खंड–2
केवल कार्यालय उपयोग हेतु

Volume-II
(FOR OFFICIAL USE ONLY)

सत्यमेव जयते

भारत सरकार
GOVERNMENT OF INDIA
जल संसाधन, नदी विकास और गंगा संरक्षण मंत्रालय
MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION
केन्द्रीय जल आयोग
CENTRAL WATER COMMISSION

जलवर्ष पुस्तिका
WATER YEAR BOOK
(जून 2019 - मई 2020) (June 2019-May 2020)
ब्राह्मणी बेसिन
BRAHMANI BASIN

जल विज्ञानीय प्रेक्षण परिमंडल
HYDROLOGICAL OBSERVATION CIRCLE
भुवनेभबर (BHUBANESWAR)

January: 2021

खंड–2

Volume-II

जलवर्ष पुस्तिका

WATER YEAR BOOK

(जून 2019 से मई 2020) (June 2019 - May 2020)

ब्राह्मणी बेसिन

BRAHMANI BASIN

FOREWORD

Proper assessment, analysis and compilation of hydro-meteorological data are essential for planning and management of precious water resources, which is vital not only for economic development but also for providing basic needs for such a large population of our country. Water reaches the land-mass through precipitation, a part of which evaporates, a portion of it percolates into ground as natural ground water and the excess runoff flows through rivulets and rivers and drain into the sea. Central Water Commission (CWC), an apex technical Organisation of Government of India for surface water resources, carries out systematic collection of hydro-meteorological data and assessment of surface water as one of its prime functions.

Hydro-meteorological observation stations have been established by CWC in almost all the river basins of India in a phased manner. These are further modernised and strengthened under various schemes. In the process, additional Divisions, Circles and Regional offices have been set up on a basin-wise concept.

All the east flowing rivers in-between the Ganga and the Godavari basins (Mahanadi, Subarnarekha, Brahmani, Baitarani, Vamsadhara Rushikulya, Burhabalang, , Nagavali and Sarada) have been identified as Mahanadi and Eastern Rivers Basin dealt by Mahanadi and Eastern Rivers Organisation (MERO), CWC, Bhubaneswar. Hydrological Observation Circle (HOC), Bhubaneswar is responsible through Mahanadi Division (MD), Burla and Eastern Rivers Division (ERD), Bhubaneswar for hydrological observation and flood forecasting activities in these 9 river basins flowing mainly through Odisha along with its neighbouring states of Jharkhand, Chhattisgarh, Andhra Pradesh and West Bengal.

There are a total of 119 observation stations under MERO. Systematic gauge and discharge observations are regularly conducted at 50 hydrological stations (out of the above 119) throughout the year. Sediment, Water Quality and Meteorological data are also observed at some of the stations. After scrutiny and checking, the collected & processed data is published in the form of Water Year Books through "SWDES", custom made software for hydrological data processing. This Water Year data Book contains Hydrological data, Sediment data and Water Quality data for the hydrological year 2019-20.

Water Year Book pertaining to the Hydrological Observation Circle, CWC, Bhubaneswar is published in four volumes.Volume-I incorporates data of Mahanadi basin, Volume-II contains data of Brahmani basin, Volume-III of Subarnarekha, Burhabalang & Baitarani basins and Volume-IV of Rushikulya, Vamsadhara, Nagavali and Sarada basins. Each Volume contains Discharge data, Sediment data and Water Quality data of sites for respective river basins.

This Volume-II covers Brahmani river basin for Water Year 2019-20.It includes hydrological, sediment and water quality data for ten sites and three effluent stations alongwith features and other important statistical information. The efforts by the officers and staff of HOC, CWC, Bhubaneswar and staff of ERD, CWC, Bhubaneswar under the leadership of Dr. D.R. Mohanty, Executive Engineer and A.Rajasekhar,Executive Engineer in collection of data and bringing out this publication is highly commendable. The guidance and encouragement from Shri A.K.Nayak, Chief Engineer, MERO, Bhubaneswar and help of officials of the Chief Engineer's office are duly acknowledged.

Place: Bhubaneswar
Date: January,2021

(S.K. Samal)
Superintending Engineer
Hydrological Observervation Circle
Central Water Commission
Bhubaneswar

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BRAHMANI BASIN

LIST OF ABBREVIATIONS USED:

General:

CWC	:	Central Water Commission
H.P.	:	Hydrology Project
IMD	:	India Meteorological Department
msl	:	mean sea level
WL	:	Water level

Type of station:

G	:	Gauge (Water Level)
D	:	Discharge (Average rate of flow passing across a cross section of the river)
S	:	Sediment (suspended sediment load)
Q	:	Water Quality

Units:

m	:	meter
mm	:	milli meter
km	:	kilometer
s	:	second
MCM	:	million cubic meters
MT	:	metric tonne
g	:	gram
l	:	litre

BRAHMANI BASIN

BRAHMANI BASIN

1. BASIN DESCRIPTION

1.1 General

Brahmani is a major inter-state east flowing river amongst the peninsular rivers in India, falling into Bay of Bengal. Brahmani basin is situated within the geographical co-ordinates of north latitude 20 °-28′- to 23°-35′ and east longitude 83°52′ to 87°03′ approximately. The basin is bounded in the north by Chhota Nagpur plateau, in the west & south by the Mahanadi basin and in the east by the Bay of Bengal. The river flows through Jharkhand, Chhattisgarh and Odisha States and drains a total area of 39,033 sq.km, before out-falling in to the Bay of Bengal. State-wise break up of drainage area is tabulated below:

Sl. No.	Name of State	Catchment Area (sq. km)	Percentage of total catchment area
1.	Jharkhand	15,769	40.4
2.	Odisha	22,364	57.3
3.	Chhattisgarh	900	2.3
	Total	39,033	100

Basin map of Brahmani river system depicting various hydrological and hydro-meteorological observation stations maintained by CWC is placed herewith. CWC is maintaining 15 stations in the basins, out of which 9 are of type GDSQ, 1 of GQ, 4 of G type and balance 1 is of seasonal G type. In addition, water quality is also observed at 3 sampling stations in this basin. However, this report contains data of nine sites (9 GDSQ and 1 GQ type) which are operated round the year along with the water quality of 3 sampling stations.

1.2 River System

River Brahmani, known as South Koel river in the upper reaches, originates near Nagri village in Ranchi district of Jharkhand, at an elevation of about 600 m. The total length of the river is about 799 km. Principal tributaries of this river are Sankh, Tikra and Karo. The catchment area details are tabulated below:

Name of Stream	River/Tributary	Length (km)	Catchment area (sq.km)	Percentage of total catchment area
Brahmani	Main stream	799	26,831	68.7
Karo	Left Tributary	112	2,741	7.0
Sankh	Right Tributary	196	6,933	17.8
Tikra	Right Tributary	101	2,528	6.5
		Total	**39,033**	**100.0**

1.3 Climatic Characteristics

The climate of the basin is tropical, with fairly hot summers and moderately cold winters. This basin is influenced by south-west monsoon from June to October, in addition to some occasional down-pours in the lower reaches due to the cyclonic depressions in the Bay of Bengal. The average annual rainfall of this basin is 1460 mm. The maximum temperature varies from 38 to 43° C and the minimum temperature ranges between 10 to 15° C.

1.4 Geology

The soils in this basin can be grouped as red and yellow, mixed red and black soils, red sandy soils, laterite, red loamy, coastal alluvium, saline and forest. The basin is rich in mineral resources. Coal, Iron ore, Copper, Bauxite, Chromite, Limestone, Manganese, Dolomites, Lead, Fire-clay and China clay are the main mineral resources of this basin.

1.5 Water storage/Diversion Structures

Details of water storage/ diversion structures in the Brahmani basin are as below:

Sl. No	Name of Project	River	Status of the project
1.	Rengali Multipurpose Dam	Brahmani	Existing
2.	Samal Barrage	Brahmani	Existing
3.	Gohira	Gohira	Existing
4.	Aunil	Aunil	Existing
5.	Nandini Reservoir	Nandini	Existing
6.	Kans Reservoir	Kans	Existing
7.	Upper Sankh Reservoir	Sankh	Existing
8.	Chargaon Reservoir	Kodari	Existing
9.	Pitamahal	Pitamahal	Existing
10.	Derjang	Derjang	Existing
11.	Ramiala	Ramiala	Existing
12.	Samakhoi	Samakhoi	Under Construction
13.	Dadaraghati	Dagachira	Existing
14.	Jaipur Reservoir	Saphi	Existing
15.	Gorkho Reservoir	South Koel	Existing
16.	Baski Reservoir	South Koel	Existing
17.	Karanjholi	Bhangi	Existing
18.	Matukdihi	Marda	Existing
19.	Sankh Irrigation	Tributary of Sankh	Existing
20.	Ramarekha Reservoir	Tributary of Sankh	Existing
21.	Mandira	Brahmani	Existing

2 STREAM FLOW DATA

2.1 Observation Methodology

Discharge Observation Methods: Area-velocity method is generally adopted for measuring discharge at sites. Cup type current meter is used to measure the velocity of the flow and the depth is measured by using sounding rod for depths upto 3 m and by log line beyond 3 m. Discharge by area velocity method is being observed once in a day starting at 0800 Hrs. at all the sites except on Sundays and holidays. Besides, silt and water quality observation are also being carried out at the CWC sites as per the table below.

Computation of flows on non-observed days: The observed stage and discharge figures for each season (monsoon and non-monsoon) are plotted and a mean Stage vs Discharge curve is drawn, giving due attention to the scattered points with reference to area, velocity etc.
The factors responsible for the shifting of the curves are also taken care of by studying the river cross section at regular intervals and with super imposition of previous years' Stage vs Discharge curves. Accordingly, the trend of the current curve is finalised. Finally, the discharges of the non observed days are computed from these Stage vs. Discharge Curves.

2.2 Data Availability

The below mentioned sites are under Brahmani Basin & data availability of these sites are as under :

Sl. No.	Code No.	Station Name	Type	Data available	
				From	To
1.	EBI00L3	Tilga	GDSQ	G-27.04.78 D-15.06.79 S-21.07.80 Q-01.06.80	Continuing -do- -do- -do-
2.	EBJ00D5	Jaraikela	GDQ	G-23.07.71 D-29.12.71 S- 01.06.75 Q-01.09.75	Continuing -do- 04-09-2002 Continuing
3.	EB000H6	Panposh	GDSQ	G-22.07.72 D-21.06.96 S- 01.08.96 Q-01.11.96	Continuing -do- -do- -do-
4.	EB000W3	Gomlai	GDSQ	G-29.08.77 D-21.01.79 S- 17.07.80 Q-01.06.80	Continuing -do- -do- -do-
5.	EB000G6	Jenapur	GDSQ	G-09.07.77 D-20.07.79 S- 09.07.80 Q-01.03.80	Continuing -do- -do- -do-
6.	EBA00I3	Altuma	GDSQ	G-09.07.77 D-20.07.79 S- 19.08.13 Q-01.06.13	Continuing -do- -do- -do-
7.	TALCHER	Talcher	GQ	G-16.08.85 D-16.08.85 S- 16.08.85 Q-16.08.85	Continuing 31-05-96 31-05-96 Continuing
8.	RENGALI	Rengali(D/S)	G(S)	G-18/08/75	Continuing
New Sites					
9.	TELKOI	Telkoi	G	G-21.08.14	Continuing
10.	KAMAKHYAN AGAR RD. BRIDGE	Kamakhyanagar Rd. Bridge	G	G-15.03.19	Continuing
11.	BHUBAN(BAJI ROUT BRIDGE)	Bhuban(Bajirout Bridge)	G	G-15.03.19	Continuing
12.	GOHIRA	Gohira	G	G-15.03.19	Continuing
13.	BOLANI	Bolani	GDSQ	G-15.03.19 D-15.03.19 S- NA Q- NA	Continuing
14.	BONAIGARH	Bonaigarh	GDSQ	G-15.03.19 D-15.03.19 S- NA Q- NA	Continuing -do- -do- -do-
15.	PURUNAGARH	Purunagarh	GDSQ	G-15.03.19 D-15.03.19 S- NA Q- NA	Continuing -do- -do- -do-

2.3 Explanatory Notes of Water Year Book

SWDES (Surface Water Data Entry Software), a custom made software for processing hydrological data, has been used for preparation of this volume. The explanatory notes described below can be used for the interpretation of data presented in this volume.

i) Water Year ranges from June 1st of one calendar year to May 31 st of the next calendar year and covers one complete hydrological cycle.

ii) Discharge is given in cubic meters per second.

iii) Discharges are expressed as 0.000 when river bed is dry and 0.000 N.F. when velocity is observed as 'NIL'.

iv) The zero R.L. of gauge is a datum level fixed for given site, which is kept 1 or 2 m lower than the lowest water level recorded in a perennial stream. In a non-perennial stream, it is kept 1 or 2 m lower than the lowest bed level of the stream.

v) Discharges are rounded off as per standard practice.

vi) Runoff in mm is the notional depth of water in millimeters over the catchment, equivalent to annual runoff volume calculated at the discharge measurement station. It is computed using the relation:

$$\text{Runoff (mm)} = \frac{\text{Annual runoff } (Mm^3) \times 1000}{\text{Catchment area } (km^2)}$$

vii) Peak and lowest flow correspond to the highest and lowest water levels recorded from 'SWDES' entered data.

viii) Measuring Authority refers to the field division of Central Water Commission (Eastern Rivers Division) responsible for the operation of the gauging station.

ix) The gauging station code number is a unique seven column alphanumeric reference number which facilitates storage and retrieval of flow data in data base. The first column is identifier of either an integral river basin or, for the sake of convenience, a region having several contiguous river catchments. This is followed by a column which identifies an independent river system which either has one or more outlets to the sea or crosses international border to enter another country. The third, fourth and fifth column spaces denote first, second and third order tributaries, respectively, from the mouth upstream. The sixth and seventh column spaces indicate the location of the gauging station in one of the 225 slots earmarked on the river. The blank column spaces are filled by zero.

3. HYDROLOGICAL DATA

This volume contains the following information for each site stated above:

i. History Sheet: Site Name, State, District, River Basin, Tributary, Sub-Tributary, Catchment Area, Latitude / Longitude, Opening / Closing date for various types of data.

ii. Annual maximum/minimum discharge since period of observation.

iii. Daily Water level and observed/ computed discharge data including 10-daily, monthly and annual totals etc.

iv. Histogram and Hydrograph showing current year monthly mean discharges, Historical monthly mean discharges, historical monthly minimum and monthly maximum discharges.
v. Histogram showing Annual Run off volume since beginning of observation.
vi. Pie-Charts showing monthly mean run off (as percentage of Annual Run off) historical for the current year.
vii. Plot of Pre and Post Monsoon Cross-section of the rivers for current year.
viii. Water Level hydrograph for 3(three) major flood events of current year.

4. SEDIMENT DATA (For Sediment Observation sites)

The frequency of sediment observation is carried out daily during monsoon season and once in a week (on Monday) during the non-monsoon period. Data for non-observed days is estimated/ interpolated from the relationship of discharge v/s. sediment load, prepared on the basis of observed sediment concentration and weighted mean discharge of the same year.

Sediment samples are collected from 0.6 depth, using Punjab type bottle sampler, from all the verticals along the hydrological observation sections where velocity is observed for computation of discharge. The collected samples from all the segments are combined in 3 to 7 groups having compartments or groups of equal or nearly equal discharges for analysis. Quantum of suspended sediment load is estimated in three grades, viz. Coarse, Medium and Fine. Coarse and medium grades are separated by sieving process and the fine grade by filtration of left over samples after sieving through filter paper. Grade wise concentration is derived gravimetrically as per standard procedure. The following parameters are derived and recorded:

- Daily Observed suspended sediment (g/l).
- Corresponding discharge.
- Average sediment load in tonnes/day (10 daily & monthly basis).
- Annual sediment load for the current year.
- Annual & Seasonal sediment load and the corresponding volume of inflow for all the years since inception.
- Grain size distribution of bed load.

5. WATER QUALITY DATA (For Water Quality Observation sites)

The water samples are collected at a regular interval of once in a month for trend stations and once in two month for base stations (on 1st working day), from the main flowing segment of the stream just below the water surface (20 to 30 cm) on the Station Gauge line where depth of flow and velocity are maximum, preferably in the mid stream. The water samples are collected in the pre-rinsed and cleaned one-litre capacity polythene bottle having double stopper (inside and out side) facility. Sampling bottle is filled to its full capacity without entrapping air bubbles inside.

After sampling, the collected samples are sent to the Water Quality Laboratory (Level-II) based at Bhubaneswar (under the Eastern Rivers Division) along with in-situ physical characteristics, for analysis. The samples received from the sites are preserved in a refrigerator in the water quality laboratories for analysis**.**

Analysis of parameters, namely pH, Electrical conductivity, Sodium, Potassium, Iron, Fluoride, Nitrate, Nitrite, Phosphate, Silicate, Boron, Sulphate, Calcium, Magnesium, Carbonate, Bi-carbonate, Chloride, Dissolved Oxygen, BOD and COD, are carried out at the Level II laboratory by using standard methodology. Micro biological parameters like total colliform and faecal colliform are also being analyzed. For analysis of trace and toxic elements, samples are sent to Level-II + laboratory at Hyderabad once in a year, in

the month of April and to Level-III+ laboratory at Kalindi Bhawan, New Delhi twice in a year in the months of March and September. The results so recorded, include:

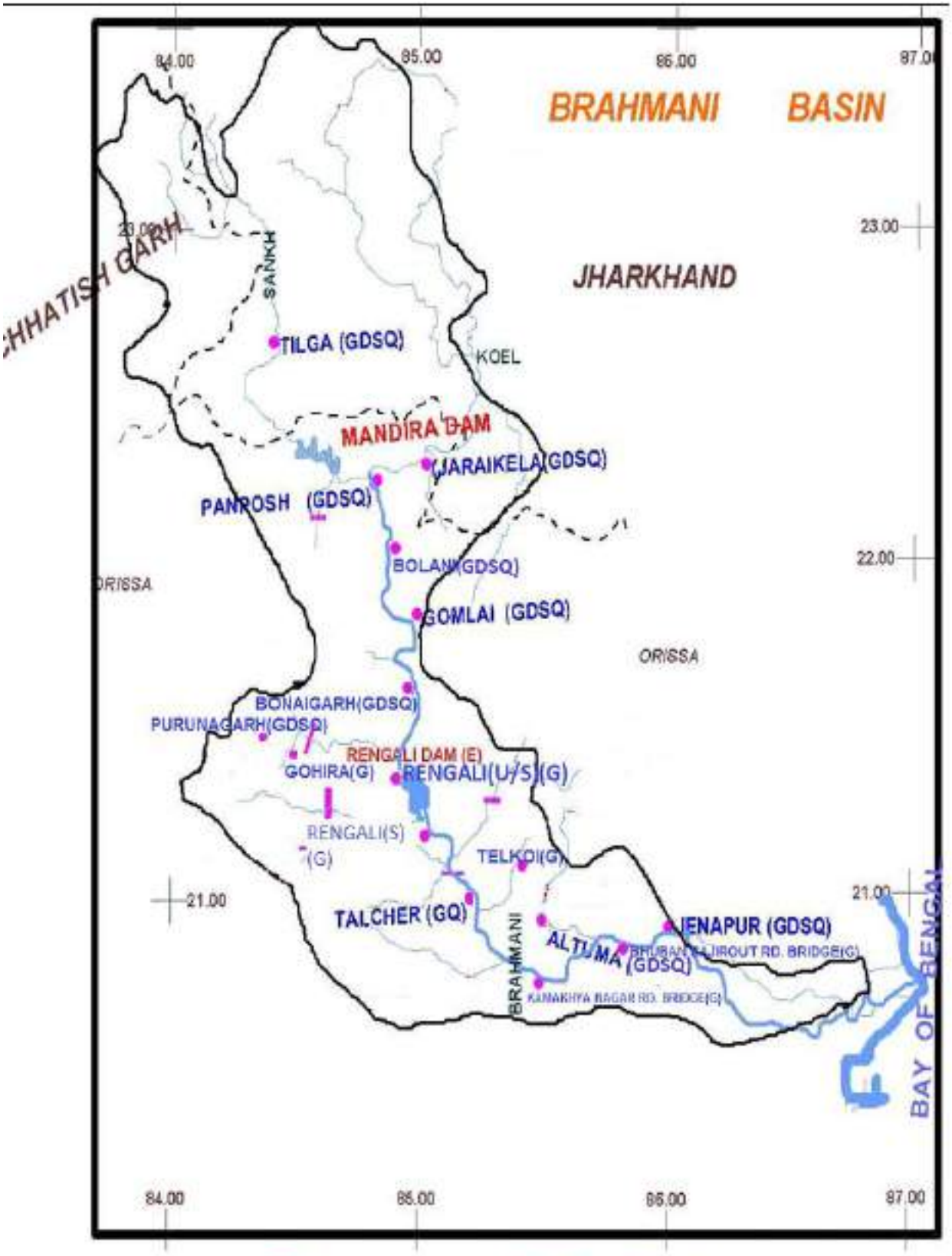
- River Water Analysis: Monthly physical, chemical & biological parameters.
- Annual Water Quality Summary: physical, chemical & biological parameters.
- Average Values over the years: Season-wise averages;
  - Average for Summer (March to June)
  - Average for Floods (July to October).
  - Average for Winter (November to February)

DETAILS OF SITES IN OPERATION UNDER BRAHMANI BASIN

Sl. No	Station Name	River/ Tributary	Type	Latitude	Longitude	Max. Water Level & Discharge upto May,2020			
						WL	Date	Q.	Date
1.	Tilga	Sankh	GDSQ	22°-.37-'24"	84°-25-'03"	379.5	23/08/11	2830	28/08/17
2.	Jaraikela	Koel	GDSQ	22°-19 '-34"	85°-04-'48"	194.63	24/09/11	12539	06/08/97
3.	Panposh	Brahmani	GDSQ	22°-13 '-35"	84°-48-'22"	181.44	24/09/11	11628	22/07/01
4.	Gomlai	Brahmani	GDSQ	21°-50 '-04"	84°-54-'46"	147.66	24/09/11	13000	27/07/17
5.	Jenapur	Brahmani	GDSQ	20°-52 '-44"	86°-00-'52"	24.78	20/08/75	10372	26/09/11
6.	Altuma	Ramiya	GDSQ	20°-55 '-51"	85°-31-'09"	51.08	05/08/97	922.30	06/08/97
7.	Talcher	Brahmani	GQ	20°-55 '-08"	85°-14-'08"	65.53	19/08/75	---	---
8.	Rengali (D/S)	Brahmani	G	21°-15 '-22"	85°-02-'14"	92.25	18/08/75	---	---
New sites									
9	Telkoi	Samkoi	G	21°-.21-'25"	85°-24-'08"	141.35	07/09/19	---	---
10	Kamakhyanagar Rd. Bridge	Brahmani	G	20°-.44-'51"	85°-33-'23"	41.78	08/09/19	---	---
11	Bhuban(Bajirout Bridge)	Brahmani	G	20°-51-'42"	85°-51-'35"	27.68	08/09/19	---	---
12	Gohira	Gohira	G	21°-.27-'28"	84°-41-'31"	157.45	14/08/19	---	---
13	Bolani	Brahmani	GDSQ	22°-.06-'19"	84°-51-'02"	166.0	23/04/19	4767	19/08/19
14	Bonaigarh	Rukura	GDSQ	21°-.48-'26"	84°-58-'07"	138.84	19/08/19	5603	20/08/19
15	Purunagarh	Baliapata Nala	GDSQ	21°-.31-'34"	84°-42-'44"	192.32	18/08/19	17.30	14/08/19

In addition, Water Quality observation samples are also collected from the following locations in the basin, which are not CWC sites per-se. The data of these sites are also presented in this report.

Sl. No.	Station Name	River/tributary	Type	Co-ordinates	
				Latitude	longitude
1	Nandira	Nandira Nala	Q	20°-53 '-56"	85°-15 '-50"
2	Kamalanga	Brahmani	Q	20°-52 '-16"	85°-17 '-52"
3	RSP Nalla	RSP Nala	Q	22°-17 '-18"	84°-49 '-05"



(Brahmani Basin)

SITE TILGA

SECTION-I (HISTORY SHEET,DISCHARGE,CROSS SECTION)

HISTORY SHEET

Water Year : 2019-2020

Site	**:**	**TILGA**	**Code**	**:**	**EBI00L3**
State	:	Jharkhand	District		Simdega
Basin	:	Brahmani-Baitarani	Independent River	:	Brahmani
Tributary	:	Sankh	Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	Sankh
Division	:	E.E., Bhubaneswar	Sub-Division	:	Rourkela.
Drainage Area	:	3160 Sq. Km.	Bank	:	Left
Latitude	:	22°37'24"	Longitude	:	84°25'03"
Zero of Gauge (m)	:	372 (m.s.l)	4/14/1978	-	3/31/2028
		Opening Date	Closing Date		
Gauge	:	4/27/1978			
Discharge	:	6/15/1979			
Sediment	:	7/21/1980			
Water Quality	:	6/1/1980			

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1980-1981	2004	377.400	7/12/1980	0.231	373.480	5/22/1981
1981-1982	579.6	375.830	7/27/1981	0.000	373.595	5/11/1982
1982-1983	654.4	376.100	8/22/1982	0.050	373.625	6/3/1982
1983-1984	660.6	375.990	9/19/1983	0.000	373.375	5/18/1984
1984-1985	967.7	376.700	9/4/1984	0.000	373.450	5/3/1985
1985-1986	561.4	376.130	7/11/1985	0.000	373.730	5/7/1986
1986-1987	1162	376.640	7/27/1986	0.000	373.640	4/23/1987
1987-1988	2830	378.625	8/28/1987	0.200	373.675	6/1/1987
1988-1989	989.7	377.050	6/28/1988	0.000	373.500	4/25/1989
1989-1990	696.6	376.400	6/22/1989	0.000	373.500	4/21/1990
1990-1991	628.8	376.205	7/21/1990	0.000	373.500	5/15/1991
1991-1992	1600	378.035	7/23/1991	0.000	373.645	6/2/1991
1992-1993	429.2	375.670	7/22/1992	0.000	373.420	5/17/1993
1993-1994	632.3	375.995	9/27/1993	0.020	373.420	5/13/1994
1994-1995	2504	377.808	6/29/1994	0.435	373.525	6/3/1994
1995-1996	1153	376.920	9/18/1995	0.276	373.490	5/18/1996
1996-1997	1428	377.620	7/26/1996	0.000	373.510	5/18/1997
1997-1998	2083	377.735	8/6/1997	0.000	373.460	6/10/1997
1998-1999	1536	377.495	9/10/1998	0.000	373.480	5/5/1999
1999-2000	1300	376.760	8/8/1999	0.407	373.535	5/8/2000
2000-2001	459.3	375.585	7/31/2000	0.000	373.530	5/4/2001

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
2001-2002	1500	376.840	7/22/2001	0.000	373.445	5/12/2002
2002-2003	662.3	376.203	6/24/2002	0.000	373.550	5/6/2003
2003-2004	1350	377.500	10/25/2003	0.000	373.450	4/21/2004
2004-2005	1211	377.078	8/14/2004	0.000	373.565	4/29/2005
2005-2006	932.6	376.595	6/30/2005	0.000	373.700	5/3/2006
2006-2007	891.7	376.310	7/31/2006	0.000	373.645	4/13/2007
2007-2008	703.8	376.095	9/27/2007	0.000	373.640	5/1/2008
2008-2009	786.4	376.383	7/7/2008	0.000	373.645	5/2/2009
2009-2010	773.4	376.300	7/28/2009	0.000	373.770	3/14/2010
2010-2011	341.1	375.575	9/17/2010	0.000	373.735	6/11/2010
2011-2012	1500	377.460	9/24/2011	0.491	373.325	5/31/2012
2012-2013	962.8	376.860	8/4/2012	0.321	373.305	6/7/2012
2013-2014	1650	378.030	10/14/2013	1.330	373.570	5/25/2014
2014-2015	949.2	376.175	8/4/2014	0.000	373.910	7/15/2014
2015-2016	1078	376.510	7/23/2015	0.000	374.990	9/1/2015
2016-2017	551.7	376.700	8/12/2016	0.034	373.390	4/26/2017
2017-2018	1118	378.830	7/27/2017	0.680	373.460	4/28/2018
2018-2019	788.7	376.600	9/2/2018	0.512	373.300	5/23/2019
2019-2020	1023	376.840	9/29/2019	0.872	373.530	6/3/2019

Stage-Discharge Data for the period 2019 - 2020

Station Name : TILGA (EBI00L3) **Division : E.E., Bhubaneswar**

Local River : Sankh **Sub-Division : Rourkela.**

Day	Jun		Jul		Aug		Sep		Oct		Nov	
	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q
1	373.530	0.993	373.930	20.22	374.440	78.73	374.480	130.0 *	375.720	486.0	374.240	57.95
2	373.520	0.920 *	374.470	119.0	374.345	56.73	374.240	127.3	375.290	380.0 *	374.170	48.38
3	373.530	0.872	374.150	60.60	374.240	54.77	374.220	126.8	374.920	288.9	374.120	45.02 *
4	373.565	3.848	374.100	54.81 *	374.160	40.47 *	374.150	97.74	374.690	194.1	374.090	42.72
5	373.590	4.600 *	374.005	44.27	374.100	29.72	374.095	82.82	374.550	159.2	374.060	50.83
6	373.625	6.703	373.940	24.22	374.605	113.5	374.000	74.98	374.560	160.0 *	374.040	40.95
7	373.580	5.197	374.780	156.2 *	374.840	187.8	373.950	71.00	374.880	176.0 *	374.030	40.88
8	373.560	4.189	374.500	112.2	374.825	132.5	373.930	82.00 *	374.740	174.0 *	374.010	38.40
9	373.540	3.500 *	374.360	78.91	374.710	136.9	373.990	85.00 *	374.920	208.3	374.000	34.20
10	373.530	2.129	374.980	191.8	374.580	117.1	374.070	88.83	374.800	154.4	373.990	35.12 *
11	373.500	1.708	374.850	161.4	374.950	194.5 *	374.225	124.6	374.640	123.9	373.980	36.13
12	373.500	1.421	374.535	95.10	375.170	234.9 *	375.240	325.5	374.520	100.4	373.960	34.03 *
13	373.500	1.090	374.305	53.63	374.940	156.3	375.500	360.8	374.570	105.1 *	373.930	31.16
14	373.510	1.146	374.130	34.87 *	376.220	518.1	375.445	289.9	374.305	80.26	373.910	31.71
15	373.500	1.000	374.060	27.52	375.750	390.0 *	374.780	173.4 *	374.210	71.39	373.880	27.81
16	373.530	2.000 *	373.975	17.75	374.990	182.9	374.475	119.9	374.140	73.55	373.870	29.31
17	373.530	3.198	374.030	22.61	374.655	126.8	374.260	115.5	374.080	69.53	373.870	28.00 *
18	373.520	2.481	373.970	23.73	374.730	140.0 *	374.240	76.24	374.050	47.60	373.870	26.94
19	373.510	0.997	374.095	44.52	376.410	469.5	374.200	74.45	374.430	92.59	373.860	23.97
20	373.510	3.164	374.195	73.92	375.720	378.0	374.280	88.12	374.610	104.9 *	373.850	22.81
21	373.520	3.370	374.130	34.87 *	374.940	193.0	374.215	75.14	374.350	87.16	373.850	25.72
22	373.975	23.29	373.960	21.45	374.555	136.1	374.120	72.18 *	374.290	82.03	373.840	23.48
23	374.520	60.93 *	373.890	16.08	374.345	105.1	374.050	48.53	374.215	56.15	373.840	25.02
24	374.055	35.67	373.900	17.75	374.545	136.2	374.145	79.15	374.455	99.23	373.840	25.00 *
25	373.860	18.69	373.980	26.36	374.470	132.4 *	374.095	72.52	375.840	410.6	373.830	24.15
26	373.730	11.79	374.235	56.63	374.650	141.5	375.805	529.3	375.105	257.4	373.820	20.11
27	373.740	13.41	374.710	64.95	375.420	337.9	375.580	403.9	374.740	106.5 *	373.820	21.30
28	374.260	50.12	374.690	75.50 *	375.185	262.1	375.615	378.2	374.535	103.5	373.810	21.59
29	374.030	27.93	374.510	85.26	375.585	404.4	376.840	1023 *	374.400	101.3	373.800	19.42
30	373.990	25.00 *	374.620	104.4	375.505	319.8	376.160	576.8	374.320	95.80	373.790	18.45
31			374.515	102.8	374.835	186.5			374.255	59.43		
Ten-Daily Mean												
I Ten-Daily	373.557	3.295	374.321	86.23	374.485	94.83	374.112	96.65	374.907	238.1	374.075	43.44
II Ten-Daily	373.511	1.821	374.215	55.51	375.353	279.1	374.664	174.8	374.355	86.93	373.898	29.19
III Ten-Daily	373.968	27.02	374.285	55.10	374.912	214.1	375.063	325.9	374.591	132.6	373.824	22.42
Monthly												
Min.	373.500	0.872	373.890	16.08	374.100	29.72	373.930	48.53	374.050	47.60	373.790	18.45
Max.	374.520	60.93	374.980	191.8	376.410	518.1	376.840	1023	375.840	486.0	374.240	57.95
Mean	373.679	10.71	374.274	65.27	374.917	196.6	374.613	199.1	374.617	151.9	373.932	31.69

Annual Runoff in MCM = 1928 Annual Runoff in mm = 610

Peak Observed Discharge = 576.8 cumecs on 30/09/2019 Corres. Water Level :376.16 m

Lowest Observed Discharge = 0.872 cumecs on 03/06/2019 Corres. Water Level :373.53 m

Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

Stage-Discharge Data for the period 2019 - 2020

Station Name : TILGA (EBI00L3) **Division : E.E., Bhubaneswar**

Local River : Sankh **Sub-Division : Rourkela.**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	373.790	16.00 *	373.740	11.51	373.730	9.854	373.700	5.500 *			373.880	24.69
2	373.790	16.74	373.740	10.90	373.720	9.266 *	373.690	5.549			373.780	14.08
3	373.790	16.21	373.850	20.86	373.700	8.082	373.680	5.883			373.730	10.46 *
4	373.790	15.06	374.030	37.26	373.700	7.793	373.670	5.745			373.710	9.018
5	373.790	16.71	374.040	37.81 *	373.710	9.632	373.680	7.605			373.820	17.06
6	373.780	16.13	373.810	25.55	373.700	7.782	373.700	8.418			373.890	27.16
7	373.780	13.88	373.750	19.06	373.700	7.946	373.780	10.05			373.870	22.18 *
8	373.780	13.00 *	373.780	20.27	373.720	8.569	373.860	19.10 *			373.850	17.19
9	373.770	13.58	373.810	22.35	373.730	8.600 *	373.910	20.58			373.800	14.39
10	373.770	13.60	373.880	22.51	373.720	8.581	373.860	19.10 *			373.770	10.89 *
11	373.760	12.73	373.940	32.67	373.720	8.147	373.780	13.19			373.750	8.549
12	373.750	12.03	373.880	30.00 *	373.710	7.944	373.880	17.09			373.750	8.876
13	373.750	12.47	373.820	16.04	373.700	7.476	374.000	26.01			373.740	8.372
14	373.750	12.31	373.820	16.04	373.690	6.884	374.020	27.00			373.680	6.562
15	373.750	12.30 *	373.790	15.31	373.690	7.090	374.800	139.9 *			373.660	5.818
16	373.810	20.17	373.770	14.17	373.690	7.000 *	374.560	105.2			373.770	10.38
17	373.960	29.78	373.760	12.27	373.680	6.805	374.230	47.31			373.720	8.310 *
18	373.930	25.96	373.760	12.59	373.670	6.003	374.050	27.52			373.670	6.245
19	373.850	19.84	373.760	12.50 *	373.670	5.976	373.930	39.16			373.650	5.081
20	373.810	15.97	373.750	11.32	373.670	5.886	373.900	24.56	373.590	4.487	373.630	4.255
21	373.770	15.24	373.750	12.46	373.670	5.876	373.870	15.74	373.590	4.777	373.620	4.204
22	373.760	12.50 *	373.740	11.91	373.670	5.759	373.840	14.00 *	373.660	8.552	373.600	4.005
23	373.760	12.45	373.740	11.34	373.670	5.500 *	373.830	13.42	373.630	7.550	373.580	3.784
24	373.760	12.28	373.740	10.81	373.670	5.229	373.800	12.72	373.740	11.89	373.540	3.104 *
25	373.760	12.00 *	373.740	11.07	373.680	5.926			373.700	10.77	373.490	2.255 *
26	373.760	11.65	373.730	9.572 *	373.690	5.911			373.680	10.43 *	373.460	1.744
27	373.790	13.05	373.720	8.074	373.700	6.050			373.760	11.78	373.450	1.553
28	373.800	15.39	373.720	8.165	373.710	6.316			373.940	24.85	373.450	1.936
29	373.800	15.00 *	373.750	10.21	373.700	5.789			373.860	23.51	373.470	3.052
30	373.790	14.78	373.740	9.122					373.930	24.60	373.510	5.605
31	373.760	10.35	373.730	9.018							373.670	13.78 *
Ten-Daily Mean												
I Ten-Daily	373.783	15.09	373.843	22.81	373.713	8.611	373.753	10.75			373.810	16.71
II Ten-Daily	373.812	17.36	373.805	17.29	373.689	6.921	374.115	46.69	373.590	4.487	373.702	7.245
III Ten-Daily	373.774	13.15	373.736	10.16	373.684	5.817	373.835	13.97	373.749	13.87	373.531	4.093
Monthly												
Min.	373.750	10.35	373.720	8.074	373.670	5.229	373.670	5.500	373.590	4.487	373.450	1.553
Max.	373.960	29.78	374.040	37.81	373.730	9.854	374.800	139.9	373.940	24.85	373.890	27.16
Mean	373.789	15.14	373.793	16.54	373.696	7.161	373.918	26.26	373.735	13.02	373.676	9.18

Peak Computed Discharge = 1023 cumecs on 29/09/2019 Corres. Water Level :376.84 m

Lowest Computed Discharge = 0.920 cumecs on 02/06/2019 Corres. Water Level :373.52 m

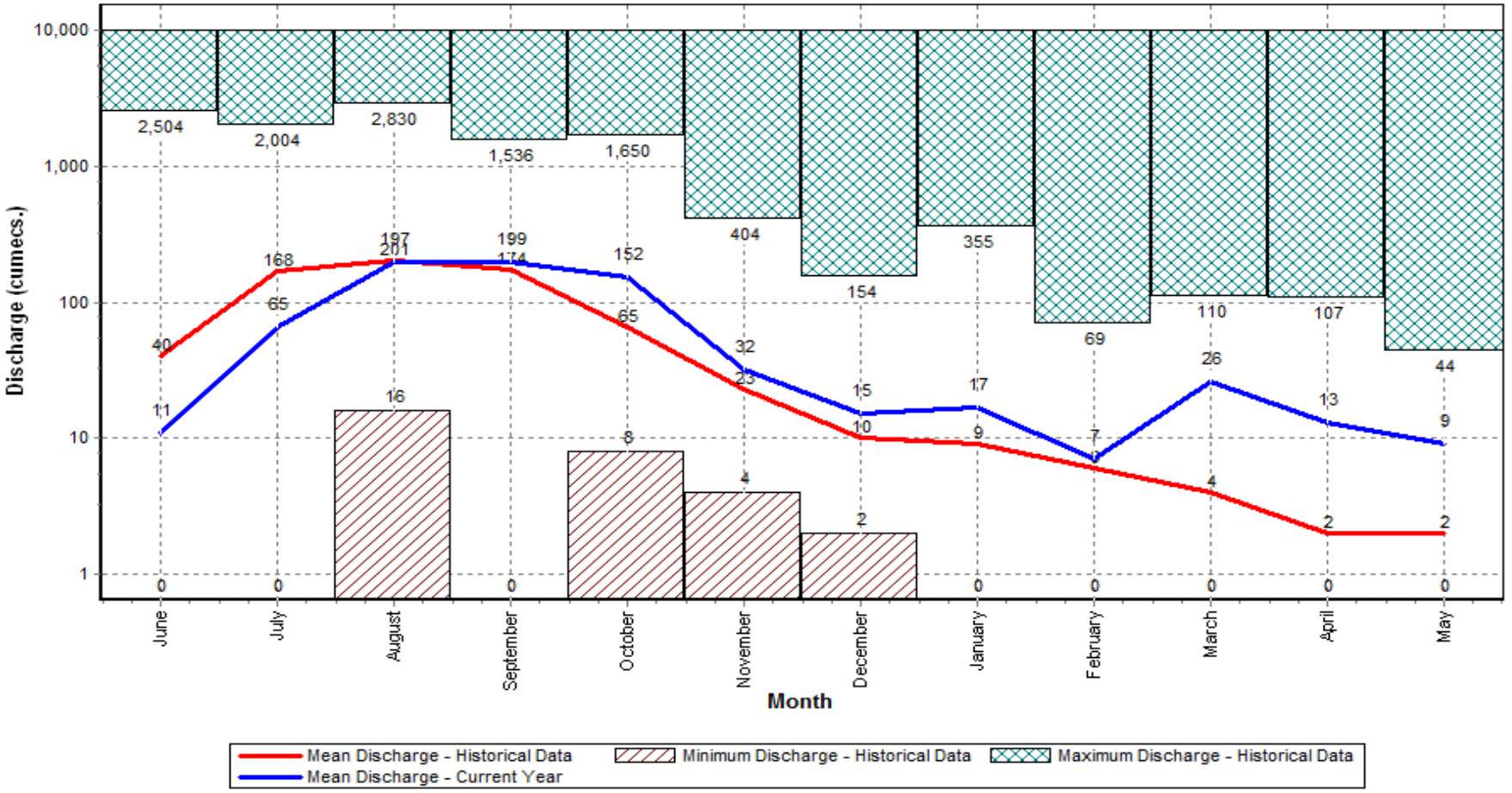
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2019-2020

Station Name : TILGA (EBI00L3) **Data considered : 1980-2020** **Division : E.E., Bhubaneswar**

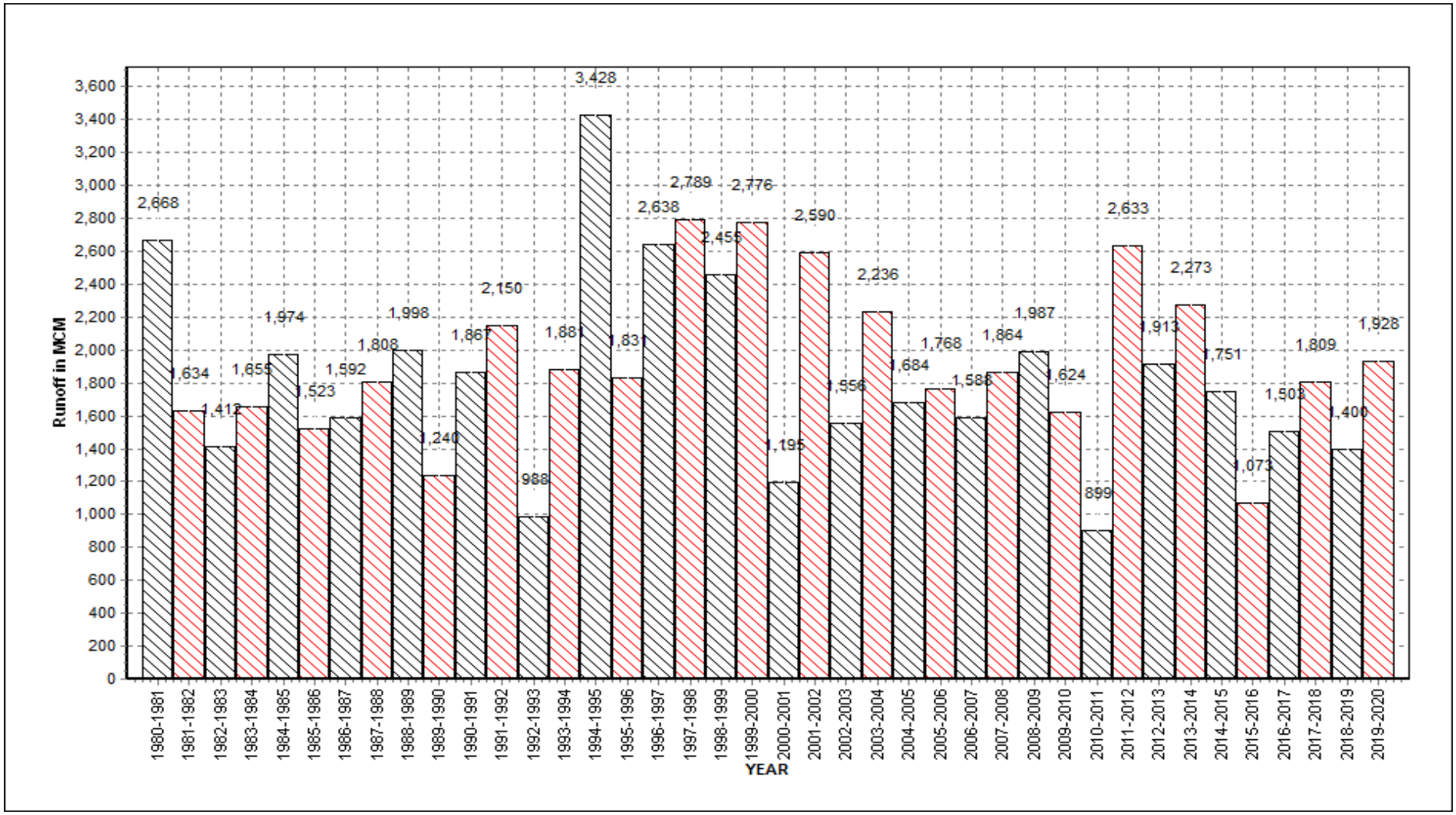
Local River : Sankh **Sub-Division : Rourkela.**



Annual Runoff Values for the period: 1980 - 2020

Station Name : TILGA (EBI00L3) **Division : E.E., Bhubaneswar**

Local River : Sankh **Sub-Division : Rourkela.**

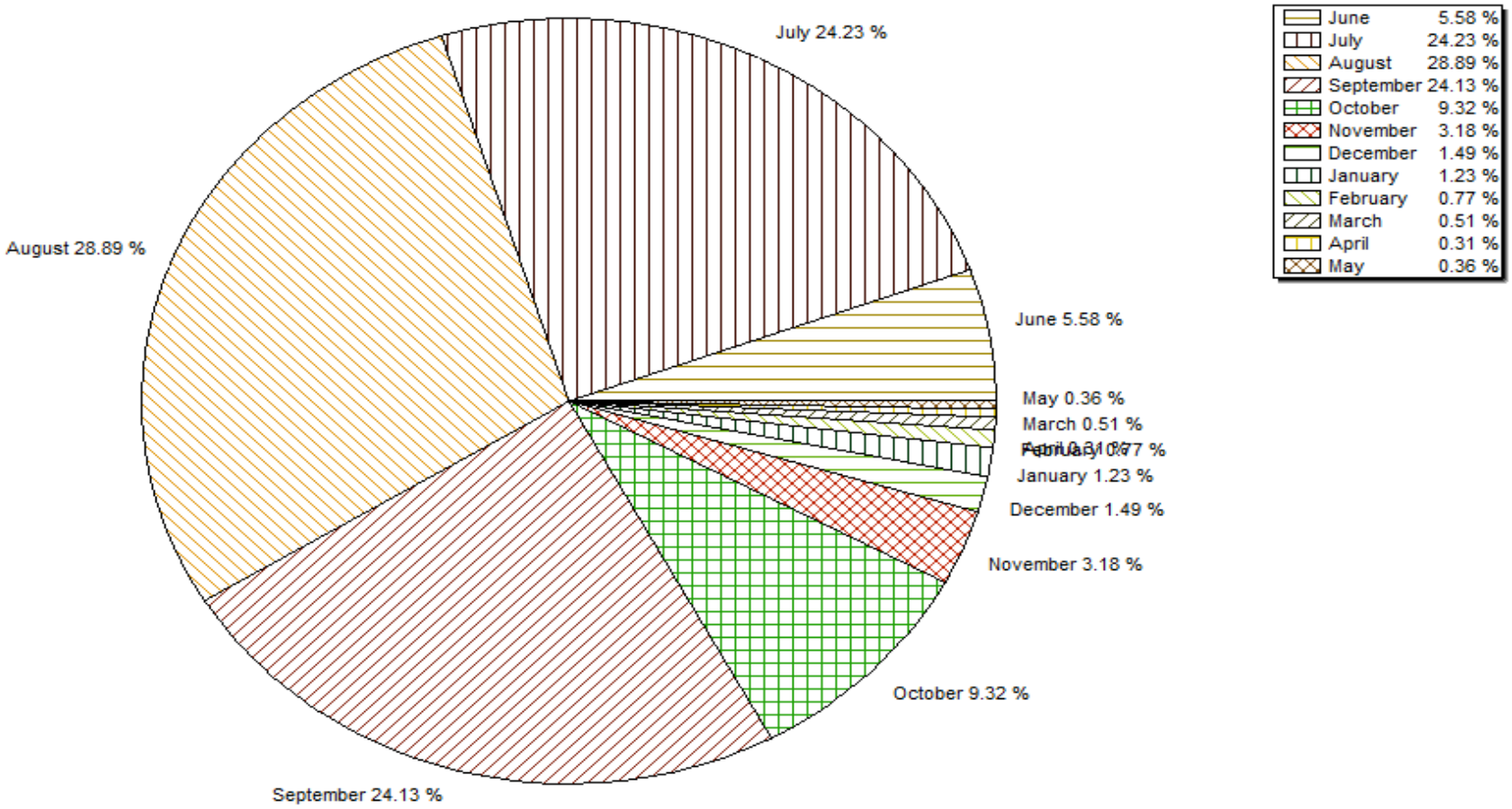


Note: Missing values have not been considered while arriving at Annual Runoff

Monthly Average Runoff based on period : 1980-2019

Station Name : TILGA (EBI00L3) **Division : E.E., Bhubaneswar**

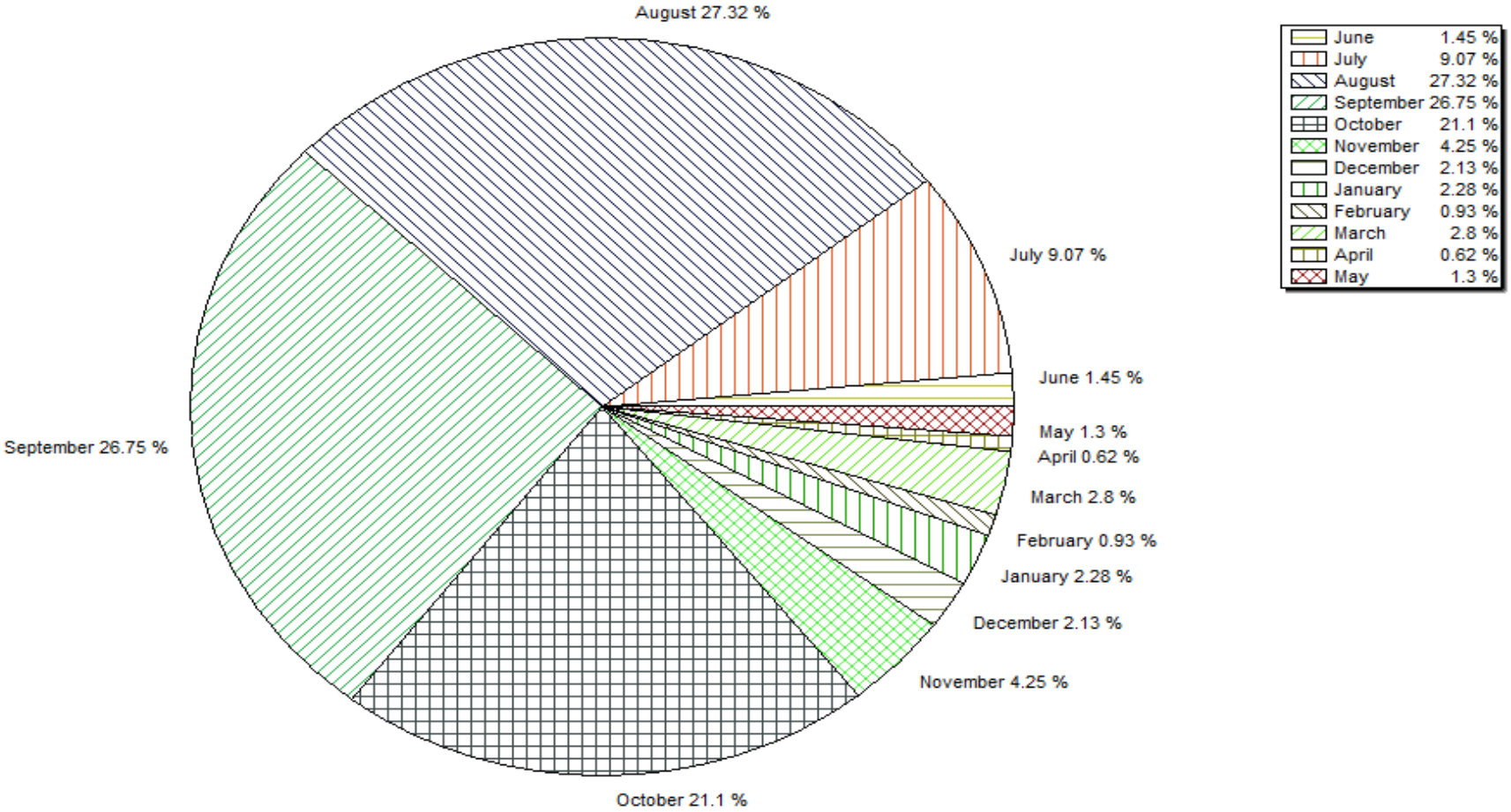
Local River : Sankh **Sub-Division : Rourkela.**



Monthly Runoff for the Year : 2019-2020

Station Name : TILGA (EBI00L3)
Local River : Sankh

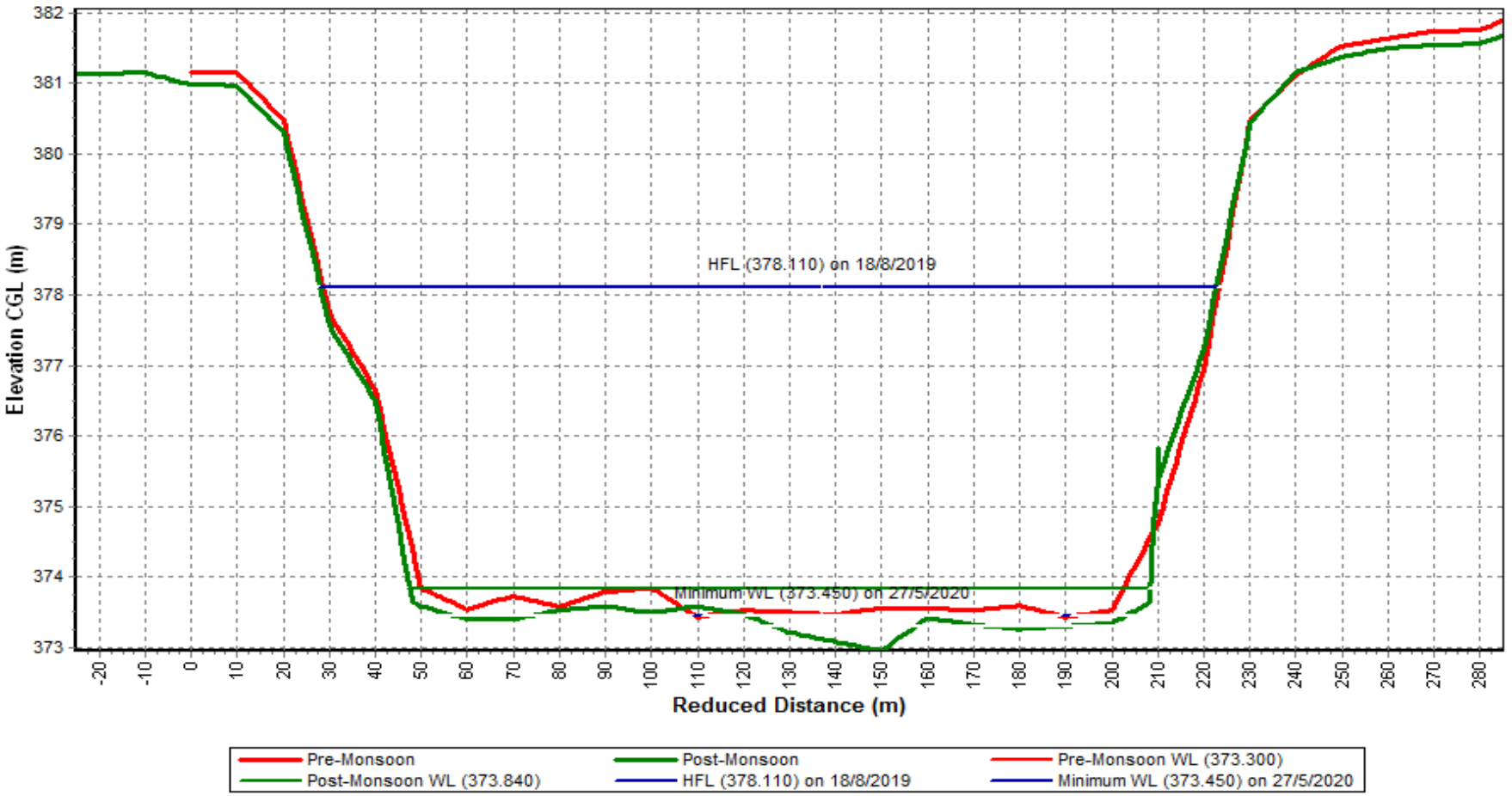
Division : E.E., Bhubaneswar
Sub-Division : Rourkela.



Pre-Monsoon & Post-Monsoon X-Section for Water Year : 2019-2020

Station Name : TILGA (EBI00L3) **Division : E.E., Bhubaneswar**

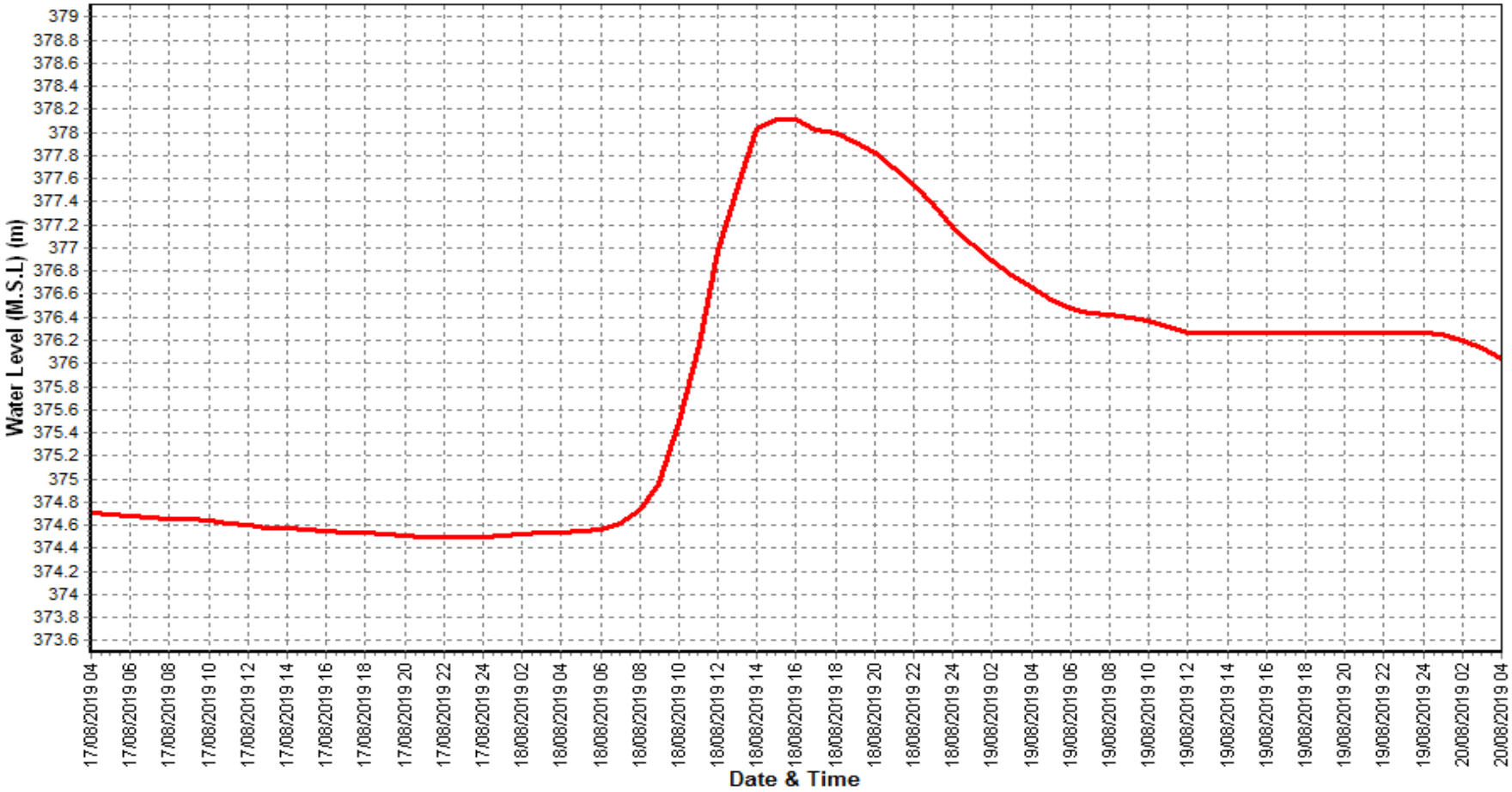
Local River : Sankh **Sub-Division : Rourkela.**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2019-2020

Station Name : TILGA (EBI00L3) **Division : E.E., Bhubaneswar**

Local River : Sankh **Sub-Division : Rourkela.**

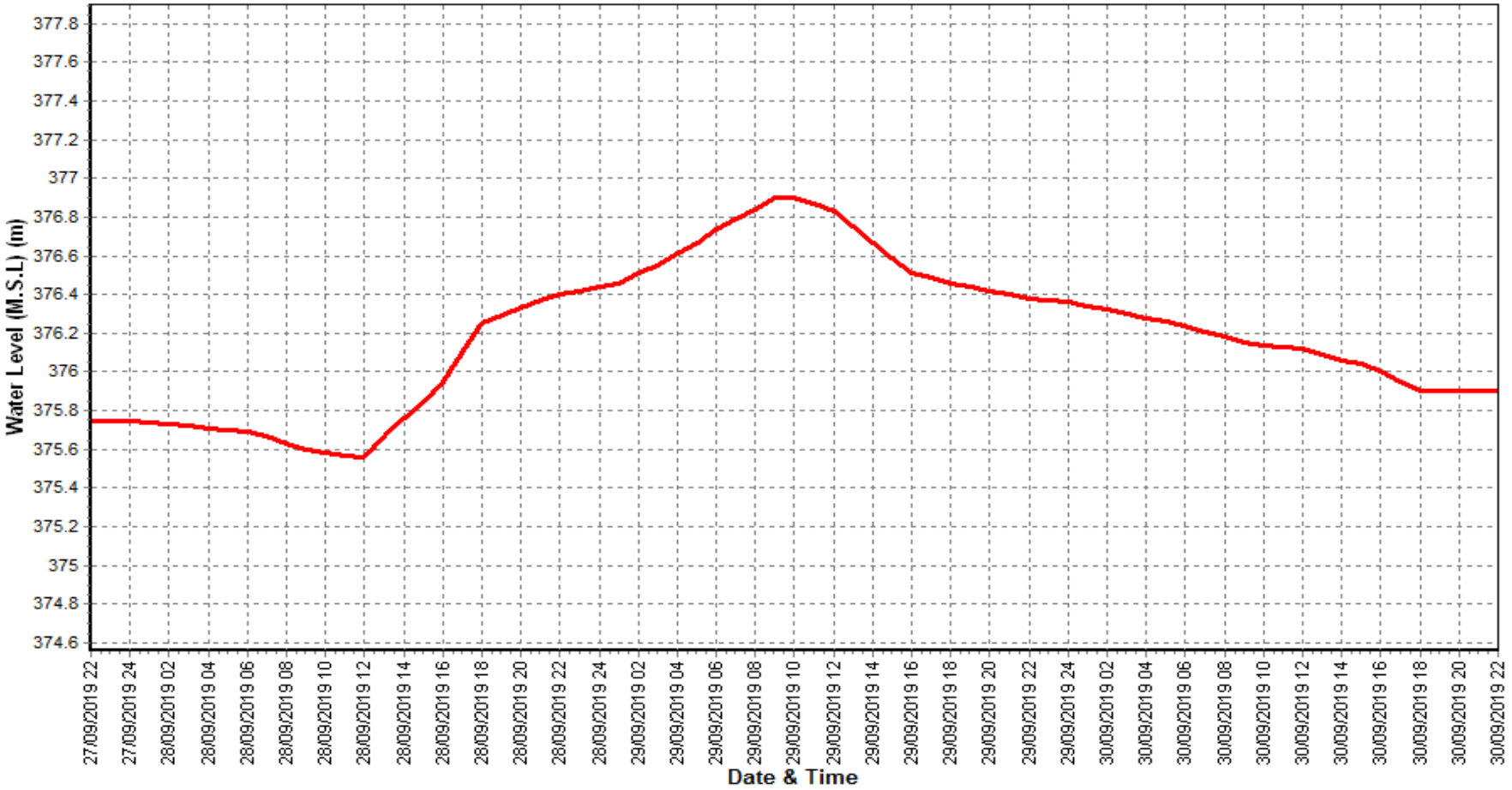


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2019-2020

Station Name : TILGA (EBI00L3) **Division : E.E., Bhubaneswar**

Local River : Sankh **Sub-Division : Rourkela.**

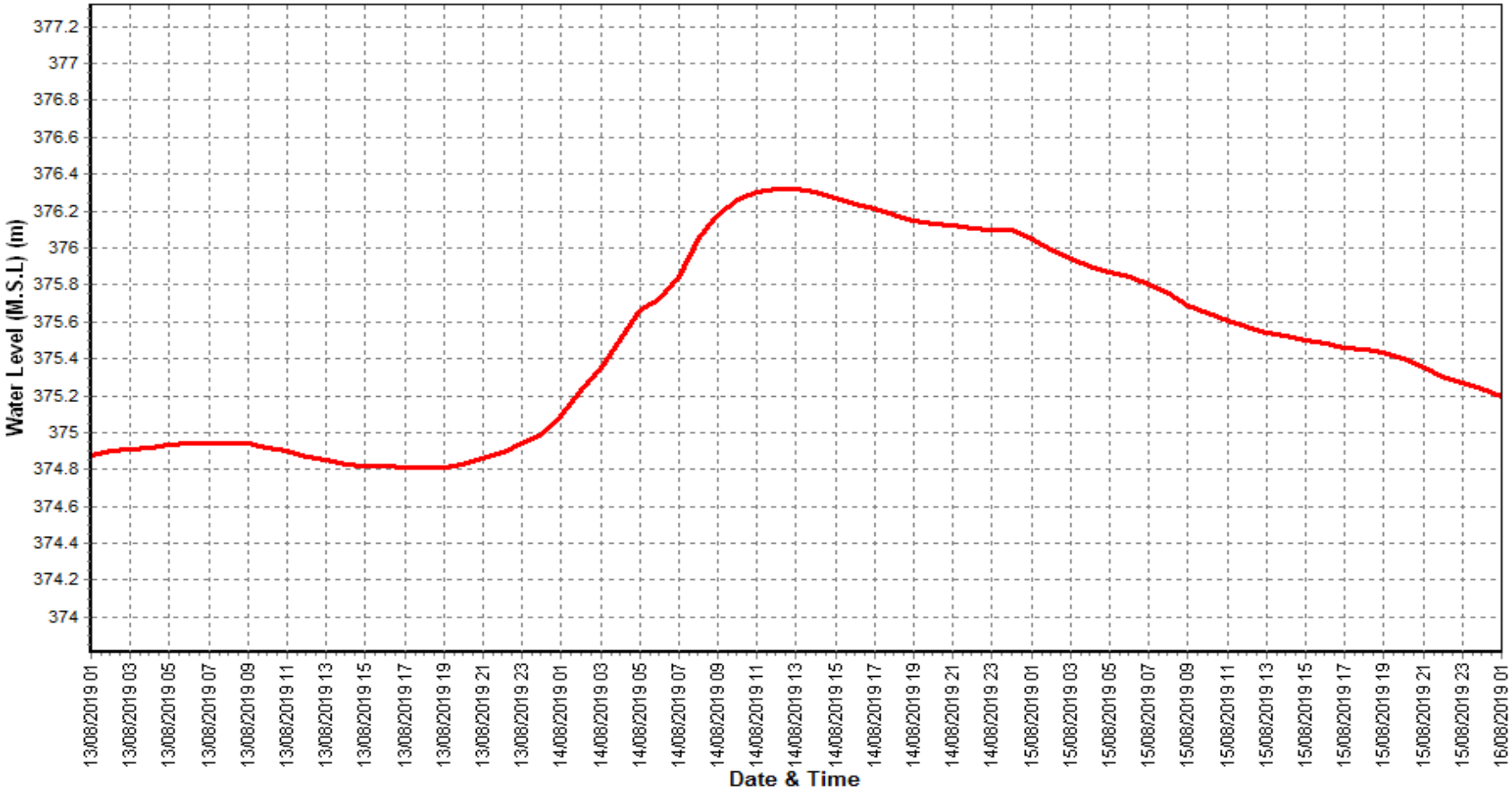


Time Span: 72 Hrs

Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2019-2020

Station Name : TILGA (EBI00L3) **Division : E.E., Bhubaneswar**

Local River : Sankh **Sub-Division : Rourkela.**



Time Span: 72 Hrs

SECTION-II (SEDIMENT DATA)

Daily Observed Sediment Datasheet for period : 2019-2020

Station Name : TILGA (EBI00L3) **Division : E.E., Bhubaneswar**

Local River : Sankh **Sub-Division : Rourkela.**

Day	Jun						Jul						Aug					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	0.993	0.000	0.000	0.000	0.000	0	20.22	0.018	0.006	0.560	0.584	1020	78.73	0.001	0.003	0.189	0.193	1313
2	0.920	0.000	0.000	0.000	0.000	0	119.0	0.001	0.020	0.805	0.826	8490	56.73	0.002	0.002	0.167	0.171	838
3	0.872	0.000	0.000	0.000	0.000	0	60.60	0.004	0.003	0.022	0.029	149	54.77	0.002	0.002	0.145	0.149	705
4	3.848	0.000	0.000	0.000	0.000	0	54.81	0.004	0.003	0.022	0.029	135	40.47	0.002	0.002	0.145	0.149	521
5	4.600	0.000	0.000	0.000	0.000	0	44.27	0.003	0.005	0.180	0.188	719	29.72	0.008	0.002	0.120	0.130	334
6	6.703	0.000	0.000	0.000	0.000	0	24.22	0.012	0.003	0.183	0.198	414	113.5	0.007	0.020	0.526	0.553	5422
7	5.197	0.000	0.000	0.000	0.000	0	156.2	0.012	0.003	0.183	0.198	2673	187.8	0.016	0.109	0.824	0.949	15396
8	4.189	0.000	0.000	0.000	0.000	0	112.2	0.002	0.005	0.620	0.627	6079	132.5	0.007	0.013	0.300	0.320	3664
9	3.500	0.000	0.000	0.000	0.000	0	78.91	0.009	0.004	0.383	0.396	2700	136.9	0.004	0.004	0.216	0.224	2650
10	2.129	0.000	0.000	0.000	0.000	0	191.8	0.013	0.038	1.530	1.581	26204	117.1	0.009	0.003	0.110	0.122	1235
11	1.708	0.000	0.000	0.000	0.000	0	161.4	0.013	0.010	0.817	0.840	11715	194.5	0.009	0.003	0.110	0.122	2050
12	1.421	0.000	0.000	0.000	0.000	0	95.10	0.008	0.003	0.267	0.278	2284	234.9	0.009	0.003	0.110	0.122	2476
13	1.090	0.000	0.000	0.000	0.000	0	53.63	0.008	0.001	0.225	0.234	1084	156.3	0.000	0.013	0.368	0.381	5145
14	1.146	0.000	0.000	0.000	0.000	0	34.87	0.008	0.001	0.225	0.234	705	518.1	0.015	0.025	0.950	0.990	44319
15	1.000	0.000	0.000	0.000	0.000	0	27.52	0.001	0.003	0.104	0.108	257	390.0	0.015	0.025	0.950	0.990	33358
16	2.000	0.000	0.000	0.000	0.000	0	17.75	0.015	0.003	0.085	0.103	158	182.9	0.003	0.007	0.241	0.251	3972
17	3.198	0.000	0.000	0.000	0.000	0	22.61	0.002	0.001	0.265	0.268	523	126.8	0.015	0.003	0.110	0.128	1402
18	2.481	0.000	0.000	0.000	0.000	0	23.73	0.008	0.001	0.114	0.123	252	140.0	0.015	0.003	0.110	0.128	1548
19	0.997	0.000	0.000	0.000	0.000	0	44.52	0.004	0.003	0.190	0.197	758	469.5	0.004	0.037	0.360	0.401	16267
20	3.164	0.000	0.000	0.000	0.000	0	73.92	0.001	0.006	0.644	0.651	4157	378.0	0.003	0.009	0.272	0.284	9275
21	3.370	0.000	0.000	0.000	0.000	0	34.87	0.001	0.006	0.644	0.651	1961	193.0	0.002	0.010	0.186	0.198	3302
22	23.29	0.002	0.002	0.351	0.355	714	21.45	0.002	0.003	0.307	0.312	578	136.1	0.002	0.002	0.123	0.127	1493
23	60.93	0.002	0.002	0.351	0.355	1869	16.08	0.002	0.002	0.172	0.176	245	105.1	0.003	0.001	0.110	0.114	1035
24	35.67	0.016	0.012	0.773	0.801	2468	17.75	0.013	0.015	0.167	0.195	299	136.2	0.003	0.007	0.267	0.277	3259
25	18.69	0.014	0.003	0.482	0.499	806	26.36	0.015	0.003	0.183	0.201	458	132.4	0.003	0.007	0.267	0.277	3170
26	11.79	0.005	0.005	0.273	0.283	288	56.63	0.002	0.015	1.923	1.940	9492	141.5	0.005	0.008	0.190	0.203	2481
27	13.41	0.005	0.002	0.370	0.377	437	64.95	0.014	0.017	3.958	3.989	22384	337.9	0.005	0.009	0.423	0.437	12760
28	50.12	0.002	0.002	2.647	2.651	11479	75.50	0.014	0.017	3.958	3.989	26021	262.1	0.009	0.021	0.180	0.210	4756
29	27.93	0.004	0.002	0.922	0.928	2239	85.26	0.001	0.005	0.386	0.392	2888	404.4	0.007	0.008	0.604	0.619	21627
30	25.00	0.004	0.002	0.922	0.928	2004	104.4	0.007	0.003	0.503	0.513	4628	319.8	0.004	0.008	0.235	0.247	6825
31							102.8	0.008	0.003	0.248	0.259	2300	186.5	0.002	0.009	0.205	0.216	3481
Ten Daily Mean																		
Ten Daily I	3.295	0.000	0.000	0.000	0.000	0	86.23	0.008	0.009	0.449	0.466	4858	94.83	0.006	0.016	0.274	0.296	3208
Ten Daily II	1.821	0.000	0.000	0.000	0.000	0	55.51	0.007	0.003	0.294	0.304	2189	279.1	0.009	0.013	0.358	0.380	11981
Ten Daily III	27.02	0.005	0.003	0.709	0.718	2231	55.10	0.007	0.008	1.132	1.147	6478	214.1	0.004	0.008	0.254	0.266	5835
Monthly Total						22305						141731						216079

Annual Sediment Load (Metric Tonnes) : 561632

Daily Observed Sediment Datasheet for period : 2019-2020

Station Name : TILGA (EBI00L3) **Division : E.E., Bhubaneswar**

Local River : Sankh **Sub-Division : Rourkela.**

Day	Sep						Oct						Nov					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	130.0	0.004	0.002	0.129	0.135	1516	486.0	0.001	0.002	0.169	0.172	7223	57.95	0.001	0.002	0.036	0.039	195
2	127.3	0.005	0.003	0.128	0.136	1496	380.0	0.001	0.002	0.125	0.128	4203	48.38	0.001	0.001	0.041	0.043	180
3	126.8	0.002	0.004	0.094	0.100	1096	288.9	0.001	0.002	0.115	0.118	2945	45.02	0.001	0.001	0.040	0.042	163
4	97.74	0.002	0.003	0.092	0.097	819	194.1	0.002	0.002	0.112	0.116	1946	42.72	0.002	0.005	0.041	0.048	177
5	82.82	0.002	0.002	0.061	0.065	465	159.2	0.001	0.002	0.123	0.126	1733	50.83	0.002	0.003	0.050	0.055	242
6	74.98	0.001	0.003	0.114	0.118	764	160.0	0.001	0.002	0.120	0.123	1700	40.95	0.002	0.002	0.050	0.054	191
7	71.00	0.002	0.003	0.133	0.138	847	176.0	0.001	0.002	0.128	0.131	1992	40.88	0.001	0.002	0.046	0.049	173
8	82.00	0.002	0.003	0.134	0.139	985	174.0	0.001	0.002	0.126	0.129	1939	38.40	0.001	0.001	0.038	0.040	133
9	85.00	0.002	0.003	0.135	0.140	1028	208.3	0.001	0.002	0.203	0.206	3707	34.20	0.003	0.001	0.038	0.042	124
10	88.83	0.002	0.003	0.174	0.179	1374	154.4	0.001	0.001	0.179	0.181	2415	35.12	0.002	0.001	0.036	0.039	118
11	124.6	0.002	0.003	0.192	0.197	2120	123.9	0.001	0.001	0.314	0.316	3383	36.13	0.005	0.001	0.042	0.048	150
12	325.5	0.002	0.009	0.215	0.226	6356	100.4	0.001	0.002	0.127	0.130	1128	34.03	0.000	0.001	0.036	0.037	109
13	360.8	0.002	0.006	0.379	0.387	12066	105.1	0.001	0.002	0.130	0.133	1208	31.16	0.001	0.001	0.031	0.033	89
14	289.9	0.001	0.008	0.186	0.195	4885	80.26	0.002	0.002	0.114	0.118	818	31.71	0.001	0.001	0.028	0.030	82
15	173.4	0.001	0.006	0.184	0.191	2861	71.39	0.001	0.001	0.068	0.070	432	27.81	0.004	0.002	0.045	0.051	123
16	119.9	0.002	0.003	0.169	0.174	1803	73.55	0.001	0.002	0.068	0.071	451	29.31	0.002	0.002	0.028	0.032	81
17	115.5	0.002	0.002	0.169	0.173	1726	69.53	0.001	0.002	0.047	0.050	300	28.00	0.002	0.002	0.028	0.032	77
18	76.24	0.002	0.003	0.178	0.183	1206	47.60	0.001	0.002	0.063	0.066	271	26.94	0.002	0.003	0.044	0.049	114
19	74.45	0.002	0.003	0.161	0.166	1068	92.59	0.002	0.002	0.131	0.135	1080	23.97	0.002	0.002	0.058	0.062	128
20	88.12	0.002	0.003	0.081	0.086	655	104.9	0.000	0.002	0.136	0.138	1250	22.81	0.002	0.002	0.056	0.060	118
21	75.14	0.001	0.006	0.065	0.072	467	87.16	0.002	0.005	0.226	0.233	1755	25.72	0.001	0.001	0.022	0.024	53
22	72.18	0.002	0.003	0.095	0.100	624	82.03	0.003	0.002	0.139	0.144	1021	23.48	0.002	0.001	0.027	0.030	61
23	48.53	0.001	0.001	0.045	0.047	197	56.15	0.003	0.002	0.092	0.097	471	25.02	0.002	0.002	0.026	0.030	65
24	79.15	0.002	0.003	0.096	0.101	691	99.23	0.012	0.007	0.182	0.201	1723	25.00	0.002	0.002	0.026	0.030	65
25	72.52	0.002	0.008	0.087	0.097	608	410.6	0.017	0.011	0.221	0.249	8834	24.15	0.002	0.001	0.022	0.025	52
26	529.3	0.001	0.003	0.341	0.345	15777	257.4	0.020	0.007	0.093	0.120	2668	20.11	0.003	0.001	0.017	0.021	36
27	403.9	0.002	0.001	0.140	0.143	4991	106.5	0.004	0.003	0.085	0.092	847	21.30	0.001	0.002	0.017	0.020	37
28	378.2	0.001	0.003	0.123	0.127	4149	103.5	0.004	0.003	0.083	0.090	805	21.59	0.001	0.001	0.022	0.024	45
29	1023	0.001	0.006	0.156	0.163	14407	101.3	0.001	0.002	0.069	0.072	630	19.42	0.002	0.001	0.025	0.028	47
30	576.8	0.001	0.001	0.146	0.148	7375	95.80	0.002	0.002	0.088	0.092	762	18.45	0.001	0.001	0.024	0.026	41
31							59.43	0.001	0.001	0.146	0.148	760						
Ten Daily Mean																		
Ten Daily I	96.65	0.002	0.003	0.119	0.125	1039	238.1	0.001	0.002	0.140	0.143	2980	43.44	0.002	0.002	0.042	0.045	170
Ten Daily II	174.8	0.002	0.005	0.191	0.198	3474	86.93	0.001	0.002	0.120	0.123	1032	29.19	0.002	0.002	0.040	0.043	107
Ten Daily III	325.9	0.001	0.004	0.129	0.134	4929	132.6	0.006	0.004	0.129	0.140	1843	22.42	0.002	0.001	0.023	0.026	50
Monthly																		
Total						94420						60401						3270

Annual Sediment Load (Metric Tonnes) : 561632

Daily Observed Sediment Datasheet for period : 2019-2020

Station Name : TILGA (EBI00L3) **Division : E.E., Bhubaneswar**

Local River : Sankh **Sub-Division : Rourkela.**

Day	Dec						Jan						Feb					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	16.00	0.000	0.000	0.030	0.030	41	11.51	0.000	0.000	0.020	0.020	20	9.854	0.000	0.000	0.000	0.000	0
2	16.74	0.000	0.000	0.032	0.032	46	10.90	0.000	0.000	0.040	0.040	38	9.266	0.000	0.000	0.000	0.000	0
3	16.21	0.000	0.000	0.032	0.032	45	20.86	0.000	0.000	0.060	0.060	108	8.082	0.000	0.000	0.000	0.000	0
4	15.06	0.000	0.000	0.032	0.032	42	37.26	0.002	0.002	0.082	0.086	277	7.793	0.000	0.000	0.000	0.000	0
5	16.71	0.000	0.000	0.032	0.032	46	37.81	0.002	0.002	0.080	0.084	274	9.632	0.000	0.000	0.000	0.000	0
6	16.13	0.000	0.000	0.030	0.030	42	25.55	0.002	0.001	0.078	0.081	179	7.782	0.000	0.000	0.000	0.000	0
7	13.88	0.000	0.000	0.020	0.020	24	19.06	0.002	0.001	0.076	0.079	130	7.946	0.000	0.000	0.000	0.000	0
8	13.00	0.000	0.000	0.010	0.010	11	20.27	0.002	0.001	0.072	0.075	131	8.569	0.000	0.000	0.000	0.000	0
9	13.58	0.000	0.000	0.009	0.009	11	22.35	0.002	0.001	0.068	0.071	137	8.600	0.000	0.000	0.000	0.000	0
10	13.60	0.000	0.000	0.009	0.009	11	22.51	0.002	0.001	0.064	0.067	130	8.581	0.000	0.000	0.000	0.000	0
11	12.73	0.000	0.000	0.009	0.009	10	32.67	0.002	0.001	0.060	0.063	178	8.147	0.000	0.000	0.000	0.000	0
12	12.03	0.000	0.000	0.009	0.009	9	30.00	0.001	0.001	0.058	0.060	156	7.944	0.000	0.000	0.000	0.000	0
13	12.47	0.000	0.000	0.009	0.009	10	16.04	0.001	0.001	0.054	0.056	78	7.476	0.000	0.000	0.000	0.000	0
14	12.31	0.000	0.000	0.009	0.009	10	16.04	0.001	0.001	0.056	0.058	80	6.884	0.000	0.000	0.000	0.000	0
15	12.30	0.000	0.000	0.009	0.009	10	15.31	0.001	0.001	0.058	0.060	79	7.090	0.000	0.000	0.000	0.000	0
16	20.17	0.001	0.001	0.112	0.114	199	14.17	0.001	0.001	0.064	0.066	81	7.000	0.000	0.000	0.000	0.000	0
17	29.78	0.003	0.003	0.173	0.179	461	12.27	0.001	0.001	0.062	0.064	68	6.805	0.000	0.000	0.000	0.000	0
18	25.96	0.001	0.001	0.140	0.142	319	12.59	0.001	0.001	0.065	0.067	73	6.003	0.000	0.000	0.000	0.000	0
19	19.84	0.002	0.002	0.122	0.126	216	12.50	0.001	0.001	0.066	0.068	73	5.976	0.000	0.000	0.000	0.000	0
20	15.97	0.000	0.000	0.042	0.042	58	11.32	0.001	0.001	0.067	0.069	67	5.886	0.000	0.000	0.000	0.000	0
21	15.24	0.000	0.000	0.040	0.040	53	12.46	0.001	0.001	0.067	0.069	74	5.876	0.000	0.000	0.000	0.000	0
22	12.50	0.000	0.000	0.036	0.036	39	11.91	0.001	0.001	0.067	0.069	71	5.759	0.000	0.000	0.000	0.000	0
23	12.45	0.000	0.000	0.033	0.033	35	11.34	0.001	0.001	0.067	0.069	68	5.500	0.000	0.000	0.000	0.000	0
24	12.28	0.000	0.000	0.033	0.033	35	10.81	0.001	0.001	0.067	0.069	64	5.229	0.000	0.000	0.000	0.000	0
25	12.00	0.000	0.000	0.033	0.033	34	11.07	0.001	0.001	0.067	0.069	66	5.926	0.000	0.000	0.000	0.000	0
26	11.65	0.000	0.000	0.033	0.033	33	9.572	0.000	0.000	0.067	0.067	55	5.911	0.000	0.000	0.000	0.000	0
27	13.05	0.000	0.000	0.033	0.033	37	8.074	0.000	0.000	0.000	0.000	0	6.050	0.000	0.000	0.000	0.000	0
28	15.39	0.000	0.000	0.036	0.036	48	8.165	0.000	0.000	0.000	0.000	0	6.316	0.000	0.000	0.000	0.000	0
29	15.00	0.000	0.000	0.036	0.036	47	10.21	0.000	0.000	0.000	0.000	0	5.789	0.000	0.000	0.000	0.000	0
30	14.78	0.000	0.000	0.022	0.022	28	9.122	0.000	0.000	0.000	0.000	0						
31	10.35	0.000	0.000	0.020	0.020	18	9.018	0.000	0.000	0.000	0.000	0						
Ten Daily Mean																		
Ten Daily I	15.09	0.000	0.000	0.024	0.024	32	22.81	0.001	0.001	0.064	0.066	142	8.611	0.000	0.000	0.000	0.000	0
Ten Daily II	17.36	0.001	0.001	0.063	0.065	130	17.29	0.001	0.001	0.061	0.063	93	6.921	0.000	0.000	0.000	0.000	0
Ten Daily III	13.15	0.000	0.000	0.032	0.032	37	10.16	0.000	0.000	0.037	0.037	36	5.817	0.000	0.000	0.000	0.000	0
Monthly																		
Total						2026						2757						0

Annual Sediment Load (Metric Tonnes) : 561632

Daily Observed Sediment Datasheet for period : 2019-2020

Station Name : TILGA (EBI00L3) **Division : E.E., Bhubaneswar**

Local River : Sankh **Sub-Division : Rourkela.**

Day	Mar						Apr						May					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	5.500	0.000	0.000	0.000	0.000	0							24.69	0.002	0.001	0.049	0.052	111
2	5.549	0.000	0.000	0.000	0.000	0							14.08	0.003	0.003	0.040	0.046	56
3	5.883	0.000	0.000	0.000	0.000	0							10.46	0.002	0.002	0.080	0.084	76
4	5.745	0.000	0.000	0.000	0.000	0							9.018	0.002	0.002	0.100	0.104	81
5	7.605	0.000	0.000	0.000	0.000	0							17.06	0.002	0.002	0.206	0.210	309
6	8.418	0.000	0.000	0.000	0.000	0							27.16	0.003	0.001	0.043	0.047	110
7	10.05	0.004	0.006	0.124	0.134	116							22.18	0.003	0.002	0.066	0.071	136
8	19.10	0.006	0.008	0.146	0.160	264							17.19	0.003	0.002	0.092	0.097	144
9	20.58	0.008	0.001	0.159	0.168	299							14.39	0.003	0.003	0.025	0.031	39
10	19.10	0.006	0.008	0.148	0.162	267							10.89	0.003	0.003	0.024	0.030	28
11	13.19	0.004	0.006	0.128	0.138	157							8.549	0.003	0.003	0.018	0.024	18
12	17.09	0.003	0.003	0.155	0.161	238							8.876	0.003	0.003	0.018	0.024	18
13	26.01	0.005	0.002	0.301	0.308	692							8.372	0.003	0.003	0.018	0.024	17
14	27.00	0.001	0.004	0.148	0.153	357							6.562	0.003	0.003	0.016	0.022	12
15	139.9	0.012	0.010	0.416	0.438	5295							5.818	0.003	0.003	0.016	0.022	11
16	105.2	0.011	0.007	0.398	0.416	3780							10.38	0.003	0.003	0.068	0.074	66
17	47.31	0.002	0.003	0.254	0.259	1059							8.310	0.002	0.002	0.026	0.030	22
18	27.52	0.002	0.002	0.247	0.251	597							6.245	0.002	0.002	0.022	0.026	14
19	39.16	0.002	0.003	0.212	0.217	734							5.081	0.002	0.002	0.018	0.022	10
20	24.56	0.002	0.002	0.143	0.147	312	4.487	0.004	0.003	0.240	0.247	96	4.255	0.002	0.002	0.012	0.016	6
21	15.74	0.002	0.001	0.134	0.137	186	4.777	0.004	0.003	0.240	0.247	102	4.204	0.002	0.002	0.010	0.014	5
22	14.00	0.004	0.002	0.196	0.202	244	8.552	0.004	0.003	0.260	0.267	197	4.005	0.002	0.002	0.010	0.014	5
23	13.42	0.004	0.002	0.195	0.201	233	7.550	0.004	0.003	0.250	0.257	168	3.784	0.002	0.002	0.008	0.012	4
24	12.72	0.004	0.003	0.194	0.201	221	11.89	0.004	0.003	0.250	0.257	264	3.104	0.002	0.002	0.008	0.012	3
25							10.77	0.004	0.003	0.250	0.257	239	2.255	0.002	0.002	0.008	0.012	2
26							10.43	0.004	0.003	0.220	0.227	205	1.744	0.000	0.000	0.006	0.006	1
27							11.78	0.003	0.002	0.160	0.165	168	1.553	0.000	0.000	0.006	0.006	1
28							24.85	0.003	0.002	0.100	0.105	225	1.936	0.000	0.000	0.006	0.006	1
29							23.51	0.003	0.002	0.077	0.082	167	3.052	0.002	0.000	0.008	0.010	3
30							24.60	0.002	0.002	0.188	0.192	408	5.605	0.004	0.000	0.010	0.014	7
31													13.78	0.006	0.002	0.022	0.030	36
Ten Daily Mean																		
Ten Daily I	10.75	0.002	0.002	0.058	0.062	95							16.71	0.003	0.002	0.073	0.077	109
Ten Daily II	46.69	0.004	0.004	0.240	0.249	1322	4.487	0.004	0.003	0.240	0.247	96	7.245	0.003	0.003	0.023	0.028	19
Ten Daily III	13.97	0.004	0.002	0.180	0.185	221	13.87	0.004	0.003	0.200	0.206	214	4.093	0.002	0.001	0.009	0.012	6
Monthly																		
Total						15052						2238						1352

Annual Sediment Load (Metric Tonnes) : 561632

Annual Sediment Load for period : 1987-2020

Station Name : TILGA (EBI00L3) **Division : E.E., Bhubaneswar**

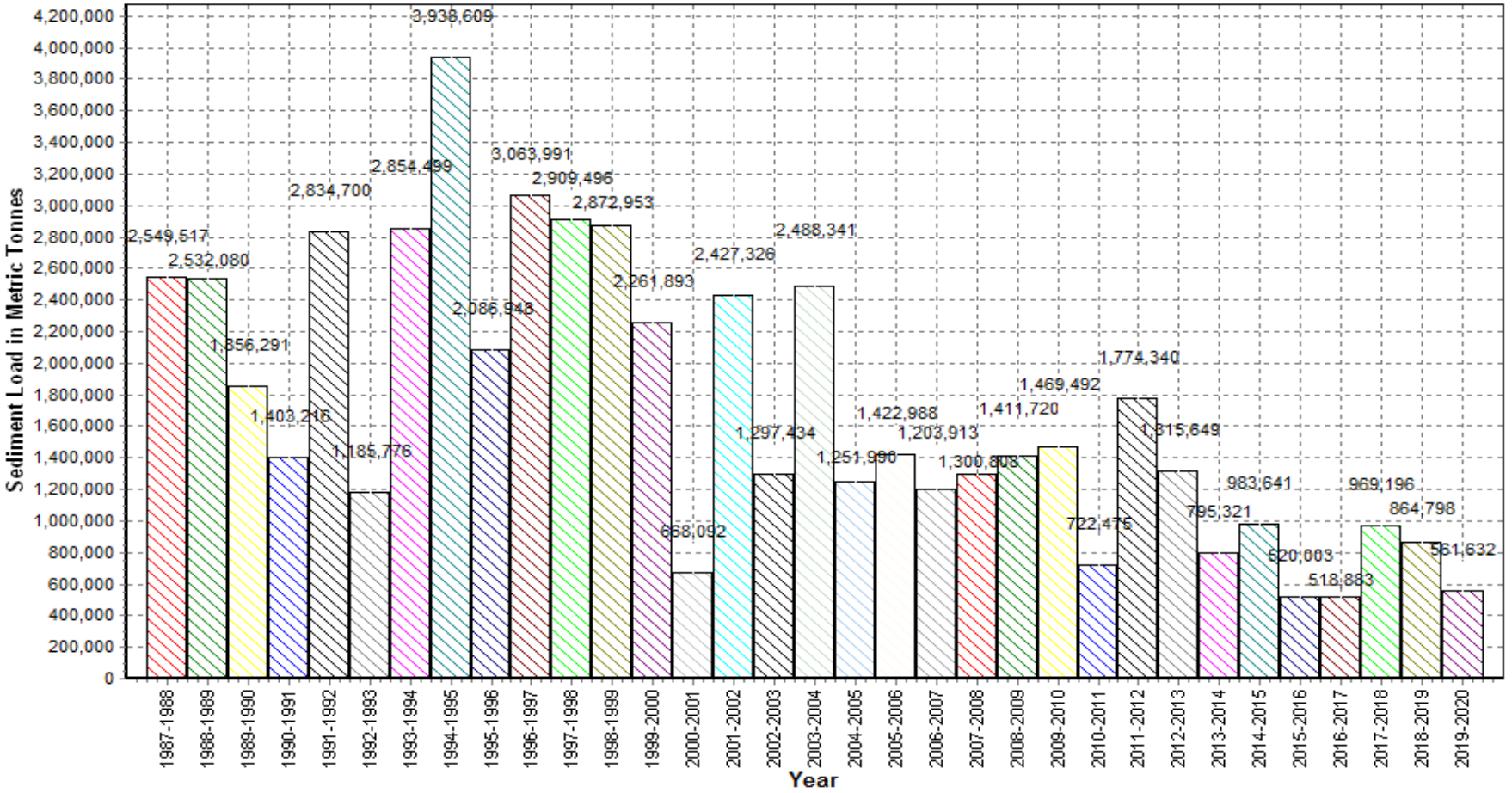
Local River : Sankh **Sub-Division : Rourkela.**

Year	Monsoon (M.T.)	Non-Monsoon (M.T.)	Annual Load (M.T.)	Annual Run Off (MCM)
1987-1988	2547446	2071	2549517	1808
1988-1989	2531017	1063	2532080	1998
1989-1990	1842714	13578	1856291	1240
1990-1991	1387808	15408	1403216	1867
1991-1992	2742881	91819	2834700	2150
1992-1993	1184174	1602	1185776	988
1993-1994	2852461	2038	2854499	1881
1994-1995	3912141	26468	3938609	3428
1995-1996	2054374	32574	2086948	1831
1996-1997	3063393	598	3063991	2638
1997-1998	2801400	108096	2909496	2789
1998-1999	2868272	4682	2872953	2455
1999-2000	2260030	1864	2261893	2776
2000-2001	667129	963	668092	1195
2001-2002	2426912	414	2427326	2590
2002-2003	1297120	314	1297434	1556
2003-2004	2462651	25690	2488341	2236
2004-2005	1248959	3031	1251990	1684
2005-2006	1420741	2248	1422988	1768
2006-2007	1203294	619	1203913	1588
2007-2008	1300660	148	1300808	1864
2008-2009	1411720	0	1411720	1987
2009-2010	1469309	183	1469492	1624
2010-2011	721353	1122	722475	899
2011-2012	1759072	15268	1774340	2633
2012-2013	1314262	1387	1315649	1913
2013-2014	785923	9398	795321	2273
2014-2015	982814	827	983641	1751
2015-2016	515947	4056	520003	1073
2016-2017	518840	43	518883	1503
2017-2018	968235	961	969196	1576
2018-2019	863776	1022	864798	1400
2019-2020	538207	23425	561632	1928

Annual Sediment Load for the period: 1987-2020

Station Name : TILGA (EBI00L3) **Division : E.E., Bhubaneswar**

Local River : Sankh **Sub-Division : Rourkela.**



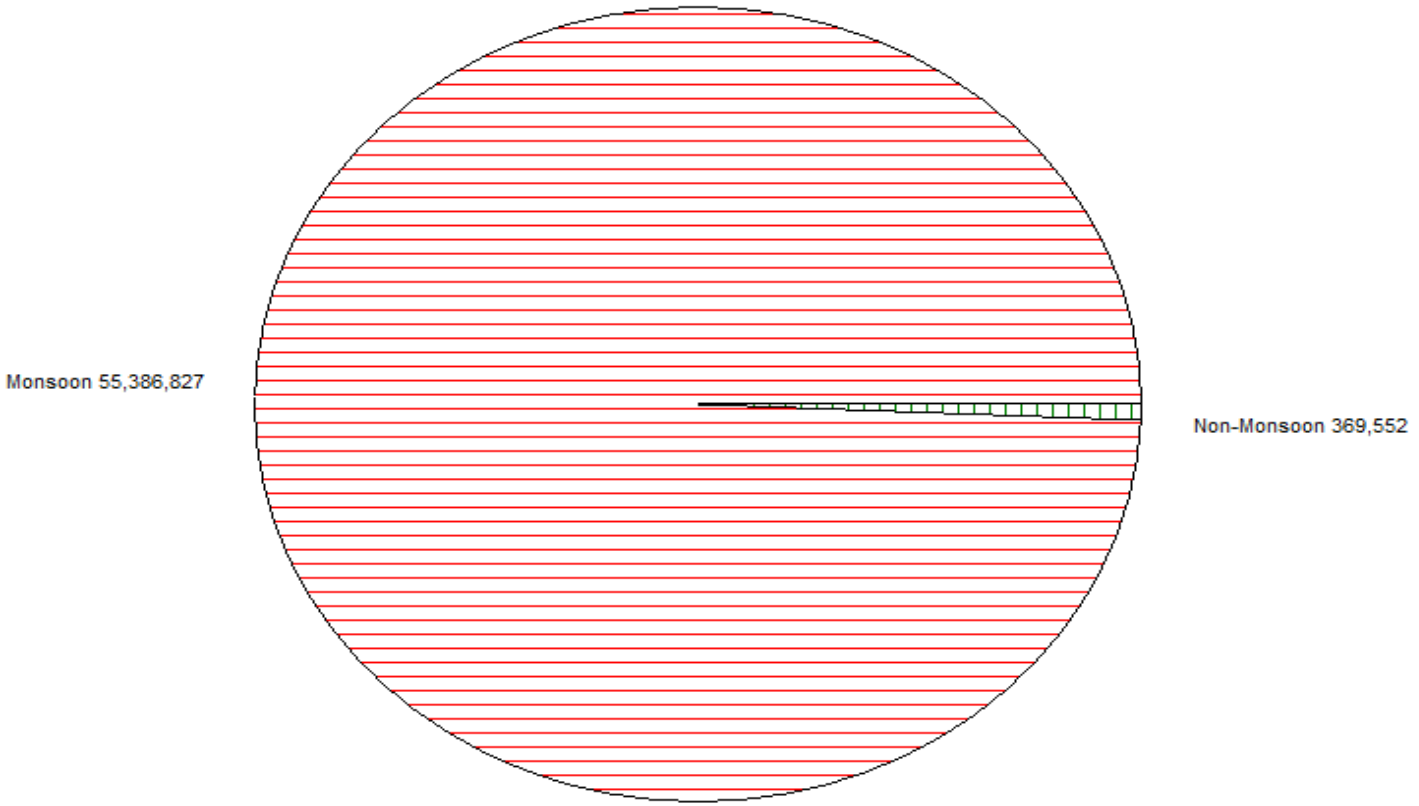
Seasonal Sediment Load for the period : 1987-2019

Station Name : TILGA (EBI00L3)

Local River : Sankh

Division : E.E., Bhubaneswar

Sub-Division : Rourkela.



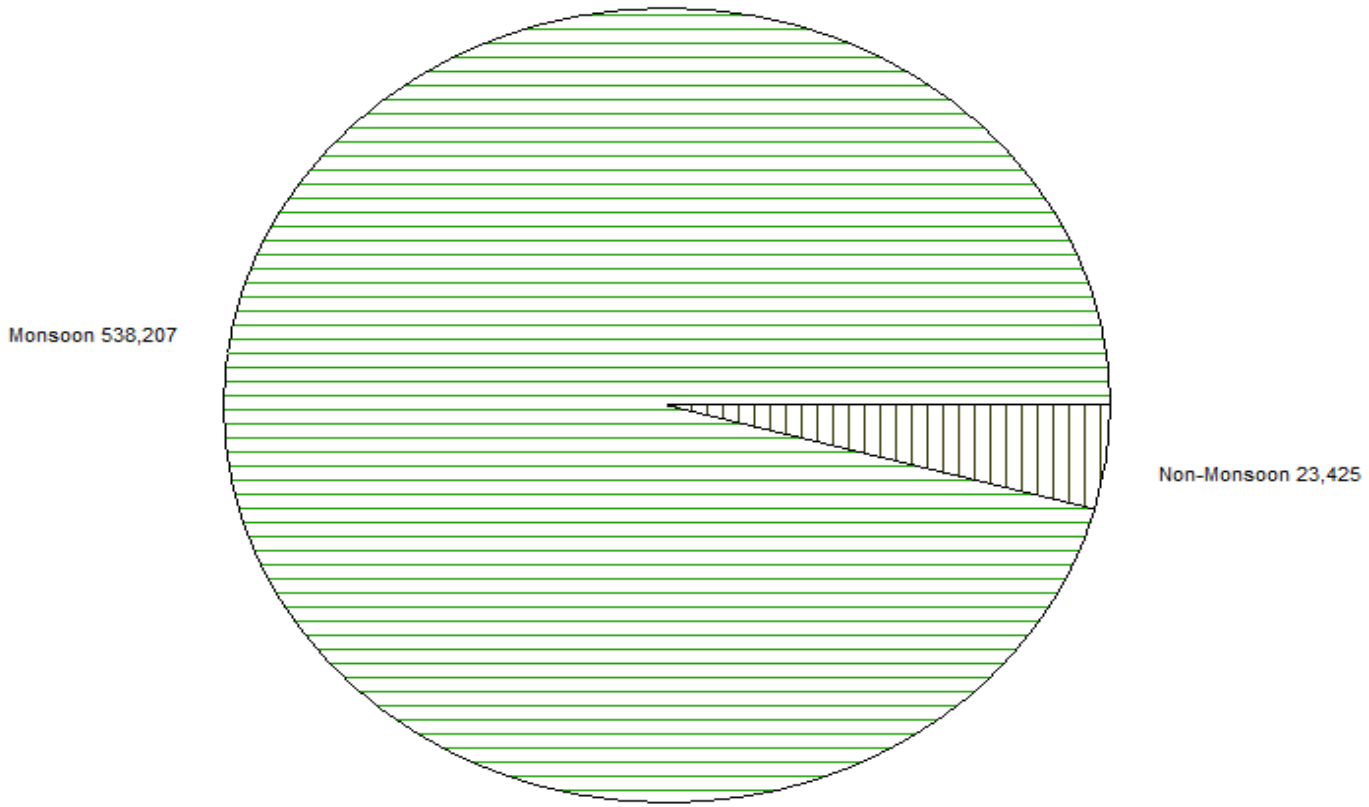
Seasonal Sediment Load for the Year: 2019-2020

Station Name : TILGA (EBI00L3)

Local River : Sankh

Division : E.E., Bhubaneswar

Sub-Division : Rourkela.



