach ate to less than 0.1 mg/L.	With changeover from mercury cell to membrane cell technology the possibility of mercury brine sludge completely eliminated.	Completed
2.	Quantification of brine sludge generation and submission of reports to CPCB and SPCB.		
3.	Reduction in mercury emission to less than 2 gm/T of the product. Action Plan to achieve the Mercury emission standards (2 gm/T of product) should be submitted in detail with clear time line.	With changeover from mercury cell to membrane cell technology the possibility of mercury release to environment completely eliminated.	Completed
4.	Installation of online mercury analyzer and individual flow meters for quantification of effluent discharge from cell house, brine plant, chlorine handling and HCL plant. Facts to be verified by UPPCB	With changeover from mercury cell to membrane cell technology the possibility of mercury bearing effluents completely eliminated. Accordingly the On Line Mercury Analyser is not required.	Completed
5.	Complete recycling of effluent from the plant.	With changeover from mercury cell to membrane cell technology the possibility of mercury bearing effluents completely eliminated. Accordingly recycling of mercury bearing effluents are not required.	Completed
6.	Monitoring of groundwater for at least two locations (Hg, Res. Cl, OCPs and general parameters) near sludge/HW disposal area and reporting of data to CPCB and SPCB.	The sampling and analysis of borewells have been awarded to IITR, Lucknow and reports submitted.	Completed

7.	Installation of new boilers with adequate APCS.	Boilers of both 25MW power plant are equipped with ESPs. Fly-ash brick plant produces 10 lakh brick/y & rest, ash delivered to cement mfr. New boiler with adequate APCS, commissioned, the old boilers phased out.	Completed
8.	Adequate measures for proper utilization of fly ash to be taken.	--	Completed
9.	Reduction of Hg conc. In Cell House Ventilation gas to 1 g/T. Clear Action Plan should be given regarding reduction of Mercury concentration in Cell House ventilation gas to 1g/T with proper time line	With changeover from mercury cell to membrane cell technology the treatment of cell room ventilation gas is not required.	Completed
10.	Monitoring of HCL furnace stack for HCL and send reports to CPCB and SPCB.	With changeover from mercury cell to membrane cell technology the treatment of cell room ventilation gas is not required.	Completed
11.	Establishment of two AAQMS for Hg, RSPM, SPM, Sox & NOx. Date of completion to be specified. Chlorine monitoring also to be included. Reference of revised AAQM standards notified in 2009 be taken.	On line ambient air monitoring equipment has been installed on 30.03.2011 for parameters PM 10, PM 2.5, SO2, NO2, Chlorine, Mercury & Hydrogen fluoride near Renukeshwar Temple Renukoot in collaboration with M/s. Hi-Tech Carbon & M/s. Hindalco Industries Ltd.	Completed
12.	Monitoring ambient air quality as per decision of meeting held on 18.1.10 and reporting data to CPCB and SPCB.	The data is available in our office. Data transfer to be done jointly with CPCB & SPCB.	Completed

B - Long term action points

Sl.No.	Action Points	Compliance Status	Time Target
1.	Action Plan for complete changeover to Membrane Cell Process. The process should be completed by December, 2011. CPCB should study the EIA clearance given by MoEF to the unit and if need be, move for its revision. The CPCB shall take Bank Guarantee of suitable amount from the Unit for the compliance.	Stopped permanently the mercury cell caustic soda plant on 22nd September, 2011 and installed 145 TPD caustic soda membrane cell plant. Thus completed the changeover process well ahead of deadline 2012 as stipulated in environmental clearance letter.	Completed
2.	Reduction in mercury consumption to less than 50 gm/T of the product.	With changeover from mercury cell to membrane cell technology the treatment of cell room ventilation gas is not required.	Completed
3.	The Industry should ensure removal and safe disposal of Hazardous waste stored in the Industry premises to the TSDF in time bound manner.	Sent entire 632 MT fresh brine sludge to TSDF Ramky Kanpur. Hazardous Used Oil being sent to TSDF Bharat Oil & Waste Management Ltd., Kanpur.	Completed

Note:- Industries has permanently stopped mercury cell based caustic soda plant and confirmed to UPPCB, Lucknow vide our letter No. ABCIL/ ENV/11-12/152 dtd. 22 September, 2011.

8. NORTHERN COAL FIELDS LTD. MINE UNITS (BINA, KAKRI, KHADIA, DHUDICHUA & KRISHNASHILA)

A - Short term action points

Sl. No.	Action Points	Compliance Status	Time Target
1.	Coal characterization in terms of ash, fluoride and mercury and submission of results to CPCB and SPCB.	The coal samples are regularly analyzed. As per the results submitted of CMPDI Ash – 33%; F BDL; Hg 0.01 – 0.09 PPM.	Complied
2.	Monitoring of effluent and noise for compliance of standards and reporting of data to CPCB and SPCB.	Monitoring effluent & noise is being done by CMPDI fortnightly.	Complied
3.	Action Plan needs improvement.	The following points are being included in the action plan:- 1 Thick Green belt already made through UP Forest Deptt. 2. All the OB generated dumped in decoaled are in internal dump. 3. All permanent service roads are metalled, temporary haul roads are WBM.	Complied
4.	Recycling plan for achieving zero discharge for NCL should be prepared and submitted by December 2010, and implementation by December 2011.	Time bound Recycling plan for achieving zero discharge for NCL has been prepared.	Status not available
5.	Monitoring of effluent, reaching Rihand reservoir should also be done and if found polluted its impact on reservoir should be assessed and remedial measures be taken accordingly.	The monitoring is being carried out by UPPCB. The industry has been directed to submit time bound programmed to achieve Zero discharge. In any case the effluent is being discharged in Rihand reservoir after confirming the prescribed standards.	-
6.	Action plan for bio-remediation of OB dumps should be prepared by March 2011.	Biological reclaimation of OB dump is being done by plantation of plants through U.P.Forest Deptt.	complying

7.	Possibility of installation of coal conveyance system through closed conveyor belts should be assessed to control fugitive emissions due to hauling of coal.	The Coal Handling Plant (CHP) already installed and efficiently having closed conveyor belts to control fugitive emissions due to hauling of coal.	Complying
8.	Establishment of AAQMS (at least 2) for monitoring SOx, NOx, RSPM and SPM and reporting the data to CPCB and SPCB.	Four No. of AAQMS established for monitoring of SOx, NOx, RSPM and SPM and reporting data to CPCB and SPCB	Complying

