Ref.No: HILP/HKD/2024-25/ 210

19 June 2024

To,

The Member Secretary
State Pollution Control Board, Odisha
Paribesh Bhawan
A / 118, Nilakantha Nagar
Unit - VIII
Bhubaneswar- 751 012

Sub: **Environment Statement in Form-V for the year 2023-24 of Hindalco Industries Ltd, Hirakud, CPP– reg.**

Dear Sir,

Please find enclosed herewith the Annual Environment Statement in **Form - V** duly filled-in with enclosures w.r.t our Captive Power Plant at Hirakud for the financial year 2023-24.

Thanking you.

Yours truly
for M/s Hindalco Industries Ltd

Encl: As above.

(Pranjal Pathak)
Head - Hirakud Power

Copy for kind information to:

1. Deputy Director General of Forests (C), MoEF&CC, IRO, A/3, Chandersekharpur, Bhubaneswar – 751023
2. The Regional Director, Eastern Regional Directorate Office, Southend Conclave, Block No. 502, 5th Floor (Office) Rajdanga Main Road, Kolkata 700107.
3. The Regional Officer, SPCB, Sambalpur, Odisha, 768002

Hindalco Industries Limited
Hirakud Complex, Hirakud - 768 016, District : Sambalpur, Odisha, India
T : +91663 2481307 / 2481273 / 2481295 I Fax : +91 663 2481356 / 2481342 I E : hindalco@adityabirla.com
W : www.hindalco.com
Registered Office : 21st Floor, One International Center, Tower 4, Senapati Bapat Marg,
Prabhadevi, Mumbai 400013
Corporate ID No.: L27020MH1958PLC011238

"FORM - V"
(See Rule - 14)

ENVIRONMENTAL STATEMENT REPORT FOR THE FINANCIAL YEAR ENDING 2023 - 2024

PART - A

01. Name and Address of the owner / Occupier of the Industry, Operation or Process : Pranjal Pathak
Head - Hirakud Power
Hindalco Industries Limited
Post: HIRAKUD - 768 016
Dist: Sambalpur (Odisha).

02. Industry Category
Primary - (STC Code) : Major
Secondary- (SIC Code) :

03. Production Capacity - Units Per : 467.5 MW or 4095.3 million units (MU)
Annum at approx. 75 % PLF

Actual Production in Million Units (MU) : **3091.5 MU (2023 - 24)**

04. Year of Establishment :1993 - Unit # I (67.5 MW)
2005 - Unit # II (100 MW)
2006 - Unit # III (100 MW)
2008 - Unit # IV (100 MW)
2013 - Unit # V (100 MW)

05. Date of the last Environmental Statement Submitted : 11th September 2023

PART – B
Water and Raw Material Consumption

01. Water Consumption m^3/day

Average (Approx.)

Process & Cooling	:	21886.63	m^3 / day
Domestic	:	1355	m^3 / day

* Including Colony Potable water

Name of the Products	Water consumption per unit of product	
	During the previous FYU **2022 - 23**	During the Current FY **2023 - 24**
Electricity	2.83 m3 / MWH	2.59 m3 / MWH

02. Raw Material Consumption:

Name of the Raw Materials	Name of the Products	Consumption of the Raw materials Per unit of Output	
		During the Previous FY (2022 - 23)	During the Current FY (2023 - 24)
Coal	Electricity	0.842 Kg / KWH	0.859 Kg / KWH

PART - C

Pollution Discharged to Environment/unit of output.
(Parameters as specified in the Consent Order)

Pollutants	Quantity of Pollutants discharged. (mass/day)	Concentrations of Pollutants in discharges (mass/volume)	Percentage of Variation from prescribed standards with reasons.
a) Water	Nil	No untreated effluent is being discharged outside. The cooling tower blowdown and other process water are treated in the Reverse osmosis-based ETP and completely recycled in the process as make-up water for cooling towers.	