SECTION-III

(WATER QUALITY)

Water Quality Datasheet for the period : 2019-2020

Station Name : TILGA (EBI00L3) **Division : E.E., Bhubaneswar**

Local River : Sankh **River Water Analysis** **Sub-Division : A.E, Rourkela.**

S.No	Parameters	6/1/2019	7/1/2019	7/1/2019	8/1/2019	9/2/2019	10/1/2019	11/1/2019	12/2/2019	1/1/2020	2/1/2020	3/2/2020
		A	A	B	A	A	A	A	A	A	A	A
	PHYSICAL											
1	Q (cumec)											
2	Colour_Cod (-)	Light Brown		Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Green	Brown
3	EC_FLD (µmho/cm)	200		256	571	110	166	281	100	655	15	18
4	EC_GEN (µmho/cm)	206		251	570	109	165	280	115	637	85	235
5	Odour_Code (-)	odour free		odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
6	pH_FLD (pH units)	7.2		7.3	7.1	7.2	6.9	7.2	7.5	6.6	7.3	9.1
7	pH_GEN (pH units)	7.3		7.3	6.9	7.3	6.9	7.2	7.8	7.2	7.0	7.9
8	Temp (deg C)	27.0		29.0	27.0	28.0	25.0	23.5	18.5	14.0	20.5	
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0		
2	ALK-TOT (mgCaCO3/L)	41		28	20	25	37	51	43	32		
3	B (mg/L)	0.03										
4	Ca (mg/L)	13		8	16	8	15	19	6	16	10	16
5	Cl (mg/L)	14.8		14.6	12.5	65.4	8.6	51.8	18.4	12.1	15.7	17.9
6	CO3 (mg/L)	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0		
7	F (mg/L)						0.11	0.20				
8	HCO3 (mg/L)	50		34	25	30	45	63	53	39	15	78
9	K (mg/L)	1.0		1.8	1.7	0.9	1.1	1.1	11.5	1.3	1.1	1.3
10	Mg (mg/L)	4.8		15.1	5.7	4.9	2.0	5.6	3.8	2.8	2.8	7.5
11	Na (mg/L)	7.5		3.4	3.6	3.6	2.8	4.6	31.3	5.7	5.8	5.3
12	P-Tot (mgP/L)	0.001										
13	SiO2 (mg/L)	8.3										
14	SO4 (mg/L)	2.8		10.2	24.0	6.5	10.1	5.8	18.7	4.5	5.6	77.0
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)	1.7		0.2	1.0	0.8	0.4	0.8	1.0	1.4	1.2	0.8
2	DO (mg/L)	3.6		3.6	4.8	4.3	5.7	5.3	5.0	5.7	4.9	4.4
3	DO_SAT% (%)	45		46	60	54	69	62	53	55	54	
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	32		20	40	20	37	47	16	40	25	39
2	HAR_Total (mgCaCO3/L)	52		82	63	41	46	71	31	51	37	71
3	Na% (%)	24		8	11	16	12	12	60	19	25	14
4	RSC (-)	0.0		0.0	0.0	0.0	0.0	0.0	0.2	0.0		
5	SAR (-)	0.5		0.2	0.2	0.2	0.2	0.2	2.4	0.3	0.4	0.3
	PESTICIDES											

Water Quality Summary for the period : 2019-2020

Station Name : TILGA (EBI00L3) **Division : E.E., Bhubaneswar**

Local River : Sankh **Sub-Division : A.E, Rourkela.**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	10	655	15	237
3	EC_GEN (µmho/cm)	10	637	85	265
4	pH_FLD (pH units)	10	9.1	6.6	7.3
5	pH_GEN (pH units)	10	7.9	6.9	7.3
6	Temp (deg C)	9	29.0	14.0	23.6
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	8	0.0	0.0	0
2	ALK-TOT (mgCaCO3/L)	8	51	20	35
3	B (mg/L)	1	0.03	0.03	0.03
4	Ca (mg/L)	10	19	6	13
5	Cl (mg/L)	10	65.4	8.6	23.2
6	CO3 (mg/L)	8	0.0	0.0	0
7	F (mg/L)	2	0.20	0.11	0.16
8	HCO3 (mg/L)	10	78	15	43
9	K (mg/L)	10	11.5	0.9	2.3
10	Mg (mg/L)	10	15.1	2.0	5.5
11	Na (mg/L)	10	31.3	2.8	7.4
12	P-Tot (mgP/L)	1	0.001	0.001	0.001
13	SiO2 (mg/L)	1	8.3	8.3	8.3
14	SO4 (mg/L)	10	77.0	2.8	16.5
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	10	1.7	0.2	0.9
2	DO (mg/L)	10	5.7	3.6	4.7
3	DO_SAT% (%)	9	69	45	55
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	10	47	16	32
2	HAR_Total (mgCaCO3/L)	10	82	31	54
3	Na% (%)	10	60	8	20
4	RSC (-)	8	0.2	0.0	0
5	SAR (-)	10	2.4	0.2	0.5
	PESTICIDES				

Water Quality Seasonal Average for the period: 2007-2020

Station Name : TILGA (EBI00L3) **Division : E.E., Bhubaneswar**

Local River : Sankh **River Water** **Sub-Division : A.E, Rourkela.**

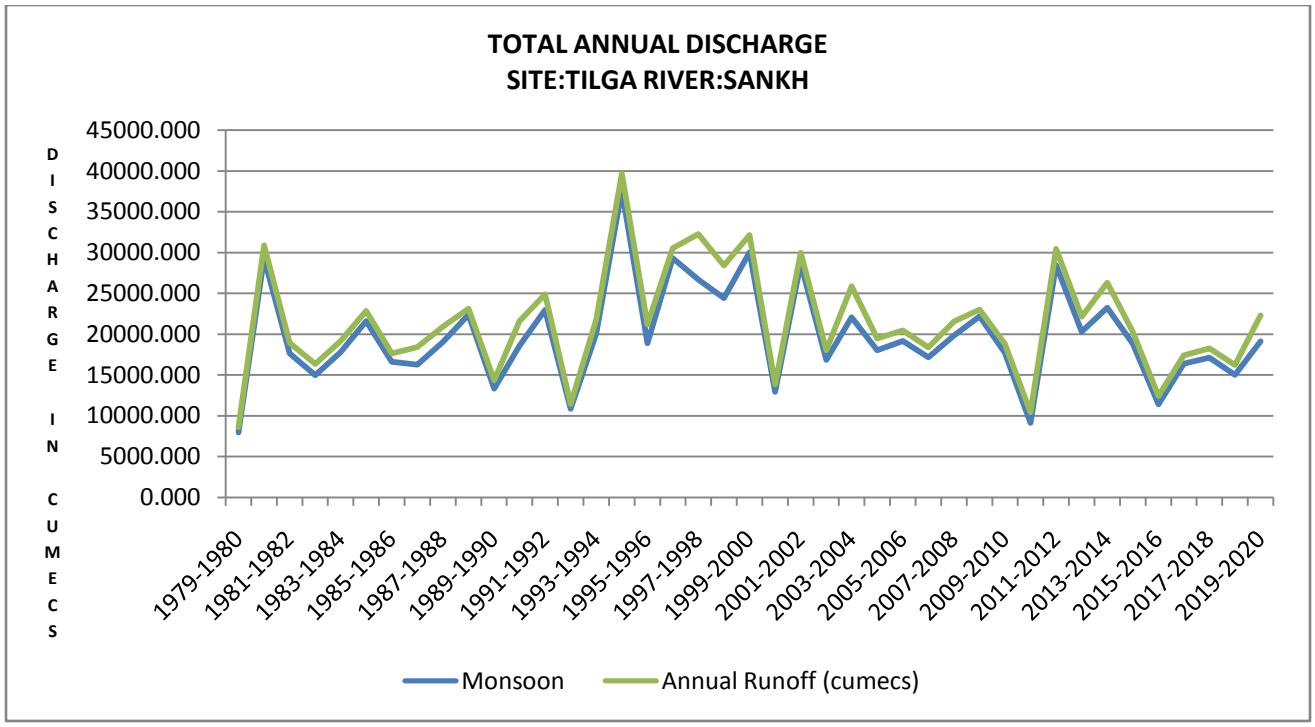
S.No	Parameters	Flood													Winter										
		Jun - Oct													Nov - Feb										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
	PHYSICAL																									
1	Q (cumec)																									
2	EC_FLD (µmho/cm)	109		137	94	102	111	56	83	160	157	92	83	261	89		99	97	90	86	76	110	187	175	87	126
3	EC_GEN (µmho/cm)	104		137	94	102	111	56	83	151	159	84	84	260	84		99	97	90	86	76	110	188	178	82	125
4	pH_FLD (pH units)	7.5		7.5	7.3	7.9	7.5	7.5	7.6	7.0	7.5	7.4	7.0	7.1	7.3		7.3	7.1	7.0	7.6	7.6	7.5	7.6	7.6	7.2	7.7
5	pH_GEN (pH units)	7.6		7.5	7.2	7.9	7.5	7.5	7.6	7.0	7.5	7.4	7.1	7.1	7.4		7.3	7.1	7.0	7.6	7.7	7.5	7.5	7.7	7.2	7.7
6	Temp (deg C)	31.0		26.0	28.2	27.8	27.8	25.8	29.2	28.2	29.7	28.3	28.2	27.2	14.8		14.5	17.8	16.8	15.5	17.5	18.0	20.0	20.5	17.5	17.5
	CHEMICAL																									
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	33	11	26	30	34			46	63	59	38	35	30	29	22	32	26	39					53	55	45	51
3	B (mg/L)	0.00		0.00	0.02	0.01	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.03	0.00		0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.02
4	Ca (mg/L)	10	13	11	7	38	9	9	15	22	17	28	15	12	9	11	7	10	9	10	9	9	20	21	19	12
5	Cl (mg/L)	9.9	8.8	11.7	8.1	14.5	14.5	12.5	11.7	13.2	8.2	18.7	13.2	23.2	10.7	5.9	11.7	8.5	14.1	12.3	12.0	14.1	17.9	13.2	10.4	6.2
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.00		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.08	0.11	0.00		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.13
8	Fe (mg/L)	0.1		6.3	0.1	0.0	1.9	0.0	0.3	0.4	0.5	0.5	0.5		0.1		0.0	0.1	0.0	1.9	0.0	0.2	0.4	0.5	0.4	0.4
9	HCO3 (mg/L)	40	13	38	33	41	30	46	60	77	71	46	43	37	36	27	30	32	48	31	43	48	65	68	55	62
10	K (mg/L)	1.8	11.5	1.6	2.2	1.5	1.6	1.5	1.2	1.5	3.7	1.8	3.7	1.3	1.5	1.4	1.1	1.3	1.0	1.2	1.2	1.1	1.2	2.9	1.8	3.4
11	Mg (mg/L)	2.0	2.4	4.9	2.9	3.6	1.9	2.7	5.2	12.0	11.8	8.2	5.3	6.5	2.2	5.7	3.4	2.9	1.0	2.9	1.4	3.4	11.2	11.2	6.9	2.8
12	Na (mg/L)	6.8	30.1	8.0	5.1	4.1	2.8	9.0	2.9	2.5	11.5	3.4	6.3	4.2	6.2	5.6	7.2	5.3	4.6	5.0	2.9	3.8	5.2	27.6	3.5	8.9
13	NO2+NO3 (mg N/L)	0.20		0.15	0.29	0.38	0.71	0.41	0.84	0.99	1.09	1.22	1.20		0.29		0.07	0.31	0.45	0.70	0.36	0.92	1.08	1.18	1.20	1.15
14	NO2-N (mgN/L)	0.00		0.00	0.01	0.07	0.00	0.30	0.04	0.00	0.01	0.01	0.00		0.00		0.00	0.00	0.07	0.00	0.01	0.01	0.01	0.02	0.00	0.00
15	NO3-N (mgN/L)	0.20		0.14	0.28	0.31	0.71	0.39	0.80	0.98	1.08	1.21	1.20		0.29		0.07	0.31	0.38	0.70	0.35	0.90	1.06	1.16	1.20	1.15
16	P-Tot (mgP/L)	4.740		0.018	0.002	0.010	0.001	0.001	0.001	0.001	0.010	0.001	0.001	0.001	0.002		0.002	0.001	0.010	0.001	0.003	0.001	0.010	0.010	0.001	0.001
17	SiO2 (mg/L)	8.2		6.6	4.7	7.7	10.7	7.9	4.3	5.0	6.7	8.7	8.1	8.3	9.7		6.4	5.7	10.0	11.5	9.1	5.3	5.5	6.5	8.7	7.1
18	SO4 (mg/L)	2.2	12.4	13.3	5.8	6.2	15.9	14.7	4.7	3.2	4.2	7.6	11.5	10.7	1.8	2.4	4.5	6.6	2.1	2.2	12.4	2.1	3.1	3.0	17.3	4.6
	BIOLOGICAL/BACTERIOLOGICAL																									
1	BOD3-27 (mg/L)	1.1		1.0	1.3	1.1	0.9	0.2	0.3	0.5	0.4	0.5	1.8	0.8	0.8		1.0	1.2	2.1	0.2	0.3	0.4	1.7	0.5	0.4	1.1
2	DO (mg/L)	6.1		7.1	7.3	6.3	6.6	6.9	6.9	6.0	8.1	6.2	6.2	4.4	8.6		7.2	7.9	8.1	8.6	8.1	11.5	8.6	10.0	7.1	6.8
3	DO_SAT% (%)	82		87	93	80	84	85	90	77	106	79	79	55	84		71	82	83	87	84	122	95	109	74	73
4	FCol-MPN (MPN/100mL)											68	65											90	68	
5	Tcol-MPN (MPN/100mL)											148	175											140	193	
	TRACE & TOXIC																									
	CHEMICAL INDICES																									
1	HAR_Ca (mgCaCO3/L)	25	32	27	19	96	23	23	39	56	41	70	37	30	21	28	18	24	22	24	23	22	50	52	48	29
2	HAR_Total (mgCaCO3/L)	34	42	47	31	111	31	34	60	106	91	104	59	57	31	52	32	36	26	36	28	36	97	99	77	41
3	Na% (%)	29	54	26	25	17	14	35	15	5	20	8	17	14	29	18	34	24	27	22	18	17	10	36	9	31
4	RSC (-)	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1	0.1	0.0	0.0	0.0	0.3
5	SAR (-)	0.5	2.0	0.5	0.4	0.3	0.2	0.7	0.2	0.1	0.5	0.2	0.3	0.2	0.5	0.3	0.6	0.4	0.4	0.4	0.2	0.3	0.2	1.2	0.2	0.7
	PESTICIDES																									

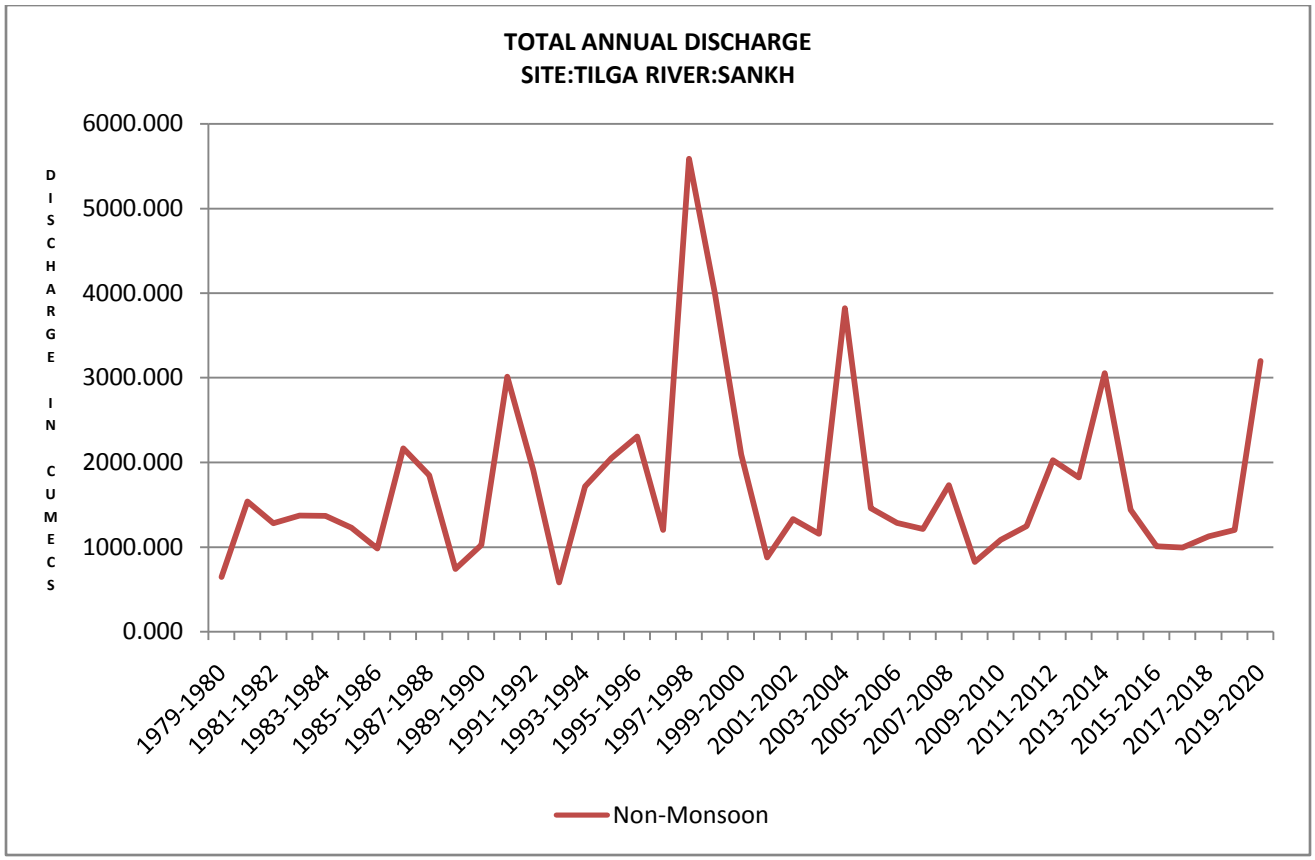
Water Quality Seasonal Average for the period: 2007-2020

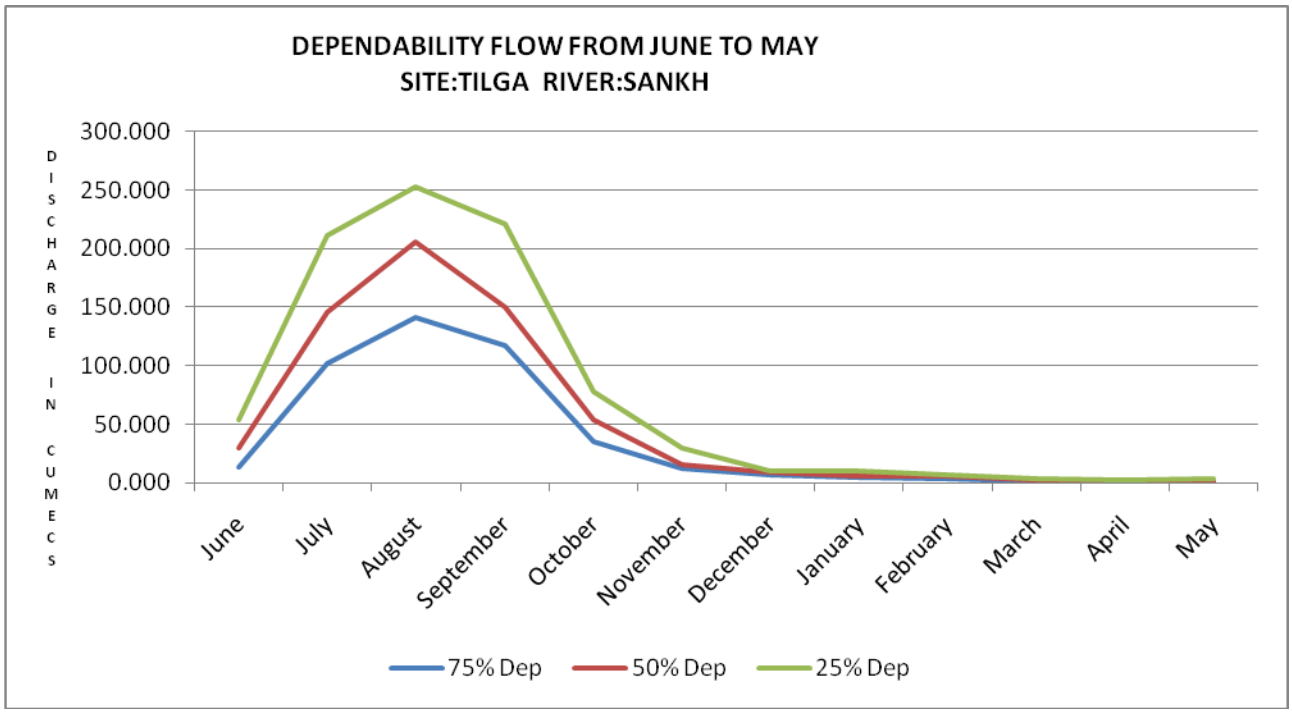
Station Name : TILGA (EBI00L3) **Division : E.E., Bhubaneswar**

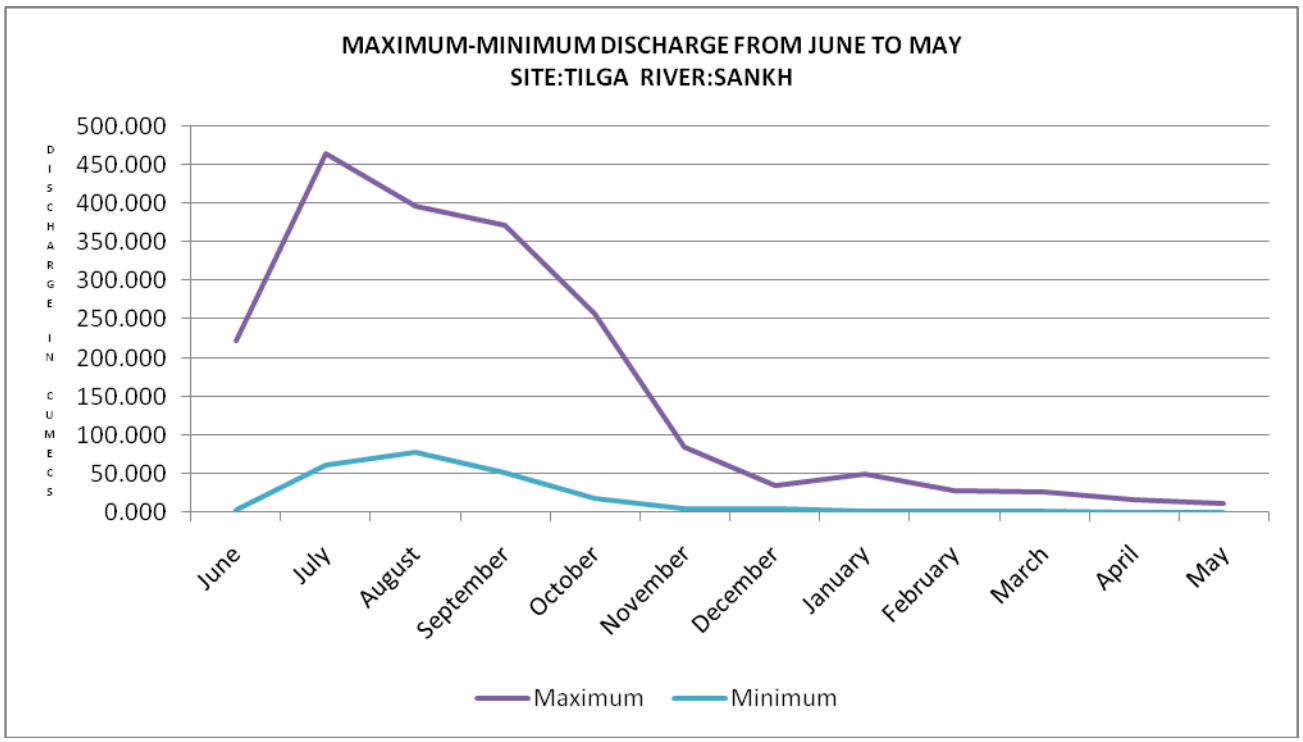
Local River : Sankh **River Water** **Sub-Division : A.E, Rourkela.**

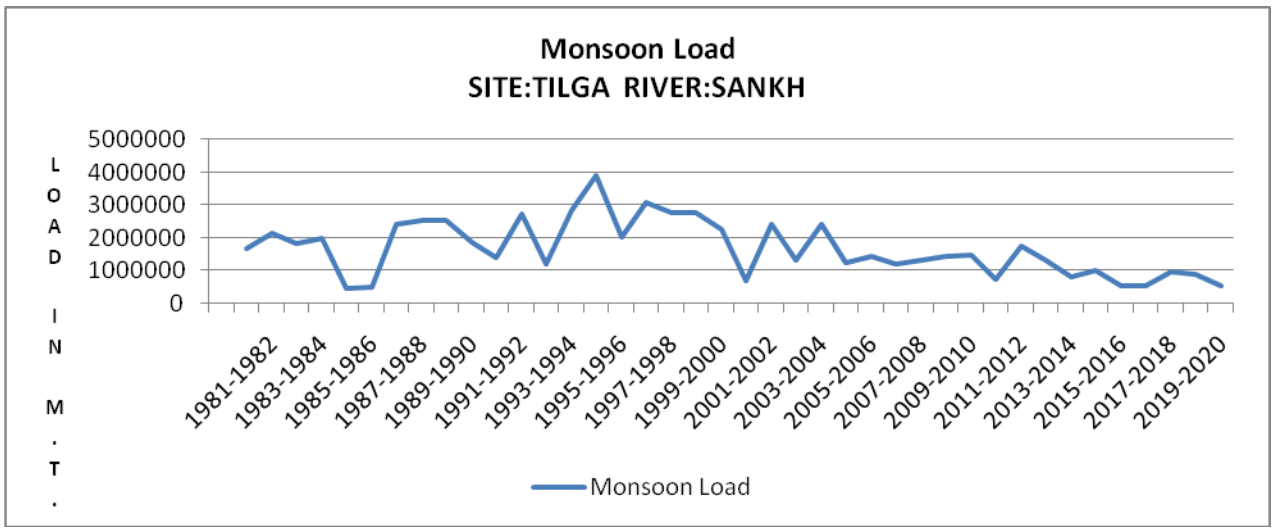
S.No	Parameters		Summer												
			Mar - May												
		2019-2020	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	PHYSICAL														
1	Q (cumec)														
2	EC_FLD (µmho/cm)	263	92		103	158	102	115	93	154	179	142	117	310	18
3	EC_GEN (µmho/cm)	279	95		103	158	102	115	93	154	182	145	114	309	235
4	pH_FLD (pH units)	7.2	7.7		6.4	8.0	7.2	7.7	7.5	7.4	7.9	7.5	7.5	7.4	9.1
5	pH_GEN (pH units)	7.3	7.8		6.4	8.0	7.2	7.7	7.5	7.4	7.9	7.6	7.4	7.4	7.9
6	Temp (deg C)	19.1	22.0		23.0	24.5	24.0	23.5	24.0	25.0	23.5	22.0	24.0	23.7	
	CHEMICAL														
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0		0.0	0.0				0.0	0.0	0.0	0.0	
2	ALK-TOT (mgCaCO3/L)	42	31	22		59	51				55	55	54	43	
3	B (mg/L)		0.00		0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.02	
4	Ca (mg/L)	13	11	10	8	14	13	13	9	13	22	22	19	12	16
5	Cl (mg/L)	24.5	9.2	11.7	7.4	9.4	24.5	21.4	12.3	23.5	13.2	9.4	13.2	10.0	17.9
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
7	F (mg/L)	0.20	0.05		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05		
8	Fe (mg/L)				0.1	0.1	0.0	0.2	0.1	0.4	0.6	0.5	0.5		
9	HCO3 (mg/L)	42	38	27	50	72	62	90	28	62	68	68	66	53	78
10	K (mg/L)	3.8	0.8	1.2	1.2	1.1	1.2	2.4	1.6	1.4	1.0	2.9	0.9	3.1	1.3
11	Mg (mg/L)	3.8	2.8	3.9	4.9	5.8	1.0	2.5	2.4	9.7	12.6	11.7	8.2	6.7	7.5
12	Na (mg/L)	11.8	6.1	6.1	4.8	5.8	4.8	16.3	12.6	4.6	8.9	39.0	4.7	7.2	5.3
13	NO2+NO3 (mg N/L)		0.29		0.13	0.55	0.36	0.84	0.50	0.69	1.28	1.20	1.25		
14	NO2-N (mgN/L)		0.00		0.00	0.03	0.07	0.00	0.00	0.01	0.00	0.01	0.00		
15	NO3-N (mgN/L)		0.29		0.13	0.52	0.29	0.84	0.50	0.67	1.28	1.19	1.25		
16	P-Tot (mgP/L)		0.050		0.001	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001	0.001	
17	SiO2 (mg/L)		6.2		6.7	7.6	11.0	22.5	7.8	3.0	5.0	8.0	8.0	7.8	
18	SO4 (mg/L)	8.7	6.3	1.4	2.6	2.0	1.6	4.0	10.6	1.6	3.2	3.2	10.0	3.2	77.0
	BIOLOGICAL/BACTERIOLOGICAL														
1	BOD3-27 (mg/L)	1.1	1.7		0.8	1.9	1.1	1.6	0.4	0.2	0.8	1.2	0.5	0.8	0.8
2	DO (mg/L)	5.2	8.6		7.8	7.5	6.8	7.7	7.3	6.0	6.9	6.9	5.3	5.4	4.4
3	DO_SAT% (%)	56	98		91	89	80	90	87	72	81	79	63	65	
4	FCol-MPN (MPN/100mL)											110	90		
5	Tcol-MPN (MPN/100mL)											220	230		
	TRACE & TOXIC														
	CHEMICAL INDICES														
1	HAR_Ca (mgCaCO3/L)	32	28	24	20	36	32	32	22	32	56	56	48	31	39
2	HAR_Total (mgCaCO3/L)	47	40	40	40	60	36	42	32	73	109	105	82	59	71
3	Na% (%)	29	25	24	20	17	22	44	45	12	15	44	11	21	14
4	RSC (-)	0.1	0.0	0.0	0.0	0.0	0.3	0.6	0.0	0.0	0.0	0.0	0.0	0.0	
5	SAR (-)	0.9	0.4	0.4	0.3	0.3	0.3	1.1	1.0	0.2	0.4	1.7	0.2	0.4	0.3
	PESTICIDES														

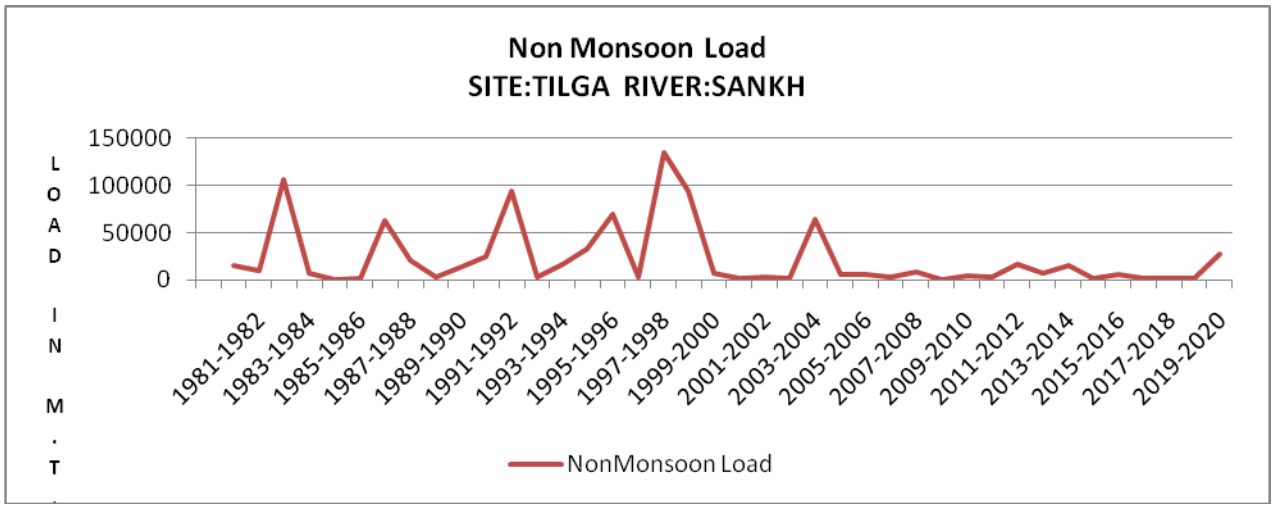

TOTAL ANNUAL DISCHARGE
SITE:TILGA RIVER:SANKH
DISCHARGE IN CUMECS
45000.000
40000.000
35000.000
30000.000
25000.000
20000.000
15000.000
10000.000
5000.000
0.000
1979-1980
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
2019-2020
Monsoon
Annual Runoff (cumecs)

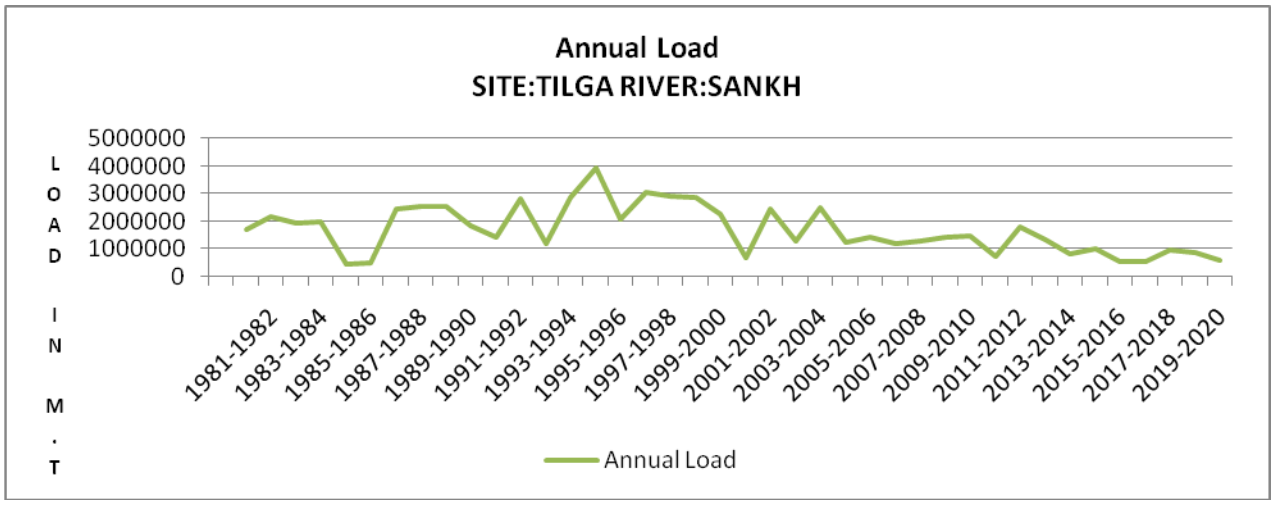

TOTAL ANNUAL DISCHARGE
SITE:TILGA RIVER:SANKH
DISCHARGE IN CUMECS
6000.000
5000.000
4000.000
3000.000
2000.000
1000.000
0.000
1979-1980
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
2019-2020
Non-Monsoon

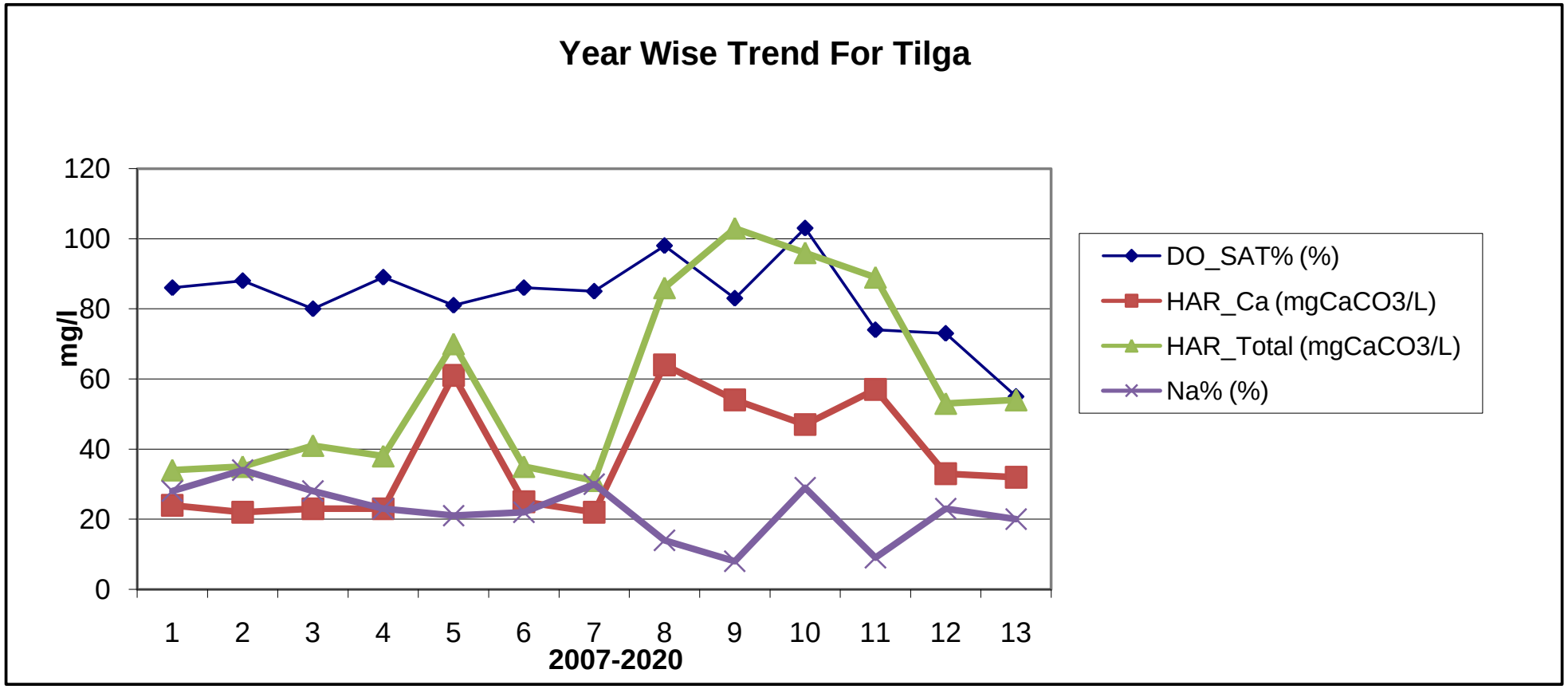

DEPENDABILITY FLOW FROM JUNE TO MAY
SITE:TILGA RIVER:SANKH
DISCHARGE IN CUMECS
300.000
250.000
200.000
150.000
100.000
50.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
75% Dep
50% Dep
25% Dep

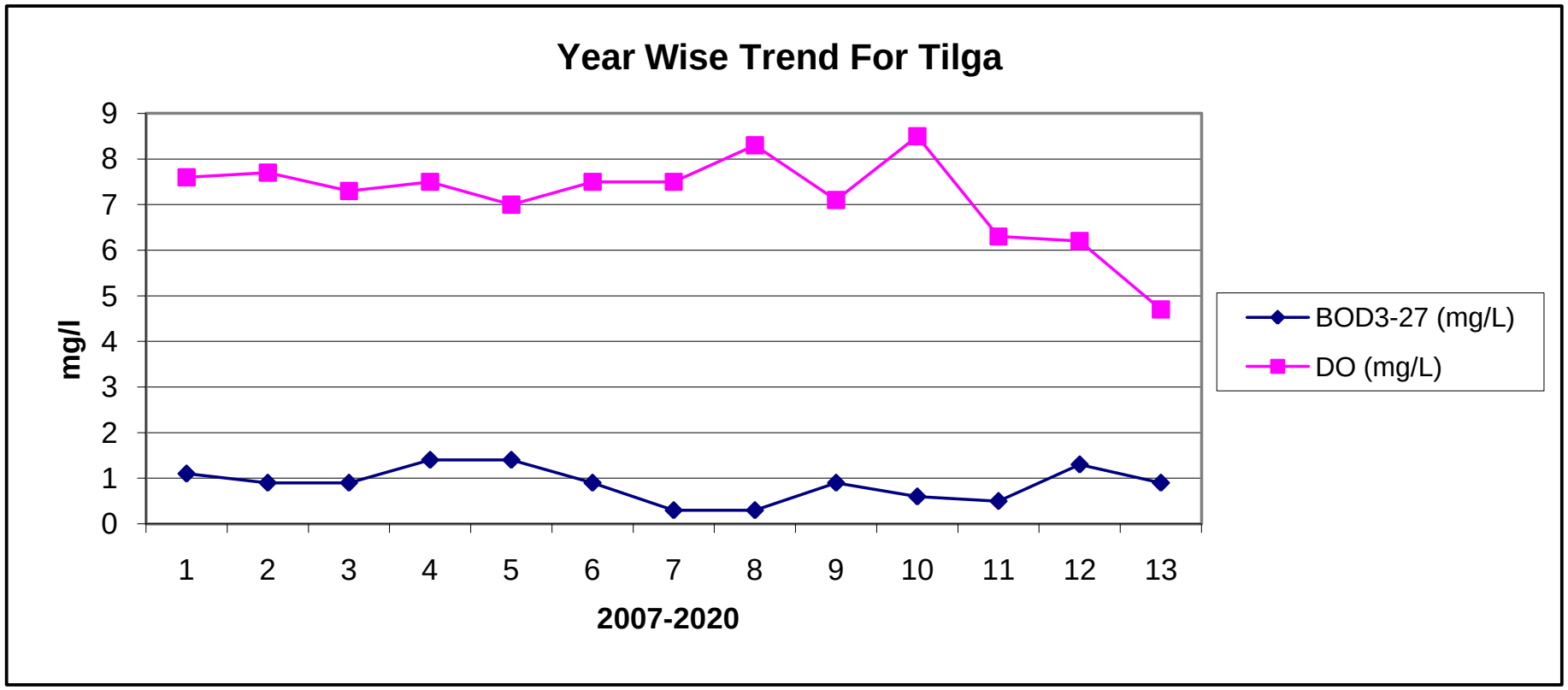

MAXIMUM-MINIMUM DISCHARGE FROM JUNE TO MAY
SITE:TILGA RIVER:SANKH
DISCHARGE IN CUMECS
500.000
450.000
400.000
350.000
300.000
250.000
200.000
150.000
100.000
50.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
Maximum
Minimum

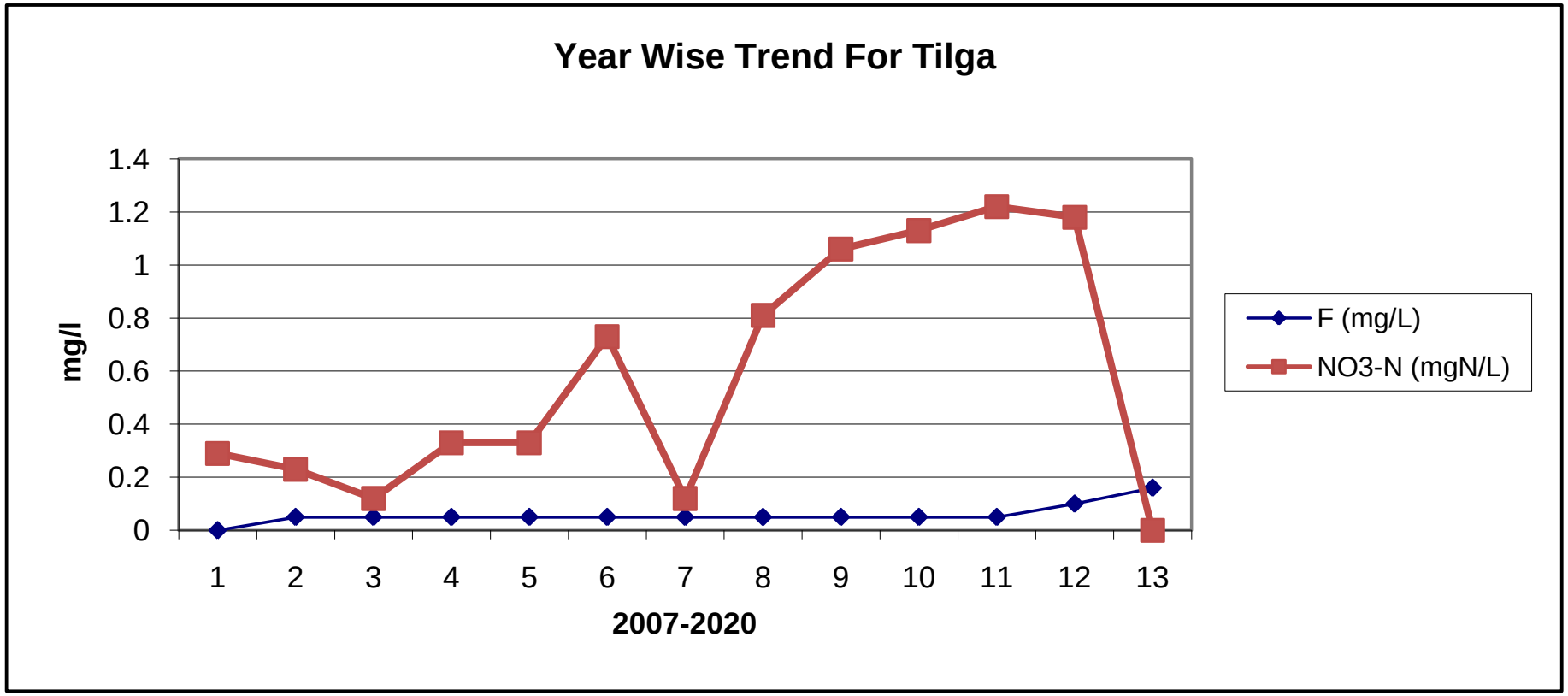

Monsoon Load
SITE:TILGA RIVER:SANKH
LOAD IN M.T.
5000000
4000000
3000000
2000000
1000000
0
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
2019-2020
Monsoon Load

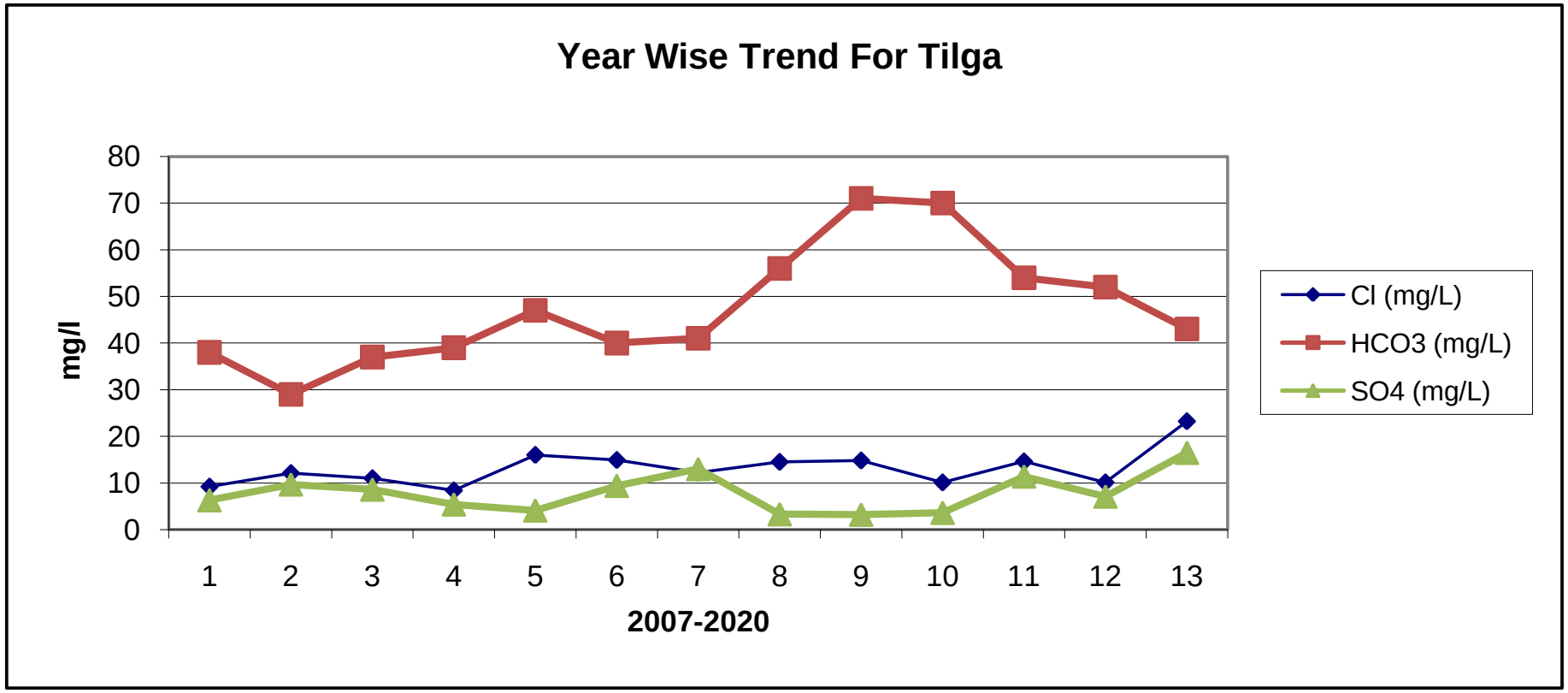

Non Monsoon Load
SITE:TILGA RIVER:SANKH
LOAD IN M.T.
150000
100000
50000
0
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
2019-2020
NonMonsoon Load

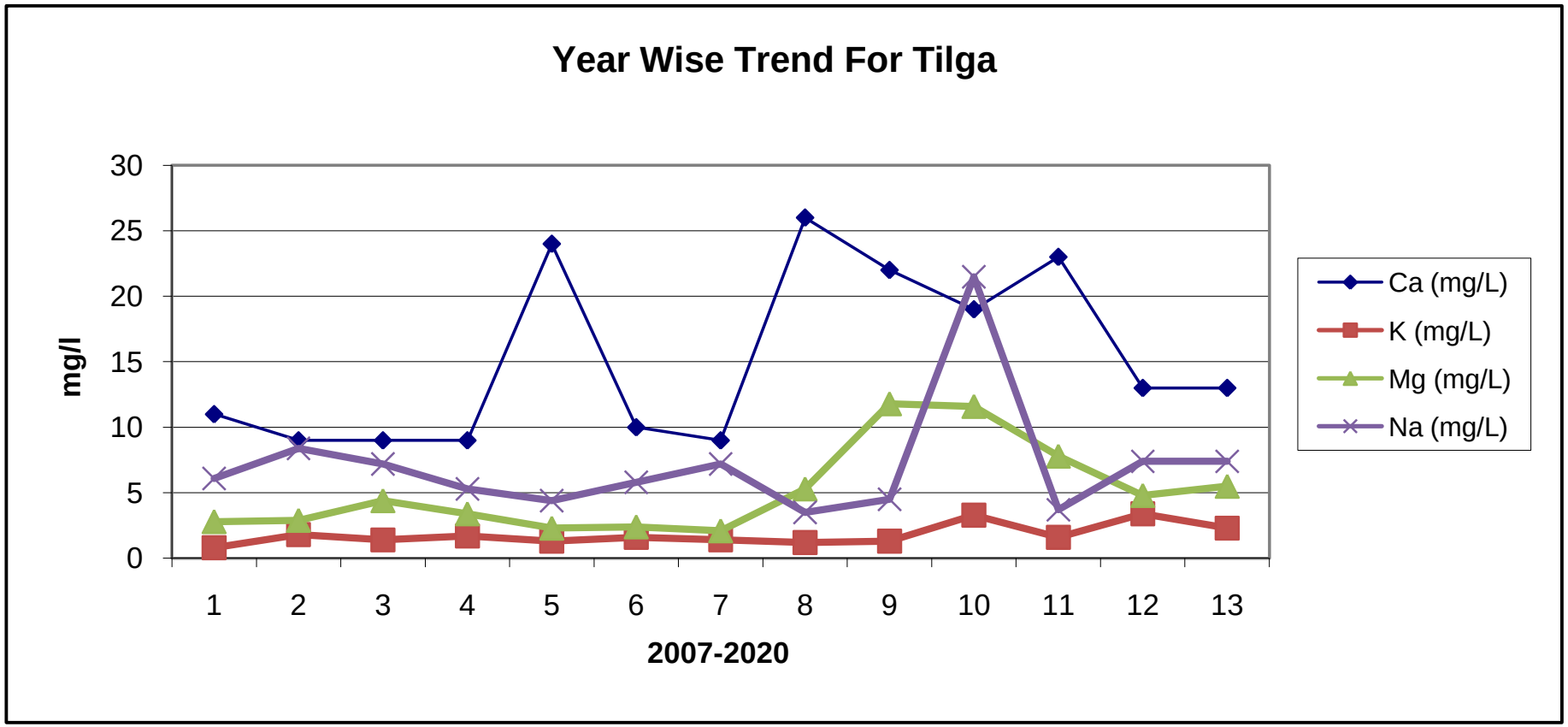

Annual Load
SITE:TILGA RIVER:SANKH
LOAD IN M.T.
5000000
4000000
3000000
2000000
1000000
0
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
2019-2020
Annual Load


Year Wise Trend For Tilga
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
DO_SAT% (%)
HAR_Ca (mgCaCO3/L)
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For Tilga
mg/l
9
8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
BOD3-27 (mg/L)
DO (mg/L)


Year Wise Trend For Tilga
mg/l
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend For Tilga
mg/l
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year Wise Trend For Tilga
mg/l
30
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
Ca (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

SITE

JARAIKELA

SECTION-I (HISTORY SHEET,DISCHARGE,CROSS SECTION)

HISTORY SHEET

Water Year : 2019-2020

Site	:	**JARAIKELA**	**Code**	:	**EBJ00D5**
State	:	Orissa	District		Sundergarh
Basin	:	Brahmani-Baitarani	Independent River	:	Brahmani
Tributary	:	Koel	Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	Koel
Division	:	E.E., Bhubaneswar	Sub-Division	:	Rourkela
Drainage Area	:	9160 Sq. Km.	Bank	:	Left
Latitude	:	22°19'34"	Longitude	:	85°04'48"
Zero of Gauge (m)	:	182 (m.s.l)	7/1/1971	-	3/20/1975
		185 (m.s.l)	3/21/1975	-	12/31/2025
		Opening Date	Closing Date		
Gauge	:	7/23/1971			
Discharge	:	8/1/1972			
Sediment	:	6/1/1975	9/4/2002		
Water Quality	:	9/1/1975			

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1973-1974	2436	192.185	9/26/1973	1.300	186.265	5/11/1974
1974-1975	3557	192.540	8/17/1974	1.000	186.055	4/26/1975
1975-1976	4130	192.405	7/18/1975	1.300	186.035	6/18/1975
1976-1977	8062	193.950	9/18/1976	1.711	185.865	4/5/1977
1977-1978	10730	193.900	8/6/1977	1.330	186.320	5/25/1978
1978-1979	5697	193.090	9/3/1978	0.730	186.230	5/30/1979
1979-1980	816.3	189.658	8/9/1979	0.410	186.260	5/10/1980
1980-1981	1372	190.135	7/11/1980	1.180	186.430	4/2/1981
1981-1982	1089	190.105	9/7/1981	0.970	186.645	5/13/1982
1982-1983	2251	191.370	8/21/1982	1.145	186.445	4/17/1983
1983-1984	1351	190.485	9/19/1983	0.604	186.615	5/30/1984
1984-1985	2611	191.810	8/27/1984	1.090	186.250	5/7/1985
1985-1986	2663	191.855	10/17/1985	2.260	186.665	4/21/1986
1986-1987	1818	190.900	7/28/1986	1.541	186.510	5/28/1987
1987-1988	3465	191.750	8/28/1987	1.000	186.265	5/29/1988
1988-1989	6422	192.975	6/28/1988	0.483	186.255	5/16/1989
1989-1990	1666	191.670	6/22/1989	2.656	186.395	6/5/1989
1990-1991	2293	191.365	7/15/1990	2.562	186.675	5/21/1991
1991-1992	2153	191.670	8/13/1991	2.200	186.465	5/24/1992
1992-1993	744.1	189.905	8/30/1992	1.318	186.445	5/18/1993
1993-1994	2202	191.770	7/13/1993	1.113	186.550	5/12/1994

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1994-1995	5007	192.915	8/3/1994	2.437	186.520	4/28/1995
1995-1996	4233	193.120	9/18/1995	1.538	186.465	5/19/1996
1996-1997	4903	192.965	7/26/1996	1.824	186.405	5/31/1997
1997-1998	12539	194.010	8/6/1997	0.884	186.365	6/12/1997
1998-1999	3252	192.205	9/11/1998	1.690	186.260	5/3/1999
1999-2000	1900	191.750	10/19/1999	2.337	186.380	4/25/2000
2000-2001	3872	193.010	7/25/2000	1.863	186.320	5/5/2001
2001-2002	4288	192.455	7/21/2001	1.764	186.295	5/14/2002
2002-2003	1139	190.400	6/24/2002	1.363	186.405	5/29/2003
2003-2004	2600	192.100	10/25/2003	0.895	186.355	6/8/2003
2004-2005	4063	193.060	8/21/2004	1.431	186.380	5/28/2005
2005-2006	1262	190.415	6/30/2005	0.990	186.280	6/22/2005
2006-2007	2658	191.190	7/30/2006	2.755	186.540	5/31/2007
2007-2008	4603	193.330	8/20/2007	1.682	186.490	6/8/2007
2008-2009	1240	190.625	7/8/2008	1.710	186.545	5/6/2009
2009-2010	2366	192.025	9/8/2009	0.957	186.230	4/28/2010
2010-2011	571.1	189.475	9/16/2010	0.770	186.440	4/4/2011
2011-2012	4032	193.085	6/20/2011	1.821	186.345	5/31/2012
2012-2013	878.7	190.200	8/17/2012	1.025	186.300	6/14/2012
2013-2014	1548	191.960	10/3/2013	0.000	188.715	8/20/2013
2014-2015	957.0	190.570	8/10/2014	0.000	190.020	7/21/2014
2015-2016	461.3	188.780	7/26/2015	0.000	189.920	7/24/2015
2016-2017	722.1	192.350	8/19/2016	0.173	186.225	5/10/2017
2017-2018	1699	190.600	8/5/2017	0.000	189.480	7/29/2017
2018-2019	548.2	189.540	9/7/2018	1.538	186.340	5/31/2019
2019-2020	2430	191.890	8/19/2019	1.440	186.340	6/1/2019

Q : Observed / Computed Discharge WL : Corresponding Water Level(m.s.l)

Stage-Discharge Data for the period 2019 - 2020

Station Name : JARAIKELA (EBJ00D5) **Division : E.E., Bhubaneswar**

Local River : Koel **Sub-Division : Rourkela**

Day	Jun		Jul		Aug		Sep		Oct		Nov	
	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q
1	186.340	1.440	186.750	13.87	187.890	94.57	188.150	192.8 *	189.240	498.5	187.880	142.2
2	186.340	1.440 *	186.920	24.00	187.565	62.30	187.745	111.5	189.040	431.6 *	187.770	128.2
3	186.360	1.670	187.320	52.48	187.365	54.97	187.505	86.76	188.540	264.4	187.690	114.8 *
4	186.350	1.524	187.290	51.51 *	187.280	47.85 *	187.595	101.5	188.240	217.5	187.600	99.63
5	186.350	1.530 *	187.275	51.03	187.845	92.96	187.760	120.7	188.000	169.3	187.560	97.93
6	186.370	1.859	187.165	38.30	187.360	53.77	187.610	101.0	187.830	128.5 *	187.510	90.62
7	186.360	1.816	187.080	31.69 *	187.220	48.36	187.545	89.33	188.000	169.3 *	187.480	83.71
8	186.340	1.660	187.320	50.33	187.340	53.04	187.550	90.00 *	188.250	229.3 *	187.440	80.37
9	186.540	3.750 *	187.315	53.05	188.125	149.4	187.600	96.71 *	188.670	330.2	187.410	78.75
10	186.480	3.120	187.240	48.73	188.235	145.1	187.720	112.8	188.730	319.8	187.390	75.57 *
11	186.450	2.894	187.355	52.43	188.010	106.5 *	187.770	119.8	188.290	227.8	187.390	75.56
12	186.420	2.545	187.300	50.05	187.920	91.00 *	187.595	100.1	188.065	211.7	187.380	74.65 *
13	186.400	2.466	187.350	51.84	188.340	223.8	188.250	225.1	188.170	238.7 *	187.360	72.81
14	186.390	2.263	187.290	45.43 *	188.565	250.7	188.580	258.2	188.000	195.6	187.340	67.81
15	186.370	2.060	187.275	43.82	188.510	238.5 *	188.150	184.3 *	187.785	157.9	187.310	62.17
16	186.420	2.220 *	187.130	33.44	188.155	170.1	187.820	127.7	187.655	95.93	187.280	62.54
17	186.370	2.020	186.995	25.87	187.850	120.4	187.710	115.3	187.550	85.58	187.270	60.49 *
18	186.390	2.148	186.920	22.22	187.950	154.9 *	187.650	105.0	187.490	83.21	187.250	56.39
19	186.450	3.192	186.974	26.03	191.890	2430	187.525	82.24	187.440	80.71	187.230	53.31
20	186.400	2.857	187.025	28.18	190.160	1060	187.490	88.97	187.400	77.09 *	187.220	52.36
21	186.445	3.753	186.960	22.56 *	188.970	413.0	187.480	79.66	187.675	101.9	187.200	50.57
22	186.660	5.871	186.905	20.24	188.480	231.4	187.480	79.66 *	187.650	95.39	187.190	51.48
23	186.790	13.71 *	186.840	17.57	188.010	180.8	187.395	72.01	187.620	92.94	187.180	49.27
24	187.880	79.43	186.850	17.65	187.910	150.2	187.330	71.50	187.800	108.6	187.170	47.74 *
25	187.365	43.66	186.865	18.14	187.890	146.2 *	187.310	70.33	188.930	388.5	187.160	46.19
26	187.070	25.33	186.815	15.76	188.250	219.0	187.425	72.77	190.440	874.3	187.150	45.25
27	186.875	18.92	187.170	38.83	188.490	282.4	187.550	91.24	189.550	589.1 *	187.140	44.90
28	186.755	14.33	187.990	107.7 *	188.660	288.5	187.890	122.7	188.790	345.7	187.120	42.75
29	186.665	9.904	187.840	95.27	188.975	393.3	188.520	280.5 *	188.400	240.0	187.110	41.61
30	186.790	15.07 *	187.920	100.6	189.540	545.5	189.590	548.8	188.160	199.3	187.100	41.34
31			187.705	72.48	188.705	297.3			187.955	162.7		
Ten-Daily Mean												
I Ten-Daily	186.383	1.981	187.167	41.50	187.622	80.24	187.678	110.3	188.454	275.8	187.573	99.18
II Ten-Daily	186.406	2.467	187.161	37.93	188.735	484.5	187.854	140.7	187.785	145.4	187.303	63.81
III Ten-Daily	186.930	23.00	187.260	47.89	188.535	286.1	187.797	148.9	188.452	290.8	187.152	46.11
Monthly												
Min.	186.340	1.440	186.750	13.87	187.220	47.85	187.310	70.33	187.400	77.09	187.100	41.34
Max.	187.880	79.43	187.990	107.7	191.890	2430	189.590	548.8	190.440	874.3	187.880	142.2
Mean	186.573	9.148	187.198	42.61	188.305	283.7	187.776	133.3	188.237	239.1	187.343	69.7

Annual Runoff in MCM = 2440 Annual Runoff in mm = 266

Peak Observed Discharge = 2430 cumecs on 19/08/2019 Corres. Water Level :191.89 m

Lowest Observed Discharge = 1.440 cumecs on 01/06/2019 Corres. Water Level :186.34 m

Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

Stage-Discharge Data for the period 2019 - 2020

Station Name : JARAIKELA (EBJ00D5) **Division : E.E., Bhubaneswar**

Local River : Koel **Sub-Division : Rourkela**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	187.080	38.44 *	187.110	30.66	187.170	21.79	187.010	12.28 *			187.160	43.53
2	187.070	36.99	187.080	29.03	187.150	20.07 *	187.000	12.26			187.080	40.35
3	187.060	34.61	187.080	28.22	187.130	18.34	186.990	11.13			187.010	
4	187.050	34.52	187.140	30.18	187.110	18.07	186.990	11.20			186.960	30.83
5	187.040	34.31	187.550	60.00 *	187.100	17.31	186.980	10.49			186.930	26.94
6	187.030	34.58	187.380	68.64	187.100	17.56	186.990	10.70			186.920	25.33
7	187.020	32.44	187.280	62.86	187.090	17.30	187.070	13.00			186.960	
8	187.010	32.65 *	187.160	52.33	187.110	17.51	187.110	18.91 *			187.030	35.58
9	187.000	32.85	187.090	47.01	187.140	18.20 *	187.320	49.86			187.090	40.30
10	187.000	31.39	187.060	42.47	187.180	19.11	187.360	53.20 *			187.020	
11	187.020	30.54	187.060	40.88	187.180	18.50	187.250	44.04			186.940	27.96
12	187.010	29.73	187.100	46.44 *	187.170	19.01	187.150	39.37			186.900	23.14
13	187.010	29.23	187.080	43.66	187.150	18.82	187.190	40.11			186.890	23.11
14	187.000	28.97	187.030	39.80	187.130	17.57	187.280	47.96			187.080	40.00
15	186.990	28.81 *	186.990	34.60	187.100	17.01	187.390	57.70 *			186.980	32.99
16	186.990	25.80	186.960	32.97	187.070	15.55 *	187.470	64.77			186.890	23.77
17	187.030	30.03	186.940	28.91	187.050	14.56	187.700	80.02			186.860	
18	187.030	29.57	186.970	28.30	187.040	14.52	187.560	76.34			186.920	28.26
19	187.150	46.29	186.960	27.17 *	187.020	13.58	187.400	75.31			186.850	18.09
20	187.130	43.38	186.930	23.79	187.010	13.50	187.210	63.58	186.600	5.120	186.800	15.00
21	187.100	38.48	186.910	21.43	187.010	13.96	187.140	53.71	186.710	8.715	186.780	14.07
22	187.110	36.58 *	186.910	21.22	187.000	13.81	187.010	42.82 *	186.780	10.08	186.770	13.61
23	187.120	32.68	186.900	22.11	186.990	12.88 *	186.920	35.27	186.980	26.25	186.760	13.53
24	187.100	29.18	187.050	20.32	186.990	12.88	186.890	28.91	186.920	25.76	186.750	
25	187.100	29.18 *	187.040	21.61	186.980	12.53			187.220	43.25	186.730	
26	187.100	27.94	187.080	21.77 *	186.980	12.50			187.380		186.720	9.655
27	187.090	27.73	187.100	21.84	186.980	11.63			187.260	45.47	186.690	7.880
28	187.080	24.95	187.100	21.90	187.020	12.19			187.130	39.10	186.710	8.993
29	187.150	29.37 *	187.180	23.19	187.020	12.31			187.300	50.19	186.880	22.79
30	187.180	31.27	187.220	24.42					187.230	47.22	186.810	18.97
31	187.150	30.63	187.200	24.16							186.910	
Ten-Daily Mean												
I Ten-Daily	187.036	34.28	187.193	45.14	187.128	18.53	187.082	20.30			187.016	34.70
II Ten-Daily	187.036	32.23	187.002	34.65	187.092	16.26	187.360	58.92	186.600	5.120	186.911	25.82
III Ten-Daily	187.116	30.73	187.063	22.18	186.997	12.74	186.990	40.18	187.091	32.89	186.774	13.69
Monthly												
Min.	186.990	24.95	186.900	20.32	186.980	11.63	186.890	10.49	186.600	5.120	186.690	7.880
Max.	187.180	46.29	187.550	68.64	187.180	21.79	187.700	80.02	187.380	50.19	187.160	43.53
Mean	187.065	32.36	187.085	33.61	187.075	15.95	187.182	39.7	187.046	30.12	186.896	24.36

Peak Computed Discharge = 589.1 cumecs on 27/10/2019 Corres. Water Level :189.55 m

Lowest Computed Discharge = 1.440 cumecs on 02/06/2019 Corres. Water Level :186.34 m

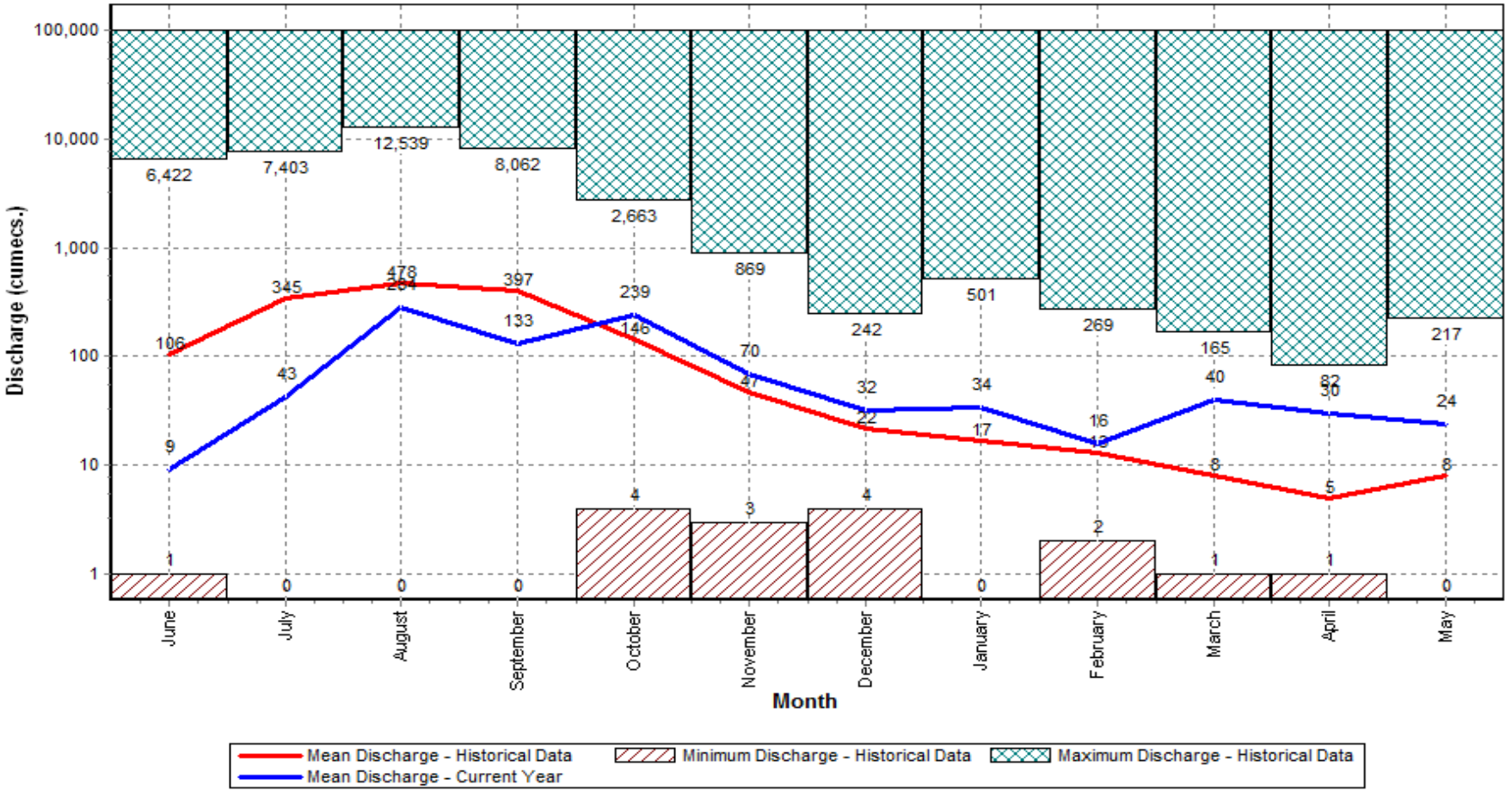
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2019-2020

Station Name : JARAIKELA (EBJ00D5) | **Data considered : 1973-2020** | **Division : E.E., Bhubaneswar**

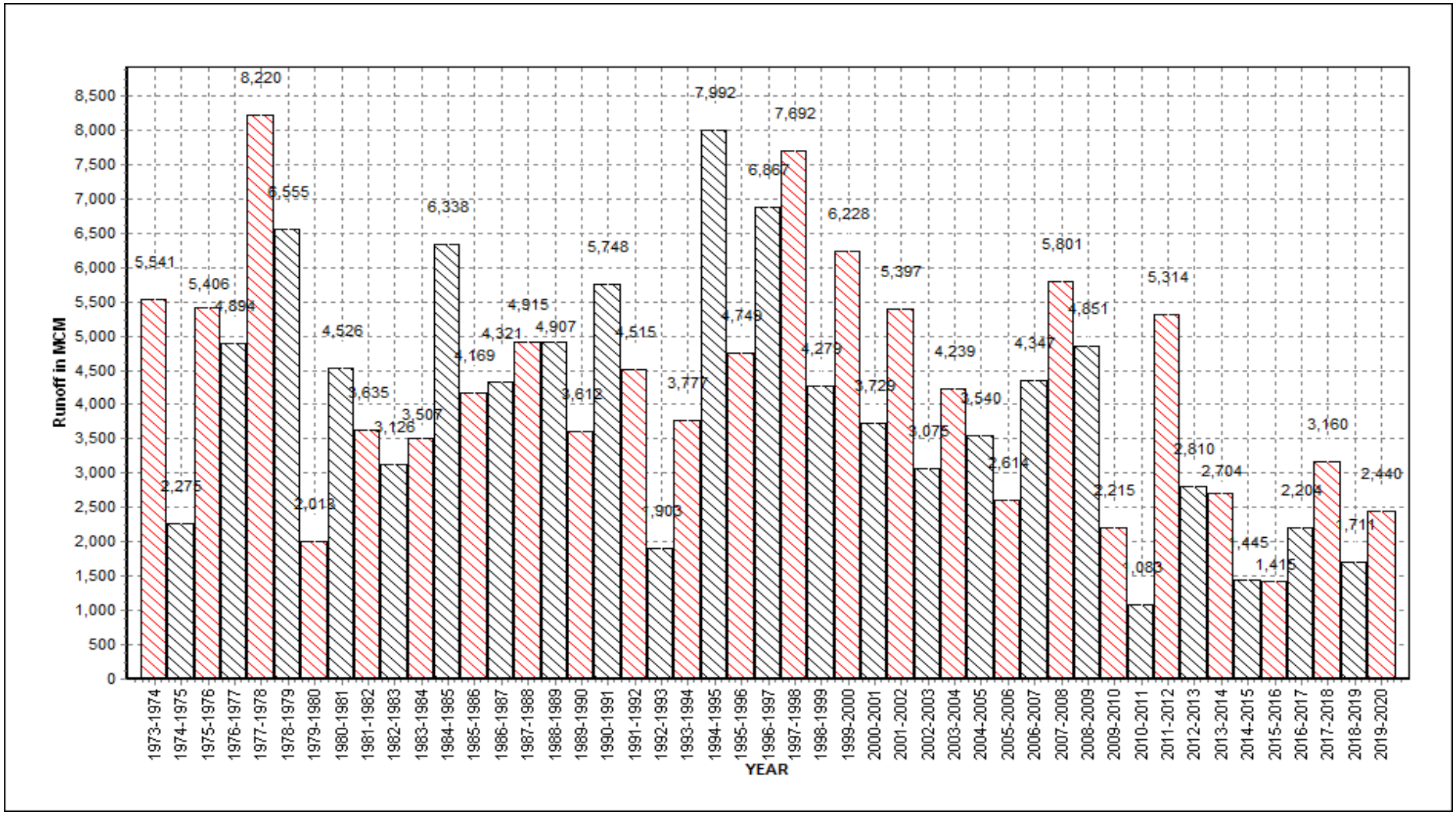
Local River : Koel | **Sub-Division : Rourkela**



Annual Runoff Values for the period: 1973 - 2020

Station Name : JARAIKELA (EBJ00D5) **Division : E.E., Bhubaneswar**

Local River : Koel **Sub-Division : Rourkela**

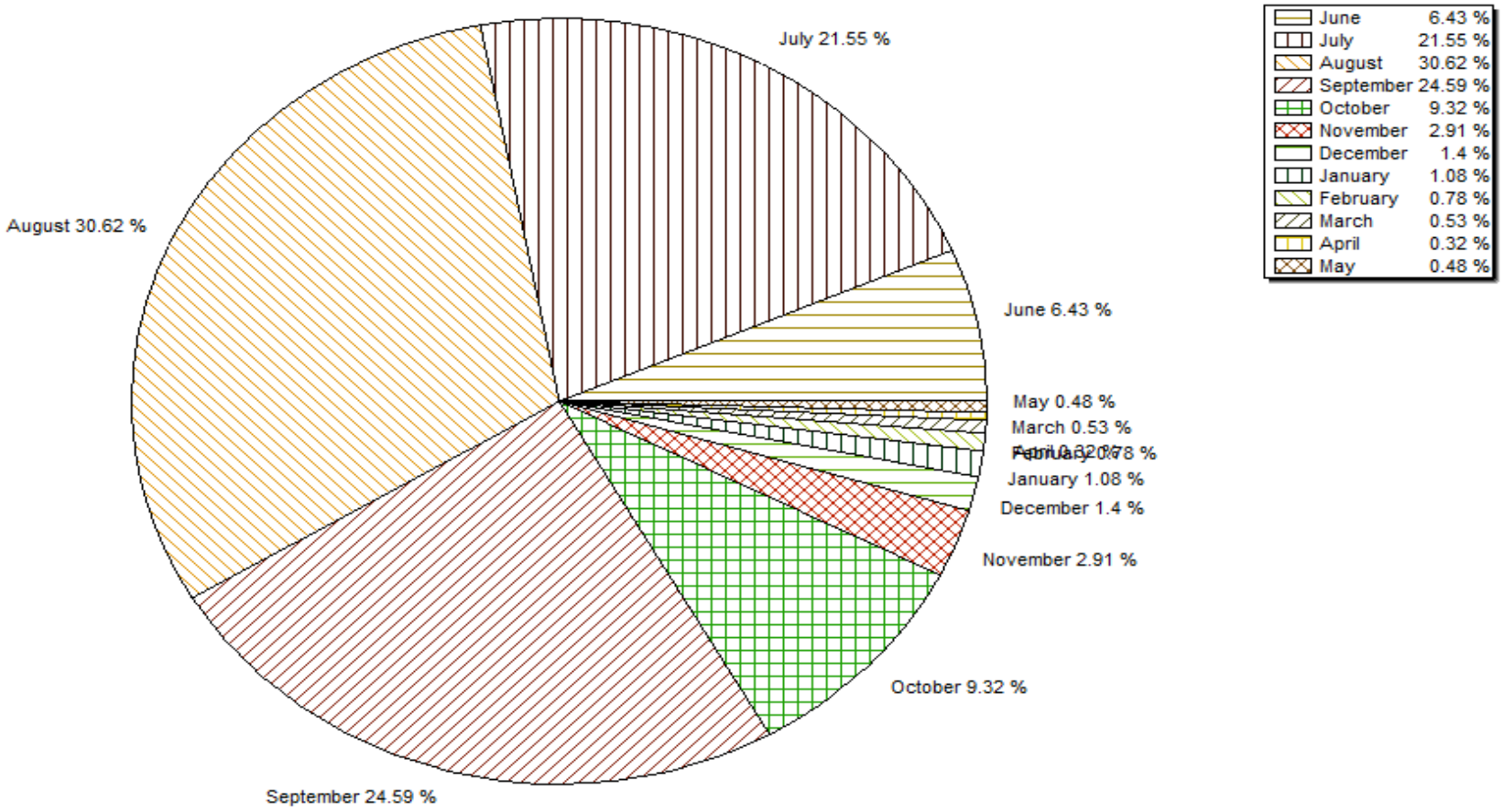


Note: Missing values have not been considered while arriving at Annual Runoff

Monthly Average Runoff based on period : 1973-2019

Station Name : JARAIKELA (EBJ00D5) **Division : E.E., Bhubaneswar**

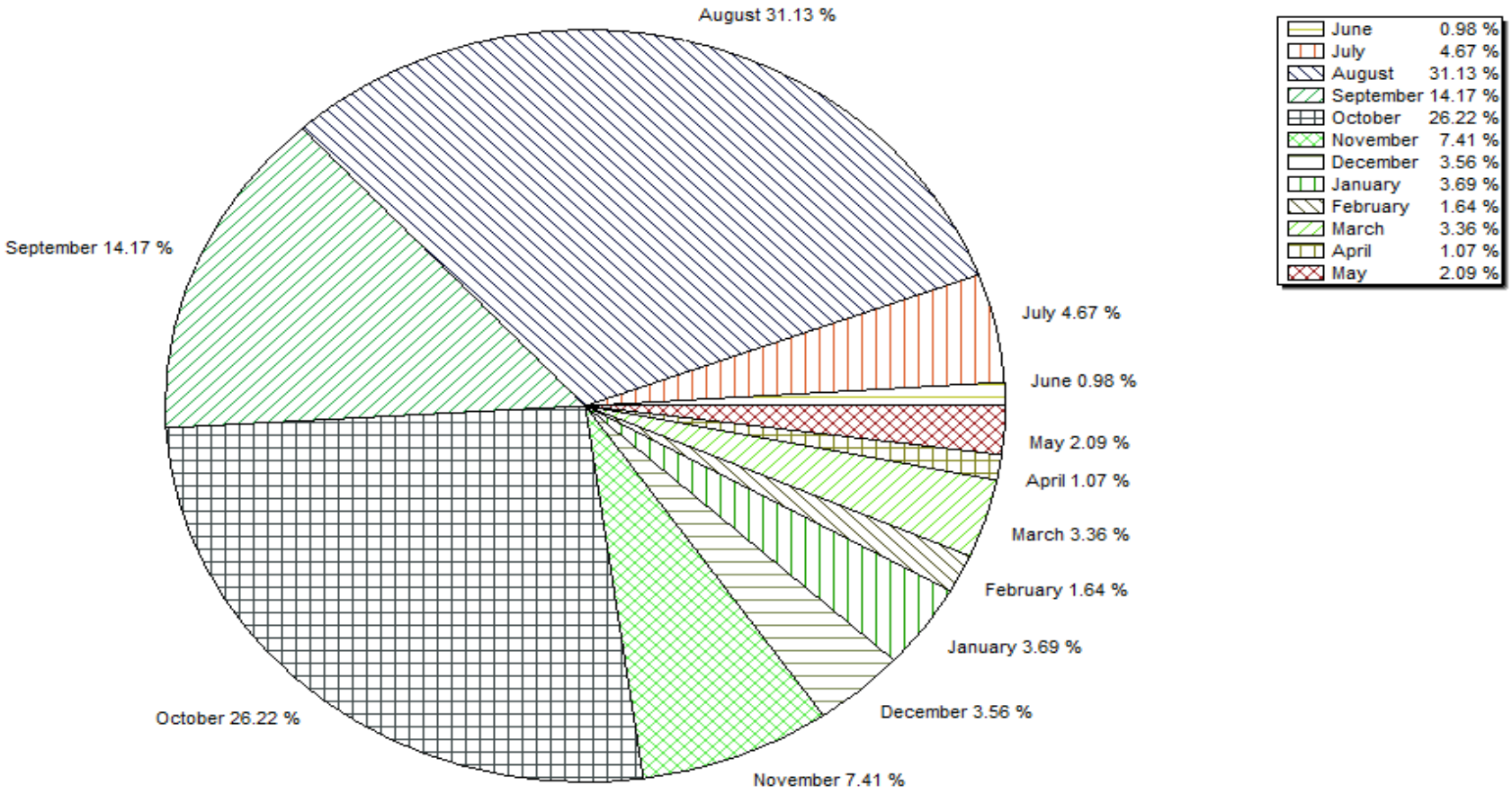
Local River : Koel **Sub-Division : Rourkela**



Monthly Runoff for the Year : 2019-2020

Station Name : JARAIKELA (EBJ00D5) **Division : E.E., Bhubaneswar**

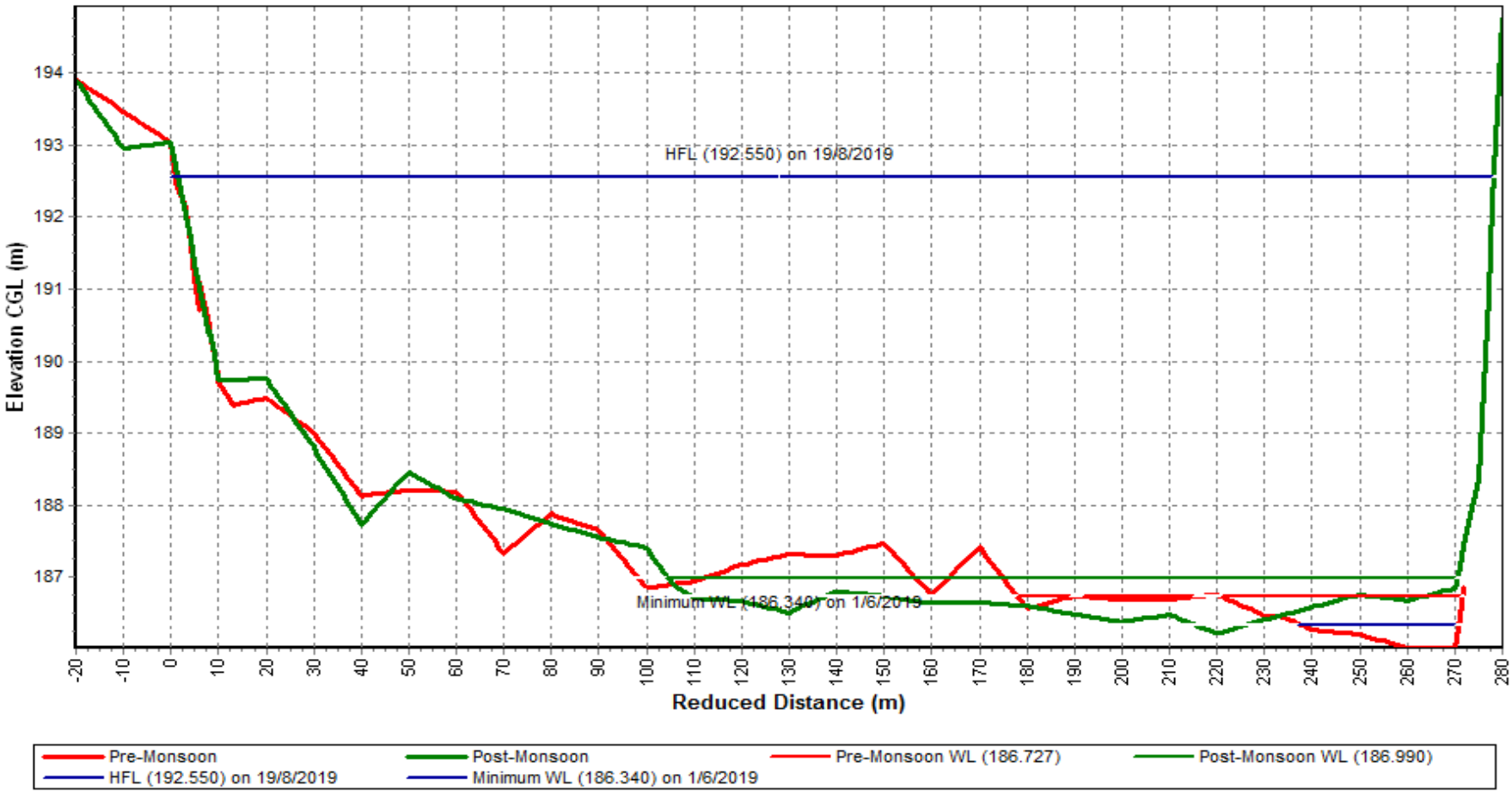
Local River : Koel **Sub-Division : Rourkela**



Pre-Monsoon & Post-Monsoon X-Section for Water Year : 2019-2020

Station Name : JARAIKELA (EBJ00D5) **Division : E.E., Bhubaneswar**

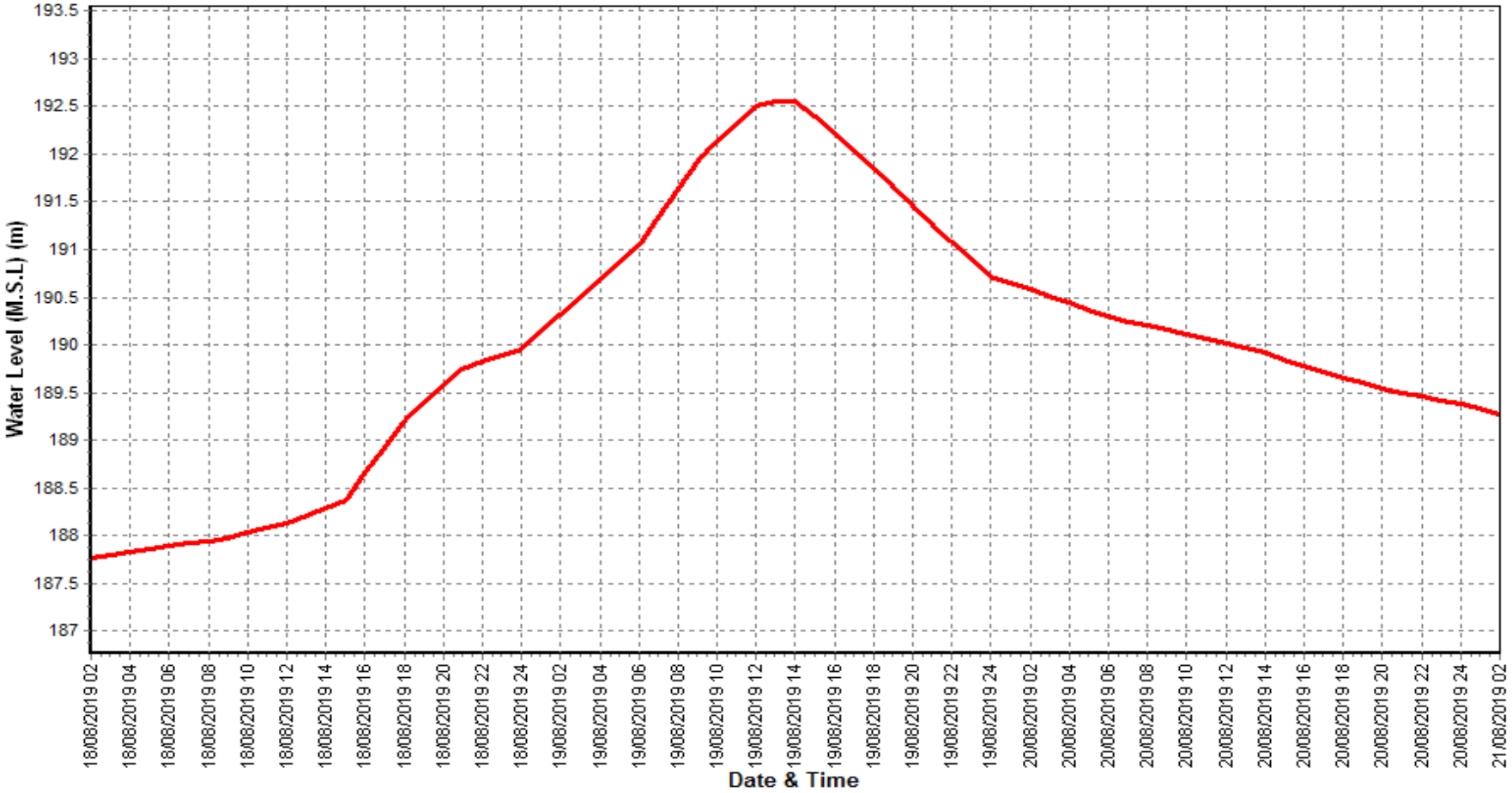
Local River : Koel **Sub-Division : Rourkela**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2019-2020

Station Name : JARAIKELA (EBJ00D5) **Division : E.E., Bhubaneswar**

Local River : Koel **Sub-Division : Rourkela**

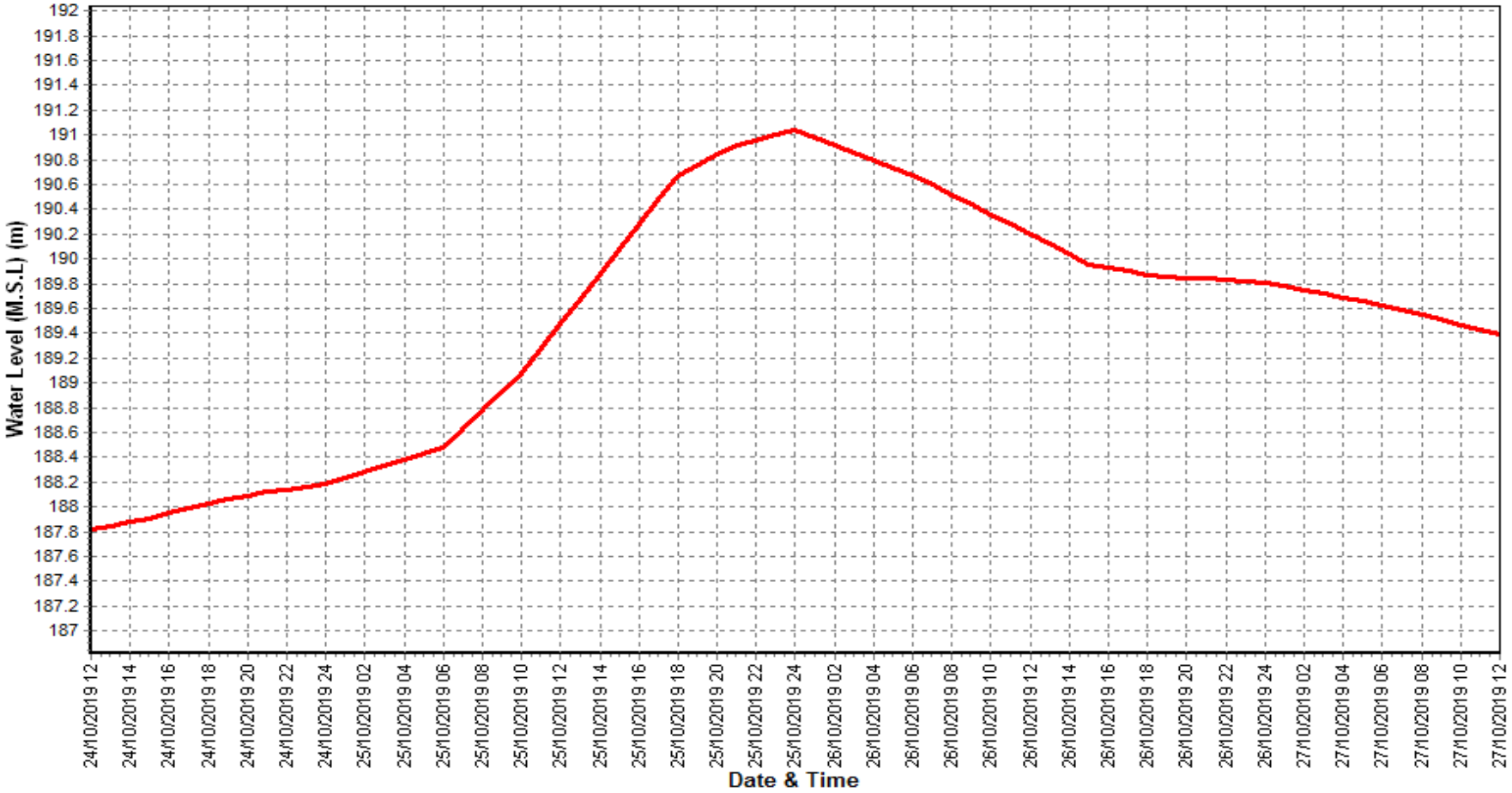


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2019-2020

Station Name : JARAIKELA (EBJ00D5) **Division : E.E., Bhubaneswar**

Local River : Koel **Sub-Division : Rourkela**

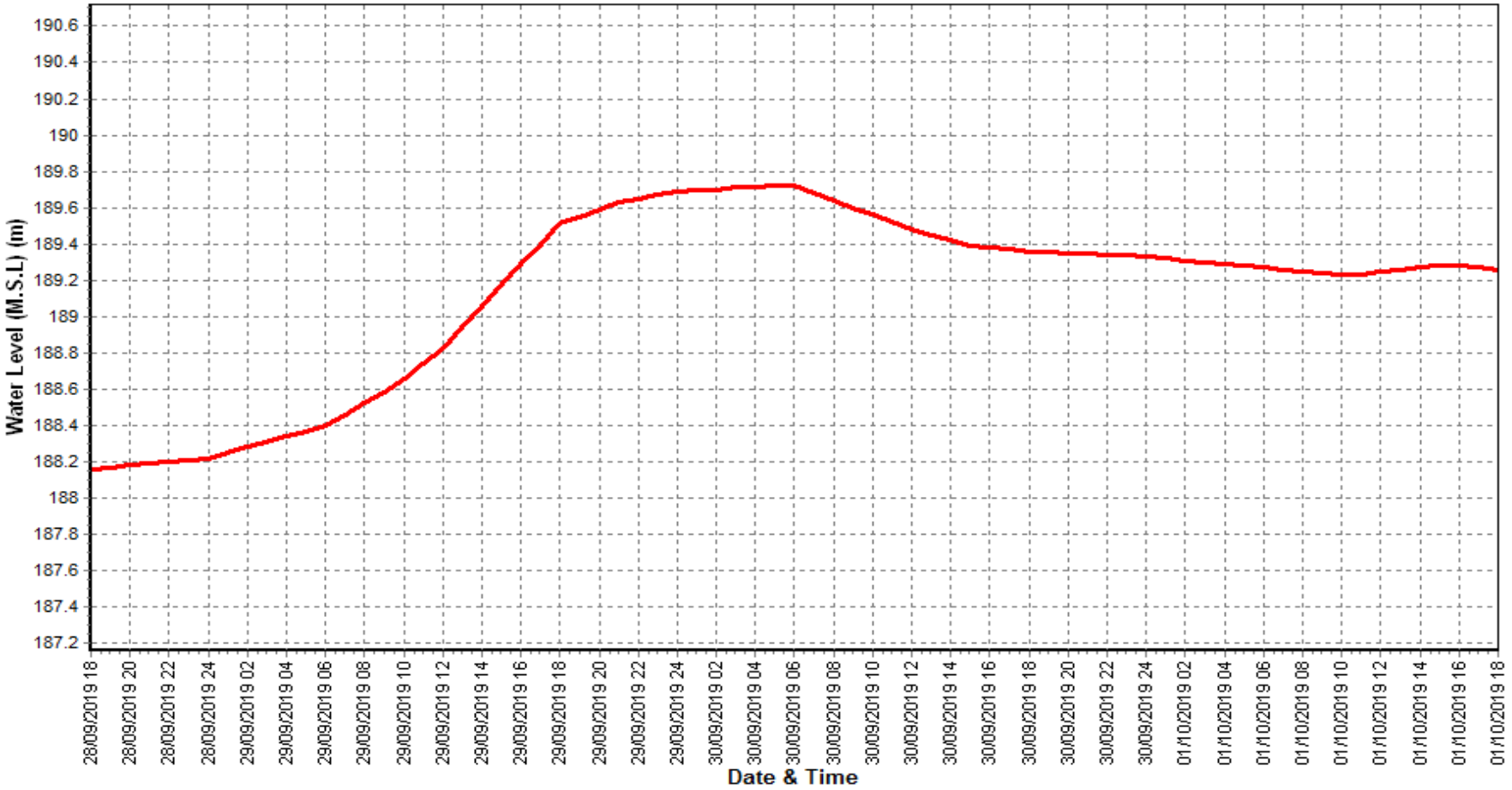


Time Span: 72 Hrs

Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2019-2020

Station Name : JARAIKELA (EBJ00D5) **Division : E.E., Bhubaneswar**

Local River : Koel **Sub-Division : Rourkela**



Time Span: 72 Hrs

SECTION-II (SEDIMENT DATA)

Annual Sediment Load for period : 1987-2003

Station Name : JARAIKELA (EBJ00D5) **Division : E.E., Bhubaneswar**

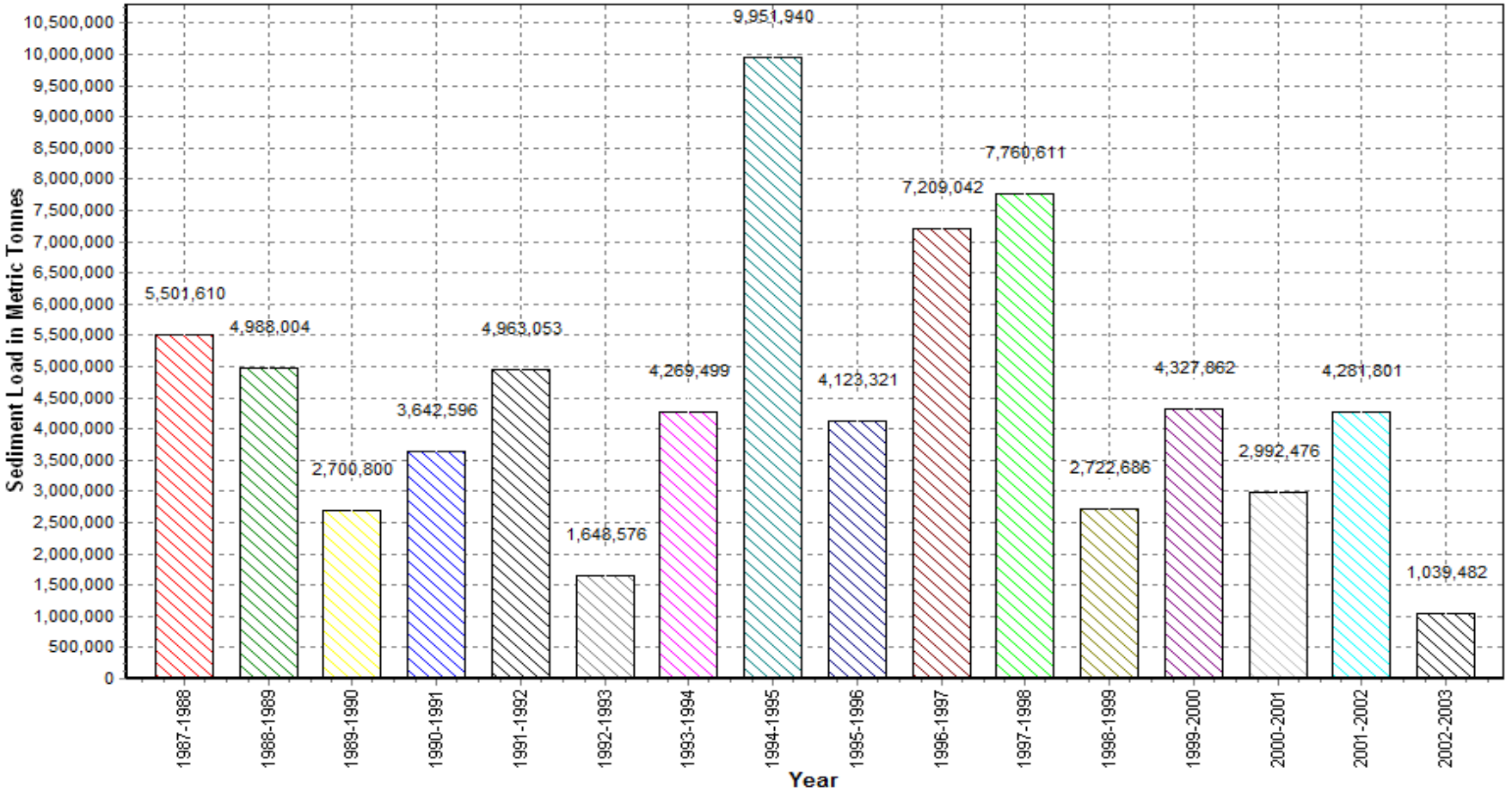
Local River : Koel **Sub-Division : Rourkela**

Year	Monsoon (M.T.)	Non-Monsoon (M.T.)	Annual Load (M.T.)	Annual Run Off (MCM)
1987-1988	5497516	4094	5501610	4915
1988-1989	4987577	427	4988004	4907
1989-1990	2603338	97462	2700800	3612
1990-1991	3625398	17198	3642596	5748
1991-1992	4896065	66988	4963053	4515
1992-1993	1644493	4083	1648576	1903
1993-1994	4266917	2583	4269499	3777
1994-1995	9936700	15240	9951940	7992
1995-1996	4118120	5201	4123321	4749
1996-1997	7205966	3076	7209042	6867
1997-1998	7628906	131706	7760611	7692
1998-1999	2695021	27665	2722686	4279
1999-2000	4320733	7129	4327862	6228
2000-2001	2988903	3573	2992476	3729
2001-2002	4279961	1839	4281801	5397
2002-2003	1039482	0	1039482	3075

Annual Sediment Load for the period: 1987-2003

Station Name : JARAIKELA (EBJ00D5) **Division : E.E., Bhubaneswar**

Local River : Koel **Sub-Division : Rourkela**



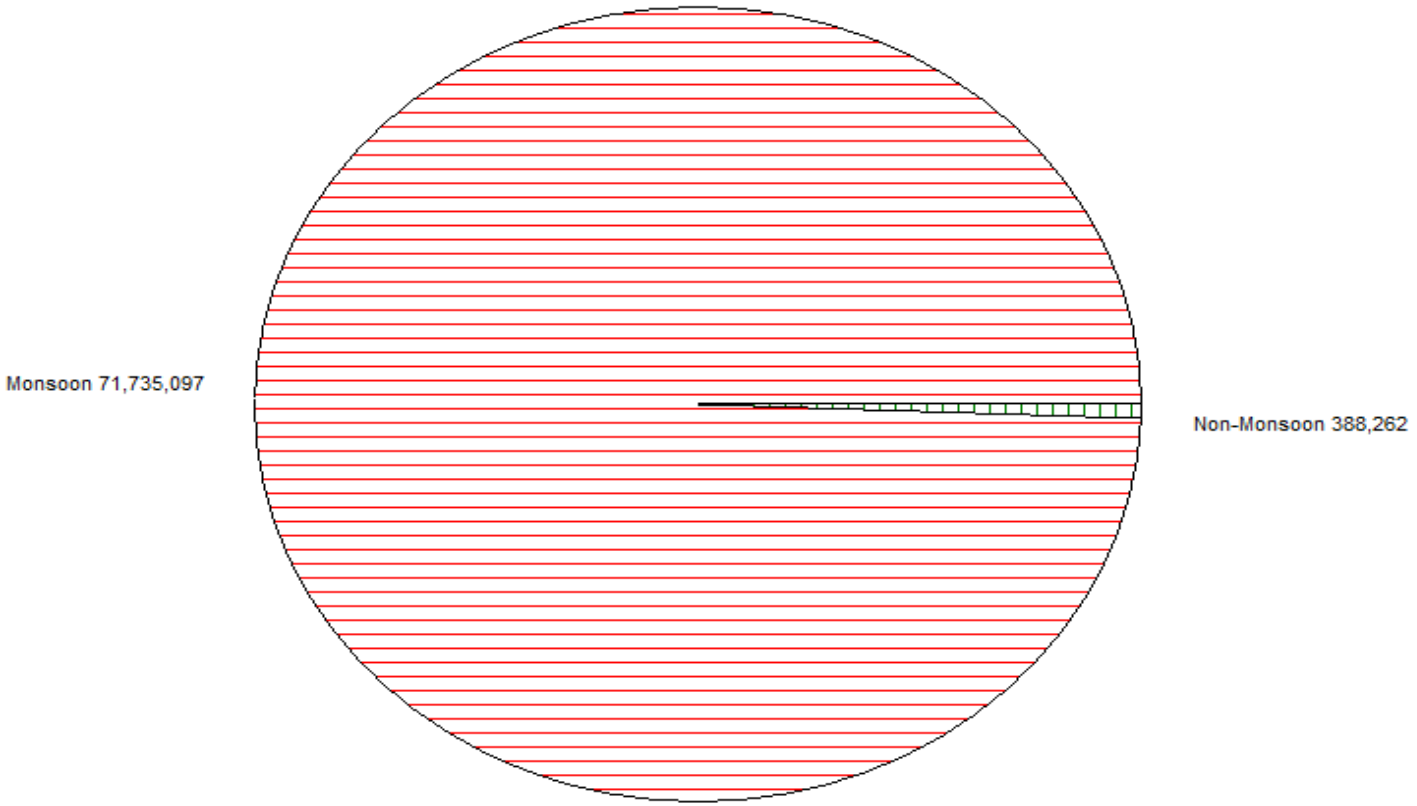
Seasonal Sediment Load for the period : 1987-2019

Station Name : JARAIKELA (EBJ00D5)

Local River : Koel

Division : E.E., Bhubaneswar

Sub-Division : Rourkela



SECTION-III

(WATER QUALITY)

Water Quality Datasheet for the period : 2019-2020

Station Name : JARAIKELA (EBJ00D5) **Division : E.E., Bhubaneswar**

Local River : Koel **River Water Analysis** **Sub-Division : Rourkela**

S.No	Parameters	6/1/2019	7/1/2019	7/1/2019	8/1/2019	9/2/2019	10/1/2019	11/1/2019	12/2/2019	1/1/2020	2/1/2020	3/2/2020
		A	A	B	A	A	A	A	A	A	A	A
	PHYSICAL											
1	Q (cumec)											
2	Colour_Cod (-)	Light Brown		Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Green	Green	Brown	Light Brown
3	EC_FLD (µmho/cm)	260		225	701	107	233	241	210	200	17	24
4	EC_GEN (µmho/cm)	260		220	703	108	235	240	217	196	177	122
5	Odour_Code (-)	odour free		odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
6	pH_FLD (pH units)	7.4		7.0	7.0	7.2	5.5	6.9	8.1	8.3	8.1	8.4
7	pH_GEN (pH units)	7.3		7.1	7.2	7.2	5.6	6.9	7.2	7.3	7.8	7.8
8	Temp (deg C)	32.0		26.0	25.0	26.5	23.5	22.5	15.5	10.5	23.1	
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0		
2	ALK-TOT (mgCaCO3/L)	94		52	4	58	45	55	87	51		
3	B (mg/L)	0.02										
4	Ca (mg/L)	22		11	19	11	12	16	19	25	20	19
5	Cl (mg/L)	15.8		14.4	10.0	55.3	9.1	17.0	18.4	15.9	22.8	18.1
6	CO3 (mg/L)	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0		
7	F (mg/L)						0.62	0.29				
8	HCO3 (mg/L)	115		63	5	71	55	67	106	63	112	125
9	K (mg/L)	1.1		2.0	2.8	1.3	1.2	1.6	11.5	1.4	1.1	1.3
10	Mg (mg/L)	12.4		16.0	6.7	5.9	3.0	5.6	5.6	4.7	6.5	9.4
11	Na (mg/L)	9.0		5.0	3.7	3.5	2.9	4.7	43.3	8.3	7.4	7.3
12	P-Tot (mgP/L)	0.001										
13	SiO2 (mg/L)	9.5										
14	SO4 (mg/L)	3.5		3.6	31.9	8.3	8.2	10.8	18.7	4.2	13.7	85.0
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)	0.6		0.5	0.8	0.6	1.6	0.6	1.2	1.4	1.2	1.1
2	DO (mg/L)	3.4		3.4	3.6	4.3	5.5	5.7	5.0	5.3	4.9	3.5
3	DO_SAT% (%)	46		42	44	52	65	65	50	47	57	
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	56		27	48	29	29	39	47	63	50	47
2	HAR_Total (mgCaCO3/L)	107		94	75	53	41	63	71	82	78	86
3	Na% (%)	15		10	9	12	13	14	53	18	17	15
4	RSC (-)	0.0		0.0	0.0	0.1	0.1	0.0	0.3	0.0		
5	SAR (-)	0.4		0.2	0.2	0.2	0.2	0.3	2.2	0.4	0.4	0.3
	PESTICIDES											

Water Quality Summary for the period : 2019-2020

Station Name : JARAIKELA (EBJ00D5) **Division : E.E., Bhubaneswar**

Local River : Koel **Sub-Division : Rourkela**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	10	701	17	222
3	EC_GEN (µmho/cm)	10	703	108	248
4	pH_FLD (pH units)	10	8.4	5.5	7.4
5	pH_GEN (pH units)	10	7.8	5.6	7.1
6	Temp (deg C)	9	32.0	10.5	22.7
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	8	0.0	0.0	0
2	ALK-TOT (mgCaCO3/L)	8	94	4	56
3	B (mg/L)	1	0.02	0.02	0.02
4	Ca (mg/L)	10	25	11	17
5	Cl (mg/L)	10	55.3	9.1	19.7
6	CO3 (mg/L)	8	0.0	0.0	0
7	F (mg/L)	2	0.62	0.29	0.45
8	HCO3 (mg/L)	10	125	5	78
9	K (mg/L)	10	11.5	1.1	2.5
10	Mg (mg/L)	10	16.0	3.0	7.6
11	Na (mg/L)	10	43.3	2.9	9.5
12	P-Tot (mgP/L)	1	0.001	0.001	0.001
13	SiO2 (mg/L)	1	9.5	9.5	9.5
14	SO4 (mg/L)	10	85.0	3.5	18.8
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	10	1.6	0.5	0.9
2	DO (mg/L)	10	5.7	3.4	4.5
3	DO_SAT% (%)	9	65	42	52
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	10	63	27	43
2	HAR_Total (mgCaCO3/L)	10	107	41	75
3	Na% (%)	10	53	9	18
4	RSC (-)	8	0.3	0.0	0.1
5	SAR (-)	10	2.2	0.2	0.5
	PESTICIDES				

Water Quality Seasonal Average for the period: 2005-2020

Station Name : JARAIKELA (EBJ00D5) **Division : E.E., Bhubaneswar**

Local River : Koel **River Water** **Sub-Division : Rourkela**

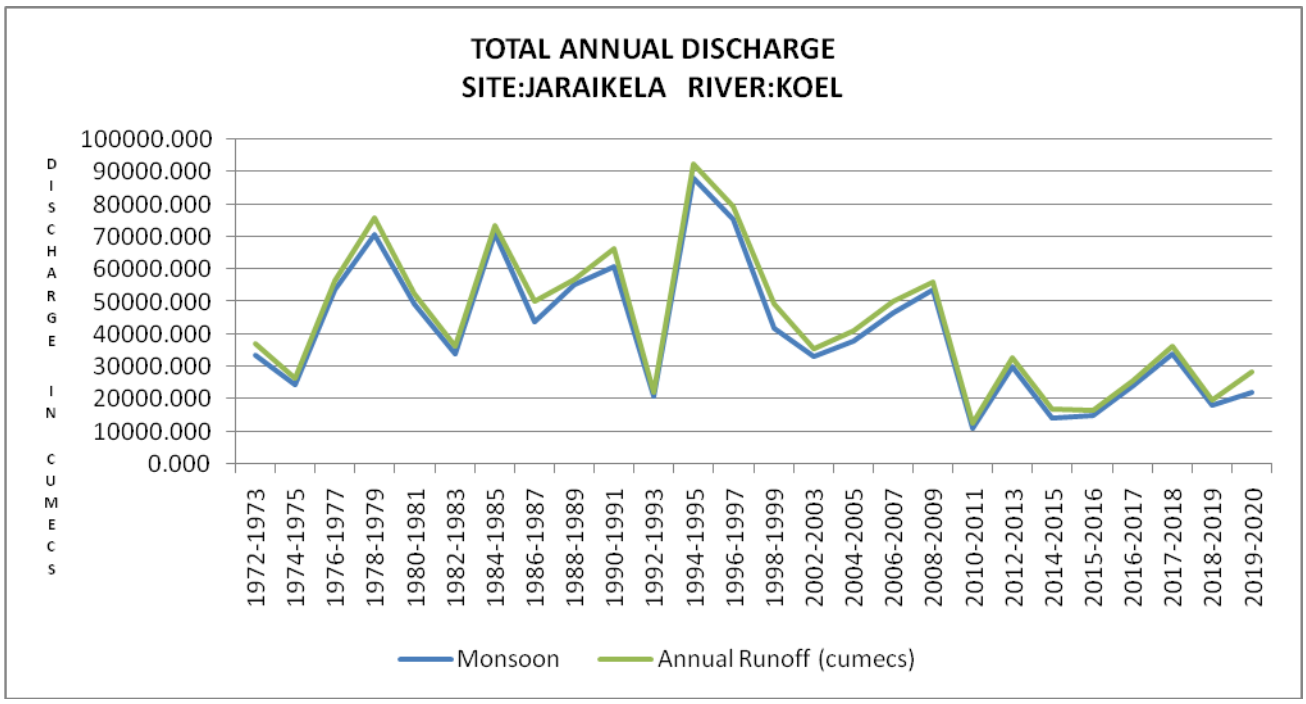
S.No	Parameters	Flood															Winter									
		Jun - Oct															Nov - Feb									
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
	PHYSICAL																									
1	Q (cumec)																									
2	EC_FLD (µmho/cm)			167		186	189	159	246	140	148	244	138	147	134	305			161	245	189	202	159	182	150	225
3	EC_GEN (µmho/cm)			163		186	189	159	246	140	148	246	142	143	135	305			152	245	189	202	159	182	150	225
4	pH_FLD (pH units)			8.0		7.6	7.5	8.0	7.6	7.6	7.9	7.4	7.4	7.6	6.9	6.8			7.6	7.5	7.5	7.8	7.4	7.6	8.0	7.9
5	pH_GEN (pH units)			8.1		7.6	7.5	8.0	7.6	7.5	7.9	7.3	7.4	7.6	6.9	6.9			7.6	7.5	7.5	7.8	7.4	7.6	8.0	7.9
6	Temp (deg C)			29.8		28.7	28.7	27.7	28.0	27.7	28.8	27.4	27.7	29.2	30.2	26.6			20.8	22.5	18.3	22.3	19.0	18.0	18.5	20.0
	CHEMICAL																									
1	Alk-Phen (mgCaCO3/L)			0.0	0.0	0.0	0.0	3.1	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	2.0	0.0	0.0			
2	ALK-TOT (mgCaCO3/L)			81	11	64	63	62	46		32	55	65	56	57	51			50	104	57	65	74			
3	B (mg/L)			0.00		0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.03	0.02			0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
4	Ca (mg/L)			15	17	17	15	43	18	17	18	21	31	27	21	15			14	23	17	18	18	19	22	18
5	Cl (mg/L)			13.0	15.7	14.9	13.6	17.6	19.5	13.2	16.3	13.8	22.0	14.6	10.8	20.9			12.1	16.6	12.6	12.3	14.1	19.8	15.5	14.1
6	CO3 (mg/L)			0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)			0.00		0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.37	0.62			0.08	0.05	0.05	0.05	0.05	0.05	0.05	0.05
8	Fe (mg/L)			0.2		0.1	0.1	0.0	0.6	0.1	0.4	0.3	0.4	0.4	0.4				0.1	0.7	0.1	0.1	0.0	0.5	0.1	0.2
9	HCO3 (mg/L)			68	13	60	76	68	66	79	56	68	79	69	70	62			61	97	65	86	90	48	117	90
10	K (mg/L)			2.1	12.8	2.3	2.2	1.7	2.1	1.5	1.5	1.6	5.0	2.8	4.6	1.7			1.9	1.9	2.5	1.6	1.3	3.8	1.6	1.3
11	Mg (mg/L)			6.4	3.9	6.8	9.4	10.7	6.2	8.1	8.4	11.7	16.5	15.0	5.4	8.8			4.8	7.3	6.8	8.7	3.9	9.5	6.8	8.7
12	Na (mg/L)			8.0	35.6	8.9	8.0	4.0	3.9	10.1	3.6	3.6	13.2	3.4	5.8	4.8			8.8	11.2	8.2	7.5	6.7	11.1	12.0	6.7
13	NO2+NO3 (mg N/L)			0.60		0.35	0.54	0.44	1.00	0.43	0.88	0.97	1.09	1.18	1.18				0.35	0.50	0.32	0.42	0.44	0.83	0.78	0.75
14	NO2-N (mgN/L)			0.04		0.00	0.00	0.07	0.00	0.00	0.02	0.03	0.01	0.02	0.00				0.00	0.02	0.00	0.00	0.07	0.00	0.00	0.02
15	NO3-N (mgN/L)			0.57		0.35	0.54	0.37	1.00	0.43	0.85	0.93	1.07	1.16	1.18				0.35	0.48	0.32	0.42	0.37	0.83	0.78	0.73
16	P-Tot (mgP/L)			0.001		0.001	0.001	0.010	0.001	0.001	0.001	0.004	0.010	0.001	0.001	0.001			0.001	0.002	0.001	0.001	0.010	0.001	0.001	0.001
17	SiO2 (mg/L)			9.0		7.5	7.4	8.7	19.7	8.6	4.0	5.3	6.7	8.2	8.9	9.5			14.0	9.4	7.8	6.3	11.0	18.3	10.2	4.5
18	SO4 (mg/L)			3.6	6.8	13.6	6.6	7.2	14.3	10.5	3.8	13.5	5.7	8.9	8.6	11.1			7.3	11.6	9.0	6.8	1.2	2.2	12.8	1.2
	BIOLOGICAL/BACTERIOLOGICAL																									
1	BOD3-27 (mg/L)			1.0		1.0	1.2	1.1	0.7	0.6	0.8	0.9	0.7	1.5	0.8	0.8			0.9	0.9	1.4	1.1	1.8	0.3	0.5	0.3
2	DO (mg/L)			7.0		6.7	6.8	6.3	6.4	6.2	6.4	6.9	7.6	6.1	5.6	4.0			8.7	8.5	8.2	8.0	8.0	8.3	7.0	10.8
3	DO_SAT% (%)			92		87	88	80	81	78	83	87	97	79	74	50			96	98	87	91	86	88	75	119
4	FCol-MPN (MPN/100mL)													76	75											
5	Tcol-MPN (MPN/100mL)													206	195											
	TRACE & TOXIC																									
	CHEMICAL INDICES																									
1	HAR_Ca (mgCaCO3/L)			37	42	41	37	108	45	43	46	53	77	68	52	38			35	57	42	46	46	48	56	46
2	HAR_Total (mgCaCO3/L)			64	58	70	77	153	71	77	81	102	146	130	75	74			55	87	70	83	62	88	84	83
3	Na% (%)			21	51	21	19	8	10	24	9	7	16	6	13	12			25	23	19	16	20	20	24	15
4	RSC (-)			0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.3	0.0	0.4	0.0
5	SAR (-)			0.4	2.0	0.4	0.4	0.2	0.2	0.5	0.2	0.2	0.5	0.1	0.3	0.2			0.5	0.5	0.4	0.4	0.4	0.5	0.6	0.3
	PESTICIDES																									

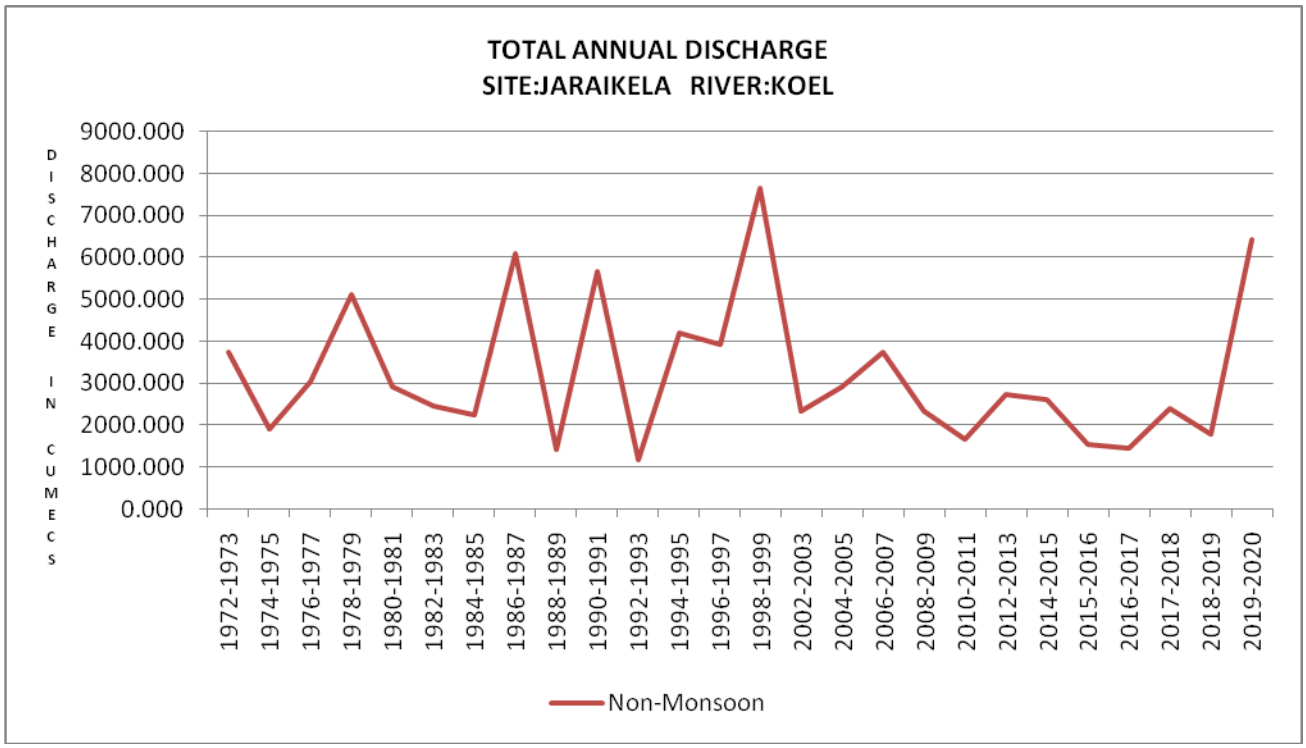
Water Quality Seasonal Average for the period: 2005-2020

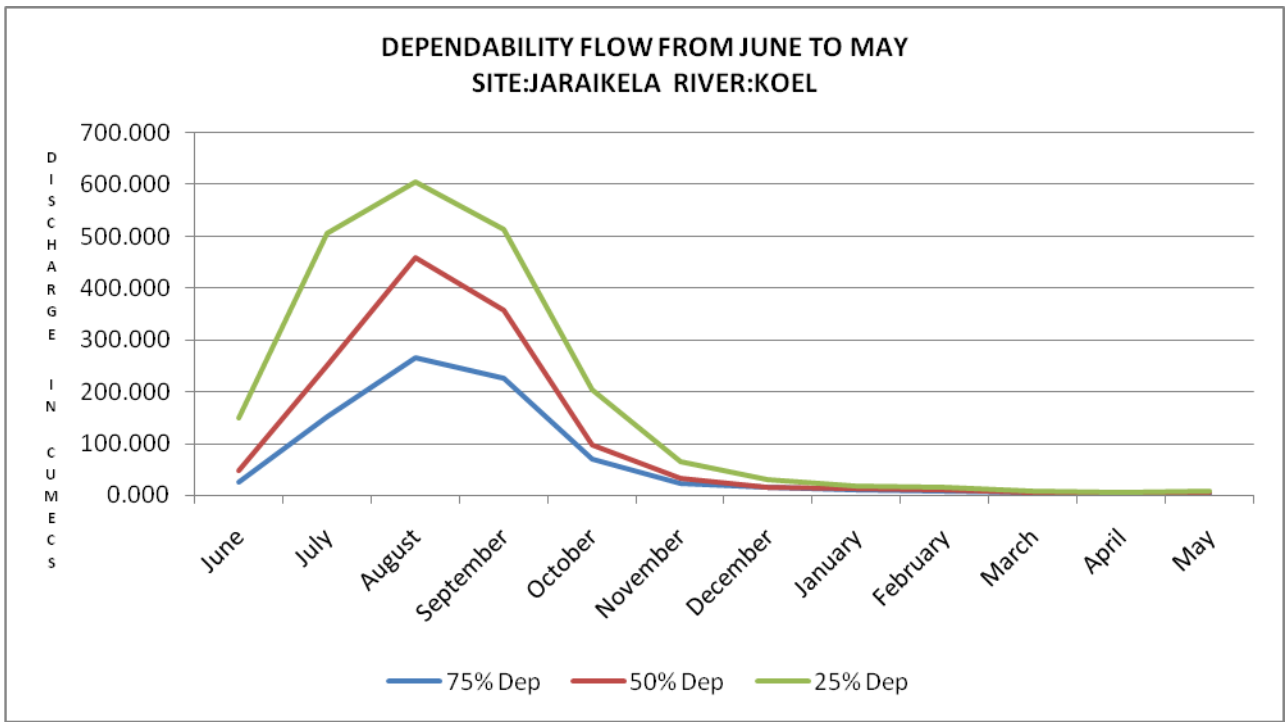
Station Name : JARAIKELA (EBJ00D5) **Division : E.E., Bhubaneswar**