B - Long term action points

Sl.No.	Action Points	Compliance Status	Time Target
1.	Ensuring supply of washed coal to the power plant/users away from the pithead.	Pleaded difficulty in terms of cost/economics factor. The issue may be taken up at higher/ corporate level.	-
2.	Regarding supply of washed coal to the power plant, NCL mentioned difficulty and referred this case to corporate level. In view of this situation, possibility may be explored for establishment of common washery to be owned by thermal power plants sourcing coal from NCL	The power plants of Singrauli Area situated in District Sonbhadra (U.P.) have been asked to explore the possibility for establishment of common washery to be owned by thermal power plants sourcing coal from NCL. The power plants mentioned problems in using washed coal on the basis of designing of plants.	-
3.	Strengthening of Internal Environmental management.	The Industry has been directed to strengthen of Internal Environmental management.	-

9. HI-TECH CARBON (HC)

A - Short term action points

Sl.No.	Action Points	Compliance Status	Time Target
1.	Regular monitoring of Sox, NOx, RSPM, SPM in stack emission and submission of data to CPCB and SPCB.	System for monitoring is in place. Data submission is regular.	Complied
2.	Ambient Air Quality Monitoring.	CAAQMS installed at Renukeshwar Mandir, Renukoot jointly with M/s Hindalco Industries Ltd. (Aluminum Division) and M/s Aditya Birla Chemicals (Kanoria Chemicals Limited) on March 30, 2011. System is operational and data is available at Site. Real time data transmission to CPCB server has been established.	Complied
5.	Monitoring of effluent for compliance of standards and reporting of data to CPCB and SPCB.		Complied
6.	Operation and maintenance protocol of pollution control devices like Bag filters should also be included in action plan as action plan includes only monitoring part	The industry has been directed to comply operation and maintenance protocol of pollution control devices like Bag filters.	Complied

10. STONE CRUSHERS IN SINGRAULI AREA DISTRICT SONEBHADRA

A - Short term action points

Sl.No.	Action Points	Compliance Status	Time Target
1.	Installation and proper operation of dry dust collection system, dust containment-cum-suppression system, Wind breaking walls and noise containment system.	• UPPCB has issued closure orders to 26 units. • Random inspection and air monitoring is being carried out by the UPPCB. **At present some stone crushers are closed due to non availability of raw materials & funds.**	-
2.	As per the minutes of the review meeting for status of Singrauli Action Plan held on 18.09.10, during summer months (2 months) when water scarcity exists, stone crushing shall be stopped. Only those units having dry scrubbing facilities shall be allowed for operation during the summer months.	Based on the comments and suggestion of the expert committee, directions have been issued to all Stone Crushers for the compliance.	-
3.	UPPCB should ensure compliance of pollution control arrangement guidelines issued by CPCB for stone crushers and time bound action plan should be prepared	UPPCB is ensuring compliance of pollution control arrangement guidelines issued by CPCB for stone crushers and as per the decision of review meeting for status of Singrauli Action Plan. • Tree plantation & Construction of C.C. Road inside the Stone Crusher area is in progress. • Construction of Varanasi-Shaktinagar Road is in progress, reported to be completed by Aug., 2015.	-

11. DALLA CEMENT FACTORY, DALLA IN SINGRAULI AREA DISTT. SONEBHADRA

A - Short term action points

Sl.No.	Action Points	Compliance Status	Time Target
1.	Installation of continuous Stack and AAQ monitoring stations.	On-line ambient Monitoring station are Installed and Commissioned. Data to be linked to CPCB website shortly. Opacity meters are installed at all stacks for continuous monitoring of emission of dust concentration. Data to be linked to UPPCB/CPCB website shortly.	Complied
2.	Proper implementation of Mine Management Plan.	Are being complied.	Complied
3.	The present plan pertains regarding installation of continuous stack & AAQ monitoring stations only whereas important environmental issues like control of fugitive emissions, stack emissions, efficacy of pollution control devices etc. should also be addressed	1. To control fugitive emissions, following activities are being carried out as follows:- - Bag filters are installed at all transfer points like Lime Stone crushing plant, Lime stone stock pile, transport gantry, Raw Material Hopper, Raw Mill, Raw Mill Silo, Kiln Feed, Preheater, Clinker Silo, transport, Coal feeding, Coal Storage, transport, Coal Mill Coal Feeding, coal Storage Transport, Cement Silo, packing plant, Fly Ash storage, Cement Mill, Coal Handling plant, Bunker and Fly ash silo. - 100% concrete road has been made. - Automatic Road sweeping machine is deployed - Treated water of STP is being sprinkling on haul Roads. - Water fogging system on conveyer Belt - Plantation work is under progress. 2. To control the stack emission, efficient Air Pollution Control System (APCS) devices like ESPs, Reverse Air Bag House and Bag filters has already been installed at all process Duct which is designed for < 50 mg/Nm3.	Complied

12. Government of U.P. and Central

A - Short term action points

Sl. No.	Action Points	Compliance Status	Time Target
1.	To ban the use of recycled plastic bags.	The State Govt. has imposed ban the use of recycled plastic of below 40 microns in the radius of 200 meters from the River bank.	Complied
2.	Safe Drinking Water Supply should be provided in the affected villages Govindpur, Myorepur, Labhari, Kamaridar, Garbandha, Kushmha and Renukoot etc.	U.P. Jal Nigam has been requested to make arrangements for supplying safe drinking water to the Villagers. The work is in progress.	-

B - Long term action points

Sl.No.	Action Points	Compliance Status	Time Target
1.	Construction of Varanasi-Shaktinagar Highway and Roads in the Stone Crusher area of Dala	Under construction and construction started by the State Highway Authority U.P. for 2 to 4/6 Lane construction under process. Construction work will be completed by August, 2015.	March, 2014 (delayed)
2.	Development of M.S.W. Municipal solid Wastes sites to be done by local bodies.	Project proposal is under preparation and installation of MSW facilities will be carried out after approval of Govt. of India.	-
3.	Supply of LPG Gas to resident of Villages to avoid the de-forestation.	Concerned agencies have been requested to submit the proposal.	-
4.	District Sonbhadra of U.P. is power hub of India and the electric supply is in very poor condition. The steps are required to strengthen the electric supply to the	State Govt. has been requested to allow the Distt. Sonbhadra as 24 hour electric supply zone.	-