(b) Air	mg/Nm3	Emission through stacks in 2023 - 24 _annual avg value							
		Parameter	Unit - I	Std.	Unit - II	Unit - III	Unit - IV	Unit - V	Std.	Remark
		PM	0	100	44.7	43.8	43.5	44.2	50	Within the standard
		SO_2	0	600	443.3	453.1	446.2	446.3	600	
		NO_x	0	600	280.4	271.3	275.3	275.6	450	
		Hg		--	0.007	0.007	0.0075	0.0076	0.03	

PART - D

Hazardous Wastes
[As specified under Hazardous Wastes (Management and Handling) Rules]

Hazardous Wastes	Total Quantity (Generation)			
	During the Previous FY (2022 - 23)		During the Current FY (2023-24)	
(a) From Process	Used Oil	28.19 KL	Used Oil	31.60 KL
	Waste containing oil	4.37 MT	Waste containing oil	2.43 MT
	Spent Resin	0.90 MT	Spent Resin	6.20 MT
	Empty Barrels/Contaminated with Hazardous Chemicals /Wastes	7.97 MT	Empty Barrels/Contaminated with Hazardous Chemicals /Wastes	1.10 MT
(b) From Pollution Control Facilities	Nil		Nil	

PART - E
Solid Wastes

		TOTAL QUANTITY (MT)	
		During the Previous FY (2022 - 23)	During the Current FY (2023-24)
(a) From Process	Fly ash	976339.677	1026456.21
	Bottom ash	108482.05	114050.69
	Total Ash	1084821.73	1140506.90
(b) From Pollution Control Facilities		Nil	Nil
(c) (1) Quantity re-cycled or re-utilized	Quantity dispatch for Cement Plant	244542.71	96462.25
	Quantity dispatch for Bricks manufacturing	607007.69	646434.76
	Quantity used for Landfilling	93404.36	96101.28
	Quantity used for Road construction	140756.34	302839.53
	Percentage of Ash utilization	100.08	100.12
(2) Sold		Nil	Nil
(3) Disposal*		Nil*	Nil*

*** Ash mound closure certification received after stabilization and reclamation vide letter no. 9251/INS-I-CON-1411 Dated-07.06.2023.**

PART - F

Please specify the characteristics (in terms of concentration and quantum) of Hazardous as well as Solid Wastes and indicate disposal practices adopted for both these categories of wastes.

A. Generation & Disposal of Hazardous Wastes:

Sr. No.	Name of Waste	Authorized Quantity/A	Quantity generated	Disposal Quantity	Disposal Practice
1	**Used Oil (KL)**	**50**	31.60	34.44	Used oil generated from various processes is collected in barrels and stored in the oil storage shed and sold to authorized recyclers.
2	**Waste containing oil (MT)**	**8**	2.43	2.43	Waste containing oil, comprising cotton used during handling of oil, is kept on an impervious floor under well ventilated covered shed and

					disposed to a cement plant for co-processing.
3	**Spent Resin (MT)**	10	6.20	6.20	Spent Resin generated from the DM Plant is kept under a shed in barrels and Co-incinerate in its own CPP with coal.
4	**Empty Barrels/Contaminated with Hazardous Chemicals /Wastes**	10	1.10	0.98 (Buy back to supplier)	Empty barrels are kept on an impervious floor under well well-ventilated covered shed and sent back to the supplier through buy-back.

B. DISPOSAL PRACTICE OF SOLID WASTES:

Fly ash & bottom ash are generated in dry form and is conveyed pneumatically to silos of 9 x 1400 MT. The stored ash from the silos is dispatched for utilization in various sectors like Cement, Bricks, Road making, Low lying area filling, etc, and the unutilized quantity is stored in the Ash Mound. The quantity of generation, utilization, and disposal of ash for the year 2023 -24 is stated below:

The unloading of Ash from the Silo is done through Ash Conditioning units where ash is conditioned with water containing adequate moisture, leaving no ash particles to be airborne. The ash is transported in tarpaulin-covered, and rope-tied trucks to various sectors of utilization, like cement and fly ash brick manufacturing, low-lying area filling, road construction, etc. Balance ash, if any, is taken to Ash Mound for storage. The typical analysis report of ash is enclosed as Annexure I.