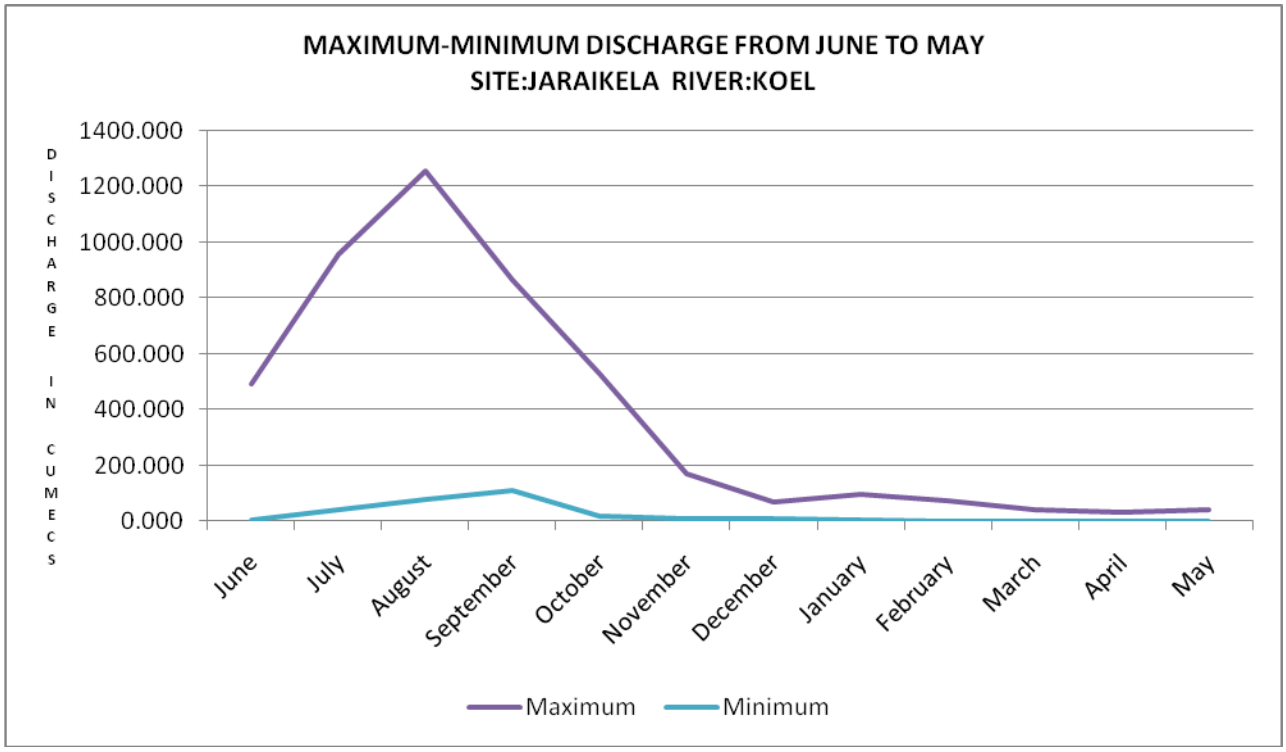
Local River : Koel **River Water** **Sub-Division : Rourkela**

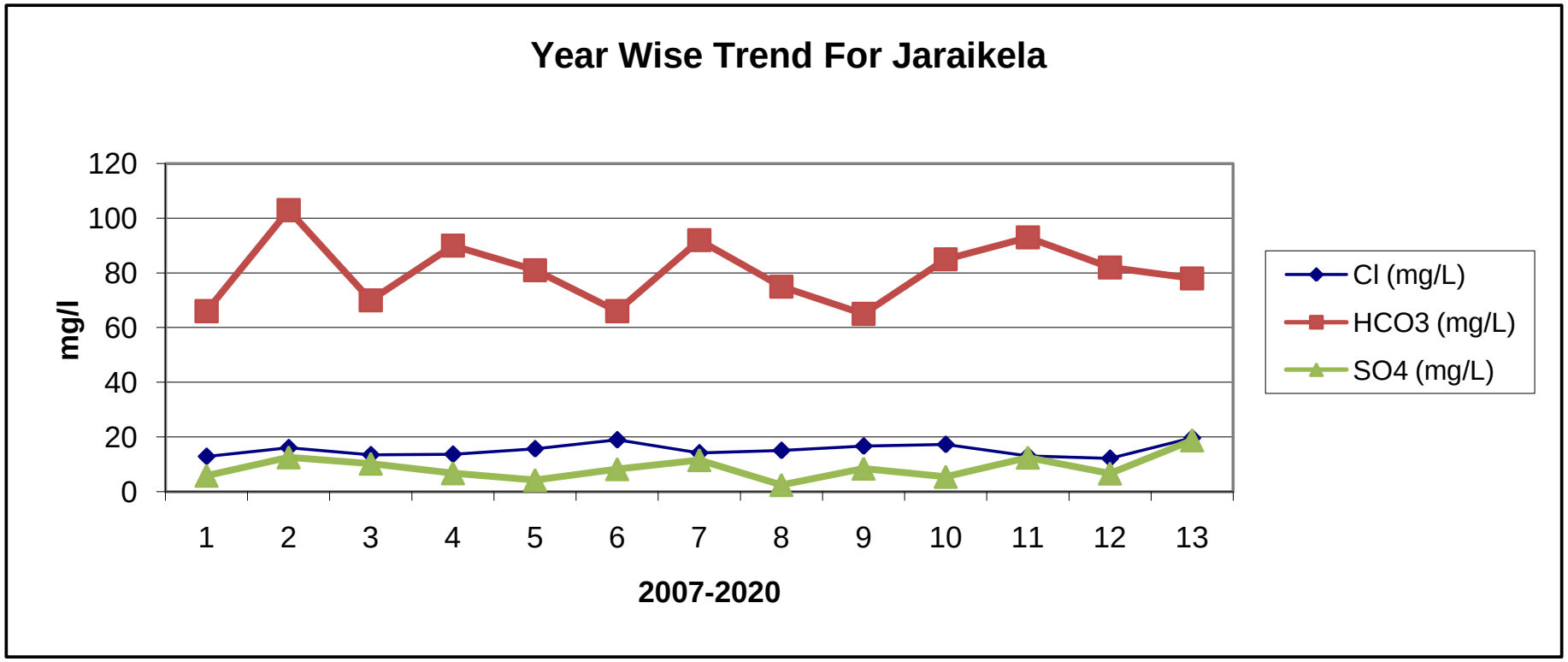
S.No	Parameters																				
															Summer						
															Mar - May						
		2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	PHYSICAL																				
1	Q (cumec)																				
2	EC_FLD (µmho/cm)	377	332	187	171	167			182	280	220	310	210	230	194	253	340	266	255	182	24
3	EC_GEN (µmho/cm)	380	335	181	168	208			188	280	220	310	210	230	194	253	343	270	250	181	122
4	pH_FLD (pH units)	8.0	7.7	7.7	7.6	7.9			7.9	7.8	7.3	8.1	7.8	7.8	7.7	7.6	8.0	7.9	7.9	7.5	8.4
5	pH_GEN (pH units)	7.9	7.7	7.6	7.6	7.3			8.0	7.8	7.6	8.1	7.8	7.8	7.7	7.6	8.1	8.0	7.9	7.5	7.8
6	Temp (deg C)	22.0	18.1	20.2	19.5	17.9			26.5	26.5	19.5	23.0	24.0	26.0	25.2	26.0	34.5	34.0	27.8	24.2	
	CHEMICAL																				
1	Alk-Phen (mgCaCO3/L)	11.5	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0				13.8	0.0	0.0	0.0	
2	ALK-TOT (mgCaCO3/L)	72	67	81	63	64			60	90	88	112	83				83	92	102	91	
3	B (mg/L)	0.01	0.01	0.02	0.02				0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.02	0.02	0.02	
4	Ca (mg/L)	18	38	33	20	20			18	30	22	32	29	18	18	29	21	37	28	22	19
5	Cl (mg/L)	20.7	14.1	10.8	11.9	18.5			14.1	15.5	11.1	17.0	13.2	21.3	14.6	13.2	17.0	9.4	13.8	14.8	18.1
6	CO3 (mg/L)	13.9	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.6	0.0	0.0	0.0	
7	F (mg/L)	0.05	0.05	0.05	0.15	0.29			0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05		
8	Fe (mg/L)	0.3	0.4	0.4	0.4				0.1	0.2	0.1	0.1	0.0	5.2	0.0	0.2	0.4	0.5	0.5		
9	HCO3 (mg/L)	59	82	99	77	87			73	110	107	136	101	104	79	101	68	113	124	111	125
10	K (mg/L)	1.3	3.9	2.3	4.9	3.9			0.5	1.3	1.6	2.5	1.5	8.1	2.1	1.5	1.3	3.8	1.2	3.9	1.3
11	Mg (mg/L)	12.2	13.6	10.9	4.5	5.6			5.6	10.2	9.7	11.7	4.9	8.2	5.2	4.9	13.6	11.7	11.1	9.8	9.4
12	Na (mg/L)	6.7	32.5	3.8	9.9	15.9			9.9	8.1	6.4	9.4	6.9	14.2	12.1	6.3	9.0	46.1	6.1	9.4	7.3
13	NO2+NO3 (mg N/L)	1.06	1.19	1.17	1.18				0.73	0.64	0.24	0.57	0.46	9.53	0.53	0.67	0.95	1.26	1.23		
14	NO2-N (mgN/L)	0.01	0.01	0.00	0.00				0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.03	0.00		
15	NO3-N (mgN/L)	1.04	1.18	1.17	1.18				0.73	0.64	0.24	0.57	0.39	9.53	0.53	0.67	0.95	1.23	1.23		
16	P-Tot (mgP/L)	0.010	0.010	0.001	0.001				0.060	0.002	0.001	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001	0.001	
17	SiO2 (mg/L)	5.5	7.8	7.8	9.0				7.3	9.6	9.7	9.6	10.0	18.3	10.8	6.0	5.0	9.1	6.7	9.0	
18	SO4 (mg/L)	3.5	5.2	14.6	5.6	11.9			10.2	13.6	3.1	7.6	1.6	2.8	12.8	1.4	3.6	5.4	15.7	5.0	85.0
	BIOLOGICAL/BACTERIOLOGICAL																				
1	BOD3-27 (mg/L)	1.8	0.7	0.5	1.0	1.1			0.8	1.0	1.0	1.4	1.0	0.6	0.2	1.0	0.6	1.4	0.6	1.6	1.1
2	DO (mg/L)	8.7	9.4	6.9	6.3	5.2			7.5	7.5	7.2	7.1	6.8	6.6	6.9	5.8	6.3	7.8	5.8	5.0	3.5
3	DO_SAT% (%)	100	99	76	69	55			92	93	77	83	80	81	84	71	90	110	73	61	
4	FCol-MPN (MPN/100mL)		250	58														90	73		
5	Tcol-MPN (MPN/100mL)		335	160														140	190		
	TRACE & TOXIC																				
	CHEMICAL INDICES																				
1	HAR_Ca (mgCaCO3/L)	46	94	83	50	50			46	76	56	80	72	46	46	72	52	92	70	55	47
2	HAR_Total (mgCaCO3/L)	97	151	128	68	73			69	119	97	129	92	80	67	92	109	141	116	96	86
3	Na% (%)	13	30	6	22	25			24	13	12	13	14	26	27	13	15	41	10	16	15
4	RSC (-)	0.0	0.0	0.0	0.2	0.1			0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	
5	SAR (-)	0.3	1.2	0.1	0.5	0.8			0.5	0.3	0.3	0.4	0.3	0.7	0.6	0.3	0.4	1.7	0.3	0.4	0.3
	PESTICIDES																				

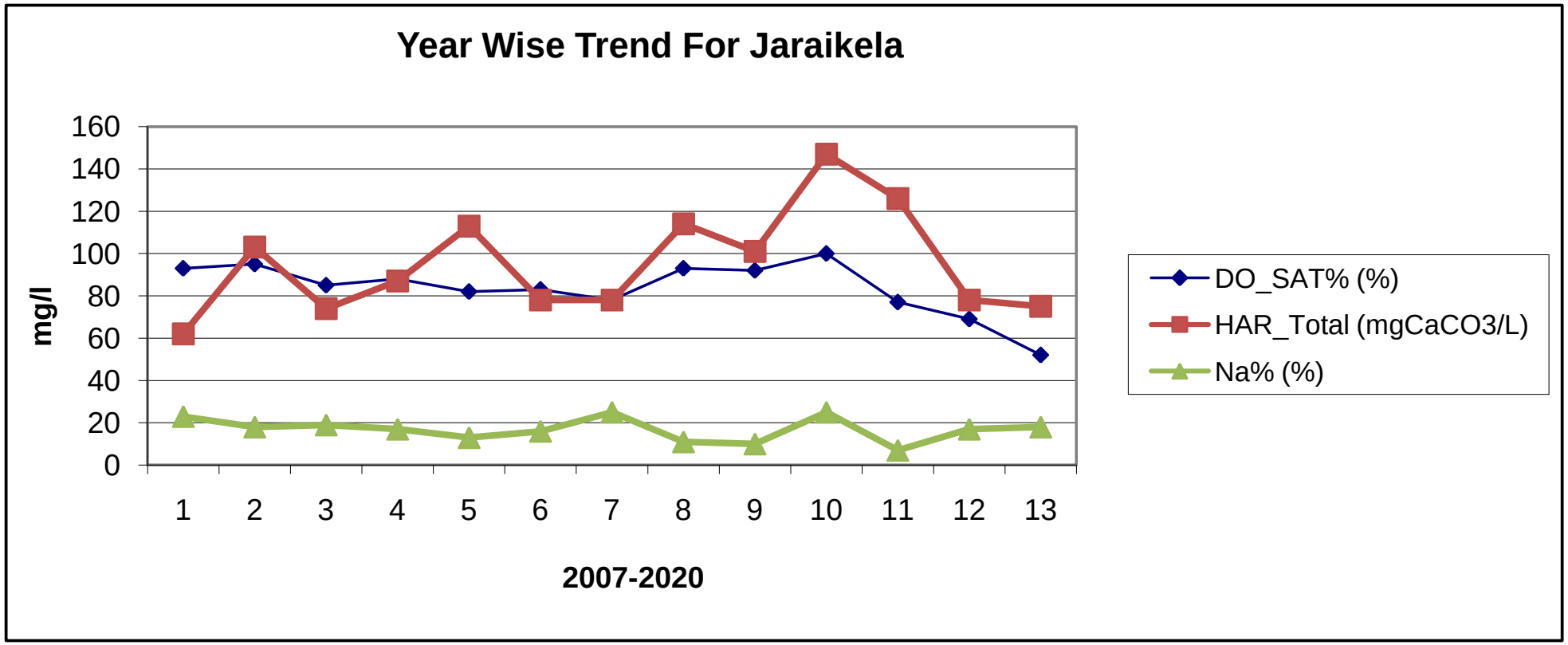

TOTAL ANNUAL DISCHARGE
SITE:JARAIKELA RIVER:KOEL
DISCHARGE IN CUMECS
100000.000
90000.000
80000.000
70000.000
60000.000
50000.000
40000.000
30000.000
20000.000
10000.000
0.000
1972-1973
1974-1975
1976-1977
1978-1979
1980-1981
1982-1983
1984-1985
1986-1987
1988-1989
1990-1991
1992-1993
1994-1995
1996-1997
1998-1999
2002-2003
2004-2005
2006-2007
2008-2009
2010-2011
2012-2013
2014-2015
2015-2016
2016-2017
2017-2018
2018-2019
2019-2020
Monsoon
Annual Runoff (cumecs)

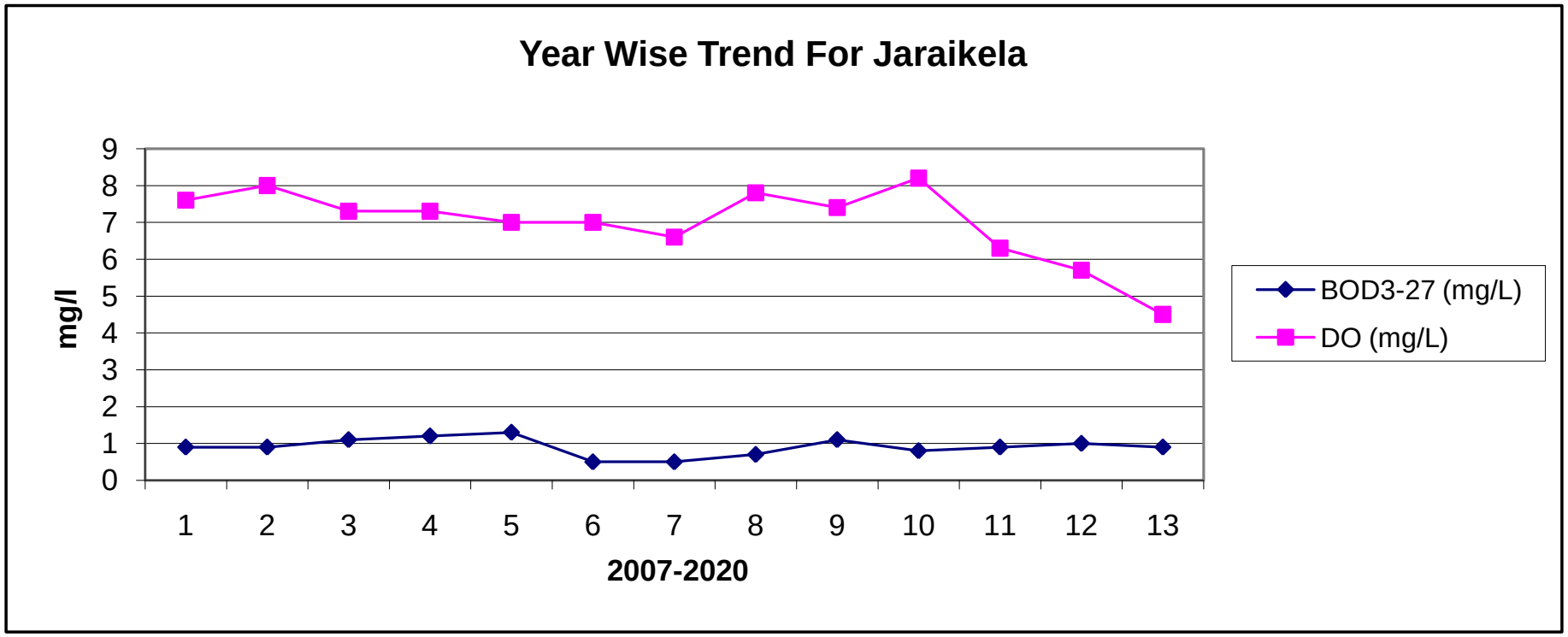

TOTAL ANNUAL DISCHARGE
SITE:JARAIKELA RIVER:KOEL
DISCHARGE IN CUMECS
9000.000
8000.000
7000.000
6000.000
5000.000
4000.000
3000.000
2000.000
1000.000
0.000
1972-1973
1974-1975
1976-1977
1978-1979
1980-1981
1982-1983
1984-1985
1986-1987
1988-1989
1990-1991
1992-1993
1994-1995
1996-1997
1998-1999
2002-2003
2004-2005
2006-2007
2008-2009
2010-2011
2012-2013
2014-2015
2015-2016
2016-2017
2017-2018
2018-2019
2019-2020
Non-Monsoon

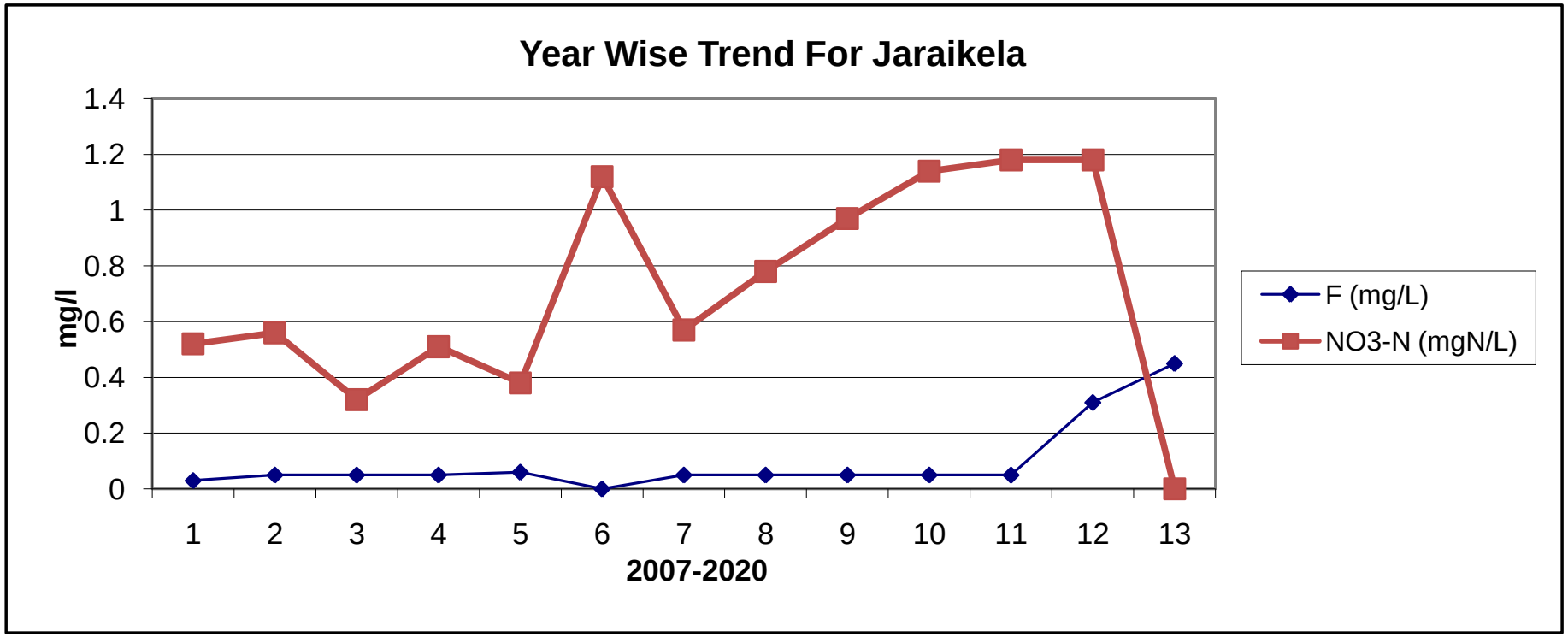

DEPENDABILITY FLOW FROM JUNE TO MAY
SITE:JARAIKELA RIVER:KOEL
DISCHARGE IN CUMECS
700.000
600.000
500.000
400.000
300.000
200.000
100.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
75% Dep
50% Dep
25% Dep

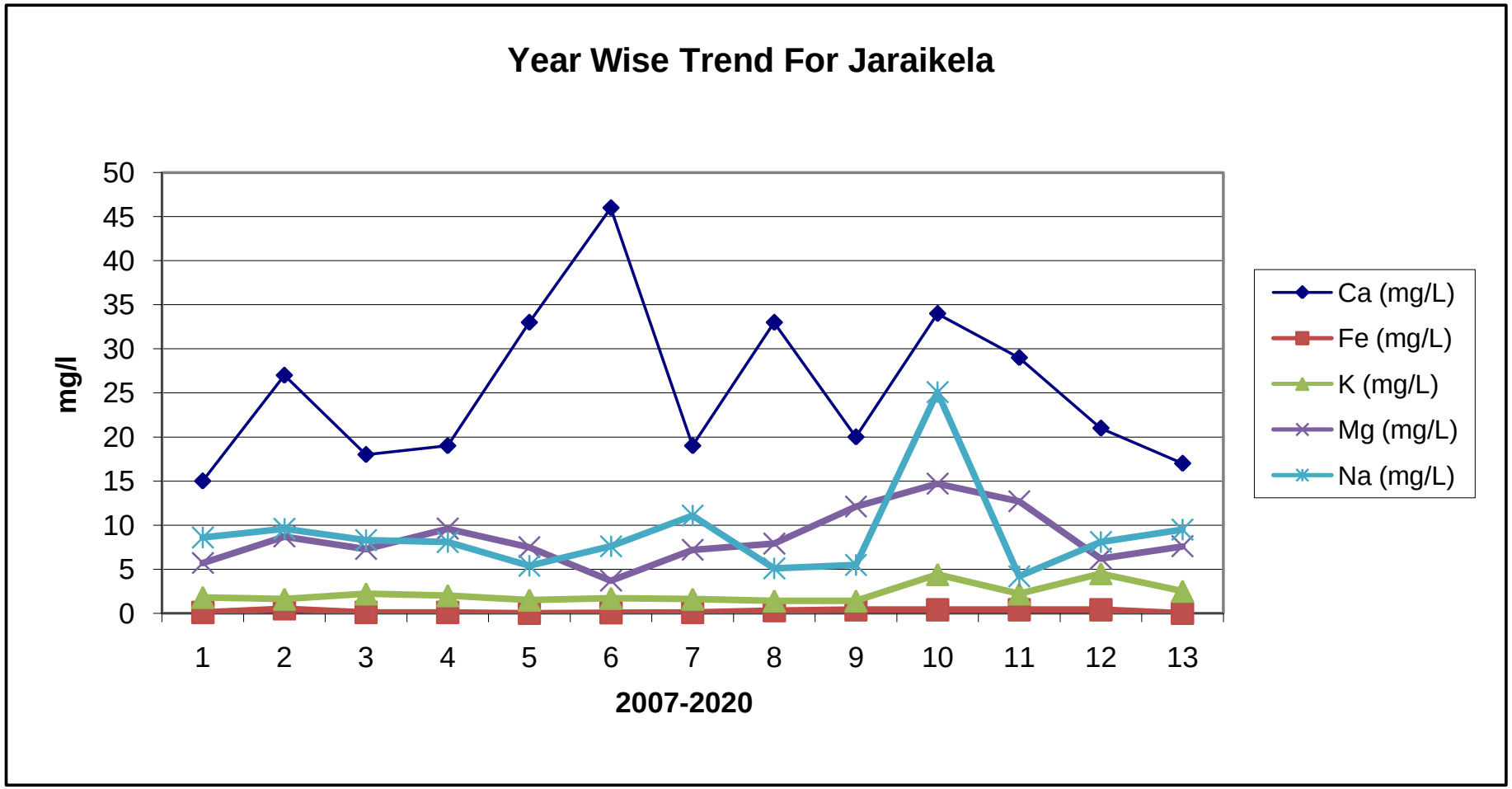

MAXIMUM-MINIMUM DISCHARGE FROM JUNE TO MAY
SITE:JARAIKELA RIVER:KOEL
DISCHARGE IN CUMECS
1400.000
1200.000
1000.000
800.000
600.000
400.000
200.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
Maximum
Minimum


Year Wise Trend For Jaraikela
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year Wise Trend For Jaraikela
160
140
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
DO_SAT% (%)
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For Jaraikela
mg/l
9
8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
BOD3-27 (mg/L)
DO (mg/L)


Year Wise Trend For Jaraikela
1.4
1.2
1
0.8
0.6
0.4
0.2
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend For Jaraikela
mg/l
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
Ca (mg/L)
Fe (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

SITE PANPOSH

SECTION-I(HISTORY SHEET,DISCHARGE,CROSS SECTION)

HISTORY SHEET

Water Year : 2019-2020

Site	:	**PANPOSH**	**Code**	:	**EB000H6**
State	:	Orissa	District		Sundergarh
Basin	:	Brahmani-Baitarani	Independent River	:	Brahmani
Tributary	:	Brahmani	Sub Tributary	:	Brahmani
Sub-Sub Tributary	:	Brahmani	Local River	:	Brahmni
Division	:	E.E., Bhubaneswar	Sub-Division	:	Brahmani
Drainage Area	:	19448 Sq. Km.	Bank	:	Left
Latitude	:	22°13'35"	Longitude	:	84°48'22"
Zero of Gauge (m)	:	170.5 (m.s.l) 168.5 (m.s.l)	1/1/1996 7/17/2019	-	12/31/2025
		Opening Date	Closing Date		
Gauge	:	7/1/1972			
Discharge	:	6/21/1996			
Sediment	:	8/1/1996			
Water Quality	:	11/1/1990			

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1997-1998	9229	179.350	8/7/1997	12.30	171.140	6/3/1997
1998-1999	8815	178.620	9/11/1998	12.25	171.150	5/19/1999
1999-2000	6307	177.820	8/8/1999	8.565	171.020	4/24/2000
2000-2001	3999	176.325	7/27/2000	8.559	171.060	4/28/2001
2001-2002	11628	179.680	7/22/2001	9.718	171.100	3/27/2002
2002-2003	3066	175.515	9/13/2002	10.51	171.220	4/17/2003
2003-2004	6600	177.900	10/25/2003	11.98	171.050	5/29/2004
2004-2005	5429	177.235	9/20/2004	10.32	171.320	5/30/2005
2005-2006	3372	175.520	7/1/2005	8.010	170.985	4/18/2006
2006-2007	4701	176.800	8/23/2006	8.843	171.110	4/4/2007
2007-2008	9661	179.345	8/20/2007	9.809	171.110	6/2/2007
2008-2009	5412	176.350	7/8/2008	9.497	171.150	5/14/2009
2009-2010	4184	175.175	9/9/2009	9.179	171.270	4/21/2010
2010-2011	1279	173.575	9/18/2010	6.484	171.050	2/15/2011
2011-2012	10947	181.440	9/24/2011	10.21	171.310	4/7/2012
2012-2013	3500	175.350	8/12/2012	10.31	171.160	6/13/2012
2013-2014	5554	176.225	10/15/2013	13.93	171.180	6/1/2013
2014-2015	3852	174.910	7/22/2014	10.25	171.170	5/25/2015
2015-2016	7431	177.475	7/11/2015	9.634	171.180	5/3/2016
2016-2017	4843	176.565	8/19/2016	6.254	171.060	5/11/2017
2017-2018	8956	179.515	7/27/2017	8.285	170.700	3/9/2018

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
2018-2019	3887	174.940	9/3/2018	9.357	170.820	5/22/2019
2019-2020	6476	177.920	8/19/2019	13.20	171.200	6/11/2019

Stage-Discharge Data for the period 2019 - 2020

Station Name : PANPOSH (EB000H6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

Day	Jun		Jul		Aug		Sep		Oct		Nov	
	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q
1	171.080	13.67	171.485	109.3	171.990	507.5	172.630	1150 *	174.345	2568	171.905	599.0
2	171.130	16.03 *	171.530	113.2	171.905	505.3	174.285	1750	174.180	1740 *	171.835	535.8
3	171.070	14.44	171.990	177.0	171.635	394.7	174.115	747.4	173.170	1235	171.790	460.0 *
4	171.070	15.19	171.980	177.0 *	171.590	350.0 *	174.100	741.8	172.560	1113	171.740	449.0
5	171.140	15.59 *	171.665	254.0	171.780	354.1	174.210	692.3	172.410	1081	171.754	453.4
6	171.110	15.50	171.485	248.8	171.615	325.0	174.100	635.5	172.200	1050 *	171.645	423.0
7	171.080	15.91	171.370	240.0 *	171.785	321.5	174.020	620.0	172.280	1035 *	171.650	407.4
8	171.100	14.97	171.460	220.9	172.305	614.5	171.940	450.0 *	173.020	1580 *	171.650	365.0
9	171.120	14.76 *	171.965	409.9	172.380	726.6	172.000	500.0 *	173.265	1679	171.400	343.3
10	171.120	14.79	171.550	209.3	172.235	715.8	174.035	536.8	173.055	1664	171.380	350.0 *
11	171.200	13.20	172.070	447.8	172.150	720.0 *	174.035	528.6	172.535	1154	171.500	334.1
12	171.060	14.82	172.070	422.0	172.200	172.2 *	174.355	703.7	172.360	818.5	171.500	350.0 *
13	171.110	14.76	171.765	359.5	172.710	1125	175.530	1905	172.330	810.0 *	171.480	322.9
14	171.110	14.65	171.640	350.0 *	173.690	1933	175.650	2384	172.225	815.2	171.450	283.0
15	171.120	14.32	171.490	295.0	173.760	1950 *	172.980	1750 *	171.990	731.8	171.400	274.1
16	171.130	14.45 *	171.420	254.6	173.010	1610	174.510	1549	171.775	703.9	171.400	268.6
17	171.080	14.78	171.380	249.0	172.425	934.3	174.235	821.5	171.785	656.3	171.500	290.0 *
18	171.140	14.92	171.340	223.7	172.710	950.0 *	174.035	498.4	171.710	463.0	171.490	282.5
19	171.210	13.76	171.305	205.0	177.920	6476	173.970	468.7	171.680	443.3	171.400	280.3
20	171.010	15.68	171.280	198.5	175.270	3090	173.920	424.2	171.720	430.0 *	171.410	266.2
21	171.135	14.78	171.340	200.0 *	173.590	2363	173.835	415.5	171.790	360.6	171.460	283.6
22	171.240	25.73	171.235	173.9	172.890	1973	171.730	380.0 *	172.180	598.2	171.440	258.9
23	171.250	25.92 *	171.235	194.6	172.445	1727	173.690	329.1	171.915	504.3	171.420	296.0
24	171.160	17.67	171.190	154.1	172.315	1130	173.480	279.8	172.345	584.8	171.420	290.0 *
25	171.420	39.29	171.280	168.9	172.420	1150 *	173.505	294.8	173.195	1550	171.370	253.8
26	171.385	44.20	171.255	169.1	173.115	1680	173.610	307.2	175.080	3108	171.300	227.0
27	171.525	71.07	171.240	166.4	173.400	2390	174.460	695.6	173.630	1880 *	171.270	200.7
28	171.570	112.8	171.870	400.0 *	173.315	1729	175.245	1710	172.675	1414	171.070	190.0
29	171.495	194.7	172.355	730.5	173.240	1447	174.230	2030 *	172.340	905.4	171.080	189.5
30	171.500	180.3 *	172.085	673.6	173.905	2479	177.185	3032	172.105	828.6	171.060	175.5
31			172.015	688.7	173.280	1625			171.980	700.8		
Ten-Daily Mean												
I Ten-Daily	171.102	15.08	171.648	215.9	171.922	481.5	173.544	782.4	173.049	1474	171.675	438.6
II Ten-Daily	171.117	14.53	171.576	300.5	173.585	1896	174.322	1103	172.011	702.6	171.453	295.2
III Ten-Daily	171.368	72.64	171.555	338.2	173.083	1790	174.097	947.4	172.658	1130	171.289	236.5
Monthly												
Min.	171.010	13.20	171.190	109.3	171.590	172.2	171.730	279.8	171.680	360.6	171.060	175.5
Max.	171.570	194.7	172.355	730.5	177.920	6476	177.185	3032	175.080	3108	171.905	599.0
Mean	171.196	34.09	171.592	286.6	172.870	1402	173.988	944.4	172.575	1103	171.472	323.4

Annual Runoff in MCM = 12827 Annual Runoff in mm = 660

Peak Observed Discharge = 6476 cumecs on 19/08/2019 Corres. Water Level :177.92 m

Lowest Observed Discharge = 13.20 cumecs on 11/06/2019 Corres. Water Level :171.2 m

Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

Stage-Discharge Data for the period 2019 - 2020

Station Name : PANPOSH (EB000H6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	171.050	185.0 *	170.995	174.6	170.980	127.1	171.440	59.00 *			171.165	170.9
2	171.040	170.9	170.955	167.5	171.150	80.00 *	171.410	57.85			171.055	175.7
3	170.920	165.3	171.035	176.5	171.320	86.58	171.490	55.98			171.060	140.0 *
4	170.950	176.7	171.010	174.7	171.550	63.31	171.510	61.10			171.070	148.5
5	171.010	192.1	171.050	170.0 *	171.575	59.94	171.550	65.43			171.080	149.7
6	170.900	194.4	171.800	302.0	171.620	62.40	171.540	60.32			171.060	155.0
7	171.050	209.0	171.445	253.7	171.590	61.41	171.670	61.21			171.090	150.0 *
8	170.920	198.0 *	171.110	218.7	171.640	63.81	171.850	76.00 *			171.140	156.3
9	170.910	180.6	171.125	225.1	171.680	65.00 *	171.940	82.77			171.210	159.5
10	170.820	190.4	171.065	210.7	171.700	64.02	171.740	120.0 *			171.250	160.0 *
11	170.825	180.3	171.050	205.2	171.700	64.13	171.360	153.6			171.170	155.7
12	170.875	178.2	171.100	210.0 *	171.685	63.76	171.145	151.5			171.050	147.6
13	170.795	166.4	171.135	222.7	171.665	63.07	171.300	158.3			171.045	128.5
14	170.865	172.7	171.020	195.7	171.420	64.00	171.500	169.5			171.030	124.2
15	170.870	165.0 *	171.010	186.1	171.390	62.18	171.580	170.0 *			171.065	136.0
16	170.890	177.2	170.985	175.6	171.520	64.00 *	172.345	492.5			171.020	145.0
17	170.890	177.1	170.950	160.9	171.500	62.98	172.500	790.0			171.020	140.0 *
18	171.090	174.5	170.975	167.8	171.470	59.99	172.045	451.9			170.995	142.3
19	170.980	188.0	170.980	170.0 *	171.480	62.97	171.430	228.4			171.040	136.6
20	171.100	210.2	170.955	150.0	171.440	59.58	171.610	312.0	171.335	52.62	170.975	110.1
21	171.050	187.9	170.965	176.4	171.465	62.18	171.210	196.6	171.320	46.03	171.430	143.3
22	171.080	195.0 *	171.030	186.1	171.450	60.50	170.870	150.0 *	171.510	65.76	171.300	129.7
23	171.025	181.0	170.940	169.8	171.520	62.00 *	171.035	175.6	171.505	59.09	171.265	92.86
24	171.050	196.7	171.000	154.3	171.522	62.57	170.850	153.1	171.940	76.08	171.240	90.00 *
25	171.000	180.0 *	171.025	135.2	171.375	61.23			172.040	93.89	171.190	80.00 *
26	170.970	184.0	170.940	120.0 *	171.350	61.64			171.140	150.0 *	171.170	76.27
27	171.000	170.6	170.960	135.9	171.410	69.23			171.315	209.3	171.140	68.40
28	171.025	167.5	170.990	133.9	171.375	60.07			171.150	166.4	171.140	66.22
29	171.050	170.0 *	171.040	194.3	171.370	60.46			171.290	178.8	171.490	99.63
30	170.980	158.4	170.970	141.4					171.215	175.0	171.500	102.1
31	171.035	169.4	171.015	149.3							171.370	90.00 *
Ten-Daily Mean												
I Ten-Daily	170.957	186.2	171.159	207.3	171.480	73.36	171.614	69.96			171.118	156.6
II Ten-Daily	170.918	178.9	171.016	184.4	171.527	62.67	171.682	307.8	171.335	52.62	171.041	136.6
III Ten-Daily	171.024	178.2	170.989	154.2	171.426	62.21	170.991	168.8	171.443	122.0	171.294	94.42
Monthly												
Min.	170.795	158.4	170.940	120.0	170.980	59.58	170.850	55.98	171.140	46.03	170.975	66.22
Max.	171.100	210.2	171.800	302.0	171.700	127.1	172.500	790.0	172.040	209.3	171.500	175.7
Mean	170.968	181	171.052	181.1	171.480	66.21	171.538	185.5	171.433	115.7	171.156	128.1

Peak Computed Discharge = 2030 cumecs on 29/09/2019 Corres. Water Level :174.23 m

Lowest Computed Discharge = 14.45 cumecs on 16/06/2019 Corres. Water Level :171.13 m

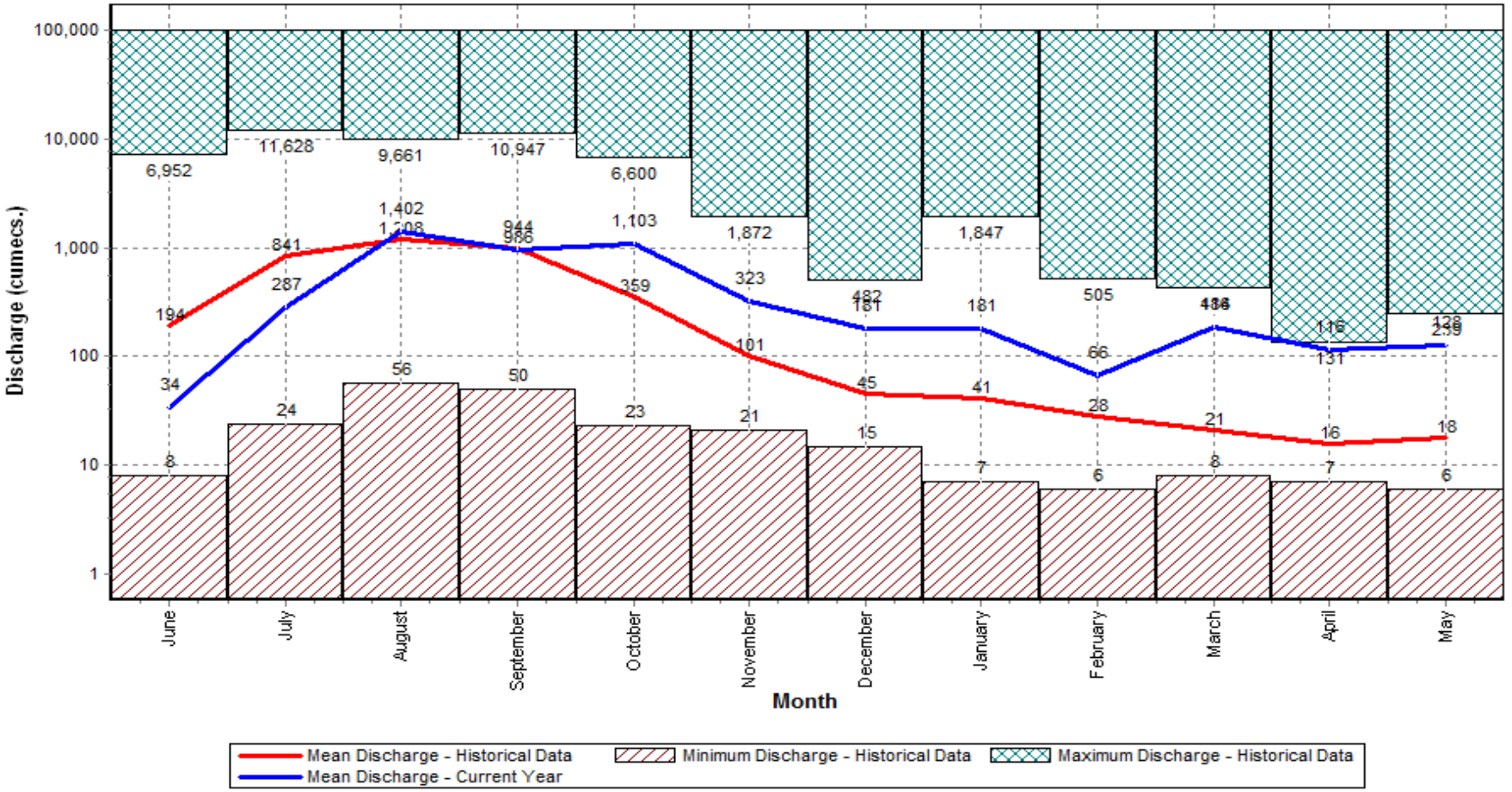
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2019-2020

Station Name : PANPOSH (EB000H6) | **Data considered : 1997-2020** | **Division : E.E., Bhubaneswar**

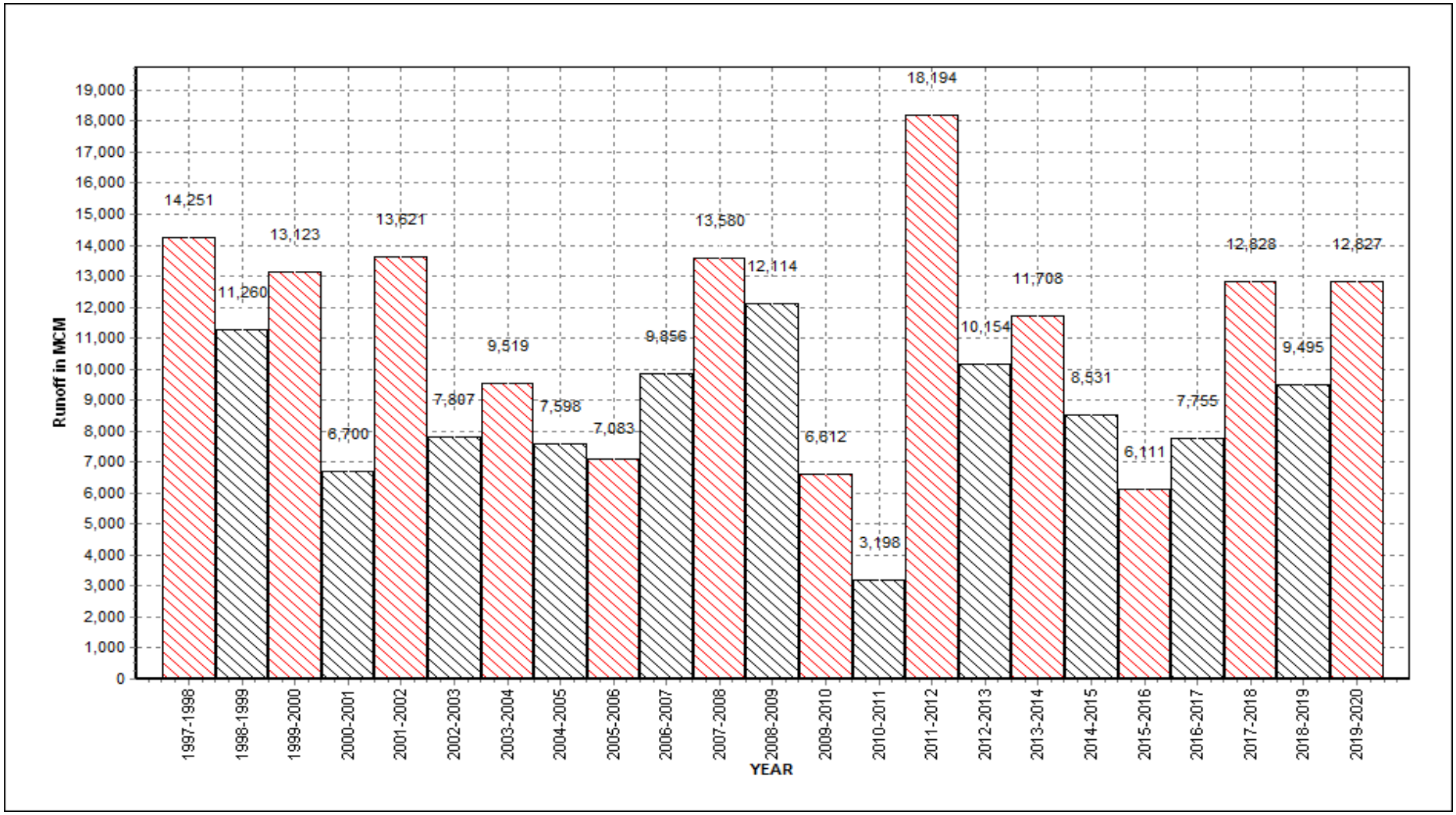
Local River : Brahmni | **Sub-Division : Rourkela**



Annual Runoff Values for the period: 1997 - 2020

Station Name : PANPOSH (EB000H6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

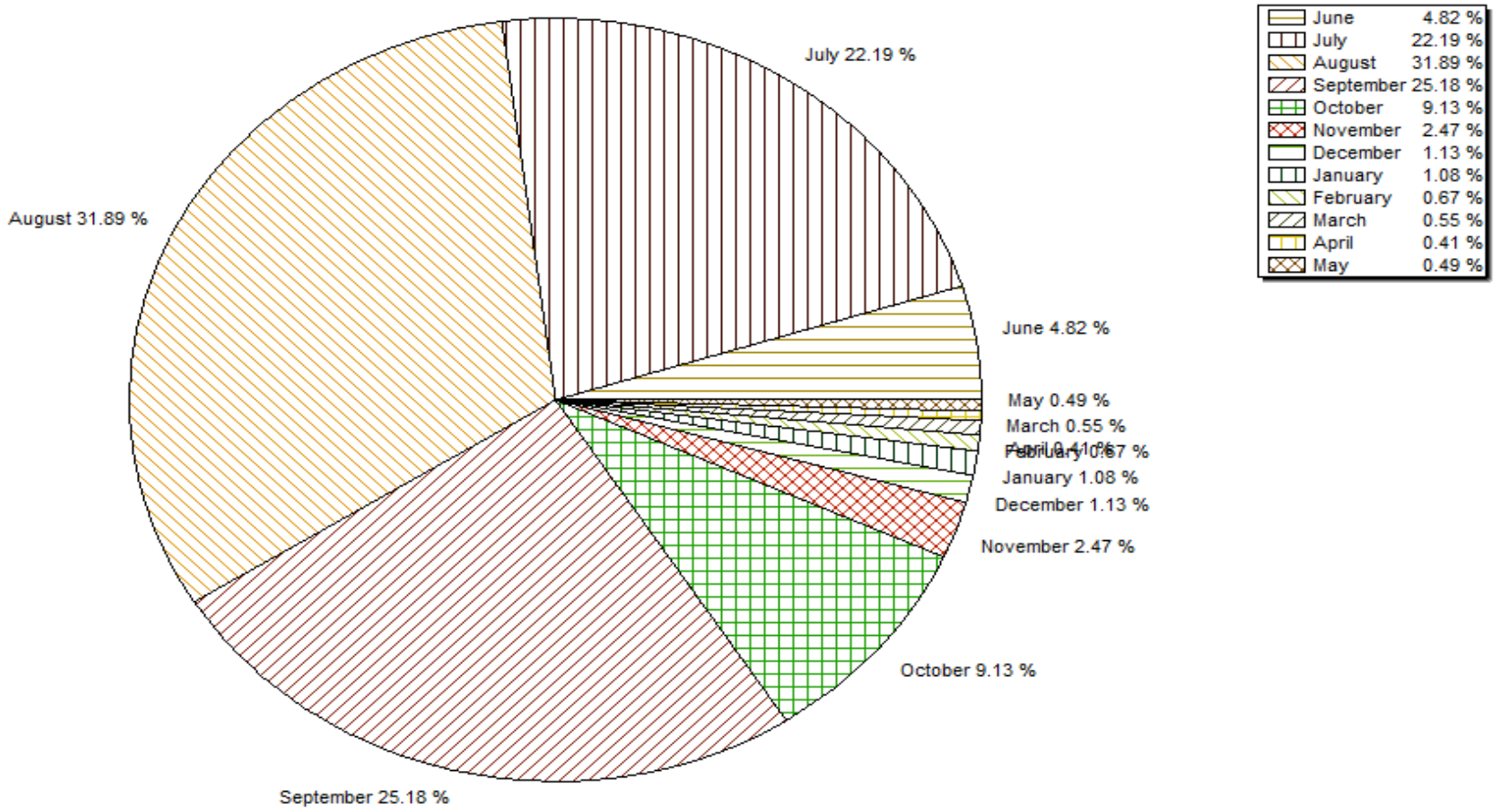


Note: Missing values have not been considered while arriving at Annual Runoff

Monthly Average Runoff based on period : 1997-2019

Station Name : PANPOSH (EB000H6) **Division : E.E., Bhubaneswar**

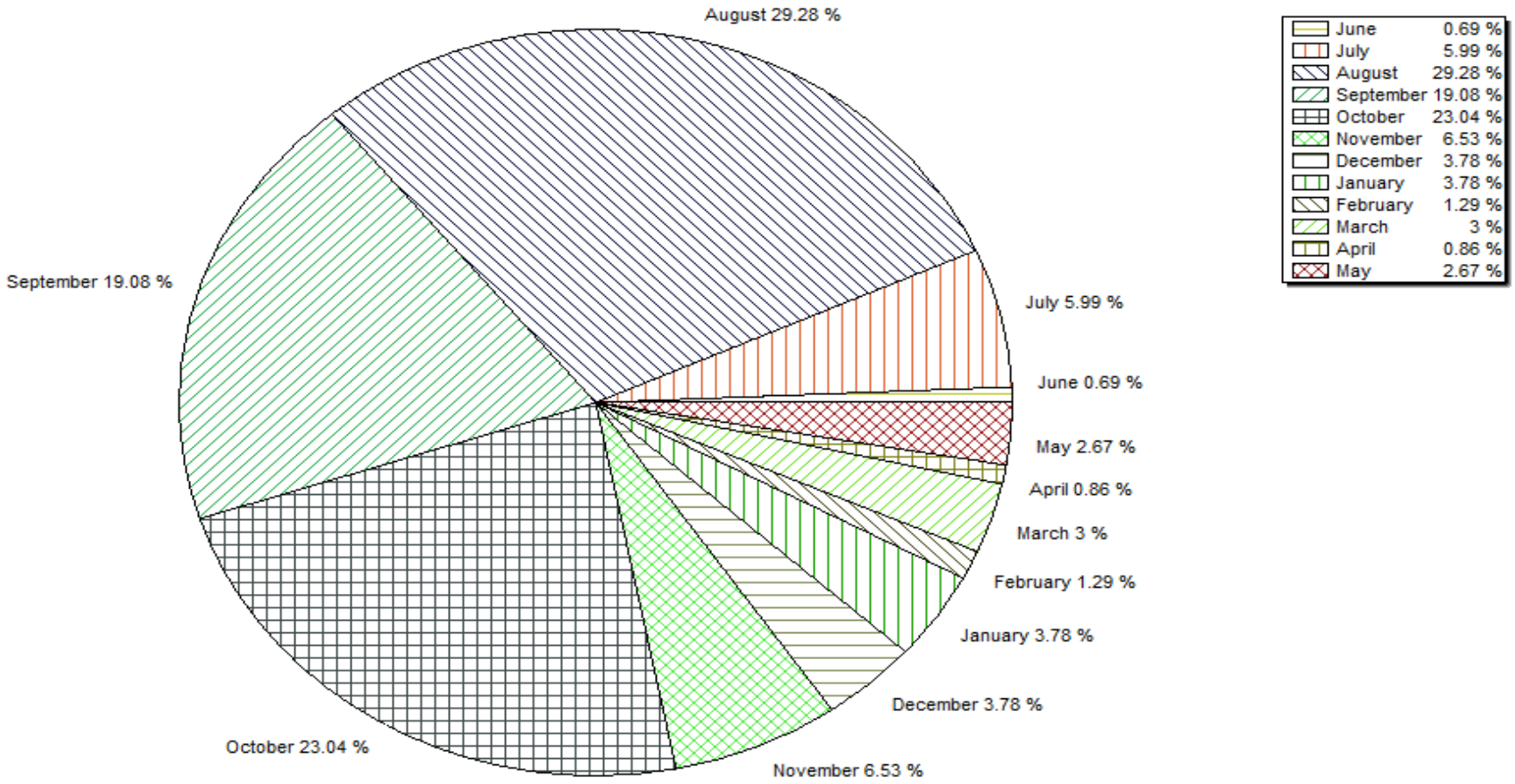
Local River : Brahmni **Sub-Division : Rourkela**



Monthly Runoff for the Year : 2019-2020

Station Name : PANPOSH (EB000H6)
Local River : Brahmni

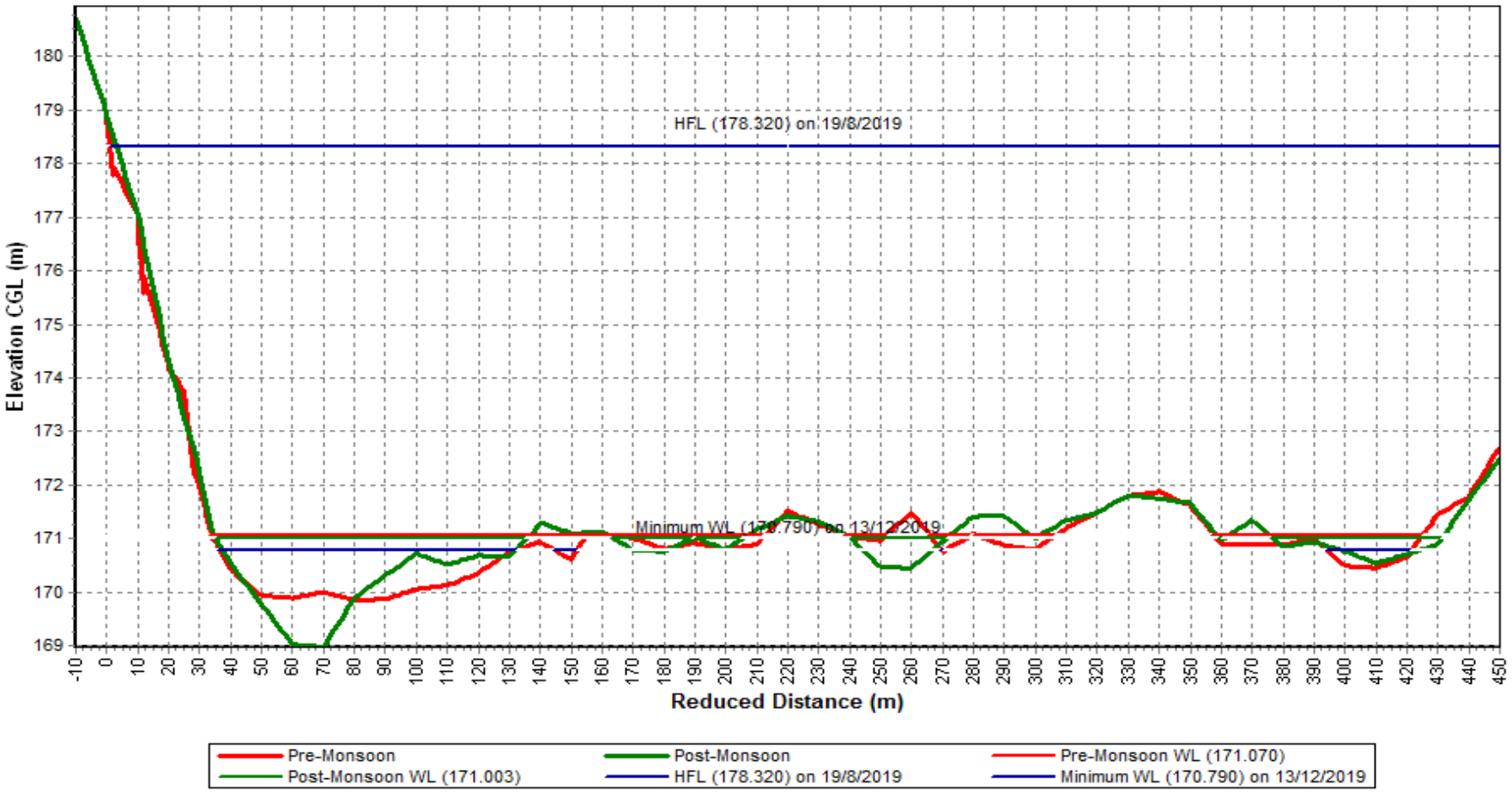
Division : E.E., Bhubaneswar
Sub-Division : Rourkela



Pre-Monsoon & Post-Monsoon X-Section for Water Year : 2019-2020

Station Name : PANPOSH (EB000H6) **Division : E.E., Bhubaneswar**

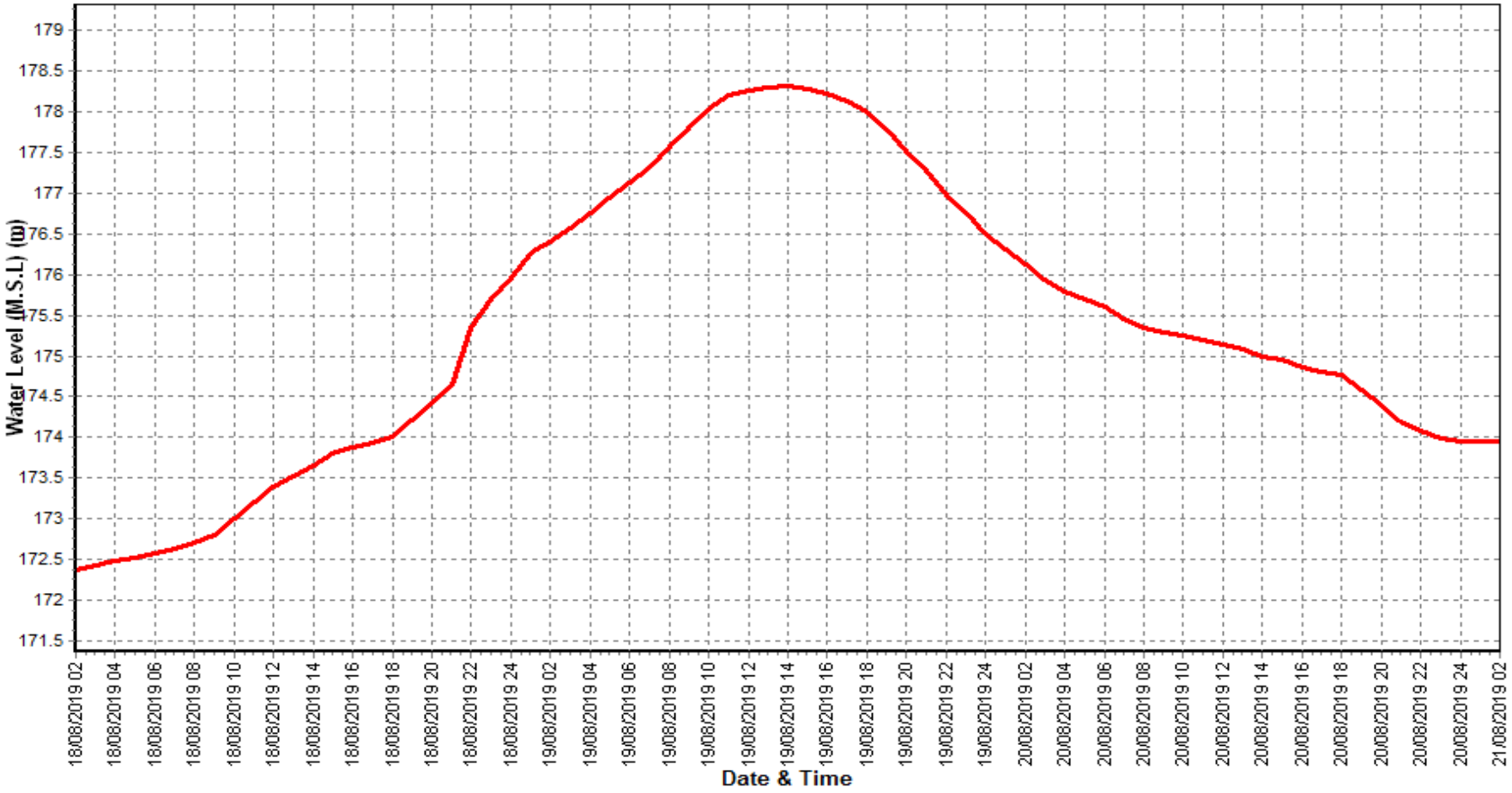
Local River : Brahmni **Sub-Division : Rourkela**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2019-2020

Station Name : PANPOSH (EB000H6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

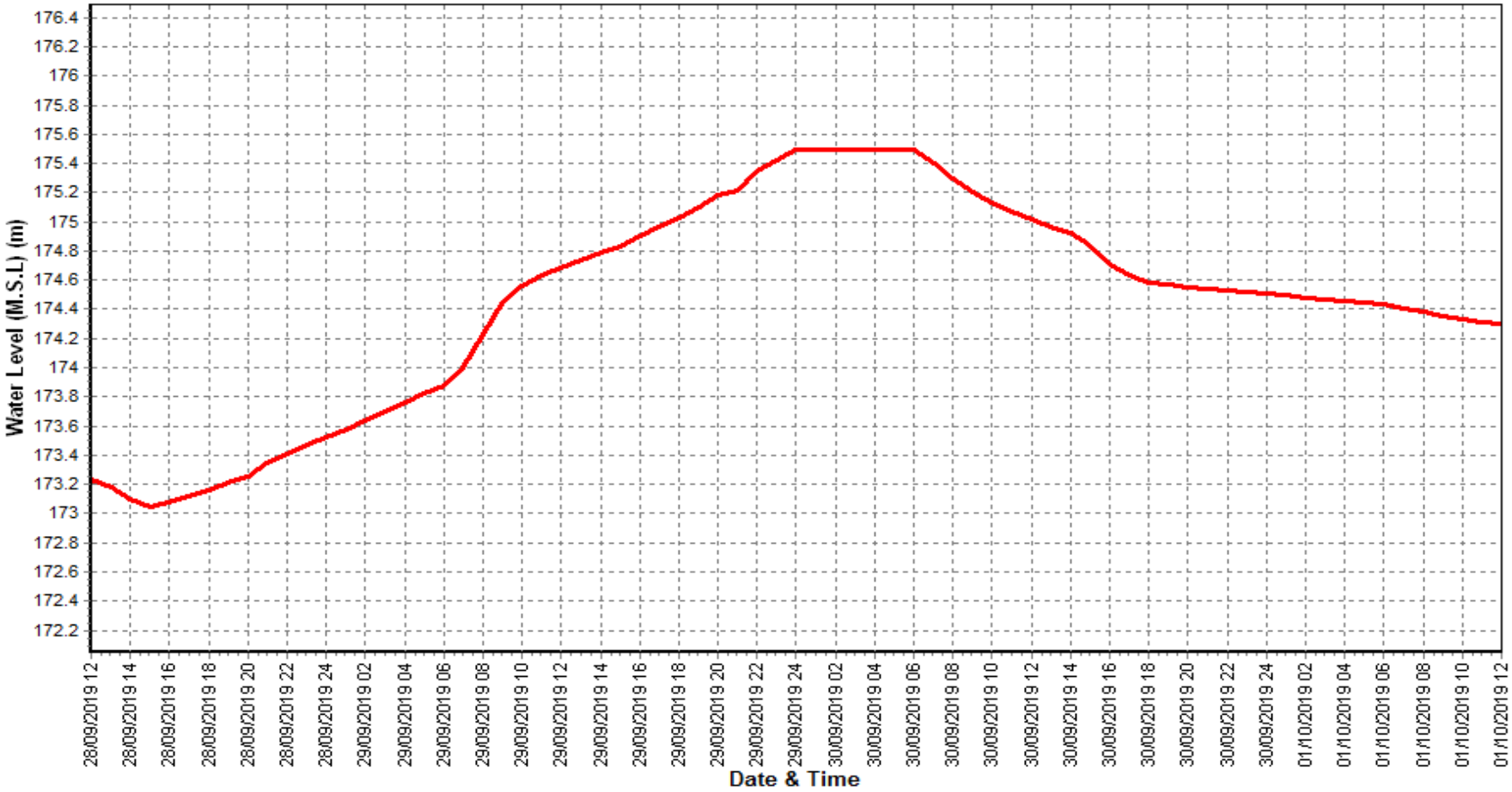


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2019-2020

Station Name : PANPOSH (EB000H6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

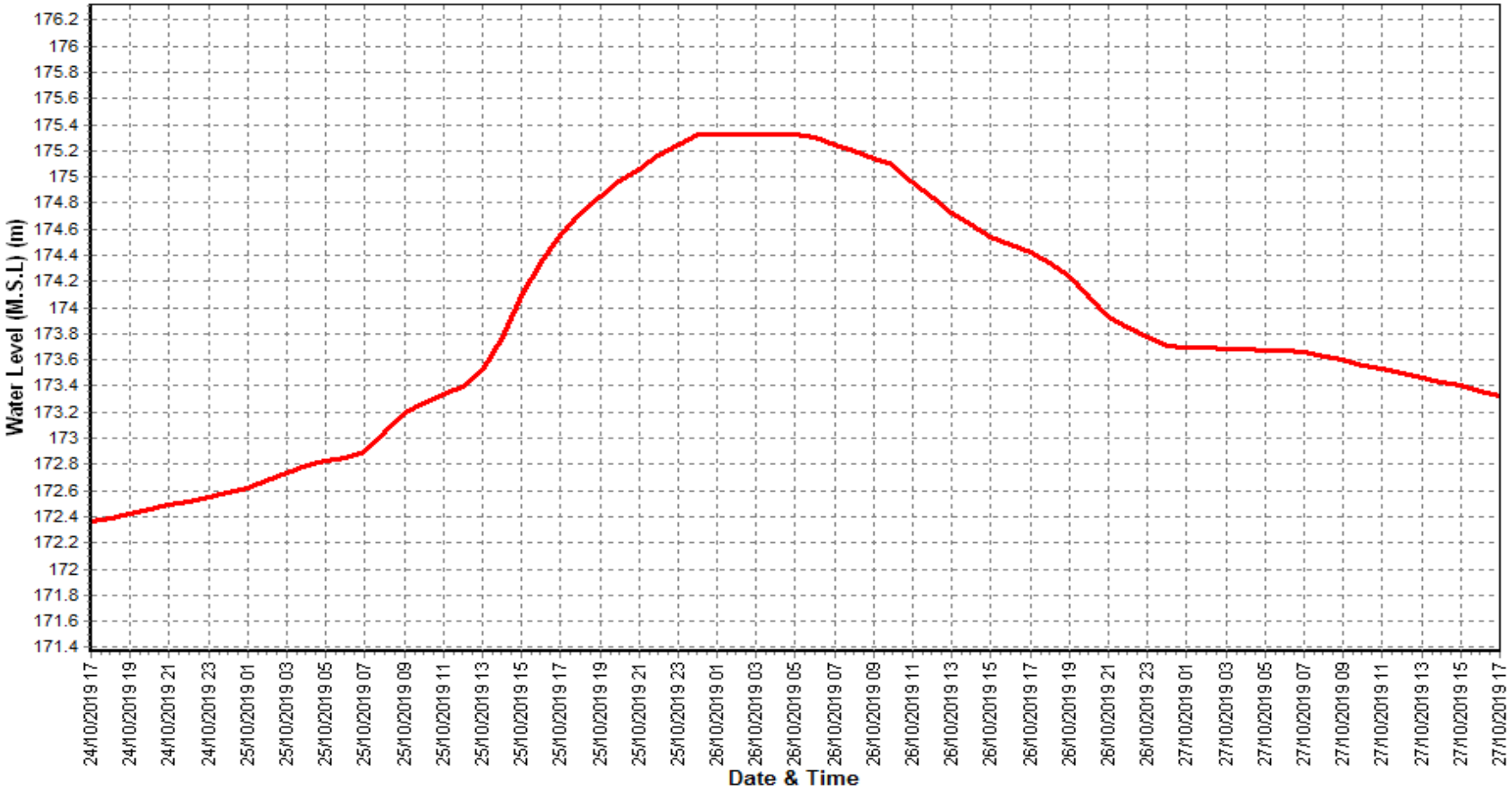


Time Span: 72 Hrs

Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2019-2020

Station Name : PANPOSH (EB000H6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**



Time Span: 72 Hrs

SECTION-II (SEDIMENT DATA)

Daily Observed Sediment Datasheet for period : 2019-2020

Station Name : PANPOSH (EB000H6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

Day	Jun						Jul						Aug					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	13.67	0.000	0.000	0.011	0.011	13	109.3	0.071	0.032	0.159	0.261	2469	507.5	0.013	0.001	0.351	0.365	16018
2	16.03	0.000	0.000	0.011	0.011	16	113.2	0.063	0.043	0.055	0.160	1566	505.3	0.011	0.007	0.096	0.113	4951
3	14.44	0.000	0.000	0.019	0.019	24	177.0	0.047	0.041	0.056	0.144	2202	394.7	0.016	0.003	0.063	0.082	2786
4	15.19	0.000	0.000	0.011	0.011	15	177.0	0.047	0.041	0.056	0.144	2202	350.0	0.016	0.003	0.063	0.082	2471
5	15.59	0.000	0.000	0.011	0.011	15	254.0	0.052	0.044	0.028	0.124	2722	354.1	0.007	0.004	0.284	0.295	9016
6	15.50	0.000	0.000	0.033	0.033	44	248.8	0.052	0.033	0.179	0.264	5675	325.0	0.027	0.015	0.343	0.384	10786
7	15.91	0.000	0.000	0.032	0.032	44	240.0	0.052	0.033	0.179	0.264	5474	321.5	0.059	0.016	0.273	0.348	9667
8	14.97	0.000	0.000	0.024	0.024	31	220.9	0.064	0.041	0.032	0.137	2620	614.5	0.043	0.017	0.061	0.121	6440
9	14.76	0.000	0.000	0.024	0.024	30	409.9	0.060	0.035	0.040	0.135	4770	726.6	0.033	0.019	0.085	0.137	8620
10	14.79	0.000	0.000	0.023	0.023	29	209.3	0.051	0.041	0.036	0.128	2315	715.8	0.015	0.004	0.060	0.079	4867
11	13.20	0.000	0.000	0.036	0.036	40	447.8	0.073	0.055	0.037	0.165	6395	720.0	0.015	0.004	0.060	0.079	4896
12	14.82	0.000	0.000	0.040	0.040	52	422.0	0.064	0.047	0.068	0.179	6515	172.2	0.015	0.004	0.060	0.079	1171
13	14.76	0.000	0.000	0.078	0.078	99	359.5	0.051	0.039	0.035	0.124	3855	1125	0.008	0.004	0.231	0.243	23596
14	14.65	0.000	0.000	0.030	0.030	38	350.0	0.051	0.039	0.035	0.124	3753	1933	0.005	0.002	0.389	0.395	65954
15	14.32	0.000	0.000	0.049	0.049	60	295.0	0.033	0.029	0.059	0.121	3091	1950	0.005	0.002	0.389	0.395	66533
16	14.45	0.000	0.000	0.049	0.049	61	254.6	0.043	0.037	0.048	0.128	2816	1610	0.007	0.002	0.079	0.088	12210
17	14.78	0.000	0.000	0.029	0.029	37	249.0	0.041	0.031	0.023	0.095	2037	934.3	0.004	0.003	0.128	0.135	10857
18	14.92	0.000	0.000	0.017	0.017	22	223.7	0.044	0.033	0.027	0.104	2010	950.0	0.004	0.003	0.128	0.135	11040
19	13.76	0.000	0.000	0.027	0.027	32	205.0	0.037	0.029	0.025	0.092	1628	6476	0.003	0.002	0.690	0.695	388729
20	15.68	0.000	0.000	0.067	0.067	91	198.5	0.033	0.028	0.044	0.105	1806	3090	0.002	0.002	0.494	0.498	132836
21	14.78	0.000	0.000	0.034	0.034	44	200.0	0.033	0.028	0.044	0.105	1814	2363	0.005	0.013	0.474	0.492	100366
22	25.73	0.000	0.000	0.024	0.024	52	173.9	0.037	0.019	0.035	0.091	1362	1973	0.002	0.002	0.276	0.280	47715
23	25.92	0.000	0.000	0.024	0.024	53	194.6	0.019	0.007	0.065	0.091	1525	1727	0.007	0.002	0.262	0.272	40552
24	17.67	0.072	0.028	0.041	0.140	213	154.1	0.039	0.020	0.075	0.133	1776	1130	0.025	0.042	0.072	0.138	13499
25	39.29	0.056	0.017	0.008	0.080	273	168.9	0.020	0.002	0.072	0.094	1368	1150	0.025	0.042	0.072	0.138	13741
26	44.20	0.042	0.023	0.033	0.098	373	169.1	0.019	0.001	0.011	0.031	448	1680	0.019	0.015	0.140	0.174	25309
27	71.07	0.084	0.053	0.059	0.196	1202	166.4	0.005	0.001	0.065	0.072	1034	2390	0.034	0.045	0.143	0.222	45825
28	112.8	0.063	0.049	0.085	0.197	1919	400.0	0.005	0.001	0.065	0.072	2485	1729	0.010	0.005	0.094	0.109	16235
29	194.7	0.052	0.041	0.060	0.153	2579	730.5	0.041	0.024	0.039	0.104	6564	1447	0.111	0.087	0.163	0.360	45041
30	180.3	0.052	0.041	0.060	0.153	2388	673.6	0.017	0.015	0.365	0.397	23122	2479	0.052	0.031	0.280	0.363	77739
31							688.7	0.001	0.003	0.285	0.289	17185	1625	0.029	0.026	0.441	0.496	69575
Ten Daily Mean																		
Ten Daily I	15.08	0.000	0.000	0.020	0.020	26	215.9	0.056	0.039	0.082	0.176	3202	481.5	0.024	0.009	0.168	0.201	7562
Ten Daily II	14.53	0.000	0.000	0.042	0.042	53	300.5	0.047	0.037	0.040	0.124	3391	1896	0.007	0.003	0.265	0.274	71782
Ten Daily III	72.64	0.042	0.025	0.043	0.110	910	338.2	0.022	0.011	0.102	0.134	5335	1790	0.029	0.028	0.220	0.277	45054
Monthly Total						9889						124605						1289038

Annual Sediment Load (Metric Tonnes) : 2767162

Daily Observed Sediment Datasheet for period : 2019-2020

Station Name : PANPOSH (EB000H6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

Day	Sep						Oct						Nov					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	1150	0.007	0.004	0.234	0.245	24343	2568	0.007	0.014	0.482	0.503	111507	599.0	0.034	0.037	0.031	0.102	5268
2	1750	0.008	0.024	0.050	0.081	12189	1740	0.006	0.013	0.450	0.469	70508	535.8	0.028	0.028	0.038	0.095	4379
3	747.4	0.014	0.031	0.091	0.136	8756	1235	0.013	0.020	0.515	0.548	58455	460.0	0.028	0.027	0.038	0.093	3696
4	741.8	0.021	0.032	0.072	0.124	7934	1113	0.038	0.028	0.381	0.447	42961	449.0	0.009	0.006	0.086	0.101	3911
5	692.3	0.015	0.006	0.081	0.102	6071	1081	0.005	0.022	0.119	0.146	13621	453.4	0.002	0.003	0.018	0.023	881
6	635.5	0.007	0.022	0.086	0.115	6315	1050	0.005	0.020	0.110	0.135	12247	423.0	0.004	0.007	0.044	0.055	2021
7	620.0	0.024	0.043	0.112	0.179	9578	1035	0.004	0.003	0.100	0.107	9568	407.4	0.002	0.009	0.071	0.082	2880
8	450.0	0.004	0.006	0.012	0.022	855	1580	0.018	0.014	0.120	0.152	20750	365.0	0.006	0.002	0.082	0.091	2854
9	500.0	0.004	0.007	0.013	0.024	1037	1679	0.019	0.014	0.126	0.160	23173	343.3	0.000	0.000	0.019	0.019	572
10	536.8	0.003	0.004	0.043	0.050	2333	1664	0.014	0.025	0.120	0.159	22899	350.0	0.000	0.000	0.019	0.019	575
11	528.6	0.027	0.023	0.033	0.082	3754	1154	0.006	0.003	0.169	0.178	17744	334.1	0.000	0.000	0.033	0.033	961
12	703.7	0.022	0.023	0.072	0.117	7090	818.5	0.007	0.004	0.187	0.199	14038	350.0	0.000	0.000	0.033	0.033	998
13	1905	0.026	0.027	0.058	0.112	18436	810.0	0.007	0.004	0.185	0.196	13717	322.9	0.000	0.000	0.096	0.096	2690
14	2384	0.015	0.012	0.275	0.302	62112	815.2	0.031	0.005	0.105	0.141	9931	283.0	0.000	0.000	0.120	0.120	2934
15	1750	0.008	0.006	0.230	0.244	36893	731.8	0.029	0.047	0.076	0.152	9579	274.1	0.000	0.000	0.057	0.057	1343
16	1549	0.013	0.020	0.246	0.279	37354	703.9	0.025	0.052	0.060	0.137	8344	268.6	0.000	0.000	0.047	0.047	1091
17	821.5	0.012	0.035	0.073	0.120	8517	656.3	0.011	0.016	0.032	0.060	3396	290.0	0.000	0.000	0.047	0.047	1178
18	498.4	0.019	0.018	0.055	0.091	3932	463.0	0.023	0.034	0.118	0.175	6981	282.5	0.000	0.000	0.047	0.047	1142
19	468.7	0.017	0.021	0.067	0.104	4224	443.3	0.024	0.032	0.126	0.182	6959	280.3	0.000	0.000	0.047	0.047	1131
20	424.2	0.033	0.010	0.054	0.096	3519	430.0	0.024	0.040	0.128	0.192	7133	266.2	0.000	0.000	0.038	0.038	876
21	415.5	0.030	0.024	0.046	0.100	3576	360.6	0.013	0.029	0.121	0.163	5088	283.6	0.000	0.000	0.013	0.013	323
22	380.0	0.004	0.006	0.012	0.022	722	598.2	0.025	0.010	0.090	0.125	6455	258.9	0.000	0.000	0.035	0.035	774
23	329.1	0.026	0.016	0.071	0.113	3207	504.3	0.038	0.033	0.056	0.128	5556	296.0	0.000	0.000	0.026	0.026	660
24	279.8	0.023	0.014	0.060	0.098	2364	584.8	0.022	0.041	0.120	0.183	9246	290.0	0.000	0.000	0.026	0.026	639
25	294.8	0.024	0.016	0.057	0.098	2486	1550	0.021	0.023	0.136	0.180	24140	253.8	0.000	0.000	0.013	0.013	274
26	307.2	0.016	0.017	0.033	0.066	1754	3108	0.014	0.061	0.241	0.317	84989	227.0	0.000	0.000	0.037	0.037	724
27	695.6	0.017	0.020	0.084	0.120	7230	1880	0.040	0.060	0.286	0.386	62699	200.7	0.000	0.000	0.040	0.040	690
28	1710	0.023	0.022	0.050	0.094	13890	1414	0.023	0.004	0.283	0.310	37895	190.0	0.000	0.000	0.040	0.040	652
29	2030	0.018	0.017	0.058	0.093	16311	905.4	0.038	0.036	0.161	0.235	18390	189.5	0.000	0.000	0.017	0.017	273
30	3032	0.014	0.012	0.537	0.563	147382	828.6	0.031	0.033	0.063	0.127	9085	175.5	0.000	0.000	0.013	0.013	190
31							700.8	0.043	0.032	0.049	0.124	7509						
Ten Daily Mean																		
Ten Daily I	782.4	0.011	0.018	0.079	0.108	7941	1474	0.013	0.017	0.252	0.283	38569	438.6	0.011	0.012	0.045	0.068	2704
Ten Daily II	1103	0.019	0.019	0.116	0.155	18583	702.6	0.019	0.024	0.119	0.161	9782	295.2	0.000	0.000	0.057	0.057	1434
Ten Daily III	947.4	0.020	0.016	0.101	0.137	19892	1130	0.028	0.033	0.146	0.207	24641	236.5	0.000	0.000	0.026	0.026	520
Monthly																		
Total						464164						754562						46581

Annual Sediment Load (Metric Tonnes) : 2767162

Daily Observed Sediment Datasheet for period : 2019-2020

Station Name : PANPOSH (EB000H6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

Day	Dec						Jan						Feb					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	185.0	0.000	0.000	0.020	0.020	312	174.6	0.000	0.000	0.006	0.006	91	127.1	0.000	0.000	0.005	0.005	55
2	170.9	0.000	0.000	0.019	0.019	285	167.5	0.000	0.000	0.008	0.008	116	80.00	0.000	0.000	0.006	0.006	41
3	165.3	0.000	0.000	0.018	0.018	257	176.5	0.000	0.000	0.012	0.012	183	86.58	0.000	0.000	0.007	0.007	54
4	176.7	0.000	0.000	0.016	0.016	244	174.7	0.000	0.000	0.016	0.016	241	63.31	0.000	0.000	0.007	0.007	39
5	192.1	0.000	0.000	0.016	0.016	265	170.0	0.000	0.000	0.022	0.022	323	59.94	0.000	0.000	0.008	0.008	41
6	194.4	0.000	0.000	0.014	0.014	235	302.0	0.000	0.000	0.025	0.025	652	62.40	0.000	0.000	0.010	0.010	54
7	209.0	0.000	0.000	0.016	0.016	289	253.7	0.000	0.000	0.025	0.025	548	61.41	0.000	0.000	0.010	0.010	53
8	198.0	0.000	0.000	0.012	0.012	205	218.7	0.000	0.000	0.025	0.025	472	63.81	0.000	0.000	0.010	0.010	55
9	180.6	0.000	0.000	0.008	0.008	117	225.1	0.000	0.000	0.018	0.018	350	65.00	0.000	0.000	0.012	0.012	67
10	190.4	0.000	0.000	0.008	0.008	123	210.7	0.000	0.000	0.012	0.012	218	64.02	0.000	0.000	0.012	0.012	68
11	180.3	0.000	0.000	0.008	0.008	117	205.2	0.000	0.000	0.008	0.008	142	64.13	0.000	0.000	0.012	0.012	68
12	178.2	0.000	0.000	0.008	0.008	115	210.0	0.000	0.000	0.006	0.006	109	63.76	0.000	0.000	0.012	0.012	68
13	166.4	0.000	0.000	0.008	0.008	108	222.7	0.000	0.000	0.005	0.005	96	63.07	0.000	0.000	0.016	0.016	87
14	172.7	0.000	0.000	0.010	0.010	149	195.7	0.000	0.000	0.005	0.005	85	64.00	0.000	0.000	0.018	0.018	100
15	165.0	0.000	0.000	0.018	0.018	257	186.1	0.000	0.000	0.005	0.005	80	62.18	0.000	0.000	0.020	0.020	107
16	177.2	0.000	0.000	0.029	0.029	449	175.6	0.000	0.000	0.005	0.005	76	64.00	0.000	0.000	0.024	0.024	133
17	177.1	0.000	0.000	0.029	0.029	448	160.9	0.000	0.000	0.004	0.004	56	62.98	0.000	0.000	0.028	0.028	150
18	174.5	0.000	0.000	0.029	0.029	442	167.8	0.000	0.000	0.003	0.003	43	59.99	0.000	0.000	0.028	0.028	143
19	188.0	0.000	0.000	0.026	0.026	422	170.0	0.000	0.000	0.003	0.003	44	62.97	0.000	0.000	0.028	0.028	150
20	210.2	0.000	0.000	0.026	0.026	472	150.0	0.000	0.000	0.003	0.003	32	59.58	0.000	0.000	0.028	0.028	144
21	187.9	0.000	0.000	0.018	0.018	292	176.4	0.000	0.000	0.003	0.003	38	62.18	0.000	0.000	0.028	0.028	150
22	195.0	0.000	0.000	0.016	0.016	270	186.1	0.000	0.000	0.003	0.003	40	60.50	0.000	0.000	0.028	0.028	146
23	181.0	0.000	0.000	0.014	0.014	211	169.8	0.000	0.000	0.003	0.003	44	62.00	0.000	0.000	0.030	0.030	161
24	196.7	0.000	0.000	0.014	0.014	229	154.3	0.000	0.000	0.003	0.003	43	62.57	0.000	0.000	0.031	0.031	165
25	180.0	0.000	0.000	0.014	0.014	210	135.2	0.000	0.000	0.004	0.004	42	61.23	0.000	0.000	0.031	0.031	161
26	184.0	0.000	0.000	0.014	0.014	215	120.0	0.000	0.000	0.004	0.004	41	61.64	0.000	0.000	0.030	0.030	160
27	170.6	0.000	0.000	0.014	0.014	199	135.9	0.000	0.000	0.005	0.005	58	69.23	0.000	0.000	0.030	0.030	179
28	167.5	0.000	0.000	0.010	0.010	145	133.9	0.000	0.000	0.005	0.005	57	60.07	0.000	0.000	0.030	0.030	156
29	170.0	0.000	0.000	0.008	0.008	118	194.3	0.000	0.000	0.005	0.005	82	60.46	0.000	0.000	0.028	0.028	146
30	158.4	0.000	0.000	0.004	0.004	60	141.4	0.000	0.000	0.005	0.005	56						
31	169.4	0.000	0.000	0.004	0.004	64	149.3	0.000	0.000	0.004	0.004	52						
Ten Daily Mean																		
Ten Daily I	186.2	0.000	0.000	0.015	0.015	233	207.3	0.000	0.000	0.017	0.017	320	73.36	0.000	0.000	0.009	0.009	53
Ten Daily II	178.9	0.000	0.000	0.019	0.019	298	184.4	0.000	0.000	0.005	0.005	76	62.67	0.000	0.000	0.021	0.021	115
Ten Daily III	178.2	0.000	0.000	0.012	0.012	183	154.2	0.000	0.000	0.004	0.004	50	62.21	0.000	0.000	0.029	0.029	158
Monthly Total						7325						4511						3102

Annual Sediment Load (Metric Tonnes) : 2767162

Daily Observed Sediment Datasheet for period : 2019-2020

Station Name : PANPOSH (EB000H6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

Day	Mar						Apr						May					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	59.00	0.000	0.000	0.048	0.048	245							170.9	0.000	0.000	0.074	0.074	1091
2	57.85	0.000	0.000	0.048	0.048	237							175.7	0.000	0.000	0.022	0.022	338
3	55.98	0.000	0.000	0.049	0.049	237							140.0	0.000	0.000	0.062	0.062	750
4	61.10	0.000	0.000	0.050	0.050	264							148.5	0.000	0.000	0.065	0.065	829
5	65.43	0.000	0.000	0.052	0.052	294							149.7	0.000	0.000	0.040	0.040	517
6	60.32	0.000	0.000	0.050	0.050	261							155.0	0.000	0.000	0.053	0.053	710
7	61.21	0.000	0.000	0.055	0.055	291							150.0	0.000	0.000	0.052	0.052	674
8	76.00	0.000	0.000	0.046	0.046	302							156.3	0.000	0.000	0.051	0.051	689
9	82.77	0.000	0.000	0.040	0.040	285							159.5	0.000	0.000	0.059	0.059	813
10	120.0	0.000	0.000	0.048	0.048	498							160.0	0.000	0.000	0.074	0.074	1023
11	153.6	0.000	0.000	0.056	0.056	743							155.7	0.000	0.000	0.070	0.070	942
12	151.5	0.000	0.000	0.066	0.066	864							147.6	0.000	0.000	0.066	0.066	844
13	158.3	0.000	0.000	0.074	0.074	1012							128.5	0.000	0.000	0.135	0.135	1500
14	169.5	0.000	0.000	0.078	0.078	1142							124.2	0.000	0.000	0.098	0.098	1050
15	170.0	0.000	0.000	0.088	0.088	1293							136.0	0.000	0.000	0.109	0.109	1280
16	492.5	0.000	0.000	0.102	0.102	4353							145.0	0.000	0.000	0.039	0.039	491
17	790.0	0.000	0.000	0.122	0.122	8327							140.0	0.000	0.000	0.009	0.009	106
18	451.9	0.005	0.003	0.124	0.132	5146							142.3	0.000	0.000	0.009	0.009	106
19	228.4	0.005	0.002	0.123	0.130	2571							136.6	0.000	0.000	0.018	0.018	207
20	312.0	0.002	0.000	0.091	0.093	2502	52.62	0.000	0.000	0.037	0.037	168	110.1	0.000	0.000	0.042	0.042	398
21	196.6	0.000	0.000	0.025	0.025	423	46.03	0.000	0.000	0.033	0.033	131	143.3	0.000	0.000	0.064	0.064	789
22	150.0	0.000	0.000	0.028	0.028	363	65.76	0.000	0.000	0.038	0.038	216	129.7	0.000	0.000	0.063	0.063	702
23	175.6	0.000	0.000	0.035	0.035	525	59.09	0.000	0.000	0.036	0.036	184	92.86	0.000	0.000	0.024	0.024	189
24	153.1	0.000	0.000	0.089	0.089	1175	76.08	0.000	0.000	0.056	0.056	368	90.00	0.000	0.000	0.023	0.023	182
25							93.89	0.000	0.000	0.088	0.088	714	80.00	0.000	0.000	0.022	0.022	152
26							150.0	0.000	0.000	0.096	0.096	1244	76.27	0.000	0.000	0.030	0.030	200
27							209.3	0.000	0.000	0.183	0.183	3316	68.40	0.000	0.000	0.059	0.059	347
28							166.4	0.000	0.000	0.060	0.060	855	66.22	0.000	0.000	0.037	0.037	214
29							178.8	0.000	0.000	0.063	0.063	967	99.63	0.000	0.000	0.145	0.145	1246
30							175.0	0.000	0.000	0.110	0.110	1665	102.1	0.000	0.000	0.118	0.118	1040
31													90.00	0.000	0.000	0.101	0.101	785
Ten Daily Mean																		
Ten Daily I	69.96	0.000	0.000	0.049	0.049	291							156.6	0.000	0.000	0.055	0.055	743
Ten Daily II	307.8	0.001	0.001	0.092	0.094	2795	52.62	0.000	0.000	0.037	0.037	168	136.6	0.000	0.000	0.059	0.059	692
Ten Daily III	168.8	0.000	0.000	0.044	0.044	621	122.0	0.000	0.000	0.076	0.076	966	94.42	0.000	0.000	0.062	0.062	531
Monthly Total						33352						9828						20204

Annual Sediment Load (Metric Tonnes) : 2767162

Annual Sediment Load for period : 1997-2020

Station Name : PANPOSH (EB000H6) **Division : E.E., Bhubaneswar**

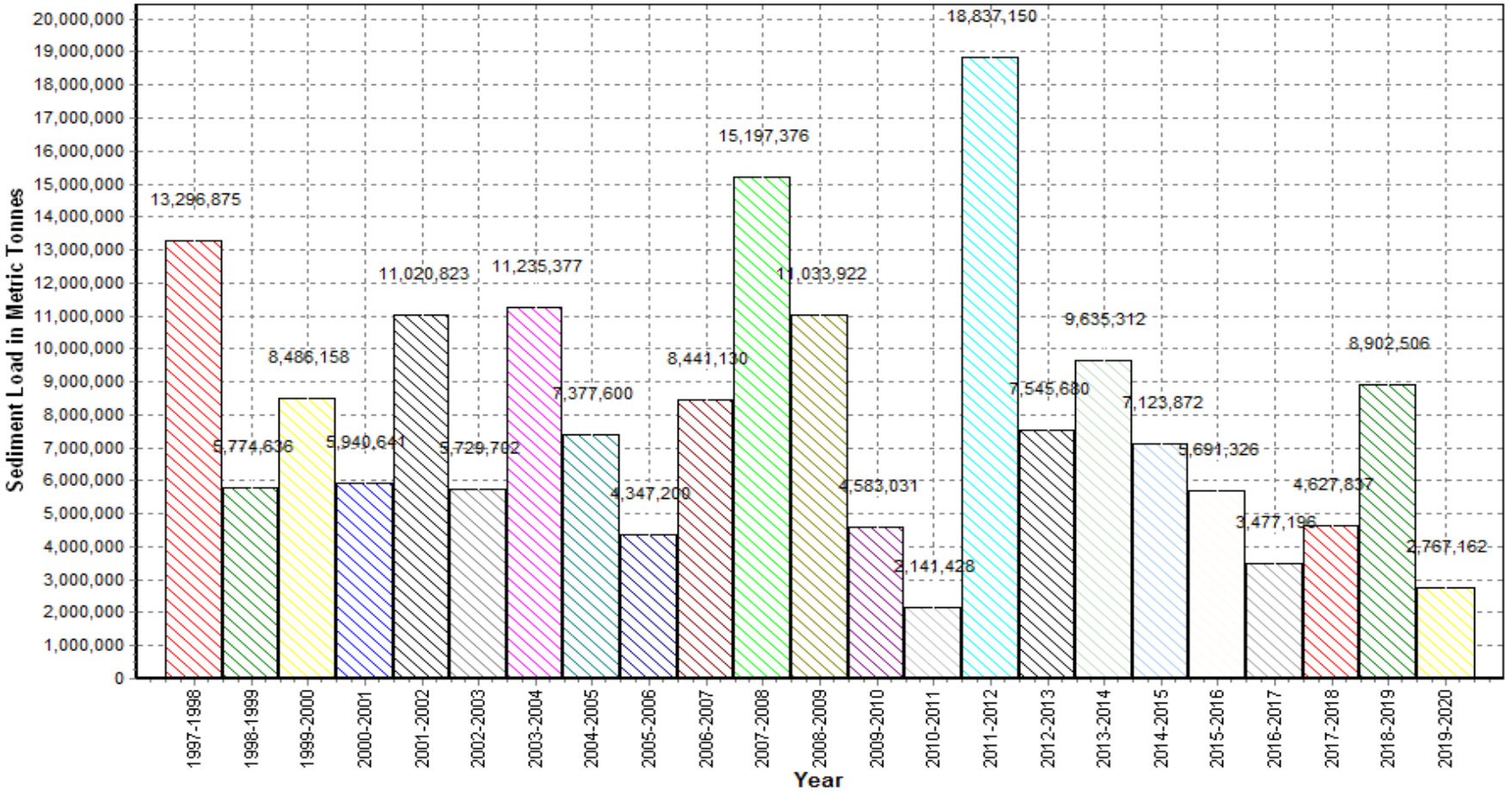
Local River : Brahmni **Sub-Division : Rourkela**

Year	Monsoon (M.T.)	Non-Monsoon (M.T.)	Annual Load (M.T.)	Annual Run Off (MCM)
1997-1998	13082732	214143	13296875	14251
1998-1999	5740493	34142	5774636	11260
1999-2000	8468080	18078	8486158	13123
2000-2001	5933566	7075	5940641	6700
2001-2002	11015435	5388	11020823	13621
2002-2003	5722434	7268	5729702	7804
2003-2004	11211416	23962	11235377	9519
2004-2005	7359200	18401	7377600	7598
2005-2006	4310272	36928	4347200	7083
2006-2007	8427091	14039	8441130	9856
2007-2008	15178560	18817	15197376	13580
2008-2009	11014979	18943	11033922	12114
2009-2010	4573405	9626	4583031	6612
2010-2011	2130446	10981	2141428	3198
2011-2012	18822863	14287	18837150	18194
2012-2013	7530170	15510	7545680	10154
2013-2014	9597843	37469	9635312	11708
2014-2015	7116756	7116	7123872	8531
2015-2016	5683606	7720	5691326	6111
2016-2017	3336292	140904	3477196	7755
2017-2018	4625181	2657	4627837	12828
2018-2019	8891381	11126	8902506	9495
2019-2020	2688839	78323	2767162	12827

Annual Sediment Load for the period: 1997-2020

Station Name : PANPOSH (EB000H6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**



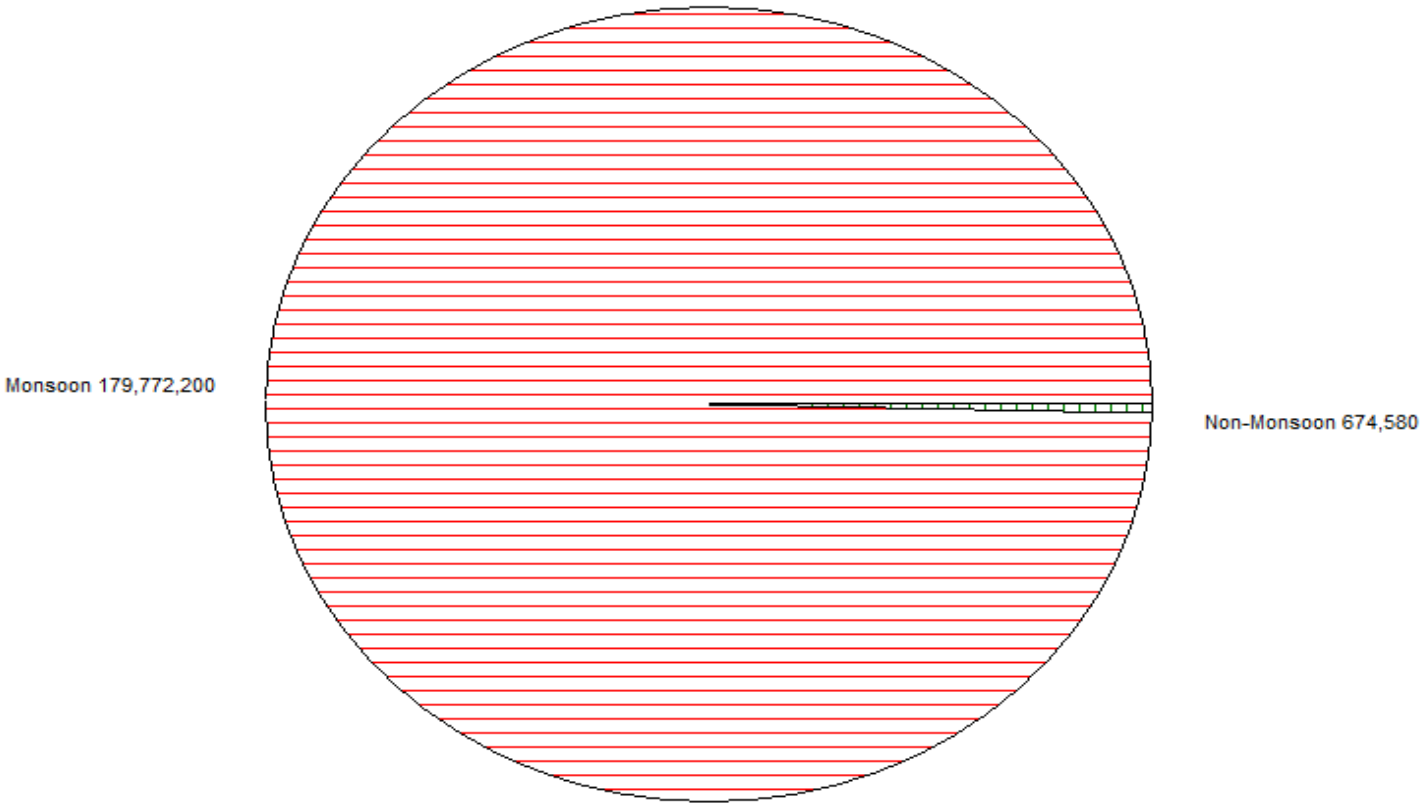
Seasonal Sediment Load for the period : 1997-2019

Station Name : PANPOSH (EB000H6)

Local River : Brahmni

Division : E.E., Bhubaneswar

Sub-Division : Rourkela



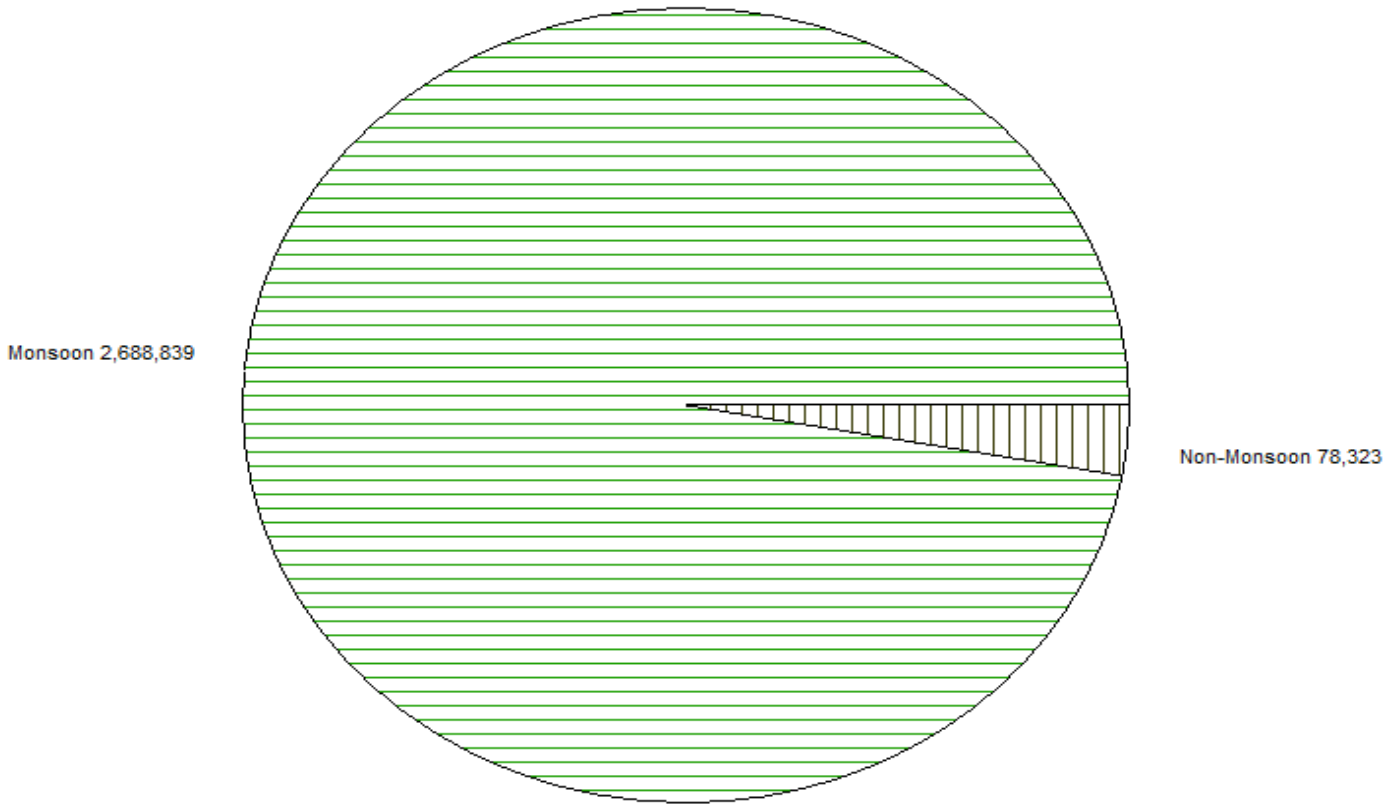
Seasonal Sediment Load for the Year: 2019-2020

Station Name : PANPOSH (EB000H6)

Local River : Brahmni

Division : E.E., Bhubaneswar

Sub-Division : Rourkela



SECTION-III

(WATER QUALITY)

Water Quality Datasheet for the period : 2019-2020

Station Name : PANPOSH (EB000H6) **Division : E.E., Bhubaneswar**

Local River : Brahmani **River Water Analysis** **Sub-Division : Rourkela**

S.No	Parameters	6/1/2019	7/1/2019	8/1/2019	9/2/2019	10/1/2019	11/1/2019	12/2/2019	1/1/2020	2/1/2020	3/2/2020
		A	A	A	A	A	A	A	A	A	A
	PHYSICAL										
1	Q (cumec)										
2	Colour_Cod (-)	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Brown		Light Brown
3	EC_FLD (µmho/cm)	190	518	682	100	124	170	181	166		22
4	EC_GEN (µmho/cm)	191	513	680	102	126	170	185	136		202
5	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free		odour free
6	pH_FLD (pH units)	7.1	7.1	7.0	7.0	6.7	7.1	8.3	8.5		8.6
7	pH_GEN (pH units)	7.1	7.2	7.1	7.1	6.6	7.1	7.9	7.5		7.9
8	Temp (deg C)	31.0	30.0	28.0	30.0	28.5	28.0	25.5	22.5		
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
2	ALK-TOT (mgCaCO3/L)	65	59	41	46	62	71	59	39		
3	B (mg/L)	0.03									
4	Ca (mg/L)	19	14	14	13	18	28	22	19		13
5	Cl (mg/L)	12.2	12.2	10.3	38.7	12.7	14.2	18.8	13.2		75.3
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
7	F (mg/L)					0.50	0.38				
8	HCO3 (mg/L)	80	72	50	56	75	87	72	47		84
9	K (mg/L)	1.1	0.7	2.3	1.5	4.0	2.1	11.5	1.6		1.7
10	Mg (mg/L)	4.8	13.2	1.9	1.0	5.9	5.6	1.9	5.0		5.6
11	Na (mg/L)	9.9	4.0	4.2	3.5	5.2	5.9	26.6	6.7		6.7
12	P-Tot (mgP/L)	0.001									
13	SiO2 (mg/L)	7.5									
14	SO4 (mg/L)	29.5	6.3	24.5	12.9	23.1	10.2	16.6	7.1		15.7
	BIOLOGICAL/BACTERIOLOGICAL										
1	BOD3-27 (mg/L)	0.8	0.6	0.8	1.0	0.8	1.0	1.3	1.2		3.4
2	DO (mg/L)	2.8	4.1	3.4	4.4	5.4	7.0	5.4	5.7		8.9
3	DO_SAT% (%)	38	55	44	59	68	89	65	65		
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	48	35	36	33	45	71	55	47		31
2	HAR_Total (mgCaCO3/L)	67	90	44	37	70	94	63	68		55
3	Na% (%)	24	9	16	17	13	12	43	17		20
4	RSC (-)	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0		
5	SAR (-)	0.5	0.2	0.3	0.3	0.3	0.3	1.5	0.4		0.4
	PESTICIDES										

Water Quality Summary for the period : 2019-2020

Station Name : PANPOSH (EB000H6) **Division : E.E., Bhubaneswar**

Local River : Brahmani **Sub-Division : Rourkela**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	9	682	22	239
3	EC_GEN (µmho/cm)	9	680	102	256
4	pH_FLD (pH units)	9	8.6	6.7	7.5
5	pH_GEN (pH units)	9	7.9	6.6	7.3
6	Temp (deg C)	8	31.0	22.5	27.9
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	8	0.0	0.0	0
2	ALK-TOT (mgCaCO3/L)	8	71	39	55
3	B (mg/L)	1	0.03	0.03	0.03
4	Ca (mg/L)	9	28	13	18
5	Cl (mg/L)	9	75.3	10.3	23.1
6	CO3 (mg/L)	8	0.0	0.0	0
7	F (mg/L)	2	0.50	0.38	0.44
8	HCO3 (mg/L)	9	87	47	69
9	K (mg/L)	9	11.5	0.7	2.9
10	Mg (mg/L)	9	13.2	1.0	5
11	Na (mg/L)	9	26.6	3.5	8.1
12	P-Tot (mgP/L)	1	0.001	0.001	0.001
13	SiO2 (mg/L)	1	7.5	7.5	7.5
14	SO4 (mg/L)	9	29.5	6.3	16.2
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	9	3.4	0.6	1.2
2	DO (mg/L)	9	8.9	2.8	5.2
3	DO_SAT% (%)	8	89	38	60
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	9	71	31	44
2	HAR_Total (mgCaCO3/L)	9	94	37	65
3	Na% (%)	9	43	9	19
4	RSC (-)	8	0.2	0.0	0
5	SAR (-)	9	1.5	0.2	0.4
	PESTICIDES				

Water Quality Seasonal Average for the period: 2005-2020

Station Name : PANPOSH (EB000H6) **Division : E.E., Bhubaneswar**

Local River : Brahmani **River Water** **Sub-Division : Rourkela**

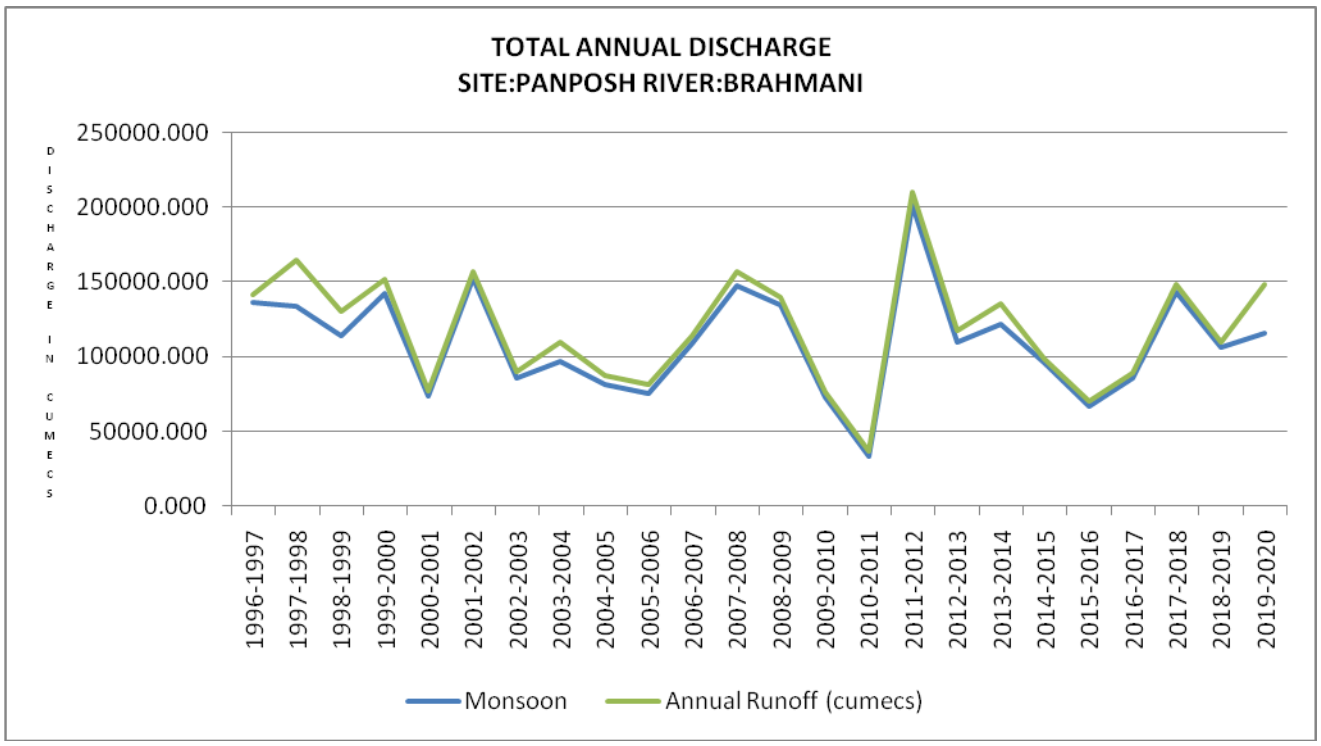
S.No	Parameters	Flood															Winter											
		Jun - Oct															Nov - Feb											
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL																											
1	Q (cumec)																											
2	EC_FLD (µmho/cm)	152	147	165	149	173	171	135	159	179	172	280	135	158	157	323	223	210	186	219	202	235	183	204	165	273	433	347
3	EC_GEN (µmho/cm)	150	143	158	149	173	175	135	159	179	172	276	139	153	157	322	218	205	178	219	202	235	183	204	165	273	436	352
4	pH_FLD (pH units)	7.7	7.5	7.9	7.4	7.5	7.7	8.0	7.5	7.3	7.6	7.2	7.5	7.6	7.2	7.0	7.6	8.3	8.0	7.6	7.5	7.5	7.6	7.3	7.8	7.5	7.4	8.0
5	pH_GEN (pH units)	7.8	7.5	8.0	7.4	7.5	7.7	8.0	7.5	7.3	7.6	7.3	7.6	7.5	7.2	7.0	7.6	8.3	8.0	7.6	7.5	7.5	7.6	7.3	7.8	7.5	7.4	8.1
6	Temp (deg C)	30.2	30.8	29.0	29.0	29.8	30.7	30.2	27.6	25.8	28.2	27.8	28.4	27.5	27.4	29.5	23.0	22.8	21.8	22.3	20.3	21.8	22.4	19.5	19.5	20.8	20.8	21.0
	CHEMICAL																											
1	Alk-Phen (mgCaCO3/L)			0.0	0.0	0.0	0.0	1.8			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)			85	46	57	64	65			49	62	70	62	59	55		71	117	66	45	71	80	65		98	58	42
3	B (mg/L)	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01
4	Ca (mg/L)	15	14	16	14	16	14	17	17	13	17	20	37	31	25	16	21	21	17	19	19	21	21	21	15	19	20	38
5	Cl (mg/L)	13.6	14.8	12.3	14.5	11.3	11.2	17.7	17.0	11.1	17.7	14.0	17.3	16.8	12.4	17.2	13.6	15.6	12.0	16.6	15.1	17.0	19.8	15.1	12.0	19.3	16.0	14.1
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.09	0.18	0.11	0.05	0.15	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.54	0.50	0.00	0.00	0.00	0.09	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
8	Fe (mg/L)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.9	0.0	0.3	0.3	0.4	0.4	0.5		0.1	0.1	0.2	0.1	0.1	0.1	0.0	1.9	0.0	0.2	0.5	0.3
9	HCO3 (mg/L)	54	59	69	49	61	71	74	67	77	74	76	86	76	72	67	86	81	77	80	54	100	97	72	63	99	70	52
10	K (mg/L)	2.7	2.5	2.1	2.2	2.2	2.4	1.8	1.9	1.6	1.8	2.0	6.7	2.9	4.5	1.9	2.8	2.6	2.7	1.9	1.3	2.3	1.5	1.7	1.9	1.4	1.6	6.5
11	Mg (mg/L)	4.0	4.1	4.9	4.7	6.3	7.6	4.5	3.9	4.7	4.5	10.9	14.6	17.1	10.6	5.3	7.8	4.7	4.5	8.3	8.7	9.2	8.0	5.1	4.5	5.3	9.2	13.1
12	Na (mg/L)	8.8	9.4	7.6	9.2	7.6	6.6	4.6	3.9	8.3	4.6	3.9	15.2	4.1	7.4	5.4	9.1	10.3	8.3	10.8	8.6	9.7	6.8	6.4	10.1	6.1	6.1	28.9
13	NH3-N (mg N/L)																											
14	NO2+NO3 (mg N/L)	0.52	0.27	0.39	0.45	0.36	0.34	0.36	0.71	0.98	1.23	1.08	0.95	1.20	1.21		1.82	0.85	0.28	0.39	0.46	0.49	0.39	0.71	1.02	0.82	1.01	0.96
15	NO2-N (mgN/L)	0.00	0.01	0.04	0.00	0.00	0.00	0.07	0.00	0.00	0.08	0.02	0.03	0.02	0.00		0.01	0.02	0.00	0.00	0.00	0.08	0.07	0.00	0.00	0.01	0.03	0.02
16	NO3-N (mgN/L)	0.52	0.27	0.34	0.45	0.36	0.34	0.29	0.71	0.98	1.15	1.06	0.92	1.19	1.21		1.80	0.83	0.28	0.39	0.46	0.41	0.33	0.71	1.02	0.80	0.98	0.95
17	o-PO4-P (mg P/L)	0.000	0.004	0.000		0.000											0.000	0.026	0.000	0.093	0.002							
18	P-Tot (mgP/L)	0.001	0.005	0.001	0.001	0.002	0.001	0.010	0.001	0.001	0.001	0.001	0.010	0.001	0.001	0.001	0.001	0.027	0.001	0.025	0.001	0.001	0.010	0.001	0.001	0.001	0.010	0.010
19	SiO2 (mg/L)	23.8	9.6	14.6	8.7	7.1	9.4	11.0	14.5	11.3	5.8	5.6	6.2	7.9	8.8	7.5	19.0	15.4	11.7	9.3	8.5	4.8	10.5	13.0	14.0	5.1	5.8	6.8
20	SO4 (mg/L)	9.1	9.5	4.2	9.6	12.6	7.1	8.7	27.0	10.8	8.7	3.4	4.7	11.3	12.2	19.3	8.2	11.3	2.9	10.7	13.9	6.6	3.0	5.5	13.7	3.1	3.0	3.5
	BIOLOGICAL/BACTERIOLOGICAL																											
1	BOD3-27 (mg/L)	0.7	0.9	1.5	1.2	1.1	1.5	1.4	0.6	0.8	0.6	1.2	1.2	0.9	0.6	0.8	1.1	1.2	1.5	1.3	1.7	1.4	2.0	0.4	0.3	0.8	1.0	1.7
2	DO (mg/L)	6.2	6.5	6.6	6.9	7.0	6.8	6.5	5.8	6.4	6.2	5.5	6.8	5.7	5.2	4.0	7.8	7.1	8.0	7.4	8.5	7.4	8.0	8.1	7.5	8.8	6.8	9.6
3	DO_SAT% (%)	82	87	86	90	92	91	86	73	79	80	70	87	72	66	53	91	82	90	85	94	84	92	87	81	98	76	107
4	FCol-MPN (MPN/100mL)													94	90													60
5	Tcol-MPN (MPN/100mL)													224	230													145
	TRACE & TOXIC																											
1	Al (mg/L)																											
	CHEMICAL INDICES																											
1	HAR_Ca (mgCaCO3/L)	36	34	39	34	40	35	42	43	33	42	51	91	77	64	39	53	53	43	47	47	52	54	53	37	48	51	94
2	HAR_Total (mgCaCO3/L)	53	51	61	66	66	67	61	59	52	61	96	152	148	108	62	85	73	62	82	84	91	87	74	56	70	90	149
3	Na% (%)	25	27	21	29	20	17	14	12	25	14	7	17	6	14	16	18	23	22	25	18	19	15	19	28	16	13	26
4	RSC (-)	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.4	0.0	0.0
5	SAR (-)	0.5	0.6	0.4	0.6	0.4	0.4	0.3	0.2	0.5	0.3	0.2	0.5	0.2	0.3	0.3	0.4	0.6	0.5	0.6	0.4	0.4	0.3	0.4	0.6	0.3	0.3	1.0
	PESTICIDES																											