	residence of Distt. Sonbhadra.		
5.	To shift the Stone Crusher Units situated along Road side in Dala, Distt. Sonbhdra to suitable site.	The suitable site is not available so the Distt. Administration has decided to construct 12' High Wall along the road side of Varanasi-Shaktinagar Highway in the Stone Crusher area of Dala.	-
6.	Treatment facility for Bio-Medical Waste	The Govt. Hospitals are the members of CBWTF Varanasi (SNG) and Pvt. Hospitals are member of CBWTF (CPC) Varanasi. The Factory's Hospitals have installed their own facility.	Complied.
7.	Remedial Action Plan for de-siltation of Rihand Reservoir and other water bodies.	The State Irrigation department has been asked to submit the detailed project report for de-siltation of Rihand Reservoir.	-
8.	In-situ bio-remediation of sewage	All the local bodies of the area have been requested to install the STP in their respective area.	March, 2015
9.	Present status and future plan for green belt development as per the norms fixed in the Master Plan of the area.	More than 50% area of Distt. Sonbhadra is covered under Forest, Gardens and shrubs. It has been decided to strengthen Green belt in Stone Crusher Area by Shaktinagar Special Area Development Authority & Forest Department.	-
10.	Action plan for promotion of Bio-compost and Bio-Fertilizer alongwith the chemical fertilizer to minimize unutilized chemical fertilizer run-off into the natural water resources through Govt. policy.	Approx. 20,000 MT Chemical fertilizer have been utilized per year. The Agriculture Deptt.,Govt. of U.P. has been requested to formulate the policy for promotion of Bio-compost and Bio-Fertilizer alongwith the chemical fertilizer to minimize unutilized chemical fertilizer run-off into the natural water resources.	-

13. U.P. Pollution Control Board

A - Short term action points

Sl. No.	Action Points	Compliance Status	Time Target
1.	Regular monitoring of surface water sources and Ground water.	UPPCB is regularly monitoring of surface water sources and Ground water.	Complied
2.	Regular monitoring of Industrial E.T.P. and APCS.	Quarterly inspection and sampling is being carried out by UPPCB.	Complied

3.	Details of Public awareness and training programme.	UPPCB is organizing the Public awareness programmes with the cooperation of Director Environment of U.P. Govt. under '**District Plan'.** The officials of UPPCB are participating in the Training Programmes organised by CPCB/Other Environmental Agencies/Abroad through MoEF.	Complied
4.	As per letter dt. 20.12.2010 of CPCB regarding Monthly monitoring Committee of Action Plan in Chairmanship of District Magistrate.	The Committee have been notified vide letter No. 25/Singrauli Action Plan/2011 dt. 07.01.2011(Copy enclosed as Annexure No.I) in Chairmanship of The District Magistrate, Sonebhadra for critically polluted area Singrauli and the meeting had already been held on 14.01.2011. Discussions & progress reports is sending time to time.	Complied

B - Long term action points

Sl.No.	Action Points	Compliance Status	Time Target
1.	To install Automatic Ambient Air Quality monitoring stations at sensitive places in the area.	The Financial assistance from CPCB has not yet been received as the decided in the Review meeting of Singrauli Action Plan held on 18.01.2010.	-
2.	To shift the Stone Crusher Units situated along Road side in Dala, Distt. Sonbhdra to suitable site with the help of State Govt./Central Govt	The suitable site is not available so the Distt. Administration has decided to construct 12' High Wall along the road side of Varanasi-Shaktinagar Highway in the Stone Crusher area of Dala.	-
3.	Action plan for GIS-GPS system for pollution sources monitoring.	GIS-GPS system for pollution sources monitoring will be installed with financial assistance of CPCB.	-
4.	GIS-GPS based tracking system for transportation of hazardous waste.	GIS-GPS based tracking system for transportation of hazardous waste will be installed with financial assistance of CPCB.	-
5.	Action point/strategy for health impact assessment.	The work of detailed health impact study will be awarded to the expert agency by the Board very soon.	-

REGIONAL OFFICE-MP POLLUTION CONTROL BOARD -SINGRAULI (MP)

CRITICALLY POLLUTED AREA SINGRAULI –MADHYA PRADESH

ACTION TAKEN REPORT- STATUS OF COMPLIANCE OF ACTION PLAN (CEPI) AS ON - 31-12-2013

A- ACTION PLAN FOR INDUSTRIAL POLLUTION CONTROL

S.No	Action Plan	Compliance status
A	After the declaration of singrauli as critically polluted area , Government of MP & MP pollution control board has considered it seriously and necessary steps have been taken . Hon'ble Minister , Ministry of Housing & Environment, with Principal Secretary, Department of H & Env., Member Secretary, MPPCB & district Collector Singrauli have conducted Ariel survey of the area and necessary discussion /meeting with officer/ public of the area. Necessary direction are issued to industries for better implementation of environmental laws, where ever violation is observed	Complied. Time to time directions have been issued to the concerned industries/mines by the Board.
B	It is decided to establish of Regional Office & laboratory of MP pollution control board in Singrauli MP	Complied. R.O. Office at Singrauli established.
C	Rapid EIA study [with limited Scope] with the involvement of Govt. of MP, EPCO and MPPCB	As per MoEF office memorandum dated 05-7-2011 CPCB was directed for examine possibility to undertake a regional environmental study involving all the stakeholders including SPCBs.
D	Involvement of International Agencies like DFID, WHO etc . for Financial Assistance in environmental studies.	Not concerned. .
E	Involvement of Industries and Mines for co-ordination of efforts.	(1) For the purpose of technology improvement ,and awareness, the Northern coal field Ltd has conducted workshop on dump slope stability in coal mines with experts of reputed institution on 14th July 2011.

		(2) MP Pollution control Board has also organized a workshop on Environmental Management in Coal mines & Thermal power plants on 3rd Sept 2011 with active participation of industrial organiza tions. . (3) Workshop on Innovative techniques for use of fly ash management on dated 07-02-2013 organized by MPPCB. (4) Workshop on E-waste management on dated 14-3-2013 & prevention of pollution due to idol immersion in river or water bodies was also conducted on 01-09-2013 by MPPCB
F	Enforcement of stringent environmental standards and stricter conditions in forthcoming consent cases	Stringent conditions for improvement in pollution control measures is imposed by the Board in consent/ renewal letters.
G	Though thermal power plant of NTPC & coal mines of Northern coal field ltd have established necessary pollution control arrangement but there are still some violation regarding hazardous waste management rules ,& provisions of environmental clearance . After a technical discussion with all industry representative in presence of Principal Secretary, Department of H & Env., all Industries are issued direction to submit time bound action plan with bank guarantee.	Compliance of EC condition are monitored time to time and some violations regard's OB dump reclamation has been observed.
H	Rigorous Plantation program outside the industrial premises and nearby area will be developed.	Complied. Plantation has been done by all the projects

