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No. JSW/S/CO/2024/591

Date: 16/09/2024

To.

The Member Secretary State Pollution Control Board, Odisha, Paribesh Bhawan, A/118, Nilakantha Nagar, Unit-8,

BHUBANESWAR-751012

Sub: - Submission of Environment Statement (Form-V) for the year 2023-24 in compliance of EC & CTO Condition for **Jajang Iron Ore Mine of M/s JSW Steel Ltd.**

Ref: - 1. Vested Environment Clearance Letter dated 13.03.2015 and amendment dated 09.11.2015 issued by MOEF&CC, GOI.

2. Consent Order No 2942 vide letter no 4820/IND-I-CON-247 dated 30.03.2024.

Dear Sir,

With reference to aforesaid subject, please find enclosed herewith the Environment Statement (Form-V) for the year 2023-24 in compliance of EC & CTO Condition for **Jajang Iron Ore Mine of M/s JSW Steel Ltd**.

Seeking your co-operation as always.

Thanking you,

Mrutyunjaya Mahapatra

Markyayya makakatra

Yours Faithfully

For JSW Steel Ltd

(Authorized Signatory)

Encl: As above

Copy to-

1. The Deputy Director General of Forests (C), Ministry of Environment, Forest and Climate Change, Regional Office (Eastern Zone), A/3, Chandersekharpur, Bhubaneswar – 751023

2. The Regional Officer, Regional Office, State Pollution Control Board, Keonjhar, At – Baniapat, College Road, Keonjhar-758 001, Office of the State Pollution Control Board, Odisha



JSW Steel Limited Jajang Iron Ore Mine



ENVIRONMENTAL STATEMENT FOR JAJANG IRON ORE MINE (FINANCIAL YEAR ENDING MARCH 31ST 2024)

PREPARED & SUBMITTED BY

Jajang Iron Ore Mine Of M/s JSW Steel Ltd Tehsil - Barbil, District – Keonjhar Odisha

Form V (See Rule 14)

Environment Statement for the Financial Year ending the 31st March 2024

Part A

(i)	Name and address of the	Jajang Iron Ore of M/s JSW Steel Ltd in villages			
	owner/occupier of the industry	Jajang, Jodibahal, Palsa (Ka), Bandhuabeda, Tehsil			
	operation or process	Barbil, District Keonjhar, Odisha			
(ii)	Industry Category	Red Category			
	Primary :- (STC Code)	SIC (Standard Industrial Classification)- Code-1000			
	Secondary :- (SIC Code)	Industry Type- Metal Mining			
(iii)	Production capacity: Units	Operating Mine as per approved Mine Plan and			
		CTO of 12.80 MTPA Iron Ore (ROM) by fresh			
		excavation only.			
(iv)	Year of establishment	Mining operation commenced from the 01.07.2020			
(v)	Date of the last Environment	20/09/2023			
	Statement Submitted				

Part B Water and Raw Material Consumption

(i)	Water consumption m3/d	
	Process (Spraying in Mine pit or Haul Road Dust Suppression or dry fog dust suppression) *	550 KL m3/day
	Cooling	Nil
	Domestic (Drinking purpose)	310 m3/day

Note: * Spraying in mine pit or haul road dust suppression is not exactly a process driven parameter, which is linked with the extent of haul road in usage during mining operation. **Maximum Rain water collected in the mine pits being reused for dust suppression purpose.

	Process water consumption per unit of product output(cum/MT)					
Name of Product	During the previous financial year	During the current financial year				
	(1)	(2)				
Iron Ore	0.017	0.02				

Raw material consumption: - Not Applicable

Nome of your		Consumption of raw material per unit of output MT					
Name of raw material	Name of products	During the previous financial year	During the current financial year				
Not Applicable							

Polluting Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw material used.