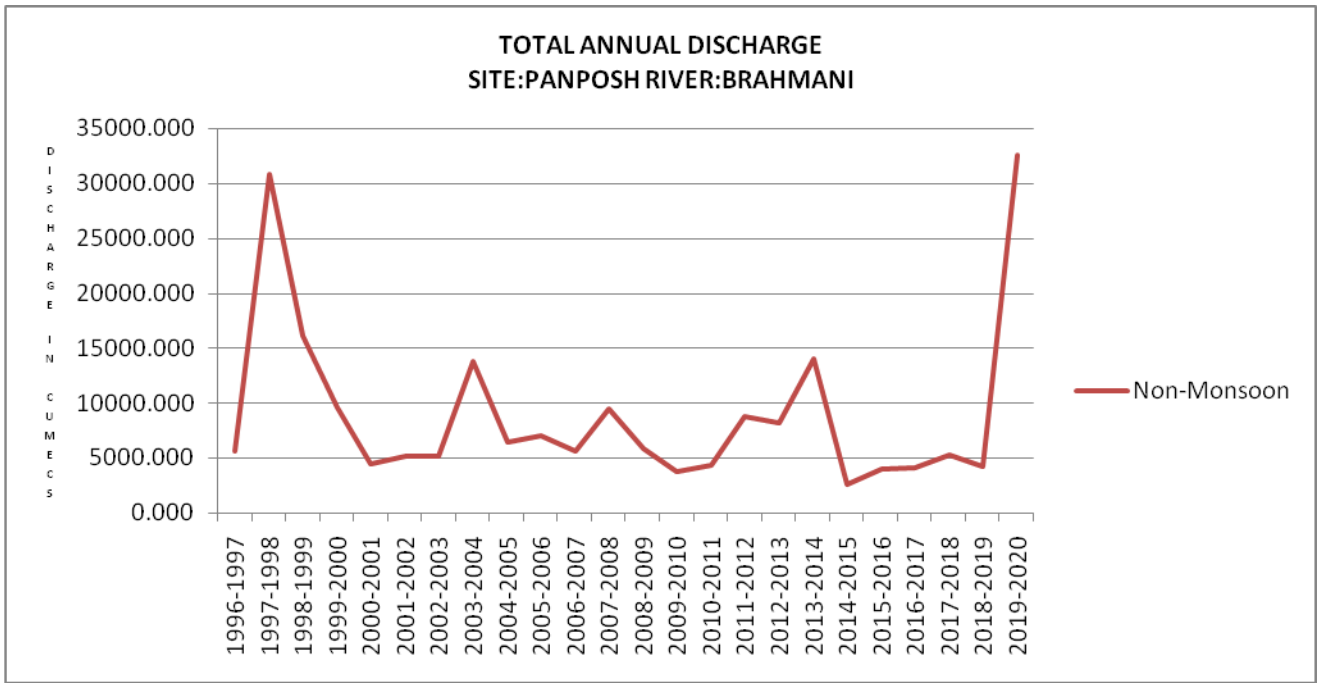
Water Quality Seasonal Average for the period: 2005-2020

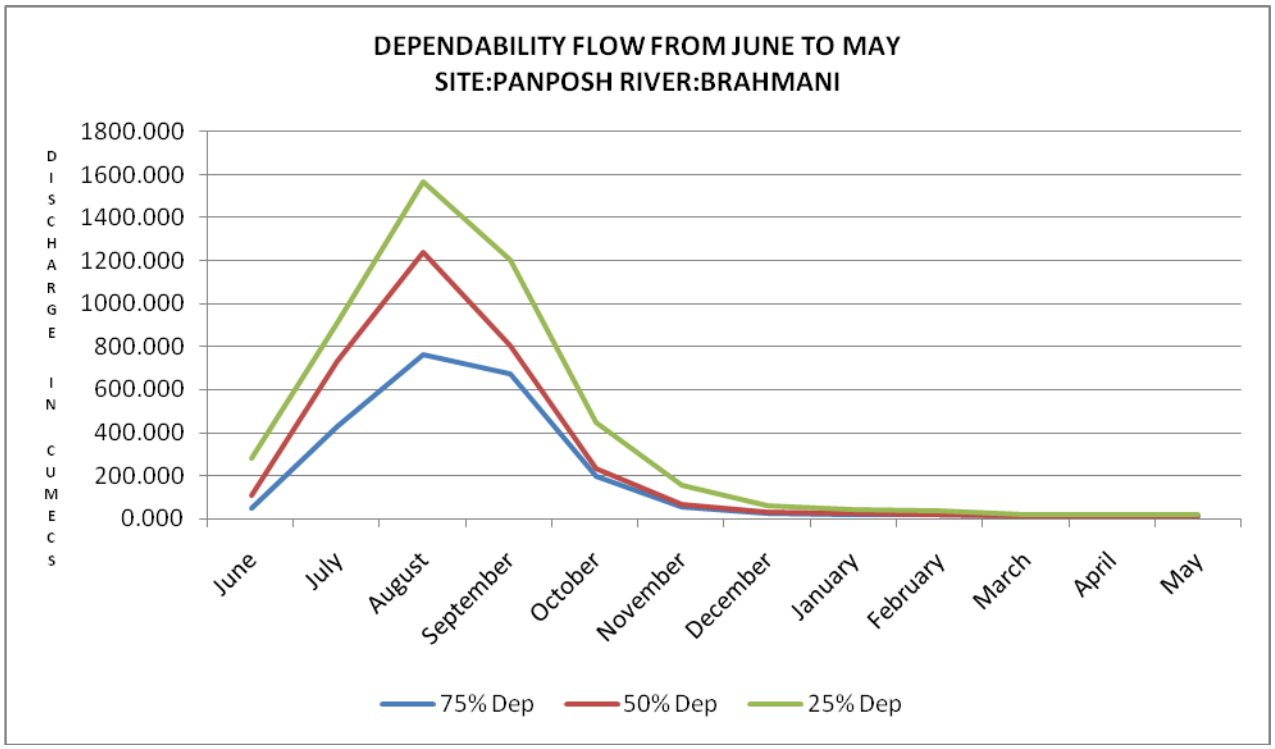
Station Name : PANPOSH (EB000H6) | **Division : E.E., Bhubaneswar**

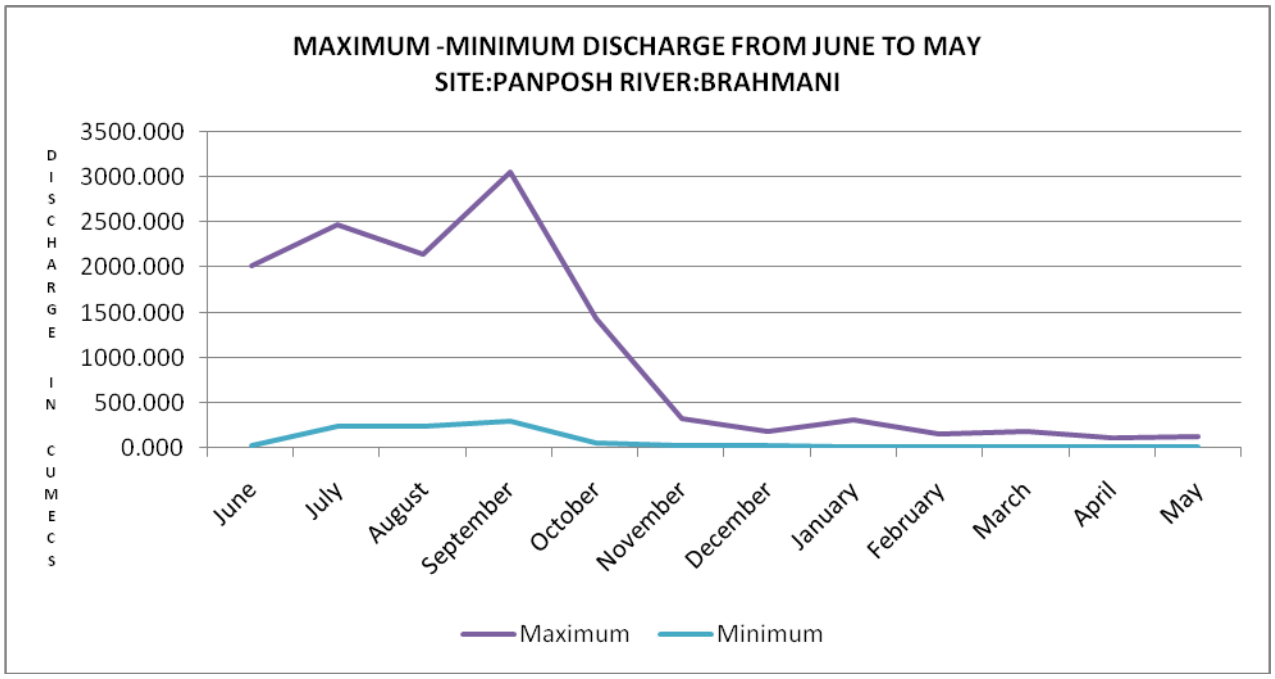
Local River : Brahmani | **River Water** | **Sub-Division : Rourkela**

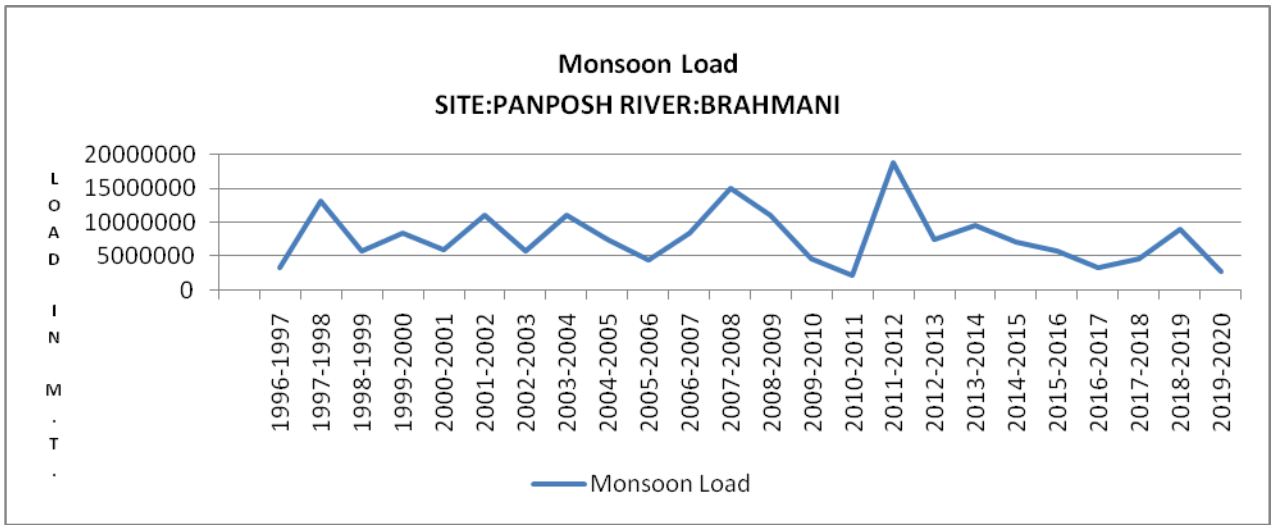
S.No	Parameters				Summer														
					Mar - May														
		2017-2018	2018-2019	2019-2020	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	PHYSICAL																		
1	Q (cumec)																		
2	EC_FLD (µmho/cm)	223	156	172	282	243	202	229	177	250	190	225	220	291	292	193	257	295	22
3	EC_GEN (µmho/cm)	218	154	164	277	240	201	229	177	250	190	225	220	291	292	196	255	291	202
4	pH_FLD (pH units)	7.9	7.7	7.9	7.7	8.1	8.1	7.7	7.9	8.1	7.4	7.8	7.7	7.6	7.5	7.4	7.7	7.4	8.6
5	pH_GEN (pH units)	7.9	7.7	7.5	7.7	8.1	8.0	7.7	7.9	8.1	7.4	7.8	7.7	7.6	7.5	7.5	7.6	7.4	7.9
6	Temp (deg C)	17.0	21.3	25.3	28.0	27.7	26.3	27.0	26.7	26.3	32.2	23.7	25.7	27.0	26.3	23.7	25.3	28.3	
	CHEMICAL																		
1	Alk-Phen (mgCaCO3/L)	4.0	0.0	0.0		0.0	0.0	0.0	0.0	3.9	0.0		0.0		0.0	0.0	0.0	0.0	
2	ALK-TOT (mgCaCO3/L)	99	76	56		102	49	68	64	94	62		60		65	71	91	98	
3	B (mg/L)	0.02	0.02		0.00	0.00	0.06	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.02	
4	Ca (mg/L)	39	20	23	27	26	18	21	15	23	30	19	19	20	29	27	26	26	13
5	Cl (mg/L)	11.7	13.3	15.4	13.9	13.3	8.1	14.9	12.2	16.3	13.8	16.5	14.5	12.0	13.8	13.8	13.8	16.2	75.3
6	CO3 (mg/L)	4.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
7	F (mg/L)	0.05	0.26	0.38	0.00	0.00	0.08	0.10	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05		
8	Fe (mg/L)	0.5	0.4		0.1	0.1	0.2	0.2	0.1	0.1	0.0	1.9	0.0	0.3	0.5	0.5	0.4		
9	HCO3 (mg/L)	111	93	69	111	124	60	75	78	105	75	94	77	53	79	86	111	119	84
10	K (mg/L)	2.6	4.4	5.1	2.3	2.6	1.4	1.6	1.5	2.6	1.7	2.0	2.2	1.3	1.4	9.6	1.6	4.7	1.7
11	Mg (mg/L)	11.7	7.3	4.2	10.5	8.2	3.2	9.4	7.8	9.7	5.2	9.1	4.7	7.7	12.0	12.0	10.1	10.6	5.6
12	Na (mg/L)	5.0	13.7	13.1	9.9	8.7	5.6	9.3	7.3	10.1	7.2	8.8	10.5	6.5	8.9	48.7	7.6	11.8	6.7
13	NH3-N (mg N/L)						0.05												
14	NO2+NO3 (mg N/L)	1.18	1.18		3.96	0.59	0.35	0.29	0.21	0.37	0.41	0.71	1.19	0.74	0.86	1.14	1.21		
15	NO2-N (mgN/L)	0.00	0.00		0.02	0.10	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00		
16	NO3-N (mgN/L)	1.18	1.18		3.94	0.49	0.35	0.29	0.21	0.37	0.34	0.71	1.19	0.74	0.85	1.13	1.21		
17	o-PO4-P (mg P/L)				0.000	0.017	0.050	0.103	0.000										
18	P-Tot (mgP/L)	0.001	0.001		0.001	0.018	0.050	0.001	0.003	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001	0.001	
19	SiO2 (mg/L)	8.2	7.5		25.6	11.0	12.4	5.9	7.2	11.2	10.3	13.0	14.3	5.8	5.3	7.3	8.4	6.6	
20	SO4 (mg/L)	13.6	9.2	11.3	14.5	3.4	4.7	19.7	3.8	3.1	2.3	19.3	23.6	2.1	3.0	2.9	15.8	7.6	15.7
	BIOLOGICAL/BACTERIOLOGICAL																		
1	BOD3-27 (mg/L)	1.8	1.1	1.2	0.9	1.5	1.3	1.5	1.8	1.9	1.3	0.8	0.7	1.0	0.9	2.2	0.9	0.9	3.4
2	DO (mg/L)	6.7	6.5	6.0	7.0	6.8	6.6	5.9	7.0	6.5	6.8	7.3	7.5	4.3	4.4	6.2	5.0	3.3	8.9
3	DO_SAT% (%)	68	74	73	89	87	82	75	88	81	93	85	91	54	56	72	61	41	
4	FCol-MPN (MPN/100mL)	88														127	97		
5	Tcol-MPN (MPN/100mL)	245														247	237		
	TRACE & TOXIC																		
1	Al (mg/L)					3.29										0.00			
	CHEMICAL INDICES																		
1	HAR_Ca (mgCaCO3/L)	97	49	57	68	64	45	52	37	57	76	47	47	49	72	68	64	64	31
2	HAR_Total (mgCaCO3/L)	146	79	75	112	98	58	91	70	98	98	85	66	81	122	118	106	108	55
3	Na% (%)	7	26	24	17	16	17	19	18	18	15	18	26	15	14	44	14	19	20
4	RSC (-)	0.0	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	
5	SAR (-)	0.2	0.7	0.7	0.4	0.4	0.3	0.4	0.4	0.4	0.3	0.4	0.6	0.3	0.4	1.9	0.3	0.5	0.4
	PESTICIDES																		

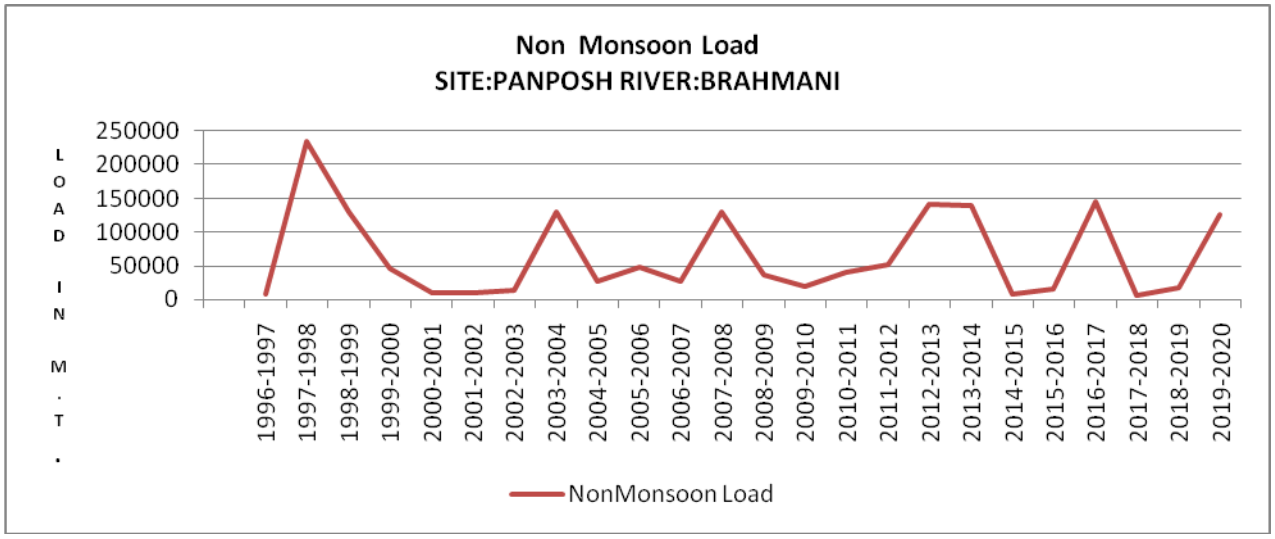

TOTAL ANNUAL DISCHARGE
SITE:PANPOSH RIVER:BRAHMANI
DISCHARGE IN CUMECS
250000.000
200000.000
150000.000
100000.000
50000.000
0.000
1996-1997
1997-1998
1998-1999
1999-2000
2000-2001
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
2018-2019
2019-2020
Monsoon
Annual Runoff (cumecs)

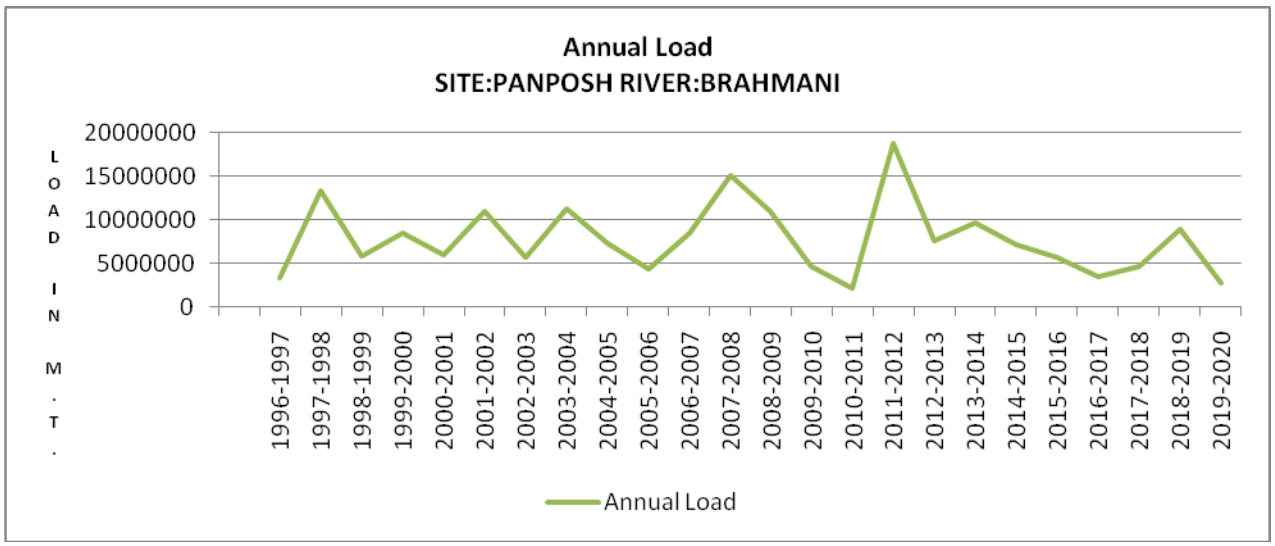

TOTAL ANNUAL DISCHARGE
SITE:PANPOSH RIVER:BRAHMANI
DISCHARGE IN CUMECS
35000.000
30000.000
25000.000
20000.000
15000.000
10000.000
5000.000
0.000
1996-1997
1997-1998
1998-1999
1999-2000
2000-2001
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
2018-2019
2019-2020
Non-Monsoon

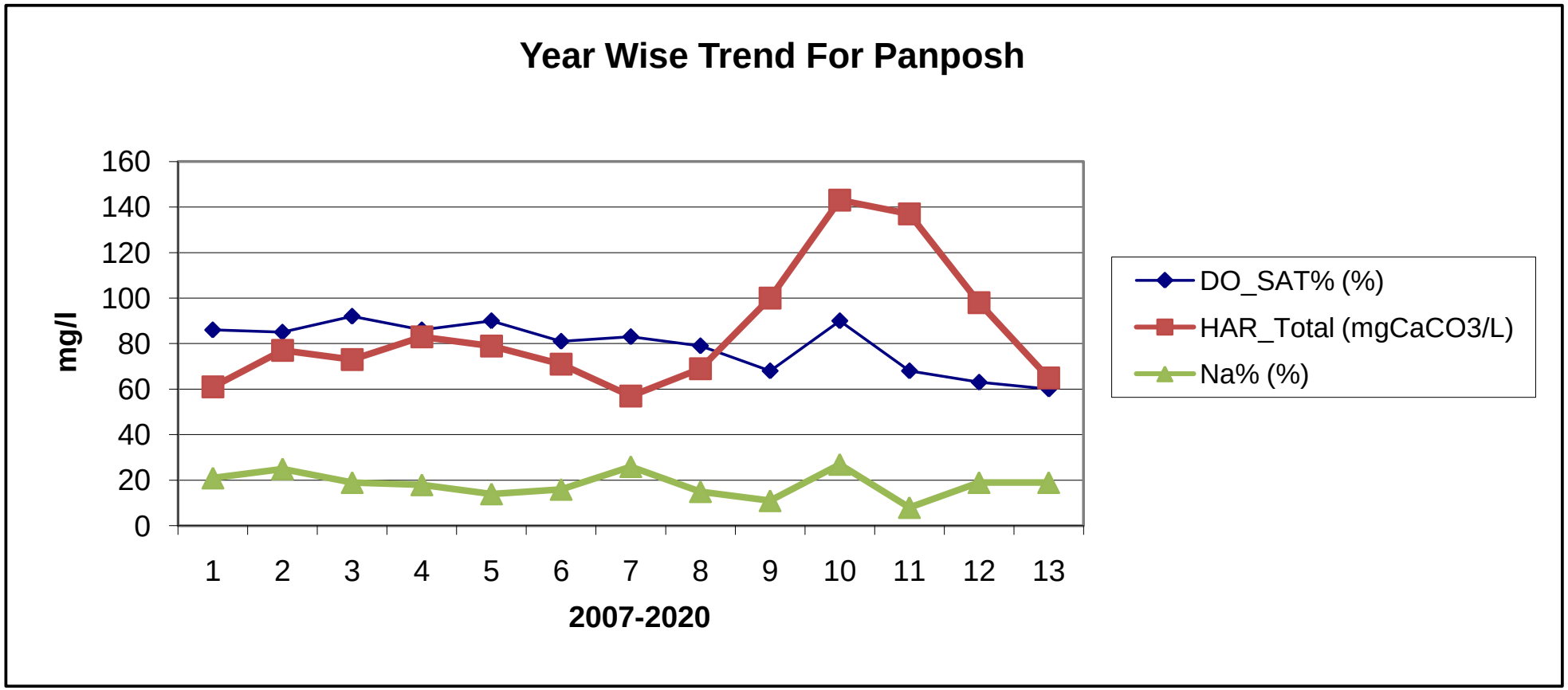

DEPENDABILITY FLOW FROM JUNE TO MAY
SITE:PANPOSH RIVER:BRAHMANI
DISCHARGE IN CUMECS
1800.000
1600.000
1400.000
1200.000
1000.000
800.000
600.000
400.000
200.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
75% Dep
50% Dep
25% Dep

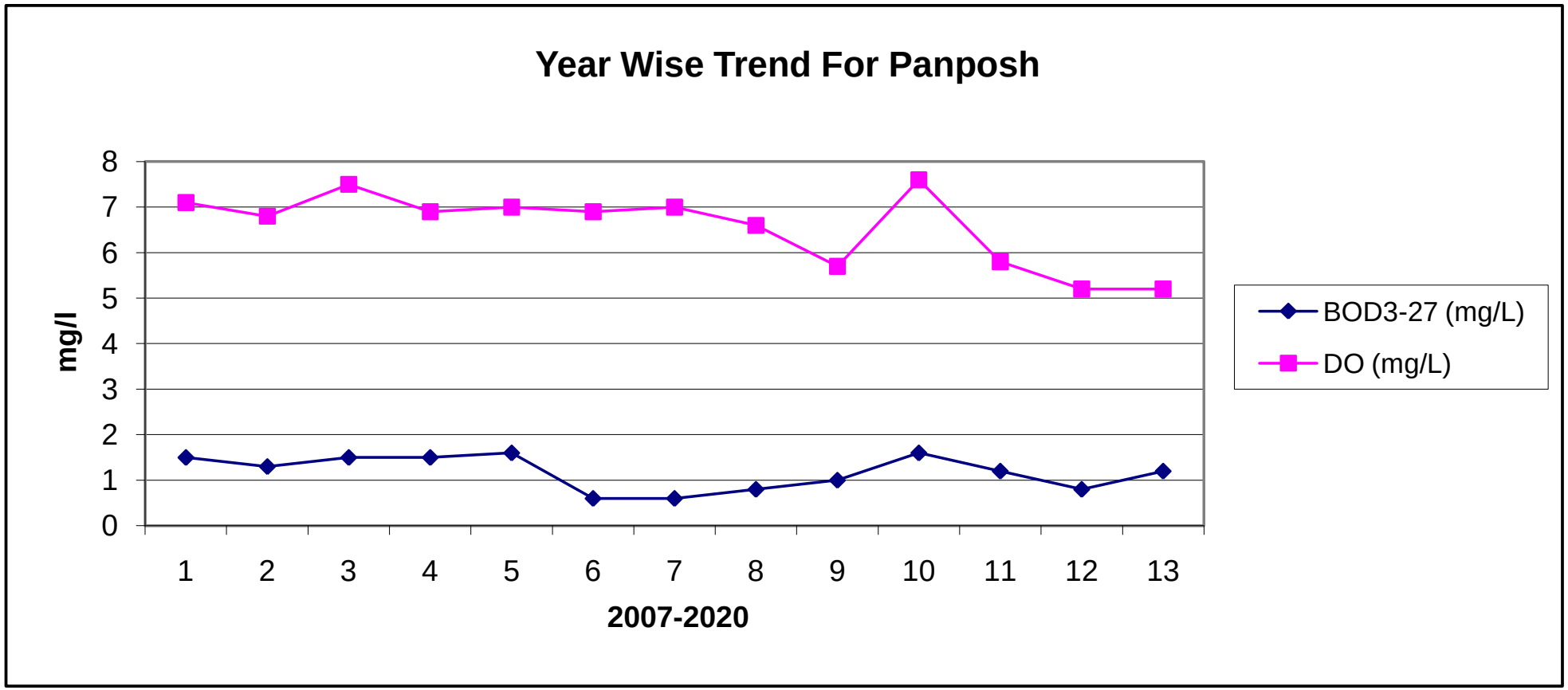

MAXIMUM -MINIMUM DISCHARGE FROM JUNE TO MAY
SITE:PANPOSH RIVER:BRAHMANI
DISCHARGE IN CUMECS
3500.000
3000.000
2500.000
2000.000
1500.000
1000.000
500.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
Maximum
Minimum

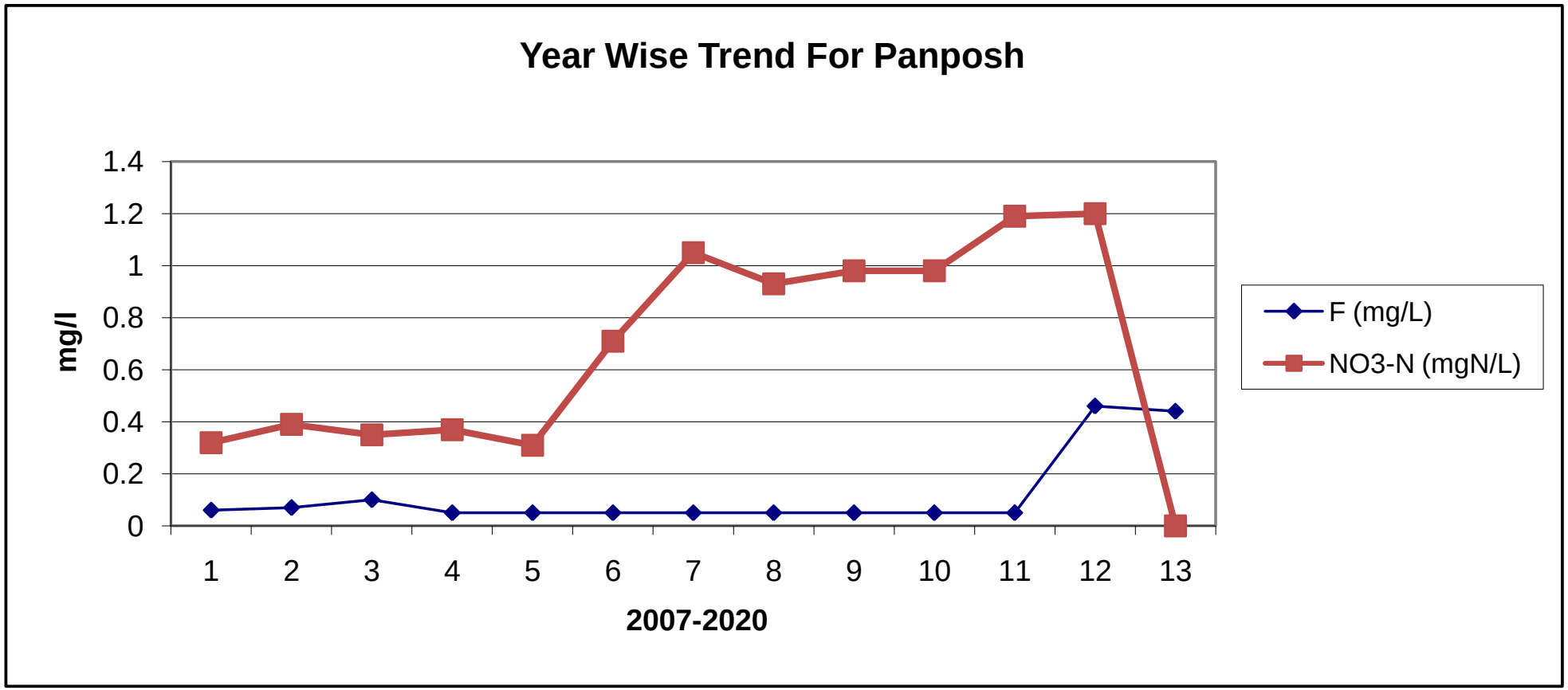

Monsoon Load
SITE:PANPOSH RIVER:BRAHMANI
LOAD IN M.T.
20000000
15000000
10000000
5000000
0
1996-1997
1997-1998
1998-1999
1999-2000
2000-2001
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
2018-2019
2019-2020
Monsoon Load

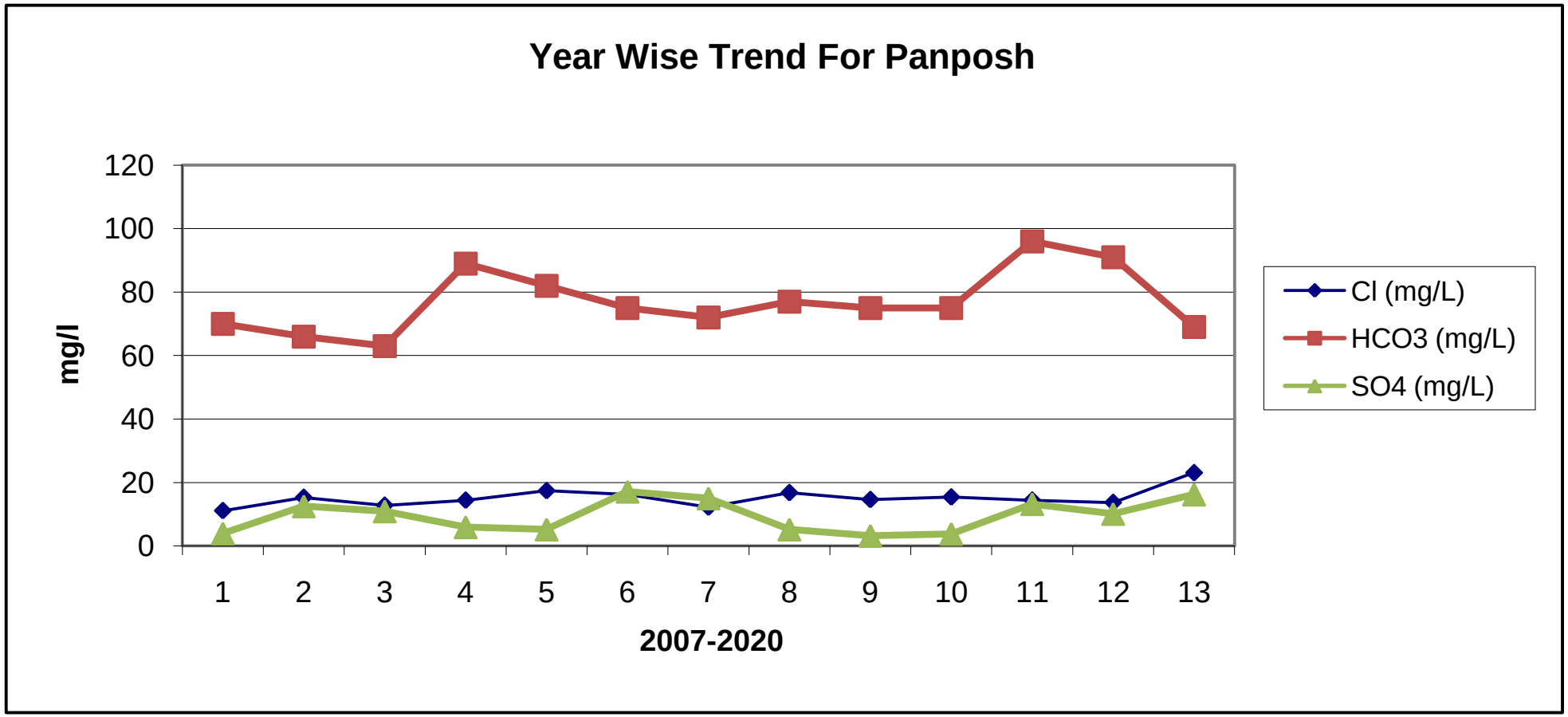

Non Monsoon Load
SITE:PANPOSH RIVER:BRAHMANI
LOAD IN M.T.
250000
200000
150000
100000
50000
0
1996-1997
1997-1998
1998-1999
1999-2000
2000-2001
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
2018-2019
2019-2020
NonMonsoon Load

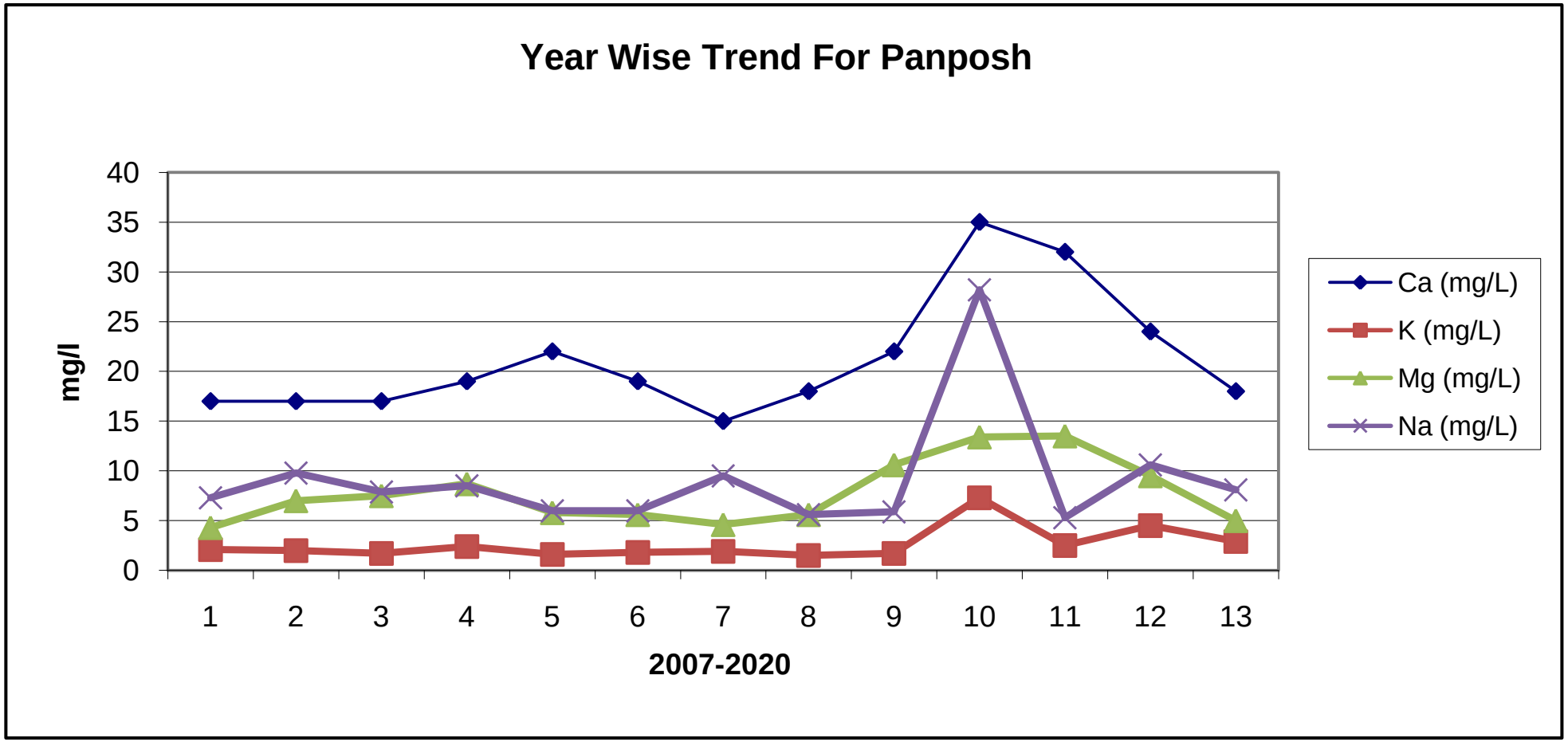

Annual Load
SITE:PANPOSH RIVER:BRAHMANI
LOAD IN M.T.
20000000
15000000
10000000
5000000
0
1996-1997
1997-1998
1998-1999
1999-2000
2000-2001
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
2018-2019
2019-2020
Annual Load


Year Wise Trend For Panposh
160
140
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
DO_SAT% (%)
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For Panposh
mg/l
8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
BOD3-27 (mg/L)
DO (mg/L)


Year Wise Trend For Panposh
1.4
1.2
1
0.8
0.6
0.4
0.2
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend For Panposh
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year Wise Trend For Panposh
mg/l
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
Ca (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

SITE GOMLAI

SECTION-I(HISTORY SHEET,DISCHARGE,CROSS SECTION)

HISTORY SHEET

Water Year : 2019-2020

Site	:	**Gomlai**	**Code**	:	**EB000W3**
State	:	Orissa	District		Sundergarh
Basin	:	Brahmani-Baitarani	Independent River	:	Brahmni
Tributary	:	Brahmni	Sub Tributary	:	Brahmni
Sub-Sub Tributary	:	Brahmni	Local River	:	Brahmni
Division	:	E.E., Bhubaneswar	Sub-Division	:	Rourkela
Drainage Area	:	21950 Sq. Km.	Bank	:	Left
Latitude	:	21°50'04"	Longitude	:	84°54'46"
Zero of Gauge (m)	:	135 (m.s.l)	1/1/1970	-	12/31/2025
		Opening Date	Closing Date		
Gauge	:	8/29/1977			
Discharge	:	1/21/1979			
Sediment	:	7/17/1980			
Water Quality	:	7/17/1980			

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1979-1980	1914	142.570	8/9/1979	6.337	138.450	4/28/1980
1980-1981	4555	144.010	6/20/1980	8.975	138.330	3/7/1981
1981-1982	1955	142.350	9/8/1981	1.110	138.500	5/17/1982
1982-1983	5002	144.480	8/21/1982	5.800	138.515	3/17/1983
1983-1984	4675	144.250	9/7/1983	7.100	138.535	4/23/1984
1984-1985	5570	144.830	8/14/1984	8.200	138.440	5/4/1985
1985-1986	4582	144.505	8/7/1985	9.200	138.540	3/30/1986
1986-1987	4176	143.975	7/28/1986	9.000	138.375	5/24/1987
1987-1988	10268	146.260	8/29/1987	9.800	138.540	5/27/1988
1988-1989	7766	145.500	8/4/1988	9.000	138.485	6/3/1988
1989-1990	5389	144.250	6/22/1989	10.33	138.645	4/23/1990
1990-1991	6852	145.190	7/15/1990	9.940	138.760	5/3/1991
1991-1992	5666	145.200	8/13/1991	1.350	138.765	4/11/1992
1992-1993	2279	142.030	8/19/1992	8.610	138.630	3/18/1993
1993-1994	2944	143.080	7/17/1993	8.655	138.395	5/9/1994
1994-1995	8433	146.100	7/9/1994	12.98	138.465	6/10/1994
1995-1996	4687	144.230	9/19/1995	10.45	138.620	5/20/1996
1996-1997	10652	146.390	7/26/1996	12.95	138.615	5/16/1997
1997-1998	9139	146.835	8/7/1997	12.65	138.610	6/6/1997
1998-1999	7072	145.960	9/11/1998	9.730	138.590	5/21/1999
1999-2000	6120	145.150	8/8/1999	8.669	138.695	4/27/2000
2000-2001	4506	144.380	7/27/2000	6.750	138.595	5/1/2001

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
2001-2002	10074	147.000	7/23/2001	8.165	138.300	5/15/2002
2002-2003	3289	143.005	9/13/2002	8.000	138.440	4/27/2003
2003-2004	5603	144.995	10/25/2003	9.474	138.475	6/12/2003
2004-2005	3692	143.160	8/15/2004	7.000	138.545	5/29/2005
2005-2006	3221	143.635	6/29/2005	5.300	138.510	4/16/2006
2006-2007	7397	144.915	7/31/2006	7.263	138.520	4/5/2007
2007-2008	10795	147.270	8/20/2007	8.755	138.580	5/18/2008
2008-2009	7521	144.425	7/8/2008	6.402	138.735	4/15/2009
2009-2010	3013	142.910	9/9/2009	6.480	138.415	4/27/2010
2010-2011	1119	140.800	9/19/2010	4.532	138.290	3/1/2011
2011-2012	10801	146.650	9/24/2011	6.339	138.555	5/6/2012
2012-2013	3428	143.150	8/12/2012	7.770	138.540	6/2/2012
2013-2014	4443	144.250	10/15/2013	3.640	138.640	4/6/2014
2014-2015	3866	142.645	8/11/2014	8.914	138.470	3/31/2015
2015-2016	6433	144.180	8/4/2015	6.825	138.280	5/5/2016
2016-2017	5751	144.080	8/20/2016	6.859	138.330	4/1/2017
2017-2018	13000	145.375	7/27/2017	8.237	138.310	4/28/2018
2018-2019	5052	143.395	9/7/2018	10.53	138.640	5/18/2019
2019-2020	5313	143.450	8/19/2019	11.95	138.600	6/11/2019

Stage-Discharge Data for the period 2019 - 2020

Station Name : Gomlai (EB000W3) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

Day	Jun		Jul		Aug		Sep		Oct		Nov	
	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q
1	138.640	12.54	139.450	171.3	139.595	392.1	140.550	1061 *	141.900	2973	139.870	501.0
2	138.640	14.42 *	139.360	143.3	139.695	476.4	140.155	667.3	141.790	2273 *	139.800	473.1
3	138.730	17.61	139.790	446.6	139.475	363.6	140.185	692.9	140.990	1809	139.750	453.3 *
4	138.710	17.20	139.730	380.8 *	139.380	290.8 *	139.995	619.3	140.460	936.3	139.710	435.6
5	138.700	14.53 *	139.540	249.7	139.320	207.2	140.000	621.8	140.305	824.5	139.665	361.1
6	138.640	12.81	139.430	207.1	139.455	281.5	140.000	630.7	140.140	710.4 *	139.640	338.1
7	138.660	14.21	139.290	180.4 *	139.370	262.8	139.940	599.1	140.100	590.8 *	139.600	329.4
8	138.640	13.44	139.230	178.4	139.925	837.7	139.940	589.0 *	140.770	1220 *	139.495	279.5
9	138.630	12.98 *	139.745	519.6	139.980	883.8	139.910	536.7 *	140.945	1729	139.405	229.4
10	138.620	12.38	139.535	334.9	139.960	846.9	139.940	573.0	140.715	1476	139.330	195.1 *
11	138.600	11.95	139.425	233.9	139.940	820.9 *	139.930	521.5	140.535	1280	139.310	157.2
12	138.610	13.41	139.630	379.3	139.820	972.6 *	140.010	637.6	140.325	1020	139.290	149.0 *
13	138.690	16.76	139.660	395.5	140.240	1245	141.075	2005	140.200	846.8 *	139.270	140.1
14	138.630	13.53	139.370	252.9 *	141.385	2125	141.340	1991	140.125	767.8	139.450	147.7
15	138.630	13.24	139.290	176.2	141.660	1968 *	140.860	1863 *	139.965	521.9	139.420	145.2
16	138.670	16.00 *	139.240	158.7	141.010	2083	140.405	907.4	139.775	497.9	139.380	137.5
17	138.680	15.97	139.185	132.3	140.180	1104	140.130	676.8	139.655	359.8	139.340	130.0 *
18	138.760	21.98	139.100	130.0	140.000	1236 *	140.010	590.7	139.680	372.0	139.425	150.1
19	138.700	16.76	139.070	116.9	143.450	5313	139.910	558.4	139.645	359.7	139.420	145.7
20	138.700	17.22	138.990	114.6	142.925	4697	139.815	506.2	139.550	242.8 *	139.410	141.2
21	138.835	29.46	139.010	117.5 *	141.325	2187	139.855	532.8	139.400	180.2	139.450	146.7
22	138.855	32.86	139.145	125.3	140.685	1162	139.740	521.2 *	139.655	307.5	139.470	152.4
23	139.080	55.43 *	139.070	115.6	140.280	1288	139.680	309.5	140.010	521.5	139.460	148.6
24	139.020	53.26	139.015	85.84	140.085	609.5	139.620	303.5	140.195	867.3	139.450	146.7 *
25	139.025	48.03	138.980	82.59	140.270	1275 *	139.650	315.6	140.735	1529	139.450	146.4
26	139.375	135.2	139.020	92.86	140.615	1241	139.620	326.0	142.700	4590	139.330	118.9
27	139.250	113.7	139.000	88.48	141.185	1798	139.640	375.5	141.380	3068 *	139.290	113.2
28	139.415	153.2	139.630	290.8 *	140.935	1502	140.755	1225	140.710	1401	139.250	109.5
29	139.440	169.3	139.920	418.0	140.685	1450	141.150	2416 *	140.290	1006	139.310	111.9
30	139.350	166.5 *	139.720	477.8	141.010	1532	142.470	4593	140.090	808.8	139.270	108.4
31			139.775	482.1	141.080	1758			139.955	512.7		
Ten-Daily Mean												
I Ten-Daily	138.661	14.21	139.510	281.2	139.616	484.3	140.061	659.1	140.812	1454	139.626	359.6
II Ten-Daily	138.667	15.68	139.296	209.0	141.061	2157	140.349	1026	139.946	626.9	139.372	144.4
III Ten-Daily	139.165	95.70	139.299	216.1	140.741	1437	140.218	1092	140.465	1345	139.373	130.3
Monthly												
Min.	138.600	11.95	138.980	82.59	139.320	207.2	139.620	303.5	139.400	180.2	139.250	108.4
Max.	139.440	169.3	139.920	519.6	143.450	5313	142.470	4593	142.700	4590	139.870	501.0
Mean	138.831	41.87	139.366	234.8	140.481	1362	140.209	925.6	140.409	1148	139.457	211.4

Annual Runoff in MCM = 11482 Annual Runoff in mm = 523

Peak Observed Discharge = 5313 cumecs on 19/08/2019 Corres. Water Level :143.45 m

Lowest Observed Discharge = 11.95 cumecs on 11/06/2019 Corres. Water Level :138.6 m

Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

Stage-Discharge Data for the period 2019 - 2020

Station Name : Gomlai (EB000W3) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	139.270	107.9 *	139.020	68.01	138.730	40.16	138.620	30.90 *			139.160	119.1
2	139.230	107.5	138.980	65.58	138.740	40.20 *	138.620	30.93			139.115	105.9
3	139.240	109.7	138.980	66.38	138.730	40.25	138.610	29.43			139.010	84.26 *
4	139.120	106.3	139.000	71.14	138.740	44.07	138.600	28.73			138.950	77.04
5	139.060	103.3	139.030	73.58 *	138.700	42.66	138.600	29.22			138.950	77.40
6	139.070	99.09	139.060	76.51	138.700	42.83	138.640	32.59			138.960	72.43
7	139.010	92.75	139.335	124.0	138.660	41.28	138.620	31.12			139.080	95.00 *
8	139.010	95.05 *	139.280	120.8	138.680	42.13	138.750	47.13 *			139.070	93.14
9	138.980	96.28	139.200	115.5	138.740	45.90 *	138.920	62.96			139.125	109.6
10	139.020	111.4	139.180	117.4	138.730	44.50	138.950	68.20 *			139.400	161.4 *
11	138.980	81.59	139.130	106.9	138.740	46.10	139.240	95.45			139.190	117.0
12	139.020	73.42	139.110	107.4 *	138.700	39.66	139.105	89.38			139.040	94.31
13	139.010	80.89	139.130	107.9	138.710	40.08	139.030	82.74			138.955	70.80
14	138.950	76.90	139.170	126.5	138.700	36.76	139.070	87.32			138.890	67.63
15	139.010	66.49 *	139.090	84.65	138.680	33.57	139.100	109.8 *			138.920	67.92
16	138.940	64.19	139.030	103.0	138.670	32.49 *	139.360	152.1			138.940	71.81
17	138.990	70.43	138.970	100.6	138.640	30.50	140.170	714.6			138.920	68.00 *
18	139.020	67.75	138.940	100.5	138.660	32.24	139.950	495.0			138.740	44.06
19	139.100	79.61	138.920	94.76 *	138.640	31.48	139.630	340.0			138.715	41.18
20	139.080	77.48	138.920	92.80	138.610	30.66	139.340	172.3	138.480	19.81	138.750	44.01
21	139.130	87.80	138.900	83.35	138.620	31.21	139.380	181.0	138.510	22.98	138.665	34.58
22	139.130	88.82 *	138.840	56.22	138.600	28.84	139.150	116.7 *	138.600	28.48	138.715	40.33
23	139.110	91.76	138.770	51.96	138.660	31.00 *	138.960	105.8	138.655	33.11	138.680	35.70
24	139.130	95.97	138.730	47.31	138.580	27.78	138.930	102.7	138.640	31.11	138.700	38.40 *
25	139.130	92.76 *	138.690	45.82	138.630	31.38			138.790	52.38	138.670	36.00 *
26	139.070	90.94	138.700	46.20 *	138.670	32.74			138.910	66.50 *	138.660	34.47
27	139.040	78.97	138.730	47.88	138.630	31.34			139.430	190.5	138.630	31.77
28	139.080	80.02	138.740	48.93	138.620	30.90			139.290	109.4	138.630	31.61
29	139.080	79.43 *	138.730	43.77	138.620	30.93			139.235	104.2	138.670	35.12
30	139.060	78.80	138.730	43.99					139.300	130.4	139.045	96.36
31	139.050	72.88	138.720	42.93							138.980	76.20 *
Ten-Daily Mean												
I Ten-Daily	139.101	102.9	139.106	89.89	138.715	42.40	138.693	39.12			139.082	99.52
II Ten-Daily	139.010	73.87	139.041	102.5	138.675	35.35	139.400	233.9	138.480	19.81	138.906	68.67
III Ten-Daily	139.092	85.29	138.753	50.76	138.626	30.68	139.105	126.6	138.936	76.91	138.731	44.60
Monthly												
Min.	138.940	64.19	138.690	42.93	138.580	27.78	138.600	28.73	138.480	19.81	138.630	31.61
Max.	139.270	111.4	139.335	126.5	138.740	46.10	140.170	714.6	139.430	190.5	139.400	161.4
Mean	139.068	87.3	138.960	80.07	138.673	36.33	139.056	134.8	138.895	71.72	138.901	70.08

Peak Computed Discharge = 3068 cumecs on 27/10/2019 Corres. Water Level :141.38 m

Lowest Computed Discharge = 12.98 cumecs on 09/06/2019 Corres. Water Level :138.63 m

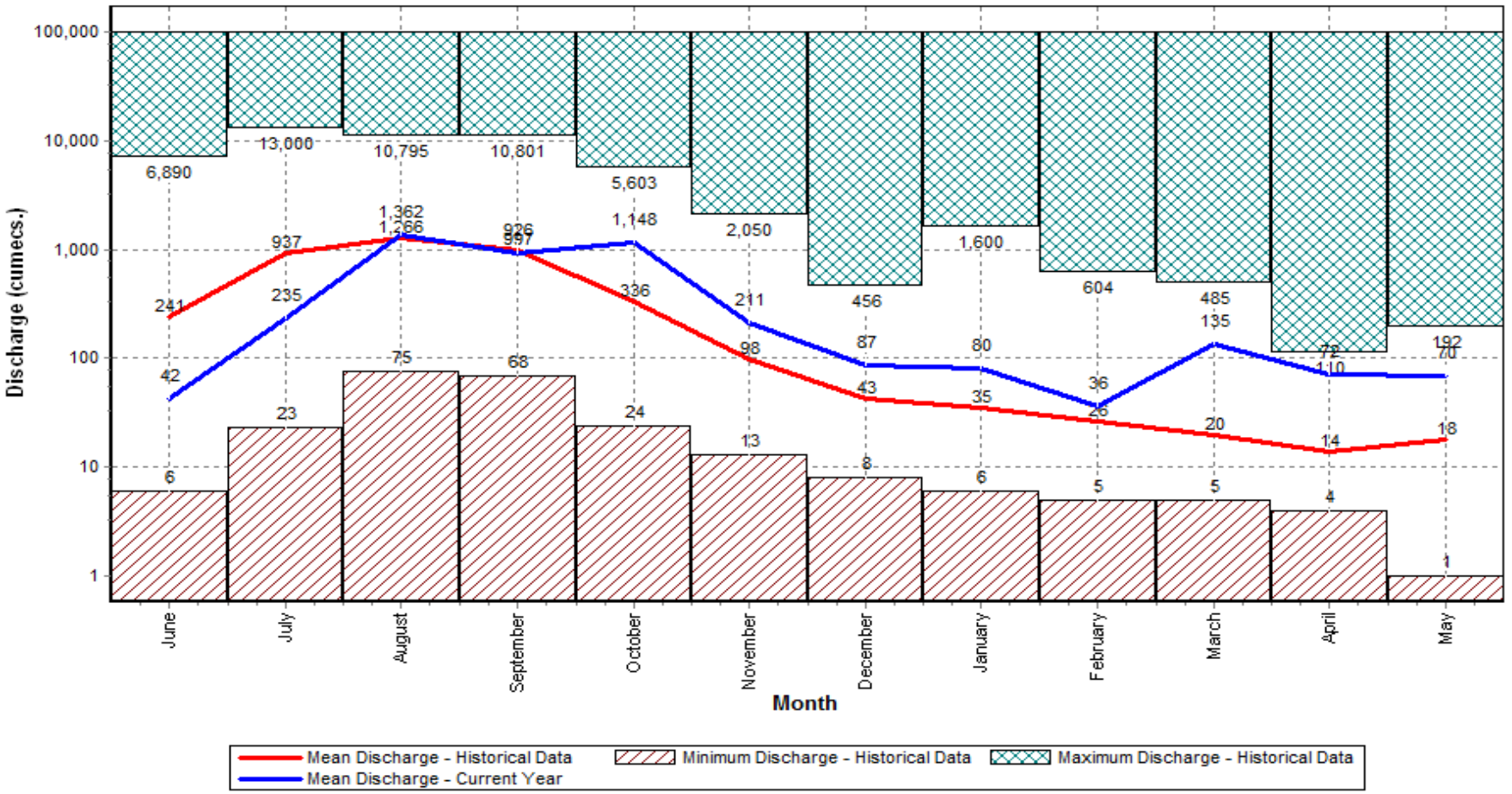
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2019-2020

Station Name : Gomlai (EB000W3) **Data considered : 1979-2020** **Division : E.E., Bhubaneswar**

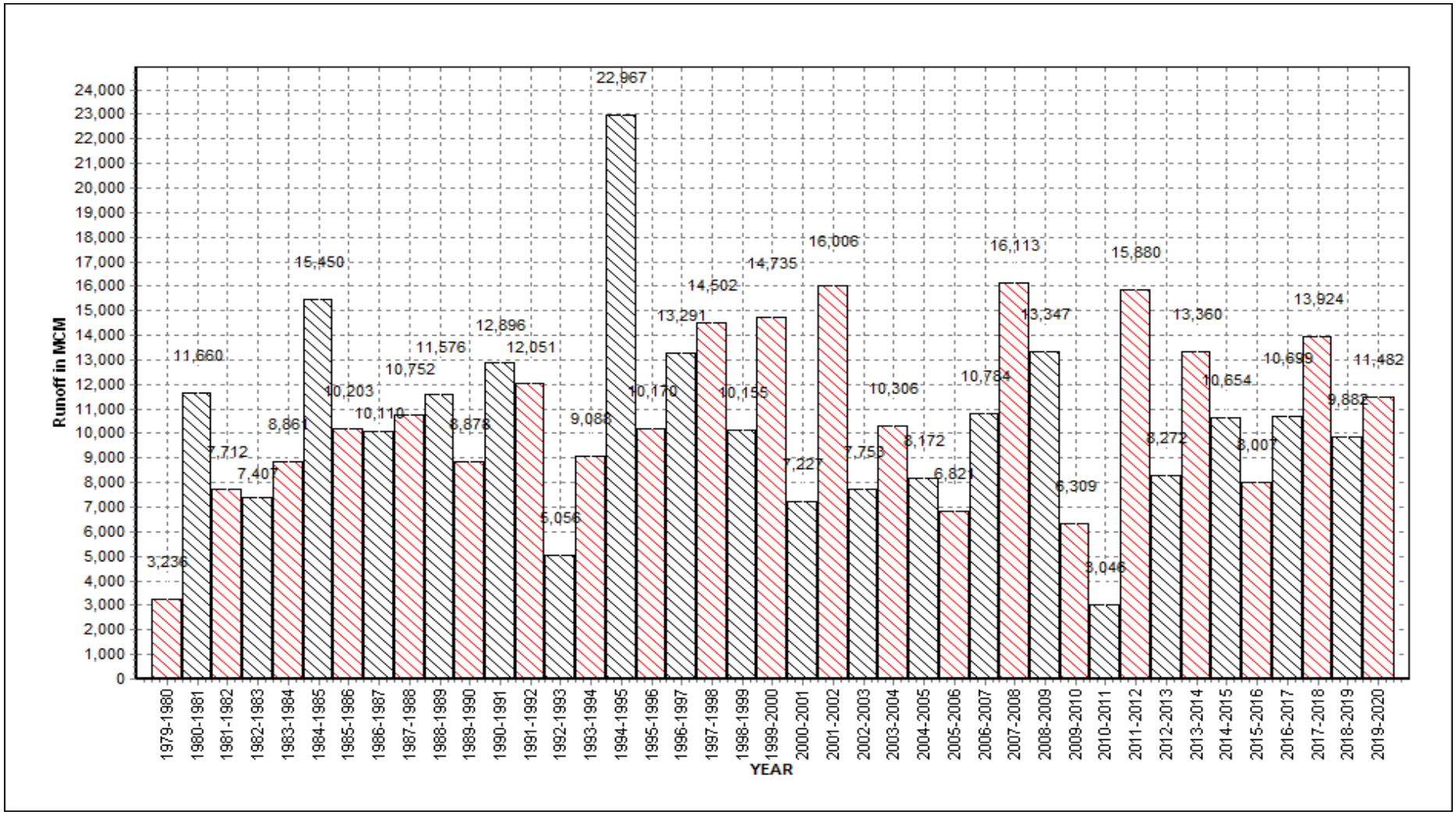
Local River : Brahmni **Sub-Division : Rourkela**



Annual Runoff Values for the period: 1979 - 2020

Station Name : Gomlai (EB000W3) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

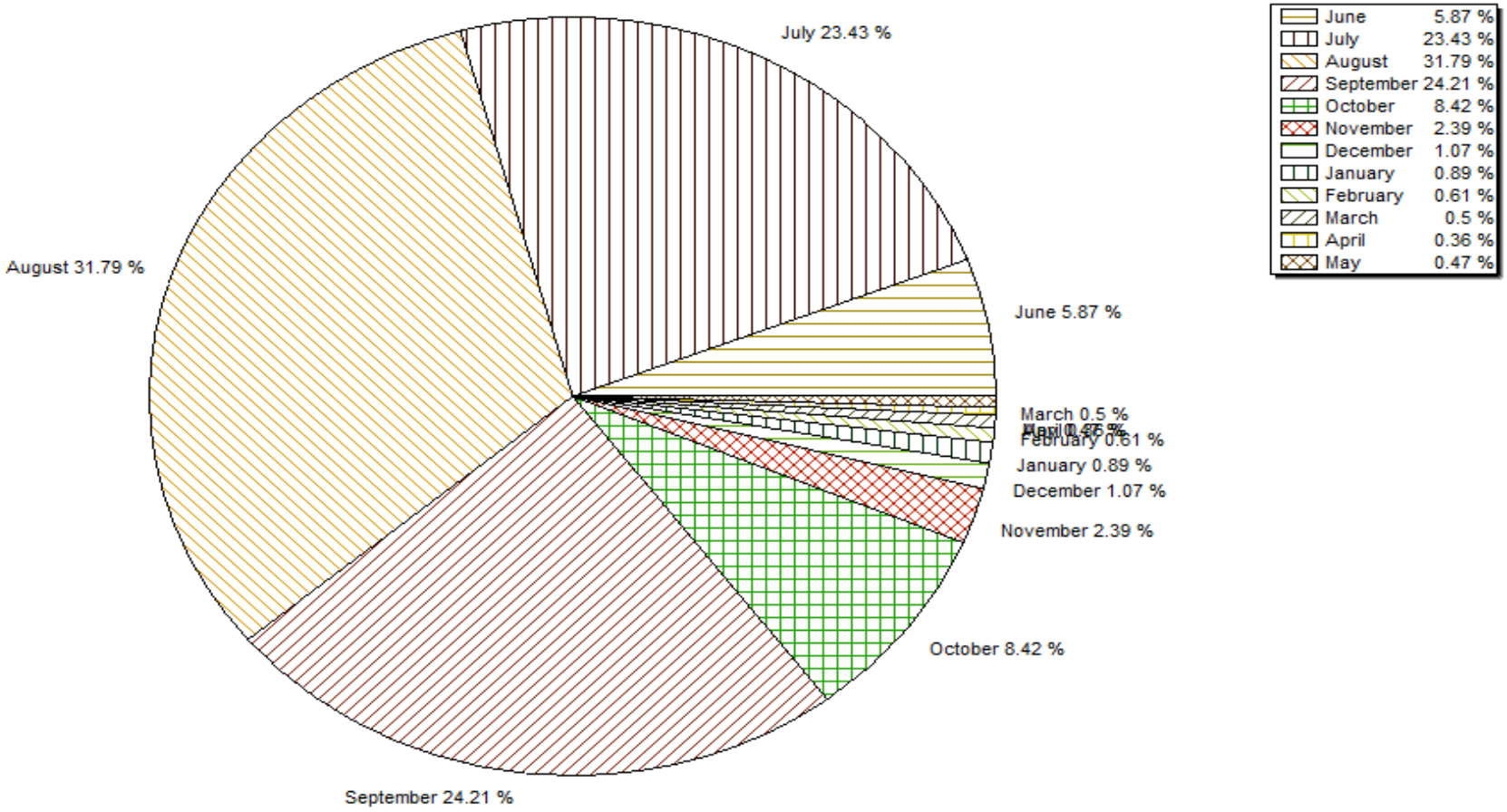


Note: Missing values have not been considered while arriving at Annual Runoff

Monthly Average Runoff based on period : 1979-2019

Station Name : Gomlai (EB000W3) **Division : E.E., Bhubaneswar**

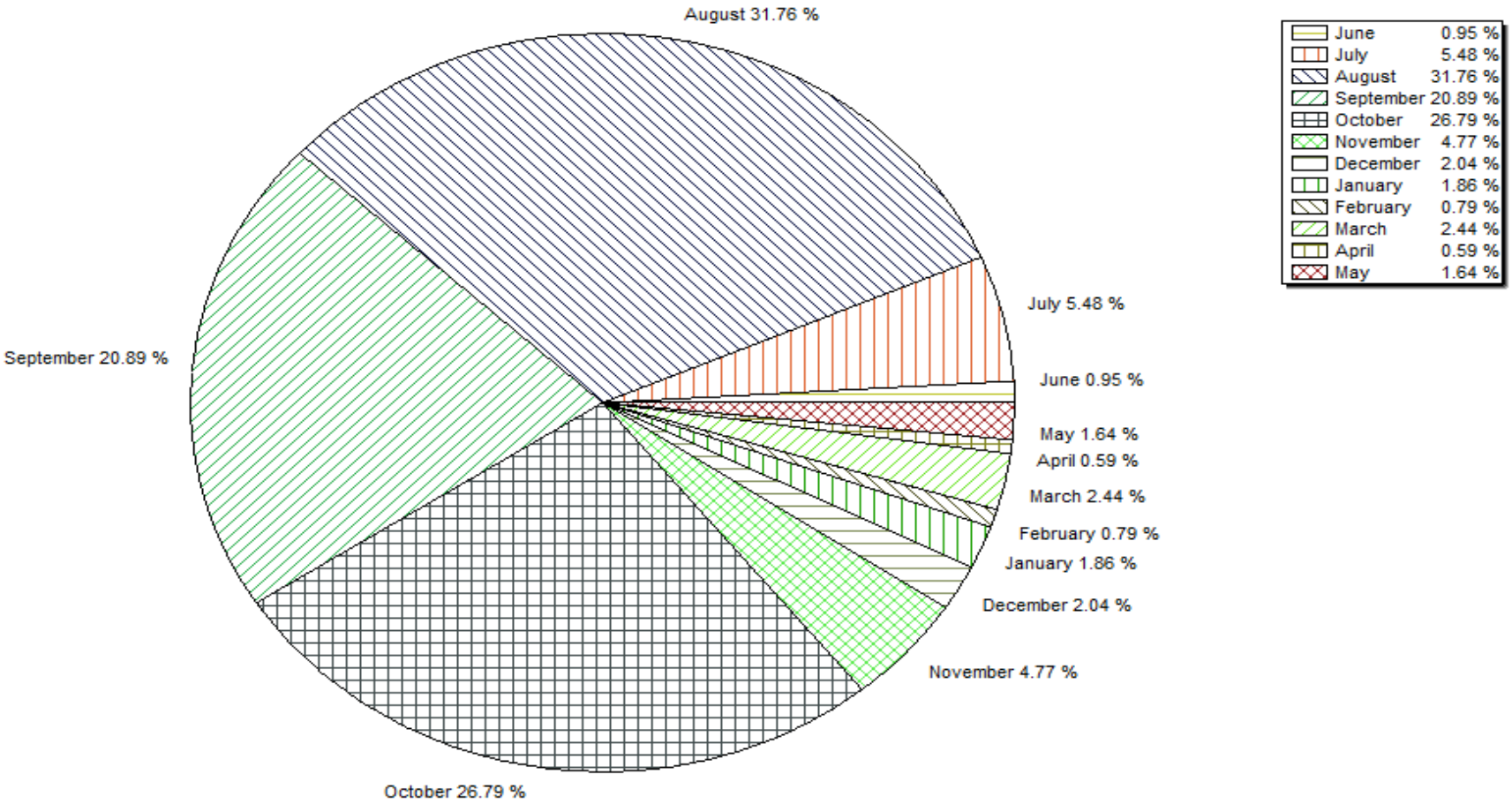
Local River : Brahmni **Sub-Division : Rourkela**



Monthly Runoff for the Year : 2019-2020

Station Name : Gomlai (EB000W3) **Division : E.E., Bhubaneswar**

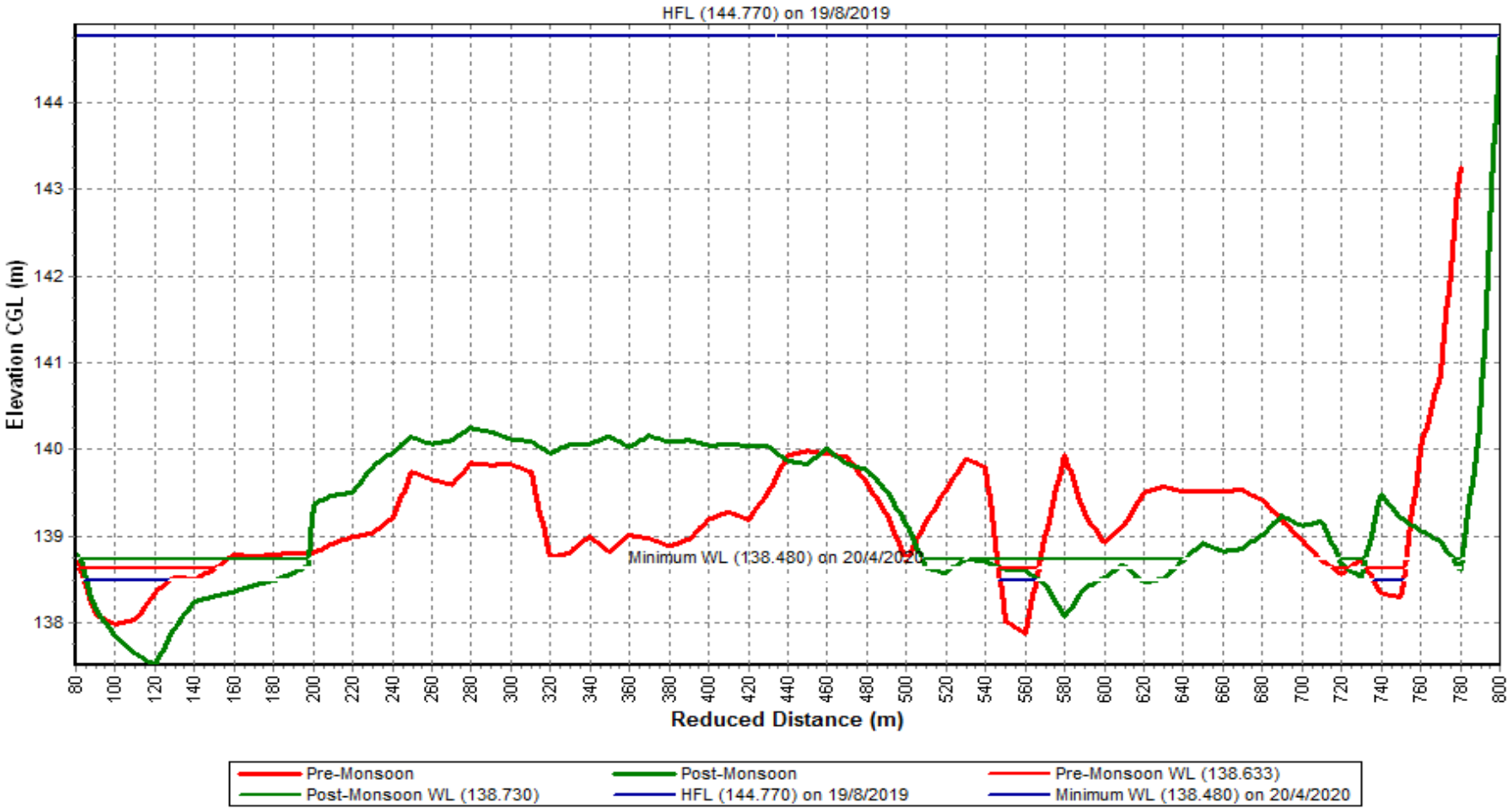
Local River : Brahmni **Sub-Division : Rourkela**



Pre-Monsoon & Post-Monsoon X-Section for Water Year : 2019-2020

Station Name : Gomlai (EB000W3) **Division : E.E., Bhubaneswar**

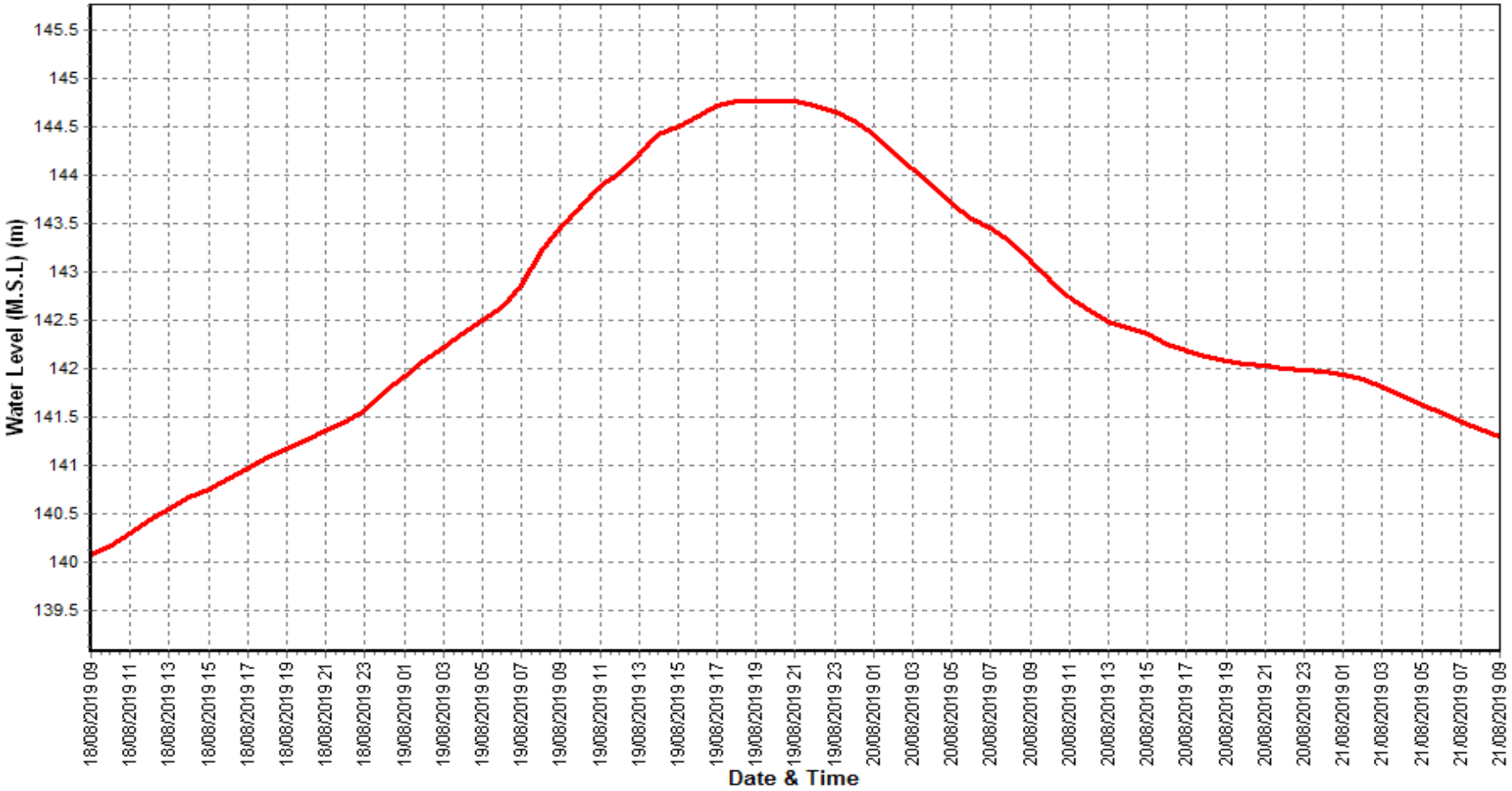
Local River : Brahmni **Sub-Division : Rourkela**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2019-2020

Station Name : Gomlai (EB000W3) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

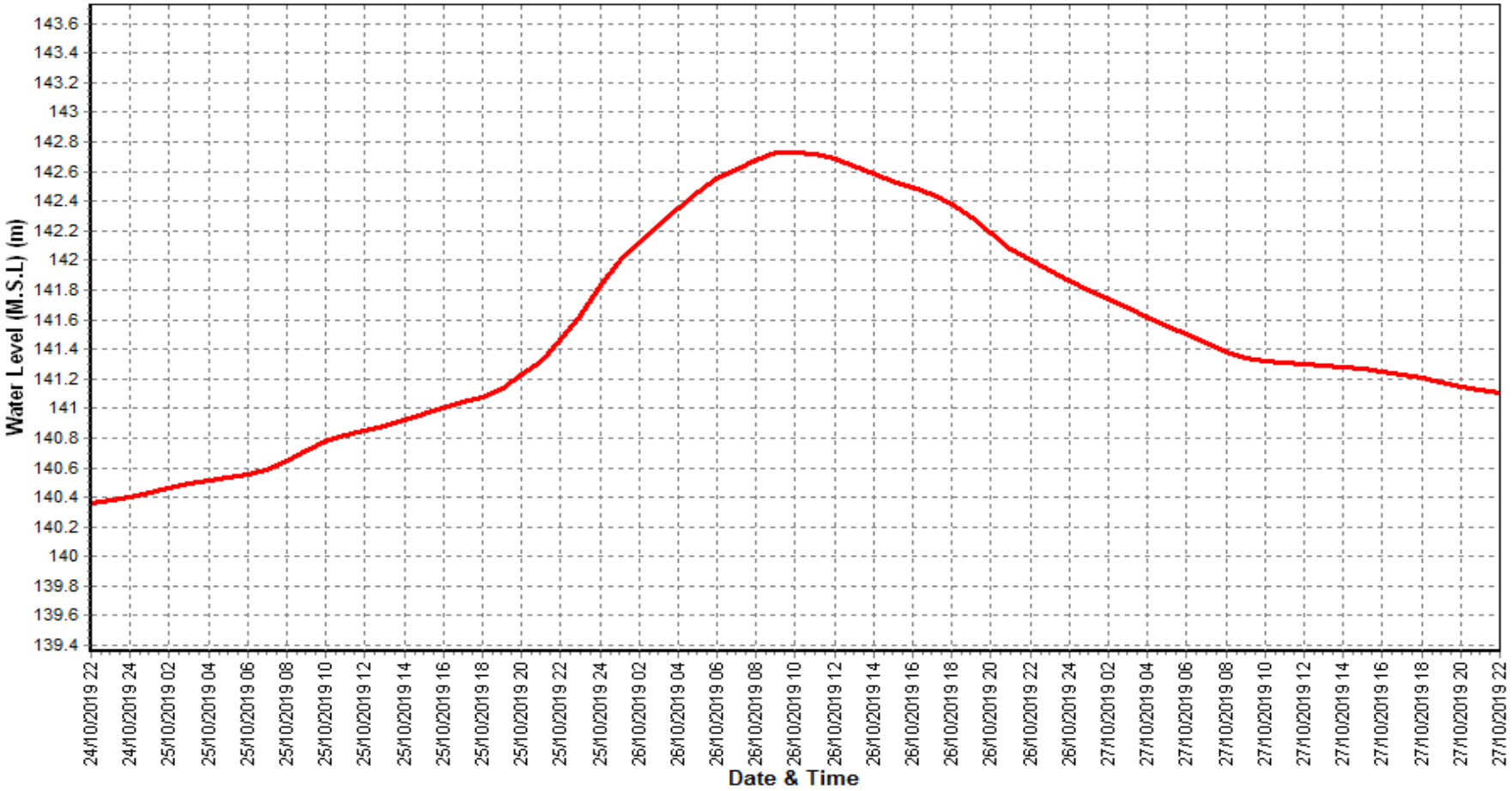


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2019-2020

Station Name : Gomlai (EB000W3) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

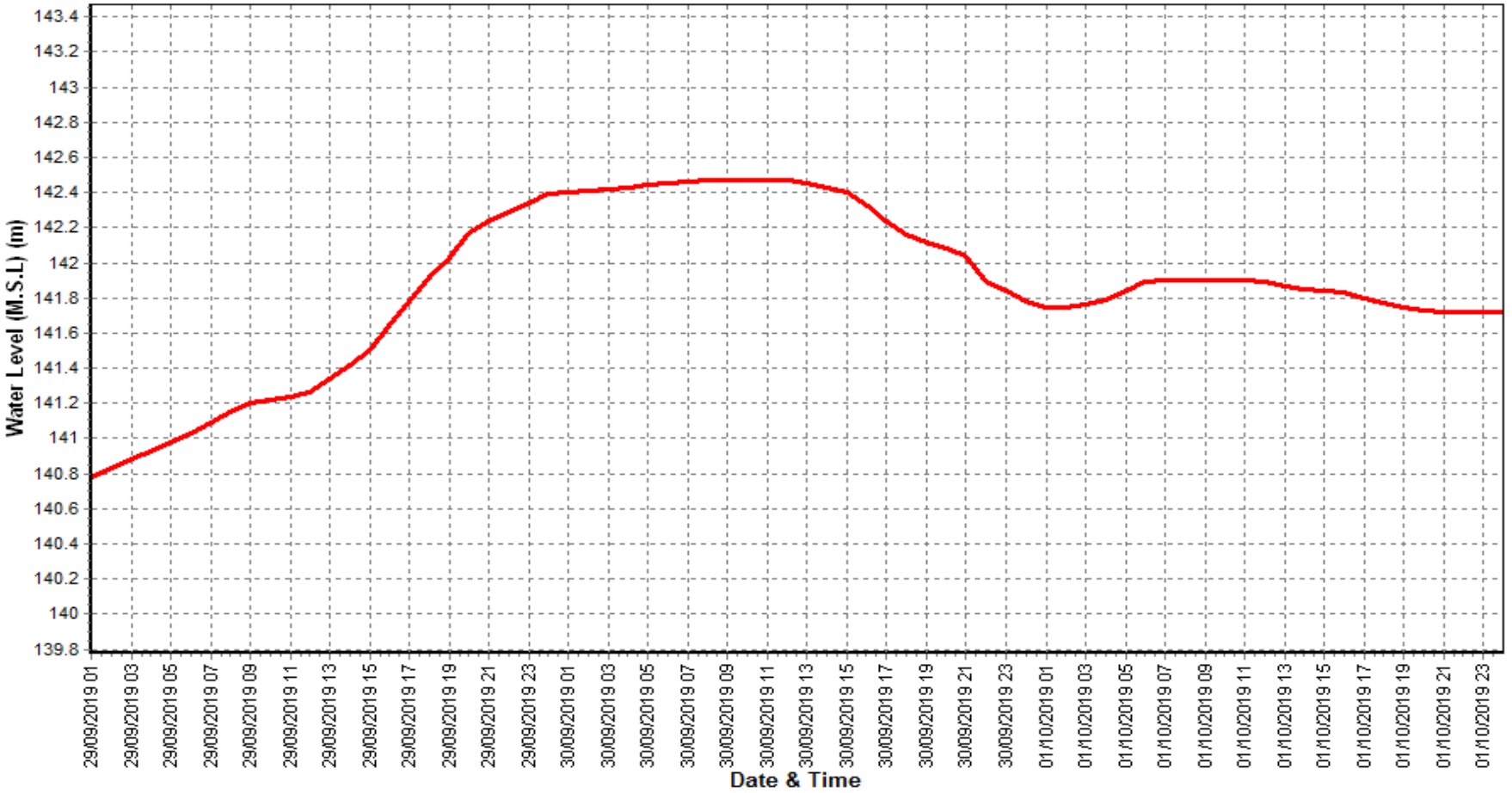


Time Span: 72 Hrs

Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2019-2020

Station Name : Gomlai (EB000W3) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**



Time Span: 72 Hrs

SECTION-II (SEDIMENT DATA)

Daily Observed Sediment Datasheet for period : 2019-2020

Station Name : Gomlai (EB000W3) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

Day	Jun						Jul						Aug					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	12.54	0.000	0.000	0.025	0.025	27	171.3	0.004	0.005	0.157	0.166	2457	392.1	0.009	0.010	0.431	0.450	15245
2	14.42	0.000	0.000	0.025	0.025	31	143.3	0.004	0.005	0.130	0.139	1721	476.4	0.011	0.011	0.369	0.391	16094
3	17.61	0.000	0.000	0.021	0.021	32	446.6	0.005	0.006	0.143	0.154	5943	363.6	0.009	0.010	0.397	0.416	13069
4	17.20	0.000	0.000	0.023	0.023	34	380.8	0.005	0.006	0.143	0.154	5067	290.8	0.009	0.010	0.397	0.416	10452
5	14.53	0.000	0.000	0.023	0.023	29	249.7	0.004	0.005	0.219	0.228	4919	207.2	0.008	0.008	0.291	0.307	5496
6	12.81	0.000	0.000	0.030	0.030	33	207.1	0.004	0.005	0.196	0.205	3668	281.5	0.008	0.009	0.309	0.326	7930
7	14.21	0.000	0.000	0.023	0.023	28	180.4	0.004	0.005	0.196	0.205	3195	262.8	0.007	0.008	0.412	0.427	9697
8	13.44	0.000	0.000	0.029	0.029	34	178.4	0.003	0.004	0.170	0.177	2728	837.7	0.018	0.002	0.387	0.407	29456
9	12.98	0.000	0.000	0.029	0.029	33	519.6	0.005	0.006	0.195	0.206	9249	883.8	0.019	0.022	0.401	0.442	33750
10	12.38	0.000	0.000	0.021	0.021	22	334.9	0.005	0.006	0.281	0.292	8450	846.9	0.019	0.022	0.496	0.537	39293
11	11.95	0.000	0.000	0.022	0.022	23	233.9	0.005	0.006	0.287	0.298	6022	820.9	0.019	0.022	0.496	0.537	38087
12	13.41	0.000	0.000	0.026	0.026	30	379.3	0.008	0.009	0.343	0.360	11797	972.6	0.019	0.022	0.496	0.537	45126
13	16.76	0.000	0.000	0.020	0.020	29	395.5	0.009	0.010	0.451	0.470	16061	1245	0.022	0.022	0.684	0.728	78329
14	13.53	0.000	0.000	0.021	0.021	25	252.9	0.009	0.010	0.451	0.470	10270	2125	0.045	0.045	1.000	1.090	200113
15	13.24	0.000	0.000	0.014	0.014	16	176.2	0.005	0.005	0.262	0.272	4140	1968	0.045	0.045	1.000	1.090	185338
16	16.00	1°50'04"	0.000	0.014	0.014	19	84°54'46"	0.004	0.004	0.213	0.221	3030	2083	0.042	0.043	0.464	0.549	98815
17	15.97	0.000	0.000	0.020	0.020	28	132.3	0.004	0.005	0.189	0.198	2264	1104	0.021	0.021	0.455	0.497	47418
18	21.98	0.000	0.000	0.020	0.020	38	130.0	0.004	0.005	0.197	0.206	2314	1236	0.021	0.021	0.455	0.497	53075
19	16.76	0.000	0.000	0.024	0.024	35	116.9	0.004	0.004	0.183	0.191	1929	5313	0.022	0.022	1.151	1.195	548586
20	17.22	0.000	0.000	0.021	0.021	31	114.6	0.003	0.003	0.179	0.185	1831	4697	0.019	0.020	1.167	1.206	489470
21	29.46	0.000	0.000	0.035	0.035	89	117.5	0.003	0.003	0.179	0.185	1878	2187	0.013	0.014	0.876	0.903	170663
22	32.86	0.000	0.000	0.066	0.066	187	125.3	0.004	0.004	0.134	0.142	1537	1162	0.011	0.013	0.525	0.549	55139
23	55.43	0.000	0.000	0.066	0.066	316	115.6	0.003	0.004	0.134	0.141	1409	1288	0.009	0.011	0.394	0.414	46073
24	53.26	0.000	0.000	0.058	0.058	267	85.84	0.003	0.003	0.110	0.116	860	609.5	0.009	0.010	0.262	0.281	14797
25	48.03	0.000	0.000	0.022	0.022	91	82.59	0.003	0.003	0.106	0.112	799	1275	0.009	0.010	0.262	0.281	30955
26	135.2	0.000	0.000	0.081	0.081	946	92.86	0.003	0.003	0.117	0.123	987	1241	0.012	0.015	0.309	0.336	36033
27	113.7	0.004	0.005	0.244	0.253	2486	88.48	0.003	0.003	0.115	0.121	925	1798	0.015	0.016	0.353	0.384	59648
28	153.2	0.004	0.006	0.244	0.254	3363	290.8	0.003	0.003	0.115	0.121	3040	1502	0.014	0.016	0.300	0.330	42812
29	169.3	0.004	0.005	0.154	0.163	2384	418.0	0.010	0.010	0.359	0.379	13687	1450	0.014	0.013	0.277	0.304	38090
30	166.5	0.000	0.000	0.154	0.154	2215	477.8	0.009	0.010	0.408	0.427	17627	1532	0.014	0.015	0.378	0.407	53870
31							482.1	0.010	0.010	0.403	0.423	17621	1758	0.016	0.017	0.366	0.399	60592
Ten Daily Mean																		
Ten Daily I	14.21	0.000	0.000	0.025	0.025	30	281.2	0.004	0.005	0.183	0.193	4740	484.3	0.012	0.011	0.389	0.412	18048
Ten Daily II	15.68	0.000	0.000	0.020	0.020	27	209.0	0.006	0.006	0.276	0.287	5966	2157	0.028	0.028	0.737	0.793	178436
Ten Daily III	95.70	0.001	0.002	0.112	0.115	1235	216.1	0.005	0.005	0.198	0.208	5488	1437	0.012	0.014	0.391	0.417	55334
Monthly																		
Total						12922						167425						2573513

Annual Sediment Load (Metric Tonnes) : 4135949

Daily Observed Sediment Datasheet for period : 2019-2020

Station Name : Gomlai (EB000W3) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

Day	Sep						Oct						Nov					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	1061	0.015	0.016	0.282	0.313	28693	2973	0.028	0.027	0.221	0.276	70887	501.0	0.006	0.005	0.035	0.046	1991
2	667.3	0.013	0.014	0.202	0.229	13203	2273	0.028	0.027	0.220	0.275	54006	473.1	0.004	0.003	0.034	0.041	1676
3	692.9	0.013	0.015	0.262	0.290	17362	1809	0.028	0.026	0.189	0.243	37979	453.3	0.002	0.003	0.030	0.035	1371
4	619.3	0.012	0.013	0.120	0.145	7759	936.3	0.026	0.027	0.175	0.228	18444	435.6	0.002	0.003	0.020	0.025	941
5	621.8	0.012	0.014	0.103	0.129	6931	824.5	0.022	0.019	0.143	0.184	13108	361.1	0.001	0.001	0.022	0.024	749
6	630.7	0.012	0.013	0.108	0.133	7247	710.4	0.021	0.018	0.014	0.053	3253	338.1	0.002	0.001	0.021	0.024	701
7	599.1	0.011	0.012	0.107	0.130	6729	590.8	0.020	0.016	0.013	0.049	2501	329.4	0.001	0.001	0.017	0.019	541
8	589.0	0.011	0.012	0.011	0.034	1715	1220	0.026	0.024	0.280	0.330	34785	279.5	0.001	0.001	0.018	0.020	483
9	536.7	0.010	0.011	0.096	0.117	5425	1729	0.029	0.028	0.299	0.356	53180	229.4	0.001	0.001	0.016	0.018	357
10	573.0	0.011	0.009	0.085	0.105	5198	1476	0.026	0.023	0.513	0.562	71657	195.1	0.001	0.001	0.014	0.016	270
11	521.5	0.004	0.002	0.088	0.094	4235	1280	0.026	0.011	0.154	0.191	21120	157.2	0.000	0.000	0.028	0.028	380
12	637.6	0.007	0.004	0.138	0.149	8209	1020	0.010	0.007	0.113	0.130	11459	149.0	0.000	0.000	0.026	0.026	335
13	2005	0.015	0.017	0.496	0.528	91464	846.8	0.008	0.006	0.110	0.124	9072	140.1	0.000	0.000	0.024	0.024	290
14	1991	0.017	0.020	0.272	0.309	53148	767.8	0.004	0.002	0.066	0.072	4777	147.7	0.000	0.000	0.018	0.018	230
15	1863	0.012	0.016	0.198	0.226	36378	521.9	0.003	0.001	0.045	0.049	2209	145.2	0.000	0.000	0.019	0.019	238
16	907.4	0.008	0.007	0.166	0.181	14190	497.9	0.002	0.001	0.045	0.048	2065	137.5	0.000	0.000	0.023	0.023	273
17	676.8	0.007	0.007	0.096	0.110	6432	359.8	0.001	0.001	0.049	0.051	1586	130.0	0.000	0.000	0.022	0.022	247
18	590.7	0.004	0.007	0.079	0.090	4593	372.0	0.003	0.001	0.035	0.039	1253	150.1	0.000	0.000	0.020	0.020	259
19	558.4	0.002	0.004	0.072	0.078	3763	359.7	0.001	0.001	0.039	0.041	1274	145.7	0.000	0.000	0.019	0.019	239
20	506.2	0.002	0.002	0.070	0.074	3236	242.8	0.002	0.001	0.045	0.048	1007	141.2	0.000	0.000	0.019	0.019	232
21	532.8	0.007	0.004	0.088	0.099	4557	180.2	0.002	0.001	0.049	0.052	810	146.7	0.000	0.000	0.021	0.021	266
22	521.2	0.018	0.004	0.045	0.067	3017	307.5	0.004	0.004	0.063	0.071	1887	152.4	0.000	0.000	0.021	0.021	276
23	309.5	0.002	0.002	0.041	0.045	1203	521.5	0.004	0.003	0.047	0.054	2433	148.6	0.000	0.000	0.020	0.020	257
24	303.5	0.005	0.002	0.045	0.052	1363	867.3	0.006	0.003	0.129	0.138	10341	146.7	0.000	0.000	0.020	0.020	253
25	315.6	0.006	0.006	0.052	0.064	1745	1529	0.007	0.005	0.154	0.166	21930	146.4	0.000	0.000	0.019	0.019	240
26	326.0	0.004	0.006	0.075	0.085	2394	4590	0.029	0.027	0.433	0.489	193908	118.9	0.000	0.000	0.019	0.019	195
27	375.5	0.007	0.007	0.031	0.045	1460	3068	0.026	0.022	0.250	0.298	78992	113.2	0.000	0.000	0.015	0.015	147
28	1225	0.021	0.020	0.131	0.172	18206	1401	0.022	0.020	0.270	0.312	37763	109.5	0.000	0.000	0.015	0.015	142
29	2416	0.026	0.029	0.211	0.266	55525	1006	0.017	0.016	0.206	0.239	20773	111.9	0.000	0.000	0.018	0.018	174
30	4593	0.030	0.031	0.241	0.302	119856	808.8	0.014	0.012	0.106	0.132	9224	108.4	0.000	0.000	0.019	0.019	178
31							512.7	0.009	0.007	0.059	0.075	3322						
Ten Daily Mean																		
Ten Daily I	659.1	0.012	0.013	0.138	0.162	10026	1454	0.025	0.024	0.207	0.256	35980	359.6	0.002	0.002	0.023	0.027	908
Ten Daily II	1026	0.008	0.009	0.168	0.184	22565	626.9	0.006	0.003	0.070	0.079	5582	144.4	0.000	0.000	0.022	0.022	272
Ten Daily III	1092	0.013	0.011	0.096	0.120	20933	1345	0.013	0.011	0.161	0.184	34671	130.3	0.000	0.000	0.019	0.019	213
Monthly																		
Total						535238						797004						13932

Annual Sediment Load (Metric Tonnes) : 4135949

Daily Observed Sediment Datasheet for period : 2019-2020

Station Name : Gomlai (EB000W3) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

Day	Dec						Jan						Feb					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	107.9	0.000	0.000	0.022	0.022	205	68.01	0.000	0.000	0.016	0.016	94	40.16	0.000	0.000	0.024	0.024	83
2	107.5	0.000	0.000	0.019	0.019	176	65.58	0.000	0.000	0.016	0.016	91	40.20	0.000	0.000	0.025	0.025	87
3	109.7	0.000	0.000	0.018	0.018	171	66.38	0.000	0.000	0.016	0.016	92	40.25	0.000	0.000	0.025	0.025	87
4	106.3	0.000	0.000	0.014	0.014	129	71.14	0.000	0.000	0.018	0.018	111	44.07	0.000	0.000	0.025	0.025	95
5	103.3	0.000	0.000	0.016	0.016	143	73.58	0.000	0.000	0.018	0.018	114	42.66	0.000	0.000	0.025	0.025	92
6	99.09	0.000	0.000	0.018	0.018	154	76.51	0.000	0.000	0.019	0.019	126	42.83	0.000	0.000	0.025	0.025	93
7	92.75	0.000	0.000	0.022	0.022	176	124.0	0.000	0.000	0.019	0.019	204	41.28	0.000	0.000	0.025	0.025	89
8	95.05	0.000	0.000	0.024	0.024	197	120.8	0.000	0.000	0.019	0.019	198	42.13	0.000	0.000	0.025	0.025	91
9	96.28	0.000	0.000	0.028	0.028	233	115.5	0.000	0.000	0.019	0.019	190	45.90	0.000	0.000	0.025	0.025	99
10	111.4	0.000	0.000	0.026	0.026	250	117.4	0.000	0.000	0.022	0.022	223	44.50	0.000	0.000	0.023	0.023	88
11	81.59	0.000	0.000	0.026	0.026	183	106.9	0.000	0.000	0.026	0.026	240	46.10	0.000	0.000	0.023	0.023	92
12	73.42	0.000	0.000	0.026	0.026	165	107.4	0.000	0.000	0.028	0.028	260	39.66	0.000	0.000	0.023	0.023	79
13	80.89	0.000	0.000	0.026	0.026	182	107.9	0.000	0.000	0.031	0.031	289	40.08	0.000	0.000	0.023	0.023	80
14	76.90	0.000	0.000	0.024	0.024	159	126.5	0.000	0.000	0.031	0.031	339	36.76	0.000	0.000	0.023	0.023	73
15	66.49	0.000	0.000	0.024	0.024	138	84.65	0.000	0.000	0.028	0.028	205	33.57	0.000	0.000	0.024	0.024	70
16	64.19	0.000	0.000	0.024	0.024	133	103.0	0.000	0.000	0.026	0.026	231	32.49	0.000	0.000	0.024	0.024	67
17	70.43	0.000	0.000	0.024	0.024	146	100.6	0.000	0.000	0.025	0.025	217	30.50	0.000	0.000	0.026	0.026	69
18	67.75	0.000	0.000	0.026	0.026	152	100.5	0.000	0.000	0.024	0.024	208	32.24	0.000	0.000	0.026	0.026	72
19	79.61	0.000	0.000	0.028	0.028	193	94.76	0.000	0.000	0.022	0.022	180	31.48	0.000	0.000	0.026	0.026	71
20	77.48	0.000	0.000	0.028	0.028	187	92.80	0.000	0.000	0.021	0.021	168	30.66	0.000	0.000	0.026	0.026	69
21	87.80	0.000	0.000	0.030	0.030	228	83.35	0.000	0.000	0.021	0.021	151	31.21	0.000	0.000	0.026	0.026	70
22	88.82	0.000	0.000	0.030	0.030	230	56.22	0.000	0.000	0.021	0.021	102	28.84	0.000	0.000	0.024	0.024	60
23	91.76	0.000	0.000	0.033	0.033	262	51.96	0.000	0.000	0.022	0.022	99	31.00	0.000	0.000	0.022	0.022	59
24	95.97	0.000	0.000	0.032	0.032	265	47.31	0.000	0.000	0.022	0.022	90	27.78	0.000	0.000	0.021	0.021	50
25	92.76	0.000	0.000	0.032	0.032	256	45.82	0.000	0.000	0.024	0.024	95	31.38	0.000	0.000	0.021	0.021	57
26	90.94	0.000	0.000	0.026	0.026	204	46.20	0.000	0.000	0.026	0.026	104	32.74	0.000	0.000	0.021	0.021	59
27	78.97	0.000	0.000	0.020	0.020	136	47.88	0.000	0.000	0.027	0.027	112	31.34	0.000	0.000	0.021	0.021	57
28	80.02	0.000	0.000	0.018	0.018	124	48.93	0.000	0.000	0.027	0.027	114	30.90	0.000	0.000	0.021	0.021	56
29	79.43	0.000	0.000	0.016	0.016	110	43.77	0.000	0.000	0.027	0.027	102	30.93	0.000	0.000	0.021	0.021	56
30	78.80	0.000	0.000	0.016	0.016	109	43.99	0.000	0.000	0.027	0.027	103						
31	72.88	0.000	0.000	0.016	0.016	101	42.93	0.000	0.000	0.027	0.027	100						
Ten Daily Mean																		
Ten Daily I	102.9	0.000	0.000	0.021	0.021	183	89.89	0.000	0.000	0.018	0.018	144	42.40	0.000	0.000	0.025	0.025	90
Ten Daily II	73.87	0.000	0.000	0.026	0.026	164	102.5	0.000	0.000	0.026	0.026	234	35.35	0.000	0.000	0.024	0.024	74
Ten Daily III	85.29	0.000	0.000	0.024	0.024	184	50.76	0.000	0.000	0.025	0.025	106	30.68	0.000	0.000	0.022	0.022	58
Monthly Total						5499						4951						2170

Annual Sediment Load (Metric Tonnes) : 4135949

Daily Observed Sediment Datasheet for period : 2019-2020

Station Name : Gomlai (EB000W3) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

Day	Mar						Apr						May					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	30.90	0.000	0.000	0.024	0.024	64							119.1	0.000	0.000	0.041	0.041	422
2	30.93	0.000	0.000	0.024	0.024	64							105.9	0.000	0.000	0.041	0.041	375
3	29.43	0.000	0.000	0.023	0.023	58							84.26	0.000	0.000	0.042	0.042	306
4	28.73	0.000	0.000	0.023	0.023	57							77.04	0.000	0.000	0.044	0.044	293
5	29.22	0.000	0.000	0.024	0.024	61							77.40	0.000	0.000	0.044	0.044	294
6	32.59	0.000	0.000	0.026	0.026	73							72.43	0.000	0.000	0.044	0.044	275
7	31.12	0.000	0.000	0.026	0.026	70							95.00	0.000	0.000	0.046	0.046	378
8	47.13	0.000	0.000	0.028	0.028	114							93.14	0.000	0.000	0.046	0.046	370
9	62.96	0.000	0.000	0.031	0.031	169							109.6	0.000	0.000	0.048	0.048	454
10	68.20	0.000	0.000	0.031	0.031	183							161.4	0.000	0.000	0.048	0.048	669
11	95.45	0.000	0.000	0.032	0.032	264							117.0	0.000	0.000	0.050	0.050	505
12	89.38	0.000	0.000	0.032	0.032	247							94.31	0.000	0.000	0.042	0.042	342
13	82.74	0.000	0.000	0.032	0.032	229							70.80	0.000	0.000	0.040	0.040	245
14	87.32	0.000	0.000	0.032	0.032	241							67.63	0.000	0.000	0.040	0.040	234
15	109.8	0.000	0.000	0.033	0.033	313							67.92	0.000	0.000	0.040	0.040	235
16	152.1	0.000	0.000	0.037	0.037	486							71.81	0.000	0.000	0.042	0.042	261
17	714.6	0.000	0.000	0.040	0.040	2470							68.00	0.000	0.000	0.040	0.040	235
18	495.0	0.000	0.000	0.040	0.040	1711							44.06	0.000	0.000	0.039	0.039	148
19	340.0	0.000	0.000	0.050	0.050	1469							41.18	0.000	0.000	0.039	0.039	139
20	172.3	0.000	0.000	0.060	0.060	893	19.81	0.000	0.000	0.015	0.015	26	44.01	0.000	0.000	0.039	0.039	148
21	181.0	0.000	0.000	0.060	0.060	938	22.98	0.000	0.000	0.017	0.017	34	34.58	0.000	0.000	0.039	0.039	117
22	116.7	0.000	0.000	0.080	0.080	807	28.48	0.000	0.000	0.018	0.018	44	40.33	0.000	0.000	0.039	0.039	136
23	105.8	0.000	0.000	0.101	0.101	923	33.11	0.000	0.000	0.018	0.018	51	35.70	0.000	0.000	0.036	0.036	111
24	102.7	0.000	0.000	0.090	0.090	799	31.11	0.000	0.000	0.018	0.018	48	38.40	0.000	0.000	0.032	0.032	106
25							52.38	0.000	0.000	0.030	0.030	136	36.00	0.000	0.000	0.030	0.030	93
26							66.50	0.000	0.000	0.035	0.035	201	34.47	0.000	0.000	0.026	0.026	77
27							190.5	0.000	0.000	0.049	0.049	807	31.77	0.000	0.000	0.026	0.026	71
28							109.4	0.000	0.000	0.049	0.049	463	31.61	0.000	0.000	0.026	0.026	71
29							104.2	0.000	0.000	0.050	0.050	450	35.12	0.000	0.000	0.026	0.026	79
30							130.4	0.000	0.000	0.056	0.056	631	96.36	0.000	0.000	0.036	0.036	300
31													76.20	0.000	0.000	0.032	0.032	211
Ten Daily Mean																		
Ten Daily I	39.12	0.000	0.000	0.026	0.026	91							99.52	0.000	0.000	0.044	0.044	384
Ten Daily II	233.9	0.000	0.000	0.039	0.039	832	19.81	0.000	0.000	0.015	0.015	26	68.67	0.000	0.000	0.041	0.041	249
Ten Daily III	126.6	0.000	0.000	0.083	0.083	867	76.91	0.000	0.000	0.034	0.034	287	44.60	0.000	0.000	0.032	0.032	125
Monthly Total						12702						2891						7700

Annual Sediment Load (Metric Tonnes) : 4135949

Annual Sediment Load for period : 1981-2020

Station Name : Gomlai (EB000W3) **Division : E.E., Bhubaneswar**

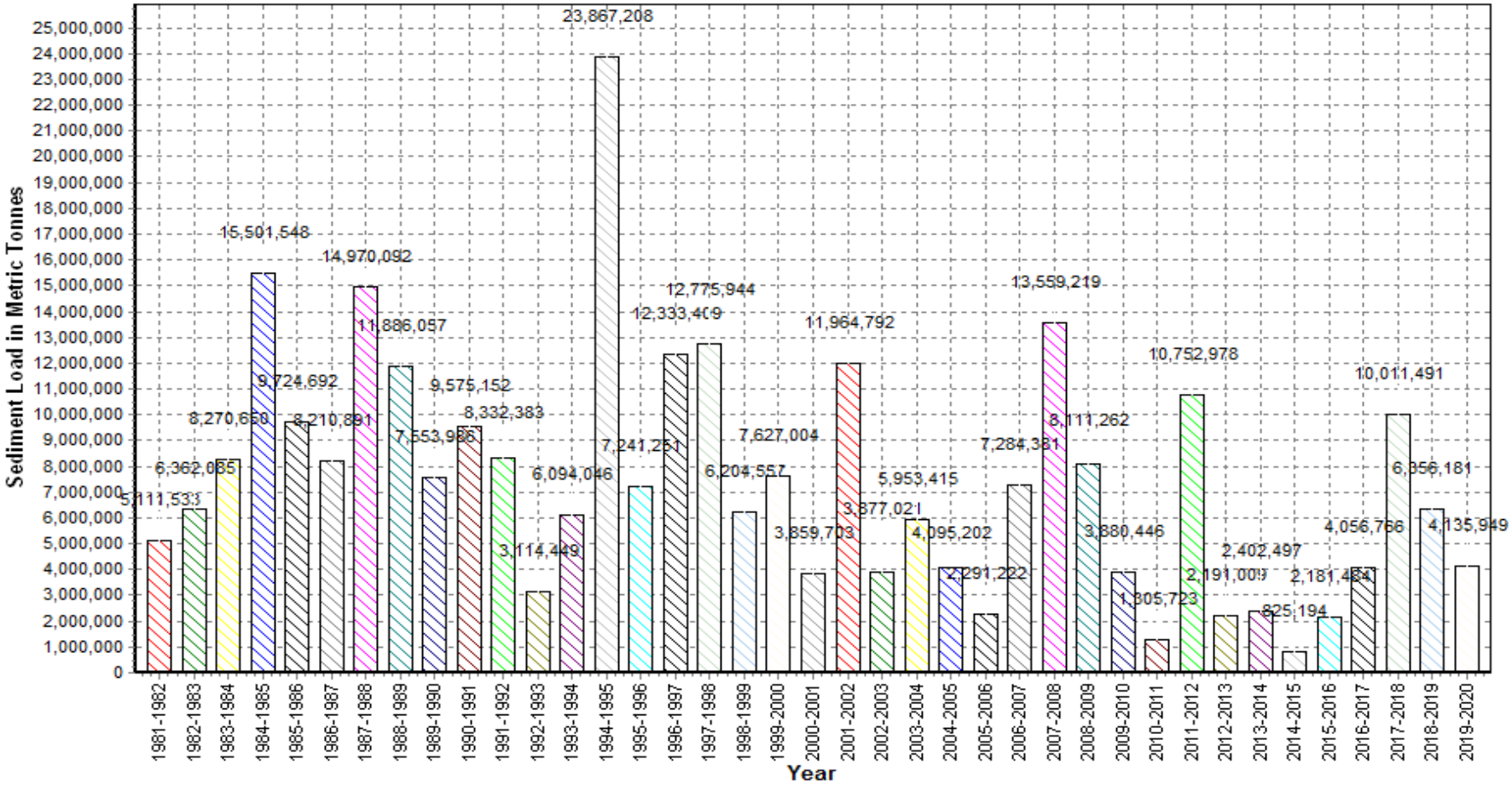
Local River : Brahmni **Sub-Division : Rourkela**