B -Thermal Power Plants

01 Vindhyachal super Thermal power project- NTPC Vindhyanagr Distt SINGRAULI MP.

Capacity - 6X500 MW + 6X210 MW = 4260 MW

S.No	Action Plan	Compliance status
1	Preparation of system for spillage & leakage detection/ correction in ash-slurry-pipelines within 03 months and implementation within 06 months.	As per the time bound action plan submitted for the year 2009-10 to 2013-14, 138 km old pipeline was planned to be replaced. Upto September 2013 130km, old pipeline for transportation of ash slurry from plant to ash dykes have been replaced. Spillage and leakages have been detected and repaired. At present, no significant leakages have been found during the survey along the pipeline. Regular inspection and repairing work is taking place..
2	Implementation of recollection system to pump back accidental discharge of ash slurry into Surya nalla within 06 months to protect Rihand Reservoir.	Approx. 50000 M3 ash deposited along the pipeline have been removed and work is continue to keep the area clean.
3	Strengthening of Environmental Cell with accountability to ensure functioning of ETP & STP at all time within 30 days.	Complied .Management has given this responsibility to Senior officer in the rank of AGM . ETP & STP have been made functional. Regular monitoring is carried by the Board.
4	Clearance of Hazardous waste from storage area by disposal to authorized CTSDF, Pithampur,	Hazardous waste (spent resin approx. 12 MT) has been found stored in HDPE bags within shed on pucca floor. The industry has not complied so far regarding disposal to CTSDF. However, used oil is sold regularly to registered and authorized recyclers.
5	Industry shall comply with the condition of EC regarding involvement of local NGO's like Vanvasi Sewa Ashram to inventories industries operating around the Rihand Reservoir within 06 months	Industry has taken initiative for this study. It has been informed that TOR has been received from TERI, Bangalore on 05/08/13 and accordingly proposal is being processed for awarding contract.
6	S-2 Ash Dyke pertaining to Thermal Power Project Shaktinagar operating in UP has been developed without prior permission of Govt. of MP or MPPCB. The activities shall be stopped immediately till such time the due permissions are sought.	Complied. Permission has been obtained from MP Pollution Control Board.
7	Installation of continous real time monitoring station for display with in 12 months. Establishment of continuous ambient air quality monitoring station .The matter of linking monitoring data with	(a) Continuous ambient air monitoring station -04 Nos. have been established & linked with CPCB. (b) Opacity meters are installed for all 11 stacks

	CPCB/SPCB	
8	Improvement in existing house keeping within 03 months	Complied. Housekeeping has been improved by regular cleaning of the area within plant and premises.
9	An action plan to achieve PM emission of 100 mg/Nm3	a) Already achieved in 05 units of 500 MW under stage II , Stage – III and stage-IV. b) For units of Stage_I (6x210 MW) stake emission limit given by MPPCB is 150 mg/m3. The industry has submitted proposal for renovation and modernization of ESPs to achieve PM level <100 mg/NM3 for which contract work has been awarded to M/s BHEL
10	Provision of dry ash collection system	a) Dry ash collection system /silo of capacity 4000 t with distribution/ loading capacity of 6000 t/day is installed. Which meets the present demand of dry fly ash b) Proposal for installation of additional dry ash collection silo & railway wagon loading facility is being installed.
11	Establishment of continuous ambient air quality monitoring station .The matter of linking monitoring data with CPCB/SPCB	Details as point no 7
12	Complete recirculation of ash pond overflow to achieve zero discharge .	The industry has installed ash water recirculation system for utilization of ash pond over flow.
13	Facility for control treatment of Oil spillage	Complied. Oil & grease separation system is established.
14	Hazardous waste treatment and proper disposal	a) Used oil is generated as hazardous waste which is stored within shed and sold regularly.. b) Other hazardous waste (spent resin) have been found stored within shed .
15	Proper management of bio-medical waste	Complied. Disposal of BMW after collection ,segregation ,and treatment in autoclave and disposal by deep burial as per provision of the Rules
16	Ensure regular running & proper functioning of sewage treatment plant	Maintenance of Sewage treatment plant is completed & it is found in working condition during visits.
17	Establishment of Ash water recirculation system by NTPC Shaktinagar (UP) from ash pond S-1 in Village Rampur Vindhyanagar Singrauli. (March 2014)	Construction work in progress. As per action plan submitted the completion of Ash water recirculation system by NTPC, Shaktinagar UP is proposed in March 2014. Approx. 60-70 % work of pipe line erection is complete & construction of pump house approx 60% .

C- Coal Mines projects of Northern coal field Ltd Singrauli

There are 08 coal mines projects viz. Amlori, Nigahi, Jayant, Dudhichua, Jhingurda, Block B project Gorbi, Bina, and Khadiya are located in Singrauli district in MP. Out of these 08 mines ,03 mines viz. dudhichua project , Khadiya project,and bina extension open cast coal mines project have their infrastructure setup in the adjoining area of Uttar Pradesh in district Sonbhadra. Current status of compliance of action plan by the NCL mine projects are as follows: -

S.No	Action Plan	Compliance status
1	Preparation of plan for management of over Burden dumps within 06 months for the following:	- Mine management have submitted clarification that most of the dumps are active and dumping on these OB dumps is in progress to achieve maximum permissible height. So plantation / biological reclamation is not possible at present.
	(a)- Maintain face of dump slop as per provision given in mining plan & EC.	Mines management agreed to maintain all external Dump slop as per EC (28°) after technical and biological reclamation. -
	(b)- Implementation of progressive physical stabilization of dumps in accordance with the condition of EC to protect gully formation and overflowing of material with runoff.	Mines management has submitted that improve techniques for dump stabilization as per EC are being implemented. Proper compaction, bench formation , maintaining the OB slop construction of retaining wall, garland drain and siltation pond are being carried out to protect the river or natural drains with run off silt. & protection of OB dump erosion of soil and gully formation .
	(c)- Detailed data regarding expenditure on plantation and the actual plantation done on field along with survival rate be prepared for at least 15 yrs and submitted within 03 months.	Data regarding plantation is prepared . Overall survival rate in last 15 years is approx 40-50 %. Approx 51 Lakh plantation is done up to 2010-11 based on 50 % survival rate. During 2011 to 3013 approx 5.5 lakh plantation has been reported by coal mine projects of NCL.
	(d)- Provision of garland drains be made within 06 months.	Complied.
	(e)- Mine closer plan shall be submitted to MPPCB within 03 months with adoption of backfilling plan as per mining lease.	All 08 mines have submitted mine closure plan to MPPCB. MPPCB has directed to make amendments as per circular of Coal India Ltd. The amended plans have not been received so far.