Areas of ash utilization	Quantity in MT
Quantity used for Cement Production	96462.25
Quantity used for Brick Manufacturing	646434.76
Quantity used for Landfilling	96101.28
Quantity used for Road construction	302839.53
Percentage of Ash Utilization (%)	100.12

PART – G

Impact of the pollution abatement measures taken on the conservation of natural resources and on the cost of production

A) Air Pollution Control Measures:

1) Electrostatic Precipitators, Dust Suppression, and Dust Extraction systems were working properly. Unit-1 is a standby unit and has been kept idle during the years 2023-24. A total 13 nos of ESPs installed in all 13 Boilers. Further, Bag Filters were

installed in Secondary Crusher Houses and all transfer Points to control the Fugitive emissions.

2) Fixed sprinklers installed all around the coal yard and additional water tankers deployed to dust suppression on roads. The summary of the ambient air quality monitoring report is enclosed as Annexure - II.

B) Wastewater Management:

1) The wastewater generated out of the Plant is treated with continuous dosing of Alum, Lime, and Sodium Hypochlorite followed by settling in a pit before discharge to a common monitoring basin. The effluents generated from the Plant, after treatment and settling in a common monitoring basin were re-used in the Ash Conditioning system for ash moisturization, coal yard spraying, road washing, gardening, etc. The treated effluent is reutilized as makeup in the Cooling Tower. Blowdown from the Cooling Towers is treated in the RO plant at 120 m3/hr and re-used in the cooling tower and process. The quality of the effluent in the final pit is enclosed as Annexure - III.

2) One STP of 300 KLD installed for power plant and power plant colony for treatment of sewage water. The treated water is reused for cooling tower makeup and gardening purposes.

Impact on Cost of Production:		2022 – 2023	2023 – 2024
Total Environmental expenditure in Lakh	:	7526.13	15539.52 *

*Note: Environmental expenditure of both Smelter & CPP is considered

PART – H

Additional measures/investment proposal for environmental protection including abatement of pollution, and prevention of pollution.

Adequate pollution control measures are undertaken for the prevention of pollution like

1. Ash Silos are provided with Telescopic chutes for dry disposal of ash to cement plants.
2. Installed Wheel washing system for control of road dust.
3. Installation of auto-lime dosing system completed in all the operating boilers.
4. One truck-mounted road sweeping machine is in operation for cleaning all the internal roads as well as public roads from Remed Chowk to Hirakud.
5. Automated water sprinklers for dust suppression in the dust generating sources like Coal yards, Railway siding, ash silo areas, and coal and ash transporting roads.

PART - I

Any other particular for improving the quality of the Environment.

1. Mobile water tankers deployed for road and coal dust suppression.
2. Automated water sprinklers for dust suppression in the dust generating sources like Coal yards, Railway siding, ash silo areas, and coal and ash transporting roads.
3. The unit has provided 6 Fog Canons around Coal Handling & Ash Handling (Silo) area for suppression of fugitive dust.
4. Transportation of Fly ash is carried out in covered vehicles to avoid spillage on roads.
5. The railway siding has been provided with a dust containment wall on both sides having a height of 7 meters from the ground level. Around 42 no sprinklers with 15-meter throw have been provided to control fugitive emissions during loading and unloading in the railway siding.
6. The installation of Micro pulse setter with existing HFTR in all the ESPs of Unit 3 has been completed.

(Pranjal Pathak)
Head - Hirakud Power

ANNEXURE - I

ANALYSIS RESULTS OF ASH

Silica as SiO_2	:	55.56	%
Alumina as Al_2O_3	:	34.46	%
Oxide of Iron as Fe_2O_3	:	4.38	%
Titanium Oxide as TiO_2	:	0.80	%
Lime as CaO	:	0.22	%
Magnesia as MgO	:	0.87	%
Potash as K_2O	:	0.20	%
Soda as Na_2O	:	0.31	%
Sulphate as SO_3	:	0.06	%
Phosphate as P_2O_5	:	0.13	%
Loss on ignition	:	2.63	%

* Sample analysed by M/s. R.V. Briggs & Co. Pvt. Ltd., Kolkata. (sample Silo-2 dt:-30.10.23)