Year	Monsoon (M.T.)	Non-Monsoon (M.T.)	Annual Load (M.T.)	Annual Run Off (MCM)
1981-1982	5097467	14066	5111533	7712
1982-1983	6285626	76459	6362085	7407
1983-1984	8267114	3536	8270650	8861
1984-1985	15497373	4175	15501548	15450
1985-1986	9721444	3247	9724692	10203
1986-1987	8191659	19232	8210891	10110
1987-1988	14950091	20001	14970092	10752
1988-1989	11882814	3243	11886057	11576
1989-1990	7459501	94485	7553986	8878
1990-1991	9542221	32930	9575152	12896
1991-1992	8299839	32544	8332383	12051
1992-1993	3109937	4512	3114449	5056
1993-1994	6086939	7107	6094046	9088
1994-1995	23858486	8722	23867208	22967
1995-1996	7222350	18901	7241251	10170
1996-1997	12327625	5784	12333409	13291
1997-1998	12371036	404909	12775944	14502
1998-1999	6184487	20071	6204557	10155
1999-2000	7614833	12171	7627004	14735
2000-2001	3855282	4421	3859703	7227
2001-2002	11960636	4156	11964792	16006
2002-2003	3871634	5386	3877021	7735
2003-2004	5947177	6237	5953415	10306
2004-2005	4089879	5322	4095202	8169
2005-2006	2279216	12006	2291222	6821
2006-2007	7278047	6334	7284381	10784
2007-2008	13552621	6599	13559219	16113
2008-2009	8104533	6729	8111262	13347
2009-2010	3876418	4028	3880446	6309
2010-2011	1301819	3904	1305723	3046
2011-2012	10747050	5928	10752978	15880
2012-2013	2184651	6358	2191009	8270
2013-2014	2399652	2844	2402497	13360
2014-2015	823808	1386	825194	10654
2015-2016	2179683	1800	2181484	8007
2016-2017	4056766	0	4056766	10699
2017-2018	10007583	3908	10011491	13194
2018-2019	6345383	10798	6356181	9882
2019-2020	4100036	35914	4135949	11482

Annual Sediment Load for the period: 1981-2020

Station Name : Gomlai (EB000W3) **Division : E.E., Bhubaneswar**

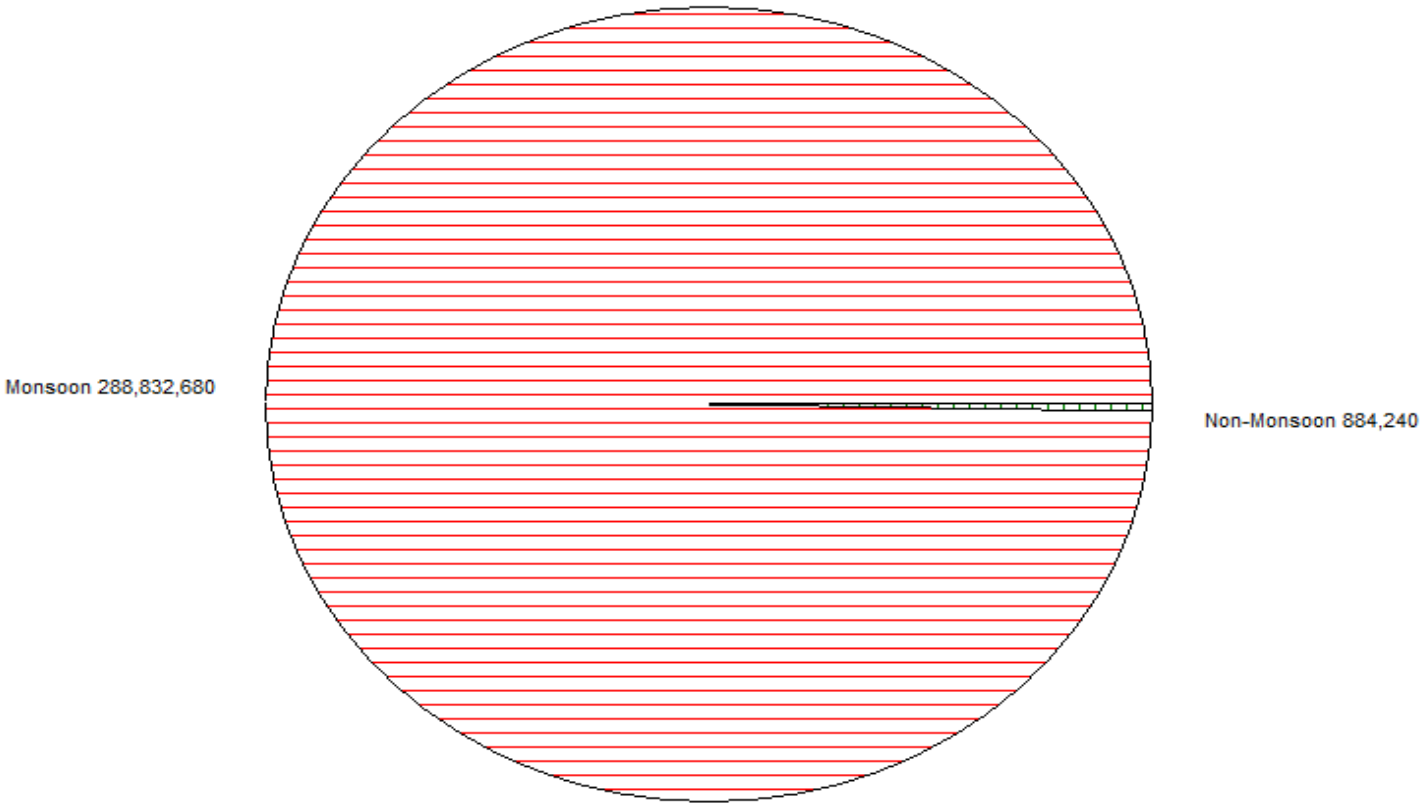
Local River : Brahmni **Sub-Division : Rourkela**



Seasonal Sediment Load for the period : 1981-2019

Station Name : Gomlai (EB000W3)
Local River : Brahmni

Division : E.E., Bhubaneswar
Sub-Division : Rourkela



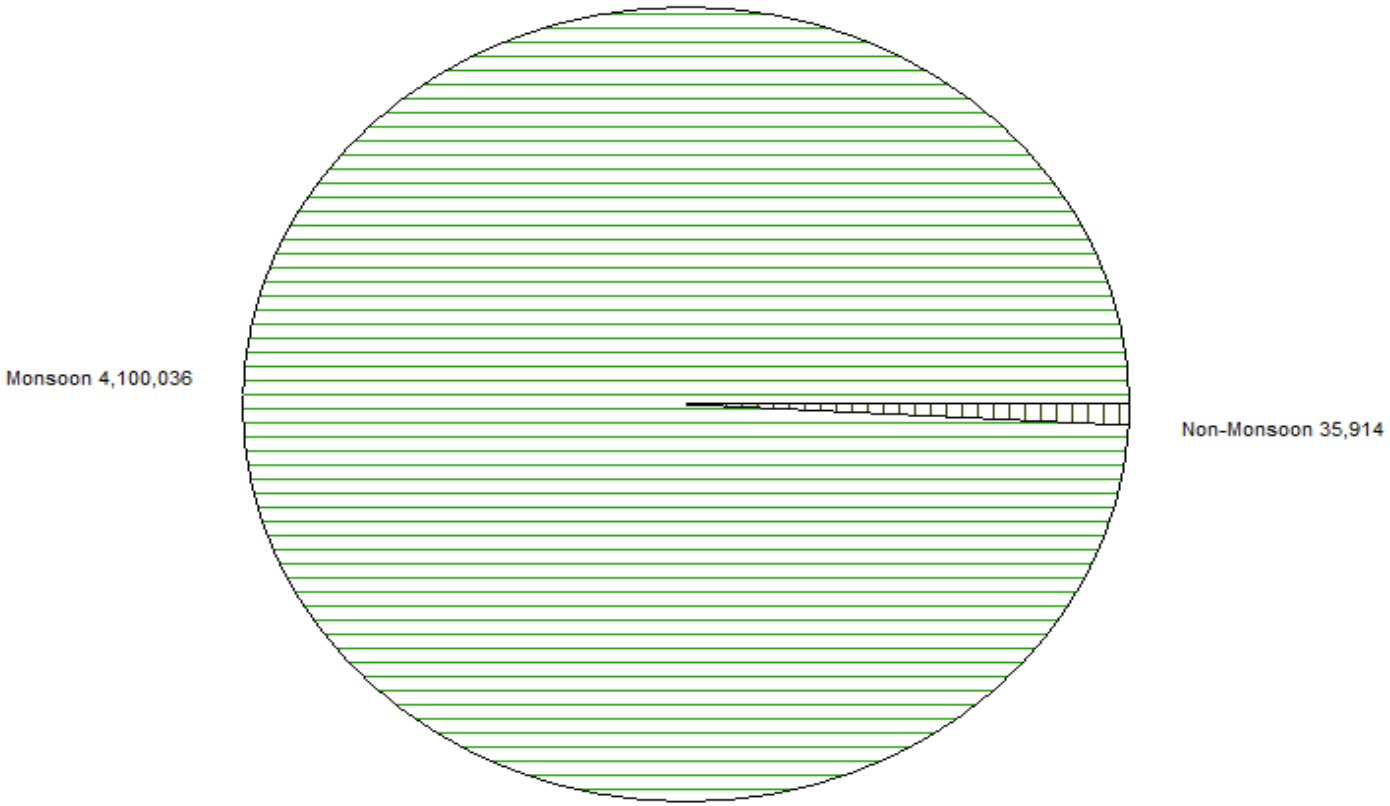
Seasonal Sediment Load for the Year: 2019-2020

Station Name : Gomlai (EB000W3)

Local River : Brahmni

Division : E.E., Bhubaneswar

Sub-Division : Rourkela



SECTION-III

(WATER QUALITY)

Water Quality Datasheet for the period : 2019-2020

Station Name : GOMLAI (EB000W3) **Division : E.E., Bhubaneswar**

Local River : Brahmani **River Water Analysis** **Sub-Division : Rourkela**

S.No	Parameters	6/1/2019	7/1/2019	7/1/2019	8/1/2019	9/2/2019	10/1/2019	11/1/2019	12/2/2019	1/1/2020	2/1/2020	3/2/2020
		A	A	B	A	A	A	A	A	A	A	A
	PHYSICAL											
1	Q (cumec)											
2	Colour_Cod (-)	Light Brown		Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Green	Light Brown	Dark Brown
3	EC_FLD (µmho/cm)	380		404	298	136	144	423	156	143	21	18
4	EC_GEN (µmho/cm)	385		400	300	131	145	425	168	137	127	409
5	Odour_Code (-)	odour free		odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
6	pH_FLD (pH units)	7.8		7.2	7.1	7.3	7.1	7.3	8.0	7.8	8.1	9.1
7	pH_GEN (pH units)	7.9		7.3	7.3	7.3	7.1	7.3	7.6	7.3	7.6	7.9
8	Temp (deg C)	32.0		30.5	28.0	31.5	26.5	27.0	23.5	18.0	21.5	
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0		
2	ALK-TOT (mgCaCO3/L)	24		59	131	46	45	114	16	32		
3	B (mg/L)	0.03										
4	Ca (mg/L)	17		9	19	10	16	31	20	27	23	25
5	Cl (mg/L)	19.6		15.2	14.9	31.0	12.2	26.1	20.3	57.5	24.7	66.4
6	CO3 (mg/L)	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0		
7	F (mg/L)						0.10	0.45				
8	HCO3 (mg/L)	30		73	159	56	55	139	19	39	107	68
9	K (mg/L)	1.9		1.1	2.6	1.5	1.4	2.0	158.0	2.2	2.5	3.9
10	Mg (mg/L)	12.4		8.5	5.7	5.9	1.0	2.8	4.7	3.8	5.6	7.5
11	Na (mg/L)	14.5		4.0	3.3	3.2	2.8	4.7	42.3	7.9	8.4	10.5
12	P-Tot (mgP/L)	0.001										
13	SiO2 (mg/L)	8.5										
14	SO4 (mg/L)	29.8		5.8	29.5	11.3	10.2	15.2	7.1	9.4	7.0	8.4
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)	0.2		0.6	0.6	0.8	1.0	1.4	1.0	1.4	0.7	0.8
2	DO (mg/L)	4.0		4.0	3.6	5.0	5.4	6.6	5.0	4.4	6.0	4.8
3	DO_SAT% (%)	54		52	46	68	66	83	59	46	67	
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	44		24	48	24	41	78	51	67	58	63
2	HAR_Total (mgCaCO3/L)	95		59	71	49	45	90	71	82	81	94
3	Na% (%)	25		13	9	12	11	10	25	17	18	19
4	RSC (-)	0.0		0.0	1.2	0.0	0.0	0.5	0.0	0.0		
5	SAR (-)	0.6		0.2	0.2	0.2	0.2	0.2	2.2	0.4	0.4	0.5
	PESTICIDES											

Water Quality Summary for the period : 2019-2020

Station Name : GOMLAI (EB000W3) **Division : E.E., Bhubaneswar**

Local River : Brahmani **Sub-Division : Rourkela**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	10	423	18	212
3	EC_GEN (µmho/cm)	10	425	127	263
4	pH_FLD (pH units)	10	9.1	7.1	7.7
5	pH_GEN (pH units)	10	7.9	7.1	7.4
6	Temp (deg C)	9	32.0	18.0	26.5
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	8	0.0	0.0	0
2	ALK-TOT (mgCaCO3/L)	8	131	16	58
3	B (mg/L)	1	0.03	0.03	0.03
4	Ca (mg/L)	10	31	9	20
5	Cl (mg/L)	10	66.4	12.2	28.8
6	CO3 (mg/L)	8	0.0	0.0	0
7	F (mg/L)	2	0.45	0.10	0.27
8	HCO3 (mg/L)	10	159	19	75
9	K (mg/L)	10	158.0	1.1	17.7
10	Mg (mg/L)	10	12.4	1.0	5.8
11	Na (mg/L)	10	42.3	2.8	10.2
12	P-Tot (mgP/L)	1	0.001	0.001	0.001
13	SiO2 (mg/L)	1	8.5	8.5	8.5
14	SO4 (mg/L)	10	29.8	5.8	13.4
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	10	1.4	0.2	0.8
2	DO (mg/L)	10	6.6	3.6	4.9
3	DO_SAT% (%)	9	83	46	60
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	10	78	24	50
2	HAR_Total (mgCaCO3/L)	10	95	45	74
3	Na% (%)	10	25	9	16
4	RSC (-)	8	1.2	0.0	0.2
5	SAR (-)	10	2.2	0.2	0.5
	PESTICIDES				

Water Quality Seasonal Average for the period: 2005-2020

Station Name : GOMLAI (EB000W3) **Division : E.E., Bhubaneswar**

Local River : Brahmani **River Water** **Sub-Division : Rourkela**

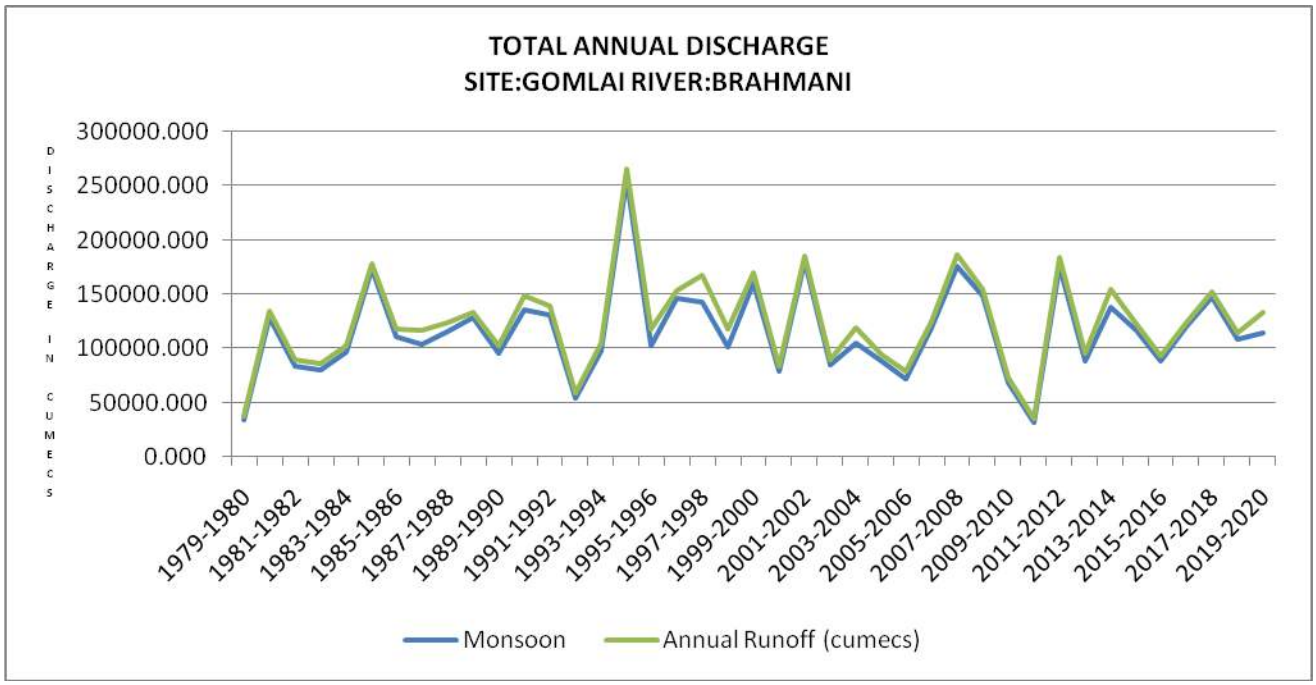
S.No	Parameters	Flood (Jun - Oct)															Winter (Nov - Feb)													
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
	PHYSICAL																													
1	Q (cumec)																													
2	EC_FLD (µmho/cm)	133	232	139	142	131	147	147	150	117	172	253	192	172	194	272	180	198	188	275	192	260	168	199	153	268	522	368	259	207
3	EC_GEN (µmho/cm)	129	228	134	142	131	147	147	150	117	172	254	197	168	192	272	178	198	179	275	192	260	168	199	153	268	519	371	254	206
4	pH_FLD (pH units)	7.7	7.8	7.8	7.7	7.7	7.9	8.2	7.5	7.6	7.8	7.6	7.8	7.6	7.2	7.3	7.9	8.3	7.8	8.0	7.8	7.4	7.7	7.5	8.1	7.9	7.8	7.9	7.9	7.8
5	pH_GEN (pH units)	7.8	7.8	7.8	7.7	7.7	7.9	8.2	7.5	7.6	7.8	7.4	7.8	7.6	7.2	7.4	7.9	8.3	7.9	8.0	7.8	7.5	7.7	7.5	8.1	7.9	7.8	7.9	7.9	7.7
6	TDS (mg/L)					87	97														127	166								
7	Temp (deg C)	29.4	29.1	29.6	29.2	30.6	30.4	29.3	29.9	29.2	28.8	27.6	28.5	30.4	29.4	29.7	21.3	22.6	21.3	22.6	20.6	20.8	21.8	22.9	21.0	19.4	20.5	19.4	20.8	21.5
	CHEMICAL																													
1	Alk-Phen (mgCaCO3/L)			0.0	0.0	0.0	0.0	9.1		0.0	0.0	0.0	0.0	8.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.5	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)			41	36	30	32	63		63	65	56	73	65	60	61			50	89	51	68	55	74	68	57	83	53	81	67
3	B (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.01
4	Ca (mg/L)	12	23	13	13	12	15	13	16	17	13	17	46	35	23	14	15	19	17	28	17	25	18	20	18	15	19	37	36	23
5	Cl (mg/L)	9.1	21.7	11.2	12.6	8.2	14.1	15.8	16.6	15.8	15.8	13.3	14.3	15.7	13.2	18.5	15.1	12.7	16.9	13.7	12.6	17.4	12.7	20.3	19.0	11.3	16.0	14.1	13.4	16.1
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	10.9	0.0	0.0	0.0	0.0	0.0	9.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.9	0.0	0.0	0.0
7	F (mg/L)	0.10	0.11	0.06	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.53	0.10	0.04	0.00	0.09	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.21
8	Fe (mg/L)	0.1	0.2	0.1	0.2	0.2	0.1	0.1	1.5	0.0	0.2	0.3	0.5	0.7	0.5		0.1	0.1	0.2	0.3	0.2	0.1	0.1	1.9	0.0	0.3	0.3	0.3	0.5	0.4
9	HCO3 (mg/L)	41	86	50	44	43	38	54	48	79	54	69	89	60	73	75	55	66	61	108	62	91	68	92	82	70	73	65	99	82
10	K (mg/L)	1.9	2.3	1.8	2.5	2.2	2.3	1.8	2.0	2.1	1.8	2.0	6.9	2.6	4.1	1.7	3.2	3.3	3.3	1.7	1.3	2.8	1.7	2.1	1.8	1.6	2.4	26.4	2.5	4.6
11	Mg (mg/L)	4.0	5.9	4.6	4.1	5.6	3.7	5.2	6.2	4.3	5.2	7.1	15.7	13.7	9.5	6.7	4.6	6.1	5.4	10.4	8.7	9.7	5.3	14.3	5.1	5.6	7.5	18.0	11.5	8.0
12	Na (mg/L)	5.7	13.9	7.7	7.7	5.0	8.4	6.4	4.8	10.4	6.4	5.3	15.5	4.4	5.6	5.6	10.0	8.7	11.4	9.0	7.5	10.1	7.0	8.0	11.0	6.3	8.0	60.2	5.6	13.1
13	NH3-N (mg N/L)																													
14	NO2+NO3 (mg N/L)	3.26	1.07	1.62	0.72	2.63	2.25	0.38	0.61	1.27	1.71	1.07	1.05	1.20	1.20		0.34	0.38	2.67	1.07	4.82	2.47	0.41	0.70	1.45	0.93	1.01	1.01	1.19	1.17
15	NO2-N (mgN/L)	0.04	0.02	0.03	0.00	0.00	0.00	0.07	0.00	0.00	0.01	0.01	0.01	0.02	0.00		0.04	0.03	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.02	0.02	0.01	0.00	0.00
16	NO3-N (mgN/L)	3.22	1.05	1.59	0.72	2.63	2.25	0.31	0.61	1.27	1.70	1.06	1.04	1.18	1.20		0.30	0.35	2.67	1.07	4.82	2.47	0.34	0.70	1.45	0.91	0.98	0.99	1.19	1.17
17	o-PO4-P (mg P/L)	0.000	0.021	0.000		0.002											0.000	0.034	0.000		0.000									
18	P-Tot (mgP/L)	0.001	0.021	0.001	0.002	0.004	0.001	0.010	0.001	0.001	0.001	0.001	0.010	0.001	0.001	0.001	0.001	0.027	0.001	0.002	0.002	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001	0.001
19	SiO2 (mg/L)	19.1	17.1	9.2	9.9	8.9	7.8	9.8	13.4	13.1	6.0	6.0	6.8	8.1	9.2	8.5	21.2	20.4	14.2	9.0	9.9	4.1	14.3	13.3	12.8	4.4	5.8	6.5	7.9	9.3
20	SO4 (mg/L)	4.5	13.9	5.5	10.6	10.9	11.3	12.7	26.9	15.0	12.7	9.4	22.5	18.3	16.4	17.3	16.4	23.6	7.2	15.9	7.6	18.3	5.5	10.7	18.5	5.6	9.7	7.2	14.5	16.4
	BIOLOGICAL/BACTERIOLOGICAL																													
1	BOD3-27 (mg/L)	0.7	0.7	1.0	1.1	1.0	1.1	1.1	0.7	0.7	0.7	1.0	0.8	0.9	1.3	0.7	0.7	0.9	0.9	1.1	1.5	1.4	1.3	0.4	0.4	1.6	1.1	1.0	0.7	2.3
2	DO (mg/L)	6.3	6.8	6.8	6.8	6.6	6.7	6.7	6.6	6.8	5.8	6.3	7.4	6.1	5.5	4.4	7.7	7.6	7.3	8.1	8.3	7.4	7.8	7.6	7.9	9.5	7.3	8.8	7.1	6.9
3	DO_SAT% (%)	82	89	89	89	88	89	87	88	89	76	80	96	82	72	57	86	87	81	94	92	83	88	88	88	102	82	94	79	78
4	FCol-MPN (MPN/100mL)												7	80	55													70	68	
5	Tcol-MPN (MPN/100mL)												11	192	143													143	183	
	TRACE & TOXIC																													
1	Al (mg/L)																	0.90												
	CHEMICAL INDICES																													
1	HAR_Ca (mgCaCO3/L)	31	57	32	32	30	38	33	39	42	31	42	115	86	57	36	38	47	41	70	43	63	45	50	46	37	47	93	90	57
2	HAR_Total (mgCaCO3/L)	47	82	51	49	54	53	55	65	59	53	72	181	144	97	64	57	73	64	114	80	104	67	110	67	60	78	168	138	90
3	Na% (%)	22	23	25	25	16	26	20	13	28	20	15	15	6	11	14	26	20	27	15	17	17	18	14	26	18	18	37	8	23
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.1	0.2	0.0	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.3	0.0	0.0	0.0
5	SAR (-)	0.4	0.6	0.5	0.5	0.3	0.5	0.4	0.3	0.6	0.4	0.3	0.5	0.2	0.3	0.3	0.6	0.4	0.6	0.4	0.4	0.4	0.4	0.3	0.6	0.4	0.4	2.0	0.2	0.6
	PESTICIDES																													

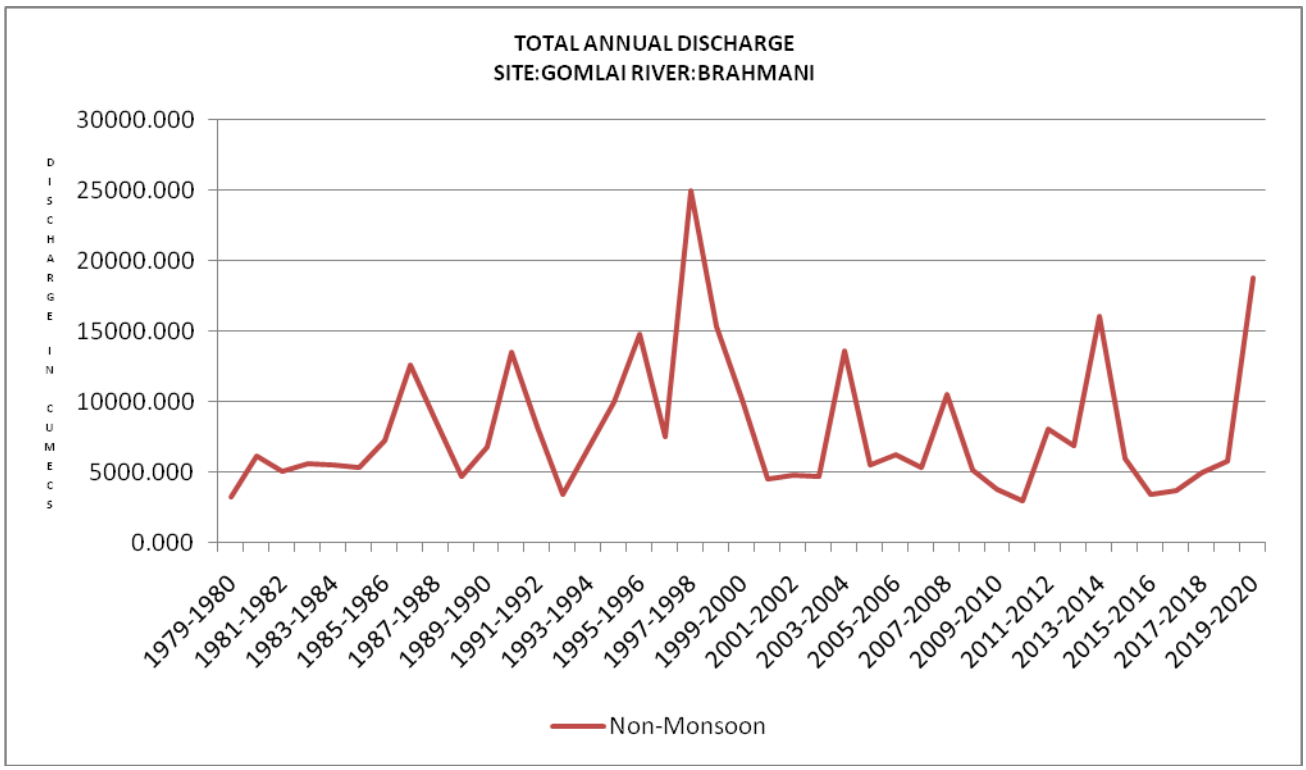
Water Quality Seasonal Average for the period: 2005-2020

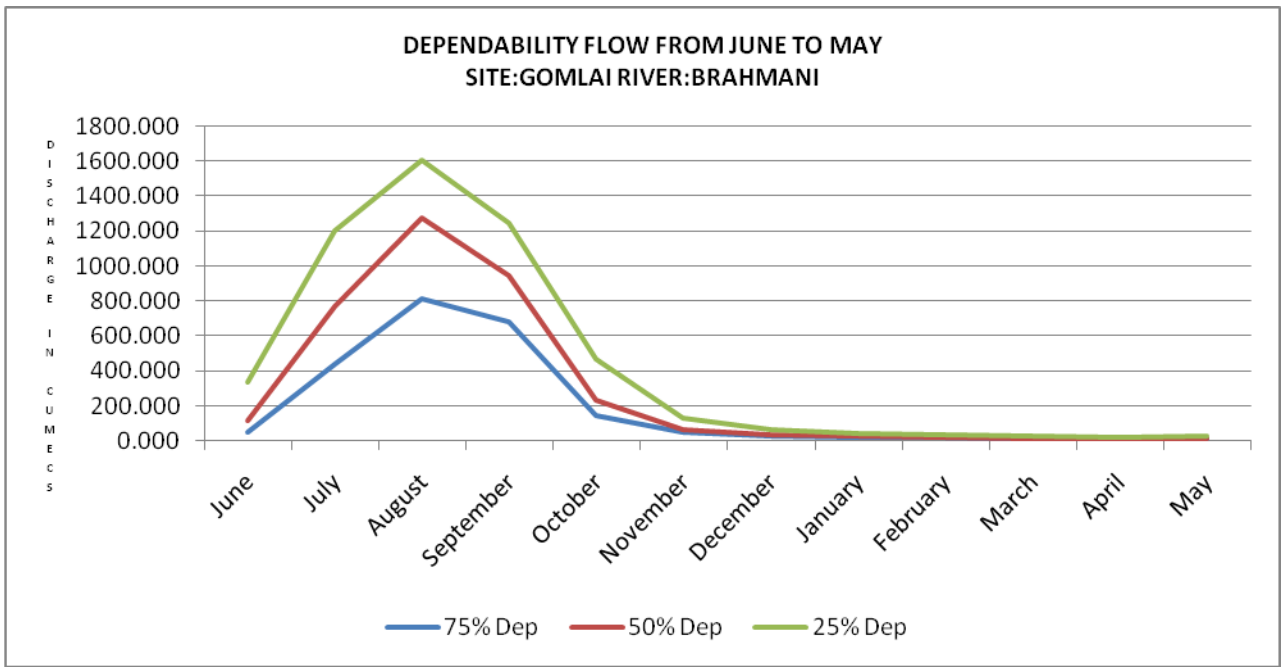
Station Name : GOMLAI (EB000W3) | **Division : E.E., Bhubaneswar**

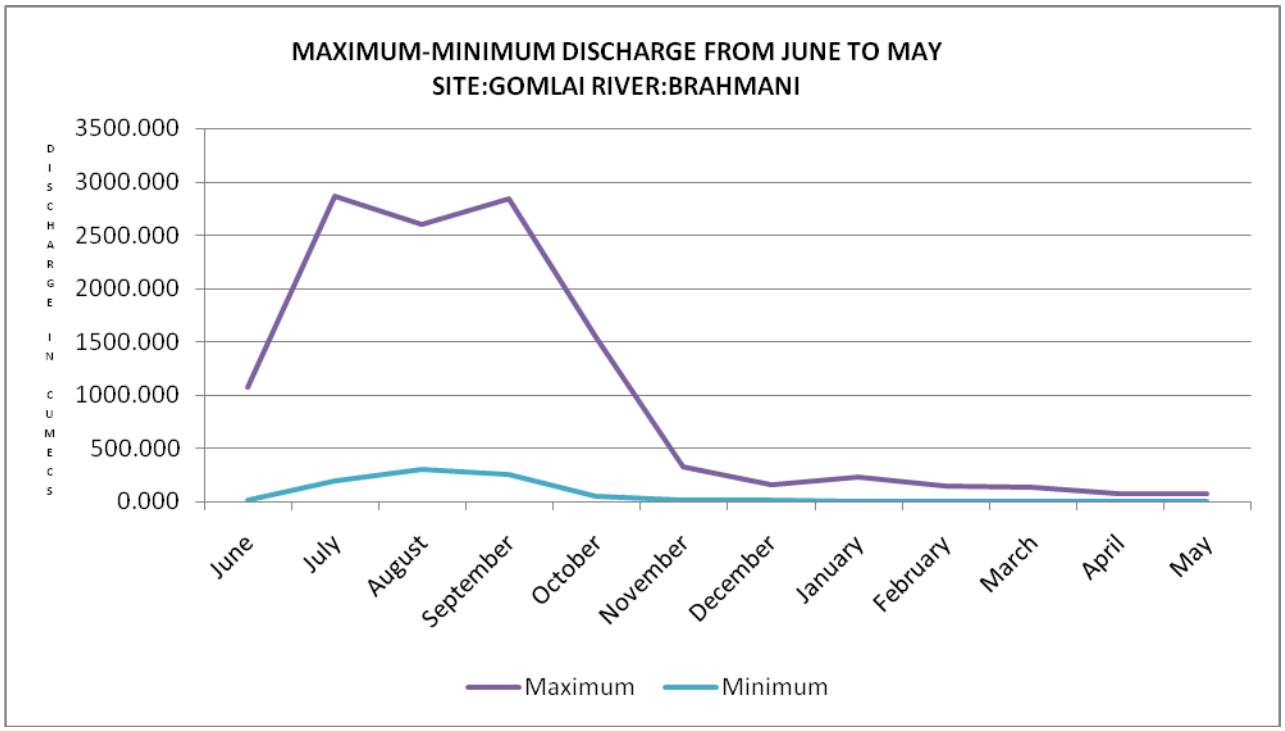
Local River : Brahmani | **River Water** | **Sub-Division : Rourkela**

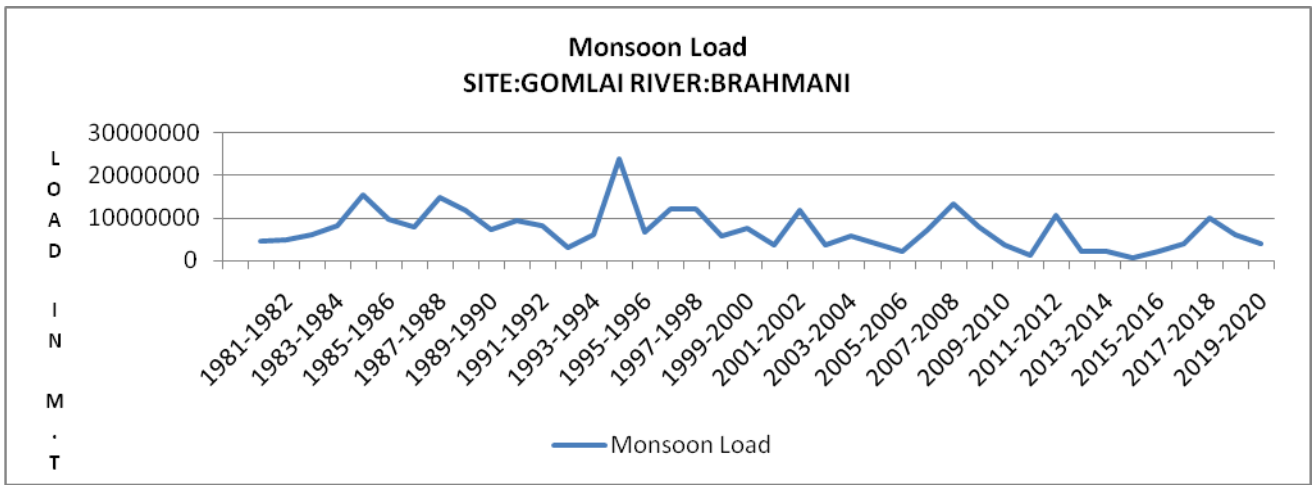
S.No	Parameters		Summer														
			Mar - May														
		2019-2020	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	PHYSICAL																
1	Q (cumec)																
2	EC_FLD (µmho/cm)	186	236	230	228	247	207	363	223	267	207	228	426	294	299	170	18
3	EC_GEN (µmho/cm)	214	233	227	233	247	207	363	223	267	207	228	432	299	294	171	409
4	pH_FLD (pH units)	7.8	7.6	8.1	8.1	8.0	7.9	8.1	7.6	7.8	7.8	7.8	7.9	7.8	7.7	7.5	9.1
5	pH_GEN (pH units)	7.4	7.6	8.1	8.1	8.0	7.9	8.1	7.6	7.9	7.8	7.8	7.7	7.8	7.7	7.6	7.9
6	TDS (mg/L)						140	238									
7	Temp (deg C)	22.5	26.8	25.7	26.0	27.5	23.3	24.2	29.8	27.0	26.8	25.3	25.3	25.3	26.2	28.0	
	CHEMICAL																
1	Alk-Phen (mgCaCO3/L)	0.0		0.0	0.0	0.0	0.0	3.9	0.0		0.0	0.0	4.6	0.0	0.0	0.0	
2	ALK-TOT (mgCaCO3/L)	54		131	79	76	49	73	68		76	65	66	60	95	79	
3	B (mg/L)		0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.02	
4	Ca (mg/L)	25	23	24	24	22	17	32	23	19	19	18	34	36	31	22	25
5	Cl (mg/L)	32.1	15.3	14.4	14.7	16.2	18.6	25.8	22.6	15.8	13.5	16.4	23.3	30.2	20.2	19.2	66.4
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.0	5.5	0.0	0.0	0.0	
7	F (mg/L)	0.45	0.06	0.08	0.05	0.05	0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05		
8	Fe (mg/L)		0.1	0.1	0.0	0.1	0.1	0.1	0.1	1.9	0.1	0.3	0.4	0.5	0.5		
9	HCO3 (mg/L)	76	89	93	97	93	60	79	83	88	93	57	70	73	116	97	68
10	K (mg/L)	41.2	3.0	3.0	1.4	2.7	2.6	3.7	2.4	2.7	1.4	1.7	2.8	43.7	2.7	4.5	3.9
11	Mg (mg/L)	4.2	9.0	8.7	9.1	9.4	9.1	14.6	5.2	11.9	4.3	6.5	13.0	19.5	11.4	9.9	7.5
12	Na (mg/L)	15.8	9.3	12.7	10.4	10.6	10.1	15.6	9.4	11.3	8.3	5.7	12.8	86.7	9.6	12.0	10.5
13	NH3-N (mg N/L)				0.05												
14	NO2+NO3 (mg N/L)		4.02	4.95	0.57	2.07	3.21	6.01	0.42	0.71	1.48	0.70	0.89	1.23	1.19		
15	NO2-N (mgN/L)		0.06	0.04	0.00	0.00	0.00	1.75	0.07	0.00	0.01	0.00	0.01	0.01	0.00		
16	NO3-N (mgN/L)		3.96	4.91	0.57	2.07	3.21	4.26	0.35	0.71	1.47	0.70	0.88	1.21	1.19		
17	o-PO4-P (mg P/L)		0.000	0.000			0.000										
18	P-Tot (mgP/L)		0.001	0.001	0.050	0.005	0.001	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001	0.001	
19	SiO2 (mg/L)		22.4	15.3	10.1	9.0	8.7	2.9	17.3	13.7	13.3	4.3	5.0	7.7	8.6	7.9	
20	SO4 (mg/L)	9.7	11.2	10.7	10.8	12.6	15.4	34.7	11.0	20.1	14.3	6.2	15.0	30.9	19.1	22.3	8.4
	BIOLOGICAL/BACTERIOLOGICAL																
1	BOD3-27 (mg/L)	1.1	0.9	1.0	1.1	1.2	1.2	1.2	1.1	0.6	1.0	0.9	0.9	0.9	1.5	1.0	0.8
2	DO (mg/L)	5.5	7.4	7.0	6.8	7.1	7.0	6.7	6.5	6.4	7.3	6.1	6.2	7.2	5.0	4.8	4.8
3	DO_SAT% (%)	64	91	86	83	90	82	79	84	79	90	74	76	87	62	62	
4	FCol-MPN (MPN/100mL)													77	83		
5	Tcol-MPN (MPN/100mL)													123	213		
	TRACE & TOXIC																
1	Al (mg/L)													0.00			
	CHEMICAL INDICES																
1	HAR_Ca (mgCaCO3/L)	64	58	60	60	56	41	80	57	47	48	44	84	91	76	56	63
2	HAR_Total (mgCaCO3/L)	81	95	96	97	95	79	141	79	97	66	71	138	172	124	97	94
3	Na% (%)	17	17	21	19	20	21	19	20	20	22	14	17	46	14	20	19
4	RSC (-)	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	
5	SAR (-)	0.8	0.4	0.6	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.3	0.5	2.9	0.4	0.5	0.5
	PESTICIDES																

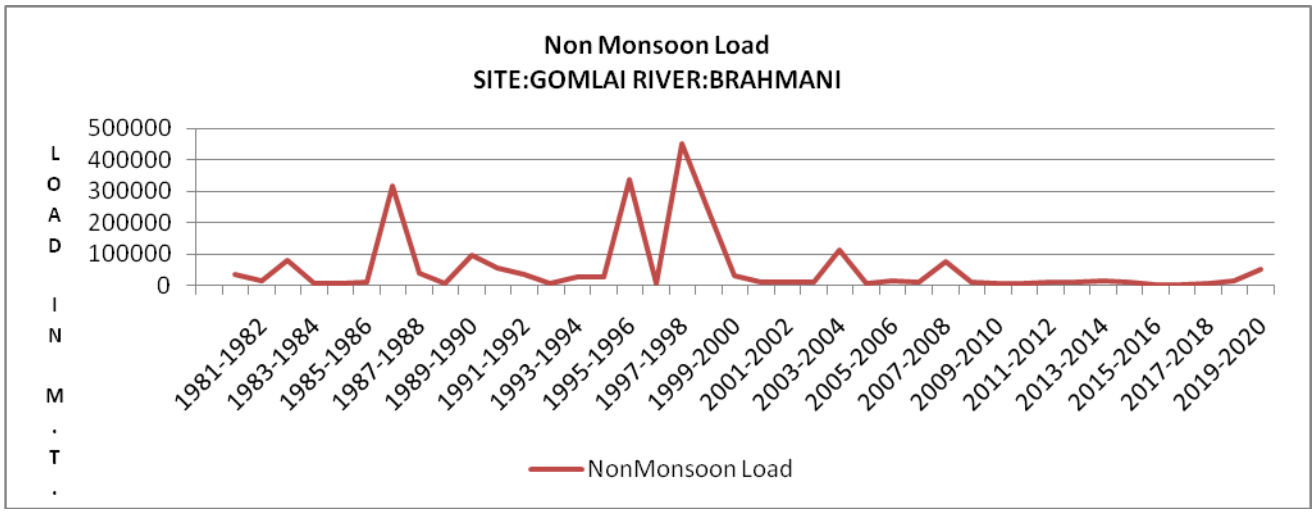

TOTAL ANNUAL DISCHARGE
SITE:GOMLAI RIVER:BRAHMANI
DISCHARGE IN CUMECS
300000.000
250000.000
200000.000
150000.000
100000.000
50000.000
0.000
1979-1980
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
2019-2020
Monsoon
Annual Runoff (cumecs)

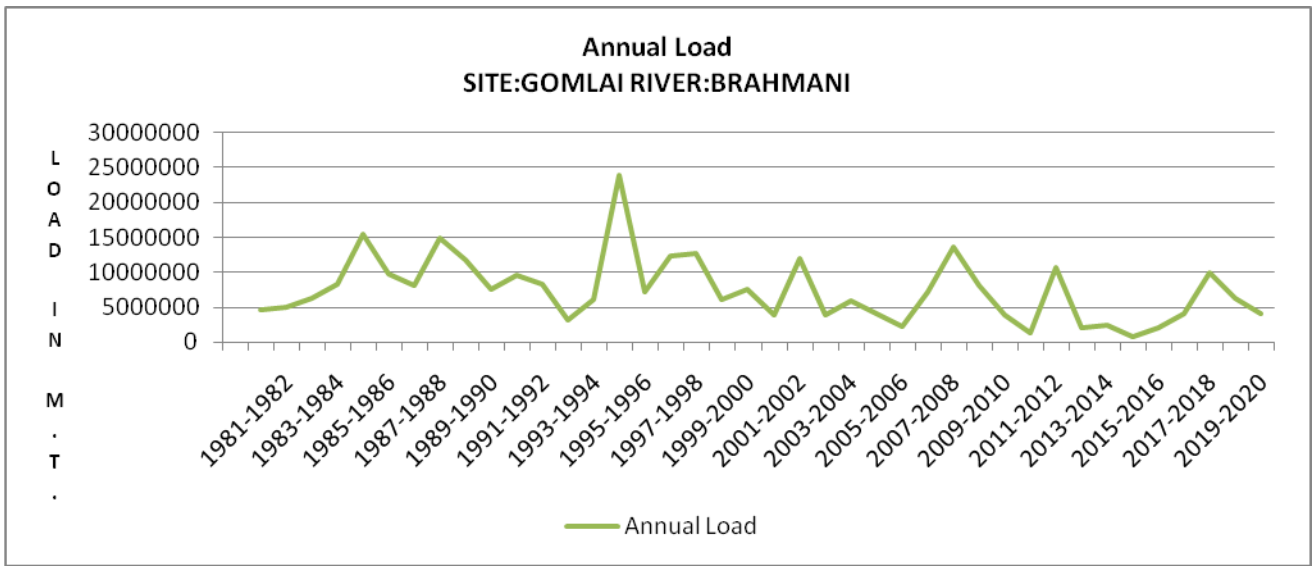

TOTAL ANNUAL DISCHARGE
SITE:GOMLAI RIVER:BRAHMANI
DISCHARGE IN CUMECS
30000.000
25000.000
20000.000
15000.000
10000.000
5000.000
0.000
1979-1980
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
2019-2020
Non-Monsoon

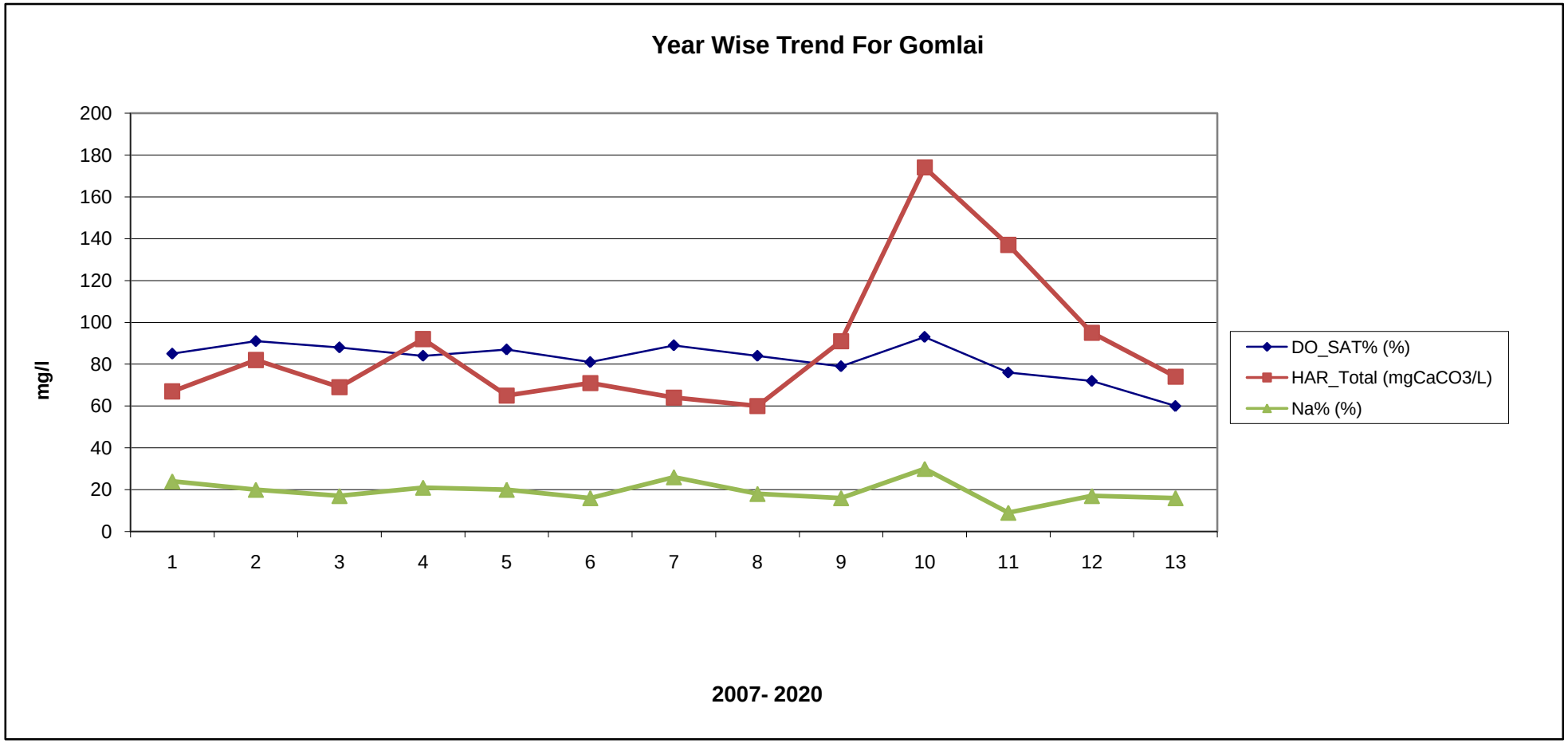

DEPENDABILITY FLOW FROM JUNE TO MAY
SITE:GOMLAI RIVER:BRAHMANI
DISCHARGE IN CUMECS
1800.000
1600.000
1400.000
1200.000
1000.000
800.000
600.000
400.000
200.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
75% Dep
50% Dep
25% Dep

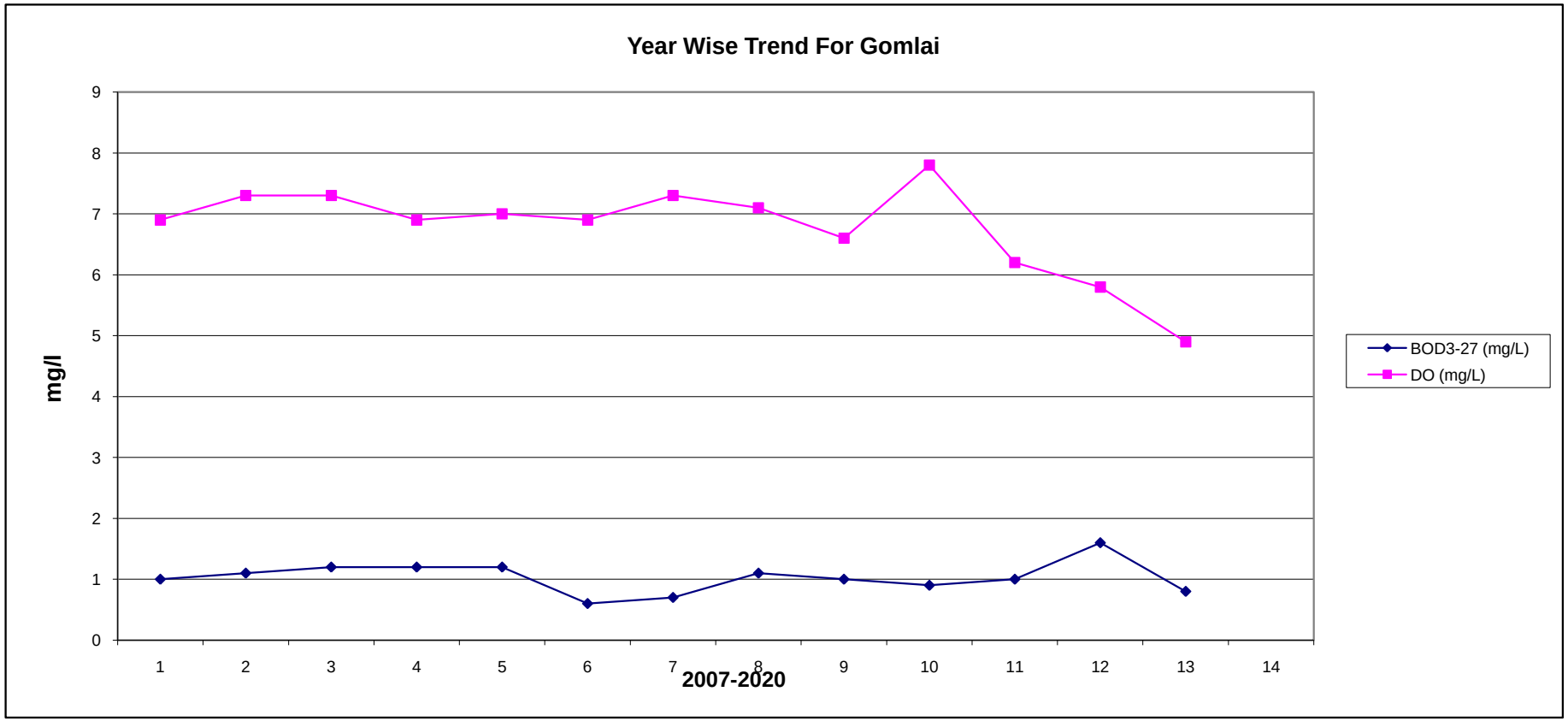

MAXIMUM-MINIMUM DISCHARGE FROM JUNE TO MAY
SITE:GOMLAI RIVER:BRAHMANI
DISCHARGE IN CUMECS
3500.000
3000.000
2500.000
2000.000
1500.000
1000.000
500.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
Maximum
Minimum

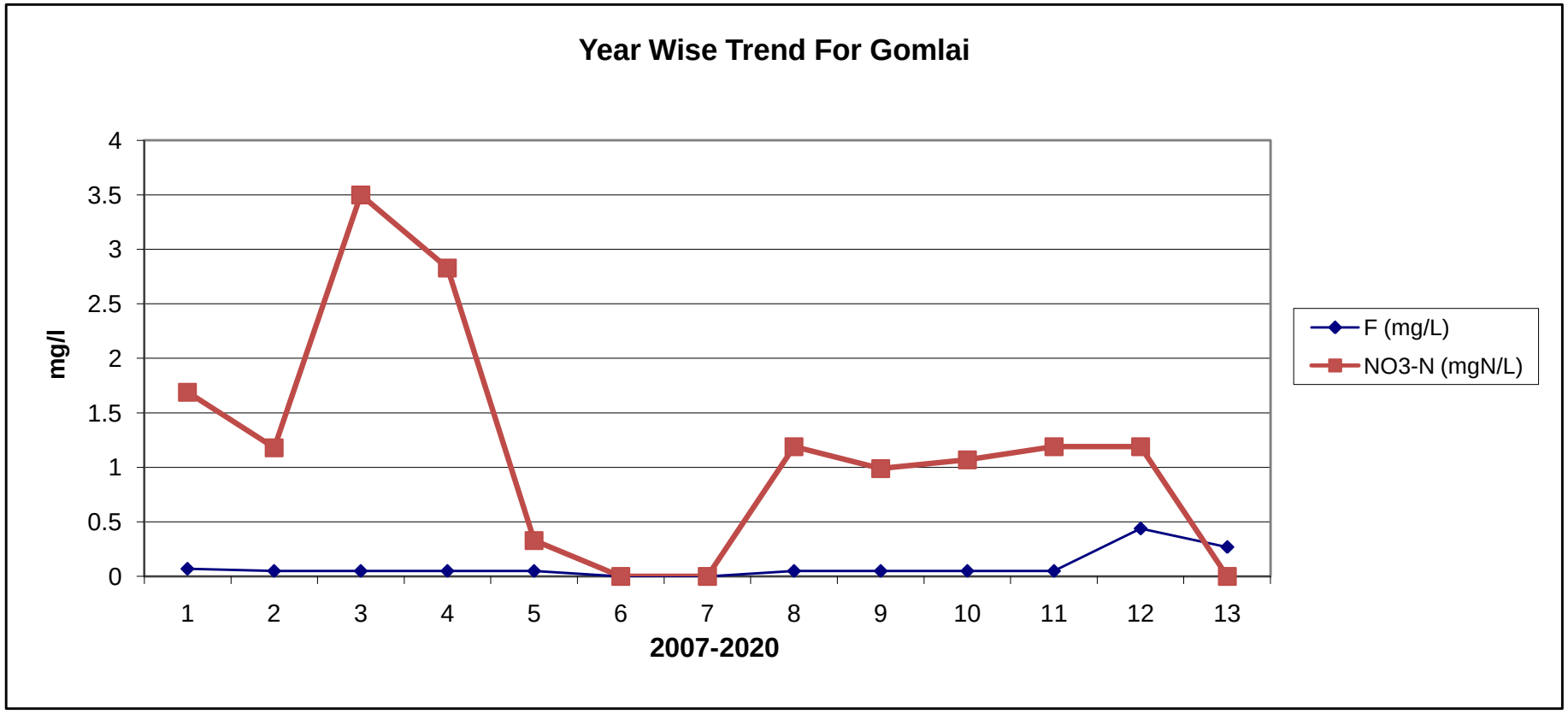

Monsoon Load
SITE:GOMLAI RIVER:BRAHMANI
LOAD IN M.T
30000000
20000000
10000000
0
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
2019-2020
Monsoon Load

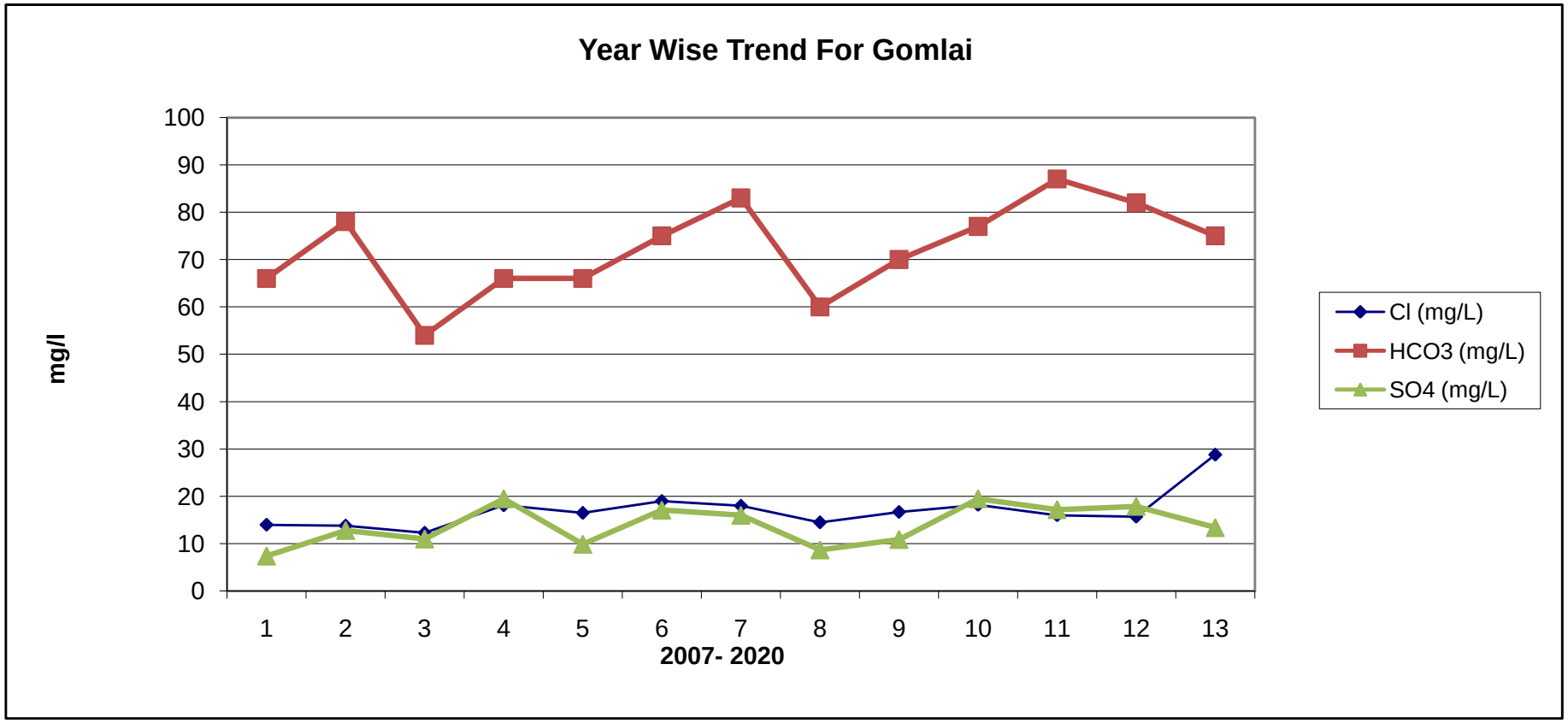

Non Monsoon Load
SITE:GOMLAI RIVER:BRAHMANI
LOAD IN M.T.
500000
400000
300000
200000
100000
0
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
2019-2020
NonMonsoon Load

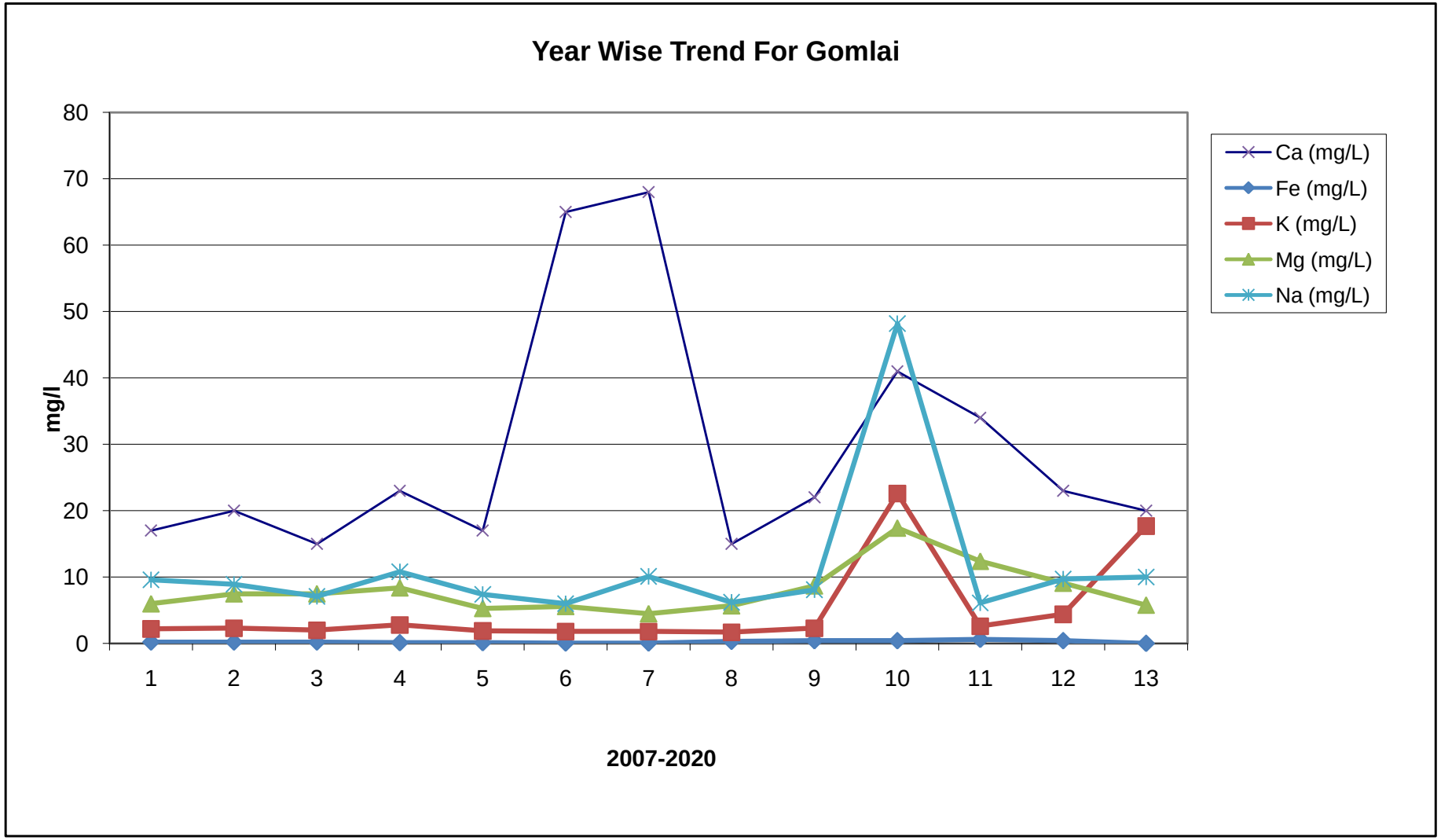

Annual Load
SITE:GOMLAI RIVER:BRAHMANI
LOAD IN M.T.
30000000
25000000
20000000
15000000
10000000
5000000
0
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
2019-2020
Annual Load


Year Wise Trend For Gomlai
mg/l
200
180
160
140
120
100
80
60
40
20
0
1
2
3
4
5
6
7
8
9
10
11
12
13
DO_SAT% (%)
HAR_Total (mgCaCO3/L)
Na% (%)
2007- 2020


Year Wise Trend For Gomlai
mg/l
9
8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
2007-2020
BOD3-27 (mg/L)
DO (mg/L)


Year Wise Trend For Gomlai
mg/l
4
3.5
3
2.5
2
1.5
1
0.5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend For Gomlai
mg/l
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007- 2020
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year Wise Trend For Gomlai
80
70
60
50
40
30
20
10
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
Ca (mg/L)
Fe (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

SITE JENAPUR

SECTION-I(HISTORY SHEET,DISCHARGE,CROSS SECTION)

HISTORY SHEET

Water Year : 2019-2020

Site	**:**	**Jenapur**	**Code**	**:**	**EB000G6**
State	:	Orissa	District		Jajpur
Basin	:	Brahmani-Baitarani	Independent River	:	Brahmni
Tributary	:	Brahmni	Sub Tributary	:	Brahmni
Sub-Sub Tributary	:	Brahmni	Local River	:	Brahmni
Division	:	E.E., Bhubaneswar	Sub-Division	:	Rourkela
Drainage Area	:	33955 Sq. Km.	Bank	:	Right
Latitude	:	20°52'44"	Longitude	:	86°00'52"
Zero of Gauge (m)	:	13 (m.s.l)	1/1/1975	-	12/31/2025
		Opening Date	Closing Date		
Gauge	:	7/9/1977			
Discharge	:	7/20/1979			
Sediment	:	7/9/1980			
Water Quality	:	3/1/1980			

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1980-1981	3036	21.210	9/9/1980	18.52	16.365	3/23/1981
1981-1982	2805	20.800	8/17/1981	14.96	16.745	5/21/1982
1982-1983	4660	22.210	8/23/1982	6.465	16.630	4/16/1983
1983-1984	8506	22.960	9/7/1983	5.120	16.810	5/21/1984
1984-1985	9702	23.475	8/18/1984	8.500	16.870	6/3/1984
1985-1986	7485	22.360	8/29/1985	6.995	16.870	6/14/1985
1986-1987	5057	22.200	7/23/1986	91.10	17.500	6/13/1986
1987-1988	4738	21.550	8/31/1987	82.17	17.355	5/13/1988
1988-1989	6217	22.175	8/4/1988	77.70	17.580	5/31/1989
1989-1990	4312	21.395	7/28/1989	78.90	17.490	4/5/1990
1990-1991	4595	21.673	10/15/1990	41.00	17.190	5/2/1991
1991-1992	9151	22.880	8/14/1991	45.77	17.170	4/26/1992
1992-1993	4892	21.680	7/29/1992	20.99	16.790	4/3/1993
1993-1994	3346	20.630	9/30/1993	26.75	17.080	4/23/1994
1994-1995	8952	22.860	9/19/1994	65.00	17.200	6/12/1994
1995-1996	3823	21.410	9/21/1995	82.06	17.750	1/24/1996
1996-1997	4652	21.680	6/23/1996	57.68	17.440	2/28/1997
1997-1998	7135	22.560	8/6/1997	75.60	17.860	1/14/1998
1998-1999	5173	22.040	9/14/1998	85.80	17.880	3/31/1999
1999-2000	8053	22.640	10/31/1999	110.0	17.680	5/28/2000
2000-2001	3545	21.320	7/30/2000	37.00	17.270	5/7/2001
2001-2002	10077	23.360	7/25/2001	49.62	17.570	5/30/2002

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
2002-2003	2002	20.220	9/9/2002	49.59	17.450	6/8/2002
2003-2004	5622	22.140	10/27/2003	61.01	17.600	4/6/2004
2004-2005	3906	21.380	8/23/2004	56.53	17.660	6/23/2004
2005-2006	10314	23.060	7/31/2005	45.00	17.540	4/23/2006
2006-2007	9804	23.110	8/24/2006	41.51	17.260	5/28/2007
2007-2008	7568	22.590	9/28/2007	40.28	17.260	3/12/2008
2008-2009	7489	22.240	9/19/2008	48.19	17.120	4/9/2009
2009-2010	6466	22.290	7/22/2009	34.55	17.060	2/5/2010
2010-2011	952.9	19.230	8/7/2010	52.00	17.300	2/20/2011
2011-2012	10372	23.730	9/26/2011	27.60	17.280	6/5/2011
2012-2013	3234	20.920	8/27/2012	23.59	19.120	10/17/2012
2013-2014	4059	21.650	10/14/2013	40.46	17.440	2/10/2014
2014-2015	7963	22.740	8/6/2014	17.56	17.560	3/8/2015
2015-2016	3916	21.130	8/6/2015	21.19	17.600	2/7/2016
2016-2017	3315	21.110	8/5/2016	26.90	18.540	5/23/2017
2017-2018	7041	22.520	7/29/2017	38.22	17.420	2/8/2018
2018-2019	4511	21.060	9/7/2018	44.54	17.540	2/6/2019
2019-2020	3467	21.140	9/9/2019	39.00	18.430	5/17/2020

Stage-Discharge Data for the period 2019 - 2020

Station Name : Jenapur (EB000G6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

Day	Jun		Jul		Aug		Sep		Oct		Nov	
	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q
1	17.920	102.7	17.680	169.1	18.065	185.3	31.655	522.0	18.845	774.6	18.800	665.9
2	17.720	72.00 *	17.850	217.9	18.060	184.5	18.805	719.1	19.140	1002 *	18.650	588.2
3	17.860	100.8	17.805	226.6	18.495	751.9	18.590	576.1	20.170	2437	18.700	481.4 *
4	17.640	80.06	17.780	210.9 *	18.580	613.1 *	18.630	564.4	20.175	2645	18.720	546.1
5	17.620	76.12 *	17.745	259.8	18.610	696.9	19.010	900.6	19.700	1980	18.720	539.4
6	17.390	66.75	17.710	155.2	18.170	244.2	18.915	776.5	18.520	504.9 *	18.630	568.6
7	17.240	67.33	17.740	152.1 *	18.005	224.0	19.160	963.8	18.700	580.3 *	18.420	415.6
8	17.300	70.97	17.965	285.0	18.655	604.9	20.270	1843 *	18.880	620.4 *	18.700	622.8
9	17.340	56.24 *	17.935	265.2	18.475	427.1	21.140	3467 *	19.920	1878	18.330	324.9
10	17.520	89.36	17.775	194.6	18.230	351.9	20.390	2222	19.020	849.6	18.180	267.8 *
11	17.530	95.06	18.800	788.6	18.490	387.6 *	19.375	1346	18.990	927.3	18.160	296.6
12	17.550	157.0	18.070	171.9	18.340	342.0 *	19.450	1140	20.015	2196	18.120	247.2 *
13	17.740	219.7	17.690	125.3	18.545	472.6	19.515	1290	20.060	1967 *	18.000	220.0
14	17.685	199.9	17.700	111.9 *	19.555	1570	19.575	1505	18.885	769.5	18.100	263.3
15	17.610	189.9	17.645	120.1	19.180	1020 *	19.480	1088 *	18.500	550.7	18.180	348.1
16	17.330	63.10 *	17.805	177.1	19.135	1084	19.455	1175	18.735	723.2	18.180	283.7
17	17.270	59.79	18.340	269.7	18.495	489.9	19.870	1861	18.790	820.1	18.090	229.3 *
18	17.220	72.31	18.140	199.6	18.440	379.9 *	18.900	646.8	18.600	482.6	18.080	256.9
19	17.180	68.53	18.045	153.4	19.320	1296	18.945	872.9	18.725	647.4	18.070	266.7
20	17.160	66.36	18.175	212.0	19.465	1345	18.970	888.6	18.650	498.9 *	18.060	256.7
21	17.380	79.84	18.310	241.3 *	19.300	1207	18.900	855.5	18.585	490.1	18.050	254.7
22	17.555	134.0	18.345	296.1	18.820	748.1	18.670	638.3 *	18.635	607.6	18.020	244.7
23	17.620	258.5 *	18.060	159.8	19.025	951.9	18.730	763.2	18.540	493.9	18.130	308.4
24	17.565	158.6	17.895	179.5	19.365	1495	18.880	743.2	18.730	666.6	18.260	330.0 *
25	17.490	139.7	17.940	198.0	19.570	1611 *	18.915	801.1	19.130	1094	18.130	280.9
26	17.470	133.6	18.075	263.8	19.305	1321	19.340	1347	19.790	1795	18.020	253.2
27	17.485	147.5	18.285	306.7	19.150	1175	19.050	939.7	19.500	1093 *	18.000	236.6
28	17.725	204.3	18.210	257.1 *	19.175	1144	19.010	952.6	20.180	2567	17.960	237.5
29	17.850	224.3	18.090	257.1	19.125	1105	18.960	752.5 *	20.100	2545	17.980	187.3
30	17.680	148.2 *	18.150	303.3	18.870	723.8	19.090	1069	18.965	855.4	17.980	180.3
31			18.060	207.6	18.820	688.2			18.800	674.6		
Ten-Daily Mean												
I Ten-Daily	17.555	78.23	17.798	213.6	18.334	428.4	20.657	1255	19.307	1327	18.585	502.1
II Ten-Daily	17.427	119.2	18.041	233.0	18.896	838.6	19.354	1181	18.995	958.3	18.104	266.8
III Ten-Daily	17.582	162.8	18.129	242.8	19.139	1106	18.954	886.2	19.178	1171	18.053	251.4
Monthly												
Min.	17.160	56.24	17.645	111.9	18.005	184.5	18.590	522.0	18.500	482.6	17.960	180.3
Max.	17.920	258.5	18.800	788.6	19.570	1611	31.655	3467	20.180	2645	18.800	665.9
Mean	17.521	120.1	17.994	230.2	18.801	801.3	19.655	1108	19.160	1153	18.247	340.1

Annual Runoff in MCM = 13555 Annual Runoff in mm = 399

Peak Observed Discharge = 2645 cumecs on 04/10/2019 Corres. Water Level :20.175 m

Lowest Observed Discharge = 59.79 cumecs on 17/06/2019 Corres. Water Level :17.27 m

Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

Stage-Discharge Data for the period 2019 - 2020

Station Name : Jenapur (EB000G6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	18.000	165.3 *	17.870	153.2	17.970	176.0	17.820	143.4 *			18.630	808.3
2	18.020	194.7	17.820	149.2	17.970	160.0 *	17.980	200.0			18.630	859.8
3	17.980	180.1	17.930	193.0	17.970	182.7	17.910	186.3			18.530	549.4 *
4	17.980	174.5	17.980	201.7	17.990	192.3	17.760	122.5			18.420	407.9
5	17.990	208.7	18.030	234.1 *	17.960	172.4	18.010	214.0			18.360	385.6
6	17.980	202.8	18.000	224.3	17.990	198.8	17.930	179.8			18.320	397.8
7	17.980	199.6	18.010	233.6	18.010	206.7	17.790	152.2			18.300	343.3 *
8	18.070	222.8 *	18.000	221.5	18.250	352.3	17.970	188.4 *			18.100	333.7
9	18.270	374.6	17.950	221.1	18.310	330.0 *	18.210	298.8			18.090	318.8
10	18.080	282.6	17.980	221.2	18.110	279.8	18.230	245.0 *			18.470	400.0 *
11	18.030	202.1	17.980	217.3	18.190	296.9	17.960	166.5			18.270	381.1
12	18.040	196.3	17.950	184.9 *	18.250	348.5	18.260	332.5			18.290	391.0
13	18.080	200.9	17.900	189.0	18.230	285.2	17.970	184.1			18.340	406.8
14	18.070	207.8	17.900	189.0	17.990	194.4	17.860	154.4			18.390	426.0
15	18.070	207.8 *	17.610	89.42	18.210	280.7	17.830	126.9 *			18.480	450.1
16	18.020	196.6	17.750	151.2	18.230	280.0 *	18.210	279.4			18.290	392.0
17	17.990	194.6	17.800	154.2	18.150	273.8	17.880	232.2			18.430	39.00 *
18	17.950	183.3	17.780	146.9	17.970	203.0	18.020	216.2			18.250	383.0
19	17.880	163.5	17.780	131.7 *	18.190	308.4	18.110	263.2			18.310	376.1
20	17.870	145.9	17.700	108.7	18.010	193.6	18.100	253.7	18.440	419.8	18.480	433.1
21	17.900	150.0	17.680	102.5	17.900	170.3	18.090	232.9	18.390	406.2	18.835	639.2
22	17.930	163.9 *	17.670	102.5	18.000	184.1	18.090	203.2 *	18.960	866.1	18.220	359.5
23	18.120	251.8	17.770	135.7	18.090	235.0 *	18.310	394.0	18.360	375.3	18.190	318.5
24	18.130	240.6	17.880	178.1	17.930	170.5	18.070	226.2	18.400	365.1 *	18.180	250.0 *
25	17.990	184.4 *	17.870	168.0	18.120	286.9			18.420	383.5 *	18.280	309.1 *
26	17.990	184.4	17.850	140.0 *	17.820	142.0			18.600	544.2 *	18.380	415.0
27	17.990	190.7	17.860	139.4	17.830	150.8			18.870	897.7	18.330	449.0
28	17.970	174.2	17.840	129.2	17.870	197.1			18.700	834.1	18.100	268.2
29	17.970	174.2 *	17.750	117.6	18.010	205.6			18.810	890.8	17.950	224.7
30	17.940	161.4	17.810	137.1					18.790	884.6	18.040	248.7
31	17.910	153.3	17.850	145.6							17.930	205.6 *
Ten-Daily Mean												
I Ten-Daily	18.035	220.6	17.957	205.3	18.053	225.1	17.961	193.0			18.385	480.5
II Ten-Daily	18.000	189.9	17.815	156.2	18.142	266.4	18.020	220.9	18.440	419.8	18.353	367.8
III Ten-Daily	17.985	184.4	17.803	136.0	17.952	193.6	18.140	264.1	18.630	644.8	18.221	335.2
Monthly												
Min.	17.870	145.9	17.610	89.42	17.820	142.0	17.760	122.5	18.360	365.1	17.930	39.00
Max.	18.270	374.6	18.030	234.1	18.310	352.3	18.310	394.0	18.960	897.7	18.835	859.8
Mean	18.006	197.9	17.856	164.9	18.052	229.6	18.015	216.5	18.613	624.3	18.317	392.6

Peak Computed Discharge = 3467 cumecs on 09/09/2019 Corres. Water Level :21.14 m

Lowest Computed Discharge = 39.00 cumecs on 17/05/2020 Corres. Water Level :18.43 m

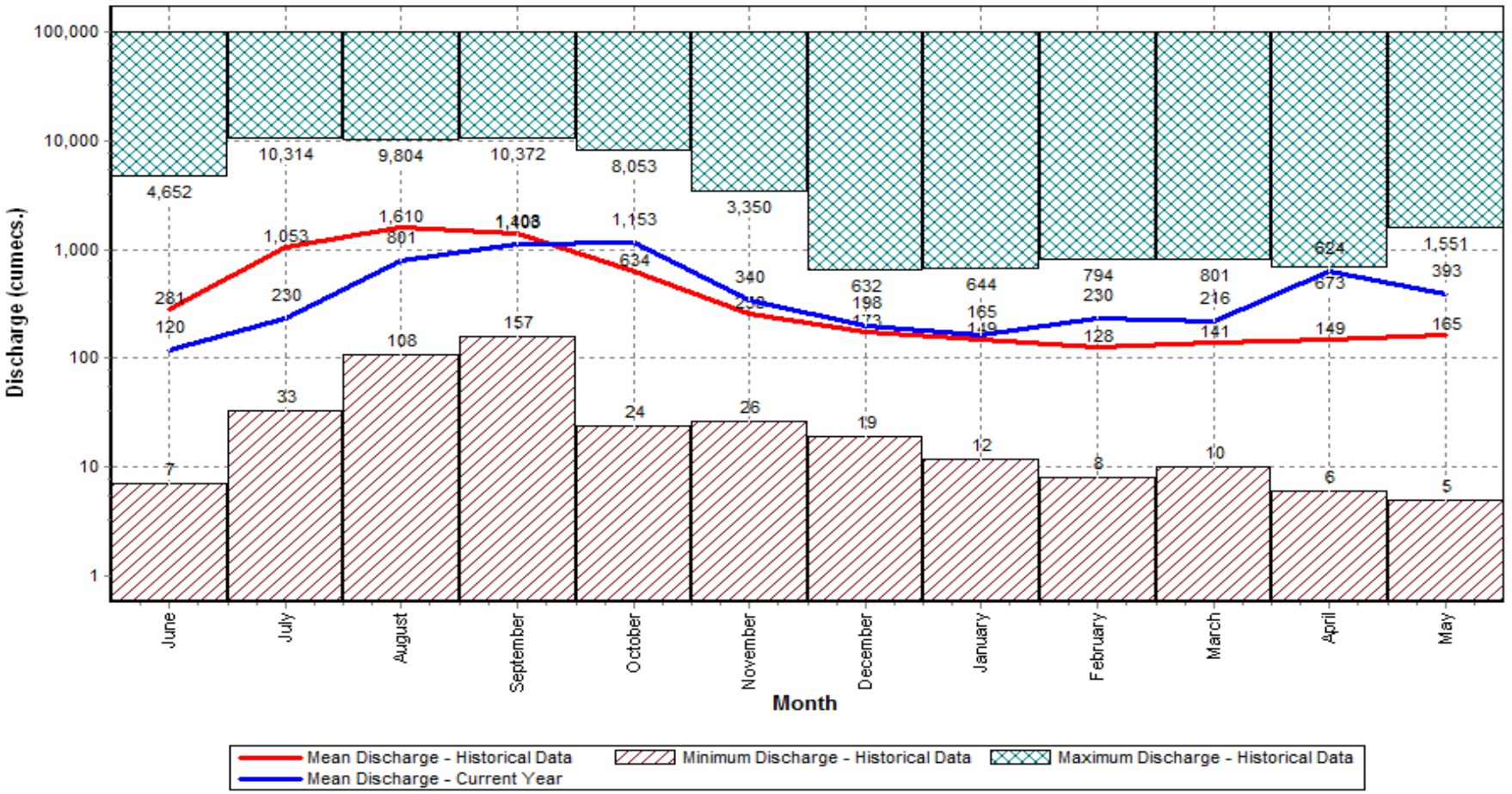
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2019-2020

Station Name : Jenapur (EB000G6) **Data considered : 1980-2020** **Division : E.E., Bhubaneswar**

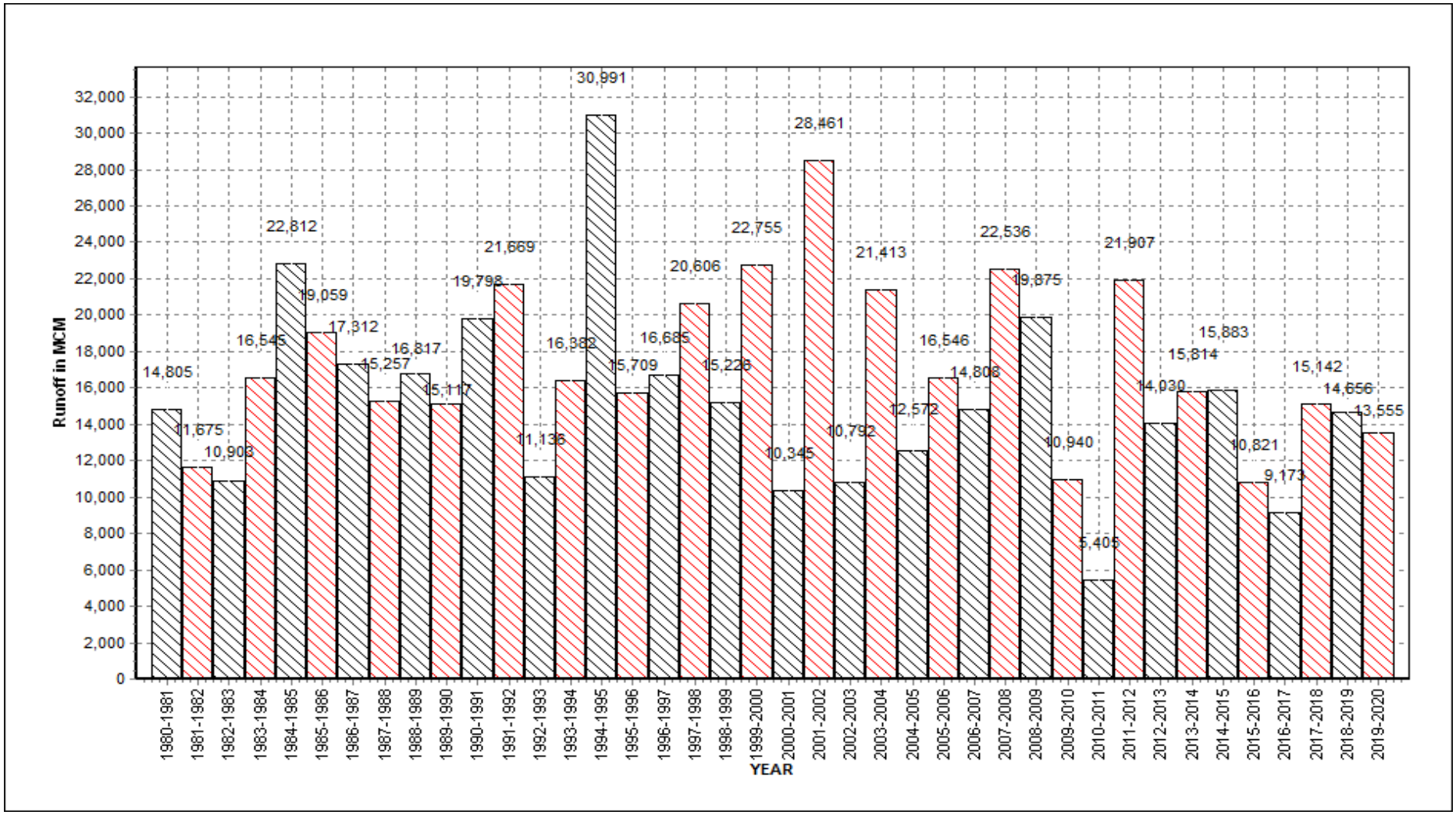
Local River : Brahmni **Sub-Division : Rourkela**



Annual Runoff Values for the period: 1980 - 2020

Station Name : Jenapur (EB000G6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

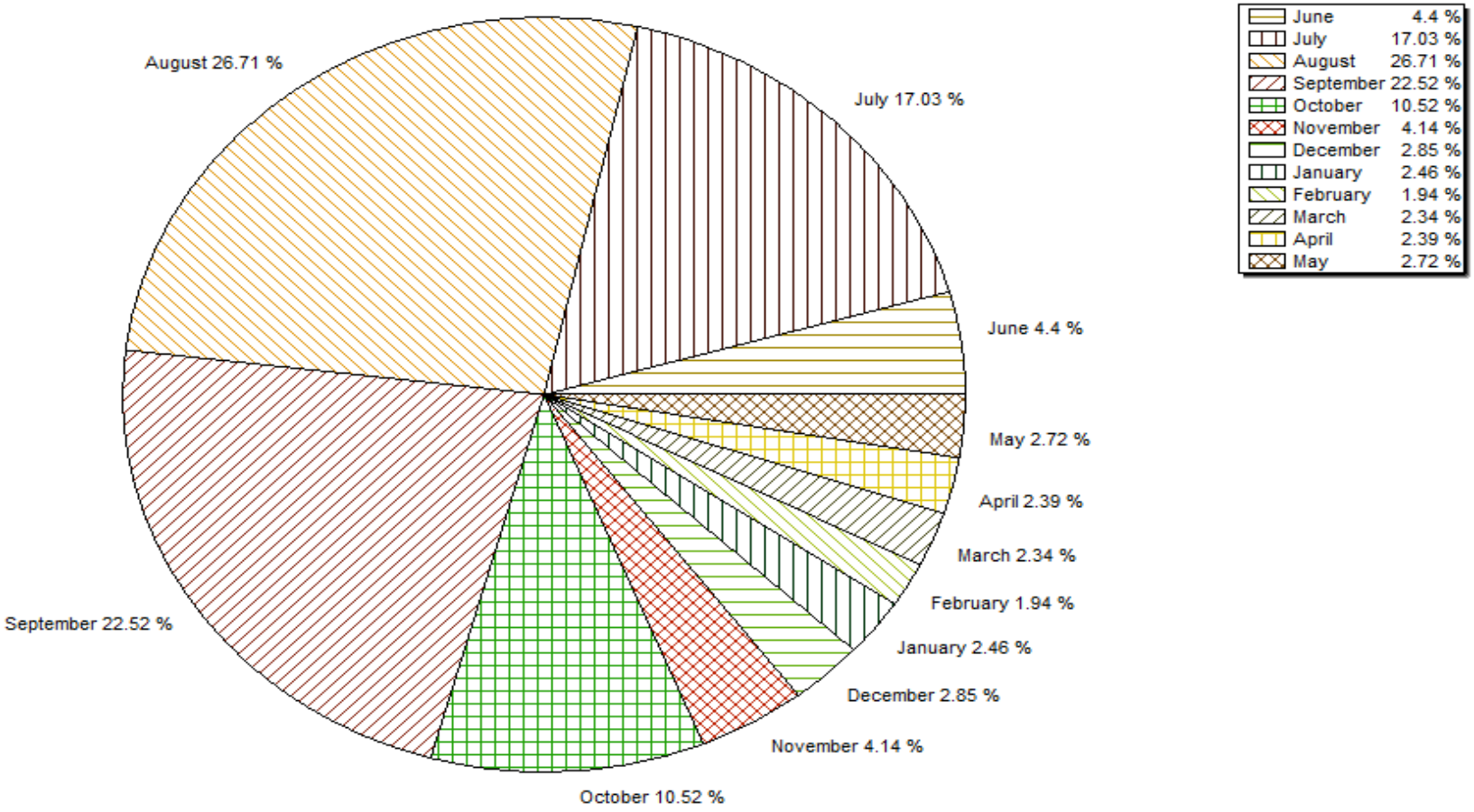


Note: Missing values have not been considered while arriving at Annual Runoff

Monthly Average Runoff based on period : 1980-2019

Station Name : Jenapur (EB000G6) **Division : E.E., Bhubaneswar**

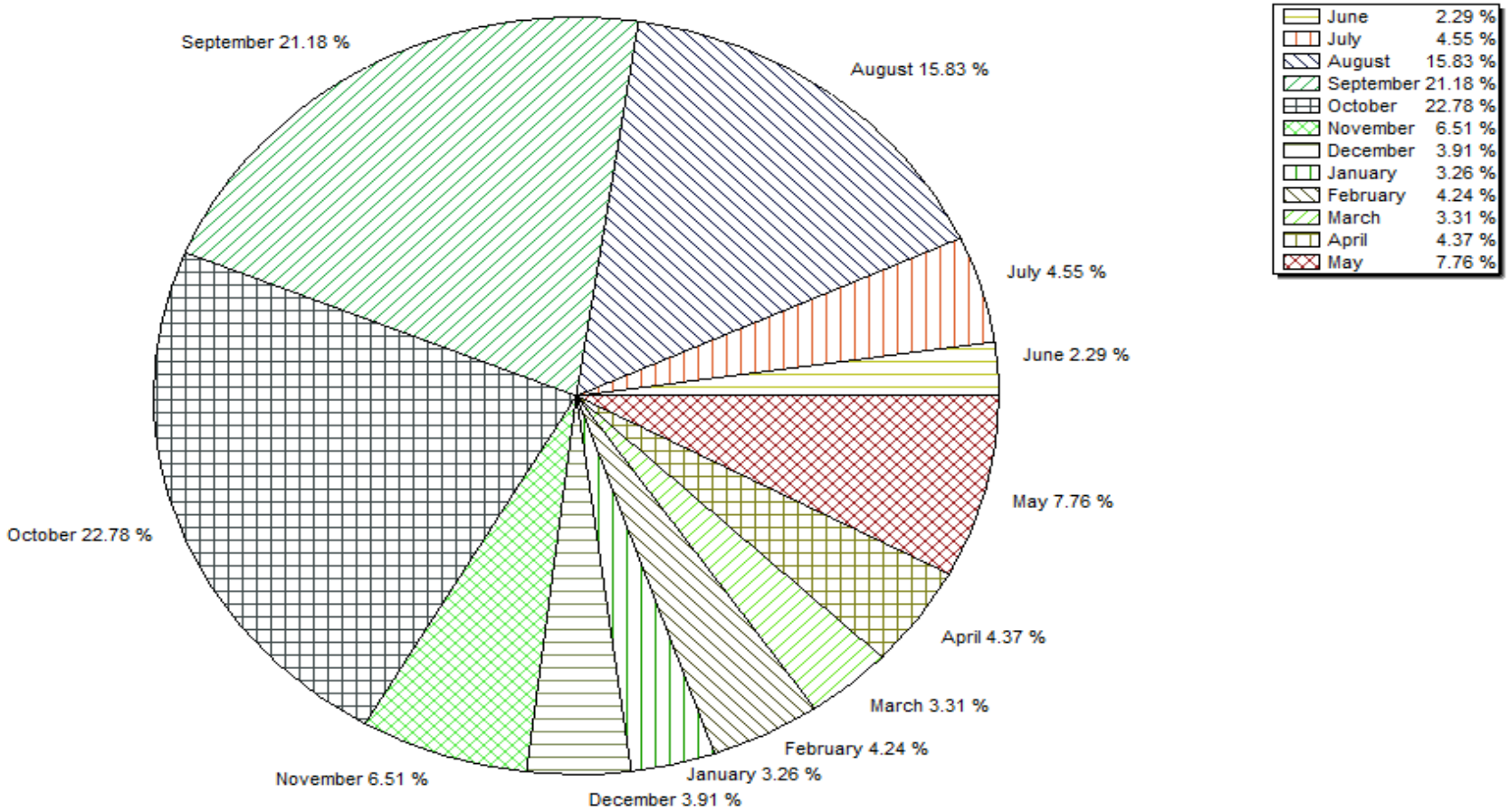
Local River : Brahmni **Sub-Division : Rourkela**



Monthly Runoff for the Year : 2019-2020

Station Name : Jenapur (EB000G6) **Division : E.E., Bhubaneswar**

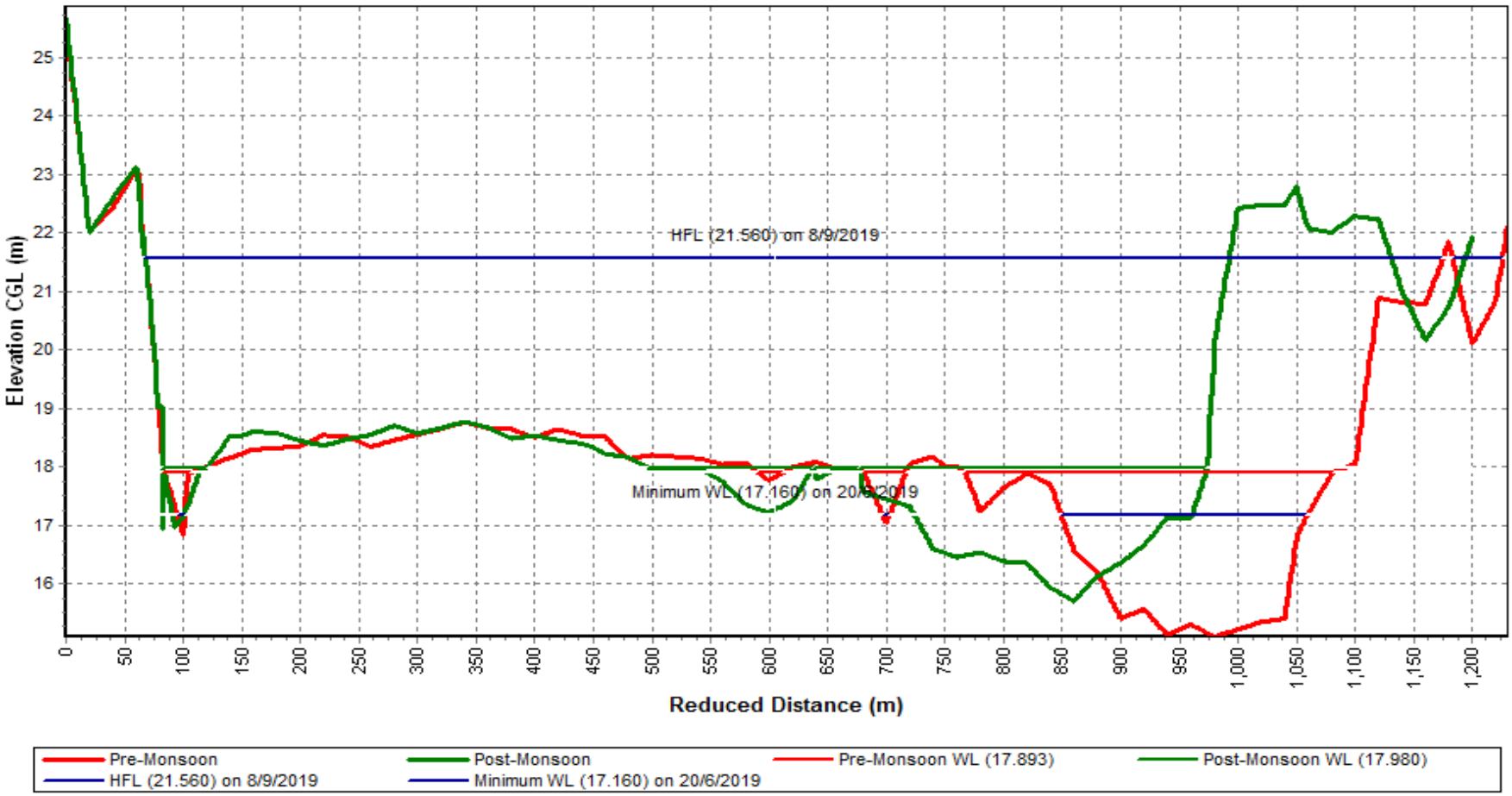
Local River : Brahmni **Sub-Division : Rourkela**



Pre-Monsoon & Post-Monsoon X-Section for Water Year : 2019-2020

Station Name : Jenapur (EB000G6) **Division : E.E., Bhubaneswar**

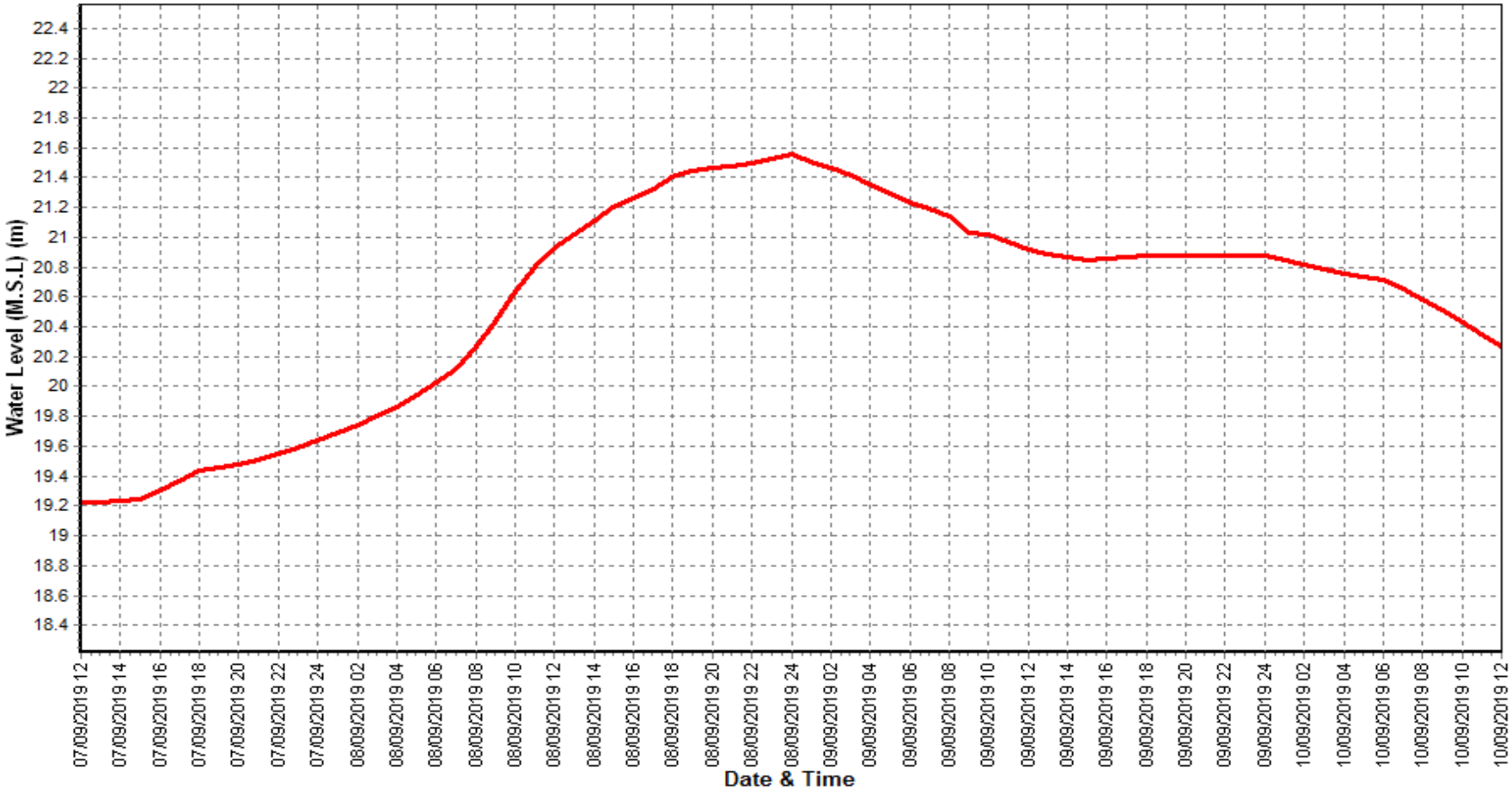
Local River : Brahmni **Sub-Division : Rourkela**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2019-2020

Station Name : Jenapur (EB000G6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

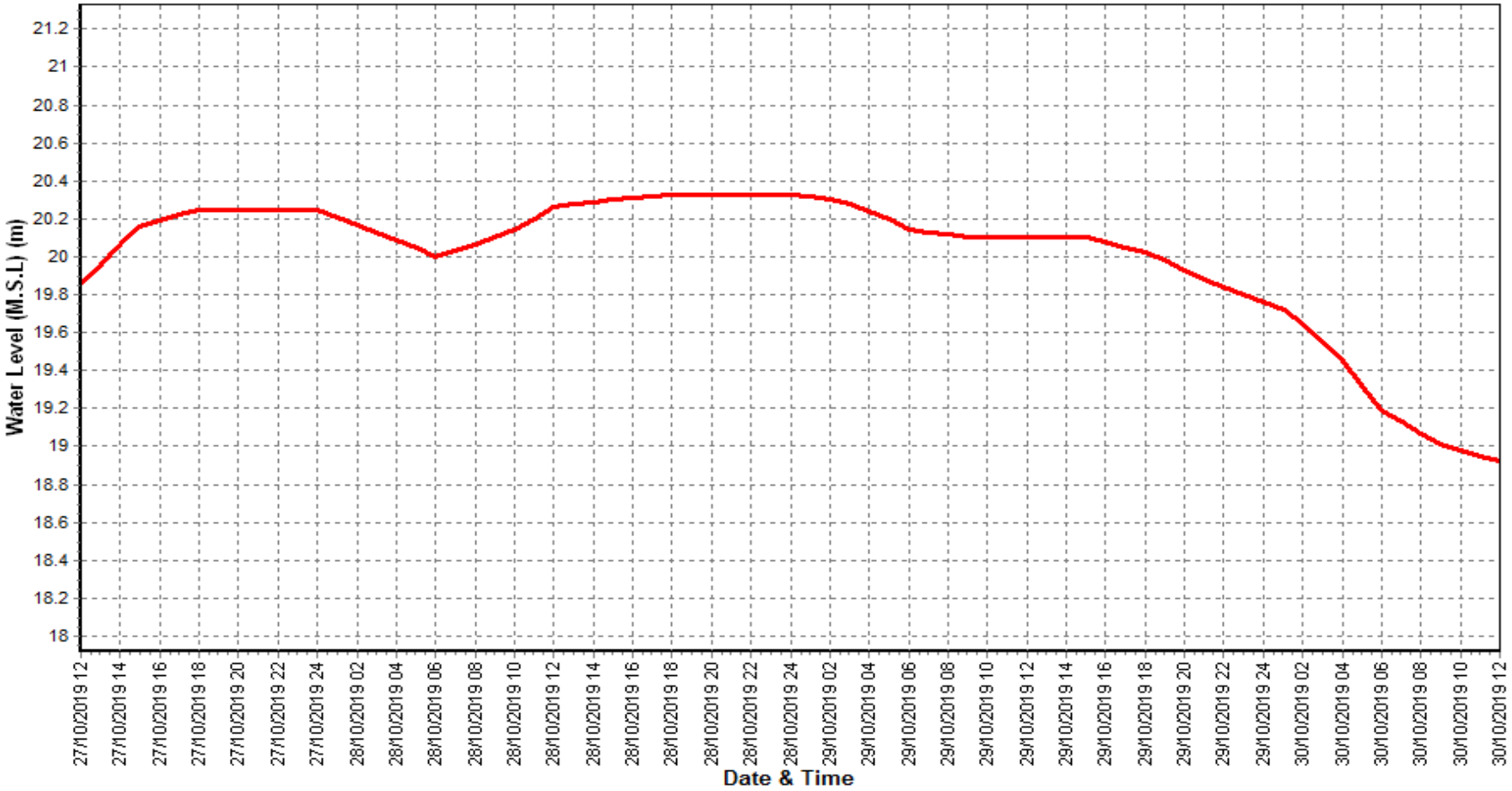


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2019-2020

Station Name : Jenapur (EB000G6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

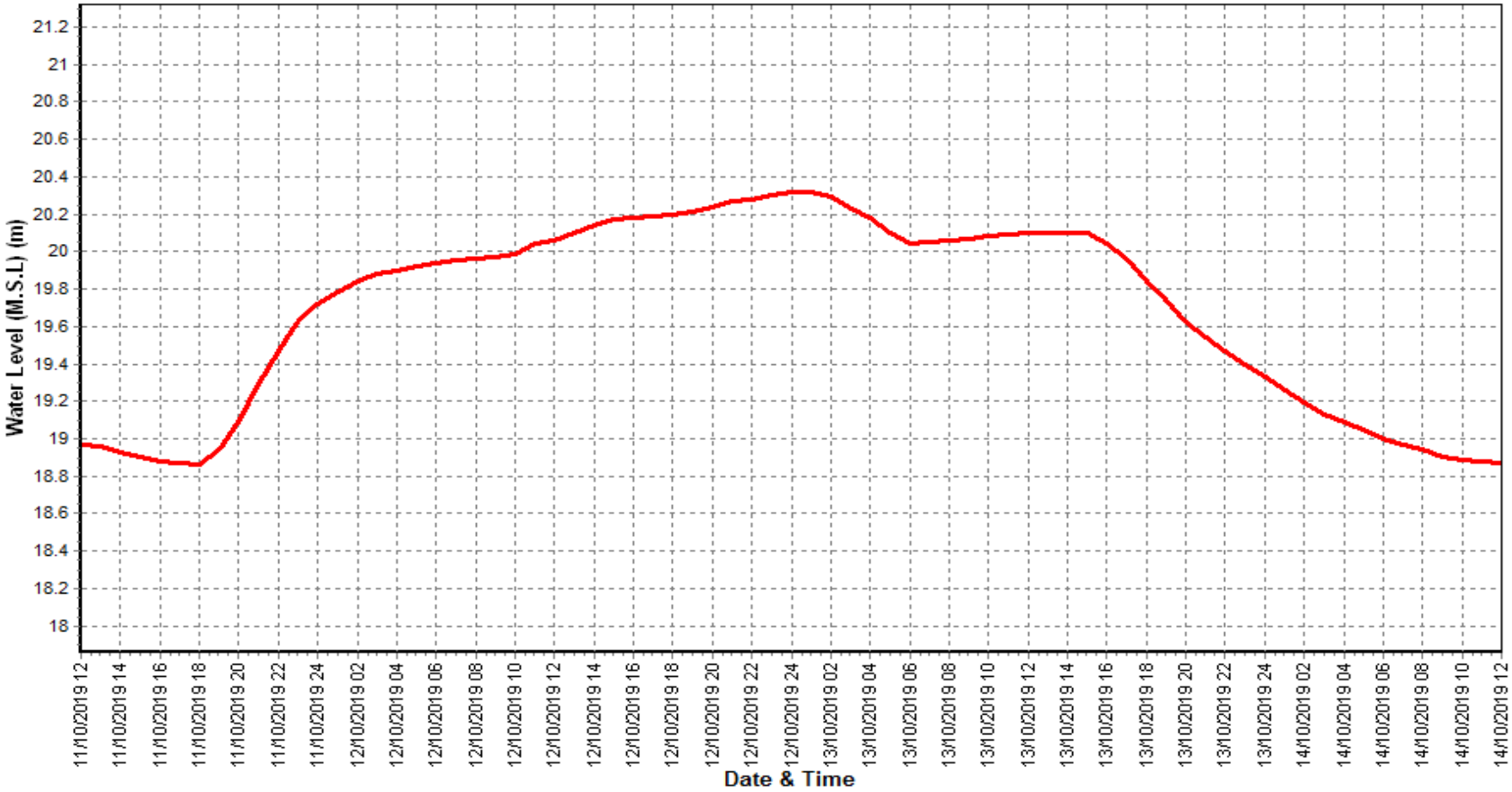


Time Span: 72 Hrs

Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2019-2020

Station Name : Jenapur (EB000G6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**



Time Span: 72 Hrs

SECTION-II (SEDIMENT DATA)

Daily Observed Sediment Datasheet for period : 2019-2020

Station Name : Jenapur (EB000G6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

Day	Jun						Jul						Aug					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	102.7	0.000	0.000	0.003	0.003	27	169.1	0.000	0.000	0.074	0.074	1081	185.3	0.000	0.000	0.004	0.004	66
2	72.00	0.000	0.000	0.003	0.003	19	217.9	0.000	0.000	0.118	0.118	2221	184.5	0.000	0.000	0.053	0.053	845
3	100.8	0.000	0.000	0.003	0.003	26	226.6	0.000	0.000	0.097	0.097	1899	751.9	0.000	0.000	0.198	0.198	12863
4	80.06	0.000	0.000	0.003	0.003	21	210.9	0.000	0.000	0.097	0.097	1768	613.1	0.000	0.000	0.198	0.198	10488
5	76.12	0.000	0.000	0.003	0.003	20	259.8	0.000	0.000	0.033	0.033	741	696.9	0.000	0.000	0.025	0.025	1505
6	66.75	0.000	0.000	0.002	0.002	9	155.2	0.000	0.000	0.047	0.047	630	244.2	0.000	0.000	0.039	0.039	823
7	67.33	0.000	0.000	0.003	0.003	15	152.1	0.000	0.000	0.047	0.047	618	224.0	0.000	0.000	0.112	0.112	2168
8	70.97	0.000	0.000	0.002	0.002	12	285.0	0.000	0.000	0.074	0.074	1822	604.9	0.000	0.000	0.148	0.148	7735
9	56.24	0.000	0.000	0.002	0.002	10	265.2	0.000	0.000	0.064	0.064	1467	427.1	0.000	0.000	0.128	0.128	4724
10	89.36	0.000	0.000	0.019	0.019	147	194.6	0.000	0.000	0.025	0.025	420	351.9	0.000	0.000	0.060	0.060	1824
11	95.06	0.000	0.000	0.004	0.004	33	788.6	0.000	0.000	0.050	0.050	3407	387.6	0.000	0.000	0.060	0.060	2009
12	157.0	0.000	0.000	0.019	0.019	258	171.9	0.000	0.000	0.008	0.008	119	342.0	0.000	0.000	0.060	0.060	1773
13	219.7	0.000	0.000	0.019	0.019	361	125.3	0.000	0.000	0.009	0.009	97	472.6	0.000	0.000	0.076	0.076	3103
14	199.9	0.000	0.000	0.025	0.025	432	111.9	0.000	0.000	0.009	0.009	87	1570	0.000	0.000	0.138	0.138	18723
15	189.9	0.000	0.000	0.010	0.010	164	120.1	0.000	0.000	0.028	0.028	290	1020	0.000	0.000	0.138	0.138	12156
16	63.10	0°52'44"	0.000	0.010	0.010	55	86°00'52"	0.000	0.000	0.013	0.013	199	1084	0.000	0.000	0.216	0.216	20221
17	59.79	0.000	0.000	0.013	0.013	67	269.7	0.000	0.000	0.014	0.014	326	489.9	0.000	0.000	0.068	0.068	2878
18	72.31	0.000	0.000	0.030	0.030	187	199.6	0.000	0.000	0.013	0.013	224	379.9	0.000	0.000	0.068	0.068	2232
19	68.53	0.000	0.000	0.029	0.029	172	153.4	0.000	0.000	0.038	0.038	504	1296	0.000	0.000	0.120	0.120	13437
20	66.36	0.000	0.000	0.013	0.013	75	212.0	0.000	0.000	0.069	0.069	1264	1345	0.019	0.045	0.296	0.360	41837
21	79.84	0.000	0.000	0.129	0.129	890	241.3	0.000	0.000	0.069	0.069	1439	1207	0.012	0.067	0.203	0.282	29401
22	134.0	0.000	0.000	0.062	0.062	718	296.1	0.000	0.000	0.008	0.008	205	748.1	0.020	0.003	0.063	0.086	5559
23	258.5	0.000	0.000	0.062	0.062	1385	159.8	0.000	0.000	0.003	0.003	41	951.9	0.020	0.019	0.128	0.167	13735
24	158.6	0.000	0.000	0.048	0.048	658	179.5	0.000	0.000	0.006	0.006	93	1495	0.000	0.002	0.173	0.175	22610
25	139.7	0.000	0.000	0.041	0.041	495	198.0	0.000	0.000	0.005	0.005	86	1611	0.000	0.002	0.173	0.175	24357
26	133.6	0.000	0.000	0.035	0.035	404	263.8	0.000	0.000	0.037	0.037	843	1321	0.002	0.006	0.049	0.057	6504
27	147.5	0.000	0.000	0.069	0.069	879	306.7	0.000	0.000	0.005	0.005	132	1175	0.026	0.046	0.108	0.180	18272
28	204.3	0.000	0.000	0.022	0.022	388	257.1	0.000	0.000	0.005	0.005	111	1144	0.031	0.041	0.158	0.230	22731
29	224.3	0.000	0.000	0.121	0.121	2345	257.1	0.000	0.000	0.006	0.006	133	1105	0.009	0.015	0.094	0.118	11270
30	148.2	0.000	0.000	0.121	0.121	1549	303.3	0.000	0.000	0.005	0.005	131	723.8	0.010	0.024	0.142	0.176	11007
31							207.6	0.000	0.000	0.070	0.070	1255	688.2	0.013	0.018	0.023	0.054	3211
Ten Daily Mean																		
Ten Daily I	78.23	0.000	0.000	0.004	0.004	30	213.6	0.000	0.000	0.068	0.068	1267	428.4	0.000	0.000	0.097	0.097	4304
Ten Daily II	119.2	0.000	0.000	0.017	0.017	180	233.0	0.000	0.000	0.025	0.025	652	838.6	0.002	0.005	0.124	0.130	11837
Ten Daily III	162.8	0.000	0.000	0.071	0.071	971	242.8	0.000	0.000	0.020	0.020	406	1106	0.013	0.022	0.119	0.155	15332
Monthly																		
Total						11817						23653						330066