2	Clearance of Hazardous waste from storage area by disposal to authorized TSDF, Pithampur, Indore M P, within not more than 03 months.	Complied. mines have made agreement with CTSDF pithampur , for regular disposal of hazardous waste. Used oil is being sold to registered recyclers.
3	Improvement in existing house keeping within 03 months	Complied . House keeping in all coal mine Projects of NCL have been improved .
4	Reclamation of old Gorbi mine is to be done within 01 year as per condition of EC.	- Gorbi mine of NCL is a closed mine. Closure Plan approved by NCL Board is submitted in July 2011 includes reclamation of mine. Work is not started
5	Establishment and proper running of Effluent treatment Plant	Following mines have established & operating Effluent treatment plant (ETP) and Sewage treatment plant (STP) in addition to oil –grease trap at source of generations 1. Amlori Project- 01 ETP & 01 STP 2. Nigahi Proect- 02 ETP & 01 STP 3. Jayant Project – 01 ETP & 01 STP 4. Jhigurda Project- 01 ETP & 01 STP 5. Dudhichua Project – 01 ETP &01 STP Block B project mine has 01 ETP and proposal for construction of 01 STP.- status- tender stage. Other 02 Project – Bina extension project and Khadia open cast coal mine have establishments in UP & ETP /STP are in UP.

क्षेत्रीय कार्यालय, सोनभद्र में स्थित प्रमुख प्रदूशणकारी उद्योगों की अद्यतन स्थिति:–

क्र0 सं0	उद्योग का नाम	उत्पाद एवं क्षमता	कच्चे पदार्थ की मात्रा / दिन MT/KLS	प्रदूषक तत्वों का भार वायु प्रतिदिन mg/Nm^3	प्रदूषक तत्वों का भार जल प्रतिदिन	फ्लाई ऐश उत्पादन प्रतिदिन MT	वायु प्रदूषण नियंत्रण की व्यवस्था	जल प्रदूषण नियंत्रण की व्यवस्था	पर्यावरणीय स्वीकृत की स्थिति	वन विभाग से अनापत्ति प्रमाण–पत्र की स्थिति	सहमति की स्थिति	टिप्पणी
1	2	3	4	5	6	7	8	9	10	11	12	13
1.	मेसर्स अनपरा थर्मल पावर स्टेशन यूनिट 'अ' अनपरा, सोनभद्र	Electricity 3x210 MW = 630 MW	कोल–10000 MT/Day जल–1460000 MT/Day ऑयल–20 KL/Day	PM -144 SO_2 -600 Nox– 430	BOD – 36646 Kg./Day S.S. – 46720 Kg/Day	2800	ESP Sprinkler Cyclone Stack-225 & 275 Mtr.	Ash Pond Neutrali-sation Pit Sewage Plant AWRS under Construction ETP under tender process	Already approved from MoEF	Already approved from MoEF	जल / वायु सहमति निरस्त	पर्यावरण संरक्षण अधि0 की धारा 5 के अन्तर्गत निर्देश जारी
	मेसर्स अनपरा थर्मल पावर स्टेशन यूनिट 'ब' अनपरा, सोनभद्र	Electricity 2x500 MW = 1000MW	कोल–16000 MT/Day जल–2561000 MT/Day ऑयल–10 KL/Day	PM -148 SO_2 -740 Nox– 550		4500						
2.	मेसर्स हिण्डालको इण्डस्ट्रीज लि0, (एल्यूमिनियम) रेनुकूट, सोनभद्र	Aluminum-472000MT/Year Alumina-900000MT/Year	Bauxite-2140719.842MT/Year C.P. Coke-153745.145 MT/Year Caustic Soda-104860.269 MT/Year Lime- 23312.812 MT/Year Borax-93.450 MT/Year Soda ash Dense-1297.338 MT/Year FO (KL)–79596.655 MT/Year Steam Coal-959601.661 MT/Year HSD(KL)–6541.008 MT/Year Starch-60.4000 MT/Year Water – 39757 KL/Day	PM -122.8 SO_2 -705 Nox– 581	BOD – 27.26 Kg/Day S.S. – 125.4 Kg/Day	Fly Ash -1033.66 MT/Day Red Mud- 2746.17 MT/Day	ESP Sprinkler Cyclone Bag Filter	ETP STP AWRS	2006 से पूर्व स्थापित	2006 से पूर्व स्थापित	दिसम्बर, 2015	–
3.	मेसर्स हिण्डालको इण्डस्ट्रीज लि0, (पावर डिवीजन), रेनुसागर, सोनभद्र	Electricity 840 MW	कोल–14290 जल–56454	PM -99.498 SO_2 -372.2 Nox– 223.3	BOD- 249 Kg/Day S.S. – 541.6 Kg./Day	4495	ESP Sprinkler Cyclone	ETP STP AWRS	स्वीकृति प्राप्त की गयी है।	स्वीकृति प्राप्त की गयी है।	दिसम्बर, 2015	–
4.	मेसर्स आदित्य बिरला केमिकल्स (इंडिया) लि0, रेनुकूट, सोनभद्र	(1) कास्टिक सोडा–129000 MTPA (2) लिक्विड क्लोरीन–103560 MTPA (3) स्टेबिल ब्लीचिंग पाउडर–30000 MTPA (4) सी0पी0डब्ल्यू–20000 MTPA (5) एल्यूमिनियम क्लोराइड–17000 MTPA (6) पी0ए0सी0–50000 MTPA	सोडा – 0.0028 MT/MT साल्ट – 1.53 MT/MT	PM -99.498 SO_2 -372.2 Nox– 223.3	BOD- 6.6 Kg/Day S.S. – 41.8 Kg./Day	–	Bag Filter, Hypo towers, Scrubber for waste gases	ETP	2006 से पूर्व स्थापित	2006 से पूर्व स्थापित	दिसम्बर, 2015	–
	मेसर्स आदित्य बिरला केमिकल्स (इंडिया) लि0, (पावर डिवीजन) रेनुकूट, सोनभद्र	Electricity 2x25 MW	Coal – 1.032 MT/Kwh HSD – 0.00030 KL/Kwh	PM -87 SOx-312 Nox– 258		323.7 MTPD	Bag Filter & ESP	ETP	2006 से पूर्व स्थापित	2006 से पूर्व स्थापित	दिसम्बर, 2015	–