ANNEXURE – II

AMBIENT AIR QUALITY

Particulate Matter PM_{10}										Standard - 100.0 µg/m³		
Location	**Apr-23**	**May-23**	**Jun-23**	**Jul-23**	**Aug-23**	**Sep-23**	**Oct-23**	**Nov-23**	**Dec-23**	**Jan-24**	**Feb-24**	**Mar-24**
FHP Control Room Top	74.8	72.3	70.9	68.9	69.8	68.7	69.50	70.50	69.30	69.80	69.20	68.70
120° NNE (Near Admn. Building)	67.2	66.9	65.8	66.4	65.3	64.4	63.80	62.10	63.40	64.10	63.80	62.50
240° SSE (Rajapada village)	62.3	62.5	58.7	57.1	58.4	59.2	59.50	60.40	61.20	62.20	61.70	62.10
360° W (Hindalco Club)	51.4	51.1	52.0	53.4	56.1	58.4	60.10	61.80	61.20	61.30	60.80	60.40
Jyoti Vihar, Burla	54.1	53.6	53.2	54.1	55.3	56.7	58.10	59.70	60.30	61.10	61.80	62.00
Ash Mound Road	65.2	64.7	60.7	61.5	60.2	61.5	63.40	64.50	65.20	65.90	66.70	66.30
Ash Mound area	71.6	70.8	67.3	65.6	64.5	62.9	61.80	62.60	62.30	63.10	64.20	65.10
Ash Silo	70.5	70.2	66.9	64.0	66.9	65.4	66.20	65.90	64.70	64.50	65.10	64.90
Particulate Matter $PM_{2.5}$										**Standard - 60.0 µg/m³**		
Location	**Apr-23**	**May-23**	**Jun-23**	**Jul-23**	**Aug-23**	**Sep-23**	**Oct-23**	**Nov-23**	**Dec-23**	**Jan-24**	**Feb-24**	**Mar-24**
FHP Control Room Top	44.6	43.1	42.6	38.3	37.5	38.5	37.30	36.80	35.90	35.50	35.40	35.10
120° NNE (Near Admn. Building)	30.4	29.7	28.3	31.5	32.2	33.1	33.60	32.50	32.10	33.10	32.50	32.20
240° SSE (Rajapada village)	31.5	30.6	26.2	27.7	28.5	27.8	30.10	32.50	31.20	31.80	32.20	31.90

360° W (Hindalco Club)	27.3	26.7	26.7	25.9	26.1	29.2	30.60	31.20	31.20	30.90	31.70	31.10
Jyoti Vihar, Burla	28.2	27.6	26.1	25.8	25.8	26.9	28.50	60.10	31.60	31.00	32.00	31.80
Ash Mound Road	39.4	38.9	33.4	31.6	32.4	33.7	33.60	33.70	34.10	33.80	34.20	33.80
Ash Mound area	34.5	33.2	30.6	29.9	29.5	30.8	31.20	32.20	31.80	32.20	33.10	32.90
Ash Silo	38.7	37.9	34.5	33.1	34.1	34.6	34.20	30.10	33.80	33.50	33.70	32.90

Sulphur Dioxide SO_2										**Standard - 80.0 µg/m³**		
Location	**Apr-23**	**May-23**	**Jun-23**	**Jul-23**	**Aug-23**	**Sep-23**	**Oct-23**	**Nov-23**	**Dec-23**	**Jan-24**	**Feb-24**	**Mar-24**
FHP Control Room Top	25.2	24.9	23.3	23.4	24.1	25.1	24.90	25.20	25.70	25.10	26.10	25.80
120° NNE (Near Admn. Building)	14.9	14.5	15.1	17.7	17.6	18.6	19.20	18.90	19.20	19.80	19.20	19.80
240° SSE (Rajapada village)	12.6	12.3	12.5	14.1	15.2	14.9	15.10	15.80	15.60	16.30	17.10	17.70
360° W (Hindalco Club)	12.8	11.9	12.0	15.6	15.9	15.3	15.30	14.70	15.60	14.70	15.20	18.00
Jyoti Vihar, Burla	18.6	19.2	18.8	19.5	18.9	19.4	19.80	19.60	19.50	19.80	18.90	19.30
Ash Mound Road	23.3	24.1	23.7	20.8	20.4	21.2	20.80	21.20	21.80	22.00	21.70	22.10
Ash Mound area	21.2	21.5	20.6	21.1	22.1	20.9	21.30	20.50	20.90	21.60	22.30	21.60
Ash Silo	22.5	22.1	20.8	20.3	21.5	21.6	21.90	19.60	21.30	21.00	21.80	21.60