Annual Sediment Load (Metric Tonnes) : 1194093

Daily Observed Sediment Datasheet for period : 2019-2020

Station Name : Jenapur (EB000G6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

Day	Sep						Oct						Nov					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	522.0						774.6	0.002	0.003	0.034	0.039	2610	665.9	0.000	0.000	0.048	0.048	2762
2	719.1	0.012	0.013	0.115	0.140	8698	1002	0.002	0.003	0.046	0.051	4415	588.2	0.000	0.000	0.046	0.046	2338
3	576.1	0.006	0.013	0.163	0.182	9059	2437	0.002	0.003	0.093	0.098	20639	481.4	0.000	0.000	0.045	0.045	1872
4	564.4	0.014	0.002	0.104	0.120	5852	2645	0.075	0.114	0.087	0.276	63068	546.1	0.000	0.000	0.044	0.044	2076
5	900.6	0.004	0.000	0.030	0.034	2646	1980	0.003	0.002	0.070	0.075	12828	539.4	0.000	0.000	0.044	0.044	2050
6	776.5	0.000	0.000	0.139	0.139	9326	504.9	0.002	0.003	0.044	0.049	2138	568.6	0.000	0.000	0.040	0.040	1965
7	963.8	0.004	0.005	0.163	0.172	14324	580.3	0.003	0.004	0.046	0.053	2657	415.6	0.000	0.000	0.036	0.036	1293
8	1843	0.110	0.018	0.250	0.378	60192	620.4	0.004	0.006	0.048	0.058	3109	622.8	0.000	0.000	0.040	0.040	2152
9	3467	0.180	0.018	0.280	0.478	143173	1878	0.074	0.082	0.081	0.237	38451	324.9	0.000	0.000	0.030	0.030	842
10	2222	0.017	0.016	0.216	0.249	47802	849.6	0.020	0.018	0.032	0.070	5138	267.8	0.000	0.000	0.010	0.010	231
11	1346	0.018	0.016	0.115	0.149	17333	927.3	0.001	0.001	0.037	0.039	3125	296.6	0.000	0.000	0.002	0.002	51
12	1140	0.014	0.033	0.035	0.082	8079	2196	0.004	0.003	0.062	0.069	13094	247.2	0.000	0.000	0.002	0.002	43
13	1290	0.024	0.044	0.067	0.135	15046	1967	0.004	0.003	0.064	0.071	12067	220.0	0.000	0.000	0.006	0.006	114
14	1505	0.019	0.070	0.108	0.197	25625	769.5	0.005	0.002	0.033	0.040	2659	263.3	0.000	0.000	0.008	0.008	182
15	1088	0.006	0.008	0.082	0.096	9024	550.7	0.001	0.003	0.020	0.024	1142	348.1	0.000	0.000	0.010	0.010	301
16	1175	0.004	0.007	0.079	0.090	9138	723.2	0.005	0.002	0.006	0.013	812	283.7	0.000	0.000	0.008	0.008	196
17	1861	0.014	0.002	0.105	0.121	19455	820.1	0.001	0.001	0.033	0.035	2480	229.3	0.000	0.000	0.010	0.010	198
18	646.8	0.013	0.018	0.064	0.095	5309	482.6	0.002	0.005	0.018	0.025	1043	256.9	0.000	0.000	0.020	0.020	444
19	872.9	0.004	0.004	0.054	0.062	4676	647.4	0.003	0.006	0.024	0.033	1846	266.7	0.000	0.000	0.020	0.020	461
20	888.6	0.004	0.003	0.062	0.069	5298	498.9	0.003	0.006	0.024	0.033	1422	256.7	0.000	0.000	0.020	0.020	444
21	855.5	0.013	0.018	0.074	0.105	7761	490.1	0.001	0.003	0.026	0.030	1270	254.7	0.000	0.000	0.018	0.018	396
22	638.3	0.012	0.016	0.068	0.096	5294	607.6	0.003	0.004	0.040	0.047	2467	244.7	0.000	0.000	0.014	0.014	296
23	763.2	0.004	0.005	0.106	0.115	7583	493.9	0.002	0.003	0.037	0.042	1792	308.4	0.000	0.000	0.018	0.018	480
24	743.2	0.001	0.001	0.044	0.046	2954	666.6	0.001	0.001	0.036	0.038	2189	330.0	0.000	0.000	0.028	0.028	798
25	801.1	0.001	0.002	0.043	0.046	3184	1094	0.007	0.001	0.084	0.092	8692	280.9	0.000	0.000	0.022	0.022	534
26	1347	0.016	0.005	0.044	0.065	7563	1795	0.001	0.003	0.093	0.097	15041	253.2	0.000	0.000	0.018	0.018	394
27	939.7	0.005	0.005	0.047	0.057	4628	1093	0.002	0.004	0.066	0.072	6801	236.6	0.000	0.000	0.008	0.008	164
28	952.6	0.001	0.002	0.047	0.050	4115	2567	0.002	0.006	0.071	0.079	17523	237.5	0.000	0.000	0.006	0.006	123
29	752.5	0.001	0.002	0.045	0.048	3121	2545	0.003	0.002	0.025	0.030	6597	187.3	0.000	0.000	0.004	0.004	65
30	1069	0.002	0.001	0.049	0.052	4803	855.4	0.004	0.004	0.027	0.035	2587	180.3	0.000	0.000	0.002	0.002	31
31							674.6	0.003	0.004	0.019	0.026	1515						
Ten Daily Mean																		
Ten Daily I	1255	0.039	0.009	0.162	0.210	33452	1327	0.019	0.024	0.058	0.101	15505	502.1	0.000	0.000	0.038	0.038	1758
Ten Daily II	1181	0.012	0.021	0.077	0.110	11898	958.3	0.003	0.003	0.032	0.038	3969	266.8	0.000	0.000	0.011	0.011	243
Ten Daily III	886.2	0.006	0.006	0.057	0.068	5101	1171	0.003	0.003	0.048	0.053	6043	251.4	0.000	0.000	0.014	0.014	328
Monthly																		
Total						471059						261218						23295

Annual Sediment Load (Metric Tonnes) : 1194093

Daily Observed Sediment Datasheet for period : 2019-2020

Station Name : Jenapur (EB000G6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

Day	Dec						Jan						Feb					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	165.3	0.000	0.000	0.018	0.018	257	153.2	0.000	0.000	0.002	0.002	26	176.0	0.000	0.000	0.002	0.002	30
2	194.7	0.000	0.000	0.018	0.018	303	149.2	0.000	0.000	2.000	2.000	25779	160.0	0.000	0.000	0.002	0.002	28
3	180.1	0.000	0.000	0.018	0.018	280	193.0	0.000	0.000	0.004	0.004	67	182.7	0.000	0.000	0.004	0.004	63
4	174.5	0.000	0.000	0.014	0.014	211	201.7	0.000	0.000	0.004	0.004	70	192.3	0.000	0.000	0.004	0.004	66
5	208.7	0.000	0.000	0.012	0.012	216	234.1	0.000	0.000	0.004	0.004	81	172.4	0.000	0.000	0.004	0.004	60
6	202.8	0.000	0.000	0.010	0.010	175	224.3	0.000	0.000	0.006	0.006	116	198.8	0.000	0.000	0.006	0.006	103
7	199.6	0.000	0.000	0.008	0.008	138	233.6	0.000	0.000	0.006	0.006	121	206.7	0.000	0.000	0.008	0.008	143
8	222.8	0.000	0.000	0.006	0.006	115	221.5	0.000	0.000	0.006	0.006	115	352.3	0.000	0.000	0.012	0.012	365
9	374.6	0.000	0.000	0.004	0.004	129	221.1	0.000	0.000	0.006	0.006	115	330.0	0.000	0.000	0.016	0.016	456
10	282.6	0.000	0.000	0.004	0.004	98	221.2	0.000	0.000	0.006	0.006	115	279.8	0.000	0.000	0.020	0.020	483
11	202.1	0.000	0.000	0.004	0.004	70	217.3	0.000	0.000	0.006	0.006	113	296.9	0.000	0.000	0.020	0.020	513
12	196.3	0.000	0.000	0.004	0.004	68	184.9	0.000	0.000	0.006	0.006	96	348.5	0.000	0.000	0.020	0.020	602
13	200.9	0.000	0.000	0.004	0.004	69	189.0	0.000	0.000	0.008	0.008	131	285.2	0.000	0.000	0.016	0.016	394
14	207.8	0.000	0.000	0.004	0.004	72	189.0	0.000	0.000	0.008	0.008	131	194.4	0.000	0.000	0.016	0.016	269
15	207.8	0.000	0.000	0.004	0.004	72	89.42	0.000	0.000	0.008	0.008	62	280.7	0.000	0.000	0.014	0.014	340
16	196.6	0.000	0.000	0.004	0.004	68	151.2	0.000	0.000	0.008	0.008	104	280.0	0.000	0.000	0.014	0.014	339
17	194.6	0.000	0.000	0.004	0.004	67	154.2	0.000	0.000	0.008	0.008	107	273.8	0.000	0.000	0.012	0.012	284
18	183.3	0.000	0.000	0.004	0.004	63	146.9	0.000	0.000	0.008	0.008	102	203.0	0.000	0.000	0.012	0.012	210
19	163.5	0.000	0.000	0.004	0.004	57	131.7	0.000	0.000	0.008	0.008	91	308.4	0.000	0.000	0.012	0.012	320
20	145.9	0.000	0.000	0.004	0.004	50	108.7	0.000	0.000	0.010	0.010	94	193.6	0.000	0.000	0.012	0.012	201
21	150.0	0.000	0.000	0.002	0.002	26	102.5	0.000	0.000	0.010	0.010	89	170.3	0.000	0.000	0.012	0.012	177
22	163.9	0.000	0.000	0.002	0.002	28	102.5	0.000	0.000	0.008	0.008	71	184.1	0.000	0.000	0.012	0.012	191
23	251.8	0.000	0.000	0.002	0.002	44	135.7	0.000	0.000	0.006	0.006	70	235.0	0.000	0.000	0.012	0.012	244
24	240.6	0.000	0.000	0.002	0.002	42	178.1	0.000	0.000	0.006	0.006	92	170.5	0.000	0.000	0.012	0.012	177
25	184.4	0.000	0.000	0.002	0.002	32	168.0	0.000	0.000	0.004	0.004	58	286.9	0.000	0.000	0.012	0.012	297
26	184.4	0.000	0.000	0.002	0.002	32	140.0	0.000	0.000	0.004	0.004	48	142.0	0.000	0.000	0.012	0.012	147
27	190.7	0.000	0.000	0.002	0.002	33	139.4	0.000	0.000	0.002	0.002	24	150.8	0.000	0.000	0.010	0.010	130
28	174.2	0.000	0.000	0.002	0.002	30	129.2	0.000	0.000	0.002	0.002	22	197.1	0.000	0.000	0.010	0.010	170
29	174.2	0.000	0.000	0.002	0.002	30	117.6	0.000	0.000	0.002	0.002	20	205.6	0.000	0.000	0.010	0.010	178
30	161.4	0.000	0.000	0.002	0.002	28	137.1	0.000	0.000	0.002	0.002	24						
31	153.3	0.000	0.000	0.002	0.002	26	145.6	0.000	0.000	0.002	0.002	25						
Ten Daily Mean																		
Ten Daily I	220.6	0.000	0.000	0.011	0.011	192	205.3	0.000	0.000	0.204	0.204	2660	225.1	0.000	0.000	0.008	0.008	180
Ten Daily II	189.9	0.000	0.000	0.004	0.004	66	156.2	0.000	0.000	0.008	0.008	103	266.4	0.000	0.000	0.015	0.015	347
Ten Daily III	184.4	0.000	0.000	0.002	0.002	32	136.0	0.000	0.000	0.004	0.004	49	193.6	0.000	0.000	0.011	0.011	190
Monthly Total						2930						28177						6980

Annual Sediment Load (Metric Tonnes) : 1194093

Daily Observed Sediment Datasheet for period : 2019-2020

Station Name : Jenapur (EB000G6) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Rourkela**

Day	Mar						Apr						May					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	143.4	0.000	0.000	0.018	0.018	223							808.3	0.000	0.000	0.014	0.014	978
2	200.0	0.000	0.000	0.020	0.020	346							859.8	0.000	0.000	0.016	0.016	1189
3	186.3	0.000	0.000	0.020	0.020	322							549.4	0.000	0.000	0.014	0.014	665
4	122.5	0.000	0.000	0.020	0.020	212							407.9	0.000	0.000	0.012	0.012	423
5	214.0	0.000	0.000	0.020	0.020	370							385.6	0.000	0.000	0.012	0.012	400
6	179.8	0.000	0.000	0.020	0.020	311							397.8	0.000	0.000	0.012	0.012	412
7	152.2	0.000	0.000	0.022	0.022	289							343.3	0.000	0.000	0.012	0.012	356
8	188.4	0.000	0.000	0.022	0.022	358							333.7	0.000	0.000	0.010	0.010	288
9	298.8	0.000	0.000	0.024	0.024	620							318.8	0.000	0.000	0.010	0.010	275
10	245.0	0.000	0.000	0.024	0.024	508							400.0	0.000	0.000	0.010	0.010	346
11	166.5	0.000	0.000	0.020	0.020	288							381.1	0.000	0.000	0.010	0.010	329
12	332.5	0.000	0.000	0.020	0.020	575							391.0	0.000	0.000	0.010	0.010	338
13	184.1	0.000	0.000	0.018	0.018	286							406.8	0.000	0.000	0.012	0.012	422
14	154.4	0.000	0.000	0.018	0.018	240							426.0	0.000	0.000	0.012	0.012	442
15	126.9	0.000	0.000	0.008	0.008	88							450.1	0.000	0.000	0.014	0.014	544
16	279.4	0.000	0.000	0.006	0.006	145							392.0	0.000	0.000	0.010	0.010	339
17	232.2	0.000	0.000	0.006	0.006	120							39.00	0.000	0.000	0.008	0.008	27
18	216.2	0.000	0.000	0.008	0.008	149							383.0	0.000	0.000	0.016	0.016	529
19	263.2	0.000	0.000	0.010	0.010	227							376.1	0.000	0.000	0.016	0.016	520
20	253.7	0.000	0.000	0.010	0.010	219	419.8	0.000	0.000	0.010	0.010	363	433.1	0.000	0.000	0.014	0.014	524
21	232.9	0.000	0.000	0.012	0.012	241	406.2	0.000	0.000	0.008	0.008	281	639.2	0.000	0.000	0.014	0.014	773
22	203.2	0.000	0.000	0.014	0.014	246	866.1	0.000	0.000	0.120	0.120	8980	359.5	0.000	0.000	0.014	0.014	435
23	394.0	0.000	0.000	0.016	0.016	545	375.3	0.000	0.000	0.008	0.008	259	318.5	0.000	0.000	0.012	0.012	330
24	226.2	0.000	0.000	0.014	0.014	274	365.1	0.000	0.000	0.006	0.006	189	250.0	0.000	0.000	0.012	0.012	259
25							383.5	0.000	0.000	0.008	0.008	265	309.1	0.000	0.000	0.012	0.012	320
26							544.2	0.000	0.000	0.010	0.010	470	415.0	0.000	0.000	0.012	0.012	430
27							897.7	0.000	0.000	0.010	0.010	776	449.0	0.000	0.000	0.012	0.012	465
28							834.1	0.000	0.000	0.012	0.012	865	268.2	0.000	0.000	0.010	0.010	232
29							890.8	0.000	0.000	0.014	0.014	1078	224.7	0.000	0.000	0.010	0.010	194
30							884.6	0.000	0.000	0.013	0.013	994	248.7	0.000	0.000	0.010	0.010	215
31													205.6	0.000	0.000	0.010	0.010	178
Ten Daily Mean																		
Ten Daily I	193.0	0.000	0.000	0.021	0.021	356							480.5	0.000	0.000	0.012	0.012	533
Ten Daily II	220.9	0.000	0.000	0.012	0.012	234	419.8	0.000	0.000	0.010	0.010	363	367.8	0.000	0.000	0.012	0.012	401
Ten Daily III	264.1	0.000	0.000	0.014	0.014	326	644.8	0.000	0.000	0.021	0.021	1416	335.2	0.000	0.000	0.012	0.012	348
Monthly Total						7201						14519						13177

Annual Sediment Load (Metric Tonnes) : 1194093

Annual Sediment Load for period : 1981-2020

Station Name : Jenapur (EB000G6) **Division : E.E., Bhubaneswar**

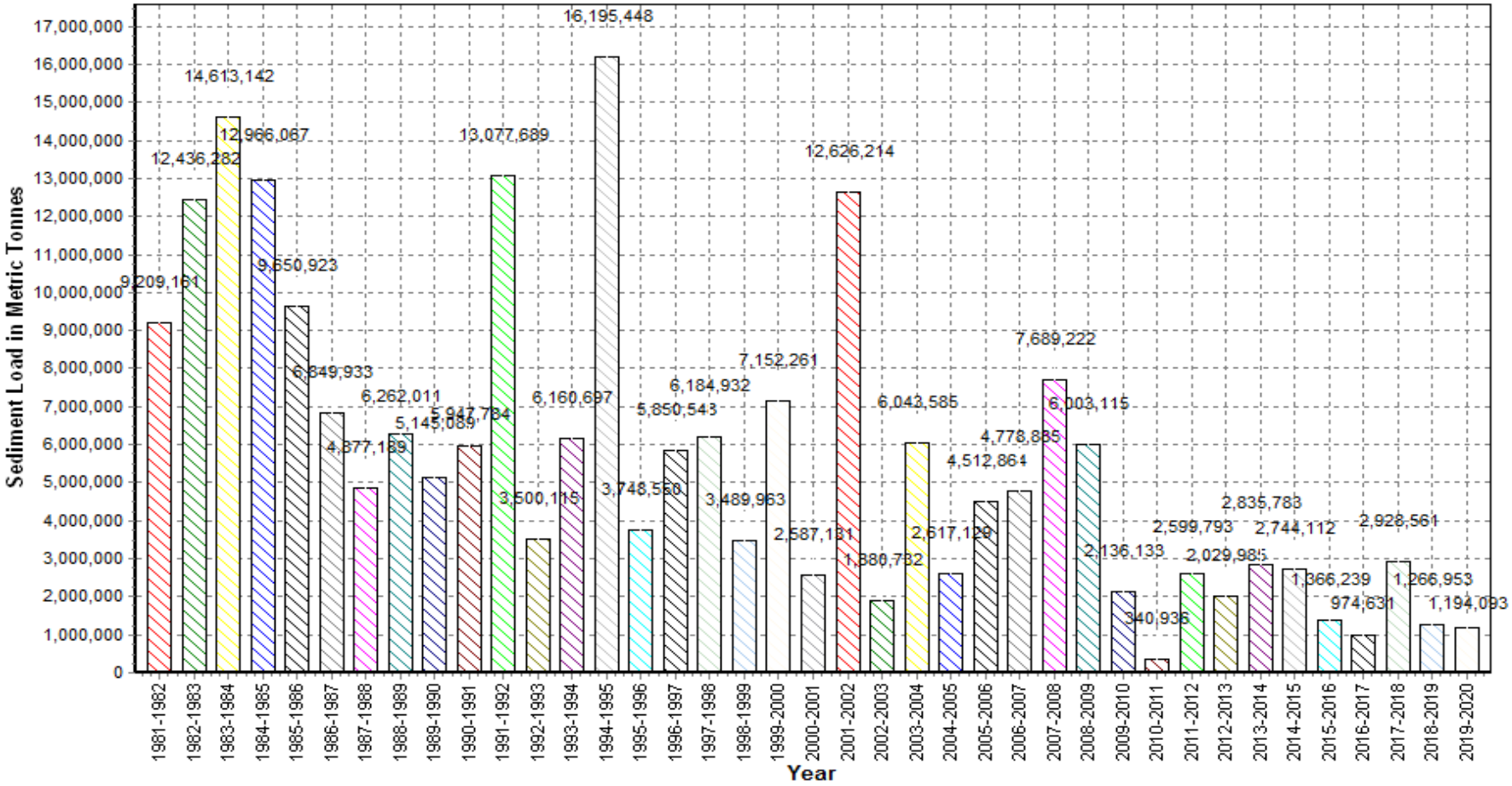
Local River : Brahmni **Sub-Division : Rourkela**

Year	Monsoon (M.T.)	Non-Monsoon (M.T.)	Annual Load (M.T.)	Annual Run Off (MCM)
1981-1982	9166586	42575	9209161	11675
1982-1983	12422941	13341	12436282	10903
1983-1984	14604846	8296	14613142	16545
1984-1985	12924990	41078	12966067	22812
1985-1986	9577008	73915	9650923	19059
1986-1987	6728612	121321	6849933	17312
1987-1988	4663043	214147	4877189	15257
1988-1989	6234143	27868	6262011	16817
1989-1990	4940638	204451	5145089	15117
1990-1991	5819871	127913	5947784	19798
1991-1992	12933609	144081	13077689	21669
1992-1993	3450830	49285	3500115	11136
1993-1994	5934153	226545	6160697	16382
1994-1995	15355732	839715	16195448	30991
1995-1996	3591112	157438	3748550	15709
1996-1997	5684669	165879	5850548	16685
1997-1998	5957430	227503	6184932	20606
1998-1999	3422796	67168	3489963	15226
1999-2000	7101132	51129	7152261	22755
2000-2001	2493260	93872	2587131	10345
2001-2002	12566894	59321	12626214	28461
2002-2003	1868745	11986	1880732	10785
2003-2004	6004276	39309	6043585	21413
2004-2005	2576281	40848	2617129	12544
2005-2006	4466743	46121	4512864	16546
2006-2007	4726357	52528	4778885	14808
2007-2008	7670521	18701	7689222	22536
2008-2009	5978111	25004	6003115	19875
2009-2010	2120268	15864	2136133	10940
2010-2011	301296	39640	340936	5405
2011-2012	2329808	269985	2599793	21907
2012-2013	1860984	169002	2029985	14030
2013-2014	2638430	197353	2835783	15814
2014-2015	2642842	101270	2744112	15883
2015-2016	1322092	44148	1366239	10821
2016-2017	974631	0	974631	9173
2017-2018	2747428	181134	2928561	14375
2018-2019	1248543	18410	1266953	14641
2019-2020	1121108	72985	1194093	13555

Annual Sediment Load for the period: 1981-2020

Station Name : Jenapur (EB000G6) **Division : E.E., Bhubaneswar**

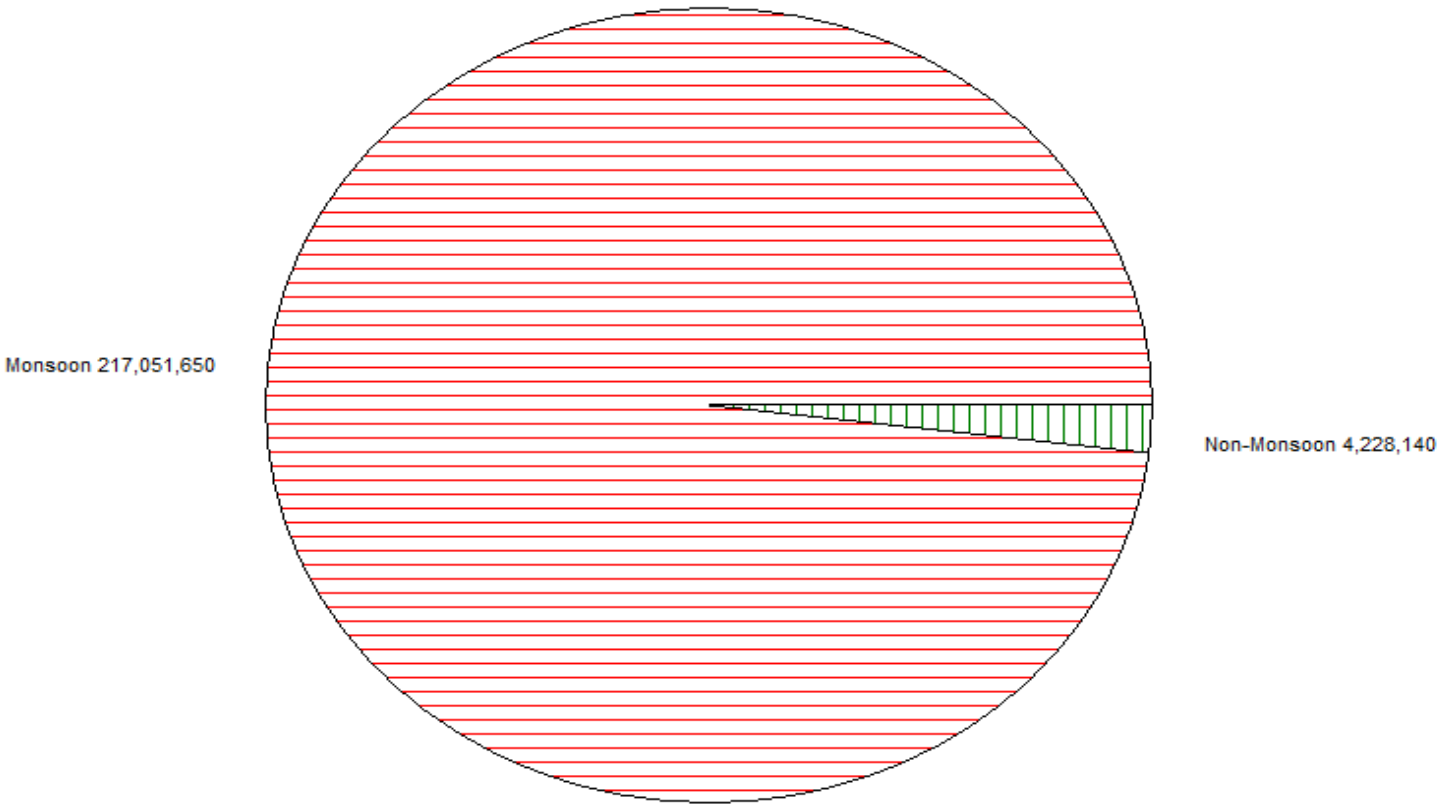
Local River : Brahmni **Sub-Division : Rourkela**



Seasonal Sediment Load for the period : 1981-2019

Station Name : Jenapur (EB000G6)
Local River : Brahmni

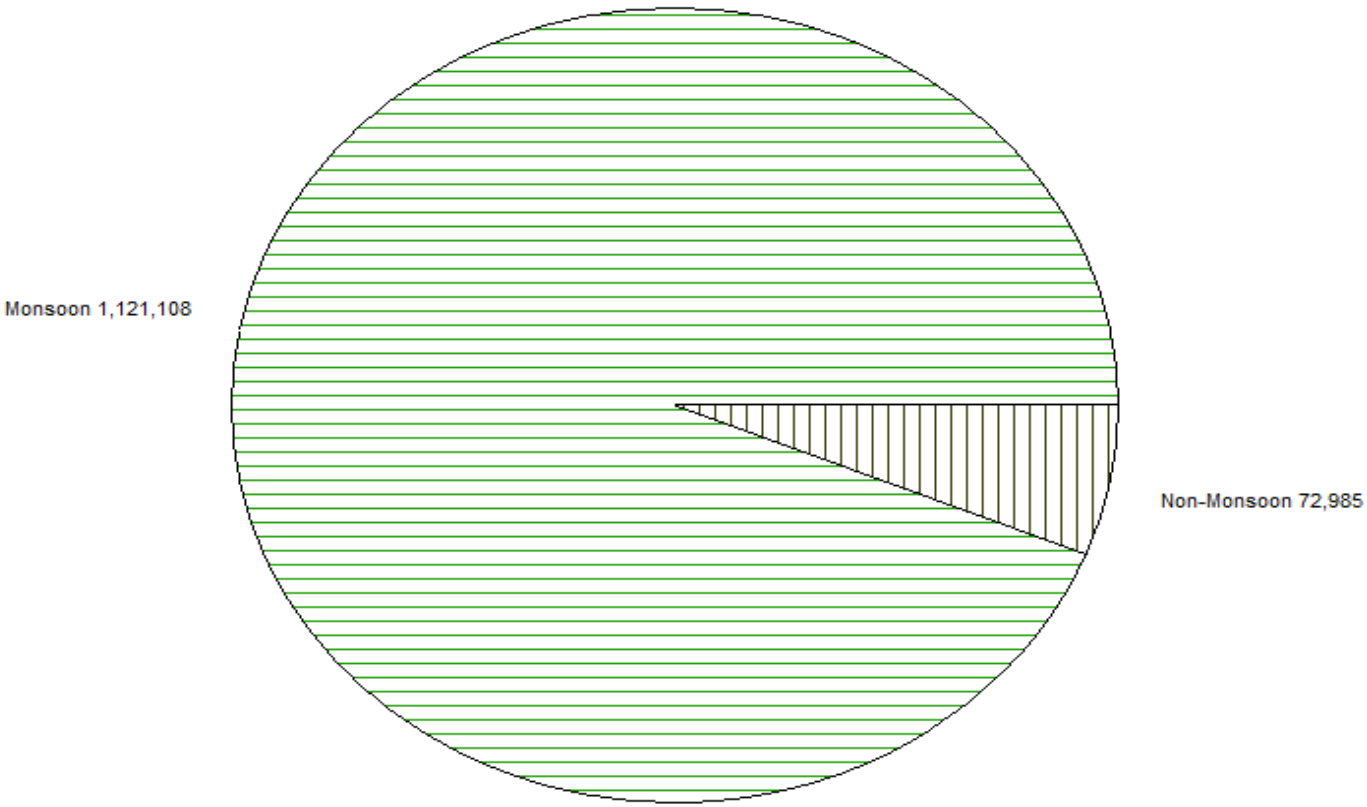
Division : E.E., Bhubaneswar
Sub-Division : Rourkela



Seasonal Sediment Load for the Year: 2019-2020

Station Name : Jenapur (EB000G6)
Local River : Brahmni

Division : E.E., Bhubaneswar
Sub-Division : Rourkela



SECTION-III

(WATER QUALITY)

Water Quality Datasheet for the period : 2019-2020

Station Name : JENAPUR (EB000G6) **Division : E.E., Bhubaneswar**

Local River : Brahmani **River Water Analysis** **Sub-Division : Rourkela**

S.No	Parameters	6/1/2019	7/1/2019	8/1/2019	9/2/2019	10/1/2019	11/1/2019	12/2/2019	1/1/2020	2/1/2020	3/2/2020
		A	A	A	A	A	A	A	A	A	A
	PHYSICAL										
1	Q (cumec)										
2	Colour_Cod (-)	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Green	Light Brown	Dark Brown	Light Brown
3	EC_FLD (µmho/cm)	310	384	309	141	159	269	250	134	162	25
4	EC_GEN (µmho/cm)	319	381	305	144	158	270	256	121	159	212
5	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
6	pH_FLD (pH units)	7.3	7.5	7.6	7.4	7.4	7.0	7.8	7.4	7.5	7.6
7	pH_GEN (pH units)	7.4	7.6	7.6	7.4	7.4	7.0	7.9	7.2	7.4	7.9
8	Temp (deg C)	32.0	29.0	28.0	29.0	28.0	28.0	24.0	20.0	22.0	
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
2	ALK-TOT (mgCaCO3/L)	61	52	163	54	70	87	142	35		
3	B (mg/L)	0.02									
4	Ca (mg/L)	11	24	35	15	16	45	24	17	19	13
5	Cl (mg/L)	16.3	19.8	37.4	111.5	13.2	27.8	14.7	147.5	19.8	37.5
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
7	F (mg/L)					0.36	0.18				
8	HCO3 (mg/L)	75	63	199	66	85	106	173	43	77	136
9	K (mg/L)	1.1	0.8	2.0	1.8	1.3	1.6	16.6	1.9	1.6	3.9
10	Mg (mg/L)	10.5	1.9	7.6	2.9	6.9	4.7	2.8	5.6	5.6	15.1
11	Na (mg/L)	7.4	4.7	7.7	4.5	4.6	4.7	46.3	6.6	5.9	22.0
12	P-Tot (mgP/L)	0.001									
13	SiO2 (mg/L)	7.3									
14	SO4 (mg/L)	26.8	24.2	17.1	22.9	10.6	18.8	39.4	13.1	7.7	15.7
	BIOLOGICAL/BACTERIOLOGICAL										
1	BOD3-27 (mg/L)	0.4	0.5	0.8	1.4	1.7	1.4	1.3	1.6	1.4	0.9
2	DO (mg/L)	3.8	3.8	2.7	4.8	4.6	6.2	3.9	7.3	5.4	3.1
3	DO_SAT% (%)	51	49	34	63	59	80	46	80	62	
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	28	59	87	37	41	114	59	43	47	31
2	HAR_Total (mgCaCO3/L)	71	67	119	49	70	133	71	67	70	94
3	Na% (%)	18	13	12	16	12	7	52	17	15	33
4	RSC (-)	0.0	0.0	0.9	0.1	0.0	0.0	1.4	0.0		
5	SAR (-)	0.4	0.3	0.3	0.3	0.2	0.2	2.4	0.4	0.3	1.0
	PESTICIDES										

Water Quality Summary for the period : 2019-2020

Station Name : JENAPUR (EB000G6) **Division : E.E., Bhubaneswar**

Local River : Brahmani **Sub-Division : Rourkela**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	10	384	25	214
3	EC_GEN (µmho/cm)	10	381	121	233
4	pH_FLD (pH units)	10	7.8	7.0	7.4
5	pH_GEN (pH units)	10	7.9	7.0	7.5
6	Temp (deg C)	9	32.0	20.0	26.7
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	8	0.0	0.0	0
2	ALK-TOT (mgCaCO3/L)	8	163	35	83
3	B (mg/L)	1	0.02	0.02	0.02
4	Ca (mg/L)	10	45	11	22
5	Cl (mg/L)	10	147.5	13.2	44.6
6	CO3 (mg/L)	8	0.0	0.0	0
7	F (mg/L)	2	0.36	0.18	0.27
8	HCO3 (mg/L)	10	199	43	102
9	K (mg/L)	10	16.6	0.8	3.3
10	Mg (mg/L)	10	15.1	1.9	6.4
11	Na (mg/L)	10	46.3	4.5	11.4
12	P-Tot (mgP/L)	1	0.001	0.001	0.001
13	SiO2 (mg/L)	1	7.3	7.3	7.3
14	SO4 (mg/L)	10	39.4	7.7	19.6
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	10	1.7	0.4	1.1
2	DO (mg/L)	10	7.3	2.7	4.6
3	DO_SAT% (%)	9	80	34	58
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	10	114	28	55
2	HAR_Total (mgCaCO3/L)	10	133	49	81
3	Na% (%)	10	52	7	20
4	RSC (-)	8	1.4	0.0	0.3
5	SAR (-)	10	2.4	0.2	0.6
	PESTICIDES				

Water Quality Seasonal Average for the period: 2005-2020

Station Name : JENAPUR (EB000G6) **Division : E.E., Bhubaneswar**

Local River : Brahmani **River Water** **Sub-Division : Rourkela**

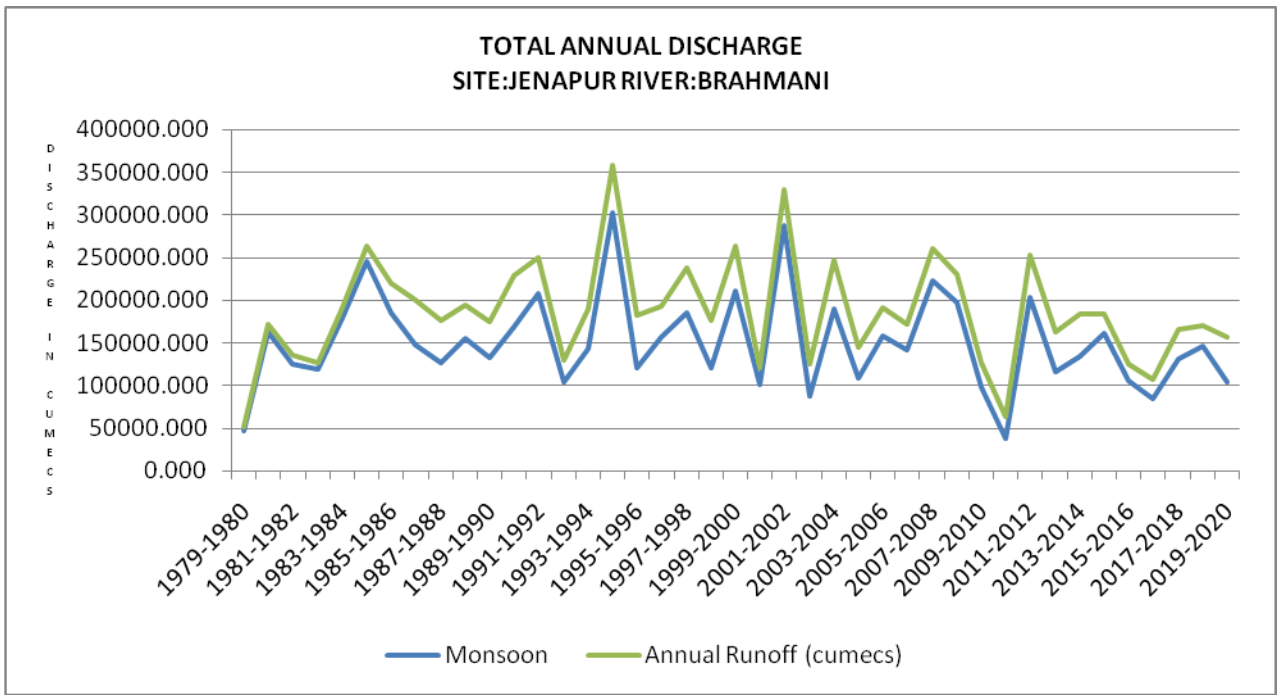
S.No	Parameters	Flood (Jun - Oct)															Winter (Nov - Feb)													
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
	PHYSICAL																													
1	Q (cumec)	2102	839.8	1066	1141	446.7	271.8	681.6	617.8	852.4	923.7						174.4	114.4	357.4	154.8	101.7	82.82	290.5	148.8	353.3	130.5				
2	EC_FLD (µmho/cm)	104	143	144	143	132	165	129	139	119	144	250	136	165	181	261	133	134	111	161	142	196	104	140	137	187	391	308	215	139
3	EC_GEN (µmho/cm)	103	139	139	143	132	166	129	139	119	144	247	139	158	182	261	130	129	105	160	142	196	104	140	137	187	395	312	214	140
4	pH_FLD (pH units)	7.8	7.9	7.9	7.8	7.8	8.1	8.2	7.6	7.5	7.8	7.6	7.5	7.8	7.4	7.4	7.8	8.0	8.0	7.9	7.8	7.6	7.8	7.5	7.9	7.9	7.7	7.9	7.7	7.5
5	pH_GEN (pH units)	7.9	7.9	8.0	7.8	7.7	8.1	8.2	7.6	7.5	7.8	7.5	7.6	7.7	7.4	7.5	7.9	8.0	8.1	7.9	7.8	7.6	7.8	7.5	7.9	7.9	7.8	8.0	7.7	7.5
6	Temp (deg C)	28.6	29.4	29.4	29.0	28.4	29.8	28.7	28.5	28.2	29.2	26.9	29.4	30.8	27.9	29.2	21.9	23.3	21.0	23.3	20.1	20.5	21.5	20.9	22.6	25.7	23.8	23.3	23.4	21.5
	CHEMICAL																													
1	Alk-Phen (mgCaCO3/L)		0.0	0.0	0.0	0.0	1.0	4.6	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	5.8	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)		59	76	31	28	49	60	44		55	65	75	50	55	80		69	34	41	38	65	49	46		60	75	64	64	62
3	B (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.02	0.01	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.02	0.02
4	Ca (mg/L)	12	16	14	13	11	14	15	17	16	15	24	32	44	24	20	13	13	12	15	12	17	12	20	12	11	25	34	29	25
5	Cl (mg/L)	8.5	10.7	10.4	12.9	13.2	13.4	15.5	13.2	12.5	15.5	13.2	30.6	12.6	12.9	39.7	11.1	11.2	9.2	14.2	14.6	12.3	22.6	15.1	12.5	23.1	17.0	17.9	12.1	13.6
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	1.0	5.5	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.9	0.0	0.0	0.0
7	F (mg/L)	0.00	0.08	0.01	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.63	0.36	0.00	0.00	0.00	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.18
8	Fe (mg/L)	0.2	0.1	0.1	0.1	0.1	0.1	0.0	1.9	0.1	0.5	0.3	0.3	0.5	0.4		0.1	0.1	0.2	0.1	0.2	0.1	0.0	1.9	0.0	0.3	0.4	0.6	0.4	0.4
9	HCO3 (mg/L)	44	58	53	43	30	57	62	51	40	62	79	91	64	67	98	50	43	42	50	42	81	60	58	39	62	77	77	77	76
10	K (mg/L)	1.2	1.8	1.7	1.7	1.7	3.3	1.5	3.6	1.3	1.5	1.7	6.4	1.8	3.8	1.4	2.1	1.7	1.3	2.6	1.4	1.6	1.2	1.4	1.7	1.3	2.0	14.1	2.3	7.8
11	Mg (mg/L)	2.4	2.9	4.0	5.1	4.9	6.6	6.0	6.2	4.4	6.0	9.5	11.9	15.8	7.7	6.0	3.6	2.4	2.6	4.9	5.6	8.3	2.9	19.4	4.7	5.3	8.8	12.9	8.4	9.1
12	Na (mg/L)	5.7	7.5	7.0	8.9	8.0	8.5	4.4	5.9	6.6	4.3	5.6	22.3	3.1	16.8	5.8	7.3	7.3	6.5	8.4	8.5	7.7	3.5	6.1	7.8	3.8	28.3	48.7	4.3	10.0
13	NH3-N (mg N/L)																													
14	NO2+NO3 (mg N/L)	1.28	1.85	1.65	1.54	1.55	1.22	0.30	0.71	0.55	1.47	1.02	0.94	1.19	1.19		1.50	2.04	1.36	1.11	1.41	0.81	0.41	0.71	1.02	1.21	1.11	1.18	1.20	1.15
15	NO2-N (mgN/L)	0.03	0.00	0.02	0.00	0.00	0.04	0.02	0.00	0.01	0.01	0.04	0.03	0.02	0.00		0.01	0.01	0.04	0.00	0.00	0.00	0.07	0.00	0.01	0.01	0.01	0.00	0.00	0.00
16	NO3-N (mgN/L)	1.25	1.85	1.63	1.54	1.55	1.17	0.29	0.71	0.54	1.47	0.98	0.92	1.17	1.19		1.50	2.03	1.32	1.11	1.41	0.81	0.34	0.71	1.02	1.20	1.10	1.18	1.20	1.15
17	o-PO4-P (mg P/L)	0.000	0.000	0.000	0.015	0.000											0.000	0.013	0.000		0.000									
18	P-Tot (mgP/L)	0.001	0.001	0.001	0.005	0.002	0.002	0.005	0.001	0.007	0.001	0.001	0.010	0.001	0.001	0.001	0.001	0.013	0.001	0.001	0.001	0.002	0.010	0.001	0.001	0.001	0.010	0.010	0.001	0.001
19	SiO2 (mg/L)	22.5	14.9	11.7	9.0	8.7	6.7	10.0	27.6	18.6	9.4	6.0	6.6	7.5	8.5	7.3	19.9	17.2	9.2	9.2	9.5	4.6	10.3	30.3	12.4	5.3	5.5	6.8	8.0	7.7
20	SO4 (mg/L)	2.0	3.0	4.8	12.8	12.9	9.9	10.2	25.2	10.3	10.2	13.2	40.3	20.5	14.0	20.3	2.4	2.3	2.4	11.5	8.1	8.6	6.3	8.5	9.2	5.3	10.5	11.6	13.1	7.5
	BIOLOGICAL/BACTERIOLOGICAL																													
1	BOD3-27 (mg/L)	0.7	1.0	1.0	1.1	1.2	1.3	1.1	0.7	0.5	0.7	0.7	1.5	1.2	1.6	1.0	1.2	0.9	1.1	1.1	1.2	1.2	1.5	0.3	0.3	0.5	1.2	0.8	1.5	1.3
2	DO (mg/L)	6.8	7.1	7.0	6.9	7.2	7.1	7.0	6.8	6.8	5.9	6.6	7.1	6.7	6.2	3.9	8.4	7.8	8.1	7.8	7.9	8.2	7.7	7.8	7.7	9.6	7.1	8.7	6.7	6.4
3	DO_SAT% (%)	88	93	91	90	93	94	90	87	87	77	82	93	90	79	51	95	90	90	91	87	91	87	87	89	117	85	101	78	73
4	FCol-MPN (MPN/100mL)		11	40	11	7	146		19					78	55			17	42	7	11	17		11				78	63	
5	Tcol-MPN (MPN/100mL)		14	54	15	7	295		26					214	145			22	72	7	15	21		27				158	160	
	TRACE & TOXIC																													
1	Al (mg/L)	2.26																2.70												
	CHEMICAL INDICES																													
1	HAR_Ca (mgCaCO3/L)	29	41	36	33	27	34	38	42	40	38	61	81	110	60	50	32	33	29	37	29	43	31	49	31	28	62	84	72	63
2	HAR_Total (mgCaCO3/L)	39	53	53	54	48	62	64	68	59	64	101	130	176	92	75	47	43	40	57	52	77	43	130	50	50	99	138	107	102
3	Na% (%)	24	23	22	26	26	23	13	15	20	12	11	26	4	20	14	25	26	26	23	27	18	15	10	25	14	26	40	8	17
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.1	0.0	0.0	0.0
5	SAR (-)	0.4	0.5	0.4	0.5	0.5	0.5	0.2	0.3	0.4	0.2	0.2	0.9	0.1	0.7	0.3	0.5	0.5	0.5	0.5	0.5	0.4	0.2	0.2	0.5	0.2	1.2	1.8	0.2	0.4
	PESTICIDES																													

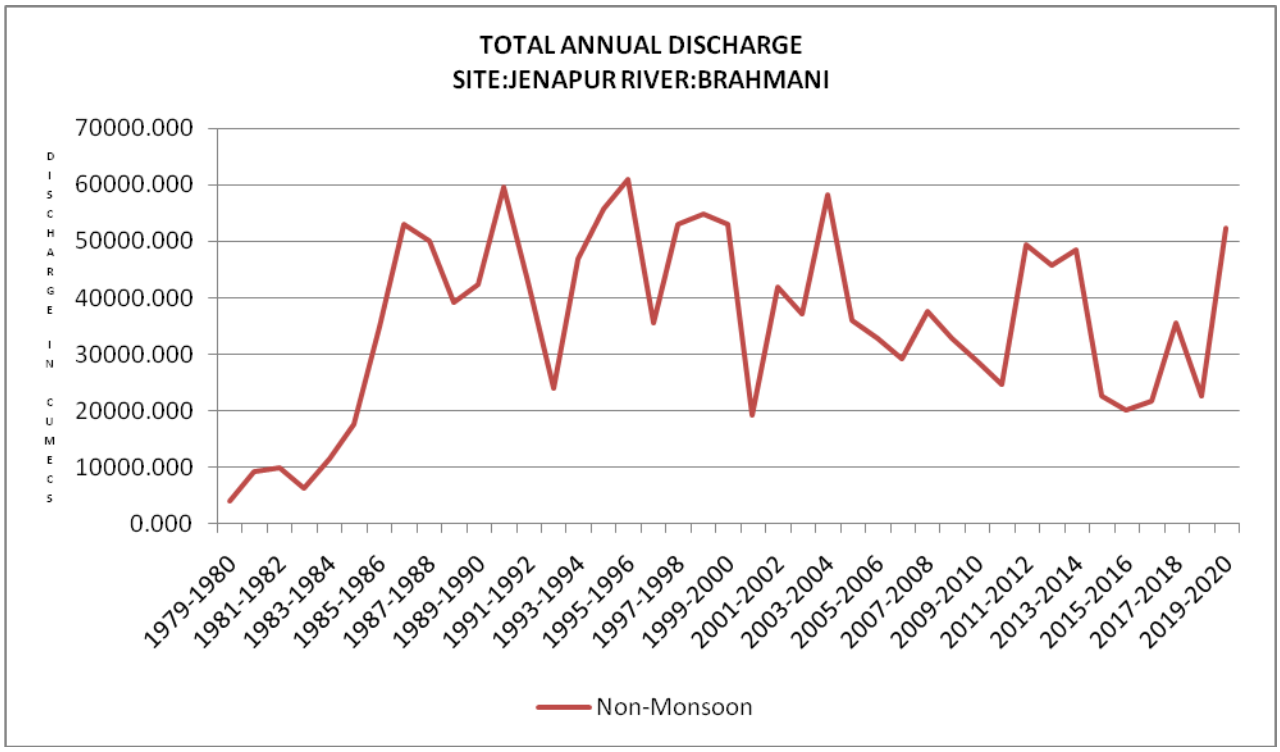
Water Quality Seasonal Average for the period: 2005-2020

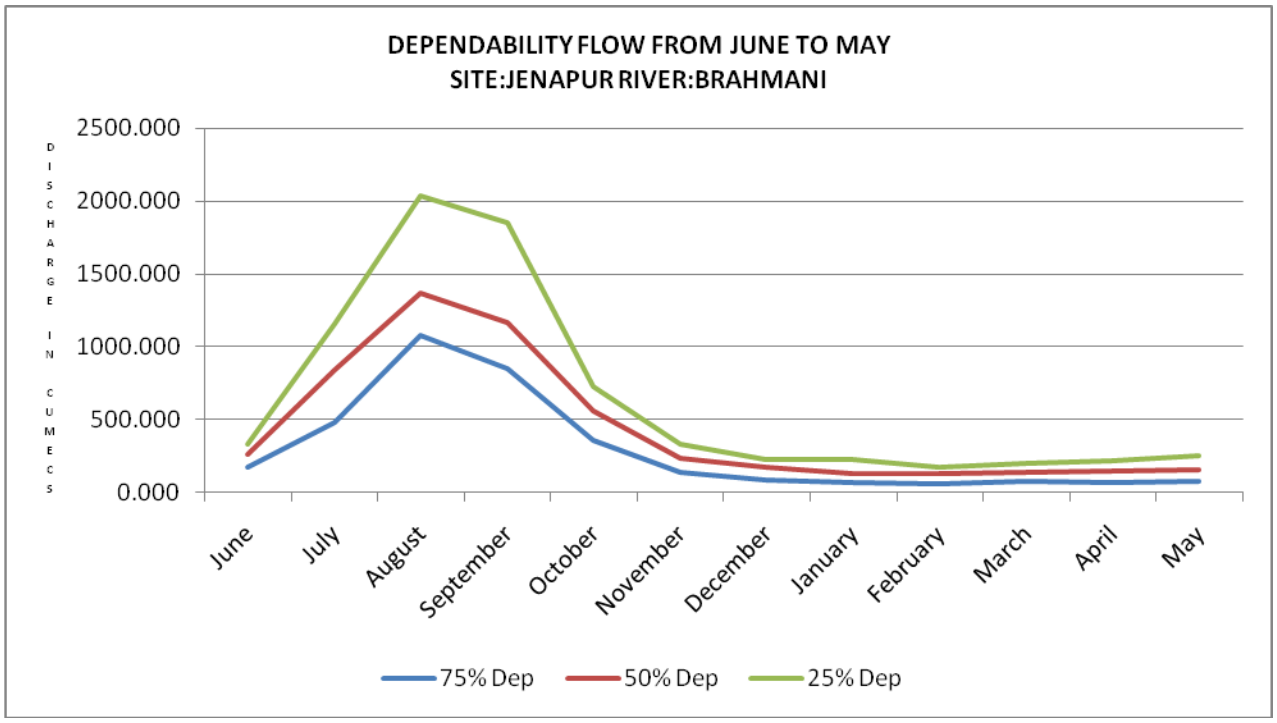
Station Name : JENAPUR (EB000G6) | **Division : E.E., Bhubaneswar**

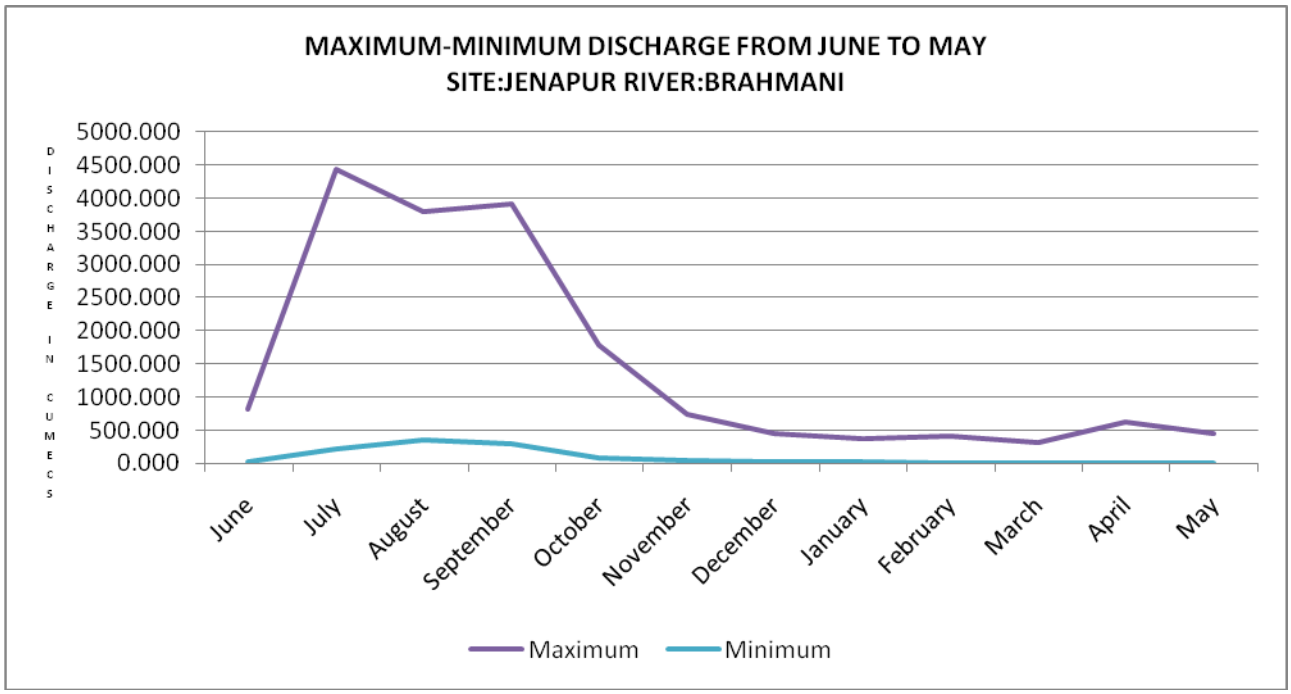
Local River : Brahmani | **River Water** | **Sub-Division : Rourkela**

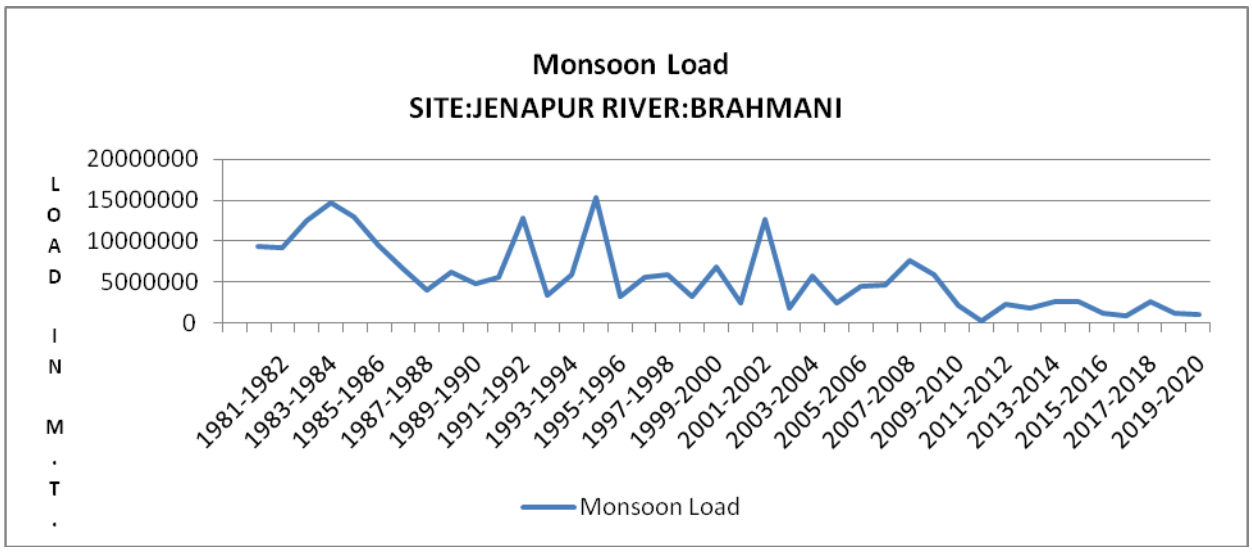
S.No	Parameters		Summer														
			Mar - May														
		2019-2020	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	PHYSICAL																
1	Q (cumec)		90.38	156.0	121.0	124.6	133.1	147.8	141.1	396.0	259.7	83.32					
2	EC_FLD (µmho/cm)	204	130	134	144	161	118	191	127	150	113	208	239	141	236	118	25
3	EC_GEN (µmho/cm)	202	125	128	143	161	118	191	127	150	113	208	244	149	230	118	212
4	pH_FLD (pH units)	7.4	7.6	8.1	8.1	7.8	8.0	8.3	7.6	7.7	7.7	7.9	7.8	7.8	7.6	7.4	7.6
5	pH_GEN (pH units)	7.4	7.6	8.1	8.2	7.8	8.0	8.3	7.6	7.7	7.7	7.9	7.9	7.7	7.5	7.4	7.9
6	Temp (deg C)	23.5	27.5	27.0	25.8	25.0	24.7	25.3	24.8	28.1	27.8	26.2	33.0	28.0	27.0	27.7	
	CHEMICAL																
1	Alk-Phen (mgCaCO3/L)	0.0		0.0	0.0	0.0	1.3	5.9	0.0	0.0	0.0	0.0	18.4	0.0	0.0	0.0	
2	ALK-TOT (mgCaCO3/L)	88		70	44	49	35	63	51	85	41	24	91	66	57	49	
3	B (mg/L)		0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.02	0.02	0.02	
4	Ca (mg/L)	26	13	12	14	13	12	15	16	16	13	17	39	37	23	13	13
5	Cl (mg/L)	52.5	9.5	10.0	11.7	9.8	11.2	12.6	16.3	10.7	14.1	15.2	34.6	12.6	12.1	15.1	37.5
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	1.6	7.1	0.0	0.0	0.0	0.0	22.2	0.0	0.0	0.0	
7	F (mg/L)	0.18	0.04	0.00	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05		
8	Fe (mg/L)		0.1	0.1	0.2	0.1	0.1	0.1	0.1	1.9	0.0	0.1	0.3	0.5	0.5		
9	HCO3 (mg/L)	100	51	42	55	60	39	62	62	88	50	55	66	81	70	59	136
10	K (mg/L)	5.4	1.6	1.6	0.3	1.4	1.2	1.7	1.4	1.2	2.1	1.2	3.4	13.3	1.1	3.7	3.9
11	Mg (mg/L)	4.7	2.3	3.5	4.6	7.8	4.2	9.1	6.2	5.3	5.5	6.2	15.9	14.6	8.5	12.0	15.1
12	Na (mg/L)	15.9	6.2	6.8	8.0	5.7	7.3	7.5	5.0	4.4	8.9	5.2	38.4	43.1	4.4	7.0	22.0
13	NH3-N (mg N/L)				0.05	0.00											
14	NO2+NO3 (mg N/L)		0.80	2.12	0.96	0.60	1.46	1.52	0.41	0.71	0.92	1.07	0.96	1.26	1.20		
15	NO2-N (mgN/L)		0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.00	0.02	0.00		
16	NO3-N (mgN/L)		0.80	2.12	0.96	0.60	1.46	1.52	0.34	0.71	0.91	1.07	0.95	1.23	1.20		
17	o-PO4-P (mg P/L)		0.000	0.000			0.000										
18	P-Tot (mgP/L)		0.001	0.001	0.050	0.001	0.001	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001	0.001	
19	SiO2 (mg/L)		24.9	16.5	10.3	8.0	7.8	4.3	8.3	30.3	12.5	5.3	5.7	7.3	7.8	8.4	
20	SO4 (mg/L)	19.7	3.7	2.9	6.8	12.0	5.8	6.2	4.7	6.4	9.8	5.9	13.0	9.8	28.6	19.6	15.7
	BIOLOGICAL/BACTERIOLOGICAL																
1	BOD3-27 (mg/L)	1.4	0.8	1.1	0.9	1.0	1.4	1.5	1.4	0.9	0.5	0.3	0.7	1.0	0.9	1.0	0.9
2	DO (mg/L)	5.7	7.7	7.3	6.8	6.8	8.1	7.6	7.3	6.8	6.9	5.9	6.4	6.9	5.4	5.8	3.1
3	DO_SAT% (%)	67	97	91	83	82	96	92	88	86	88	73	89	88	67	74	
4	FCol-MPN (MPN/100mL)			4	9	17	144	24		12				87	53		
5	Tcol-MPN (MPN/100mL)			9	11	280	179	25		13				143	147		
	TRACE & TOXIC																
1	Al (mg/L)																
	CHEMICAL INDICES																
1	HAR_Ca (mgCaCO3/L)	66	33	31	35	32	29	39	40	41	33	43	98	94	57	33	31
2	HAR_Total (mgCaCO3/L)	85	43	45	54	64	47	77	66	63	56	68	164	154	92	83	94
3	Na% (%)	23	23	24	24	16	25	17	15	13	25	14	29	36	10	15	33
4	RSC (-)	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.0	
5	SAR (-)	0.8	0.4	0.4	0.5	0.3	0.5	0.4	0.3	0.2	0.5	0.3	1.6	1.5	0.2	0.3	1.0
	PESTICIDES																

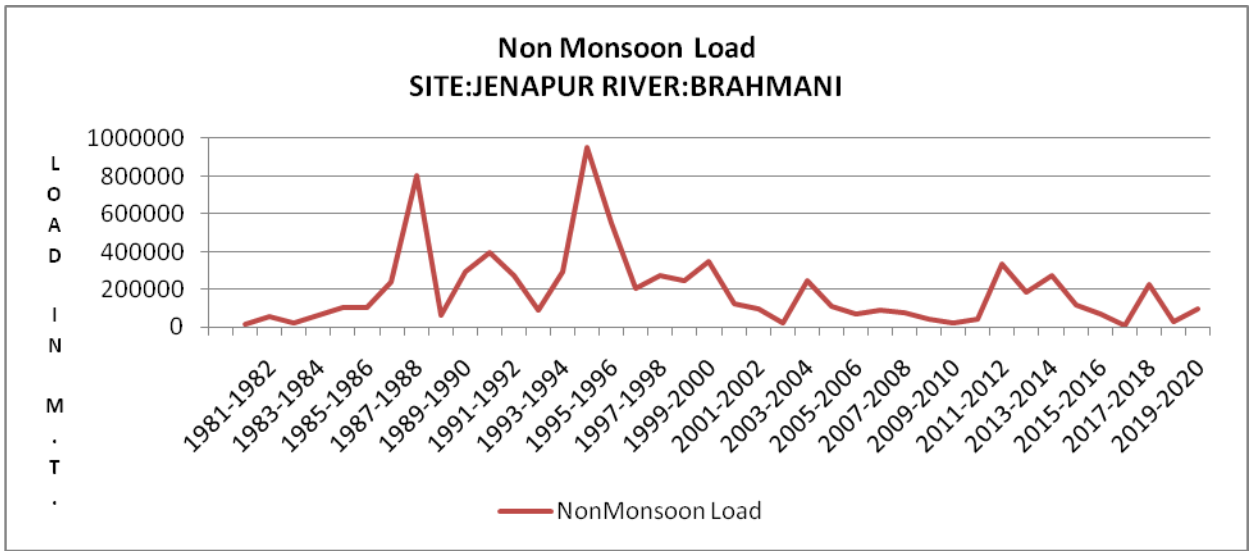

TOTAL ANNUAL DISCHARGE
SITE:JENAPUR RIVER:BRAHMANI
DISCHARGE IN CUMECS
400000.000
350000.000
300000.000
250000.000
200000.000
150000.000
100000.000
50000.000
0.000
1979-1980
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
2019-2020
Monsoon
Annual Runoff (cumecs)

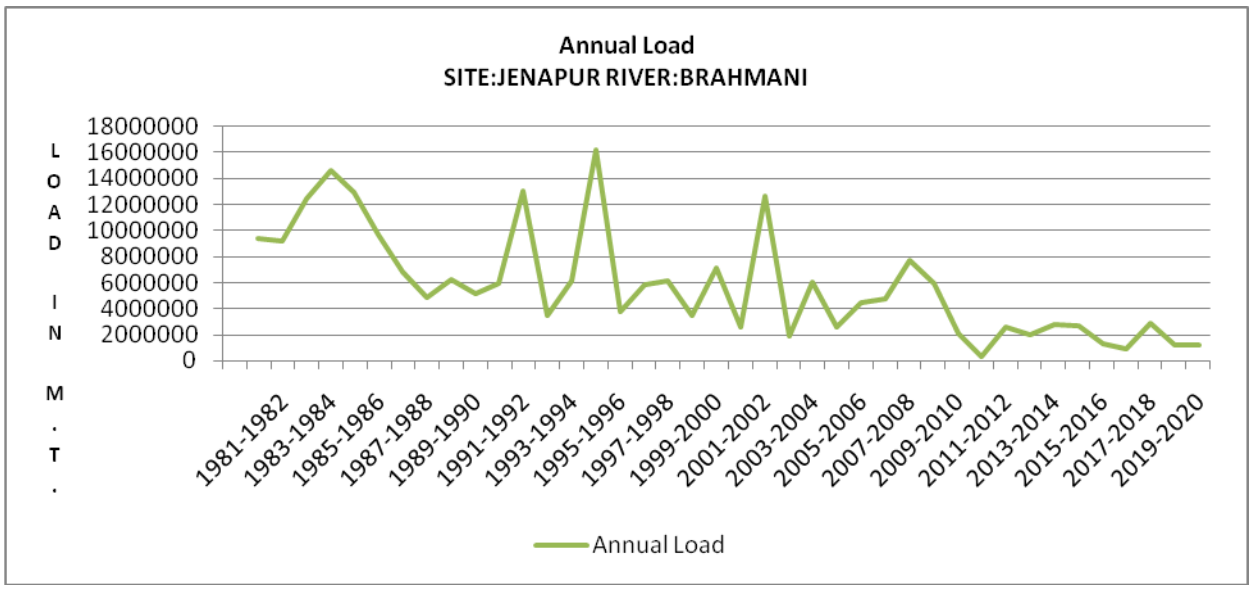

TOTAL ANNUAL DISCHARGE
SITE:JENAPUR RIVER:BRAHMANI
DISCHARGE IN CUMECS
70000.000
60000.000
50000.000
40000.000
30000.000
20000.000
10000.000
0.000
1979-1980
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
2019-2020
Non-Monsoon

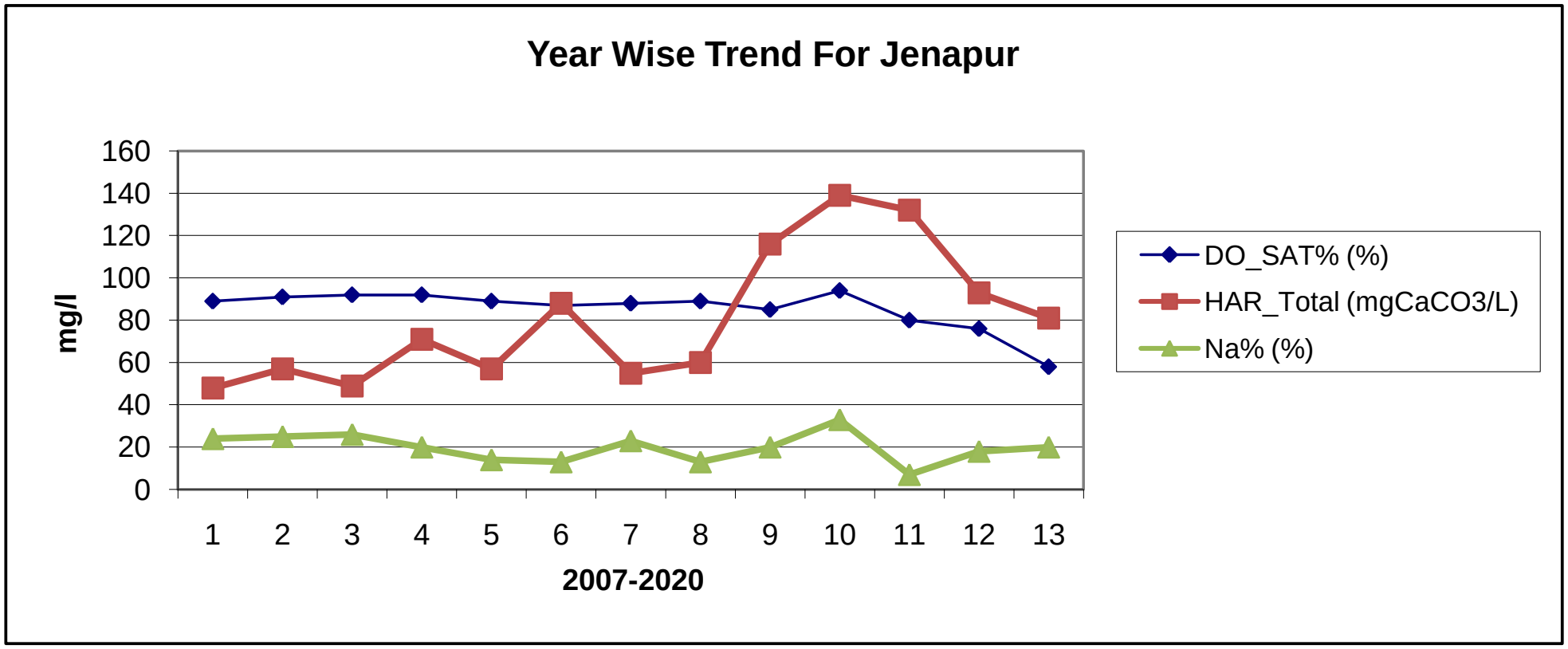

DEPENDABILITY FLOW FROM JUNE TO MAY
SITE:JENAPUR RIVER:BRAHMANI
DISCHARGE IN CUMECS
2500.000
2000.000
1500.000
1000.000
500.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
75% Dep
50% Dep
25% Dep

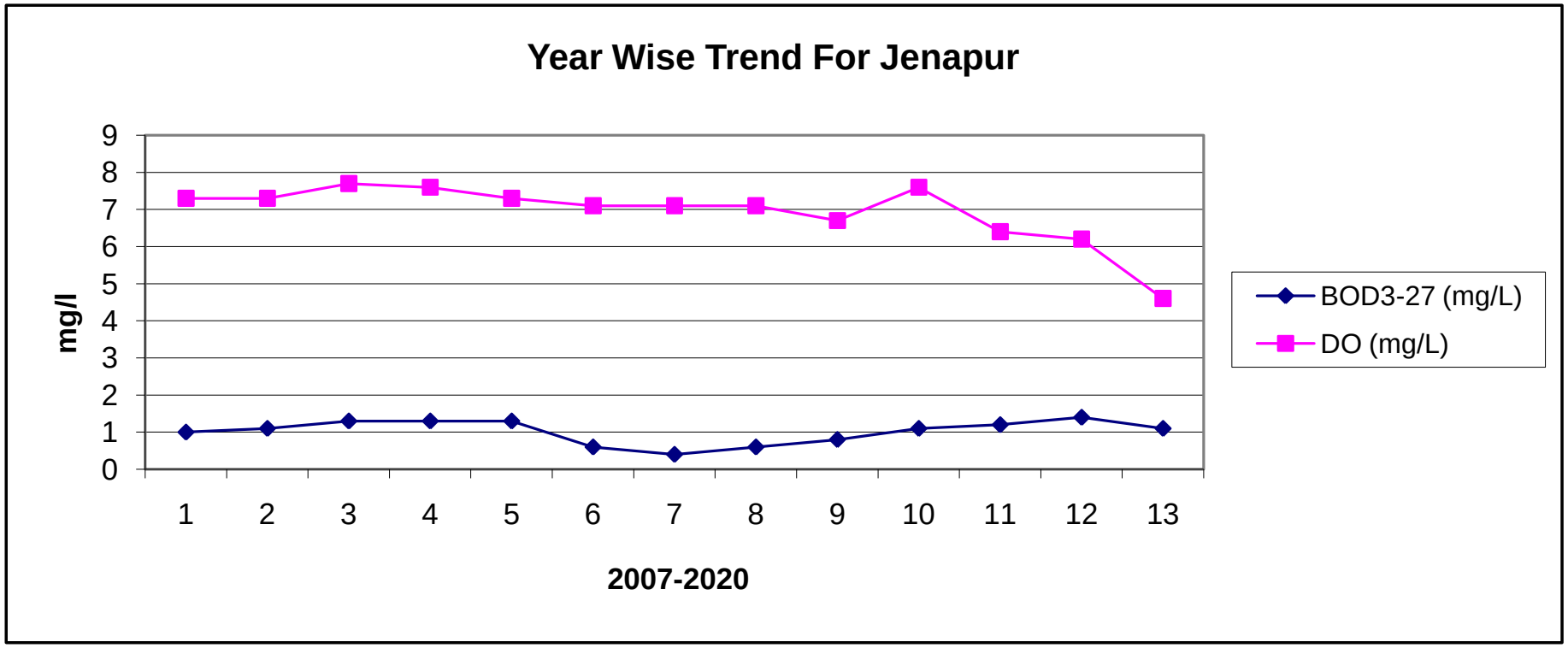

MAXIMUM-MINIMUM DISCHARGE FROM JUNE TO MAY
SITE:JENAPUR RIVER:BRAHMANI
DISCHARGE IN CUMECS
5000.000
4500.000
4000.000
3500.000
3000.000
2500.000
2000.000
1500.000
1000.000
500.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
Maximum
Minimum

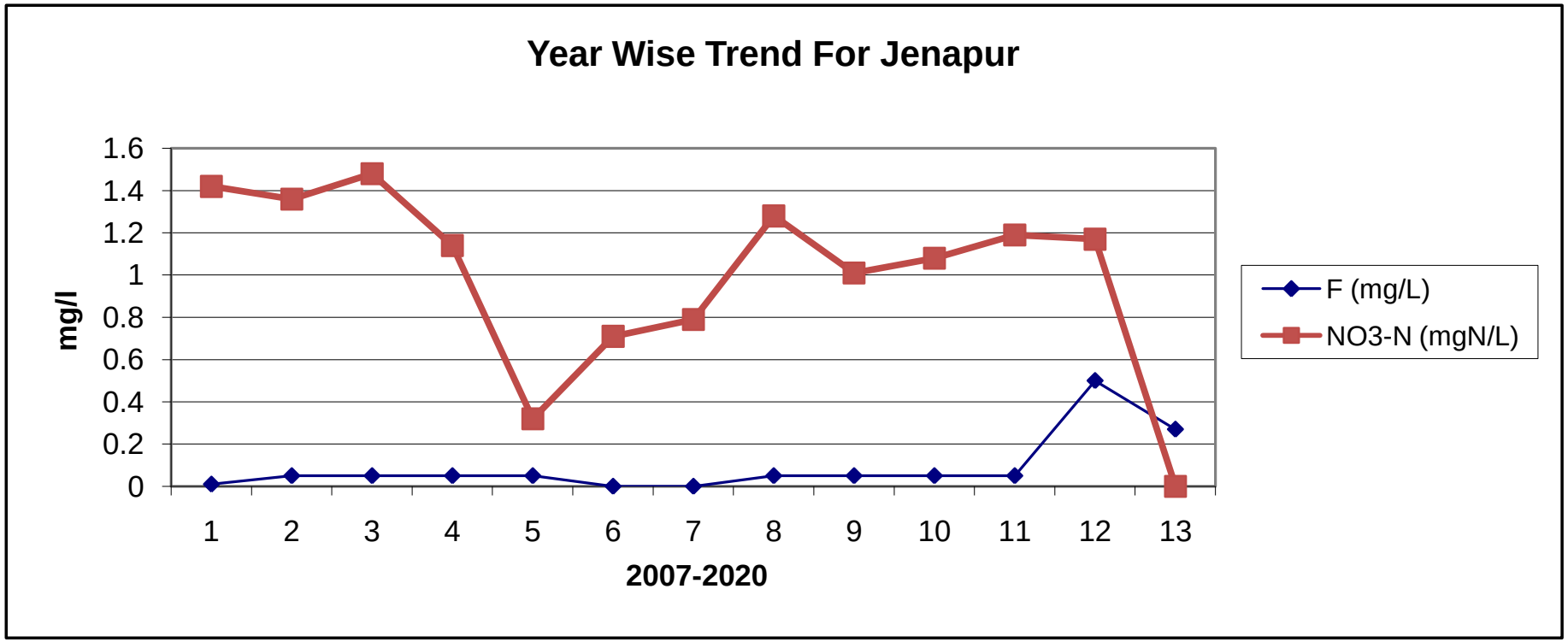

Monsoon Load
SITE:JENAPUR RIVER:BRAHMANI
LOAD IN M.T.
20000000
15000000
10000000
5000000
0
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
2019-2020
Monsoon Load

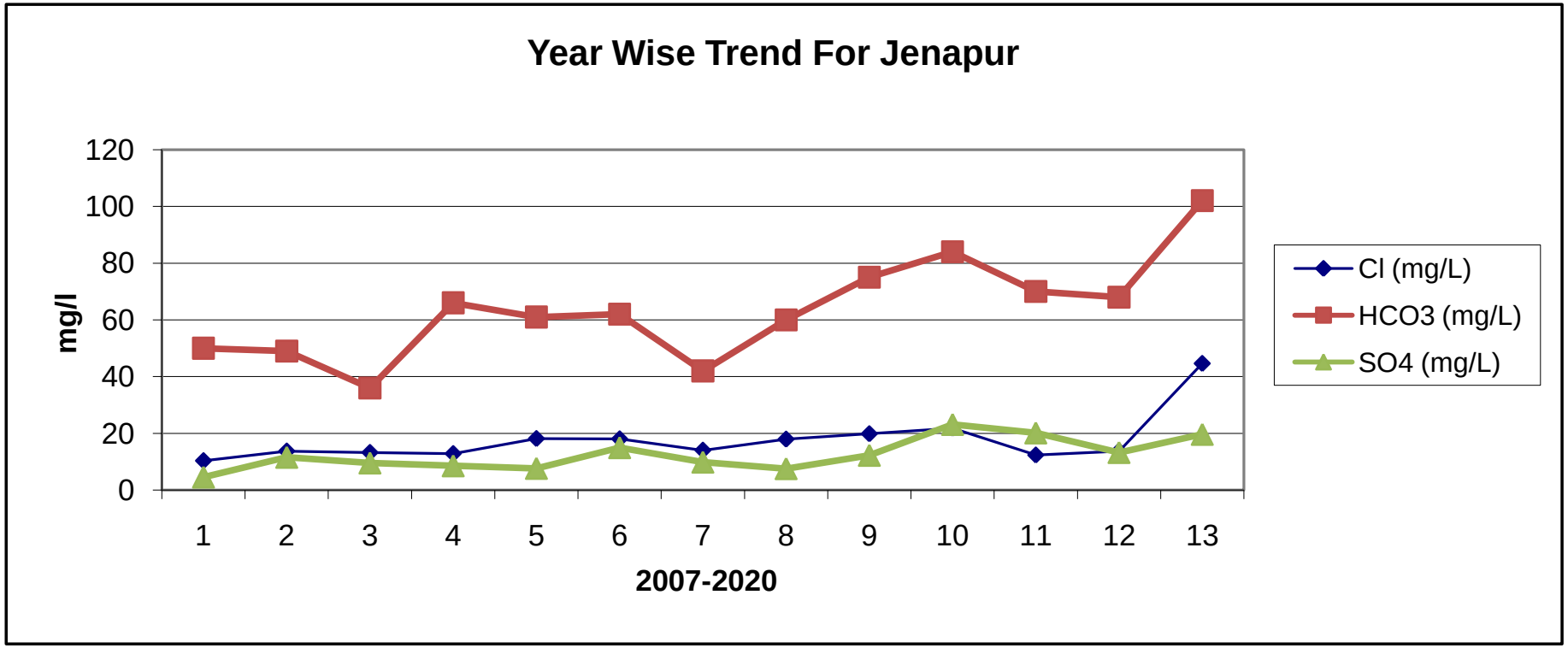

Non Monsoon Load
SITE:JENAPUR RIVER:BRAHMANI
LOAD IN M.T.
1000000
800000
600000
400000
200000
0
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
2019-2020
NonMonsoon Load

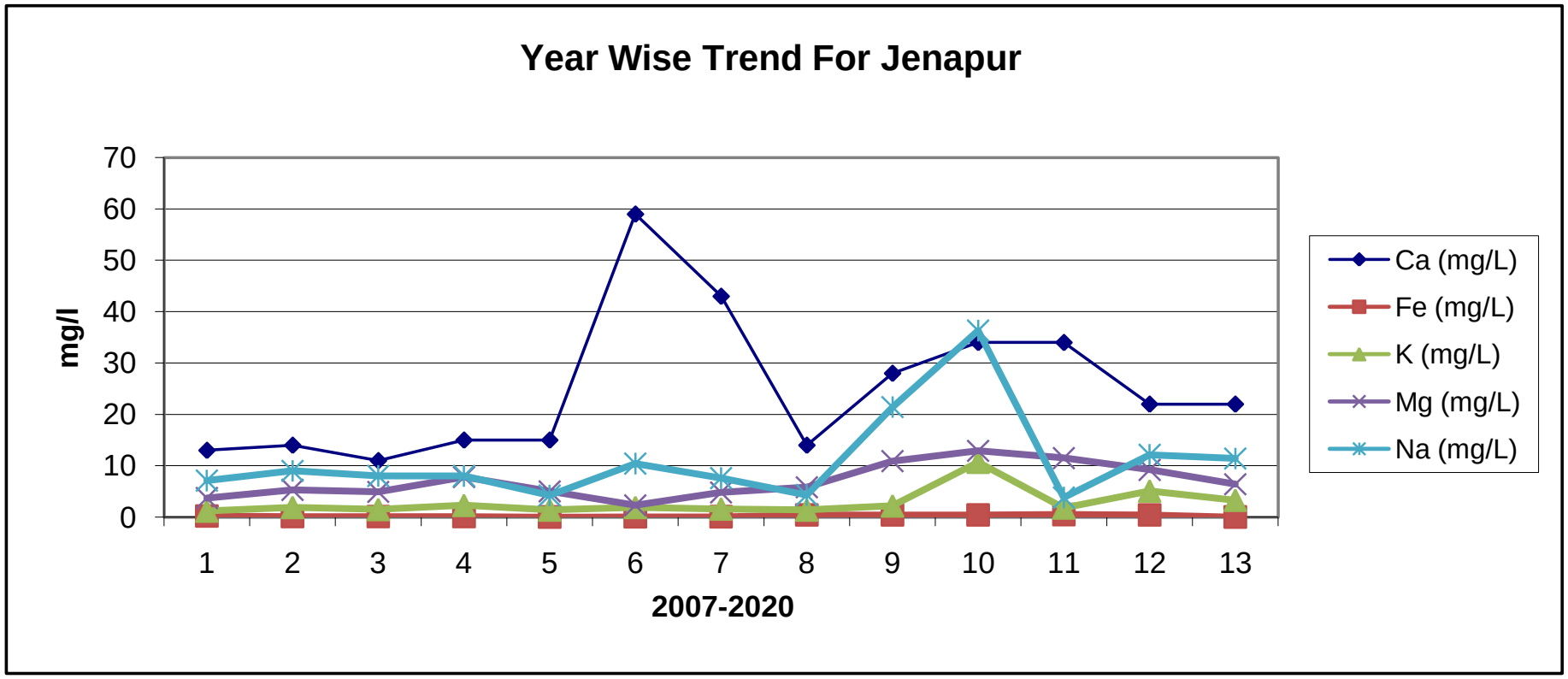

Annual Load
SITE:JENAPUR RIVER:BRAHMANI
LOAD IN M.T.
18000000
16000000
14000000
12000000
10000000
8000000
6000000
4000000
2000000
0
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
2019-2020
Annual Load


Year Wise Trend For Jenapur
160
140
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
DO_SAT% (%)
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For Jenapur
mg/l
9
8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
BOD3-27 (mg/L)
DO (mg/L)


Year Wise Trend For Jenapur
mg/l
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend For Jenapur
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year Wise Trend For Jenapur
70
60
50
40
30
20
10
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
Ca (mg/L)
Fe (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

SITE ALTUMA

SECTION-I(HISTORY SHEET,DISCHARGE,CROSS SECTION)

HISTORY SHEET

Water Year : 2019-2020

Site	:	**Altuma**	**Code**	:	**EBA00I3**
State	:	Orissa	District		Dhenkanal
Basin	:	Brahmani-Baitarani	Independent River	:	Brahmni
Tributary	:	Ramyala	Sub Tributary	:	Ramyala
Sub-Sub Tributary	:	Ramyala	Local River	:	Ramyala
Division	:	E.E., Bhubaneswar	Sub-Division	:	Rourkela
Drainage Area	:	830 Sq. Km.	Bank	:	Left
Latitude	:	20°55'51"	Longitude	:	85°31'09"
Zero of Gauge (m)	:	44 (m.s.l)	6/8/1990	-	12/31/2020
		Opening Date	Closing Date		
Gauge	:	6/8/1990			
Discharge	:	7/25/1990			
Sediment	:	8/19/2013			
Water Quality	:				

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1993-1994	791.2	49.620	8/15/1993	0.500	46.300	6/9/1993
1994-1995	329.4	49.740	8/17/1994	0.600	46.280	6/2/1994
1995-1996	333.2	48.830	8/9/1995	0.780	46.160	5/31/1996
1996-1997	500.7	48.800	6/22/1996	0.620	46.145	6/20/1996
1997-1998	922.3	49.940	8/6/1997	0.550	46.180	6/17/1997
1998-1999	377.1	48.380	7/3/1998	0.590	46.260	6/2/1998
1999-2000	500.0	50.000	10/31/1999	1.530	46.290	6/10/1999
2000-2001	392.5	48.620	8/31/2000	0.370	46.200	5/23/2001
2001-2002	475.4	48.780	7/9/2001	0.485	46.160	6/29/2001
2002-2003	102.5	47.130	9/6/2002	0.796	46.125	6/10/2002
2003-2004	581.5	48.910	9/7/2003	1.000	46.185	1/18/2004
2004-2005	250.3	47.980	8/13/2004	0.963	46.130	6/28/2004
2005-2006	758.4	49.780	7/31/2005	0.159	45.985	6/25/2005
2006-2007	531.1	48.860	8/23/2006	1.054	45.990	5/31/2007
2007-2008	543.0	48.675	9/24/2007	0.674	45.960	6/14/2007
2008-2009	536.8	49.560	9/18/2008	0.785	45.920	6/3/2008
2009-2010	892.7	50.150	7/21/2009	1.124	45.910	6/9/2009
2010-2011	243.8	47.580	6/30/2010	0.584	45.855	6/6/2010
2011-2012	832.0	49.585	9/23/2011	1.069	45.820	6/1/2011
2012-2013	460.8	48.460	9/11/2012	0.000	46.200	8/16/2012
2013-2014	399.4	47.980	10/10/2013	0.792	45.650	6/7/2013
2014-2015	783.5	49.505	8/5/2014	0.621	45.540	6/30/2014

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
2015-2016	241.3	47.305	7/29/2015	0.552	45.360	5/20/2016
2016-2017	303.1	47.650	8/16/2016	0.000	45.640	6/21/2016
2017-2018	61.62	46.420	8/3/2017	0.591	45.475	4/1/2018
2018-2019	384.2	47.750	9/22/2018	1.091	45.500	6/21/2018
2019-2020	451.5	47.355	9/26/2019	1.057	45.270	6/27/2019

Stage-Discharge Data for the period 2019 - 2020

Station Name : Altuma (EBA00I3) **Division : E.E., Bhubaneswar**

Local River : Ramyala **Sub-Division : Rourkela**

Day	Jun		Jul		Aug		Sep		Oct		Nov	
	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q
1	45.390	1.689	45.580	8.371	45.580	9.390	45.940	26.54 *	45.980	19.60	45.630	10.69
2	45.410	1.819 *	45.585	8.804	45.555	9.088	45.935	26.00	45.980	32.99 *	45.650	11.09
3	45.400	1.775	45.510	5.421	45.765	12.91	45.930	25.87	45.920	23.78	45.710	14.40 *
4	45.380	1.539	45.550	6.195 *	45.670	10.57 *	46.150	28.13	45.910	22.95	45.650	12.30
5	45.370	1.242 *	45.485	4.972	45.665	10.45	45.965	30.08	45.855	21.80	45.640	11.29
6	45.400	2.077	45.490	5.084	45.695	13.02	45.965	23.86	45.840	20.54 *	45.620	11.04
7	45.420	2.309	45.570	10.72 *	46.350	76.21	46.525	102.5	45.870	23.06 *	45.600	10.80
8	45.390	1.676	45.495	5.515	46.035	50.16	48.970	437.4 *	45.900	25.57 *	45.590	10.15
9	45.400	1.646 *	45.450	3.881	46.045	47.83	46.480	145.7 *	45.890	24.73	45.580	9.772
10	45.390	1.885	45.420	3.047	45.835	22.36	46.300	75.74	45.830	20.43	45.600	10.87 *
11	45.370	1.617	45.470	4.469	45.740	10.50 *	46.190	68.62	45.880	23.98	45.530	7.013
12	45.350	1.536	45.410	2.848	45.660	9.320 *	46.275	68.13	45.800	18.39	45.520	5.849 *
13	45.370	2.003	45.535	6.567	46.370	81.86	47.355	328.7	45.820	19.17 *	45.520	5.848
14	45.700	15.65	45.470	4.502 *	46.205	60.74	46.190	60.79	45.770	17.21	45.550	7.781
15	45.460	4.116	45.440	3.567	45.990	33.85 *	46.060	40.91 *	45.795	13.93	45.530	5.597
16	45.440	3.604 *	45.410	2.860	45.875	19.93	46.065	41.69	45.760	13.59	45.500	5.101
17	45.390	2.405	45.420	3.114	45.800	15.66	46.020	37.24	45.720	11.70	45.480	4.368 *
18	45.330	1.551	45.810	30.67	46.320	64.75 *	46.100	46.96	45.710	11.55	45.470	4.000
19	45.310	1.488	45.630	11.87	46.035	37.83	46.080	45.85	45.690	11.12	45.450	3.962
20	45.310	1.343	45.620	10.32	45.855	17.21	46.365	109.1	45.660	10.88 *	45.440	3.619
21	45.495	5.024	45.590	9.127 *	45.865	18.20	45.995	32.49	45.590	10.29	45.435	3.543
22	45.415	2.693	45.495	5.350	45.785	18.09	45.920	19.43 *	45.610	10.84	45.420	3.598
23	45.370	2.453 *	45.460	4.419	45.695	13.62	45.965	27.26	45.605	10.75	45.420	3.534
24	45.380	2.539	45.470	4.691	46.210	72.44	45.905	24.21	46.150	12.03	45.415	3.315 *
25	45.340	1.487	45.495	5.859	46.530	161.2 *	46.500	135.4	46.150	62.83	45.415	3.314
26	45.280	1.333	46.070	54.72	46.110	44.69	47.355	451.5	46.010	38.79	45.390	3.041
27	45.270	1.057	45.735	20.75	46.145	50.00	46.005	30.88	45.860	22.91 *	45.360	2.902
28	45.300	1.243	45.790	27.75 *	46.045	38.88	46.080	39.48	45.775	13.91	45.350	2.754
29	45.320	1.454	45.825	31.50	45.980	27.39	46.140	48.52 *	45.760	11.81	45.340	2.564
30	45.480	5.000 *	45.725	20.40	46.300	86.06	46.065	37.24	45.690	11.46	45.330	2.536
31			45.640	12.12	45.975	30.28			45.650	11.18		
Ten-Daily Mean												
I Ten-Daily	45.395	1.766	45.514	6.201	45.819	26.20	46.416	92.18	45.898	23.54	45.627	11.24
II Ten-Daily	45.403	3.532	45.522	8.078	45.985	35.17	46.270	84.80	45.761	15.15	45.499	5.314
III Ten-Daily	45.365	2.428	45.663	17.88	46.058	50.99	46.193	84.64	45.805	19.71	45.388	3.110
Monthly												
Min.	45.270	1.057	45.410	2.848	45.555	9.088	45.905	19.43	45.590	10.29	45.330	2.536
Max.	45.700	15.65	46.070	54.72	46.530	161.2	48.970	451.5	46.150	62.83	45.710	14.40
Mean	45.388	2.575	45.569	10.95	45.958	37.89	46.293	87.21	45.820	19.48	45.505	6.555

Annual Runoff in MCM = 487 Annual Runoff in mm = 586

Peak Observed Discharge = 451.5 cumecs on 26/09/2019 Corres. Water Level :47.355 m

Lowest Observed Discharge = 1.057 cumecs on 27/06/2019 Corres. Water Level :45.27 m

Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

Stage-Discharge Data for the period 2019 - 2020

Station Name : Altuma (EBA00I3) **Division : E.E., Bhubaneswar**

Local River : Ramyala **Sub-Division : Rourkela**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	45.320	2.492 *	44.995	1.461	45.100	3.352	45.125	3.240 *			45.215	5.177
2	45.310	2.448	44.990	1.250	45.095	2.841 *	45.115	3.060			45.210	4.586
3	45.310	2.273	44.990	1.237	45.095	2.850	45.110	3.271			45.205	5.869 *
4	45.310	2.198	45.380	8.015	45.085	2.818	45.115	3.492			45.205	5.872
5	45.320	2.226	45.210	4.314 *	45.100	3.486	45.160	4.449			45.290	7.873
6	45.300	2.215	45.120	2.364	45.150	4.168	45.190	5.621			45.250	6.823
7	45.290	2.073	45.100	1.888	45.130	4.114	45.445	16.80			45.290	9.492 *
8	45.290	2.073 *	45.100	1.447	45.150	4.257	45.320	10.46 *			45.230	5.465
9	45.280	2.007	45.100	1.249	45.230	4.521 *	45.305	10.04			45.420	7.809
10	45.280	1.972	45.050	1.199	45.150	4.519	45.250	7.134 *			45.310	6.432 *
11	45.280	1.953	45.020	1.252	45.105	2.988	45.205	4.758			45.260	5.805
12	45.270	1.789	45.015	1.256 *	45.080	2.795	45.165	3.901			45.240	5.402
13	45.270	1.670	44.995	1.269	45.060	2.215	45.150	3.896			45.190	4.375
14	45.260	1.754	44.990	1.116	45.050	2.082	45.150	3.542			45.160	2.967
15	45.250	1.771 *	44.985	1.332	45.045	1.647	45.130	2.945 *			45.130	2.505
16	45.250	1.771	44.985	1.183	45.055	1.909 *	45.130	2.944			45.120	2.228
17	45.250	1.746	45.010	1.392	45.080	2.560	45.130	3.430			45.730	11.04 *
18	45.250	1.759	45.040	1.716	45.075	2.456	45.125	2.840			45.360	5.694
19	45.240	1.594	45.045	1.642 *	45.080	2.557	45.125	2.293			45.280	3.355
20	45.240	1.619	45.045	1.641	45.090	2.974	45.250	6.613	45.280	6.504	45.275	3.415
21	45.015	1.534	45.055	1.774	45.090	2.709	45.573	4.723	45.235	4.808	45.700	15.39
22	45.015	1.587 *	45.040	1.527	45.090	2.713	45.160	4.266 *	45.400	10.09	45.470	8.595
23	45.005	1.587	45.045	1.927	45.100	3.229 *	45.135	4.249	45.270	6.251	45.450	4.261
24	45.005	1.583	45.045	1.816	45.105	3.487	45.115	3.727	45.220	5.738	45.395	2.749 *
25	45.005	1.583 *	45.070	2.237	45.110	3.688			45.265	6.104	45.370	2.062 *
26	45.000	1.523	45.060	2.230 *	45.300	9.802			45.270	7.093 *	45.360	1.787
27	45.005	1.566	45.060	2.521	45.180	5.258			45.270	7.095	45.350	1.738
28	45.005	1.595	45.055	2.487	45.135	3.839			45.250	6.748	45.340	1.700
29	45.005	1.595 *	45.055	2.397	45.130	3.598			45.220	5.579	45.895	45.18
30	45.005	1.503	45.075	2.499					45.220	5.467	45.525	8.600
31	45.000	1.489	45.125	4.161							45.430	6.455 *
Ten-Daily Mean												
I Ten-Daily	45.301	2.197	45.104	2.442	45.129	3.693	45.214	6.757			45.263	6.540
II Ten-Daily	45.256	1.743	45.013	1.380	45.072	2.418	45.156	3.716	45.280	6.504	45.274	4.679
III Ten-Daily	45.006	1.559	45.062	2.325	45.138	4.258	45.246	4.241	45.262	6.497	45.480	8.957
Monthly												
Min.	45.000	1.489	44.985	1.116	45.045	1.647	45.110	2.293	45.220	4.808	45.120	1.700
Max.	45.320	2.492	45.380	8.015	45.300	9.802	45.572	16.80	45.400	10.09	45.895	45.18
Mean	45.182	1.824	45.060	2.058	45.112	3.429	45.195	5.071	45.264	6.498	45.344	6.797

Peak Computed Discharge = 437.4 cumecs on 08/09/2019 Corres. Water Level :48.97 m

Lowest Computed Discharge = 1.242 cumecs on 05/06/2019 Corres. Water Level :45.37 m

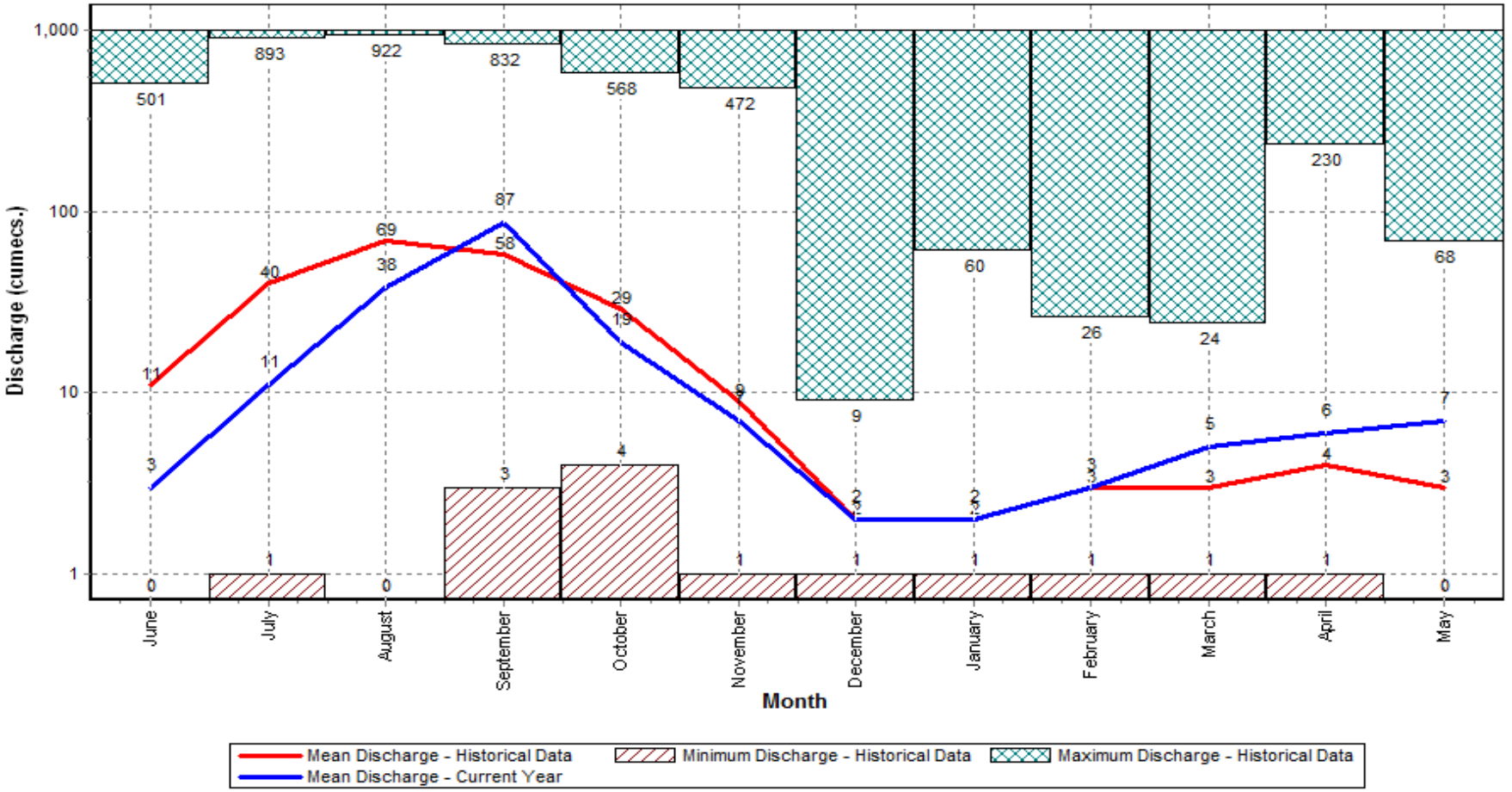
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2019-2020

Station Name : Altuma (EBA00I3) | **Data considered : 1993-2020** | **Division : E.E., Bhubaneswar**

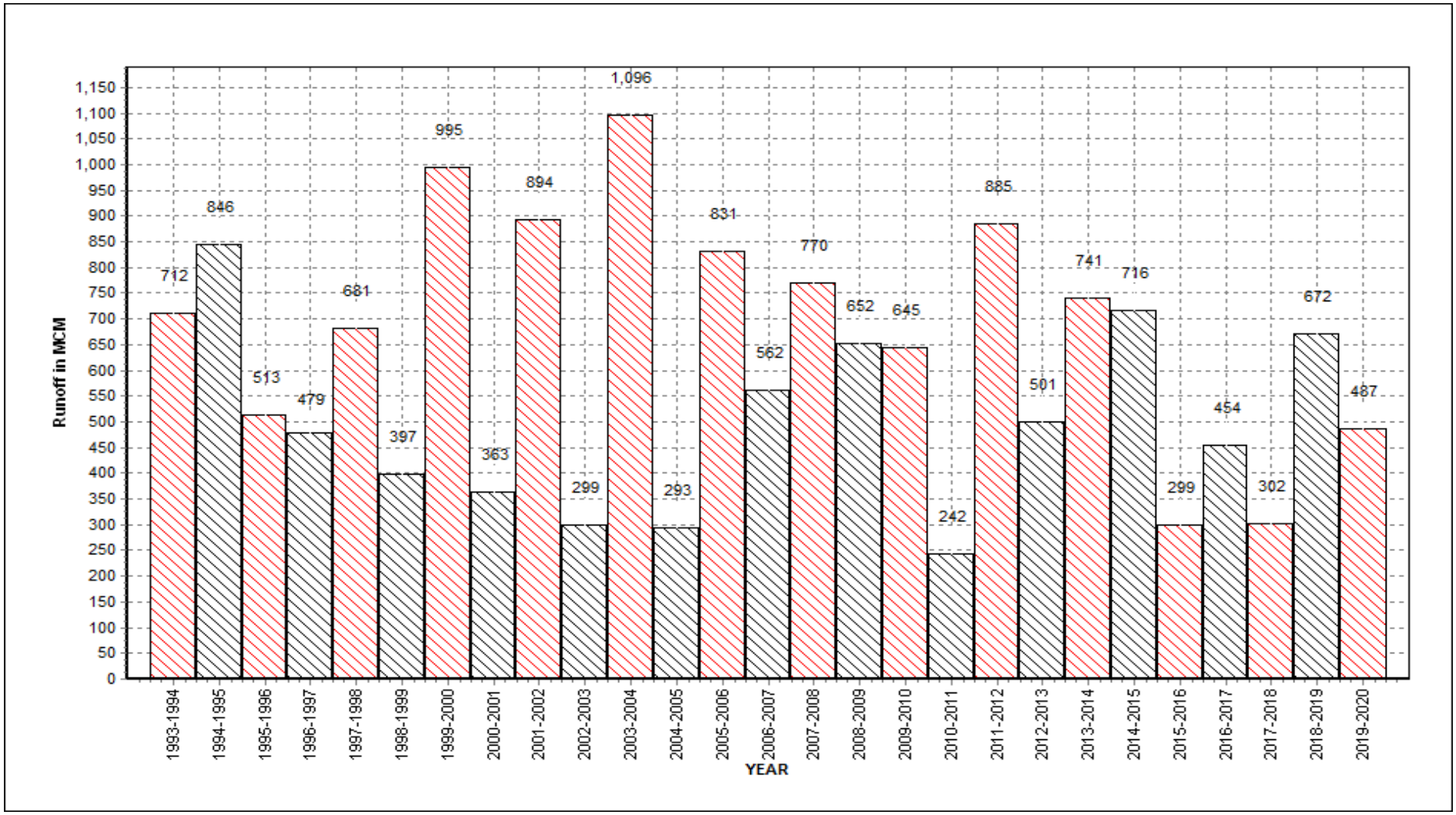
Local River : Ramyala | **Sub-Division : Rourkela**



Annual Runoff Values for the period: 1993 - 2020

Station Name : Altuma (EBA00I3) **Division : E.E., Bhubaneswar**

Local River : Ramyala **Sub-Division : Rourkela**

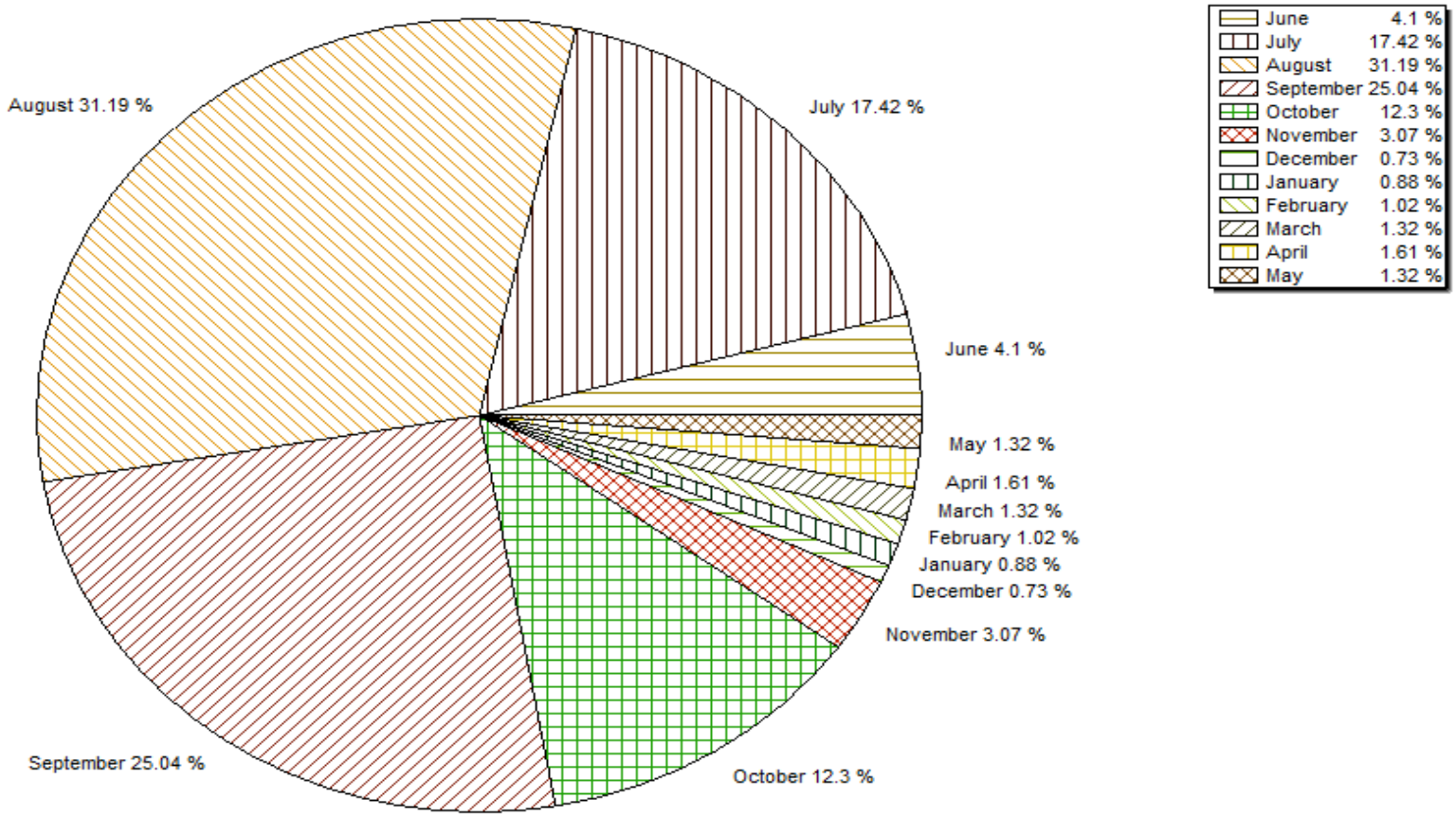


Note: Missing values have not been considered while arriving at Annual Runoff

Monthly Average Runoff based on period : 1993-2019

Station Name : Altuma (EBA00I3) **Division : E.E., Bhubaneswar**

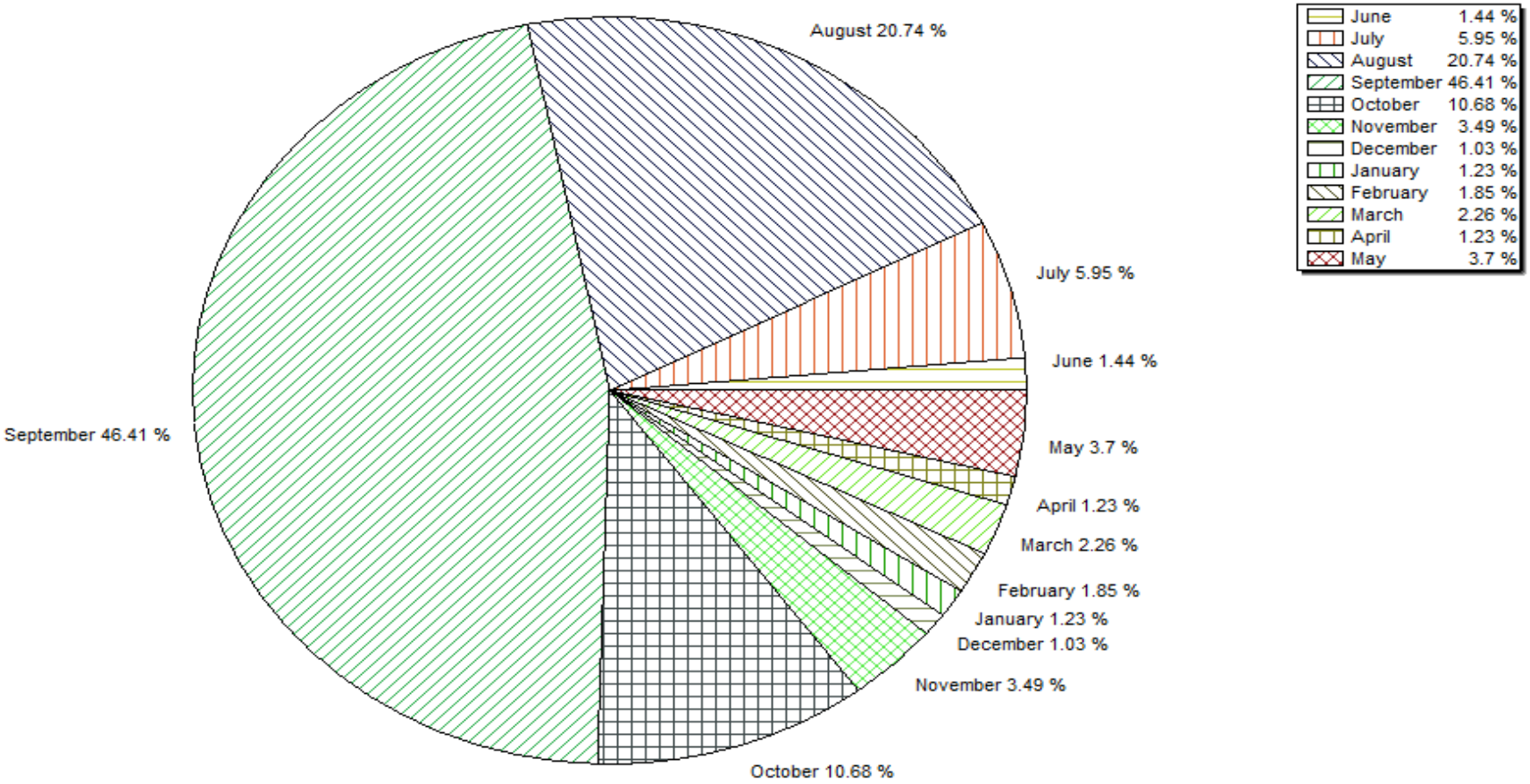
Local River : Ramyala **Sub-Division : Rourkela**



Monthly Runoff for the Year : 2019-2020

Station Name : Altuma (EBA00I3) **Division : E.E., Bhubaneswar**

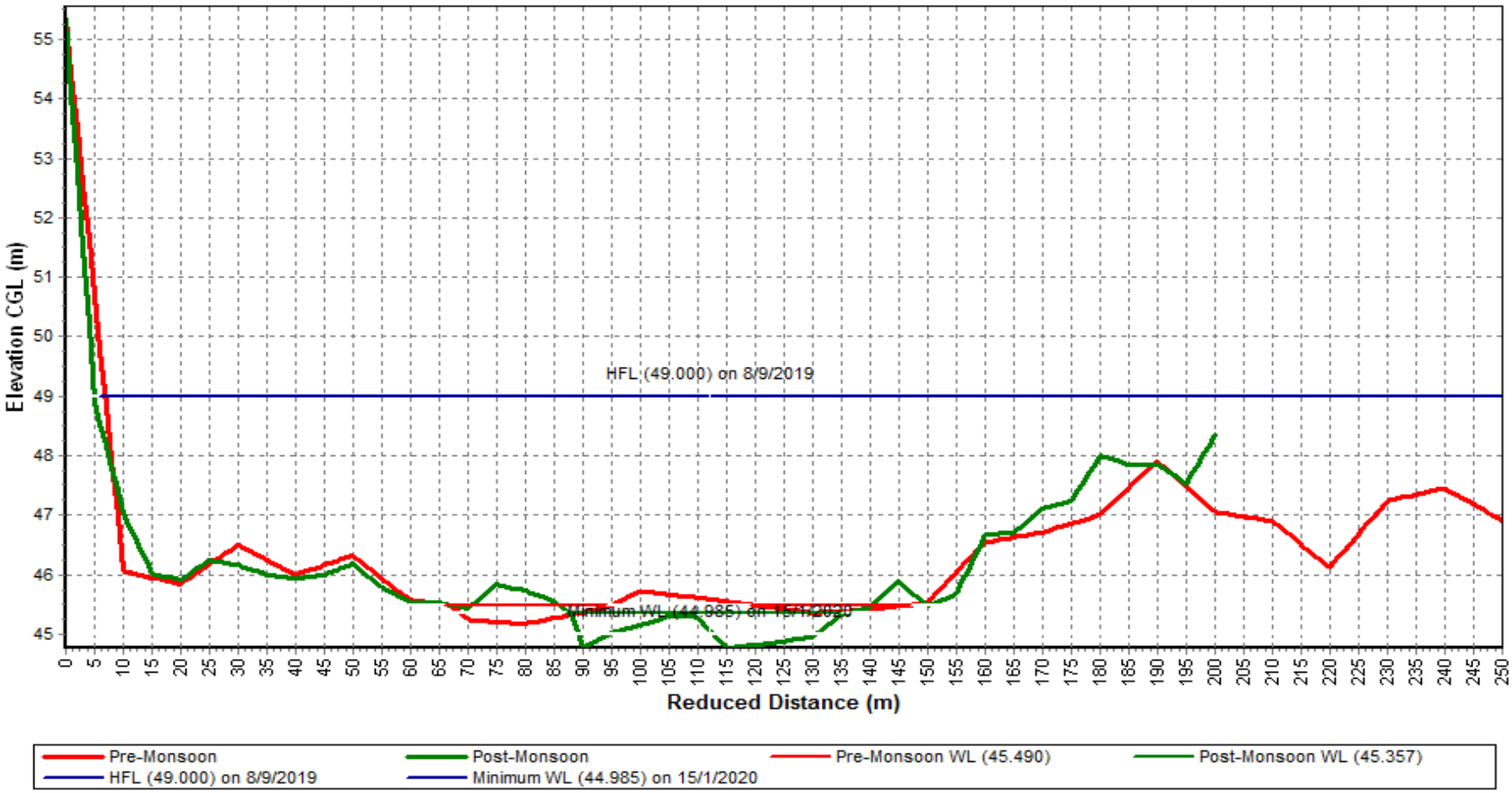
Local River : Ramyala **Sub-Division : Rourkela**