PART-C Pollution discharged to environment/unit of output

(Parameter as specified in the consent issued)

Pollutants	Qty. of pollutants discharged (mass/day)	Concentrations of pollutants in discharged (mass/volume)	Percentage of variation from prescribed standard with reason
(a) Water		e effluent and source emissions of ated Environmental Monitoring da Annexure 1.	
(b) Air	emissions or processed estimation of specific p be ascertained, however locations are monit	mine and does not have any pod stacks emanating pollutants to the pollution load or air pollutants discover ambient air quality for 4 coresponded as per NAAQS-2009 pring data for FY 2023-24 is enclosed.	the environments. Hence, charged in Kg/day cannot the zone & 4 buffer zone and the Consolidated

PART- D HAZARDOUS WASTES (as specified under Hazardous Wastes / Management and Handling Rules, 1989)

Hazardous Wastes	Total Quantity (T)			
	During the previous financial year	During the current financial year		
(a) From process	44.09 T	69.97		
(b) From pollution control	Nil	Nil		

PART- E Solid Wastes

	Total Quantity	
	During the previous	During the current financial year
	financial year	
(a) From process		Over Burden- 34885233.9 tonnes
(b) From pollution control		Not Applicable
(c) (1) Quantity recycled or re-	Not Applicable	Nil
utilized within the unit		
(2) Sold		Nil
(3) Disposed		It is disposed at ear marked area in of
		the mine as per Approved Mine Plan.

PART-F

Please specify the characterization (in terms of composition and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both the categories of wastes.

Solid Waste- Overburden of 34885233.9 tonnes generated during the reporting period. The OB/Waste being disposed of at the earmarked area and after maturity same will be stabilized with plantation as per approved Mine Plan.

Hazardous Waste- Hazardous waste of 69.97 T was generated during the reporting period. The hazardous waste was being stored in a hazardous waste shed made as per specifications laid by SPCB and was sold to a certified hazardous waste dealer.

PART-G

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

Our aim is to preserve the long- term health of the natural environment affected by our operations. We set and achieve targets that promote efficient use of resources and include the reduction and prevention pollution.

Air Management- Blasting Operation

- Controlled blasting method is in practice by restriction of explosive charge in the holes
- Well-designed blast by effective stemming and use of mili second delay detonators, Proper blasting designing to see that the optimum breakage occurs.
- To control ground vibrations and arrest fly rocks, advanced initiation system is being used for blasting.
- Ground vibrations are also being monitored and the results are well within limits.

Excavation, Hauling and Crushing & Screening

- Dry fog system for crusher & screen plants are provided.
- Using sharp teeth for shovels and other soil excavation equipment, and their periodical replacements.
- Acoustic enclosures for operator cabin.
- Avoiding overloading of dumpers
- Provision of dust filters / masks to workers working at highly dust prone and affected areas
- Imparting sufficient training to operators on safety and Environmental parameters.

Transportation

- Regular water sprinkling is being carried out by engaging mobile water tankers on the mine benches, mine haul, loading and unloading points and transfer points for dust suppressions.
- Maintenance of haul road by regular grading is carried out through grader, dozer.
- Ensuring that all mineral trucks are covered by tarpaulin.
- Vehicular emissions controlled through regular and proper preventive maintenance schedules.
- It is ensured that there is no overloading of trucks by having Quick Dispatch system at the weigh bridge near the dispatch gate.

- Regular water sprinkling arrangements have been made on the transportation roads/public road through mobile water tankers.
- Tarpaulin Covering in Railway Wagons.



Wet Drilling and Dust Extractor System in Drilling Operation



Quick Dispatch System



50 KL Water Tanker



16 KL Water Tanker



Fixed Water Sprinkler



Tarpaulin Covering on the Railway Wagons



Dry Fog System in Mineral Handling Plants



Electronic Digital Display Board near Jajang Mine Gate No 2



Road Sweeping Machine

Water & OB Management

- Garland drains maintained of suitable size around mine area and dump with proper gradients to prevent rain water descent into active mine area.
- Settling ponds maintained to prevent flow of fine particles from OB / Waste dumps, check dams, parapet / retaining walls & garland drains.
- Usage of stored water in the settling ponds for watering of haul roads, vehicle washing and green belt development etc.
- De- silting of garland drains & settling ponds are being carried out at regular intervals.
- Maintenance of all the runoff management structures.



GeoCoir Matting & Plantation



Retaining wall & Garland drain



Check Dam near railway siding



Wheel Washing System near Gate No 6.