Oxides of Nitrogen NO_x										Standard - 80.0 µg/m^3		
Location	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24
FHP Control Room Top	26.1	25.7	24.7	24.4	24.6	26.5	26.80	26.20	26.70	27.30	28.20	28.80
120^0 NNE (Near Admn. Building)	22.8	22.3	21.6	20.8	21.2	22.2	22.70	23.40	23.20	22.90	23.30	22.90
240^0 SSE (Rajapada village)	21.1	20.6	21.1	21.4	22.3	23.6	23.10	23.90	24.20	24.60	24.10	23.90
360^0 W (Hindalco Club)	20.9	20.1	19.6	18.9	19.6	19.2	18.90	19.50	24.20	20.10	21.20	21.00
Jyoti Vihar, Burla	24.7	25.2	24.3	23.6	24.1	23.8	24.20	25.30	25.90	25.70	26.10	26.30
Ash Mound Road	24.1	23.8	24.2	23.6	20.4	21.7	21.20	20.60	21.10	21.80	22.00	22.40
Ash Mound area	23.4	23.5	21.9	21.4	22.1	21.2	22.30	22.80	22.60	23.20	22.90	24.80
Ash Silo	28.9	29.6	29.2	28.7	21.5	26.9	25.80	25.30	26.40	26.10	25.70	24.80

ANNEXURE -III

TREATED WATER QUALITY

Parameters	Standard	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24
Ph	5.5 -9.0	7.28	7.25	7.28	7.33	7.38	7.33	7.27	7.19	7.28	7.23	7.18	7.23
Total Dissolved Solids, mg/L	2100	591	587	576	582	574	568	554	563	549	538	547	539
Total Suspended Solids, mg/L	50	57	55	58	64	68	70	75	72	69	65	59	62
Turbidity		3.3	3.1	3.3	3.9	3.6	3.1	3.4	3.1	3.4	3.1	3.5	3.2
BOD (3 day at 27 Deg. C.), mg/L	30	14	12	14	12	10	8	7	6.8	6.4	6.9	7.4	7.1
C.O.D, mg/L	250	44	38	36	30	27	24	25	24	26	28	32	28
Oils & Grease, mg/L	5	3.6	3.0	3.6	4.0	6.0	4.0	4.8	4.0	3.6	3.2	3.8	3.5
Total Residual Chlorine	1	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)
Ammonical Nitrogen as N, mg/L	50	1.64	1.76	1.80	1.80	1.65	1.57	1.43	1.29	1.18	1.2	1.6	1.4
Total Kjeldahl Nitrogen (as N)	100	2.6	2.2	2.4	2.8	3.2	2.9	3.2	3.8	4.2	4.8	5.2	5.0
Free Ammonia (as NH3)	5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Manganese (as Mn)	2	BDL (0.004)	BDL (0.004)	BDL (0.004)	BDL (0.004)	BDL (0.004)	BDL (0.004)	BDL (0.004)	BDL (0.004)	BDL (0.004)	BDL (0.004)	BDL (0.004)	BDL (0.004)
Total iron as Fe, mg/L	3	0.78	0.59	0.63	0.95	0.90	0.84	0.79	0.80	0.79	0.81	0.78	0.75
Vanadium (as V)	0.2	BDL (0.005)	BDL (0.005)	BDL (0.005)	BDL (0.005)	BDL (0.005)	BDL (0.005)	BDL (0.005)	BDL (0.005)	BDL (0.005)	BDL (0.005)	BDL (0.005)	BDL (0.005)
Hexavalent Chromium (as Cr+6)	0.1	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)
Total Chromium as Cr	1	BDL (0.011)	BDL (0.011)	BDL (0.011)	BDL (0.011)	BDL (0.011)	BDL (0.011)	BDL (0.011)	BDL (0.011)	BDL (0.011)	BDL (0.011)	BDL (0.011)	BDL (0.011)
Copper as Cu, mg/L	2	BDL (0.006)	BDL (0.006)	BDL (0.006)	BDL (0.006)	BDL (0.006)	BDL (0.006)	BDL (0.006)	BDL (0.006)	BDL (0.006)	BDL (0.006)	BDL (0.006)	BDL (0.006)
Cadmium as Cd, mg/L	2	BDL (0.0003)	BDL (0.0003)	BDL (0.0003)	BDL (0.0003)	BDL (0.0003)	BDL (0.0003)	BDL (0.0003)	BDL (0.0003)	BDL (0.0003)	BDL (0.0003)	BDL (0.0003)	BDL (0.0003)
Zinc as Zn, mg/L	1	BDL (0.008)	BDL (0.008)	BDL (0.008)	BDL (0.008)	BDL (0.008)	BDL (0.008)	BDL (0.008)	BDL (0.008)	BDL (0.008)	BDL (0.008)	BDL (0.008)	BDL (0.008)