Pre-Monsoon & Post-Monsoon X-Section for Water Year : 2019-2020

Station Name : Altuma (EBA00I3) **Division : E.E., Bhubaneswar**

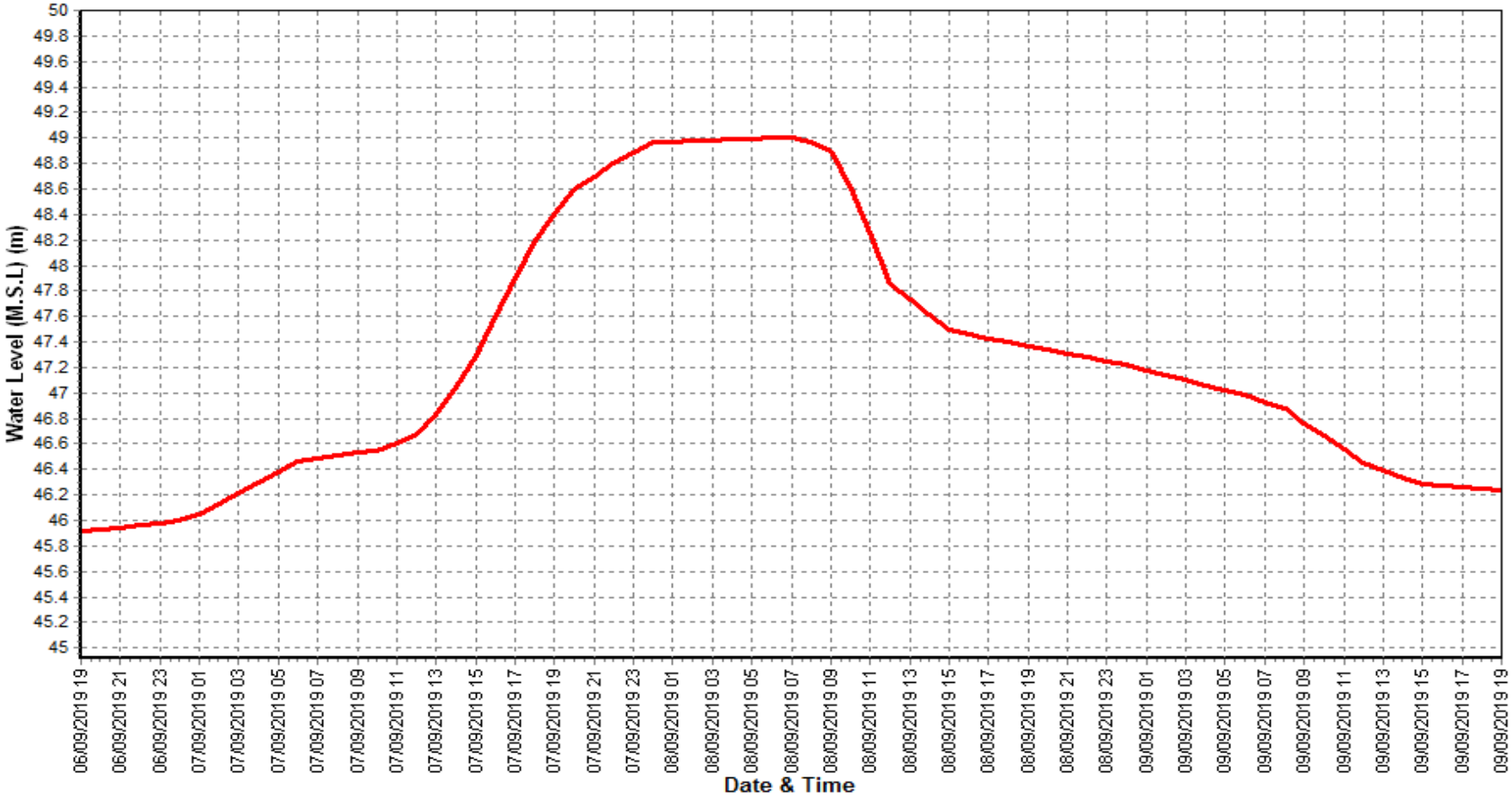
Local River : Ramyala **Sub-Division : Rourkela**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2019-2020

Station Name : Altuma (EBA00I3) **Division : E.E., Bhubaneswar**

Local River : Ramyala **Sub-Division : Rourkela**

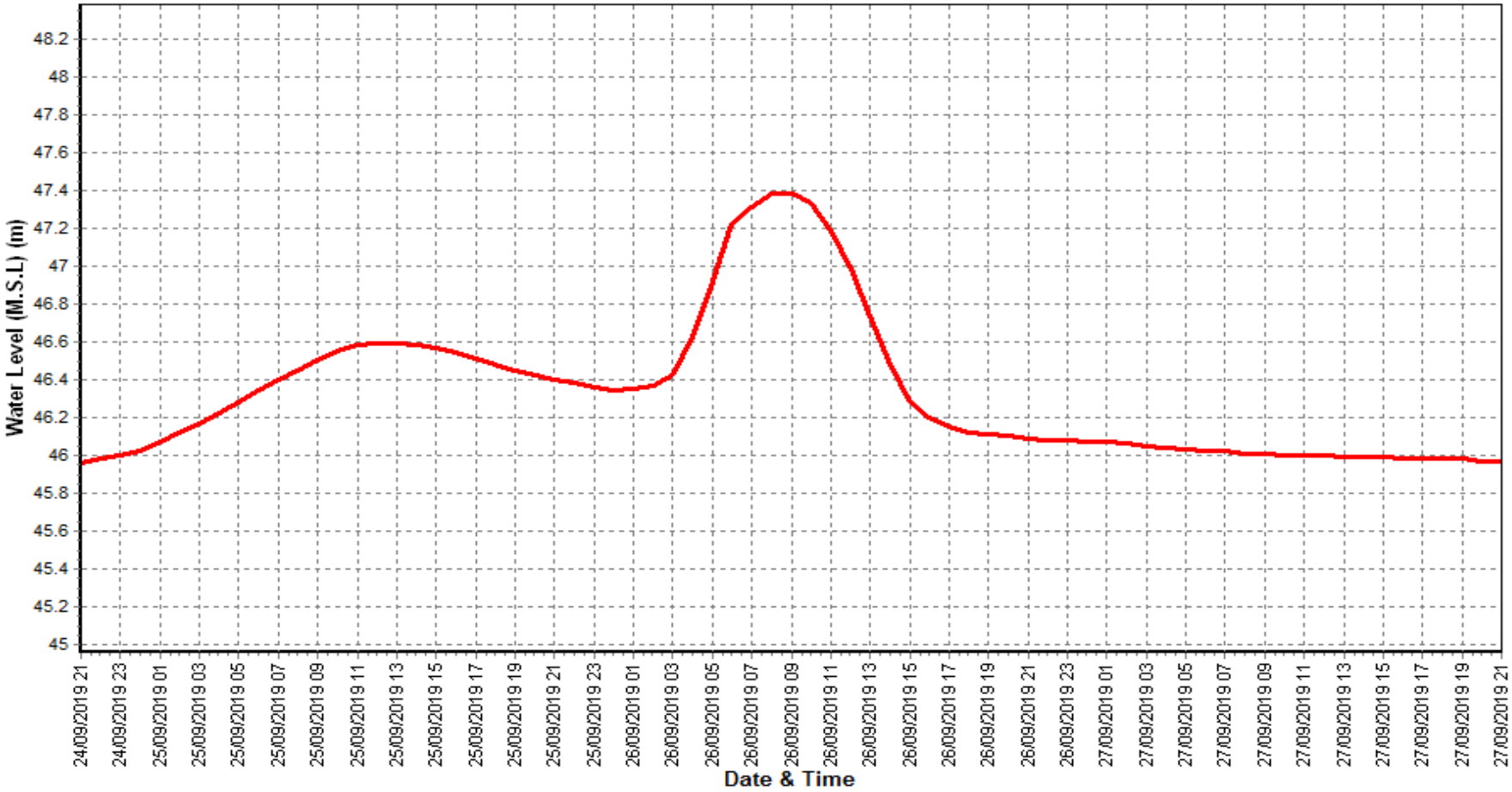


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2019-2020

Station Name : Altuma (EBA00I3) **Division : E.E., Bhubaneswar**

Local River : Ramyala **Sub-Division : Rourkela**

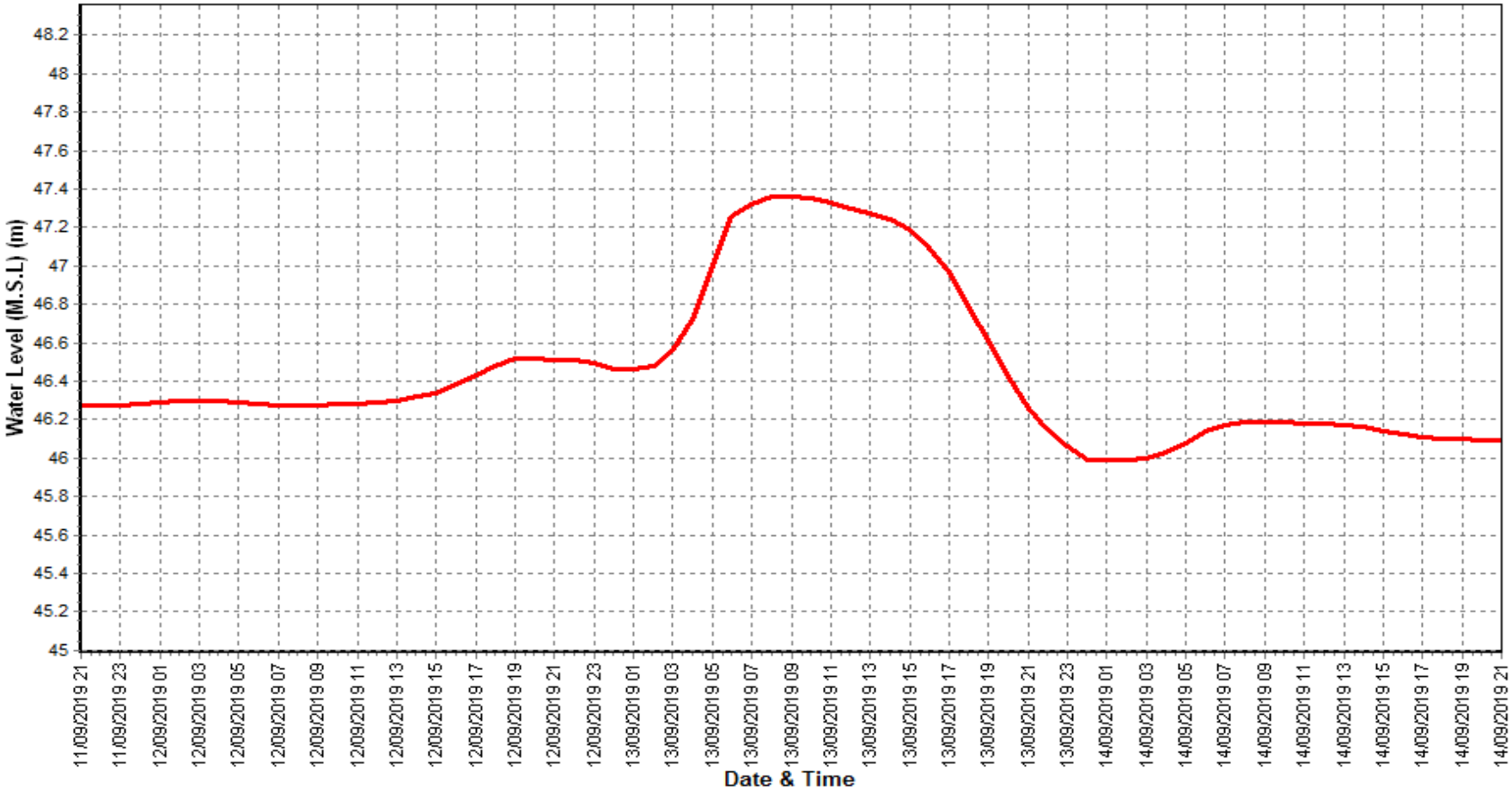


Time Span: 72 Hrs

Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2019-2020

Station Name : Altuma (EBA00I3) **Division : E.E., Bhubaneswar**

Local River : Ramyala **Sub-Division : Rourkela**



Time Span: 72 Hrs

SECTION-II (SEDIMENT DATA)

Daily Observed Sediment Datasheet for period : 2019-2020

Station Name : Altuma (EBA00I3) **Division : E.E., Bhubaneswar**

Local River : Ramyala **Sub-Division : Rourkela**

Day	Jun						Jul						Aug					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	1.689	0.000	0.000	0.018	0.018	3	8.371	0.000	0.000	0.016	0.016	12	9.390	0.000	0.000	0.056	0.056	45
2	1.819	0.000	0.000	0.019	0.019	3	8.804	0.000	0.000	0.014	0.014	11	9.088	0.000	0.000	0.052	0.052	41
3	1.775	0.000	0.000	0.014	0.014	2	5.421	0.000	0.000	0.012	0.012	6	12.91	0.000	0.000	0.130	0.130	145
4	1.539	0.000	0.000	0.010	0.010	1	6.195	0.000	0.000	0.012	0.012	6	10.57	0.000	0.000	0.130	0.130	119
5	1.242	0.000	0.000	0.014	0.014	2	4.972	0.000	0.000	0.016	0.016	7	10.45	0.000	0.000	0.110	0.110	99
6	2.077	0.000	0.000	0.012	0.012	2	5.084	0.000	0.000	0.014	0.014	6	13.02	0.000	0.000	0.094	0.094	106
7	2.309	0.000	0.000	0.008	0.008	2	10.72	0.000	0.000	0.014	0.014	13	76.21	0.000	0.000	0.378	0.378	2489
8	1.676	0.000	0.000	0.010	0.010	1	5.515	0.000	0.000	0.016	0.016	8	50.16	0.000	0.000	0.196	0.196	849
9	1.646	0.000	0.000	0.010	0.010	1	3.881	0.000	0.000	0.012	0.012	4	47.83	0.000	0.000	0.442	0.442	1827
10	1.885	0.000	0.000	0.012	0.012	2	3.047	0.000	0.000	0.012	0.012	3	22.36	0.000	0.000	0.148	0.148	286
11	1.617	0.000	0.000	0.014	0.014	2	4.469	0.000	0.000	0.012	0.012	5	10.50	0.000	0.000	0.148	0.148	134
12	1.536	0.000	0.000	0.016	0.016	2	2.848	0.000	0.000	0.012	0.012	3	9.320	0.000	0.000	0.148	0.148	119
13	2.003	0.000	0.000	0.014	0.014	2	6.567	0.000	0.000	0.018	0.018	10	81.86	0.000	0.000	0.408	0.408	2886
14	15.65	0.000	0.000	0.025	0.025	34	4.502	0.000	0.000	0.018	0.018	7	60.74	0.000	0.000	0.090	0.090	472
15	4.116	0.000	0.000	0.014	0.014	5	3.567	0.000	0.000	0.012	0.012	4	33.85	0.000	0.000	0.090	0.090	263
16	3.604	0.000	0.000	0.014	0.014	4	2.860	0.000	0.000	0.014	0.014	3	19.93	0.000	0.000	0.130	0.130	224
17	2.405	0.000	0.000	0.014	0.014	3	3.114	0.000	0.000	0.012	0.012	3	15.66	0.000	0.000	0.092	0.092	124
18	1.551	0.000	0.000	0.012	0.012	2	30.67	0.000	0.000	0.027	0.027	71	64.75	0.000	0.000	0.092	0.092	515
19	1.488	0.000	0.000	0.014	0.014	2	11.87	0.000	0.000	0.016	0.016	16	37.83	0.000	0.000	0.178	0.178	582
20	1.343	0.000	0.000	0.014	0.014	2	10.32	0.000	0.000	0.039	0.039	35	17.21	0.000	0.000	0.082	0.082	122
21	5.024	0.000	0.000	0.012	0.012	5	9.127	0.000	0.000	0.039	0.039	31	18.20	0.000	0.000	0.042	0.042	66
22	2.693	0.000	0.000	0.012	0.012	3	5.350	0.000	0.000	0.022	0.022	10	18.09	0.000	0.000	0.040	0.040	63
23	2.453	0.000	0.000	0.014	0.014	3	4.419	0.000	0.000	0.016	0.016	6	13.62	0.000	0.000	0.058	0.058	68
24	2.539	0.000	0.000	0.014	0.014	3	4.691	0.000	0.000	0.024	0.024	10	72.44	0.000	0.000	0.023	0.023	146
25	1.487	0.000	0.000	0.012	0.012	2	5.859	0.000	0.000	0.028	0.028	14	161.2	0.000	0.000	0.023	0.023	326
26	1.333	0.000	0.000	0.014	0.014	2	54.72	0.000	0.000	0.039	0.039	184	44.69	0.000	0.000	0.094	0.094	363
27	1.057	0.000	0.000	0.012	0.012	1	20.75	0.000	0.000	0.037	0.037	66	50.00	0.000	0.000	0.092	0.092	397
28	1.243	0.000	0.000	0.014	0.014	2	27.75	0.000	0.000	0.037	0.037	89	38.88	0.000	0.000	0.076	0.076	255
29	1.454	0.000	0.000	0.012	0.012	2	31.50	0.000	0.000	0.043	0.043	117	27.39	0.000	0.000	0.062	0.062	147
30	5.000	0.000	0.000	0.016	0.016	7	20.40	0.000	0.000	0.064	0.064	113	86.06	0.000	0.000	0.104	0.104	773
31							12.12	0.000	0.000	0.054	0.054	57	30.28	0.000	0.000	0.010	0.010	26
Ten Daily Mean																		
Ten Daily I	1.766	0.000	0.000	0.013	0.013	2	6.201	0.000	0.000	0.014	0.014	8	26.20	0.000	0.000	0.174	0.174	601
Ten Daily II	3.532	0.000	0.000	0.015	0.015	6	8.078	0.000	0.000	0.018	0.018	16	35.17	0.000	0.000	0.146	0.146	544
Ten Daily III	2.428	0.000	0.000	0.013	0.013	3	17.88	0.000	0.000	0.037	0.037	63	50.99	0.000	0.000	0.057	0.057	239
Monthly																		
Total						105						929						14079

Annual Sediment Load (Metric Tonnes) : 55202

Daily Observed Sediment Datasheet for period : 2019-2020

Station Name : Altuma (EBA00I3) **Division : E.E., Bhubaneswar**

Local River : Ramyala **Sub-Division : Rourkela**

Day	Sep						Oct						Nov					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	26.54	0.000	0.000	0.012	0.012	28	19.60	0.000	0.000	0.022	0.022	37	10.69	0.000	0.000	0.012	0.012	11
2	26.00	0.000	0.000	0.012	0.012	27	32.99	0.000	0.000	0.020	0.020	57	11.09	0.000	0.000	0.014	0.014	13
3	25.87	0.000	0.000	0.033	0.033	74	23.78	0.000	0.000	0.025	0.025	51	14.40	0.000	0.000	0.016	0.016	20
4	28.13	0.000	0.000	0.200	0.200	486	22.95	0.000	0.000	0.014	0.014	28	12.30	0.000	0.000	0.013	0.013	14
5	30.08	0.000	0.000	0.038	0.038	99	21.80	0.000	0.000	0.046	0.046	87	11.29	0.000	0.000	0.013	0.013	13
6	23.86	0.000	0.000	0.032	0.032	66	20.54	0.000	0.000	0.042	0.042	75	11.04	0.000	0.000	0.012	0.012	11
7	102.5	0.000	0.000	0.360	0.360	3188	23.06	0.000	0.000	0.480	0.480	956	10.80	0.000	0.000	0.012	0.012	11
8	437.4	0.000	0.000	0.400	0.400	15118	25.57	0.000	0.000	0.048	0.048	106	10.15	0.000	0.000	0.011	0.011	10
9	145.7	0.000	0.000	0.350	0.350	4405	24.73	0.000	0.000	0.016	0.016	34	9.772	0.000	0.000	0.011	0.011	9
10	75.74	0.000	0.000	0.015	0.015	99	20.43	0.000	0.000	0.024	0.024	42	10.87	0.000	0.000	0.012	0.012	11
11	68.62	0.000	0.000	0.048	0.048	285	23.98	0.000	0.000	0.032	0.032	66	7.013	0.000	0.000	0.013	0.013	8
12	68.13	0.000	0.000	0.118	0.118	695	18.39	0.000	0.000	0.020	0.020	32	5.849	0.000	0.000	0.013	0.013	7
13	328.7	0.000	0.000	0.132	0.132	3749	19.17	0.000	0.000	0.018	0.018	30	5.848	0.000	0.000	0.012	0.012	6
14	60.79	0.000	0.000	0.048	0.048	252	17.21	0.000	0.000	0.016	0.016	24	7.781	0.000	0.000	0.014	0.014	9
15	40.91	0.000	0.000	0.040	0.040	141	13.93	0.000	0.000	0.013	0.013	16	5.597	0.000	0.000	0.012	0.012	6
16	41.69	0.000	0.000	0.026	0.026	94	13.59	0.000	0.000	0.018	0.018	21	5.101	0.000	0.000	0.011	0.011	5
17	37.24	0.000	0.000	0.016	0.016	51	11.70	0.000	0.000	0.012	0.012	12	4.368	0.000	0.000	0.010	0.010	4
18	46.96	0.000	0.000	0.060	0.060	243	11.55	0.000	0.000	0.011	0.011	11	4.000	0.000	0.000	0.012	0.012	4
19	45.85	0.000	0.000	0.040	0.040	158	11.12	0.000	0.000	0.014	0.014	13	3.962	0.000	0.000	0.010	0.010	3
20	109.1	0.000	0.000	0.104	0.104	980	10.88	0.000	0.000	0.012	0.012	11	3.619	0.000	0.000	0.008	0.008	3
21	32.49	0.000	0.000	0.040	0.040	112	10.29	0.000	0.000	0.010	0.010	9	3.543	0.000	0.000	0.006	0.006	2
22	19.43	0.000	0.000	0.060	0.060	101	10.84	0.000	0.000	0.011	0.011	10	3.598	0.000	0.000	0.006	0.006	2
23	27.26	0.000	0.000	0.018	0.018	42	10.75	0.000	0.000	0.012	0.012	11	3.534	0.000	0.000	0.008	0.008	2
24	24.21	0.000	0.000	0.022	0.022	46	12.03	0.000	0.000	0.019	0.019	20	3.315	0.000	0.000	0.010	0.010	3
25	135.4	0.000	0.000	0.112	0.112	1310	62.83	0.000	0.000	0.120	0.120	651	3.314	0.000	0.000	0.012	0.012	3
26	451.5	0.000	0.000	0.098	0.098	3823	38.79	0.000	0.000	0.052	0.052	174	3.041	0.000	0.000	0.011	0.011	3
27	30.88	0.000	0.000	0.050	0.050	133	22.91	0.000	0.000	0.022	0.022	44	2.902	0.000	0.000	0.010	0.010	3
28	39.48	0.000	0.000	0.062	0.062	211	13.91	0.000	0.000	0.018	0.018	22	2.754	0.000	0.000	0.008	0.008	2
29	48.52	0.000	0.000	0.080	0.080	335	11.81	0.000	0.000	0.017	0.017	17	2.564	0.000	0.000	0.006	0.006	1
30	37.24	0.000	0.000	0.040	0.040	129	11.46	0.000	0.000	0.016	0.016	16	2.536	0.000	0.000	0.004	0.004	1
31							11.18	0.000	0.000	0.014	0.014	14						
Ten Daily Mean																		
Ten Daily I	92.18	0.000	0.000	0.145	0.145	2359	23.54	0.000	0.000	0.074	0.074	147	11.24	0.000	0.000	0.013	0.013	12
Ten Daily II	84.80	0.000	0.000	0.063	0.063	665	15.15	0.000	0.000	0.017	0.017	24	5.314	0.000	0.000	0.012	0.012	5
Ten Daily III	84.64	0.000	0.000	0.058	0.058	624	19.71	0.000	0.000	0.028	0.028	90	3.110	0.000	0.000	0.008	0.008	2
Monthly																		
Total						36481						2697						200

Annual Sediment Load (Metric Tonnes) : 55202

Daily Observed Sediment Datasheet for period : 2019-2020

Station Name : Altuma (EBA00I3) **Division : E.E., Bhubaneswar**

Local River : Ramyala **Sub-Division : Rourkela**

Day	Dec						Jan						Feb					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	2.492	0.000	0.000	0.014	0.014	3	1.461	0.000	0.000	0.008	0.008	1	3.352	0.000	0.000	0.010	0.010	3
2	2.448	0.000	0.000	0.014	0.014	3	1.250	0.000	0.000	0.008	0.008	1	2.841	0.000	0.000	0.010	0.010	2
3	2.273	0.000	0.000	0.014	0.014	3	1.237	0.000	0.000	0.010	0.010	1	2.850	0.000	0.000	0.010	0.010	2
4	2.198	0.000	0.000	0.014	0.014	3	8.015	0.000	0.000	0.010	0.010	7	2.818	0.000	0.000	0.010	0.010	2
5	2.226	0.000	0.000	0.014	0.014	3	4.314	0.000	0.000	0.014	0.014	5	3.486	0.000	0.000	0.010	0.010	3
6	2.215	0.000	0.000	0.014	0.014	3	2.364	0.000	0.000	0.016	0.016	3	4.168	0.000	0.000	0.010	0.010	4
7	2.073	0.000	0.000	0.014	0.014	3	1.888	0.000	0.000	0.016	0.016	3	4.114	0.000	0.000	0.010	0.010	4
8	2.073	0.000	0.000	0.014	0.014	3	1.447	0.000	0.000	0.016	0.016	2	4.257	0.000	0.000	0.010	0.010	4
9	2.007	0.000	0.000	0.014	0.014	2	1.249	0.000	0.000	0.016	0.016	2	4.521	0.000	0.000	0.012	0.012	5
10	1.972	0.000	0.000	0.014	0.014	2	1.199	0.000	0.000	0.016	0.016	2	4.519	0.000	0.000	0.012	0.012	5
11	1.953	0.000	0.000	0.014	0.014	2	1.252	0.000	0.000	0.014	0.014	2	2.988	0.000	0.000	0.012	0.012	3
12	1.789	0.000	0.000	0.014	0.014	2	1.256	0.000	0.000	0.012	0.012	1	2.795	0.000	0.000	0.012	0.012	3
13	1.670	0.000	0.000	0.014	0.014	2	1.269	0.000	0.000	0.010	0.010	1	2.215	0.000	0.000	0.012	0.012	2
14	1.754	0.000	0.000	0.014	0.014	2	1.116	0.000	0.000	0.010	0.010	1	2.082	0.000	0.000	0.012	0.012	2
15	1.771	0.000	0.000	0.014	0.014	2	1.332	0.000	0.000	0.010	0.010	1	1.647	0.000	0.000	0.010	0.010	1
16	1.771	0.000	0.000	0.014	0.014	2	1.183	0.000	0.000	0.010	0.010	1	1.909	0.000	0.000	0.010	0.010	2
17	1.746	0.000	0.000	0.014	0.014	2	1.392	0.000	0.000	0.010	0.010	1	2.560	0.000	0.000	0.010	0.010	2
18	1.759	0.000	0.000	0.014	0.014	2	1.716	0.000	0.000	0.010	0.010	1	2.456	0.000	0.000	0.010	0.010	2
19	1.594	0.000	0.000	0.014	0.014	2	1.642	0.000	0.000	0.012	0.012	2	2.557	0.000	0.000	0.010	0.010	2
20	1.619	0.000	0.000	0.014	0.014	2	1.641	0.000	0.000	0.012	0.012	2	2.974	0.000	0.000	0.010	0.010	3
21	1.534	0.000	0.000	0.014	0.014	2	1.774	0.000	0.000	0.012	0.012	2	2.709	0.000	0.000	0.010	0.010	2
22	1.587	0.000	0.000	0.014	0.014	2	1.527	0.000	0.000	0.012	0.012	2	2.713	0.000	0.000	0.010	0.010	2
23	1.587	0.000	0.000	0.012	0.012	2	1.927	0.000	0.000	0.012	0.012	2	3.229	0.000	0.000	0.018	0.018	5
24	1.583	0.000	0.000	0.012	0.012	2	1.816	0.000	0.000	0.012	0.012	2	3.487	0.000	0.000	0.022	0.022	7
25	1.583	0.000	0.000	0.010	0.010	1	2.237	0.000	0.000	0.012	0.012	2	3.688	0.000	0.000	0.022	0.022	7
26	1.523	0.000	0.000	0.010	0.010	1	2.230	0.000	0.000	0.012	0.012	2	9.802	0.000	0.000	0.022	0.022	19
27	1.566	0.000	0.000	0.008	0.008	1	2.521	0.000	0.000	0.012	0.012	3	5.258	0.000	0.000	0.022	0.022	10
28	1.595	0.000	0.000	0.008	0.008	1	2.487	0.000	0.000	0.012	0.012	3	3.839	0.000	0.000	0.022	0.022	7
29	1.595	0.000	0.000	0.006	0.006	1	2.397	0.000	0.000	0.012	0.012	2	3.598	0.000	0.000	0.022	0.022	7
30	1.503	0.000	0.000	0.006	0.006	1	2.499	0.000	0.000	0.012	0.012	3						
31	1.489	0.000	0.000	0.006	0.006	1	4.161	0.000	0.000	0.012	0.012	4						
Ten Daily Mean																		
Ten Daily I	2.197	0.000	0.000	0.014	0.014	3	2.442	0.000	0.000	0.013	0.013	3	3.693	0.000	0.000	0.010	0.010	3
Ten Daily II	1.743	0.000	0.000	0.014	0.014	2	1.380	0.000	0.000	0.011	0.011	1	2.418	0.000	0.000	0.011	0.011	2
Ten Daily III	1.559	0.000	0.000	0.010	0.010	1	2.325	0.000	0.000	0.012	0.012	2	4.258	0.000	0.000	0.019	0.019	7
Monthly																		
Total						62						66						122

Annual Sediment Load (Metric Tonnes) : 55202

Daily Observed Sediment Datasheet for period : 2019-2020

Station Name : Altuma (EBA00I3) **Division : E.E., Bhubaneswar**

Local River : Ramyala **Sub-Division : Rourkela**

Day	Mar						Apr						May					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	3.240	0.000	0.000	0.014	0.014	4							5.177	0.000	0.000	0.008	0.008	4
2	3.060	0.000	0.000	0.014	0.014	4							4.586	0.000	0.000	0.008	0.008	3
3	3.271	0.000	0.000	0.015	0.015	4							5.869	0.000	0.000	0.008	0.008	4
4	3.492	0.000	0.000	0.015	0.015	5							5.872	0.000	0.000	0.010	0.010	5
5	4.449	0.000	0.000	0.015	0.015	6							7.873	0.000	0.000	0.010	0.010	7
6	5.621	0.000	0.000	0.018	0.018	9							6.823	0.000	0.000	0.010	0.010	6
7	16.80	0.000	0.000	0.018	0.018	26							9.492	0.000	0.000	0.011	0.011	9
8	10.46	0.000	0.000	0.022	0.022	20							5.465	0.000	0.000	0.011	0.011	5
9	10.04	0.000	0.000	0.026	0.026	23							7.809	0.000	0.000	0.011	0.011	7
10	7.134	0.000	0.000	0.026	0.026	16							6.432	0.000	0.000	0.011	0.011	6
11	4.758	0.000	0.000	0.020	0.020	8							5.805	0.000	0.000	0.012	0.012	6
12	3.901	0.000	0.000	0.020	0.020	7							5.402	0.000	0.000	0.012	0.012	6
13	3.896	0.000	0.000	0.015	0.015	5							4.375	0.000	0.000	0.012	0.012	5
14	3.542	0.000	0.000	0.015	0.015	5							2.967	0.000	0.000	0.013	0.013	3
15	2.945	0.000	0.000	0.013	0.013	3							2.505	0.000	0.000	0.013	0.013	3
16	2.944	0.000	0.000	0.010	0.010	3							2.228	0.000	0.000	0.013	0.013	3
17	3.430	0.000	0.000	0.010	0.010	3							11.04	0.000	0.000	0.013	0.013	12
18	2.840	0.000	0.000	0.008	0.008	2							5.694	0.000	0.000	0.014	0.014	7
19	2.293	0.000	0.000	0.008	0.008	2							3.355	0.000	0.000	0.012	0.012	3
20	6.613	0.000	0.000	0.008	0.008	5	6.504	0.000	0.000	0.012	0.012	7	3.415	0.000	0.000	0.012	0.012	4
21	4.723	0.000	0.000	0.009	0.009	4	4.808	0.000	0.000	0.011	0.011	5	15.39	0.000	0.000	0.014	0.014	19
22	4.266	0.000	0.000	0.009	0.009	3	10.09	0.000	0.000	0.013	0.013	11	8.595	0.000	0.000	0.013	0.013	10
23	4.249	0.000	0.000	0.010	0.010	4	6.251	0.000	0.000	0.012	0.012	6	4.261	0.000	0.000	0.010	0.010	4
24	3.727	0.000	0.000	0.010	0.010	3	5.738	0.000	0.000	0.012	0.012	6	2.749	0.000	0.000	0.008	0.008	2
25							6.104	0.000	0.000	0.011	0.011	6	2.062	0.000	0.000	0.006	0.006	1
26							7.093	0.000	0.000	0.011	0.011	7	1.787	0.000	0.000	0.004	0.004	1
27							7.095	0.000	0.000	0.010	0.010	6	1.738	0.000	0.000	0.004	0.004	1
28							6.748	0.000	0.000	0.010	0.010	6	1.700	0.000	0.000	0.004	0.004	1
29							5.579	0.000	0.000	0.008	0.008	4	45.18	0.000	0.000	0.016	0.016	62
30							5.467	0.000	0.000	0.008	0.008	4	8.600	0.000	0.000	0.012	0.012	9
31													6.455	0.000	0.000	0.012	0.012	7
Ten Daily Mean																		
Ten Daily I	6.757	0.000	0.000	0.018	0.018	12							6.540	0.000	0.000	0.010	0.010	6
Ten Daily II	3.716	0.000	0.000	0.013	0.013	4	6.504	0.000	0.000	0.012	0.012	7	4.679	0.000	0.000	0.013	0.013	5
Ten Daily III	4.241	0.000	0.000	0.010	0.010	3	6.497	0.000	0.000	0.011	0.011	6	8.957	0.000	0.000	0.009	0.009	10
Monthly Total						171						67						222

Annual Sediment Load (Metric Tonnes) : 55202

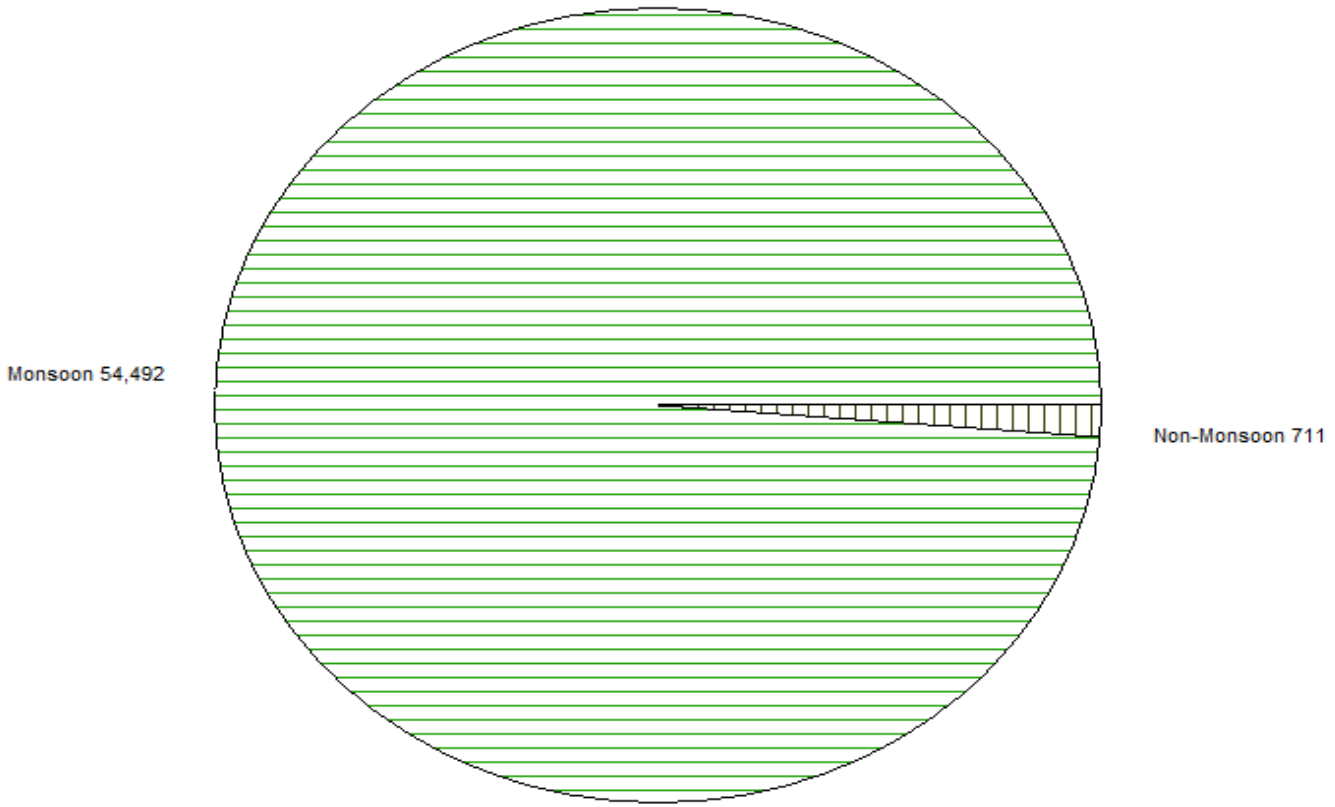
Seasonal Sediment Load for the Year: 2019-2020

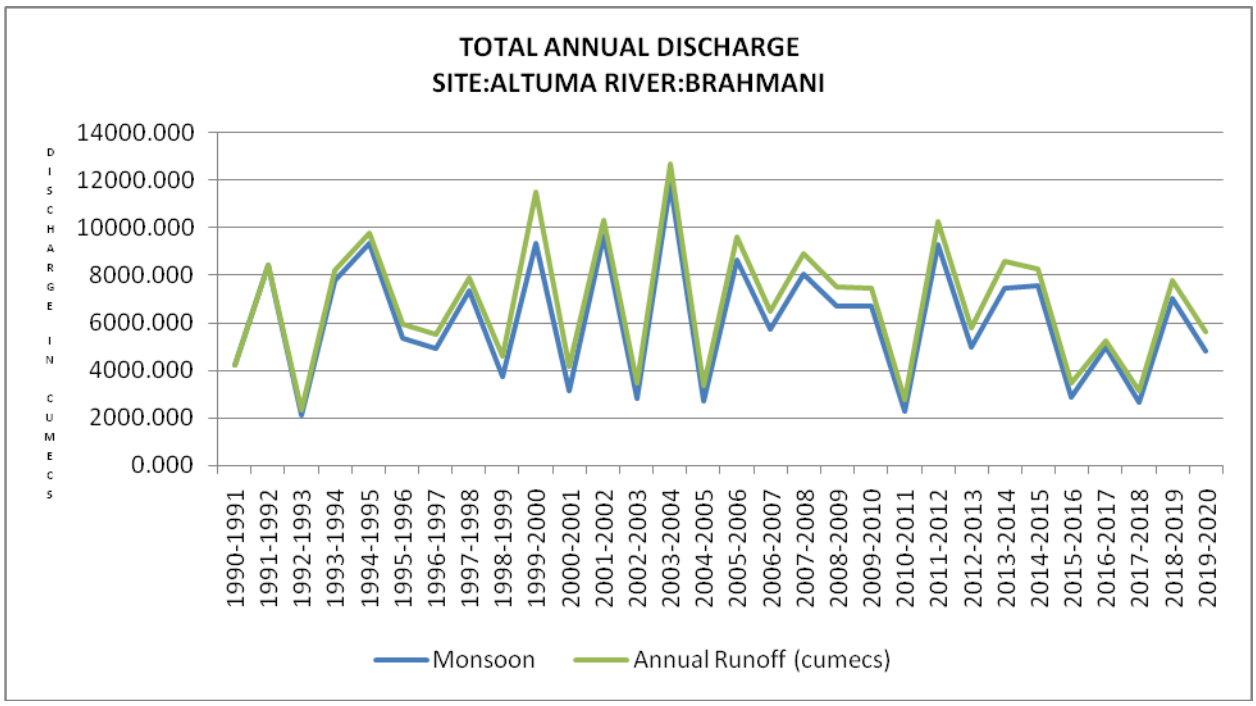
Station Name : Altuma (EBA00I3)

Local River : Ramyala

Division : E.E., Bhubaneswar

Sub-Division : Rourkela




TOTAL ANNUAL DISCHARGE
SITE:ALTUMA RIVER:BRAHMANI
DISCHARGE IN CUMECS
14000.000
12000.000
10000.000
8000.000
6000.000
4000.000
2000.000
0.000
1990-1991
1991-1992
1992-1993
1993-1994
1994-1995
1995-1996
1996-1997
1997-1998
1998-1999
1999-2000
2000-2001
2001-2002
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2006-2007
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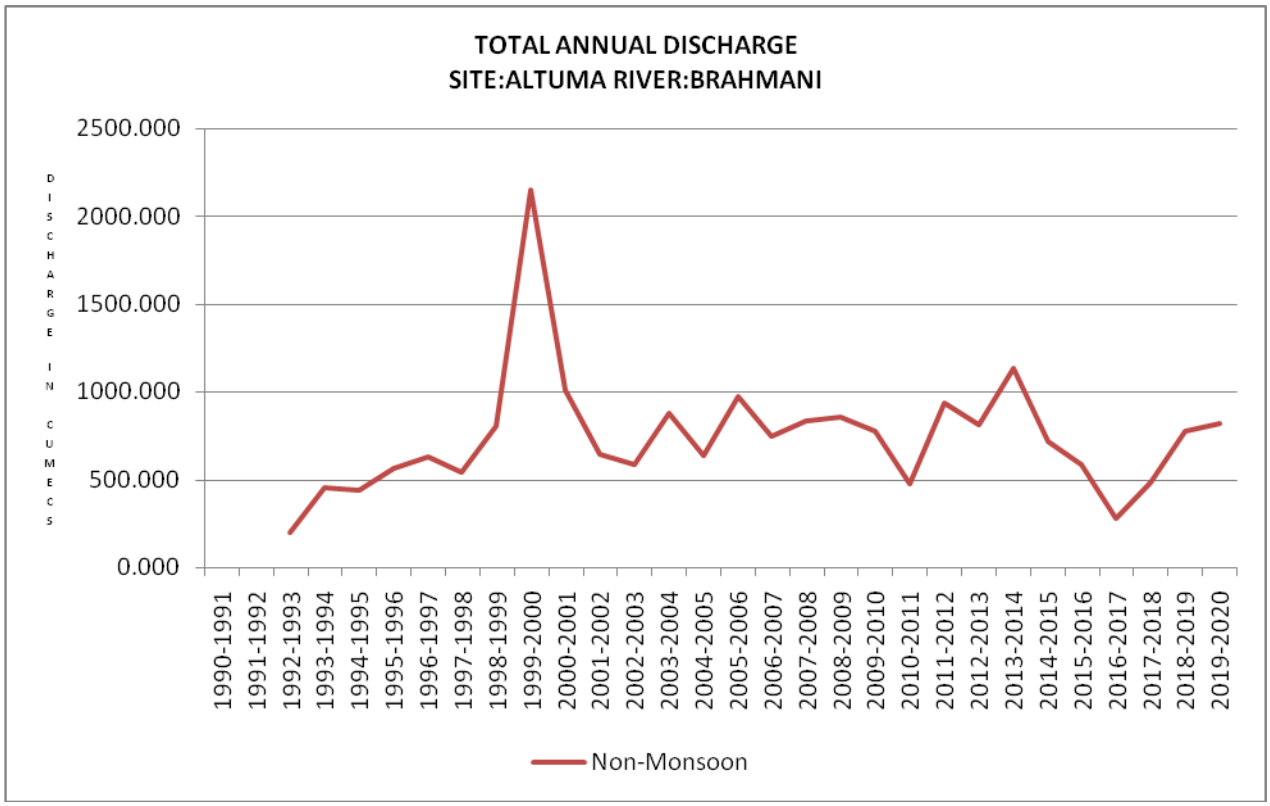
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
2018-2019
2019-2020
Monsoon
Annual Runoff (cumecs)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SITE:ALTUMA RIVER:BRAHMANI
DISCHARGE IN CUMECS
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2000.000
1500.000
1000.000
500.000
0.000
1990-1991
1991-1992
1992-1993
1993-1994
1994-1995
1995-1996
1996-1997
1997-1998
1998-1999
1999-2000
2000-2001
2001-2002
2002-2003
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2007-2008
2008-2009
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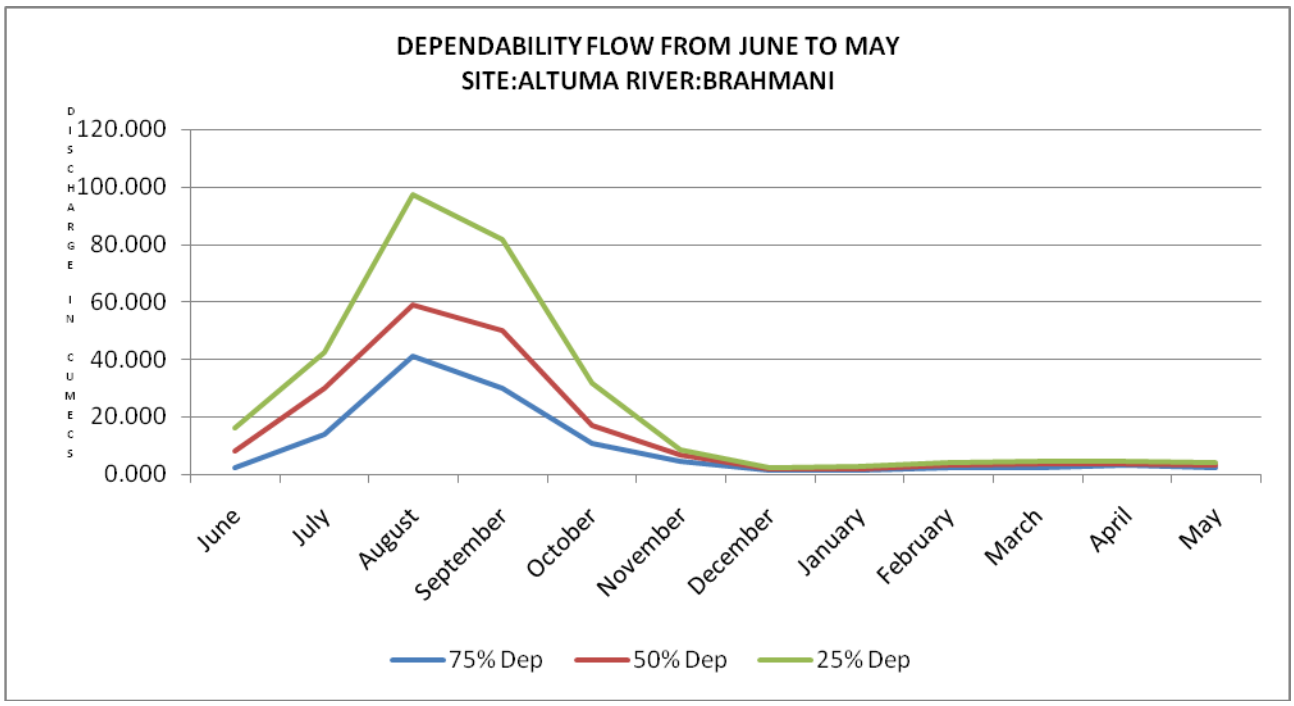
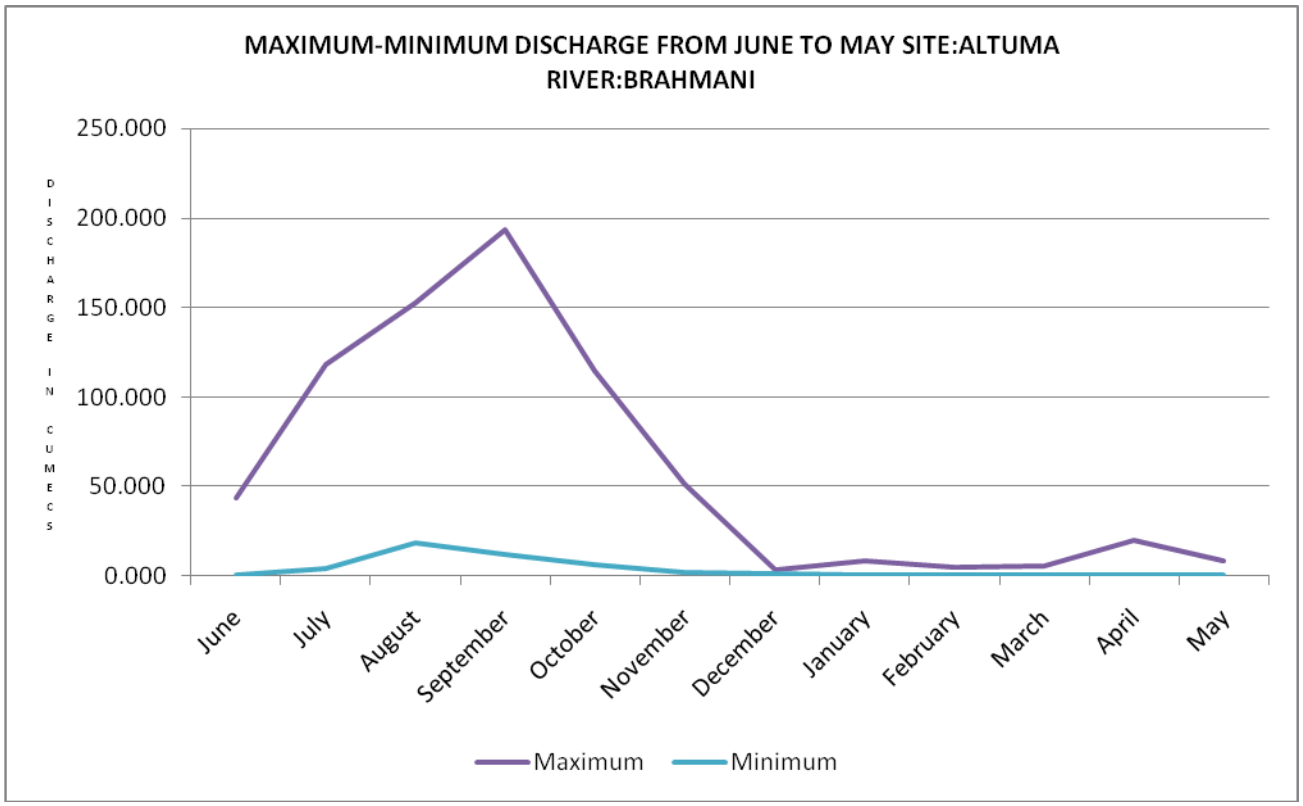
2014-2015
2015-2016
2016-2017
2017-2018
2018-2019
2019-2020
Non-Monsoon


DEPENDABILITY FLOW FROM JUNE TO MAY
SITE:ALTUMA RIVER:BRAHMANI
DISCHARGE IN CUMECS
120.000
100.000
80.000
60.000
40.000
20.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
75% Dep
50% Dep
25% Dep


MAXIMUM-MINIMUM DISCHARGE FROM JUNE TO MAY SITE:ALTUMA
RIVER:BRAHMANI
DISCHARGE IN CUMECS
250.000
200.000
150.000
100.000
50.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
Maximum
Minimum

SITE TALCHER

SECTION-I (HISTORY SHEET)

HISTORY SHEET

			Water Year	:	**2019-2020**
Site	:	**TALCHER**	**Code**	:	**EB000N5**
State	:	Orissa	District		Angul
Basin	:	Brahmani-Baitarani	Independent River	:	Brahmani
Tributary	:	Brahmani	Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	Brahmani
Division	:	E.E., Bhubaneswar	Sub-Division	:	Rourkela
Drainage Area	:	29750 Sq. Km.	Bank	:	Left
Latitude	:	20°55'08"	Longitude	:	85°14'08"
		Opening Date	Closing Date		
Gauge	:	16-08-1985			
Discharge	:	16-08-1985	31-05-1996		
Sediment	:	16-08-1985	31-05-1996		
Water Quality	:	16-08-1985			

SECTION-III

(WATER QUALITY)

Water Quality Datasheet for the period : 2019-2020

Station Name : TALCHER (EB000N5) **Division : E.E., Bhubaneswar**

Local River : Brahmani **River Water Analysis** **Sub-Division : Rourkela**

S.No	Parameters	6/1/2019	7/1/2019	8/1/2019	9/2/2019	10/1/2019	11/1/2019	12/2/2019	1/1/2020	2/1/2020	3/2/2020
		A	A	A	A	A	A	A	A	A	A
	PHYSICAL										
1	Q (cumec)										
2	Colour_Cod (-)	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Brown	Light Green	Brown	Light Brown
3	EC_FLD (µmho/cm)	210	238	318	124	125	319	360	281	22	21
4	EC_GEN (µmho/cm)	219	232	317	121	126	318	361	270	127	446
5	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
6	pH_FLD (pH units)	7.7	7.1	7.4	7.1	7.2	7.5	8.6	8.6	8.7	8.4
7	pH_GEN (pH units)	7.8	7.3	7.4	7.1	7.2	7.5	7.8	7.7	7.4	7.9
8	Temp (deg C)	33.0	29.5	29.5	28.0	25.5	25.0	21.0	17.5	23.0	
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
2	ALK-TOT (mgCaCO3/L)	61	75	86	54	58	87	59	45		
3	B (mg/L)	0.03									
4	Ca (mg/L)	16	9	17	13	16	28	16	22	23	17
5	Cl (mg/L)	12.7	13.9	15.6	60.5	11.4	16.8	16.0	63.7	20.4	16.2
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
7	F (mg/L)					0.16	0.30				
8	HCO3 (mg/L)	75	92	105	66	70	106	72	55	87	84
9	K (mg/L)	1.0	0.9	2.1	1.8	1.6	1.5	12.6	1.6	2.5	1.6
10	Mg (mg/L)	6.7	12.1	5.7	3.9	4.0	7.5	1.9	6.6	5.6	6.6
11	Na (mg/L)	7.0	4.2	5.7	3.7	4.3	4.0	40.1	5.2	8.4	6.6
12	P-Tot (mgP/L)	0.001									
13	SiO2 (mg/L)	8.1									
14	SO4 (mg/L)	14.7	36.2	14.8	13.9	12.7	30.8	20.2	11.0	1.7	1.4
	BIOLOGICAL/BACTERIOLOGICAL										
1	BOD3-27 (mg/L)	0.6	2.4	0.8	0.8	1.0	0.6	1.3	1.4	0.7	0.8
2	DO (mg/L)	4.7	4.7	3.1	4.6	6.1	6.4	5.4	5.7	6.0	3.7
3	DO_SAT% (%)	65	61	40	59	74	78	60	59	70	
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	40	24	44	33	41	71	39	55	58	43
2	HAR_Total (mgCaCO3/L)	67	74	67	49	58	102	47	82	81	71
3	Na% (%)	18	11	15	14	14	8	58	12	18	17
4	RSC (-)	0.0	0.0	0.4	0.1	0.0	0.0	0.2	0.0		
5	SAR (-)	0.4	0.2	0.3	0.2	0.2	0.2	2.5	0.3	0.4	0.3
	PESTICIDES										

Water Quality Summary for the period : 2019-2020

Station Name : TALCHER (EB000N5) **Division : E.E., Bhubaneswar**

Local River : Brahmani **Sub-Division : Rourkela**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	10	360	21	202
3	EC_GEN (µmho/cm)	10	446	121	254
4	pH_FLD (pH units)	10	8.7	7.1	7.8
5	pH_GEN (pH units)	10	7.9	7.1	7.5
6	Temp (deg C)	9	33.0	17.5	25.8
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	8	0.0	0.0	0
2	ALK-TOT (mgCaCO3/L)	8	87	45	66
3	B (mg/L)	1	0.03	0.03	0.03
4	Ca (mg/L)	10	28	9	18
5	Cl (mg/L)	10	63.7	11.4	24.7
6	CO3 (mg/L)	8	0.0	0.0	0
7	F (mg/L)	2	0.30	0.16	0.23
8	HCO3 (mg/L)	10	106	55	81
9	K (mg/L)	10	12.6	0.9	2.7
10	Mg (mg/L)	10	12.1	1.9	6.1
11	Na (mg/L)	10	40.1	3.7	8.9
12	P-Tot (mgP/L)	1	0.001	0.001	0.001
13	SiO2 (mg/L)	1	8.1	8.1	8.1
14	SO4 (mg/L)	10	36.2	1.4	15.7
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	10	2.4	0.6	1
2	DO (mg/L)	10	6.4	3.1	5
3	DO_SAT% (%)	9	78	40	63
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	10	71	24	45
2	HAR_Total (mgCaCO3/L)	10	102	47	70
3	Na% (%)	10	58	8	18
4	RSC (-)	8	0.4	0.0	0.1
5	SAR (-)	10	2.5	0.2	0.5
	PESTICIDES				

Water Quality Seasonal Average for the period: 2005-2020

Station Name : TALCHER (EB000N5) **Division : E.E., Bhubaneswar**

Local River : Brahmani **River Water** **Sub-Division : Rourkela**

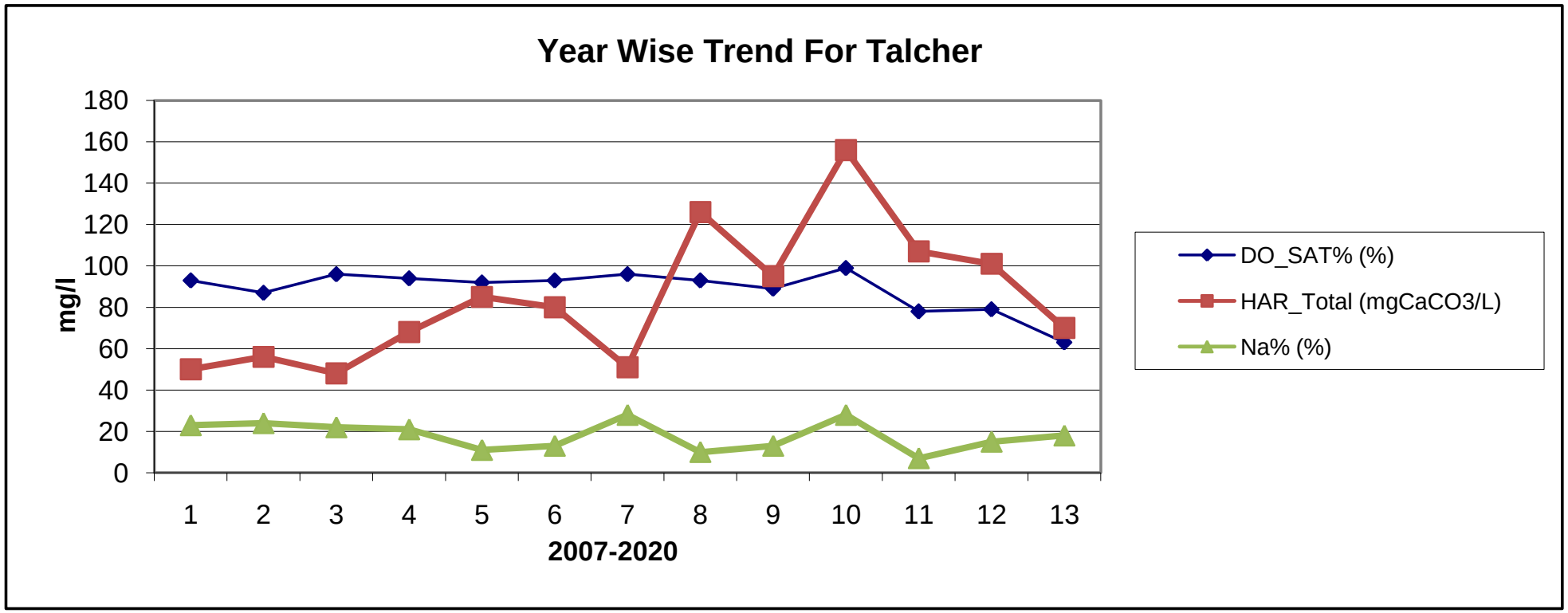
S.No	Parameters	Flood															Winter								
		Jun - Oct															Nov - Feb								
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
	PHYSICAL																								
1	Q (cumec)																								
2	EC_FLD (µmho/cm)	112	129	156	124	126	160	108	144	110	131	226	211	127	159	203	191	117	99	158	130	152	108	128	113
3	EC_GEN (µmho/cm)	109	126	151	124	126	160	108	144	110	131	216	193	122	162	203	186	114	93	158	148	152	108	128	113
4	pH_FLD (pH units)	7.7	7.9	7.9	7.6	7.7	7.8	8.2	7.6	7.6	7.9	7.4	7.7	7.7	7.2	7.3	7.8	8.0	8.0	7.8	7.7	7.7	7.7	7.4	7.9
5	pH_GEN (pH units)	7.8	7.9	7.9	7.6	7.7	7.8	8.2	7.6	7.6	7.9	7.4	7.7	7.7	7.3	7.4	7.8	8.0	8.0	7.8	7.7	7.7	7.7	7.4	7.9
6	Temp (deg C)	28.9	29.2	30.2	29.2	28.4	27.4	28.0	29.6	28.9	27.7	29.6	30.0	29.7	29.6	29.1	23.6	24.8	24.4	24.1	24.3	23.8	26.3	23.1	24.1
	CHEMICAL																								
1	Alk-Phen (mgCaCO3/L)		0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	ALK-TOT (mgCaCO3/L)		80	86	36	32	44	43	45	58	34	54	66	44	63	67		87	41	44	37	38	45	72	
3	B (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
4	Ca (mg/L)	12	13	16	12	11	16	47	21	15	47	19	36	31	21	14	18	15	11	17	10	12	16	18	14
5	Cl (mg/L)	9.4	10.5	12.6	10.6	9.7	12.6	17.0	14.7	13.4	17.0	11.2	11.3	9.7	12.5	22.8	15.6	8.8	9.0	12.7	11.2	12.3	22.2	12.3	11.6
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.02	0.02	0.02	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.63	0.16	0.00	0.00	0.00	0.05	0.05	0.05	0.05	0.05	0.05
8	Fe (mg/L)	0.1	0.1	0.1	0.1	0.1	0.1	0.0	1.9	0.0	0.4	0.4	0.5	0.5	0.4		0.1	0.2	0.1	0.2	0.1	0.1	0.0	1.5	0.0
9	HCO3 (mg/L)	43	64	62	44	39	55	43	62	66	43	66	80	54	77	81	87	48	35	53	44	57	54	68	74
10	K (mg/L)	1.7	8.2	1.8	1.3	1.6	1.9	1.6	1.8	1.6	1.6	1.9	11.7	2.0	4.2	1.5	2.0	1.6	1.5	1.5	1.5	1.8	1.4	1.5	1.3
11	Mg (mg/L)	2.0	3.2	4.6	3.9	5.1	4.7	3.5	6.8	4.2	3.5	9.0	13.2	12.5	6.7	6.5	7.3	2.2	1.7	4.9	5.3	6.1	3.4	10.0	3.5
12	Na (mg/L)	6.1	6.6	7.8	7.6	5.9	7.7	3.4	4.5	9.6	3.4	4.4	20.6	3.5	5.7	5.0	10.7	5.9	5.5	7.3	7.1	7.4	3.5	5.2	9.6
13	NO2+NO3 (mg N/L)	0.34	1.14	0.39	0.39	0.27	0.57	0.41	0.71	1.11	1.45	1.05	1.10	1.24	1.19		0.40	0.60	0.58	0.51	0.26	0.36	0.43	0.71	1.06
14	NO2-N (mgN/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.01	0.01	0.02	0.00		0.01	0.02	0.00	0.00	0.00	0.00	0.07	0.00	0.00
15	NO3-N (mgN/L)	0.34	1.14	0.39	0.39	0.27	0.57	0.34	0.71	1.11	1.45	1.04	1.09	1.23	1.19		0.39	0.57	0.58	0.51	0.26	0.36	0.36	0.71	1.15
16	o-PO4-P (mg P/L)	0.000	0.000	0.000		0.000											0.000	0.000	0.000		0.000				
17	P-Tot (mgP/L)	0.001	0.001	0.001	0.001	0.001	0.001	0.010	0.001	0.001	0.001	0.001	0.010	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.010	0.001	0.001
18	SiO2 (mg/L)	27.4	11.5	13.3	8.3	6.8	6.9	10.4	12.8	10.9	5.2	5.6	6.6	7.5	8.9	8.1	22.8	18.8	9.0	7.9	7.4	4.6	11.5	13.3	9.7
19	SO4 (mg/L)	3.1	1.9	4.8	10.6	12.8	10.3	11.6	55.3	10.5	16.2	9.2	13.5	12.6	13.9	18.4	2.4	4.8	4.7	11.4	9.6	9.4	9.4	9.3	11.7
	BIOLOGICAL/BACTERIOLOGICAL																								
1	BOD3-27 (mg/L)	0.7	0.7	0.9	1.0	1.1	1.2	1.0	0.9	0.2	0.7	1.0	1.3	1.0	1.7	1.1	0.6	0.6	0.8	0.9	1.1	1.0	1.4	0.3	0.5
2	DO (mg/L)	7.2	7.1	7.3	7.1	7.4	7.3	7.1	7.2	7.4	6.5	6.4	7.8	6.6	6.2	4.6	8.2	7.7	7.8	8.0	8.1	8.1	7.5	8.1	8.4
3	DO_SAT% (%)	93	92	97	93	96	92	90	95	96	82	84	103	86	82	60	96	92	93	95	97	95	93	95	100
4	FCol-MPN (MPN/100mL)		93	13	27	12	250		30					100	55			111		5	18	64		22	
5	Tcol-MPN (MPN/100mL)		118	21	34	20	625		25					236	143			112		6	22	885		23	
	TRACE & TOXIC																								
	CHEMICAL INDICES																								
1	HAR_Ca (mgCaCO3/L)	30	33	41	30	28	41	117	51	38	117	48	89	77	52	36	45	37	28	42	26	30	40	45	35
2	HAR_Total (mgCaCO3/L)	38	47	60	47	49	60	132	80	55	132	85	144	130	80	63	75	46	35	62	48	55	54	87	50
3	Na% (%)	25	21	22	27	21	21	9	12	27	9	10	21	6	13	14	21	21	24	20	24	22	12	13	29
4	RSC (-)	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.2
5	SAR (-)	0.4	0.4	0.4	0.5	0.4	0.4	0.2	0.2	0.6	0.2	0.2	0.7	0.1	0.3	0.3	0.5	0.4	0.4	0.4	0.5	0.4	0.2	0.3	0.6
	PESTICIDES																								

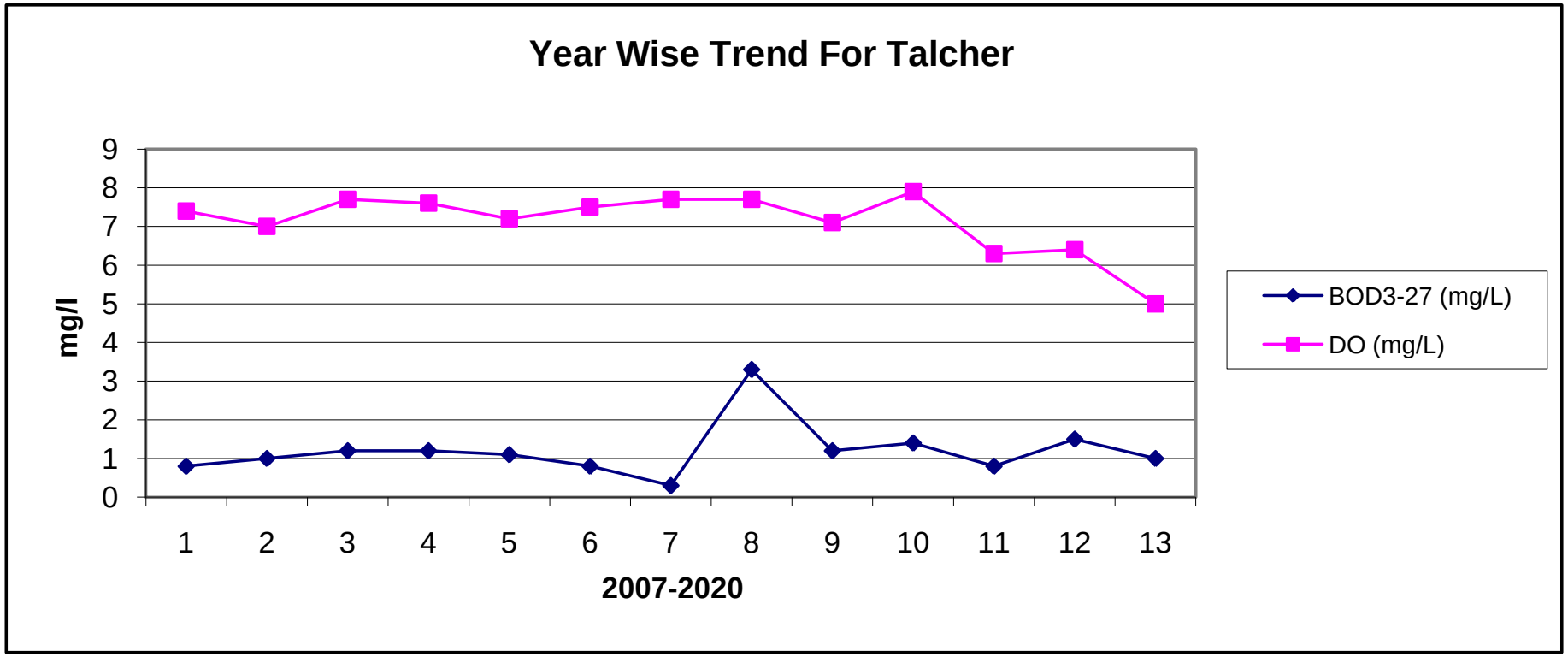
Water Quality Seasonal Average for the period: 2005-2020

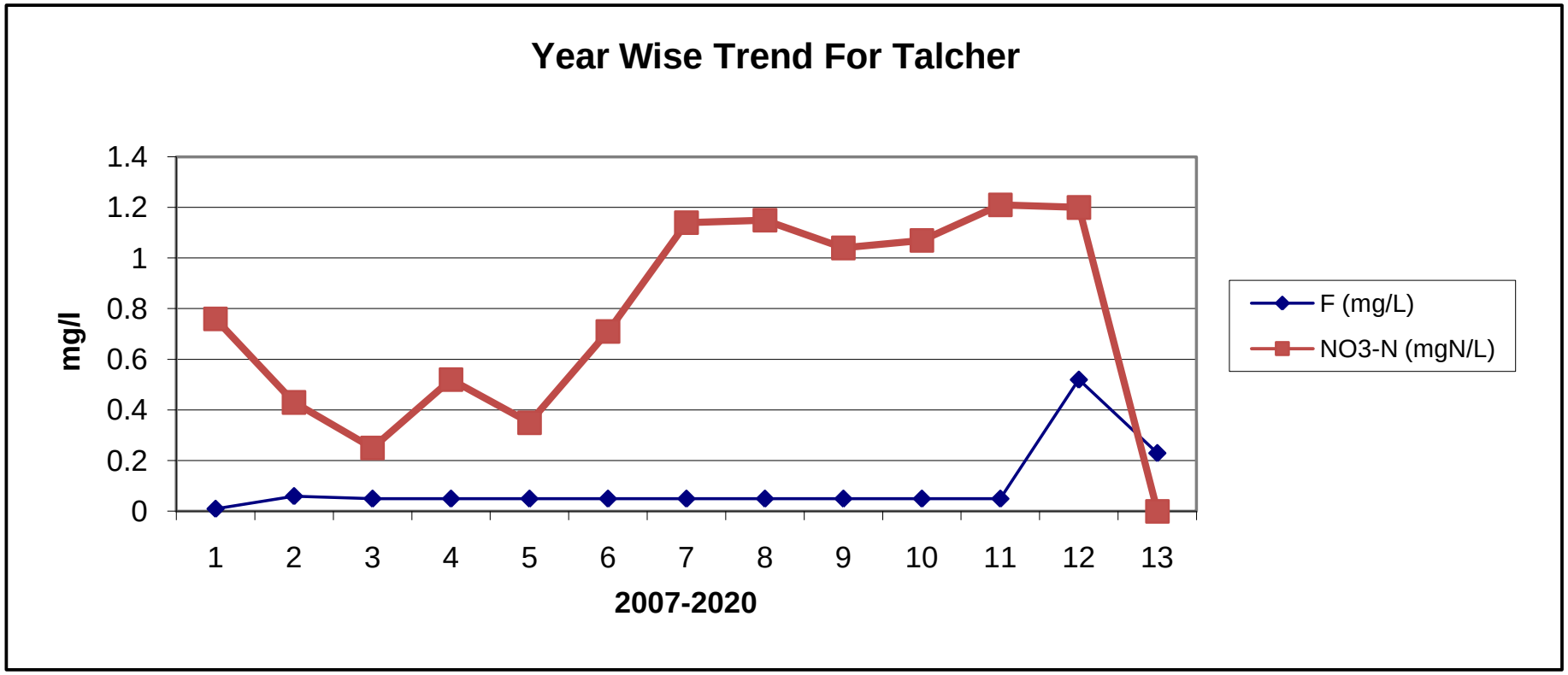
Station Name : TALCHER (EB000N5) **Division : E.E., Bhubaneswar**

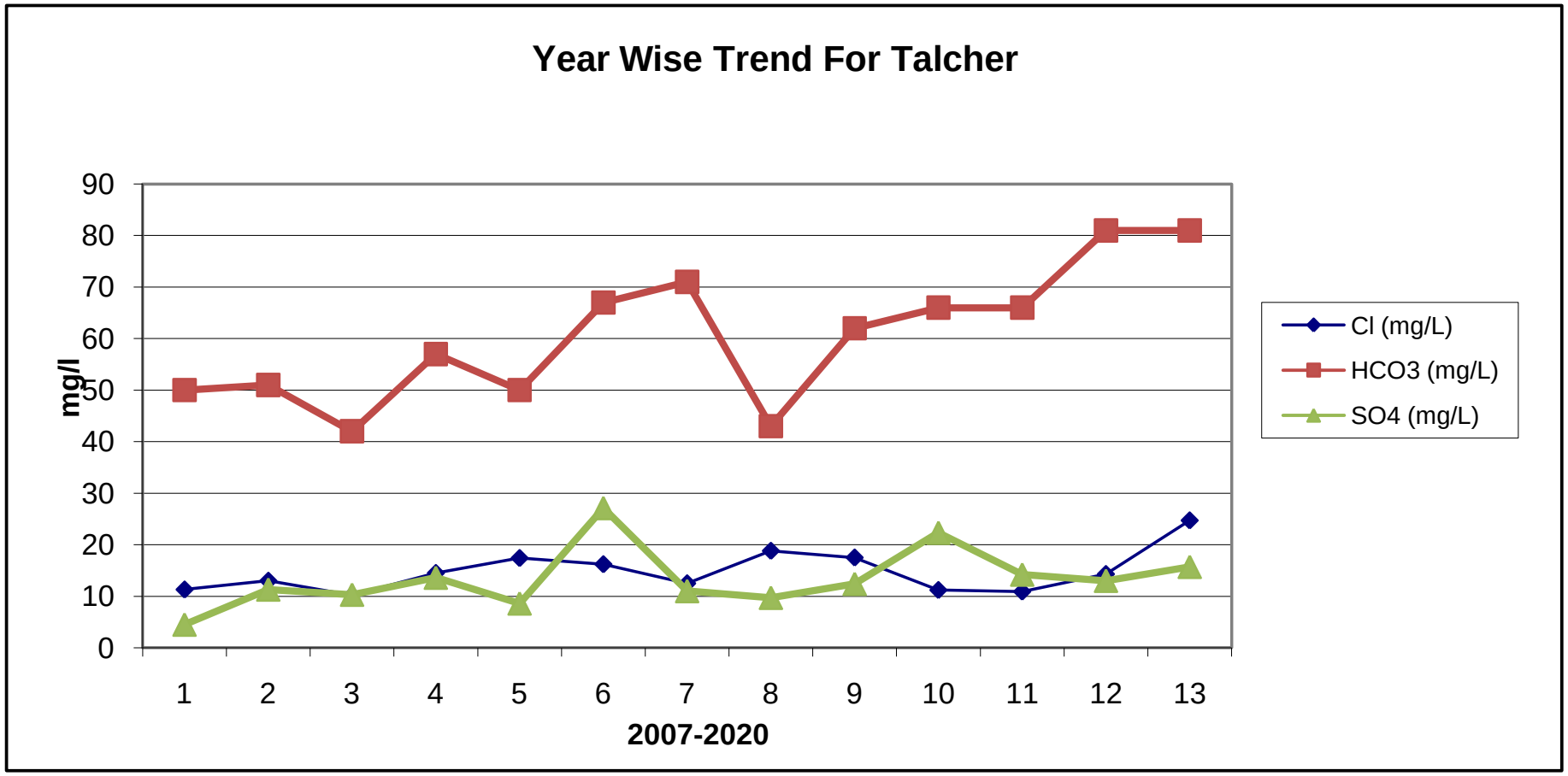
Local River : Brahmani **River Water** **Sub-Division : Rourkela**

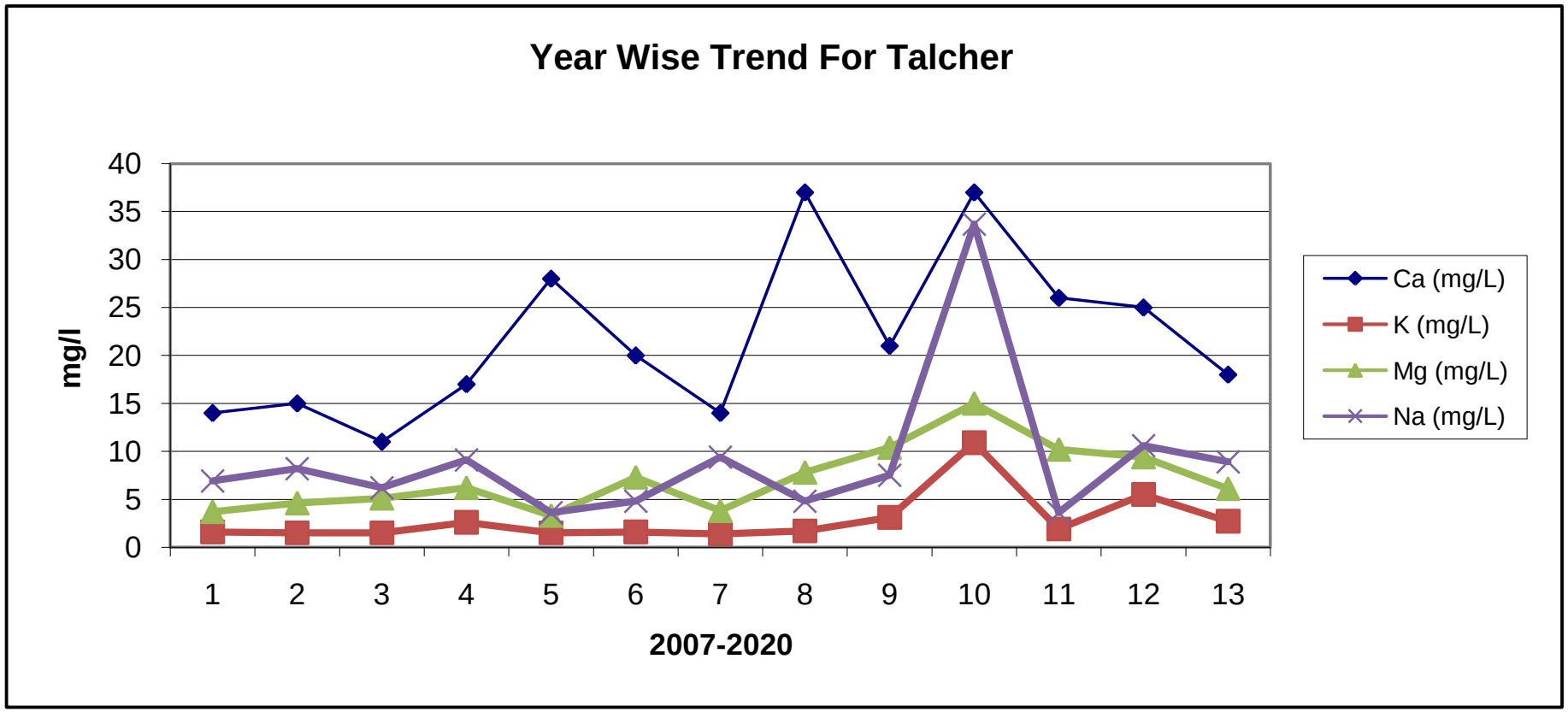
S.No	Parameters																					
								Summer														
								Mar - May														
		2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	PHYSICAL																					
1	Q (cumec)																					
2	EC_FLD (µmho/cm)	159	696	233	166	223	245	135	136	143	178	115	267	123	137	114	173	233	172	236	285	21
3	EC_GEN (µmho/cm)	163	692	237	161	221	269	130	125	140	178	115	267	123	137	114	173	232	177	231	265	446
4	pH_FLD (pH units)	7.9	7.7	7.7	7.5	7.7	8.4	7.6	8.1	8.0	8.0	7.9	8.3	7.5	7.7	7.7	7.8	7.8	7.6	7.6	7.8	8.4
5	pH_GEN (pH units)	7.9	7.7	7.8	7.5	7.7	7.6	7.7	8.0	8.1	8.0	7.9	8.3	7.5	7.7	7.8	7.8	7.9	7.6	7.6	7.8	7.8
6	Temp (deg C)	20.9	24.0	23.5	21.0	20.3	21.6	28.2	29.0	26.8	28.8	27.7	28.3	30.0	26.3	27.0	29.2	28.0	27.2	28.8	28.5	
	CHEMICAL																					
1	Alk-Phen (mgCaCO3/L)	0.0	4.6	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	8.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	ALK-TOT (mgCaCO3/L)	60	62	42	53	52	64		75	41	44	35	79	48	60	62	40	43	52	71	90	
3	B (mg/L)	0.00	0.01	0.01	0.01	0.02		0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.02	
4	Ca (mg/L)	36	20	38	24	18	22	15	14	13	17	10	24	14	21	13	23	25	40	19	39	17
5	Cl (mg/L)	21.9	14.6	12.3	10.4	12.3	29.2	9.8	9.3	12.0	17.5	9.9	20.7	11.9	24.1	12.5	17.7	32.1	9.4	13.8	20.2	16.2
6	CO3 (mg/L)	0.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
7	F (mg/L)	0.05	0.05	0.05	0.05	0.27	0.30	0.00	0.00	0.01	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05		
8	Fe (mg/L)	0.3	0.4	0.2	0.4	0.5		0.1	0.1		0.1	0.1	0.1	0.0	1.9	0.0	0.3	0.4	0.6	0.4		
9	HCO3 (mg/L)	42	65	51	65	63	80	52	46	51	58	43	62	58	73	76	52	53	64	86	109	84
10	K (mg/L)	1.5	3.3	13.6	2.3	6.2	4.6	1.7	1.6	1.2	1.6	1.3	4.9	1.5	1.5	1.4	2.0	5.1	6.0	1.0	6.6	1.6
11	Mg (mg/L)	5.3	9.5	14.1	8.5	10.1	5.4	2.0	2.4	4.8	5.5	4.9	9.1	2.9	4.5	3.7	18.1	13.9	19.2	8.5	12.9	6.6
12	Na (mg/L)	3.4	9.1	52.5	3.8	9.4	14.4	6.3	6.4	7.3	10.5	5.5	13.6	3.9	4.7	8.7	9.1	10.4	30.7	3.4	20.2	6.6
13	NO2+NO3 (mg N/L)	0.82	1.01	0.97	1.18	1.20		0.78	0.63	1.62	0.38	0.21	0.64	0.40	0.71	1.19	1.11	1.10	1.19	1.21		
14	NO2-N (mgN/L)	0.01	0.01	0.02	0.00	0.00		0.00	0.01	0.00	0.00	0.00	0.01	0.07	0.00	0.00	0.00	0.00	0.01	0.00		
15	NO3-N (mgN/L)	0.81	0.99	0.96	1.18	1.20		0.78	0.62	1.62	0.38	0.21	0.64	0.33	0.71	1.19	1.11	1.10	1.17	1.21		
16	o-PO4-P (mg P/L)							0.000	0.000	0.010		0.000										
17	P-Tot (mgP/L)	0.001	0.010	0.010	0.001	0.001		0.001	0.001	0.050	0.001	0.001	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001	0.001	
18	SiO2 (mg/L)	5.0	5.8	7.5	7.9	8.8		18.4	20.0	9.0	8.2	7.7	3.8	10.3	13.7	10.7	4.3	5.7	8.2	8.0	8.2	
19	SO4 (mg/L)	10.0	13.4	46.5	15.7	9.7	15.9	3.1	3.2	3.9	12.2	7.1	24.8	2.6	3.7	10.8	9.0	16.2	4.5	14.9	16.0	1.4
	BIOLOGICAL/BACTERIOLOGICAL																					
1	BOD3-27 (mg/L)	0.9	1.7	1.6	0.3	1.2	1.0	0.7	0.8	0.9	1.1	1.4	1.3	1.1	1.1	0.3	1.1	0.9	1.1	1.0	1.3	0.8
2	DO (mg/L)	9.9	8.3	8.8	6.6	7.0	5.9	7.6	7.3	7.0	5.2	7.7	7.5	7.2	6.9	7.4	6.8	6.7	7.0	5.6	5.8	3.7
3	DO_SAT% (%)	110	98	102	73	78	67	97	94	87	68	97	97	95	86	93	89	86	88	72	76	
4	FCol-MPN (MPN/100mL)			68	80				14	4	5	11	19		16				50	57		
5	Tcol-MPN (MPN/100mL)			213	215				146	5	8	12	20		24				97	167		
	TRACE & TOXIC																					
	CHEMICAL INDICES																					
1	HAR_Ca (mgCaCO3/L)	91	50	94	60	46	56	36	34	33	41	24	59	35	53	32	58	61	100	48	98	43
2	HAR_Total (mgCaCO3/L)	113	90	153	96	88	78	45	44	53	64	44	97	47	72	48	134	119	180	83	152	71
3	Na% (%)	8	16	38	8	17	24	23	23	22	26	21	21	15	13	28	14	15	26	9	18	17
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.1	
5	SAR (-)	0.2	0.4	1.8	0.2	0.4	0.8	0.4	0.4	0.4	0.6	0.4	0.6	0.2	0.2	0.6	0.3	0.4	1.0	0.2	0.6	0.3
	PESTICIDES																					


Year Wise Trend For Talcher
180
160
140
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
DO_SAT% (%)
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For Talcher
mg/l
9
8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
BOD3-27 (mg/L)
DO (mg/L)


Year Wise Trend For Talcher
mg/l
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend For Talcher
90
80
70
60
50
40
30
20
10
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year Wise Trend For Talcher
mg/l
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
Ca (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

SITE BOLANI

SECTION-I(HISTORY SHEET,DISCHARGE)

HISTORY SHEET

Water Year : 2019-2020

Site	:	**Bolani**	**Code**	:	**BOLANI**
State	:	Orissa	District		Sundergarh
Basin	:	Brahmani-Baitarani	Independent River	:	Brahmani
Tributary	:	-	Sub Tributary	:	Brahmni
Sub-Sub Tributary	:		Local River	:	
Division	:	E.E., Bhubaneswar	Sub-Division	:	Rourkela
Drainage Area	:	Sq. Km.	Bank	:	Left
Latitude	:	22°06'19"	Longitude	:	84°51'02"
Zero of Gauge (m)	:	160 (m.s.l)	11/30/2016		
		Opening Date	Closing Date		
Gauge	:	3/15/2019			
Discharge	:	3/15/2019			
Sediment	:				
Water Quality	:				

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
2019-2020	4767	163.500	8/19/2019	9.343	159.730	6/7/2019

Stage-Discharge Data for the period 2019 - 2020

Station Name : Bolani (BOLANI) **Division : E.E., Bhubaneswar**

Local River : **Sub-Division : Rourkela**

Day	Jun		Jul		Aug		Sep		Oct		Nov	
	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q
1	159.880	11.80	160.550	71.90	161.170	300.3	161.720	1326 *	163.180	2018	160.650	227.1
2	159.920	12.30 *	160.600	77.86	161.230	324.3	161.220	972.4	163.040	2063 *	160.620	216.5
3	159.830	11.18	161.300	275.2	160.760	228.6	161.100	743.2	162.360	1757	160.590	165.7 *
4	159.820	9.368	161.100	263.5 *	160.640	206.1 *	161.175	672.6	161.480	1576	160.580	148.8
5	159.900	9.720 *	160.730	241.8	160.690	241.7	161.095	586.6	161.220	845.4	160.600	205.1
6	159.820	10.30	160.590	75.43	160.640	196.5	161.050	556.4	161.040	711.8 *	160.620	199.9
7	159.730	9.343	160.460	73.74 *	160.940	269.2	161.050	523.7	161.010	689.5 *	160.610	195.6
8	159.740	9.752	160.300	72.15	161.320	350.2	161.080	567.5 *	161.770	1253 *	160.590	169.5
9	159.840	9.900	161.220	228.6	161.710	746.9	161.040	509.1 *	162.350	1684	160.580	166.5
10	159.720	10.17	160.780	116.8	161.510	442.3	161.070	494.5	161.680	1569	160.560	156.7 *
11	159.710	9.847	161.360	266.0	161.400	333.4 *	161.100	477.5	161.380	849.7	160.500	127.4
12	159.580	9.500	161.200	350.9	161.500	432.4 *	161.190	612.1	161.120	768.7	160.430	122.0 *
13	159.690	10.02	161.020	267.4	161.990	922.4	162.030	1748	161.070	736.4 *	160.340	114.9
14	159.690	10.10	160.680	191.2 *	162.980	2193	162.670	2305	160.970	671.9	160.250	118.8
15	159.800	10.27	160.600	174.0	163.160	2616 *	162.140	1884 *	160.810	650.1	160.180	96.42
16	159.980	16.75 *	160.540	104.1	162.750	1652	161.365	1268	160.620	353.6	160.180	104.2
17	159.860	12.43	160.305	102.4	162.320	1311	161.205	1140	160.570	322.9	160.180	104.2 *
18	159.800	9.470	160.270	97.71	162.420	1604 *	161.130	737.8	160.550	231.1	160.180	107.8
19	159.800	11.90	160.180	88.61	163.500	4767	161.040	455.7	160.550	216.9	160.170	106.1
20	159.860	12.95	160.160	83.44	163.380	4074	161.060	383.3	160.540	206.7 *	160.170	125.2
21	159.960	11.79	160.160	83.44 *	161.950	1423	161.045	368.2	160.470	134.9	160.170	116.5
22	160.220	34.12	160.320	99.43	161.000	1052	160.890	323.4 *	160.530	430.5	160.140	121.9
23	160.160	31.38 *	160.210	82.60	160.550	828.4	160.755	284.4	160.620	468.5	160.110	100.6
24	160.000	21.08	160.150	55.77	159.900	731.9	160.750	203.4	160.710	484.9	160.080	98.43 *
25	160.720	84.03	160.250	68.52	159.440	708.4 *	160.660	274.9	161.835	982.9	160.050	96.26
26	160.420	56.41	160.180	57.74	159.020	922.5	160.710	285.3	164.080	3446	160.020	90.40
27	160.500	60.72	160.250	62.42	159.460	1810	161.225	767.3	162.610	1974 *	160.010	87.20
28	160.760	87.24	161.100	428.4 *	159.370	1586	162.030	1490	162.030	1393	159.990	100.6
29	160.600	78.25	161.600	643.6	158.960	1363	162.130	1608 *	161.225	682.9	159.980	97.31
30	160.620	75.71 *	161.200	416.6	159.170	1429	164.190	4030	160.960	358.0	159.970	95.96
31			161.310	357.9	159.300	1736			160.790	264.9		
Ten-Daily Mean												
I Ten-Daily	159.820	10.38	160.763	149.7	161.061	330.6	161.160	695.2	161.913	1417	160.600	185.1
II Ten-Daily	159.777	11.32	160.632	172.6	162.540	1990	161.493	1101	160.818	500.8	160.258	112.7
III Ten-Daily	160.396	54.07	160.612	214.2	159.829	1236	161.439	963.4	161.442	965.5	160.052	100.5
Monthly												
Min.	159.580	9.343	160.150	55.77	158.960	196.5	160.660	203.4	160.470	134.9	159.970	87.20
Max.	160.760	87.24	161.600	643.6	163.500	4767	164.190	4030	164.080	3446	160.650	227.1
Mean	159.998	25.26	160.667	180	161.101	1187	161.364	919.9	161.393	961.1	160.303	132.8

Annual Runoff in MCM = 9892 **Annual Runoff in mm =**

Peak Observed Discharge = 4767 cumecs on 19/08/2019 **Corres. Water Level :163.5 m**

Lowest Observed Discharge = 9.343 cumecs on 07/06/2019 **Corres. Water Level :159.73 m**

Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

Stage-Discharge Data for the period 2019 - 2020

Station Name : Bolani (BOLANI) **Division : E.E., Bhubaneswar**

Local River : **Sub-Division : Rourkela**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	159.950	95.65 *	159.620	52.97	159.500	35.97	159.000	23.48 *			159.740	100.4
2	159.920	94.19	159.620	49.92	159.500	35.97 *	159.010	23.56			159.640	73.63
3	159.900	79.49	159.630	52.61	159.480	36.19	159.010	19.08			159.600	64.03 *
4	159.880	58.13	159.640	57.53	159.480	29.95	159.020	19.04			159.620	68.83
5	159.850	55.45	159.640	57.53 *	159.480	30.79	159.060	20.32			159.580	60.26
6	159.820	53.66	159.780	124.6	159.480	31.97	159.100	18.64			159.620	67.77
7	159.780	55.86	159.760	114.9	159.480	30.40	159.140	21.69			159.620	67.77 *
8	159.740	56.71 *	159.760	113.5	159.480	33.26	159.200	28.67 *			159.680	96.13
9	159.700	57.56	159.800	116.9	159.460	32.44 *	159.260	35.65			159.700	97.05
10	159.640	54.27	159.780	95.04	159.420	30.81	159.360	38.66 *			159.980	107.2 *
11	159.620	47.08	159.760	91.22	159.400	30.53	159.380	41.67			159.840	102.1
12	159.600	46.96	159.760	91.22 *	159.380	32.56	159.380	34.42			159.660	81.89
13	159.620	52.79	159.760	88.16	159.360	32.62	159.420	44.56			159.520	74.66
14	159.630	56.50	159.740	83.61	159.320	32.86	159.460	51.86			159.600	78.63
15	159.630	56.50 *	159.740	82.16	159.300	32.20	159.520	63.18 *			159.580	72.37
16	159.630	57.35	159.700	79.85	159.260	31.19 *	160.270	204.7			159.580	62.21
17	159.640	59.45	159.660	65.97	159.220	30.18	161.020	453.4			159.600	64.00 *
18	159.630	52.75	159.640	65.04	159.200	27.97	160.580	382.5			159.560	44.93
19	159.630	63.25	159.640	65.04 *	159.160	26.63	160.090	171.6			159.460	41.83
20	159.630	61.44	159.640	70.65	159.140	27.08	160.120	230.9	159.060	24.49	159.540	46.86
21	159.640	73.65	159.620	67.83	159.120	25.94	159.825	153.7	159.050	24.88	159.500	31.23
22	159.640	73.65 *	159.580	47.99	159.100	25.32	159.700	107.1 *	159.150	34.52	159.540	39.95
23	159.640	74.92	159.600	57.77	159.080	24.64 *	159.570	58.53	159.150	48.73	159.500	36.99
24	159.640	72.96	159.560	42.20	159.060	23.96	159.540	64.67	159.200	57.57	159.500	37.00 *
25	159.640	72.96	159.540	41.75	159.040	24.35			159.360	65.49	159.500	37.00 *
26	159.620	69.13	159.540	41.75 *	159.020	26.82			159.520	89.89 *	159.520	35.23
27	159.620	67.29	159.520	40.26	159.000	24.13			160.010	164.6	159.520	40.31
28	159.640	61.33	159.520	33.67	159.000	24.12			159.700	105.6	159.540	44.59
29	159.620	56.76 *	159.520	36.99	159.000	23.48			159.820	112.9	159.580	48.58
30	159.620	56.76	159.520	33.27					159.800	101.1	159.600	52.60
31	159.620	55.02	159.500	36.30							159.600	53.00 *
Ten-Daily Mean												
I Ten-Daily	159.818	66.10	159.703	83.55	159.476	32.78	159.116	24.88			159.678	80.30
II Ten-Daily	159.626	55.41	159.704	78.29	159.274	30.38	159.924	167.9	159.060	24.49	159.594	66.95
III Ten-Daily	159.631	66.77	159.547	43.62	159.047	24.75	159.659	95.99	159.476	80.53	159.536	41.50
Monthly												
Min.	159.600	46.96	159.500	33.27	159.000	23.48	159.000	18.64	159.050	24.49	159.460	31.23
Max.	159.950	95.65	159.800	124.6	159.500	36.19	161.020	453.4	160.010	164.6	159.980	107.2
Mean	159.690	62.89	159.648	67.68	159.273	29.46	159.543	96.31	159.438	75.43	159.601	62.23

Peak Computed Discharge = 2616 cumecs on 15/08/2019 Corres. Water Level :163.16 m

Lowest Computed Discharge = 9.720 cumecs on 05/06/2019 Corres. Water Level :159.9 m

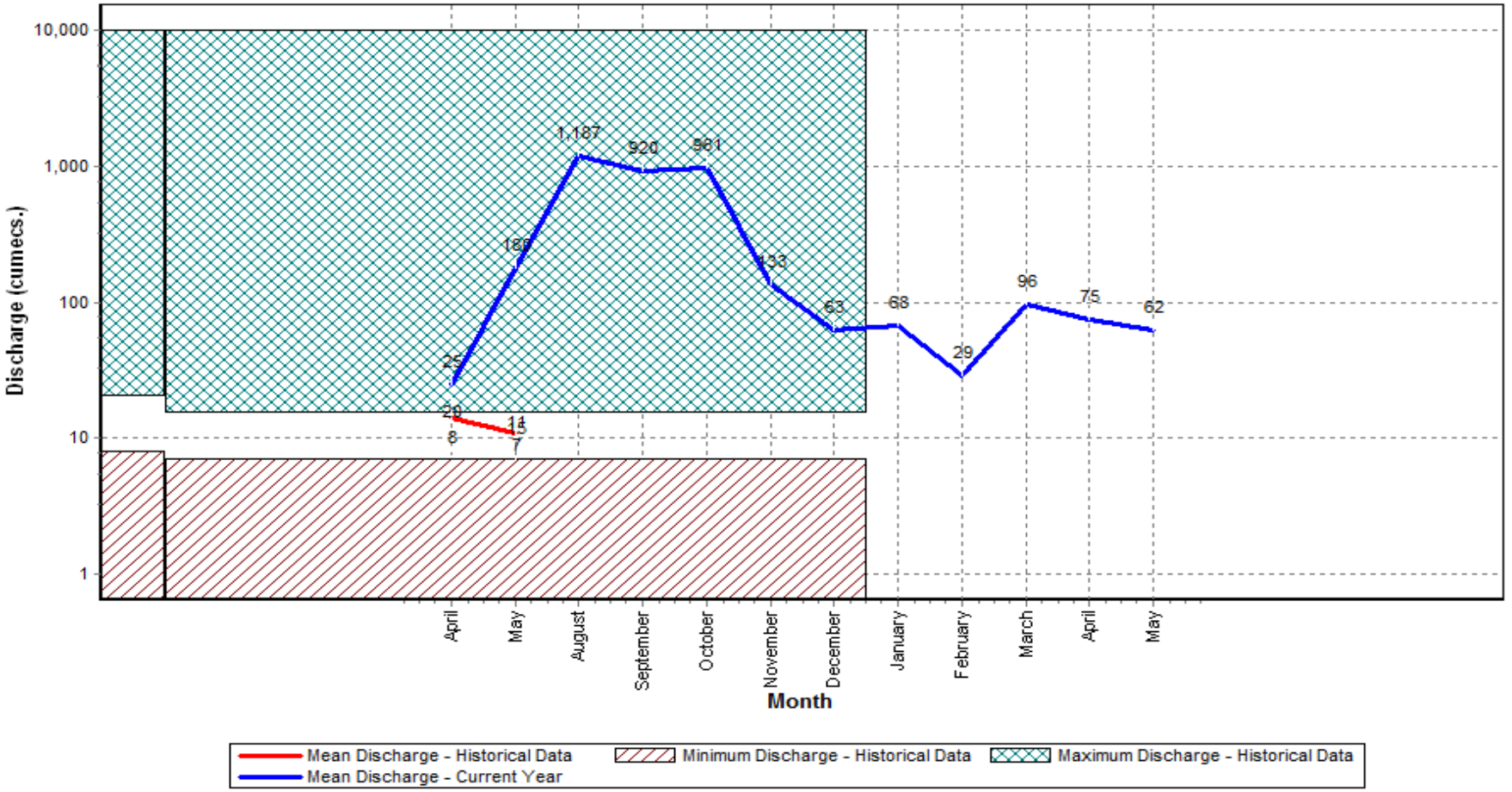
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2019-2020

Station Name : Bolani (BOLANI) **Data considered : 2019-2020** **Division : E.E., Bhubaneswar**

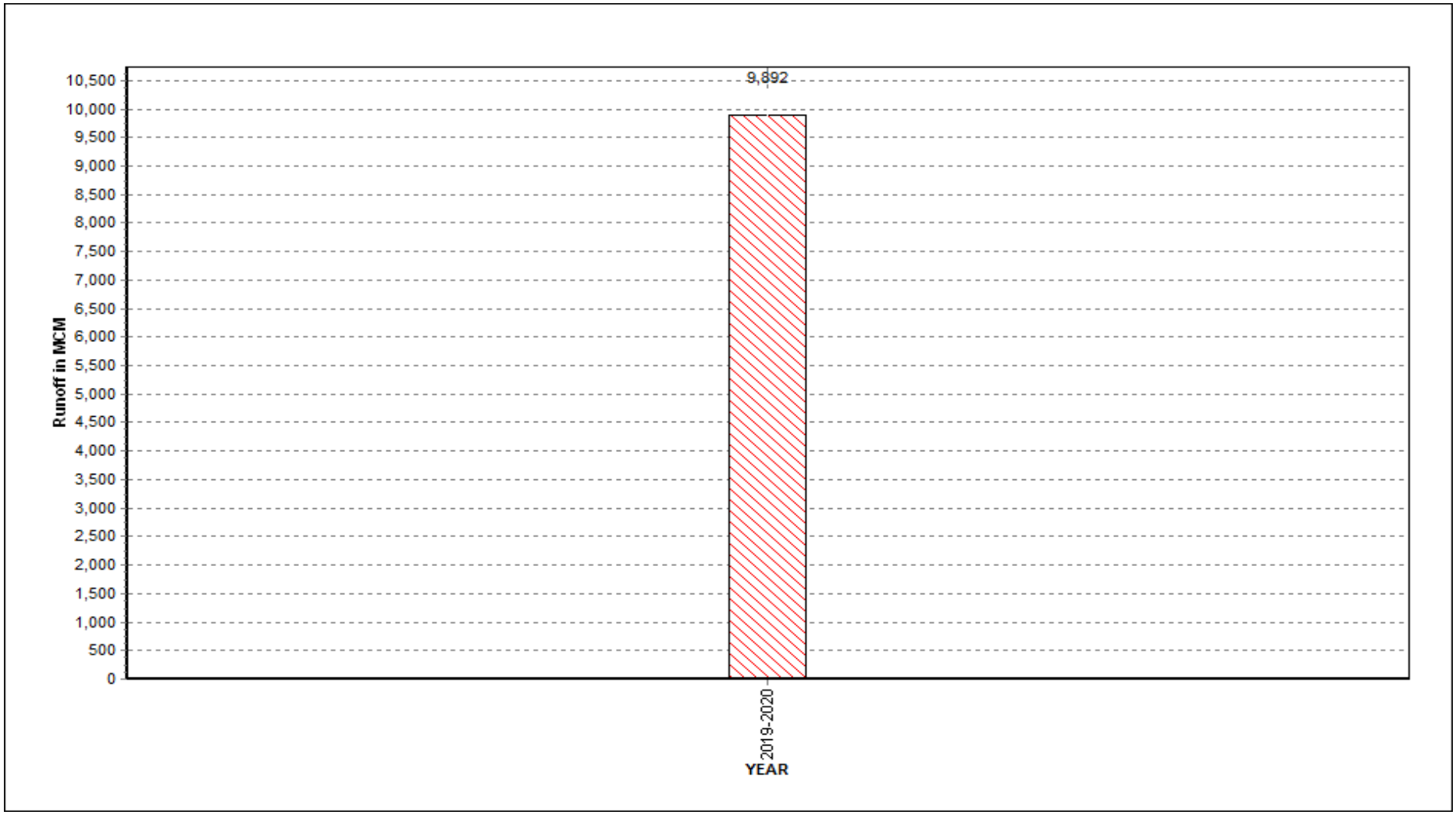
Local River : **Sub-Division : Rourkela**



Annual Runoff Values for the period: 2019 - 2020

Station Name : Bolani (BOLANI) **Division : E.E., Bhubaneswar**

Local River : **Sub-Division : Rourkela**



Note: Missing values have not been considered while arriving at Annual Runoff 157(d)

SITE

BONAIGARH

SECTION-I(HISTORY SHEET,DISCHARGE)

HISTORY SHEET

Water Year : 2019-2020

Site	:	**Bonaigarh**	**Code**	:	**BONAIGARH**
State	:	Orissa	District		Sundergarh
Basin	:	Brahmani-Baitarani	Independent River	:	Brahmani
Tributary	:	-	Sub Tributary	:	Brahmani
Sub-Sub Tributary	:		Local River	:	
Division	:	E.E., Bhubaneswar	Sub-Division	:	Brahmani
Drainage Area	:	Sq. Km.	Bank	:	
Latitude	:	21°48'26"	Longitude	:	84°58'07"
Zero of Gauge (m)	:	130 (m.s.l)	3/1/2019		
		Opening Date	Closing Date		
Gauge	:	3/15/2019			
Discharge	:	3/15/2019			
Sediment	:				
Water Quality	:				

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
2019-2020	5603	138.715	8/20/2019	9.735	132.850	6/11/2019

Stage-Discharge Data for the period 2019 - 2020

Station Name : Bonaigarh (BONAIGARH) **Division : E.E., Bhubaneswar**

Local River : **Sub-Division : Rourkela**

Day	Jun		Jul		Aug		Sep		Oct		Nov	
	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q
1	132.860	10.25	133.765	215.2	134.465	438.2	135.650	1526 *	137.130	3299	134.595	626.7
2	132.840	11.98 *	133.800	242.8	134.410	500.4	135.025	982.7	136.990	3049 *	134.485	552.8
3	132.920	14.53	134.260	331.1	134.270	344.9	135.110	1022	136.105	2031	134.410	498.6 *
4	132.930	14.64	134.480	345.0 *	134.110	308.9 *	134.790	874.3	135.455	1633	134.360	489.9
5	132.910	12.98 *	134.310	355.4	133.995	282.6	134.775	854.3	135.180	1056	134.300	453.7
6	132.875	10.28	134.070	308.6	134.250	307.0	134.790	792.1	134.960	970.0 *	134.260	387.5
7	132.840	9.825	133.870	281.4 *	134.080	295.6	134.670	743.0	134.880	890.0 *	134.200	353.4
8	132.880	11.23	133.780	214.3	135.070	803.5	134.680	755.6 *	135.790	1810 *	134.090	288.5
9	132.880	11.09 *	134.390	353.0	135.110	904.3	134.620	520.9 *	136.040	2020	133.925	257.4
10	132.850	10.59	134.350	358.5	135.045	777.2	134.650	621.5	135.710	1708	133.840	250.6 *
11	132.850	9.735	134.000	294.9	135.000	768.4 *	134.640	625.8	135.430	1518	133.790	299.0
12	132.860	10.03	134.490	447.8	134.810	696.9 *	134.855	800.2	135.238	1102	133.790	299.6 *
13	132.920	13.65	134.530	430.0	135.420	1271	136.205	2106	135.060	1011 *	133.790	222.8
14	132.880	12.22	134.090	350.6 *	136.580	2156	136.500	2231	134.955	848.6	133.770	222.2
15	132.870	11.95	133.925	294.9	136.820	2370 *	135.980	1719 *	134.720	660.4	133.750	219.0
16	132.900	12.97 *	133.850	248.7	136.240	1986	135.410	1326	134.450	482.5	133.740	200.7 *
17	132.910	13.14	133.720	188.1	135.360	1183	134.970	651.2	134.300	459.6	133.760	203.0 *
18	132.960	16.51	133.600	153.0	135.050	801.0 *	134.810	894.3	134.310	463.5	133.800	207.4
19	132.940	13.24	133.550	149.8	138.840	5589	134.625	840.9	134.250	399.4	133.870	213.0
20	132.910	12.40	133.415	122.2	138.715	5603	134.480	672.5	134.180	386.2 *	133.800	198.5
21	133.050	22.14	133.420	135.6 *	136.670	2355	134.560	708.2	133.985	272.1	133.820	208.2
22	133.090	31.67	133.540	155.9	135.845	1616	134.380	390.8 *	134.240	397.1	133.850	219.2
23	133.300	39.02 *	133.540	167.7	135.290	1136	134.250	541.3	134.790	694.5	133.860	223.9
24	133.250	38.97	133.480	146.8	134.990	962.7	134.200	417.5	134.733	632.3	133.800	215.8 *
25	133.170	28.43	133.400	118.0	135.250	1178 *	134.235	576.3	135.740	1653	133.800	216.6
26	133.720	192.1	133.490	148.5	135.520	1549	134.170	410.6	137.855	4378	133.720	195.8
27	133.525	149.2	133.470	144.0	136.340	2139	134.220	425.4	136.600	2610 *	133.680	191.4
28	133.660	173.7	134.100	398.4 *	136.010	1998	135.705	1528	135.710	1687	133.640	184.3
29	133.860	274.0	134.830	696.3	135.810	1572	136.190	2112 *	135.233	1167	133.720	200.0
30	133.740	250.6 *	134.760	515.9	136.110	1901	138.160	4954	134.905	836.5	133.670	189.1
31			134.740	506.9	136.290	2117			134.695	677.3		
Ten-Daily Mean												
I Ten-Daily	132.878	11.74	134.107	300.5	134.480	496.3	134.876	869.2	135.824	1847	134.247	415.9
II Ten-Daily	132.900	12.58	133.917	268.0	136.283	2242	135.247	1187	134.689	733.1	133.786	228.5
III Ten-Daily	133.436	120.0	133.888	284.9	135.830	1684	135.007	1206	135.317	1364	133.756	204.4
Monthly												
Min.	132.840	9.735	133.400	118.0	133.995	282.6	134.170	390.8	133.985	272.1	133.640	184.3
Max.	133.860	274.0	134.830	696.3	138.840	5603	138.160	4954	137.855	4378	134.595	626.7
Mean	133.072	48.1	133.968	284.5	135.541	1481	135.043	1087	135.278	1316	133.930	283

Annual Runoff in MCM = 13408 Annual Runoff in mm =

Peak Observed Discharge = 5603 cumecs on 20/08/2019 Corres. Water Level :138.715 m

Lowest Observed Discharge = 9.735 cumecs on 11/06/2019 Corres. Water Level :132.85 m

Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

Stage-Discharge Data for the period 2019 - 2020

Station Name : Bonaigarh (BONAIGARH) **Division : E.E., Bhubaneswar**

Local River : **Sub-Division : Rourkela**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	133.670	188.8 *	133.500	73.87	133.290	58.18	133.100	35.19 *			133.700	202.5
2	133.640	181.9	133.500	74.53	133.280	56.84 *	133.100	34.96			133.630	181.1
3	133.650	190.2	133.500	74.73	133.250	52.11	133.080	32.37			133.570	125.6 *
4	133.550	168.9	133.520	75.71	133.250	52.29	133.080	32.11			133.620	116.6
5	133.480	156.3	133.540	76.02 *	133.180	44.03	133.080	32.74			133.500	95.73
6	133.490	151.7	133.560	85.23	133.160	43.99	133.100	34.34			133.510	96.30
7	133.500	162.7	133.820	163.5	133.150	42.91	133.080	32.82 *			133.620	125.4 *
8	133.480	148.5 *	133.740	158.7	133.150	43.44	133.220	52.96			133.630	127.2
9	133.480	149.8	133.680	147.4	133.200	45.99 *	133.345	71.38			133.660	137.9
10	133.450	141.4	133.660	140.5	133.190	45.72	133.410	78.66 *			133.880	230.2 *
11	133.430	122.2	133.650	137.7	133.200	47.28	133.700	146.7			133.790	191.1
12	133.450	127.2	133.620	127.6	133.170	44.48	133.610	141.6			133.620	158.4
13	133.440	123.9	133.640	192.3	133.180	44.61	133.530	99.03			133.520	103.4
14	133.440	125.5	133.680	144.4	133.180	45.02	133.570	102.6			133.440	82.16
15	133.470	145.6 *	133.620	136.2	133.150	42.70	133.600	140.6 *			133.410	74.76
16	133.410	116.2	133.580	127.7	133.140	42.44 *	133.850	171.7			133.430	77.89
17	133.430	79.21	133.510	114.7	133.120	41.96	135.245	1053			133.420	78.20 *
18	133.490	83.24	133.480	87.53	133.130	41.50	134.940	909.4			133.320	49.45
19	133.530	105.0	133.640	84.40 *	133.110	38.95	134.940	679.3			133.280	43.29
20	133.510	99.63	133.460	84.24	133.090	33.97	134.060	284.1	133.000	18.67	133.310	48.52
21	133.550	108.5	133.460	86.52	133.100	34.61	134.150	367.1	133.010	19.31	133.275	41.28
22	133.550	108.6 *	133.400	79.05	133.080	32.45	133.980	204.6 *	133.090	25.45	133.225	34.05
23	133.550	110.4	133.350	72.75	133.070	31.99 *	133.610	160.1	133.120	31.34	133.250	39.89
24	133.580	113.3	133.350	66.56	133.070	32.09	133.570	81.11	133.130	32.41	133.260	40.60 *
25	133.550	109.2 *	133.310	58.36	133.120	36.95			133.250	55.08	133.250	38.92 *
26	133.520	105.3	133.350	65.75 *	133.110	35.20			133.350	70.25 *	133.240	37.00
27	133.500	91.36	133.320	60.20	133.100	35.89			133.700	202.8	133.210	33.22
28	133.550	93.98	133.300	58.01	133.090	33.69			133.675	195.8	133.210	34.11
29	133.550	92.98 *	133.290	57.37	133.100	35.51			133.750	220.8	133.220	35.43
30	133.540	92.95	133.290	58.61					133.840	236.2	133.530	100.9
31	133.530	89.42	133.280	57.78							133.540	102.4 *
Ten-Daily Mean												
I Ten-Daily	133.539	164.0	133.602	107.0	133.210	48.55	133.160	43.75			133.632	143.9
II Ten-Daily	133.460	112.8	133.588	123.7	133.147	42.29	134.104	372.8	133.000	18.67	133.454	90.72
III Ten-Daily	133.543	101.5	133.336	65.54	133.093	34.26	133.827	203.2	133.391	108.9	133.292	48.89
Monthly												
Min.	133.410	79.21	133.280	57.37	133.070	31.99	133.080	32.11	133.000	18.67	133.210	33.22
Max.	133.670	190.2	133.820	192.3	133.290	58.18	135.245	1053	133.840	236.2	133.880	230.2
Mean	133.515	125.3	133.503	97.67	133.152	41.96	133.665	207.4	133.356	100.7	133.454	93.02