Plantation on OB Dump no 2



Plantation in Safety Zone near Gate No 2



Drip Irrigation System in Orchard Area



Fruit Bearing & Flowering Plants in Orchard



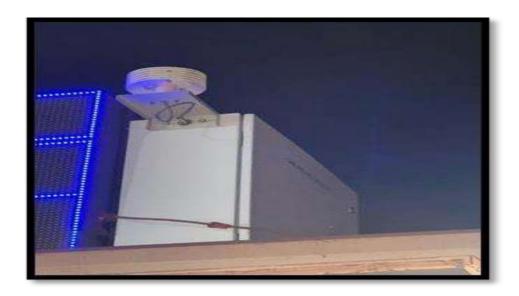
Orchard in Jajang Mine



View Point Orchard in Jajang Mine

Noise Management

- Providing sound proof operator's cabin for equipment like dumpers, shovel, tippers, etc.
- All HEMMs are monitored for any abnormal sound and rectified with due precaution by maintenance personnel.
- Providing workers with ear muffs & earplugs against high noise levels.
- Controlling the time of exposure of workers towards high noise areas.



Online Noise Monitoring



Noise & Vibration proof cabin

PART-G

Additional measures/investment proposal for environment protection including abatement of pollution /prevention of pollution.

Jajang Environmental Protection Measures Expenditure (head wise breakup) incurred from in FY 2023-24 is given below-

SI	Expenditure Head -Particulars (INR)	Jajang
No.	(
1	Horticulture Services (Gardening services, Manpower)	4517135
2	Plantation and maintenance services	1923000
3	Nursery Development	3120000
4	Construction & Maintenance of garland drains	420000
5	Construction & Maintenance of retaining walls	4666666
6	Geo-textiling- Coir Mating/ slope stabilization, etc.	935165.4
7	Dust Suppression activities- Water Sprinkling (fixed and mobile), Dust suppression chemicals, road sweeping vehicle	8828000
8	Manual Environment parameters monitoring (Air, Water, Noise and ground vibration)	1229880
9	CAAMS Environment parameters monitoring	557148
10	Installation and Service of Flowmeter and Piezometer	143086.2
11	Installation of Online noise meter	330000
12	Environmental Awareness Programmes/ MEMC program	451866.72
13	Land Scaping/ Land Restoration	0
14	Any other expenses related to Environment protection, infrastructure, machineries etc. (if any)	0
	TOTAL	2,71,21,947

PART-H

Any other particular for improving the quality of the environment.

- Company is committed for prevention/abatement of pollution and minimize adverse
 environmental impacts of the business by ensuring continual improvement of
 environmental performance, and complying to the relevant environmental and other
 legislation, regulation & other requirements.
- The mine has already been certified with ISO-14001 (Environment Management System), ISO-9001 (Quality Management System) and OHSAS-45001 (Occupational Health and Safety Assessment Series) and maintaining the systems satisfactorily.

Environmental Monitoring

Regular monitoring of important and crucial environmental parameters is of immense importance to assess the status of environment during mines operation. With the knowledge of baseline conditions, the monitoring program can serve as an indicator for any deterioration in environmental conditions due to operation of the mines and suitable preventive steps could be taken in time to safeguard the environment. Monitoring is as important as that of control of pollution since the efficiency of control measures can only be determined by monitoring.

The environmental attributes being monitored are as given below:

- Air Pollution and Meteorological Aspects
- Surface and Ground Water Quality
- Noise Levels
- Soil Quality



AAQMS Near Mine Office



CAAQMS at Guest House Area Jajang



Surface Water Quality



Ground Water Quality

Annexure 1
Consolidated Air Quality Monitoring Data of FY 2023-2024

JAJANG IRON ORE MINES AAQ DATA FOR THE PERIOD APRIL 2023 TO MARCH 2024											
	PM10 [μg/m3]		PM2.5 [μg/m3]		SO2 [μg/m3]		NO2 [μg/m3]		CO [mg/m3]		
	Maxi mum	Mini mum	Maxi mum	Mini mum	Maxi mum	Mini mum	Maxi mum	Mini mum	Maxi mum	Mini mum	
COREZONE											
MinesOffice	<u> </u>			10-				10.0			
Entry & Exit Gate	77 76.9	42.1	26.8	12.7	20.4	9.6	19.8	10.2	0.66	0.39	
GuestHouse	77	41.1	30.3	14.1	19	9.8	19.4	9.8	0.83	0.38	
Work ShopArea	76.3	41.6	28.8	10.6	19.3	9.8	24.7	10.2	0.83	0.39	
BUFFERZONE	70.5	41.0	20.0	10.6	19.5	9.5	24.7	10.2	0.64	0.59	
Jajang Village	60.7	24.7	22.4	10.3	47.6	0.4	47.7	10.1	0.52	0.2	
Jaraibahal Village	62.4	31.7	23.4	10.2	17.6	9.1	18.6	10.1	0.52	0.3	
BandabedaVillage	62.4	32.2	23.5	10.1	19.3	9.3	18.4	10.1	0.51	0.3	
Kamalpur Village	61.3	31.2	23.4	10.1	18.1	9.4			0.51	0.31	
NAAQ (24 hourly standard)	_	ıg/m3]		g/m3]		g/m3]	<u> </u>		2 [mg/	0.51 0.31 2 [mg/m3] (8 hourly)	