Parameters	Standard	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24
Dissolved Phosphate as PO_4, mg/L	3	1.28	1.33	1.42	1.63	1.71	1.66	1.58	1.47	1.39	1.43	1.36	1.40
Sulphides (as S)	2	BDL (0.03)	BDL (0.03)	BDL (0.03)	BDL (0.03)	BDL (0.03)	BDL (0.03)	BDL (0.03)	BDL (0.03)	BDL (0.03)	BDL (0.03)	BDL (0.03)	BDL (0.03)
Phenolic Compound (as C6H5OH)	1	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)	BDL (0.02)
Nickel as Ni, mg/L	3	BDL (0.005)	BDL (0.005)	BDL (0.005)	BDL (0.005)	BDL (0.005)	BDL (0.005)	BDL (0.005)	BDL (0.005)	BDL (0.005)	BDL (0.005)	BDL (0.005)	BDL (0.005)
Selenium as Se, mg/L	0.05	BDL (0.0002)	BDL (0.0002)	BDL (0.0002)	BDL (0.0002)	BDL (0.0002)	BDL (0.0002)	BDL (0.0002)	BDL (0.0002)	BDL (0.0002)	BDL (0.0002)	BDL (0.0002)	BDL (0.0002)
Arsenic as As, mg/L	0.2	BDL (0.003)	BDL (0.003)	BDL (0.003)	BDL (0.003)	BDL (0.003)	BDL (0.003)	BDL (0.003)	BDL (0.003)	BDL (0.003)	BDL (0.003)	BDL (0.003)	BDL (0.003)
Mercury as Hg, mg/L	0.01	BDL (0.001)	BDL (0.001)	BDL (0.001)	BDL (0.001)	BDL (0.001)	BDL (0.001)	BDL (0.001)	BDL (0.001)	BDL (0.001)	BDL (0.001)	BDL (0.001)	BDL (0.001)
Lead as Pb, mg/L	0.1	BDL (0.0007)	BDL (0.0007)	BDL (0.0007)	BDL (0.0007)	BDL (0.0007)	BDL (0.0007)	BDL (0.0007)	BDL (0.0007)	BDL (0.0007)	BDL (0.0007)	BDL (0.0007)	BDL (0.0007)
Cyanides as CN, mg/L	0.2	BDL (0.01)	BDL (0.01)	BDL (0.01)	BDL (0.01)	BDL (0.01)	BDL (0.01)	BDL (0.01)	BDL (0.01)	BDL (0.01)	BDL (0.01)	BDL (0.01)	BDL (0.01)
Fluoride as F, mg/L	1.5	0.8	0.76	0.72	0.80	0.77	0.75	0.82	0.79	0.81	0.78	0.75	0.72
Nitrate Nitrogen (as NO3-N)	10	2.69	2.78	2.88	2.7	2.5	2.2	2.4	2.1	2.5	2.2	2.31	2.45
Bio-assay Test		All fishes survive after 96 hrs in 100% effluent	All fishes survive after 96 hrs in 100% effluent	All fishes survive after 96 hrs in 100% effluent	All fishes survive after 96 hrs in 100% effluent	All fishes survive after 96 hrs in 100% effluent	All fishes survive after 96 hrs in 100% effluent	All fishes survive after 96 hrs in 100% effluent	All fishes survive after 96 hrs in 100% effluent	All fishes survive after 96 hrs in 100% effluent	All fishes survive after 96 hrs in 100% effluent	All fishes survive after 96 hrs in 100% effluent	All fishes survive after 96 hrs in 100% effluent