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ANNEXURE-IV

1	2	3	4	5	6	7	8	9	10	11	12	13
5.	मेसर्स एन0टी0पी0सी0, रिहन्द नगर, सोनभद्र	विद्युत उत्पादन 3000 MW	कोयला 43268 MT/Day	**Stage-I** SPM-145 SO_2-622 NOx-207 **Stage-II** SPM-85 SO_2-642 NOx-225 **Stage-III** SMP-46 SO_2-630 NOx-229	BOD – 1106 Kg./Day S.S – 564 Kg/Day	14629	ESP Dust Extraction & Dust suppression system	LWTP ETP STP (Oxidation Pond) AWRS	सभी तीनों चरणों की पर्यावरणीय स्वीकृतियां उपलब्ध स्टेज–I 1991 से पूर्व स्थापित स्टेज–II 2006 से पूर्व स्थापित स्टेज–III 2014 से पूर्व स्थापित	उपलब्ध स्टेज–I 1991 से पूर्व स्थापित स्टेज–II 2006 से पूर्व स्थापित स्टेज–III 2014 से पूर्व स्थापित	दिसम्बर, 2015 तक उपलब्ध	–
6.	मेसर्स एन0टी0पी0सी0, शक्तिनगर, सोनभद्र	Electricity 2000 MW	कोयला 30165 MT/Day	SPM-129 SO_2-731 NOx-424	BOD–336 Kg./Day S.S – 3444 Kg/Day	10317	ESP DE/DS Sprinklers	LWTP STP AWRS (in progress)	1994 से पूर्व स्थापित	1994 से पूर्व स्थापित	दिसम्बर, 2015 तक वैध	–
7.	मेसर्स नार्दर्न कोलफील्ड्स लि0, दुद्धीचुआ, सोनभद्र	कोयला 15.5 मिलियन टन/प्रतिवर्ष	विस्फोटक– 14423.322 एमटी/वर्ष डीजल – 57.6 KL/दिन लुब्रीकेन्ट्स – 2.69 KL/दिन	PM-10 – 179.6 $\mu g/m^3$ SO_2-22.4 $\mu g/m^3$ NOx-36.5 $\mu g/m^3$	BOD–51.3 Kg/Day S.S – 96.0 Kg/Day	NIL	- Closed Conveyors– Sprinklers - Cyclone Bag Filters	ETP STP	2006 से पूर्व स्थापित	2006 से पूर्व स्थापित	दिसम्बर, 2015	–
8.	मेसर्स नार्दर्न कोलफील्ड्स लि0, बीना यूनिट, सोनभद्र	कोयला 6.00 मिलियन टन/प्रतिवर्ष (दि0 05. 08.14 तक) वर्तमान में 7.5 मिलियन टन/वर्ष (दि0 06.08.14 से)	जल – 124.80 KL/दिन बारूद – 34.20 टन/दिन लुब्रीकेन्ट्स – 1.40 KL/दिन	PM-10 – 126.5 $\mu g/m^3$ SO_2-12.6 $\mu g/m^3$ NOx-27.1 $\mu g/m^3$	BOD–142.8 Kg/Day S.S – 571.5 Kg/Day	NIL	- Closed Conveyors – Sprinklers - Cyclone Bag Filters	ETP STP	स्वीकृति प्राप्त की गयी है।	2006 से पूर्व स्थापित	दिसम्बर, 2015	–
9.	मेसर्स नार्दर्न कोलफील्ड्स लि0, ककरी यूनिट, सोनभद्र	कोयला – 3.30 MT	बारूद – 16.55 टन/दिन डीजल – 16.50 KL/दिन ग्रीस – 0.068 मोबिल – 0.89	PM-10 – 145.9 $\mu g/m^3$ SO_2-18.9 $\mu g/m^3$ NOx-33.6 $\mu g/m^3$	BOD–57 Kg/Day S.S – 131 Kg/Day	NIL	- Closed Conveyors – Sprinklers - Cyclone Bag Filters	ETP STP	स्वीकृति प्राप्त की गयी है।	स्वीकृति प्राप्त की गयी है।	दिसम्बर, 2015	–
10.	मेसर्स नार्दर्न कोलफील्ड्स लि0, खड़िया यूनिट, सोनभद्र	कोयला 10 मिलियन टन/प्रतिवर्ष	बारूद – 570 टन/माह डीजल – 650 KL/माह ऑयल एण्ड ग्रीस – 66.5 टन/माह	PM-10 – 226-7 $\mu g/m^3$ SO_2-19-8 $\mu g/m^3$ NOx-36.5 $\mu g/m^3$	BOD–46.22 Kg/Day S.S – 71.90 Kg/Day	NIL	- Closed Conveyors – Sprinklers - Cyclone Bag Filters	ETP STP	स्वीकृति प्राप्त की गयी है।	स्वीकृति प्राप्त की गयी है।	विचाराधीन	–

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1	2	3	4	5	6	7	8	9	10	11	12	13
11.	मेसर्स नार्दर्न कोलफील्ड्स लि0, कृष्णशिला यूनिट, सोनभद्र	कोयला – 4.00 MTPA	बारूद – 14.8 टन/दिन डीजल – 7972 Lit/दिन लुब्रीकेन्ट्स – 315 Lit/दिन	SPM-309 $\mu g/m^3$ SO_2-19 $\mu g/m^3$ NOx-19 $\mu g/m^3$	ETP not installed	NIL	Water Sprinklers – Dust Extractor - Plantation	ETP not installed	स्वीकृति प्राप्त की गयी है।	स्वीकृति प्राप्त की गयी है।	वायु दिसम्बर, 2015 एवं जल सहमति निरस्त	–
12.	मेसर्स ओबरा थर्मल पावर स्टेशन यूनिट 'अ' ओबरा, सोनभद्र	Electricity 5x50 MW 3x100 MW	कोल–2400 MT/Day जल–20000 MT/Day	PM -401 SO_2-509 Nox– 246	BOD– 444 Kg/Day S.S.–3280 Kg/Day	31784.68 MT/Year	ESP Sprinkler Plantation	Ash Pond AWRS under Construction ETP under commissioning	2006 से पूर्व स्थापित	2006 से पूर्व स्थापित	जल/ वायु सहमति निरस्त	केन्द्रीय प्रदूषण नियंत्रण बोर्ड द्वारा दिनांक 16.08.2010 को पर्यावरण संरक्षण अधि0 की धारा 5 के अंतर्गत बन्दी आदेश जारी
	मेसर्स ओबरा थर्मल पावर स्टेशन यूनिट 'ब' ओबरा, सोनभद्र	Electricity 5x200 MW		PM -152 SO_2-537 Nox– 288								
13.	मेसर्स डाला सीमेन्ट फैक्ट्री (ए यूनिट आफ जय प्रकाश एसोसिएट्स), डाला, सोनभद्र	Clinker– 2.0 MTPA Cement – 0.5 MTPA CPP – 27 MW	लाइम स्टोन–8820 MT आयरन ओर–90 MT रेड मड – 90 MT	PM - < 50 SO_2 - < 100 Nox – < 600	N.A.	250 MT	Bag House/ ESPs/ Bag Filters	STP	स्वीकृति प्राप्त की गयी है।	स्वीकृति प्राप्त की गयी है।	दिसम्बर, 2015	–
14.	मेसर्स हाईटेक कार्बन, रेनुकूट, सोनभद्र	5100 MT/Month	कार्बन ब्लैक–400 T/Day पोटेशियम नाइट्रेट–0.06 T/Day Malases – 1.00T/Day Castic Soda – 1.00 T/Day HCL – 1.00 T/Day	PM – 98.2 SOx - - Nox– -	BOD– 8.7 Kg/Day S.S.–725 Kg/Day	–	Bag Filter Pure Gas Filter Scrubber	ETP STP	2006 से पूर्व स्थापित	2006 से पूर्व स्थापित	दिसम्बर, 2015	–
15.	मेसर्स लैंको अनपरा पावर लिमिटेड, अनपरा, सोनभद्र	1200 MW	Coal – 12750 MT/Day Water – 64714 KL/Day	PM - 41 SOx - 632 Nox– 204	BOD – 2.03 Kg/Day S.S – 34.0 Kg/Day	4453	ESP EFF	ETP STP AWRS	स्वीकृति प्राप्त की गयी है।	स्वीकृति प्राप्त की गयी है।	दिसम्बर, 2015	–