Consolidated Surface Water Quality Monitoring Data of FY 2023-2024

	JAJANG IRON ORE MINE									
Baitarini River UpStream										
Parameter	Units	April	May	June	July	August	September	Limits for Stream Water Standards		
PH	-	6.96	7.12	6.74	6.79	6.86	6.88	6.5-8.5		
Total Dissolved Solids	mg/l	174.0	172.0	194.0	176.0	188.6	155.0	1500		
Chlorides	mg/l	16.0	22.0	28.0	20.0	32.3	17.0	600		
Iron	mg/l	0.15	0.18	0.15	0.11	0.16	0.42	50		
Fluorides	mg/l	0.11	0.15	0.34	0.31	0.32	0.30	1.5		
BOD	mg/l	2.75	2.8	8.0	2.1	7.7	5.2	3		
DO	mg/l	6.9	7.00	6.2	6.6	7.12	7.3	4		
Baitarini R	iver Up	Stream								
Parameter	Units	October	November	December	January	February	March	Limits for Stream Water Standards		
PH	-	6.88	6.95	6.91	6.81	6.84	6.82	6.5-8.5		
Total Dissolved Solids	mg/l	224	236	240	248	244	244	1500		
Chlorides	mg/l	28	24	22	28	28	20	600		
Iron	mg/l	0.16	0.14	0.12	0.16	0.16	021	50		
Fluorides	mg/l	0.28	0.3	0.28	0.28	0.35	0.28	1.5		
BOD	mg/l	6.8	6.5	4.5	6.6	6.8	6.2	3		
DO	mg/l	7.1	6.9	6.5	6.5	6.7	6.7	4		

DO

Iron

Chlorides

Fluorides

7.5

36

0.46

0.27

mg/l

mg/l

mg/l

mg/l

7.5

40

0.48

0.25

Baitarini R	iver Do	wnStream	ı					
Parameter	Units	April	May	June	July	August	September	Limits for Stream Water Standards
PH	-	6.86	6.62	6.83	6.89	6.96	6.98	6.5-8.5
Total Dissolved Solids	mg/l	226.0	212.0	216.0	224.0	210.0	143.0	1500
Chlorides	mg/l	20.0	22.0	36.0	32.0	38.0	20.0	600
Iron	mg/l	0.16	0.10	0.27	0.22	0.32	0.30	50
Fluorides	mg/l	7.52	0.18	0.37	0.33	0.42	0.48	1.5
BOD	mg/l	3.6	3.4	14.0	2.6	4.2	4.5	3
DO	mg/l	6.2	6.2	4.5	2.8	7.4	7.3	4
Baitarini R	iver Do	wnStream	1					
Parameter	Units	October	November	December	January	February	March	Limits for Stream Water Standards
PH	-	7.29	7.35	7.38	7.2	7.49	7.49	6.5-8.5
Total Dissolved Solids	mg/l	248	260	269	272	278	272	1500
BOD	mg/l	5.4	5.7	5	5.5	5.9	6	3