M P Pollution Control Board

D-3 Russian Complex Vindhya Nagar Singrauli (M P)

INVENTORISATION OF INDUSTRIES (NGT CASE NO. 276/13 - SINGRAULI)

S. No.	NAME AND ADDRESS OF INDUSTRY	TYPE OF INDUSTRY	PRODUCTS & PRODUCTION CAPACITY	QUANTITY OF RAW MATERIAL USED PER DAY	WATER CONSUMPTION			SOURCE OF WATER	QUANTITY OF FLY ASH GENERATED PER DAY	HAZARDOUS WASTE	
					INDUSTRIAL	DOMESTIC	OTHERS			TYPE & CATEGORY NO.	QUANTITY PER DAY
1	Vindhyachal Super Thermal Power Project (NTPC) Vindhya nagar Distt. Singrauli	TPP	stage –I 6 x210MW stage II 2x 500MW Stage-III 2x500 MW stage-IV 2x500 MW	Water coal	329300	16900	65000	Rihand through cooling water discharge canal of NTPC Shktinagar (UP)	19000MT	Used oil Spent resin from DM plant Discarded Containers	148 MT 12 MT 20 MT
2	Sasan Power Limited Village Siddh Khurd Distt. Singrauli,	TPP	6x660 MW	Water coal	240994	2064	35000	Rihand Reservoir	9600 MT	Used Oil Waste containing oil Chemical sludge from ETP Discarded containers Spent ion exchange resn	300 KL 50 MT 100 MT 50 MT 6 MT
3	Essar Power MP Ltd Village Bandhaura Distt. Singrauli	TPP	2x600MW	Water coal	19962	200	--	Rihand Reservoir	2100 MT	Used Oil Waste containing oil Chemical sludge from ETP Discarded containers	60 MT 1 MT -- 75 MT

4	Jaiprakash Power Venture Ltd.-Jaypee Nigrie Super Thermal Power Project, Village Nigarie Distt. Singrauli	TPP	2x660MW + Cement 2.0 million tonnes	Water Coa Cement clinkers	107271	720	--	Gopad River	2500 MT	Used Oil Waste containing oil Chemical sludge from ETP Discarded containers Spent ion exchange resn	50 MT 160 MT ---- -- 100 MT
5	Hindalco Industries Limited-Mahan Aluminium Project Village Bargawan Distt. Singrauli	Aluminium + CPP	Aluminium3.59 lakh tonne/year Captive Power Plant 6x150 MW	Alumina Aluminium Fluoride Coal CP coke Fuel Oil CPP Fuel Oil Smelter Pitch	14550	475	--	Gopad River	1000 MT	Used Oil I Wastes residue containing oil Cathode residue including pot lining waste (11.3) Spent oil exchange resin containing toxic chemicals (34.2)	623 2 6390 2
6	Trimula Industries Ltd Village Gondiwali Distt. Singrauli	Sponge Iron	2x350 TPD	Iron ore Coal Ferro alloys	800	65	60	Bore wells + water storage ponds	100 MT		
7	Moher & Moher Amlori Extension Coal Mine Project	Open Cast Coal Mine	12 Million tonnes per year (MTPA)	Diesel Explosives	2390	250	--	Bore Well + mine water	Not Applicable	Used oil Wastes Containing Oil	200 MT 2.4 MT

	(Sasan Power Ltd) Village Amlori, Distt. Singrauli										
8	MP state MIning Corporation Amiliya Joint Venture with J PAssociates)	Open Cast Coal Mine	2.8 MTPA	Diesel Explosives	191	260	--	Bore Well + mine water	Not Applicabl e	Used oil Wastes Containing Oil	90 MT 2.5 MT
9	Jayant Project-Northern Coalfield Ltd Village Jayant, Distt. Singrauli	Open Cast Coal Mine	15.5 MTPA	Diesel Explosives	3720	2200	--	Rihand Reservoir through IWSS Khadia + mine water	Not Applicabl e	Used oil Wastes Containing Oil	500 MT 30 MT
10	Amlori Project-Northern Coalfield Ltd Village Amlori, Distt. Singrauli	Open Cast Coal Mine	10.0 MTPA	Diesel Explosives	3755	1745	--	Rihand Reservoir through IWSS Khadia + mine water	Not Applicabl e	Used oil Wastes Containing Oil	168 MT 12 MT
11	Nigahi Project-Northern Coalfield Ltd Village Nigahii, Distt. Singrauli	Open Cast Coal Mine	15.5 MTPA	Diesel Explosives	3320	1760	--	Rihand Reservoir through IWSS Khadia + mine water	Not Applicabl e	Used oil Wastes Containing Oil	500 MT 90 MT
12	Jhingurda Project-Northern Coalfield Ltd Village Jhingurda, Distt. Singrauli	Open Cast Coal Mine	5 MTPA	Diesel Explosives	2600	1800	--	Rihand Reservoir through IWSS Khadia + mine water	Not Applicabl e	Used oil Wastes Containing Oil	80 MT 13.5 MT
13	Block B Project-Northern Coalfield Ltd Village Gorbi Distt. Singrauli	Open Cast Coal Mine	4.375 MTPA	Diesel Explosives	670	450	--	Rihand Reservoir through IWSS Khadia + mine water	Not Applicabl e	Used oil Wastes Containing Oil	50 MT 03 MT