6.5

36

0.42

0.22

7.2

44

0.45

0.23

6.4

44

0.45

0.22

7.3

44

0.45

0.27

4

600

1.5

50

Suna River Upstream										
Parameter	Units	April	May	June	July	August	September	Limits for Stream Water Standards		
PH	-	7.34	7.25	6.57	6.77	6.81	6.87	6.5-8.5		
Total Dissolved Solids	mg/l	136.0	134.0	190.0	210.0	172.0	137.0	1500		
BOD	mg/l	3.1	3.2	3.0	3.1	3.0	3.2	3		
DO	mg/l	6.76	6.8	5.6	6.3	7.2	7.2	4		
Chlorides	mg/l	26.0	20.0	18.0	14.0	17.0	20.0	600		
Fluorides	mg/l	0.15	0.18	0.35	0.32	0.40	0.43	1.5		
Iron	mg/l	0.31	0.41	0.15	0.22	0.21	0.28	50		
Suna River	Upstre	am								
Parameter	Units	October	November	December	January	February	March	Limits for Stream Water Standards		
PH	-	6.78	6.86	6.91	6.95	6.95	6.94	6.5-8.5		
Total Dissolved Solids	mg/l	184	210	222	224	224	224	1500		
BOD	mg/l	4.6	4.4	3.1	4.6	4.6	4.8	3		
DO	mg/l	6.8	6.9	5.7	6.8	6.7	6.8	4		
Chlorides	mg/l	24	28	20	24	32	32	600		
Fluorides	mg/l	0.46	0.42	0.34	0.45	0.45	0.44	1.5		
Iron	mg/l	0.29	0.21	0.23	0.23	0.24	0.23	50		

Fluorides

Iron

mg/l

mg/l

0.45

0.19

0.48

0.22

Suna River	Downs	stream						
Parameter	Units	April	May	June	July	August	September	Limits for Stream Water Standards
РН	-	7.27	7.20	6.81	6.70	6.95	7.06	6.5-8.5
Total Dissolved Solids	mg/l	196.0	192.0	258.0	267.0	240.0	184.0	1500
BOD	mg/l	4.01	4.2	3.6	3.9	3.5	5.0	3
DO	mg/l	6.21	6.4	6.1	6.2	6.8	6.3	4
Chlorides	mg/l	28.0	24.0	26.0	28.0	24.0	22.3	600
Fluorides	mg/l	0.16	0.20	0.38	0.35	0.43	0.48	1.5
Iron	mg/l	0.20	0.19	0.23	0.20	0.24	0.21	50
Suna River	Down	stream						
Parameter	Units	October	November	December	January	February	March	Limits for Stream Water Standards
PH	-	7.18	7.29	7.05	7.35	7.54	7.37	6.5-8.5
Total Dissolved Solids	mg/l	256	270	256	280	282	280	1500
BOD	mg/l	5.1	4.5	3.9	4.2	3.6	5.2	3
DO	mg/l	6.5	6.8	5.4	6.6	6.9	6.5	4
Chlorides	mg/l	40	44	18	48	48	46	600

0.3

0.21

0.44

0.25

0.47

0.24

0.44

0.25

1.5

50

Kakarpani	River U	pstream						
Parameter	Units	April	May	June	July	August	September	Limits for Stream Water Standards
PH	-	6.89	6.87	6.49	6.43	6.70	6.77	6.5-8.5
Total Dissolved Solids	mg/l	167.0	182.0	166.0	154.0	151.0	148.0	1500
BOD	mg/l	4.0	4.0	4.3	3.8	3.6	3.4	3
DO	mg/l	6.5	6.8	6.4	6.7	6.6	6.4	4
Chlorides	mg/l	16.0	16.0	20.0	18.0	22.5	26.0	600
Fluorides	mg/l	0.19	0.18	0.24	0.21	0.25	0.29	1.5
Iron	mg/l	0.22	0.26	0.14	0.13	0.16	0.16	50
Kakarpani	River U	pstream						
Parameter	Units	October	November	December	January	February	March	Limits for Stream Water Standards
PH	-	6.87	6.95	6.91	6.85	6.88	6.86	6.5-8.5
Total Dissolved Solids	mg/l	188	196	178	210	188	188	1500
BOD	mg/l	4.2	3.4	3.2	4.3	4.6	4.0	3
DO	mg/l	6.2	6.5	6.1	6.7	6.7	6.3	4
Chlorides	mg/l	22	26	28	28	30	24	600
Fluorides	mg/l	0.26	0.29	0.25	0.31	0.27	0.3	1.5
Iron	mg/l	0.18	0.21	0.16	0.22	0.23	0.24	50