14	Dudhichua Project-Norther Coalfield Ltd Village Dudhichua, Distt. Singrauli	Open Cast Coal Mine	15 MTPA	Diesel Explosives	500	1671	--	Rihand Reservoir through IWSS Khadia + mine water	Not Applicable	Used oil Wastes Containing Oil	387 MT 1.7 MT
15	Khadia Project-Northern Coalfield Ltd Village Kdadia Distt. Singrauli	Open Cast Coal Mine	10 MTPA	Diesel Explosives	150	-	--	Rihand Reservoir through IWSS Khadia + mine water	Not Applicable	---- HW generation in UP	Not Applicable
16	Bina Ext Project-Northern Coalfield Ltd Village Bina Distt. Singrauli	Open Cast Coal Mine	6 MTPA	Diesel Explosives	130	--	--	Rihand Reservoir through IWSS Khadia + mine water	Not Applicable	---- HW generation in UP	Not Applicable

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ANNEXURE V

Minutes of the First Meeting of *Sub-committee-I on Quantification of Industrial Impacts* in compliance to the NGT Order dated 25, 2014 in the matter of Jagat Narayan Viswakarma & Ors. Vs. Union of India & Ors. And Ashwani Kumar Dubey Vs. Union of India & Ors. (O.A.No. 276 of 2013 & M.A. No. 59 of 2014 in O.A. No. 20 of 2014), held on September 24, 2014 at CPCB, Delhi

1.0 The first meeting of *Sub-Committee-I on " Quantification of Industrial Impacts"* in compliance to the NGT Order dated 25, 2014 in the matter of Jagat Narayan Viswakarma & Ors. Vs. Union of India & Ors. And Ashwani Kumar Dubey Vs. Union of India & Ors. (O.A.No. 276 of 2013 & M.A. No. 59 of 2014 in O.A. No. 20 of 2014), was held on September 24, 2014 at CPCB, Delhi. The meeting was chaired by Dr. A. B. Akolkar Member Secretary, CPCB. The list of participants is enclosed (**Annexure I**). Regional officer of MoEF (Bhopal & Lucknow) and expert from Indian School of Mines could not attended in the meeting.

2.0 Member Secretary informed that MoEF & CC has defined, vide office circular No. Q-18011/12/2014/ CPA dated 22.09.2014 (**Annexure II**), the Chairman and member convenors of core team and coordinators for sub committees (1-5) referring to the order of the Hon,ble National Green Tribunal (NGT) dated 25.08.2014 . All the member institutions were provided copy of the circular under reference.

3.0 The Sub- Committee discussed the Approach and Methodology to carryout the activities as per the Terms of References set by the Hon,ble NGT. The representatives of the UPPCB & MPPCB provided available recent data with respect to industries located in their States. Thereafter, discussion was held in respect of each part of the TOR. After detailed discussion, working approach and methodology for execution of each task was finalised as below:

3.1 **Inventory of Existing industries – industry wise**

3.1.a Production in terms of each product either per day or per month
3.1.b Raw material used: in terms of each raw material including fuel and water per day & its sources

Representatives of MPPCB, UPPCB and Zonal offices of CPCB informed that information on the above is available with SPCBs. It was agreed that the same shall be compiled by the respective SPCBs and submitted to the Sub-Committee.

3.2 **Pollution Load generation**

3.2.a Water- quantity of each of the significant pollutant per day before & after treatment.
3.2.b Air- quantity emission in terms of each pollutant per day.
3.2.c Fly-ash-quantity per day.
3.2.d Hazardous waste-quantity & type/day.

3.2.e Others, if any – specify & quantify

It was informed by representatives of MPPCB, UPPCB and Zonal offices of CPCB that information/data on the above mentioned tasks is available with SPCBs through various studies conducted by respective SPCBs and other institutions in past. The Sub Committee agreed that the same shall be compiled by the respective SPCBs and submitted to the Sub-Committee. Wherever, required data is not available, the same will be collected by respective SPCB and compiled.

3.3 **Compliance Status:**

a. Environmental Clearance conditions
b. Forest Clearance conditions
c. Consent conditions

Monitoring of environmental & forest clearance conditions is done by MOEF &CC. Hence, it was decided that concerned regional offices of MoEF & CC will provide the same. Information pertaining to compliance of consent conditions will be provided by the respective SPCBs.

3.4 **Adequacy of each of the pollution control measure/s.**

The Committee decided that adequacy of pollution control measures shall be adjudged by SPCB / CPCB based on actual monitoring of effluent and emissions in all the concerned industries and the same shall be submitted to the Committee.

3.5 **Daily basis Vehicular traffic census especially in and around residential clusters. Ambient air quality should also be monitored in the above residential areas.**

3.6 **Vehicular census and their usages data to be used for quantification of pollution load generation from the vehicles (petrol and diesel driven separately).**

Regarding collection of data on vehicular traffic census, it was decided that respective SPCBs will collect the same alongwith average running of each type vehicle in the respective area. Vehicular Pollution load shall be computed by applying Emission Factor.

The Committee was informed that transportation of coal by road was limited to M/s Renusagar Power Company and partially with M/s Lanco Power. M/s Renusagar Power Company is in the process of switching over to Pipe Conveying System while M/s Lanco Power has switch over to dedicated rail transport system, thereby eliminating possibility of fugitive dust emission due to transportation of coal. Other industries including thermal power plants, cement plant have dedicated rail transport system for transportation of coal.

3.7 **Overall working and deficiency, if any**

Besides industrial pollution in Singrauli area, it was noted that there are Technical and Administrative issues responsible for pollution in the area. Such issues shall be identified and characterised as under :

3.7.1 Technical issues:

3.7.1.1 Considering quantum of heavy traffic, the roads preferably in areas close to stone crushers, are required to be made of Cement Concrete

3.7.1.2 Burning of coal by domestic users in residential clusters

3.7.1.3 Transportation of material to and from stone crushers undertaken through open trucks lead to spillage of material and cause road-side dust being air borne

3.7.1.5 Considering a large number of Reverse Osmosis (RO) plants being established in the area for supply of safe drinking water, it would be pertinent to ensure disposal of RO Rejects in environmentally sound manner.

3.7.2 Administrative:

3.7.2.1 Delay in construction of highway by SADA

3.7.2.2 Supply of LPG to locals using coal for cooking

4. The Committee was informed that currently there are 19 RO Plants have been established in UP while 04 RO plants in MP State. Additionally, a dedicated (piped) water supply system has been provided by M/s Renusagar Power Company (Hindalco), Dala Cement Works and NCL Dudhichua coal mine in their vicinity.

5. The Committee took note of the fact that there are number of locations where regular ambient air quality monitoring is being carried out. These stations are being managed either by SPCB or by industries. It was agreed that a rationalised approach shall be followed so as to relocate the existing stations with a view to make representative assessment of ambient air quality in residential areas.

The meeting ended with a vote of thank to the Chair.