Kakarpani	River D	ownstrear	n					
Parameter	Units	April	May	June	July	August	September	Limits for Stream Water Standards
PH	-	6.96	6.98	6.98	6.77	6.92	6.98	6.5-8.5
Total Dissolved Solids	mg/l	218.0	232.0	278.0	280.0	283.0	152.0	1500
BOD	mg/l	4.2	4.2	4.0	4.5	4.0	3.8	3
DO	mg/l	6.21	6.2	6.1	2.2	6.9	6.5	4
Chlorides	mg/l	30.0	31.0	26.0	34.0	25.0	22.0	600
Fluorides	mg/l	0.27	0.32	0.45	0.40	0.42	0.45	1.5
Iron	mg/l	0.24	0.28	0.31	0.24	0.34	0.32	50
Kakarpani	River D	ownstrear	n					
Parameter	Units	October	November	December	January	February	March	Limits for Stream Water Standards
PH	-	6.89	7.15	7.11	7.24	7.23	7.25	6.5-8.5
Total Dissolved Solids	mg/l	321	344	210	358	360	356	1500
BOD	mg/l	3.9	3.7	3.0	3.9	3.4	3.2	3
DO	mg/l	6.3	6.6	6.4	6.8	6.8	6.4	4
Chlorides	mg/l	26	30	34	34	34	28	600
Fluorides	mg/l	0.48	0.45	0.29	0.42	0.47	0.42	1.5
Iron	mg/l	0.36	0.32	0.19	0.35	0.35	0.36	50

0.15

mg/l

Iron

0.19

Jalpa Nadi	Upstrea	am						
Parameter	Units	April	May	June	July	August	September	Limits for Stream Water Standards
PH	-	6.93	6.97	6.71	6.87	6.93	6.78	6.5-8.5
Total Dissolved Solids	mg/l	176.0	174.0	182.0	187.0	164.0	120.00	1500
BOD	mg/l	4.2	4.5	4.4	3.7	4.0	4.2	3
DO	mg/l	6.5	6.3	7.4	7.7	6.6	6.4	4
Chlorides	mg/l	16.0	11.0	20.0	24.0	24.0	20.0	600
Fluorides	mg/l	0.32	0.37	0.30	0.24	0.28	0.32	1.5
Iron	mg/l	0.15	0.14	0.15	0.11	0.16	0.19	50
Jalpa Nadi	Upstrea	am						
Parameter	Units	October	November	December	January	February	March	Limits for Stream Water Standards
PH	-	6.96	6.8	6.87	6.97	6.95	6.9	6.5-8.5
Total Dissolved Solids	mg/l	160	175	182	188	184	184	1500
BOD	mg/l	3.9	4	3.6	4.4	4.4	4.3	3
DO	mg/l	6.7	5.9	6.2	5.7	6.1	6.1	4
Chlorides	mg/l	18	22	26	26	26	18	600
Fluorides	mg/l	0.3	0.34	0.32	0.36	0.32	0.32	1.5

0.11

0.22

0.21

0.18

50

Jalpa Nadi	Downs	tream						
Parameter	Units	April	May	June	July	August	September	Limits for Stream Water Standards
PH	-	7.10	7.10	7.23	7.02	7.27	7.07	6.5-8.5
Total Dissolved Solids	mg/l	268.0	268.0	210.0	228.0	195.0	113.0	1500
BOD	mg/l	5.01	4.1	4.4	3.3	4.8	5.5	3
DO	mg/l	6.5	6.2	6.3	6.2	6.5	6.8	4
Chlorides	mg/l	24.0	23.0	30.0	28.0	32.0	18.0	600
Fluorides	mg/l	0.25	0.27	0.26	0.23	0.27	0.35	1.5
Iron	mg/l	0.21	0.21	0.22	0.18	0.20	0.24	50
Jalpa Nadi	Downs	tream			l			
Parameter	Units	October	November	December	January	February	March	Limits for Stream Water Standards
PH	-	7.24	7.46	6.98	7.38	7.38	7.38	6.5-8.5
Total Dissolved Solids	mg/l	228	242	234	254	248	256	1500
BOD	mg/l	5.8	5.5	5.2	5.7	5.7	5.2	3
DO	mg/l	6.7	6.8	7.1	6.4	6.7	6.3	4
Chlorides	mg/l	42	36	32	40	40	32	600
Fluorides	mg/l	0.39	0.37	0.38	0.39	0.39	0.39	1.5
Iron	mg/l	0.26	0.24	0.14	0.22	0.26	0.22	50