Peak Computed Discharge = 3049 cumecs on 02/10/2019 Corres. Water Level :136.99 m

Lowest Computed Discharge = 11.09 cumecs on 09/06/2019 Corres. Water Level :132.88 m

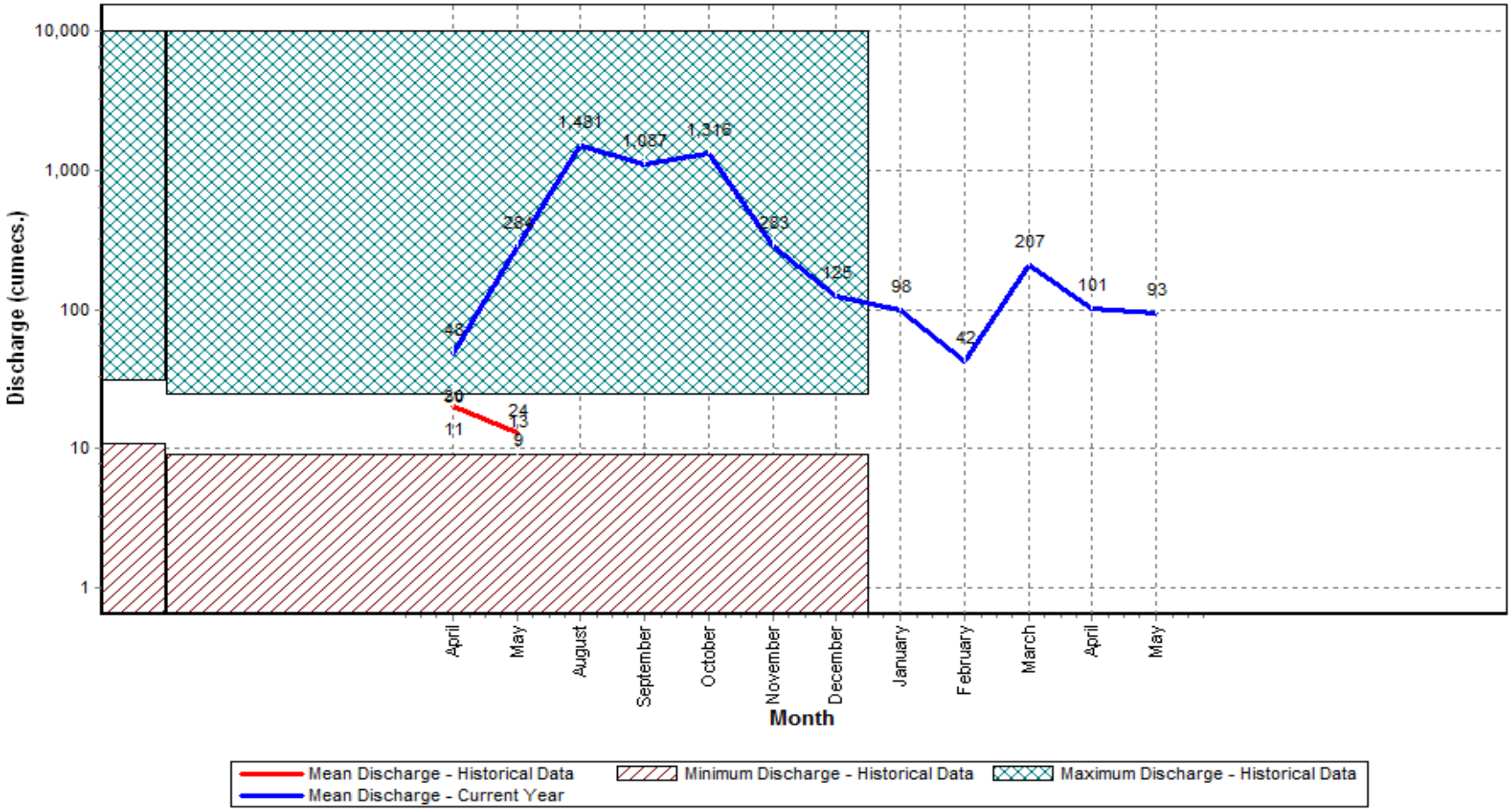
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2019-2020

Station Name : Bonaigarh (BONAIGARH) **Data considered : 2019-2020** **Division : E.E., Bhubaneswar**

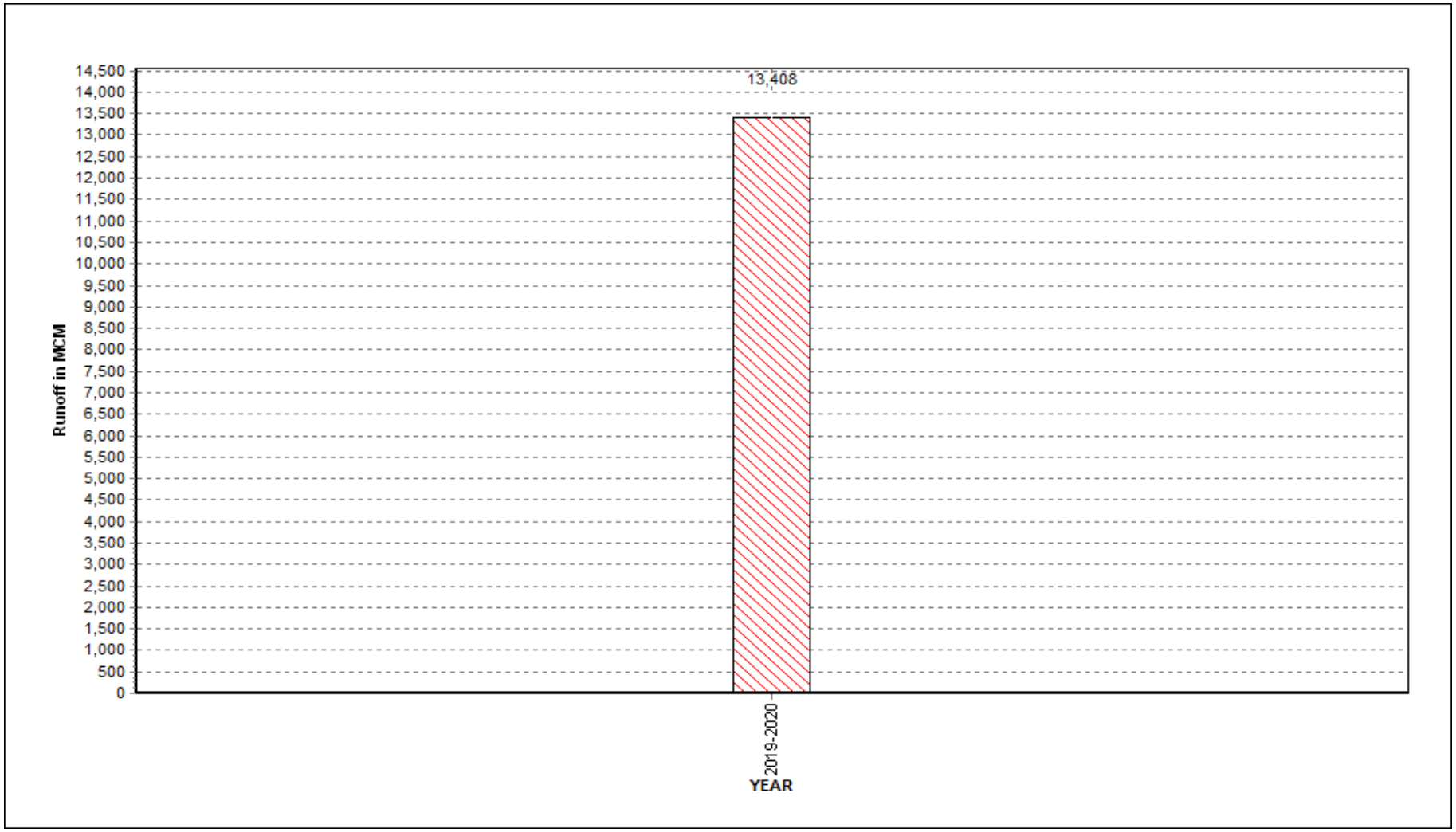
Local River : **Sub-Division : Rourkela**



Annual Runoff Values for the period: 2019 - 2020

Station Name : Bonaigarh (BONAIGARH) **Division : E.E., Bhubaneswar**

Local River : **Sub-Division : Rourkela**



Note: Missing values have not been considered while arriving at Annual Runoff 158(d)

SITE

PURUNAGARH

SECTION-I(HISTORY SHEET,DISCHARGE)

HISTORY SHEET

Water Year : 2019-2020

Site	:	**Purunagarh**	**Code**	:	**PURUNAGARH**
State	:	Orissa	District		Deogarh
Basin	:	Brahmani-Baitarani	Independent River	:	Brahmni
Tributary	:	-	Sub Tributary	:	Baliapata Nala
Sub-Sub Tributary	:		Local River	:	
Division	:	E.E., Bhubaneswar	Sub-Division	:	Rourkela
Drainage Area	:	Sq. Km.	Bank	:	
Latitude	:	21°31'34"	Longitude	:	84°42'44"
Zero of Gauge (m)	:	189.9 (m.s.l)	10/28/2016		
		Opening Date	Closing Date		
Gauge	:	3/15/2019			
Discharge	:	3/15/2019			
Sediment	:				
Water Quality	:				

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
2019-2020	17.31	192.230	8/14/2019	0.000	191.660	4/23/2020

Stage-Discharge Data for the period 2019 - 2020

Station Name : Purunagarh (PURUNAGARH) **Division : E.E., Bhubaneswar**

Local River : **Sub-Division : Rourkela**

Day	Jun		Jul		Aug		Sep		Oct		Nov	
	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q
1	191.460	0.000	191.500	0.000	191.570	0.000	191.770	1.608 *	191.860	4.316	191.720	1.032
2	191.480	0.000 *	191.510	0.000	191.580	0.000	191.760	1.349	191.830	3.695 *	191.710	1.023
3	191.480	0.000	191.540	0.000	191.580	0.000	191.920	4.655	191.790	2.866	191.700	0.000 *
4	191.460	0.000	191.530	0.000 *	191.570	0.000 *	191.830	2.669	191.780	2.801	191.690	0.000
5	191.180	0.000 *	191.520	0.000	191.550	0.000	191.780	2.425	191.760	1.413	191.700	0.000
6	191.480	0.000	191.550	0.000	191.560	0.000	191.800	2.626	191.750	1.275 *	191.700	0.000
7	191.460	0.000	191.690	0.000 *	191.550	0.000	191.830	3.208	191.740	1.137 *	191.700	0.000
8	191.470	0.000	191.640	0.478	191.650	0.000	192.010	6.588 *	191.740	1.138 *	191.690	0.000
9	191.470	0.000 *	191.630	0.477	191.670	0.000	191.890	4.335 *	192.030	5.139	191.690	0.000
10	191.480	0.000	191.620	0.000	191.670	0.000	191.915	4.804	191.910	4.724	191.680	0.000 *
11	191.490	0.000	191.600	0.000	191.660	0.000 *	191.860	3.328	191.860	4.265	191.680	0.000
12	191.490	0.000	191.590	0.000	191.670	0.000 *	191.985	6.098	191.860	4.238	191.680	0.000
13	191.500	0.000	191.590	0.000	192.000	5.162	191.960	5.750	191.840	3.567 *	191.670	0.000
14	191.470	0.000	191.580	0.000 *	192.230	17.31	191.880	3.514	191.830	3.231	191.670	0.000
15	191.460	0.000	191.580	0.000	191.960	7.451 *	191.800	2.426 *	191.790	2.572	191.660	0.000
16	191.480	0.000 *	191.570	0.000	191.830	2.706	191.780	2.223	191.770	1.386	191.660	0.000
17	191.470	0.000	191.560	0.000	191.780	2.502	191.830	3.108	191.760	1.384	191.650	0.000 *
18	191.470	0.000	191.560	0.000	192.320	9.538 *	191.790	2.251	191.750	1.318	191.650	0.000
19	191.480	0.000	191.570	0.000	191.920	4.326	191.790	2.105	191.740	1.289	191.640	0.000 *
20	191.470	0.000	191.560	0.000	191.800	2.257	191.790	2.032	191.730	1.213 *	191.640	0.000
21	191.490	0.000	191.550	0.000 *	191.805	2.270	191.790	2.035	191.710	1.061	191.650	0.000
22	191.490	0.000	191.550	0.000	191.800	2.291	191.770	1.629 *	191.750	1.266	191.650	0.000
23	191.490	0.000 *	191.540	0.000	191.935	4.710	191.750	1.223	191.730	1.241	191.640	0.000
24	191.480	0.000	191.540	0.000	191.850	2.652	191.760	1.287	191.770	1.381	191.640	0.000 *
25	191.480	0.000	191.530	0.000	191.830	2.604 *	191.740	1.025	191.910	4.558	191.650	0.000
26	191.470	0.000	191.520	0.000	191.810	2.555	191.740	1.017	191.840	3.032	191.650	0.000
27	191.470	0.000	191.530	0.000	191.800	2.543	191.740	1.077	191.800	1.949 *	191.650	0.000
28	191.470	0.000	191.550	0.000 *	191.790	2.434	191.780	2.117	191.780	1.407	191.640	0.000
29	191.470	0.000	191.550	0.000	191.770	1.378	191.810	2.611 *	191.740	1.275	191.640	0.000
30	191.500	0.000 *	191.580	0.000	191.850	2.909	191.990	5.572	191.730	1.251	191.630	0.000
31			191.580	0.000	191.810	2.645			191.720	1.047		
Ten-Daily Mean												
I Ten-Daily	191.442	0.000	191.573	0.096	191.595	0.000	191.851	3.427	191.819	2.850	191.698	0.205
II Ten-Daily	191.478	0.000	191.576	0.000	191.917	5.125	191.847	3.283	191.793	2.446	191.660	0.000
III Ten-Daily	191.481	0.000	191.547	0.000	191.823	2.635	191.787	1.959	191.771	1.770	191.644	0.000
Monthly												
Min.	191.180	0.000	191.500	0.000	191.550	0.000	191.740	1.017	191.710	1.047	191.630	0.000
Max.	191.500	0.000	191.690	0.478	192.320	17.31	192.010	6.588	192.030	5.139	191.720	1.032
Mean	191.467	0	191.565	0.031	191.780	2.588	191.828	2.89	191.794	2.337	191.667	0.068

Annual Runoff in MCM = 21 Annual Runoff in mm =

Peak Observed Discharge = 17.31 cumecs on 14/08/2019 Corres. Water Level :192.23 m

Lowest Observed Discharge = 0.000 cumecs on 01/06/2019 Corres. Water Level :191.46 m

Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

Stage-Discharge Data for the period 2019 - 2020

Station Name : Purunagarh (PURUNAGARH) **Division : E.E., Bhubaneswar**

Local River : **Sub-Division : Rourkela**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	191.630	0.000 *	191.570	0.000	191.540	0.000	191.560	0.000 *			191.600	0.000
2	191.630	0.000	191.570	0.000	191.540	0.000 *	191.560	0.000			191.600	0.000
3	191.640	0.000	191.580	0.000	191.540	0.000	191.550	0.000			191.590	0.000 *
4	191.640	0.000	191.580	0.000	191.530	0.000	191.550	0.000			191.580	0.000
5	191.630	0.000	191.570	0.000 *	191.540	0.000	191.550	0.000			191.620	0.000
6	191.630	0.000	191.570	0.000	191.550	0.000	191.560	0.000			191.640	0.000
7	191.620	0.000	191.570	0.000	191.560	0.000	191.600	0.000			191.650	0.000 *
8	191.620	0.000	191.560	0.000	191.570	0.000	191.630	0.000 *			191.630	0.000
9	191.610	0.000	191.570	0.000	191.570	0.000 *	191.640	0.000			191.620	0.000
10	191.600	0.000	191.570	0.000	191.570	0.000	191.630	0.000 *			191.600	0.000 *
11	191.600	0.000	191.570	0.000	191.570	0.000	191.620	0.000			191.590	0.000
12	191.590	0.000	191.570	0.000	191.560	0.000	191.600	0.000			191.590	0.000
13	191.600	0.000	191.560	0.000			191.590	0.000			191.590	0.000
14	191.600	0.000	191.560	0.000	191.560	0.000	191.590	0.000			191.620	0.000
15	191.610	0.000 *	191.570	0.000	191.560	0.000	191.580	0.000 *			191.600	0.000
16	191.610	0.000	191.570	0.000	191.560	0.000 *	191.580	0.000			191.590	0.000
17	191.600	0.000	191.570	0.000	191.560	0.000	191.580	0.000			191.570	0.000 *
18	191.600	0.000	191.570	0.000	191.550	0.000	191.570	0.000			191.560	0.000
19	191.600	0.000	191.560	0.000 *	191.550	0.000	191.550	0.000			191.560	0.000
20	191.590	0.000	191.560	0.000	191.550	0.000	191.560	0.000	191.480	0.000	191.570	0.000
21	191.590	0.000	191.560	0.000	191.540	0.000	191.560	0.000	191.480	0.000	191.550	0.000
22	191.580	0.000 *	191.550	0.000	191.540	0.000	191.550	0.000 *	191.620	0.000	191.530	0.000
23	191.580	0.000	191.550	0.000	191.540	0.000 *	191.540	0.000	191.660	0.000	191.520	0.000
24	191.580	0.000	191.550	0.000	191.550	0.000	191.540	0.000	191.630	0.000	191.510	0.000 *
25	191.580	0.000	191.560	0.000	191.580	0.000			191.610	0.000	191.500	0.000 *
26	191.570	0.000	191.560	0.000 *	191.570	0.000			191.620	0.000 *	191.500	0.000
27	191.570	0.000	191.560	0.000	191.570	0.000			191.630	0.000	191.500	0.000
28	191.570	0.000	191.550	0.000	191.570	0.000			191.620	0.000	191.500	0.000
29	191.570	0.000 *	191.540	0.000	191.560	0.000			191.620	0.000	191.550	0.000
30	191.570	0.000	191.540	0.000					191.610	0.000	191.560	0.000
31	191.570	0.000	191.540	0.000							191.550	0.000 *
Ten-Daily Mean												
I Ten-Daily	191.625	0.000	191.571	0.000	191.551	0.000	191.583	0.000			191.613	0.000
II Ten-Daily	191.600	0.000	191.566	0.000	191.558	0.000	191.582	0.000	191.480	0.000	191.584	0.000
III Ten-Daily	191.575	0.000	191.551	0.000	191.558	0.000	191.547	0.000	191.610	0.000	191.525	0.000
Monthly												
Min.	191.570	0.000	191.540	0.000	191.530	0.000	191.540	0.000	191.480	0.000	191.500	0.000
Max.	191.640	0.000	191.580	0.000	191.580	0.000	191.640	0.000	191.660	0.000	191.650	0.000
Mean	191.599	0	191.562	0	191.555	0	191.577	0	191.598	0	191.572	0

Peak Computed Discharge = 9.538 cumecs on 18/08/2019 Corres. Water Level :192.32 m

Lowest Computed Discharge = 0.000 cumecs on 02/06/2019 Corres. Water Level :191.48 m

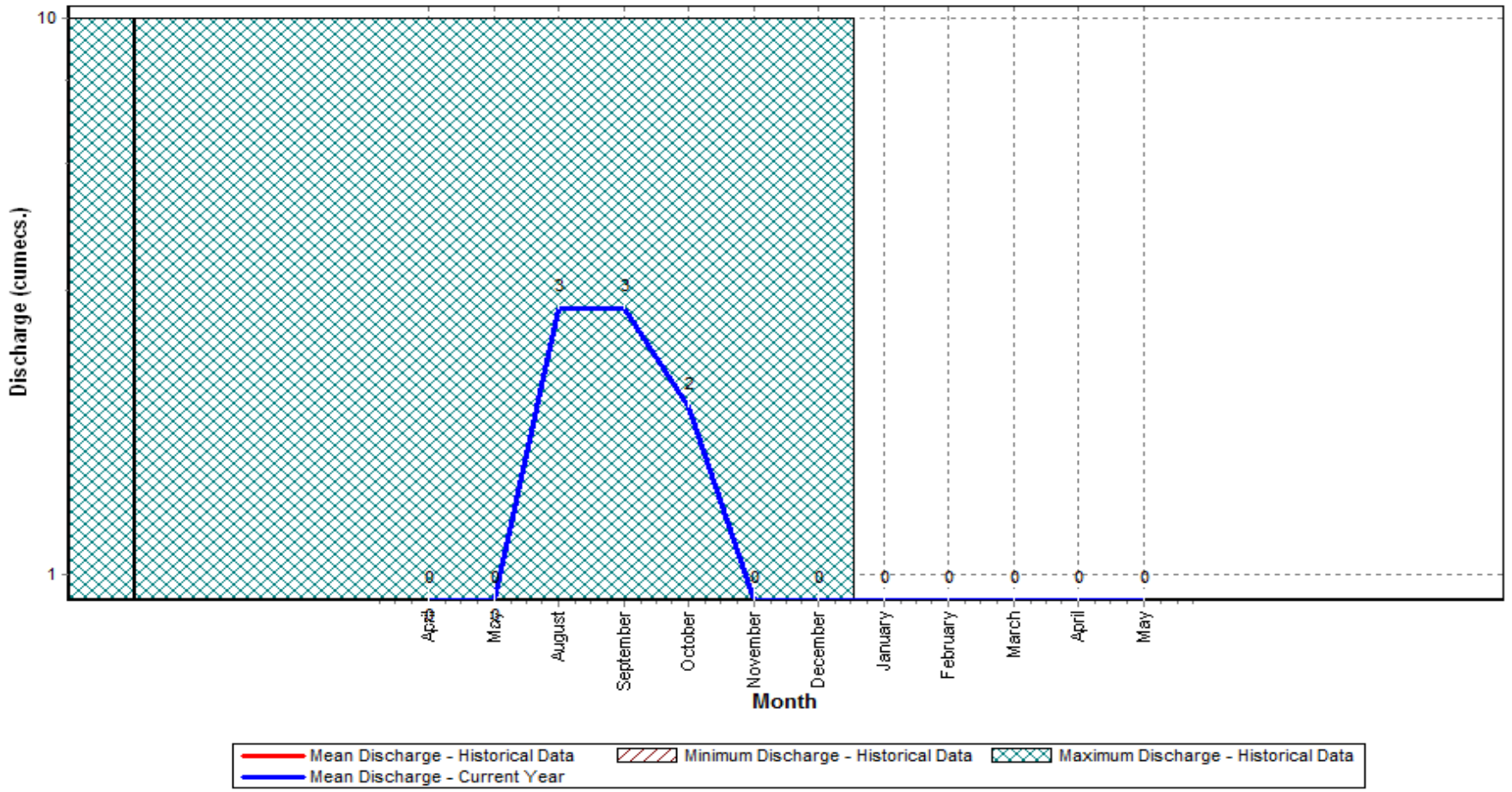
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2019-2020

Station Name : Purunagarh (PURUNAGARH) **Data considered : 2019-2020** **Division : E.E., Bhubaneswar**

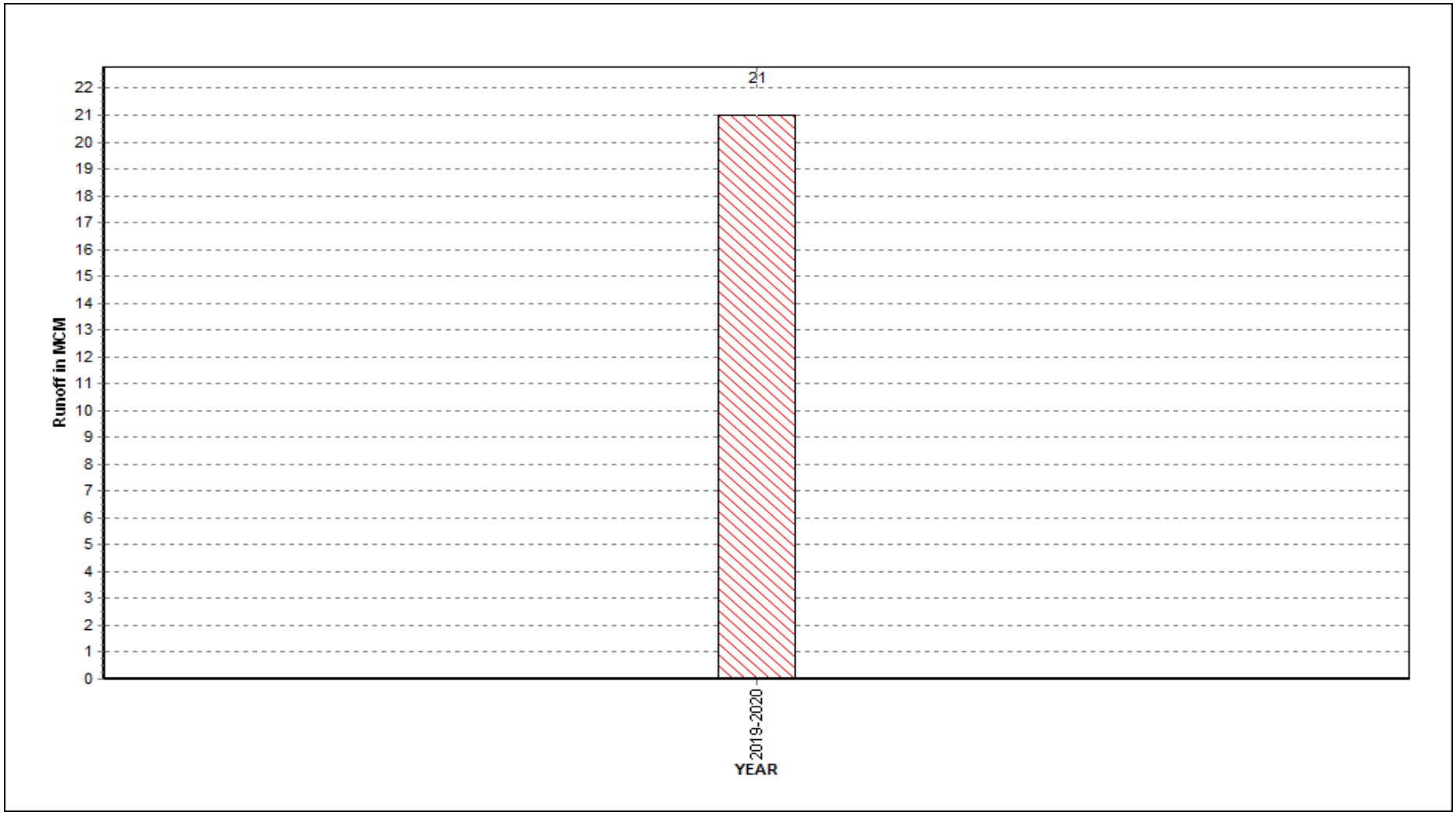
Local River : **Sub-Division : Rourkela**



Annual Runoff Values for the period: 2019 - 2020

Station Name : Purunagarh (PURUNAGARH) **Division : E.E., Bhubaneswar**

Local River : **Sub-Division : Rourkela**



Note: Missing values have not been considered while arriving at Annual Runoff 159(d)

SITE NANDIRA

SECTION-I(HISTORY SHEET)

HISTORY SHEET

			Water Year	**:**	**2019-2020**
Site	**:**	**NANDIRA**	**Code**	**:**	**NANDIRA**
State	:	Orissa	District		Angul
Basin	:	Brahmani-Baitarani	Independent Ri	:	Brahmni
Tributary	:	Nandiranala	Sub Tributary	:	
Sub-Sub Tributa	:		Local River	:	Nandiranala
Division	:	E.E., Bhubaneswar	Sub-Division	:	Sambalpur
Drainage Area	:	Sq. Km.	Bank	:	Right
Latitude	:	20°53'16"	Longitude	:	85°15'44"
		Opening Date	Closing Date		
Gauge	:				
Discharge	:				
Sediment	:				
Water Quality	:	01-11-1990			

SECTION-III

(WATER QUALITY)

Water Quality Datasheet for the period : 2019-2020

Station Name : NANDIRA (NANDIRA) **Division : E.E., Bhubaneswar**

Local River : Nandiranala **River Water Analysis** **Sub-Division : Sambalpur**

S.No	Parameters	6/1/2019	7/1/2019	8/1/2019	9/2/2019	10/1/2019	11/1/2019	12/2/2019	1/1/2020	2/1/2020	3/2/2020
		A	A	A	A	A	A	A	A	A	A
	PHYSICAL										
1	Q (cumec)										
2	Colour_Cod (-)	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Dark Brown	Light Brown	Light Brown
3	EC_FLD (µmho/cm)	400	642	701	313	257	500	317	275	22	15
4	EC_GEN (µmho/cm)	404	637	707	372	259	502	319	263	242	326
5	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
6	pH_FLD (pH units)	7.5	7.4	7.4	7.4	7.7	7.2	8.8	8.8	8.9	7.5
7	pH_GEN (pH units)	7.5	7.6	7.4	7.4	7.7	7.2	7.5	7.7	7.8	8.0
8	Temp (deg C)	33.5	30.0	30.0	28.5	26.5	25.5	22.0	18.0	21.3	
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
2	ALK-TOT (mgCaCO3/L)	86	107	90	108	107	71	91	64		
3	B (mg/L)	0.03									
4	Ca (mg/L)	32	17	19	26	30	34	27	31	31	16
5	Cl (mg/L)	28.5	30.3	27.2	47.9	18.8	22.7	26.5	37.6	17.9	78.8
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
7	F (mg/L)					0.28	0.60				
8	HCO3 (mg/L)	105	130	110	131	131	87	111	78	101	94
9	K (mg/L)	3.2	7.1	4.0	4.1	2.7	3.2	61.4	4.5	4.6	2.7
10	Mg (mg/L)	5.7	9.4	5.7	11.8	8.9	5.6	8.5	6.6	3.7	7.5
11	Na (mg/L)	24.5	5.6	19.2	19.5	12.6	14.5	102.0	14.3	3.7	12.1
12	P-Tot (mgP/L)	0.001									
13	SiO2 (mg/L)	7.0									
14	SO4 (mg/L)	29.8	34.2	34.3	26.2	25.1	12.4	12.6	25.3	18.7	28.1
	BIOLOGICAL/BACTERIOLOGICAL										
1	BOD3-27 (mg/L)	0.4	2.6	0.6	0.8	1.4	0.4	1.0	1.7	1.0	1.0
2	DO (mg/L)	3.8	6.0	2.7	5.0	5.9	6.8	5.4	6.1	4.9	3.9
3	DO_SAT% (%)	52	79	35	64	73	82	62	64	55	
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	79	43	48	65	74	86	67	78	78	39
2	HAR_Total (mgCaCO3/L)	103	82	71	114	111	110	102	106	93	71
3	Na% (%)	33	12	35	26	19	22	55	22	8	26
4	RSC (-)	0.0	0.5	0.4	0.0	0.0	0.0	0.0	0.0		
5	SAR (-)	1.1	0.3	1.0	0.8	0.5	0.6	4.4	0.6	0.2	0.6
	PESTICIDES										

Water Quality Summary for the period : 2019-2020

Station Name : NANDIRA (NANDIRA) **Division : E.E., Bhubaneswar**

Local River : Nandiranala **Sub-Division : Sambalpur**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	10	701	15	344
3	EC_GEN (µmho/cm)	10	707	242	403
4	pH_FLD (pH units)	10	8.9	7.2	7.8
5	pH_GEN (pH units)	10	8.0	7.2	7.6
6	Temp (deg C)	9	33.5	18.0	26.1
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	8	0.0	0.0	0
2	ALK-TOT (mgCaCO3/L)	8	108	64	90
3	B (mg/L)	1	0.03	0.03	0.03
4	Ca (mg/L)	10	34	16	26
5	Cl (mg/L)	10	78.8	17.9	33.6
6	CO3 (mg/L)	8	0.0	0.0	0
7	F (mg/L)	2	0.60	0.28	0.44
8	HCO3 (mg/L)	10	131	78	108
9	K (mg/L)	10	61.4	2.7	9.8
10	Mg (mg/L)	10	11.8	3.7	7.3
11	Na (mg/L)	10	102.0	3.7	22.8
12	P-Tot (mgP/L)	1	0.001	0.001	0.001
13	SiO2 (mg/L)	1	7.0	7.0	7
14	SO4 (mg/L)	10	34.3	12.4	24.7
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	10	2.6	0.4	1.1
2	DO (mg/L)	10	6.8	2.7	5
3	DO_SAT% (%)	9	82	35	63
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	10	86	39	66
2	HAR_Total (mgCaCO3/L)	10	114	71	96
3	Na% (%)	10	55	8	26
4	RSC (-)	8	0.5	0.0	0.1
5	SAR (-)	10	4.4	0.2	1
	PESTICIDES				

Water Quality Seasonal Average for the period: 2005-2020

Station Name : NANDIRA (NANDIRA) | **Division : E.E., Bhubaneswar**

Local River : Nandiranala | **River Water** | **Sub-Division : Sambalpur**

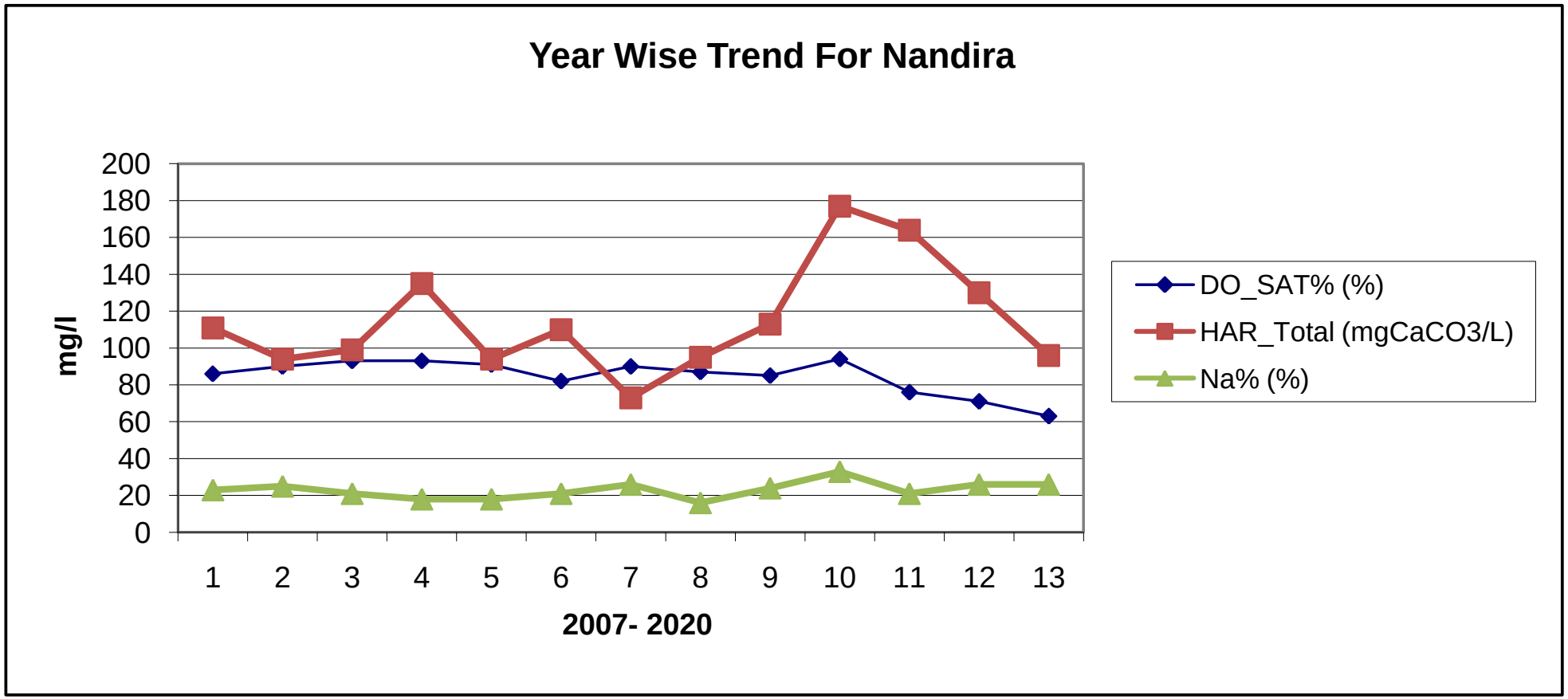
S.No	Parameters	Flood															Winter								
		Jun - Oct															Nov - Feb								
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
	PHYSICAL																								
1	Q (cumec)																								
2	EC_FLD (µmho/cm)	305	290	336	264	214	309	246	251	262	274	458	290	326	385	463	243	230	216	229	217	290	230	363	272
3	EC_GEN (µmho/cm)	302	277	333	264	214	309	246	251	262	274	463	293	321	386	476	239	226	213	229	217	290	230	363	272
4	pH_FLD (pH units)	7.8	7.9	8.0	7.8	7.8	8.1	8.0	7.6	7.7	7.8	7.6	7.7	7.8	7.5	7.4	7.9	8.1	7.9	7.9	7.8	7.6	7.7	7.4	8.0
5	pH_GEN (pH units)	7.8	8.0	8.0	7.8	7.8	8.1	8.0	7.6	7.7	7.8	7.5	7.8	7.7	7.5	7.5	7.9	8.1	8.0	7.9	7.8	7.6	7.7	7.4	8.0
6	Temp (deg C)	29.1	29.6	29.9	29.3	29.2	28.4	29.6	30.4	29.0	27.2	28.8	30.2	29.0	28.6	29.7	22.7	23.2	23.8	23.9	25.3	25.0	26.9	23.3	23.9
	CHEMICAL																								
1	Alk-Phen (mgCaCO3/L)		0.0	0.1	0.0	0.0	3.2	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)		113	76	48	26	68	71	42	76	69	63	66	91	104	99		71	43	46	45	69	72	113	84
3	B (mg/L)	0.53	0.00	0.17	0.21	0.15	0.15	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.53	0.00	0.19	0.15	0.17	0.15	0.01	0.00	0.00
4	Ca (mg/L)	33	31	34	23	17	29	22	20	20	25	26	35	32	38	25	25	23	20	21	19	28	27	34	23
5	Cl (mg/L)	21.6	17.4	23.3	20.0	18.3	17.9	28.3	18.9	20.6	28.3	12.8	17.0	19.4	19.9	30.5	22.3	16.6	17.8	18.6	15.5	17.9	16.5	27.8	20.9
6	CO3 (mg/L)	0.0	0.0	0.1	0.0	0.0	3.8	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.47	0.54	0.66	0.05	0.20	0.48	0.05	0.17	0.05	0.05	0.05	0.05	0.05	1.53	0.28	0.11	0.19	0.44	0.21	0.30	0.56	0.05	0.06	0.05
8	Fe (mg/L)	0.1	0.2	0.1	0.1	0.1	0.1	0.0	1.3	0.1	0.3	0.5	0.4	0.4	0.4		0.1	0.3	0.1	0.2	0.1	0.1	0.0	1.5	0.3
9	HCO3 (mg/L)	96	62	94	59	31	75	76	50	97	84	77	80	110	127	121	78	68	53	57	54	79	88	117	100
10	K (mg/L)	2.1	2.9	2.6	5.8	2.3	3.0	2.4	2.4	1.6	2.4	3.5	8.0	3.3	6.3	4.2	3.7	3.3	2.1	1.6	1.5	2.9	2.0	4.2	1.8
11	Mg (mg/L)	9.4	7.8	10.1	8.6	8.6	12.5	9.9	9.3	4.8	9.9	11.7	20.4	12.3	14.3	8.3	6.0	7.1	6.3	8.0	9.2	10.0	6.1	13.1	5.7
12	Na (mg/L)	14.9	11.5	15.5	13.4	10.9	12.2	8.4	9.0	10.7	8.4	13.4	28.4	15.4	24.8	16.3	14.8	11.1	12.3	13.8	9.8	12.3	10.8	19.5	12.0
13	NO2+NO3 (mg N/L)	9.01	11.29	9.05	6.58	5.43	7.80	0.41	0.96	1.88	2.03	1.11	1.06	1.19	1.17		6.33	7.82	6.33	6.27	4.06	5.25	0.44	0.84	2.89
14	NO2-N (mgN/L)	0.25	1.26	0.00	0.00	0.00	0.01	0.07	0.00	0.00	0.01	0.02	0.01	0.02	0.00		0.65	0.92	0.00	0.00	0.00	0.00	0.07	0.00	0.00
15	NO3-N (mgN/L)	8.75	10.03	9.05	6.58	5.43	7.79	0.34	0.96	1.88	2.02	1.08	1.04	1.17	1.17		5.68	6.90	6.33	6.27	4.06	5.25	0.37	0.84	2.89
16	o-PO4-P (mg P/L)	0.064	0.044	0.058	0.110	0.060	0.062										0.043	0.018	0.000	0.121	0.065				
17	P-Tot (mgP/L)	0.064	0.045	0.280	0.003	0.010	0.001	0.010	0.001	0.001	0.001	0.001	0.010	0.001	0.001	0.001	0.032	0.019	0.001	0.002	0.010	0.001	0.010	0.001	0.001
18	SiO2 (mg/L)	26.7	13.9	10.1	9.2	8.5	6.6	11.6	11.4	8.0	5.4	6.0	6.2	7.7	8.0	7.0	22.2	18.2	9.0	8.6	7.9	3.2	11.8	11.5	8.8
19	SO4 (mg/L)	11.4	19.6	20.5	20.1	27.3	27.8	29.3	34.9	24.6	31.9	22.9	17.8	21.1	38.9	29.9	7.4	7.6	15.0	15.2	25.4	34.5	27.8	43.9	27.4
	BIOLOGICAL/BACTERIOLOGICAL																								
1	BOD3-27 (mg/L)	1.9	1.9	1.9	2.2	2.1	2.5	2.1	0.9	0.6	0.6	0.8	0.8	1.0	1.4	1.1	2.0	1.9	2.0	2.0	2.6	2.4	2.8	0.7	0.7
2	DO (mg/L)	6.7	6.6	6.6	6.9	7.2	7.2	6.8	6.6	6.9	6.4	6.7	7.4	6.2	6.1	4.7	7.9	7.5	7.4	7.7	7.8	7.6	7.5	7.8	7.8
3	DO_SAT% (%)	87	86	87	90	94	92	89	87	90	80	86	97	80	79	61	91	88	88	91	95	92	94	92	92
4	FCol-MPN (MPN/100mL)		170	60	57	12	335		17					88	103			705		13	17	104		30	
5	Tcol-MPN (MPN/100mL)		920	65	70	31	1250		26					214	253			1270		17	21	940		25	
	TRACE & TOXIC																								
	CHEMICAL INDICES																								
1	HAR_Ca (mgCaCO3/L)	82	76	86	58	42	71	55	50	49	61	64	87	80	96	62	61	58	51	53	48	71	68	86	56
2	HAR_Total (mgCaCO3/L)	121	109	128	93	77	123	97	89	69	103	113	172	131	155	96	86	87	77	87	87	113	94	141	80
3	Na% (%)	23	19	21	24	24	19	16	17	25	15	20	23	20	25	25	27	20	25	26	20	19	20	22	25
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
5	SAR (-)	0.6	0.5	0.6	0.6	0.5	0.5	0.4	0.4	0.6	0.4	0.6	0.9	0.6	0.9	0.7	0.7	0.5	0.6	0.7	0.5	0.5	0.5	0.7	0.6
	PESTICIDES																								

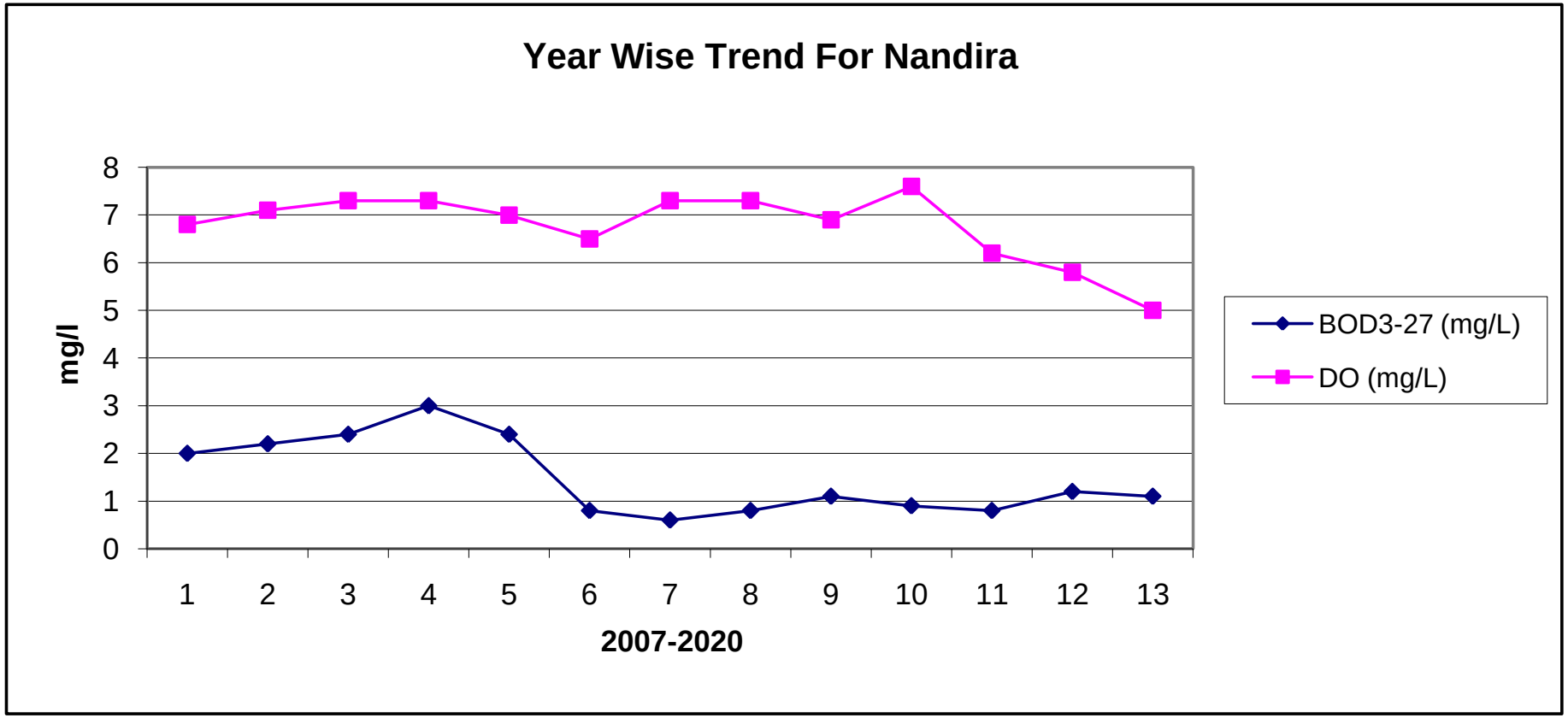
Water Quality Seasonal Average for the period: 2005-2020

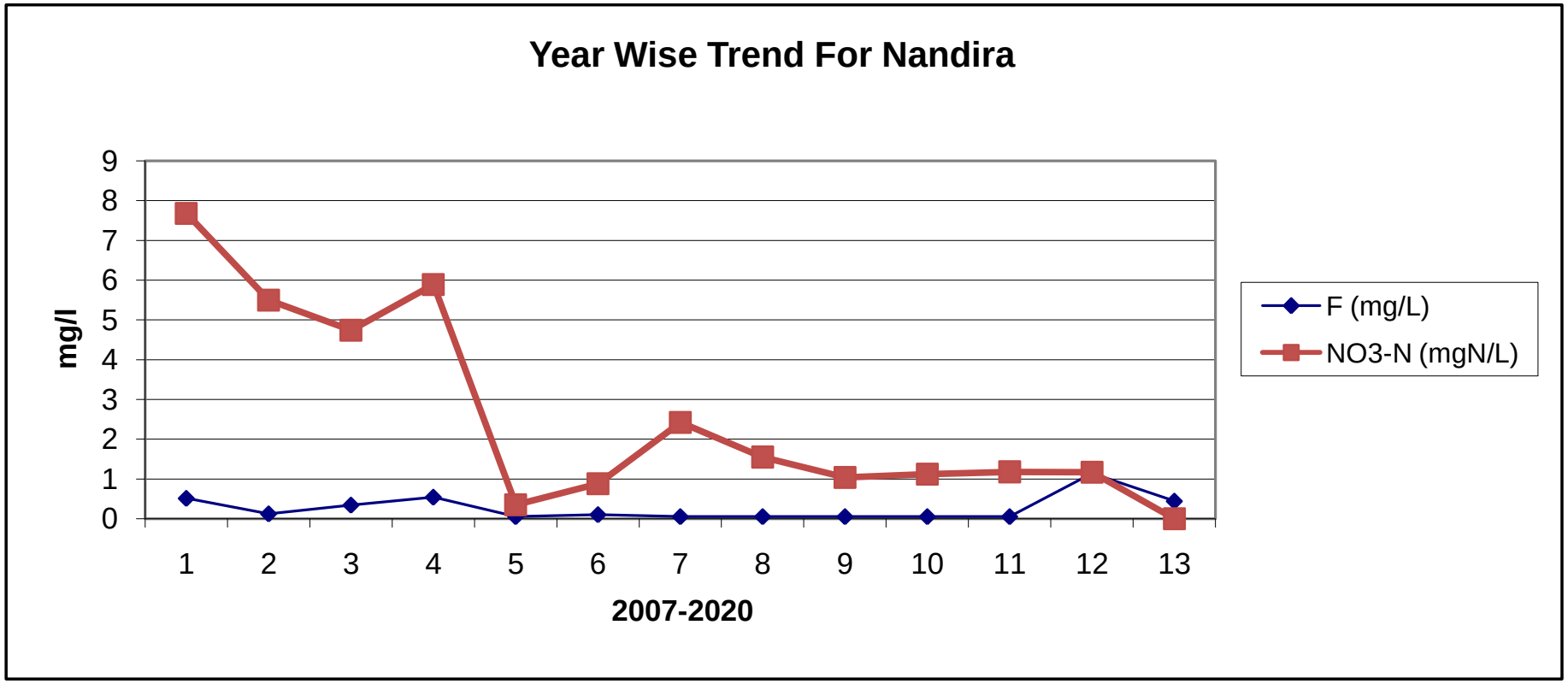
Station Name : NANDIRA (NANDIRA) | **Division : E.E., Bhubaneswar**

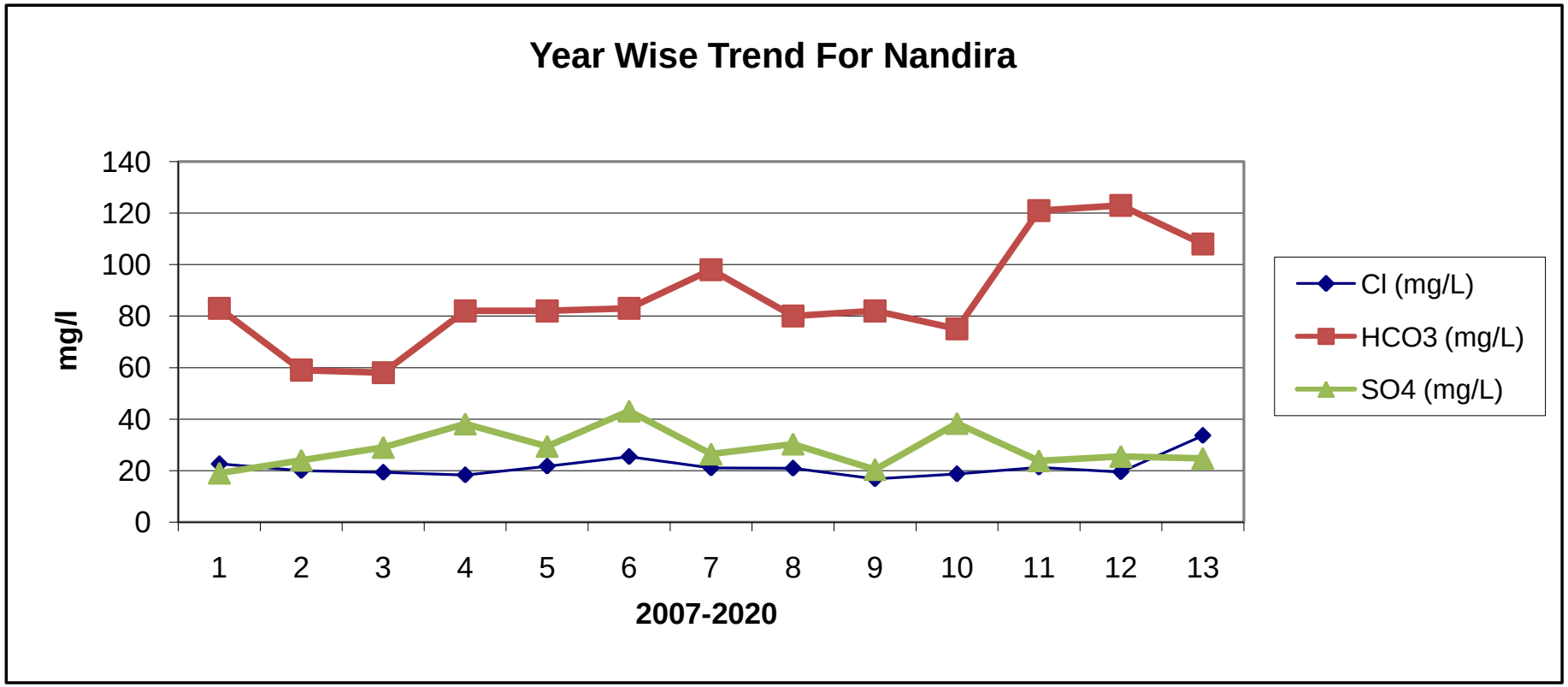
Local River : Nandiranala | **River Water** | **Sub-Division : Sambalpur**

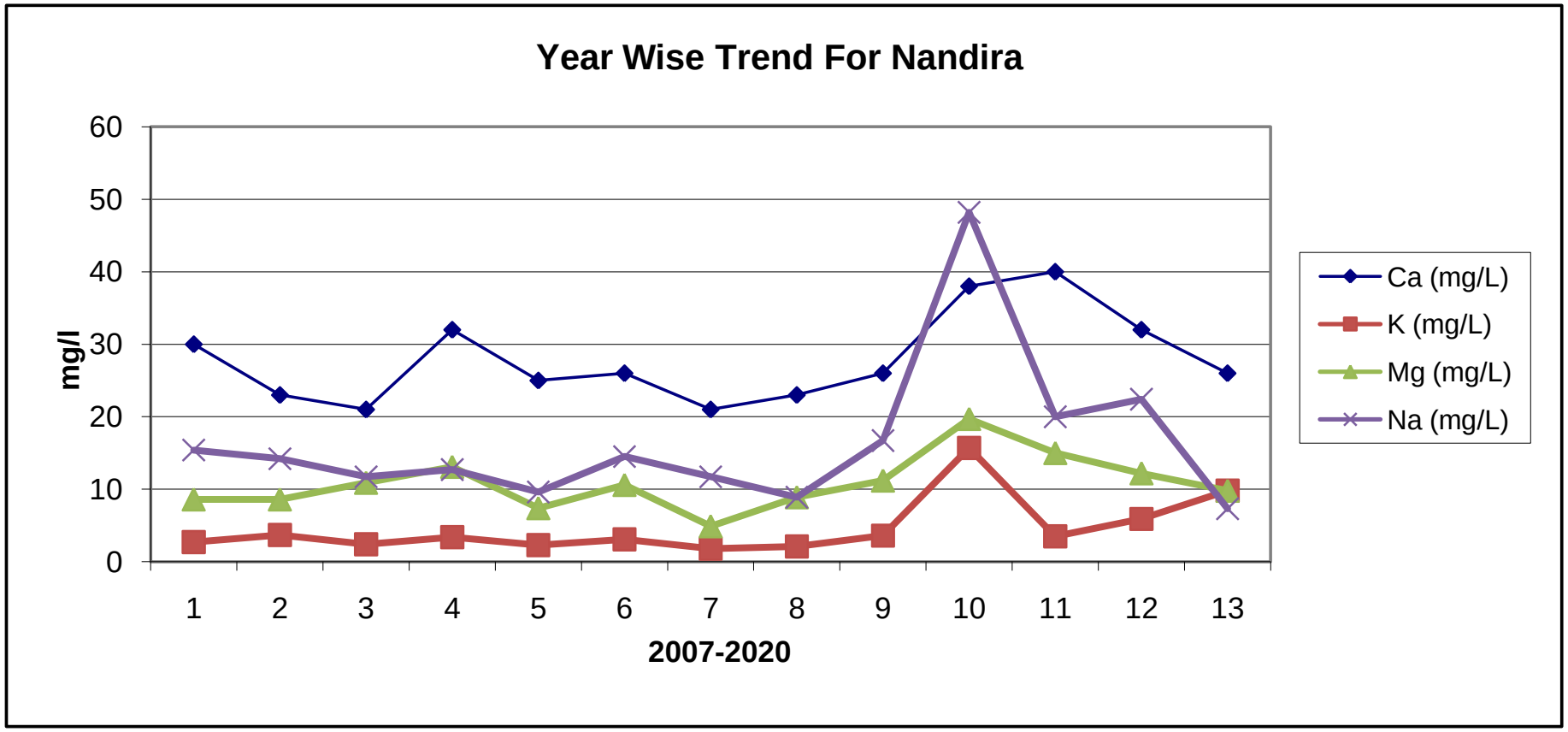
S.No	Parameters																					
								Summer														
								Mar - May														
		2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	PHYSICAL																					
1	Q (cumec)																					
2	EC_FLD (µmho/cm)	330	710	621	357	334	279	204	239	351	293	378	450	273	338	120	184	468	366	476	268	15
3	EC_GEN (µmho/cm)	330	707	623	352	338	332	201	236	353	293	378	450	273	338	120	184	473	375	471	268	326
4	pH_FLD (pH units)	8.0	7.8	8.0	8.0	8.0	8.4	7.5	8.1	8.1	8.3	7.9	8.2	7.6	7.5	7.6	7.8	7.6	7.7	7.5	7.8	7.5
5	pH_GEN (pH units)	8.0	7.7	8.1	8.0	8.1	7.5	7.5	8.1	8.1	8.3	7.9	8.2	7.6	7.5	7.6	7.8	7.8	7.8	7.4	7.8	8.0
6	Temp (deg C)	20.0	22.6	22.6	21.0	20.1	21.7	27.4	28.5	28.5	30.2	28.7	29.3	31.0	27.5	26.3	28.2	27.9	26.8	28.2	29.5	
	CHEMICAL																					
1	Alk-Phen (mgCaCO3/L)	0.0	3.5	0.0	3.0	0.0	0.0		0.0	0.0	0.0	0.0	19.5	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
2	ALK-TOT (mgCaCO3/L)	63	67	47	120	117	75		94	87	53	90	120	71	81		66	85	74	107	75	
3	B (mg/L)	0.00	0.01	0.01	0.01	0.01		0.14	0.00	0.19	0.11	0.18	0.15	0.01	0.00	0.00	0.00	0.01	0.02	0.02	0.02	
4	Ca (mg/L)	20	19	39	49	27	31	22	25	36	26	32	43	28	26	21	25	38	42	43	26	16
5	Cl (mg/L)	17.4	17.0	17.9	20.8	20.2	26.2	18.7	15.2	28.1	22.0	26.0	19.5	17.6	32.9	21.7	13.3	23.3	22.6	25.4	17.9	78.8
6	CO3 (mg/L)	0.0	4.2	0.0	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
7	F (mg/L)	0.05	0.05	0.05	0.05	0.17	0.60	0.36	0.16	0.38	0.14	0.63	0.61	0.05	0.06	0.05	0.05	0.05	0.05	0.05		
8	Fe (mg/L)	0.3	0.4	0.4	0.4	0.4		0.1	0.2	0.0	0.1	0.1	0.1	0.0	1.3	0.1	0.4	0.3	0.7	0.3		
9	HCO3 (mg/L)	77	73	58	139	143	94	60	59	106	64	109	98	86	92	97	78	103	90	113	92	94
10	K (mg/L)	2.0	4.6	18.3	3.8	6.3	18.4	1.9	2.0	3.6	3.0	3.9	4.7	2.6	3.0	2.1	1.9	2.6	25.1	3.5	4.7	2.7
11	Mg (mg/L)	9.2	8.8	19.9	17.7	9.9	6.1	5.0	8.2	9.3	9.4	17.2	18.5	4.9	9.4	4.0	6.8	13.6	18.1	15.9	12.0	7.5
12	Na (mg/L)	10.7	21.8	61.5	17.1	25.1	33.6	13.1	10.8	19.5	16.0	15.6	14.1	10.3	17.0	12.9	7.2	15.3	63.3	31.7	14.7	12.1
13	NO2+NO3 (mg N/L)	1.24	1.13	1.16	1.17	1.18		5.62	7.51	7.31	2.67	4.49	3.56	0.41	0.81	2.72	1.19	0.85	1.22	1.20		
14	NO2-N (mgN/L)	0.00	0.00	0.01	0.00	0.00		0.02	0.00	0.12	0.00	0.00	0.00	0.07	0.00	0.00	0.01	0.00	0.02	0.00		
15	NO3-N (mgN/L)	1.23	1.13	1.15	1.17	1.18		5.60	7.51	7.19	2.67	4.49	3.56	0.34	0.81	2.72	1.18	0.85	1.21	1.20		
16	o-PO4-P (mg P/L)							0.005	0.026		0.141	0.020										
17	P-Tot (mgP/L)	0.001	0.010	0.010	0.001	0.001		0.006	0.021	0.050	0.002	0.010	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001	0.001	
18	SiO2 (mg/L)	5.9	6.0	7.0	7.5	8.3		20.1	19.3	9.1	9.1	8.7	2.2	11.7	12.0	7.9	6.0	5.0	8.5	9.2	8.1	
19	SO4 (mg/L)	27.9	22.5	50.5	22.3	11.3	17.2	10.7	20.5	22.0	42.4	36.4	60.0	31.8	55.6	28.1	30.7	13.5	56.2	30.5	22.2	28.1
	BIOLOGICAL/BACTERIOLOGICAL																					
1	BOD3-27 (mg/L)	1.2	2.0	0.6	0.8	0.8	1.0	2.0	2.2	2.3	2.6	2.6	4.8	2.5	0.8	0.3	0.5	0.6	1.5	0.6	1.3	0.9
2	DO (mg/L)	9.3	8.2	8.6	7.2	6.1	5.8	6.9	7.0	6.2	6.6	6.9	7.2	6.7	4.6	7.0	6.1	5.7	6.8	4.8	5.0	3.9
3	DO_SAT% (%)	102	94	98	81	67	66	87	89	80	87	89	94	91	58	86	78	72	85	62	66	
4	FCol-MPN (MPN/100mL)			80	83				114	80	7	12	16		22				77	77		
5	Tcol-MPN (MPN/100mL)			168	248				855	90	11	15	19		31				143	200		
	TRACE & TOXIC																					
	CHEMICAL INDICES																					
1	HAR_Ca (mgCaCO3/L)	51	47	97	123	68	77	54	62	89	64	79	107	71	65	53	63	95	106	107	65	39
2	HAR_Total (mgCaCO3/L)	89	84	180	197	109	103	75	96	128	103	151	184	91	104	70	91	152	181	173	115	71
3	Na% (%)	20	35	40	17	33	27	26	20	25	26	19	14	19	27	28	14	17	39	27	19	26
4	RSC (-)	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.3	0.0	0.0	0.0	0.0	0.0	
5	SAR (-)	0.5	1.0	2.0	0.6	1.1	1.4	0.6	0.5	0.8	0.7	0.5	0.4	0.5	0.8	0.7	0.3	0.5	2.1	1.0	0.6	0.6
	PESTICIDES																					


Year Wise Trend For Nandira
mg/l
200
180
160
140
120
100
80
60
40
20
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007- 2020
DO_SAT% (%)
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For Nandira
mg/l
8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
BOD3-27 (mg/L)
DO (mg/L)


Year Wise Trend For Nandira
mg/l
9
8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend For Nandira
140
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year Wise Trend For Nandira
60
50
40
30
20
10
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
Ca (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

SITE

KAMALANGA

SECTION-I(HISTORY SHEET)

HISTORY SHEET

			Water Year	**:**	**2019-2020**
Site	**:**	**KAMALANGA**	**Code**	**:**	**KAMALANGA**
State	:	Orissa	District		Angul
Basin	:	Brahmani-Baitarani	Independent Ri	:	Brahmni
Tributary	:		Sub Tributary	:	
Sub-Sub Tributa	:		Local River	:	Brahmni
Division	:	E.E., Bhubaneswar	Sub-Division	:	Brahmni
Drainage Area	:	Sq. Km.	Bank	:	Left
Latitude	:	20°53'14"	Longitude	:	85°16'43"
		Opening Date	Closing Date		
Gauge	:				
Discharge	:				
Sediment	:				
Water Quality	:	01-11-1990			

SECTION-III

(WATER QUALITY)

Water Quality Datasheet for the period : 2019-2020

Station Name : KAMALANGA (KAMALANGA) **Division : E.E., Bhubaneswar**

Local River : Brahmni **River Water Analysis** **Sub-Division : Sambalpur**

S.No	Parameters	6/1/2019	7/1/2019	8/1/2019	9/2/2019	10/1/2019	11/1/2019	12/2/2019	1/1/2020	2/1/2020	3/2/2020
		A	A	A	A	A	A	A	A	A	A
	PHYSICAL										
1	Q (cumec)										
2	Colour_Cod (-)	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Brown	Light Brown	Dark Brown	Brown
3	EC_FLD (µmho/cm)	460	484	499	329	240	296	239	381	22	23
4	EC_GEN (µmho/cm)	461	480	496	328	242	395	243	163	240	340
5	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
6	pH_FLD (pH units)	7.4	7.8	7.7	7.6	7.6	7.3	8.7	8.7	8.8	8.4
7	pH_GEN (pH units)	7.5	7.9	7.6	7.5	7.6	7.3	7.9	7.6	7.8	8.1
8	Temp (deg C)	33.0	30.0	30.0	28.5	26.0	25.0	22.0	18.0	24.6	
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
2	ALK-TOT (mgCaCO3/L)	82	78	180	95	99	118	87	67		
3	B (mg/L)	0.02									
4	Ca (mg/L)	27	16	19	31	23	36	243	33	23	38
5	Cl (mg/L)	30.2	27.9	22.7	53.7	17.2	20.7	24.0	28.4	21.9	40.0
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
7	F (mg/L)					0.11	0.27				
8	HCO3 (mg/L)	100	95	219	116	121	144	106	82	102	73
9	K (mg/L)	2.6	5.9	3.7	3.6	2.5	2.7	37.0	4.5	3.7	1.8
10	Mg (mg/L)	10.5	8.5	2.6	8.8	8.9	3.8	20.4	3.8	4.7	9.4
11	Na (mg/L)	20.9	5.3	17.5	16.4	11.0	12.7	77.0	13.9	12.5	6.5
12	P-Tot (mgP/L)	0.001									
13	SiO2 (mg/L)	9.0									
14	SO4 (mg/L)	26.4	29.5	30.2	22.4	23.0	12.7	21.9	29.9	16.1	15.9
	BIOLOGICAL/BACTERIOLOGICAL										
1	BOD3-27 (mg/L)	0.6	1.8	0.6	1.0	2.5	1.5	1.2	1.4	1.4	1.1
2	DO (mg/L)	4.1	5.4	2.9	6.0	5.0	4.2	5.8	3.2	5.6	6.5
3	DO_SAT% (%)	58	72	38	76	61	50	66	34	67	
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	67	39	48	78	58	90	608	82	58	94
2	HAR_Total (mgCaCO3/L)	111	74	58	114	95	106	692	98	78	133
3	Na% (%)	29	12	38	23	20	20	19	23	25	9
4	RSC (-)	0.0	0.1	2.4	0.0	0.1	0.3	0.0	0.0		
5	SAR (-)	0.9	0.3	1.0	0.7	0.5	0.5	1.3	0.6	0.6	0.2
	PESTICIDES										

Water Quality Summary for the period : 2019-2020

Station Name : KAMALANGA (KAMALANGA) **Division : E.E., Bhubaneswar**

Local River : Brahmni **Sub-Division : Sambalpur**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	10	499	22	297
3	EC_GEN (µmho/cm)	10	496	163	339
4	pH_FLD (pH units)	10	8.8	7.3	8
5	pH_GEN (pH units)	10	8.1	7.3	7.7
6	Temp (deg C)	9	33.0	18.0	26.3
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	8	0.0	0.0	0
2	ALK-TOT (mgCaCO3/L)	8	180	67	101
3	B (mg/L)	1	0.02	0.02	0.02
4	Ca (mg/L)	10	243	16	49
5	Cl (mg/L)	10	53.7	17.2	28.7
6	CO3 (mg/L)	8	0.0	0.0	0
7	F (mg/L)	2	0.27	0.11	0.19
8	HCO3 (mg/L)	10	219	73	116
9	K (mg/L)	10	37.0	1.8	6.8
10	Mg (mg/L)	10	20.4	2.6	8.1
11	Na (mg/L)	10	77.0	5.3	19.4
12	P-Tot (mgP/L)	1	0.001	0.001	0.001
13	SiO2 (mg/L)	1	9.0	9.0	9
14	SO4 (mg/L)	10	30.2	12.7	22.8
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	10	2.5	0.6	1.3
2	DO (mg/L)	10	6.5	2.9	4.9
3	DO_SAT% (%)	9	76	34	58
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	10	608	39	122
2	HAR_Total (mgCaCO3/L)	10	692	58	156
3	Na% (%)	10	38	9	22
4	RSC (-)	8	2.4	0.0	0.4
5	SAR (-)	10	1.3	0.2	0.7
	PESTICIDES				

Water Quality Seasonal Average for the period: 2005-2020

Station Name : KAMALANGA (KAMALANGA) | **Division : E.E., Bhubaneswar**

Local River : Brahmni | **River Water** | **Sub-Division : Sambalpur**

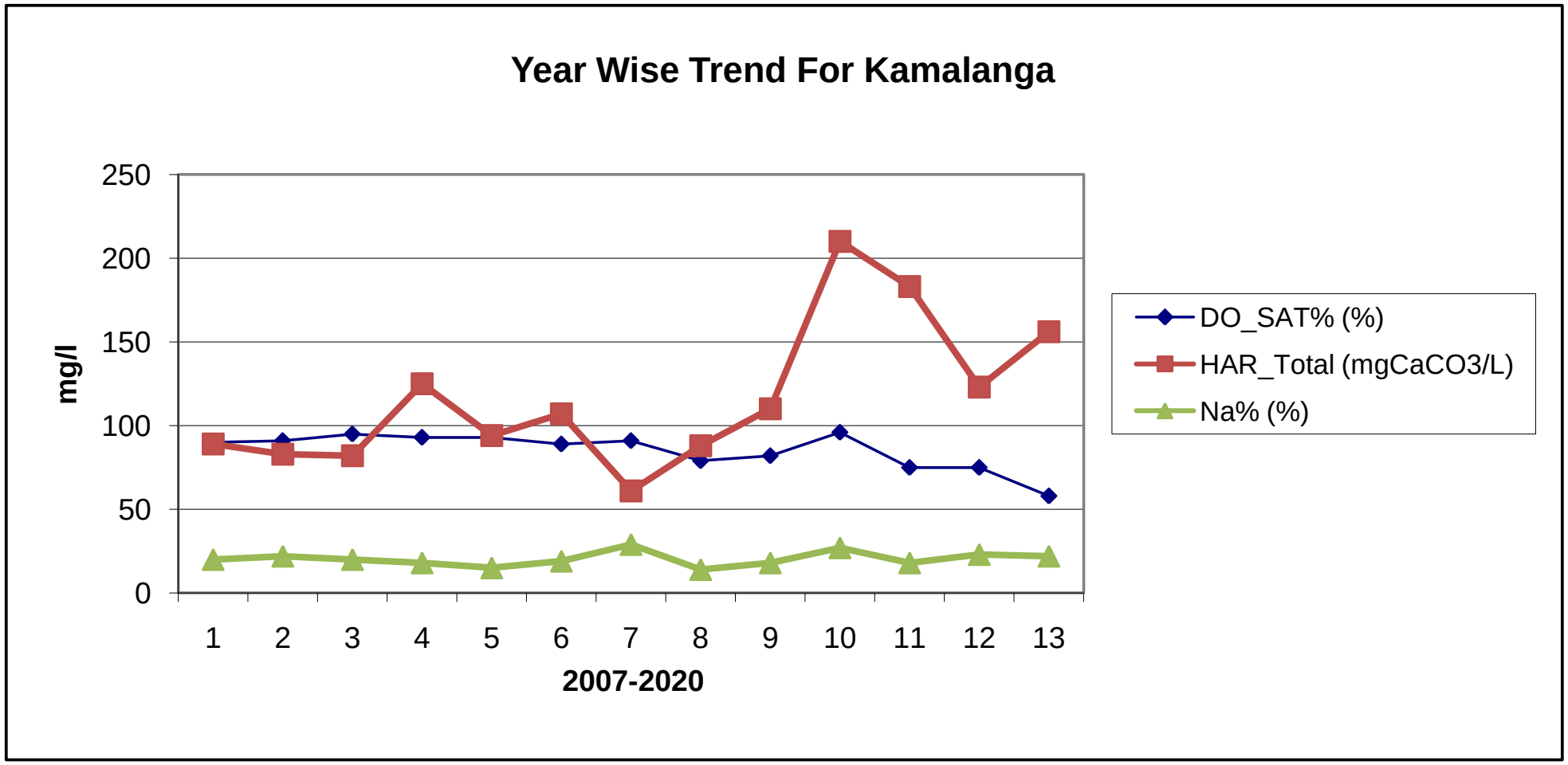
S.No	Parameters	Flood Jun - Oct															Winter Nov - Feb									
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
	PHYSICAL																									
1	Q (cumec)																									
2	EC_FLD (µmho/cm)	159	203	278	231	183	269	191	177	251	308	424	281	333	342	402	146	139	175	175	212	267	197	358	284
3	EC_GEN (µmho/cm)	155	198	276	231	183	269	191	177	251	308	427	285	329	342	401	141	135	170	175	212	267	197	358	284
4	pH_FLD (pH units)	7.8	7.9	8.0	7.7	7.8	8.1	8.1	7.6	7.6	7.9	7.6	7.8	7.9	7.5	7.6	7.9	8.0	8.1	7.9	7.8	7.6	7.7	7.5	8.1
5	pH_GEN (pH units)	7.9	8.0	8.0	7.7	7.8	8.0	8.1	7.6	7.6	7.9	7.6	7.8	7.8	7.5	7.6	8.0	8.0	8.1	8.0	7.8	7.6	7.7	7.5	8.1
6	Temp (deg C)	28.3	28.5	29.5	29.3	29.3	28.4	29.6	30.4	23.4	27.2	28.8	29.8	28.7	28.6	29.5	22.8	23.8	23.4	23.6	25.3	25.0	27.0	23.3	18.7
	CHEMICAL																									
1	Alk-Phen (mgCaCO3/L)		0.0	0.0	0.0	0.0	3.2	4.6	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	ALK-TOT (mgCaCO3/L)		104	62	47	36	66	65	51		52	75	91	80	89	107		57	46	38	45	66	51	83	
3	B (mg/L)	0.44	0.00	0.13	0.11	0.13	0.14	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.47	0.00	0.19	0.10	0.12	0.15	0.01	0.00	0.00
4	Ca (mg/L)	19	23	28	21	15	24	19	16	18	24	24	56	44	32	23	16	14	22	14	19	25	31	39	16
5	Cl (mg/L)	10.7	16.5	15.2	15.2	14.8	17.9	23.4	14.7	21.1	23.4	13.6	23.4	18.1	18.8	30.3	10.1	10.4	10.9	15.2	14.1	15.1	17.9	25.9	15.7
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	3.8	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.06	0.21	0.21	0.23	0.11	0.12	0.05	0.06	0.05	0.05	0.05	0.05	0.05	1.19	0.11	0.14	0.08	0.17	0.23	0.15	0.07	0.05	0.06	0.05
8	Fe (mg/L)	0.0	0.1	0.1	0.1	0.1	0.1	0.0	1.3	0.1	0.3	0.5	0.6	0.4	0.4		0.1	0.2	0.1	0.1	0.1	0.1	0.0	1.3	0.1
9	HCO3 (mg/L)	48	66	76	57	44	72	68	48	80	63	91	110	98	109	130	41	41	56	47	55	81	62	106	85
10	K (mg/L)	1.6	2.0	6.3	3.3	1.9	2.5	2.0	1.7	3.1	2.0	2.4	7.5	2.5	6.4	3.7	1.6	1.7	1.4	1.5	1.4	2.6	1.8	3.8	2.2
11	Mg (mg/L)	4.5	5.7	8.4	8.6	7.6	10.3	7.4	5.3	4.6	7.4	9.3	21.8	22.9	13.5	7.8	5.4	4.7	4.1	7.0	8.7	10.0	7.8	16.5	4.3
12	Na (mg/L)	6.3	11.5	11.0	10.7	8.2	12.3	5.6	5.0	13.1	5.6	9.4	26.2	15.5	19.8	14.2	6.7	7.4	8.0	9.6	9.8	10.7	8.3	19.2	11.9
13	NH3-N (mg N/L)																									
14	NO2+NO3 (mg N/L)	3.64	6.15	7.94	4.18	3.30	5.15	0.41	2.59	2.87	1.54	0.96	1.10	1.21	1.15		4.80	3.14	3.76	3.38	3.85	5.03	0.42	0.86	2.05
15	NO2-N (mgN/L)	0.06	0.07	0.02	0.00	0.00	0.00	0.07	0.00	0.01	0.01	0.02	0.01	0.02	0.00		0.03	0.07	0.10	0.00	0.04	0.00	0.07	0.00	0.00
16	NO3-N (mgN/L)	3.58	6.08	7.93	4.18	3.30	5.15	0.34	2.59	2.86	1.54	0.94	1.09	1.19	1.15		4.76	3.08	3.66	3.38	3.81	5.03	0.35	0.86	2.05
17	o-PO4-P (mg P/L)	0.010	0.089	0.012	0.058	0.046											0.047	0.310	0.013	0.062	0.078				
18	P-Tot (mgP/L)	0.011	0.062	0.015	0.002	0.008	0.001	0.010	0.001	0.001	0.001	0.001	0.008	0.001	0.001	0.001	0.044	0.055	0.031	0.003	0.001	0.001	0.010	0.001	0.001
19	SiO2 (mg/L)	12.8	15.1	9.7	8.8	8.0	8.0	10.2	12.4	8.5	8.5	6.0	6.2	7.7	8.5	9.0	16.7	20.6	8.8	8.8	7.6	3.2	10.8	12.5	8.4
20	SO4 (mg/L)	13.6	9.5	23.0	24.4	18.5	17.3	22.8	65.3	22.1	24.8	24.1	52.8	27.0	36.8	26.3	12.9	12.6	13.0	10.9	21.3	28.2	28.5	40.7	22.6
	BIOLOGICAL/BACTERIOLOGICAL																									
1	BOD3-27 (mg/L)	1.2	1.5	1.5	1.6	1.6	2.0	1.5	1.0	0.6	0.4	0.8	0.9	1.0	1.1	1.3	1.5	1.5	1.9	1.6	1.9	1.8	2.3	0.3	0.7
2	DO (mg/L)	7.0	7.0	7.1	7.2	7.3	7.4	7.1	6.7	7.0	6.1	6.5	7.9	6.3	5.7	4.7	8.0	7.9	7.5	7.8	7.8	7.7	7.5	7.9	7.9
3	DO_SAT% (%)	89	90	93	93	95	95	93	89	86	77	84	104	82	73	61	93	94	88	91	95	93	94	93	96
4	FCol-MPN (MPN/100mL)		60	80	26	15	82		17					92	108			550		7	13	33		17	
5	Tcol-MPN (MPN/100mL)		165	90	29	28	155		22					210	240			660		8	16	560		22	
	TRACE & TOXIC																									
	CHEMICAL INDICES																									
1	HAR_Ca (mgCaCO3/L)	47	59	70	52	38	59	46	39	44	59	59	139	110	81	58	41	35	54	36	47	62	78	97	41
2	HAR_Total (mgCaCO3/L)	66	82	105	88	70	102	77	61	63	90	98	230	205	137	91	64	55	71	65	84	104	111	166	59
3	Na% (%)	17	22	18	22	21	20	14	15	30	12	16	19	15	23	24	18	22	21	24	20	18	16	20	30
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
5	SAR (-)	0.3	0.5	0.5	0.5	0.5	0.5	0.3	0.3	0.7	0.3	0.4	0.8	0.5	0.8	0.7	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.6	0.7
	PESTICIDES																									

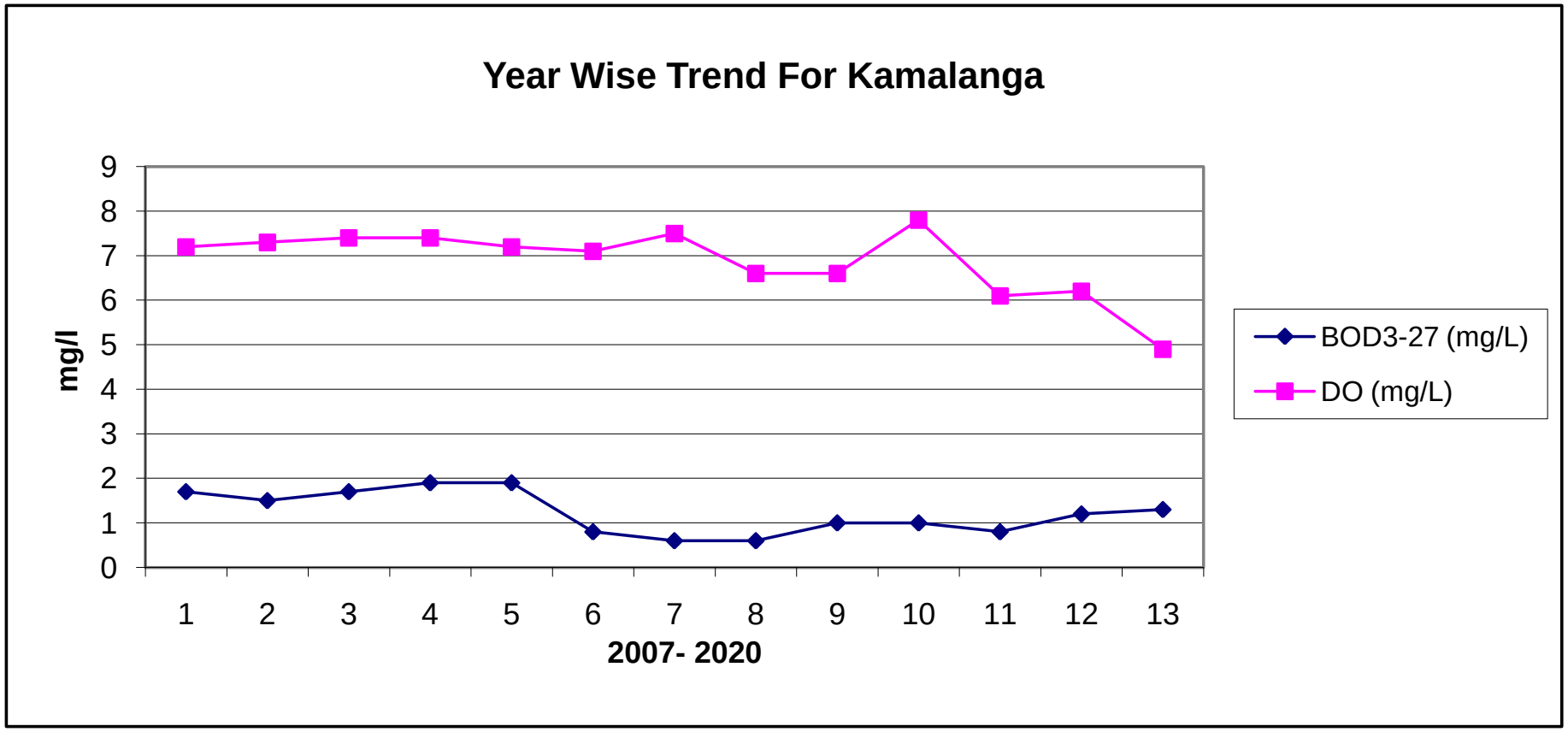
Water Quality Seasonal Average for the period: 2005-2020

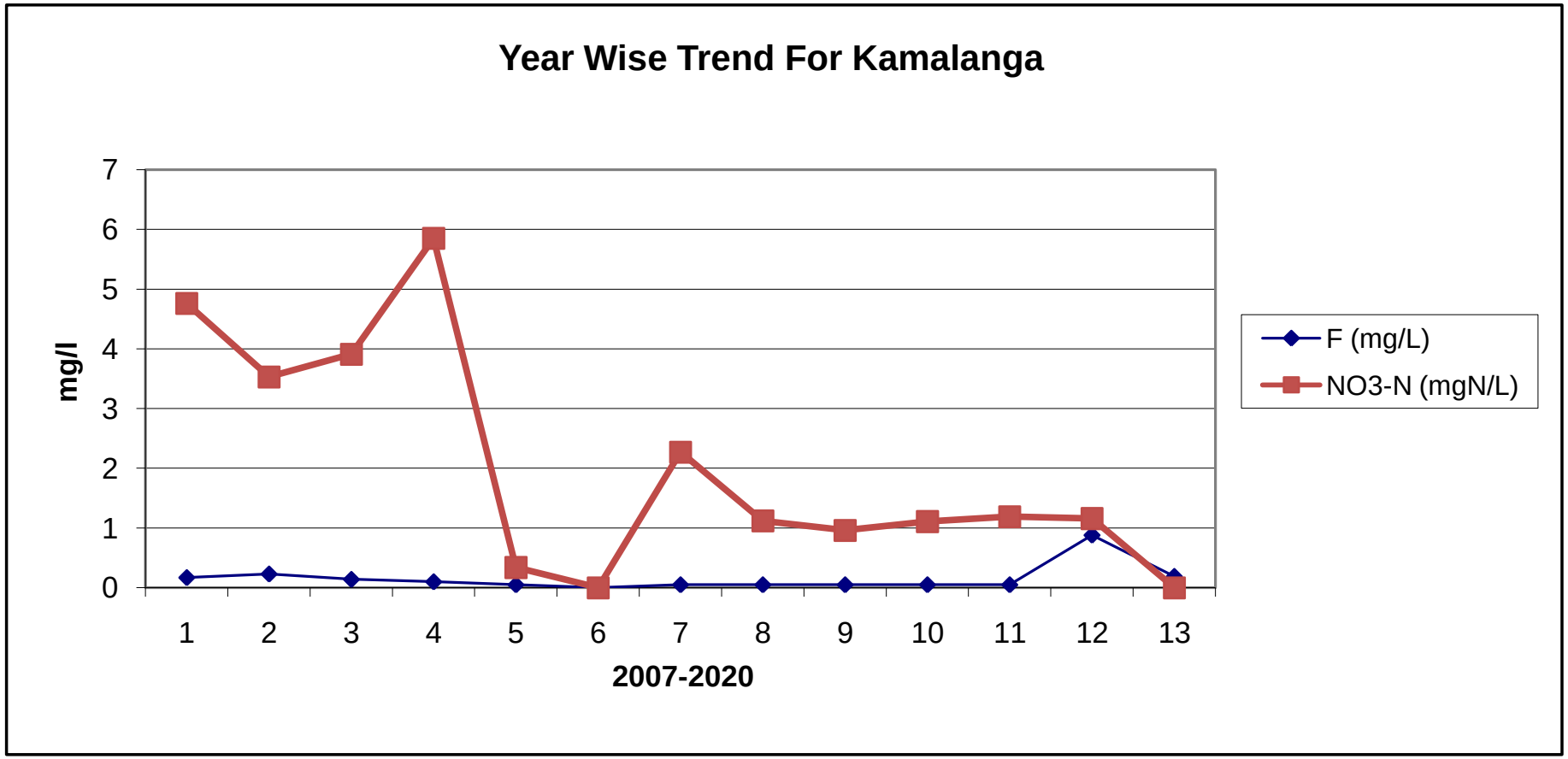
Station Name : KAMALANGA (KAMALANGA) | **Division : E.E., Bhubaneswar**

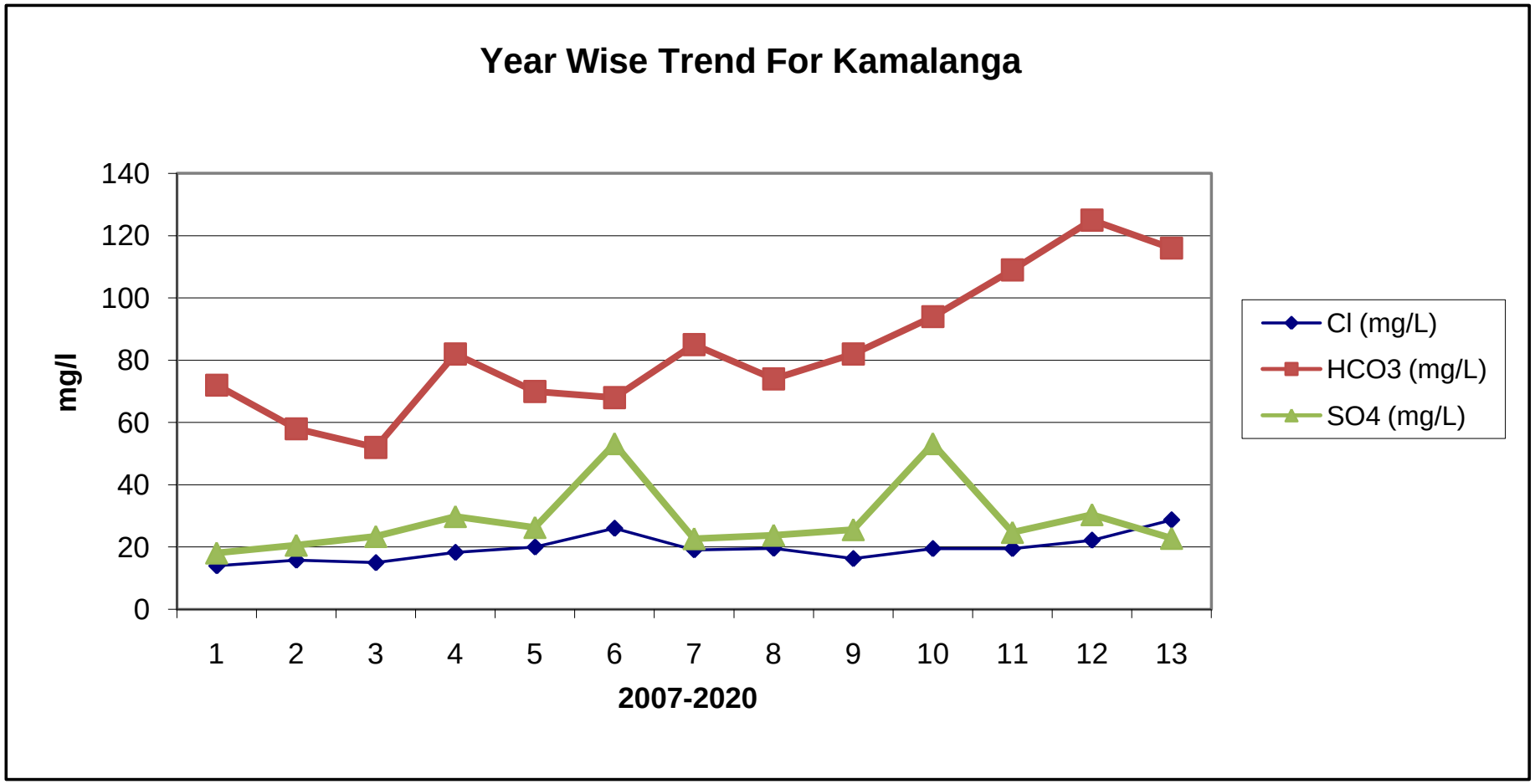
Local River : Brahmni | **River Water** | **Sub-Division : Sambalpur**

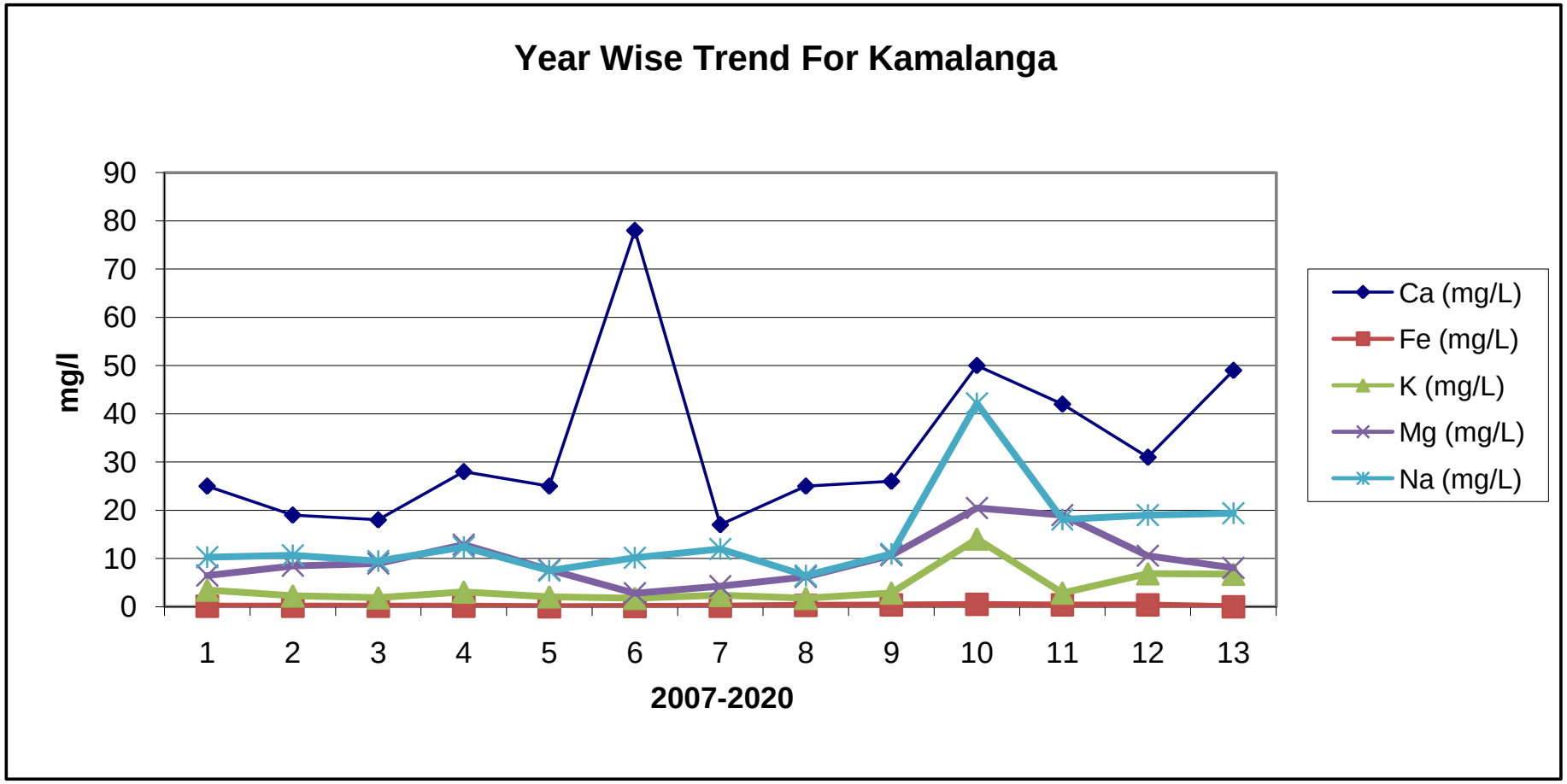
S.No	Parameters																					
								Summer														
								Mar - May														
		2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	PHYSICAL																					
1	Q (cumec)																					
2	EC_FLD (µmho/cm)	373	822	670	339	266	235	145	179	226	260	258	467	260	352	119	193	395	352	406	242	23
3	EC_GEN (µmho/cm)	373	824	675	334	267	260	140	175	225	260	258	467	260	352	119	193	396	355	408	244	340
4	pH_FLD (pH units)	8.0	7.5	8.1	7.9	8.0	8.4	7.6	8.2	8.1	7.9	7.9	8.2	7.6	7.6	7.7	7.7	7.8	7.8	7.7	7.8	8.4
5	pH_GEN (pH units)	8.0	7.6	8.1	7.9	8.0	7.6	7.7	8.2	7.5	7.7	7.9	8.2	7.6	7.6	7.7	7.7	7.9	7.8	7.7	7.8	8.1
6	Temp (deg C)	20.1	23.2	22.4	20.6	19.6	22.4	27.8	28.2	27.0	29.5	28.7	29.3	31.0	27.5	26.3	28.0	27.6	26.7	27.3	28.5	
	CHEMICAL																					
1	Alk-Phen (mgCaCO3/L)	0.0	3.5	0.0	0.0	0.0	0.0		0.0		0.0	0.0	13.7	0.0	0.0	0.0	0.0	3.1	0.0	0.0	0.0	
2	ALK-TOT (mgCaCO3/L)	65	65	55	94	119	91		104		60	49	110	68	85	64	71	72	83	97	103	
3	B (mg/L)	0.00	0.01	0.01	0.01	0.02		0.29	0.00	0.21	0.07	0.17	0.15	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.02	
4	Ca (mg/L)	26	20	47	39	27	84	17	21	23	23	21	41	26	25	18	25	38	43	41	36	38
5	Cl (mg/L)	18.1	17.4	13.7	16.4	22.7	23.7	9.4	9.9	16.1	17.5	16.7	23.3	17.0	29.6	20.2	15.2	19.5	20.7	26.0	27.3	40.0
6	CO3 (mg/L)	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.5	0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	
7	F (mg/L)	0.05	0.05	0.05	0.05	0.12	0.27	0.08	0.09	0.11	0.23	0.16	0.13	0.05	0.05	0.05	0.05	0.05	0.05	0.05		
8	Fe (mg/L)	0.2	0.4	0.5	0.4	0.4		0.1	0.1	0.2	0.1	0.1	0.1	0.0	1.1	0.1	0.4	0.4	0.6	0.4		
9	HCO3 (mg/L)	79	70	68	114	145	109	43	64	85	73	59	100	83	113	94	87	81	101	119	125	73
10	K (mg/L)	1.7	2.7	16.9	2.8	6.5	12.0	1.6	1.6	1.6	1.9	2.7	4.9	2.4	3.4	1.6	1.7	3.8	21.5	3.7	8.2	1.8
11	Mg (mg/L)	5.6	9.0	20.7	14.7	7.5	8.1	4.9	6.1	6.8	10.4	11.7	21.1	8.1	10.0	4.0	5.2	15.2	18.1	18.3	9.9	9.4
12	Na (mg/L)	7.9	15.6	45.2	17.9	12.0	29.0	5.8	6.1	12.0	12.5	11.3	15.0	9.6	16.3	10.5	6.2	7.7	64.8	22.6	26.9	6.5
13	NH3-N (mg N/L)									0.05												
14	NO2+NO3 (mg N/L)	0.93	0.95	1.07	1.21	1.18		3.71	3.87	0.98	2.64	5.14	8.09	0.41	0.79	1.56	0.72	1.01	1.24	1.18		
15	NO2-N (mgN/L)	0.02	0.03	0.02	0.00	0.00		0.04	0.02	0.06	0.00	0.06	0.00	0.07	0.00	0.00	0.03	0.00	0.01	0.00		
16	NO3-N (mgN/L)	0.91	0.92	1.05	1.21	1.18		3.68	3.85	0.93	2.64	5.09	8.09	0.35	0.79	1.55	0.70	1.01	1.22	1.18		
17	o-PO4-P (mg P/L)							0.055	0.017		0.069	0.147										
18	P-Tot (mgP/L)	0.001	0.010	0.010	0.001	0.001		0.065	0.018	0.050	0.002	0.001	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001	0.001	
19	SiO2 (mg/L)	8.8	5.3	6.5	8.5	7.3		19.3	17.2	9.9	9.0	8.2	1.9	11.0	12.0	8.6	8.7	5.0	8.8	7.8	8.1	
20	SO4 (mg/L)	24.1	31.9	53.4	22.0	9.7	20.2	14.1	11.5	16.6	27.5	34.2	52.9	29.3	49.7	24.0	21.5	19.7	53.7	24.7	47.4	15.9
	BIOLOGICAL/BACTERIOLOGICAL																					
1	BOD3-27 (mg/L)	0.7	1.2	1.1	0.5	0.7	1.4	1.7	1.5	1.6	1.4	1.8	2.1	1.9	1.2	0.7	0.7	1.1	1.2	0.9	2.2	1.1
2	DO (mg/L)	8.9	7.2	8.6	6.5	7.2	4.7	7.2	7.0	6.8	6.8	7.2	7.0	6.9	6.6	7.6	4.4	6.0	6.6	5.4	5.6	6.5
3	DO_SAT% (%)	97	84	98	72	79	54	91	90	86	89	93	92	93	83	94	57	76	82	67	72	
4	FCol-MPN (MPN/100mL)			83	63				74	45	8	4	13		20				117	67		
5	Tcol-MPN (MPN/100mL)			130	183				654	65	12	6	13		25				247	190		
	TRACE & TOXIC																					
	CHEMICAL INDICES																					
1	HAR_Ca (mgCaCO3/L)	65	50	118	97	68	210	43	51	57	57	52	102	64	62	44	62	96	107	102	89	94
2	HAR_Total (mgCaCO3/L)	88	88	204	158	100	243	64	77	86	101	101	189	98	104	61	83	160	182	178	131	133
3	Na% (%)	16	26	29	20	18	22	16	15	24	22	19	14	17	25	27	14	11	39	21	29	9
4	RSC (-)	0.0	0.0	0.0	0.0	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.0	0.0	0.0	0.0	0.0	
5	SAR (-)	0.4	0.7	1.4	0.6	0.5	0.8	0.3	0.3	0.6	0.6	0.5	0.5	0.4	0.7	0.6	0.3	0.3	2.1	0.7	1.1	0.2
	PESTICIDES																					


Year Wise Trend For Kamalanga
250
200
150
100
50
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
DO_SAT% (%)
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For Kamalanga
mg/l
9
8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007- 2020
BOD3-27 (mg/L)
DO (mg/L)


Year Wise Trend For Kamalanga
mg/l
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend For Kamalanga
mg/l
140
120
100
80
60
40
20
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year Wise Trend For Kamalanga
mg/l
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
Ca (mg/L)
Fe (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

SITE RSP NALA

SECTION-I(HISTORY SHEET)

HISTORY SHEET

			Water Year	**:**	**2019-2020**
Site	**:**	**RSP NALA**	**Code**	**:**	**RSP NALA**
State	:	Orissa	District		Sundergarh
Basin	:	Brahmani-Baitarani	Independent Ri	:	Brahmni
Tributary	:	RSP Nala	Sub Tributary	:	
Sub-Sub Tributa	:		Local River	:	RSP Nala
Division	:	E.E., Bhubaneswar	Sub-Division	:	Brahmni
Drainage Area	:	Sq. Km.	Bank	:	Left
Latitude	:	22°12'39"	Longitude	:	84°52'24"
		Opening Date	Closing Date		
Gauge	:				
Discharge	:				
Sediment	:				
Water Quality	:	01-11-1990			

SECTION-III

(WATER QUALITY)

Water Quality Datasheet for the period : 2019-2020

Station Name : RSP (RSP) **Division : E.E., Bhubaneswar**

Local River : RSP Nala **River Water Analysis** **Sub-Division : Sambalpur**

S.No	Parameters	6/1/2019	8/1/2019	9/2/2019	10/1/2019	11/1/2019	12/2/2019	1/1/2020	2/1/2020	3/2/2020
		A	A	A	A	A	A	A	A	A
	PHYSICAL									
1	Q (cumec)									
2	Colour_Cod (-)	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Dark Brown	Brown	Dark Brown	Dark Brown
3	EC_FLD (µmho/cm)	500	755	675	484	280	810	381	23	20
4	EC_GEN (µmho/cm)	504	750	671	483	281	828	306	546	184
5	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
6	pH_FLD (pH units)	8.0	7.6	7.6	7.7	7.3	8.5	8.7	8.5	8.1
7	pH_GEN (pH units)	8.0	7.6	7.6	7.8	7.0	7.8	8.2	7.9	7.5
8	Temp (deg C)	31.0	29.0	32.0	30.0	29.0	26.0	24.0	20.3	
	CHEMICAL									
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
2	ALK-TOT (mgCaCO3/L)	86	90	128	132	91	134	61		
3	B (mg/L)	0.01								
4	Ca (mg/L)	22	14	42	46	25	42	30	36	31
5	Cl (mg/L)	32.7	32.5	54.8	26.5	58.0	46.6	37.5	74.3	35.5
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
7	F (mg/L)				0.46	0.23				
8	HCO3 (mg/L)	105	110	157	161	111	163	74	177	172
9	K (mg/L)	8.0	18.6	43.3	18.4	2.6	69.4	19.3	18.9	15.0
10	Mg (mg/L)	16.2	2.9	8.8	8.9	5.6	3.8	3.8	5.6	13.2
11	Na (mg/L)	25.8	19.2	24.1	16.0	17.7	16.2	23.3	25.1	27.5
12	P-Tot (mgP/L)	0.001								
13	SiO2 (mg/L)	9.5								
14	SO4 (mg/L)	36.2	54.0	9.2	34.9	7.4	20.9	32.9	5.5	30.1
	BIOLOGICAL/BACTERIOLOGICAL									
1	BOD3-27 (mg/L)	2.1	0.8	1.0	1.4	0.8	0.8	1.0	1.2	0.8
2	DO (mg/L)	4.3	1.5	1.5	3.6	3.0	3.0	3.4	3.2	4.3
3	DO_SAT% (%)	58	20	21	48	39	37	40	35	
	TRACE & TOXIC									
	CHEMICAL INDICES									
1	HAR_Ca (mgCaCO3/L)	55	36	106	115	63	106	74	89	78
2	HAR_Total (mgCaCO3/L)	123	48	143	152	86	122	90	113	133
3	Na% (%)	30	37	21	17	30	14	31	29	28
4	RSC (-)	0.0	0.8	0.0	0.0	0.1	0.3	0.0		
5	SAR (-)	1.0	1.2	0.9	0.6	0.8	0.6	1.1	1.0	1.0
	PESTICIDES									

Water Quality Summary for the period : 2019-2020

Station Name : RSP (RSP) **Division : E.E., Bhubaneswar**

Local River : RSP Nala **Sub-Division : Sambalpur**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	9	810	20	436
3	EC_GEN (µmho/cm)	9	828	184	506
4	pH_FLD (pH units)	9	8.7	7.3	8
5	pH_GEN (pH units)	9	8.2	7.0	7.7
6	Temp (deg C)	8	32.0	20.3	27.7
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	7	0.0	0.0	0
2	ALK-TOT (mgCaCO3/L)	7	134	61	103
3	B (mg/L)	1	0.01	0.01	0.01
4	Ca (mg/L)	9	46	14	32
5	Cl (mg/L)	9	74.3	26.5	44.2
6	CO3 (mg/L)	7	0.0	0.0	0
7	F (mg/L)	2	0.46	0.23	0.35
8	HCO3 (mg/L)	9	177	74	137
9	K (mg/L)	9	69.4	2.6	23.7
10	Mg (mg/L)	9	16.2	2.9	7.6
11	Na (mg/L)	9	27.5	16.0	21.7
12	P-Tot (mgP/L)	1	0.001	0.001	0.001
13	SiO2 (mg/L)	1	9.5	9.5	9.5
14	SO4 (mg/L)	9	54.0	5.5	25.7
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	9	2.1	0.8	1.1
2	DO (mg/L)	9	4.3	1.5	3.1
3	DO_SAT% (%)	8	58	20	37
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	9	115	36	80
2	HAR_Total (mgCaCO3/L)	9	152	48	112
3	Na% (%)	9	37	14	26
4	RSC (-)	7	0.8	0.0	0.2
5	SAR (-)	9	1.2	0.6	0.9
	PESTICIDES				

Water Quality Seasonal Average for the period: 2005-2020

Station Name : RSP (RSP) | **Division : E.E., Bhubaneswar**

Local River : RSP Nala | **River Water** | **Sub-Division : Sambalpur**

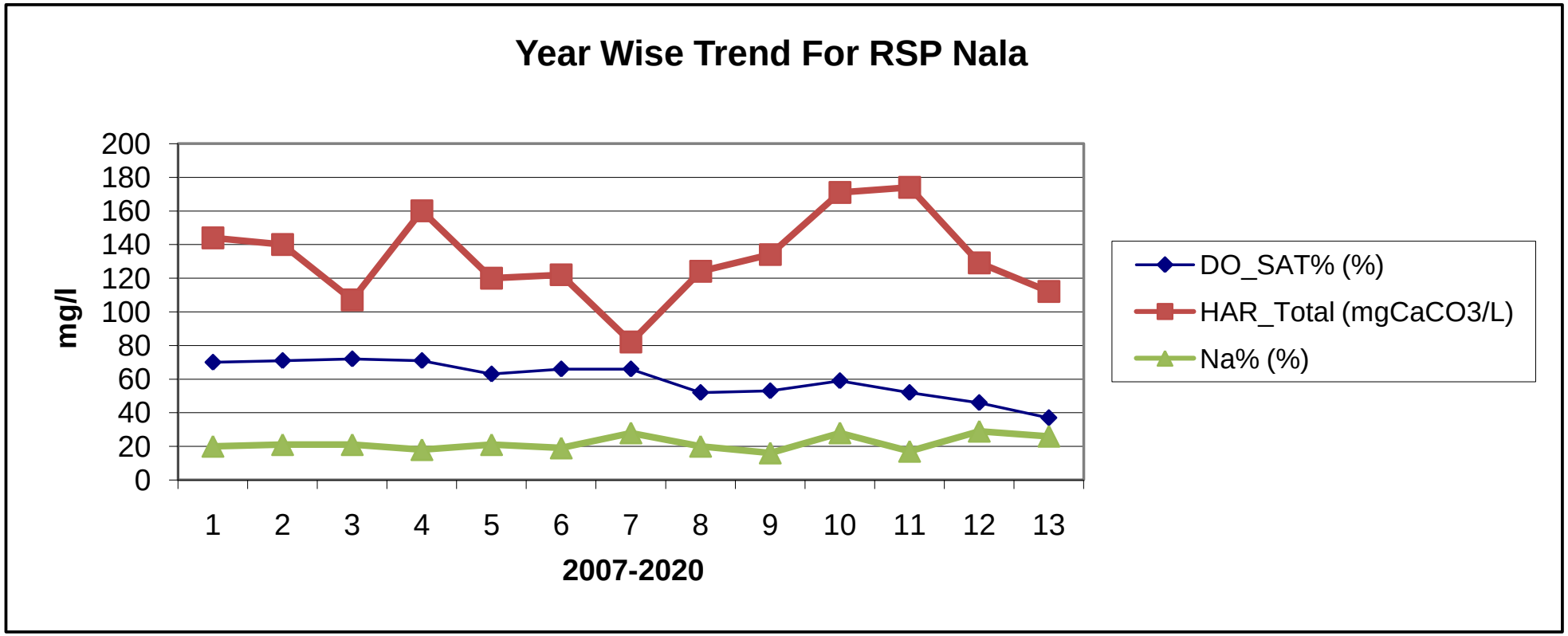
S.No	Parameters	Flood															Winter								
		Jun - Oct															Nov - Feb								
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
	PHYSICAL																								
1	Q (cumec)																								
2	EC_FLD (µmho/cm)	272	262	328	321	293	311	358	338	316	404	514	361	382	534	604	292	301	318	400	265	475	273	348	233
3	EC_GEN (µmho/cm)	269	260	326	321	293	311	358	338	316	404	516	365	375	535	602	287	300	339	403	265	475	273	348	233
4	pH_FLD (pH units)	7.6	7.4	7.6	7.4	7.4	7.5	8.1	7.3	7.4	7.4	7.6	7.6	7.5	7.2	7.7	7.5	7.9	7.6	7.8	7.6	7.5	7.5	7.7	7.6
5	pH_GEN (pH units)	7.6	7.5	7.6	7.4	7.4	7.5	8.1	7.3	7.4	7.4	7.4	7.6	7.5	7.3	7.7	7.6	7.9	7.6	7.8	7.6	7.5	7.5	7.7	7.6
6	Temp (deg C)	30.6	30.2	28.6	29.6	29.8	31.0	30.2	28.0	25.8	28.6	28.8	28.6	27.9	27.0	30.5	22.7	22.4	22.3	22.5	20.5	21.8	22.8	19.8	19.5
	CHEMICAL																								
1	Alk-Phen (mgCaCO3/L)			0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)			72	61	60	48	82	9	71	91	68	52	43	70	109			64	84	30	93	89	76	86
3	B (mg/L)	0.00	0.00	0.20	0.00	0.00	0.16	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.01	0.00	0.00	0.19	0.00	0.25	0.20	0.01	0.00	0.00
4	Ca (mg/L)	29	27	33	30	25	28	34	28	20	34	28	46	41	39	31	29	32	35	38	24	47	31	34	23
5	Cl (mg/L)	17.5	18.2	19.0	22.0	21.4	21.9	27.2	34.7	25.7	33.8	17.7	19.6	23.1	27.5	36.6	18.8	16.5	21.3	24.5	19.9	26.4	35.8	32.5	31.3
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.40	0.51	0.43	0.30	0.27	0.25	0.05	0.06	0.05	0.05	0.05	0.05	0.05	2.33	0.46	0.32	0.33	0.33	0.08	0.41	0.74	0.05	0.06	0.05
8	Fe (mg/L)	0.2	0.1	0.1	0.2	0.2	0.2	0.0	1.4	0.1	0.3	0.5	0.4	0.5	0.4		0.3	0.2	0.1	0.3	0.1	0.1	0.0	1.2	0.1
9	HCO3 (mg/L)	55	80	88	72	42	59	96	45	93	111	83	63	52	86	133	50	78	78	90	37	113	108	76	119
10	K (mg/L)	2.5	6.7	2.9	5.3	4.3	4.5	6.7	4.1	3.3	6.7	3.6	9.4	8.3	14.5	22.1	4.5	3.2	3.6	4.5	2.0	5.1	5.6	5.1	4.6
11	Mg (mg/L)	7.5	7.1	11.5	10.7	10.7	11.1	12.6	8.4	6.1	12.6	12.6	15.0	17.3	12.2	9.2	7.9	10.3	11.2	14.1	10.3	16.0	7.8	16.0	7.2
12	Na (mg/L)	13.2	12.5	13.7	14.8	12.6	13.5	15.5	9.3	15.7	15.5	8.5	19.5	11.4	27.2	21.3	14.0	11.9	14.1	16.0	12.0	17.1	15.7	13.5	14.9
13	NO2+NO3 (mg N/L)	13.11	7.23	10.33	10.66	7.36	7.50	0.39	1.06	12.72	1.50	1.19	1.06	1.20	1.20		15.24	13.00	14.38	12.66	10.82	10.90	0.40	1.11	15.50
14	NO2-N (mgN/L)	0.96	0.16	0.03	0.09	0.00	0.00	0.07	0.00	0.00	0.02	0.02	0.01	0.02	0.00		1.00	0.83	0.09	0.96	0.10	0.00	0.07	0.00	0.00
15	NO3-N (mgN/L)	12.15	7.07	10.30	10.57	7.36	7.50	0.33	1.06	12.72	1.48	1.16	1.05	1.18	1.20		14.24	12.17	14.29	11.70	10.72	10.90	0.33	1.11	15.50
16	o-PO4-P (mg P/L)	0.011	0.010	0.000		0.000											0.000	0.005	0.000	0.120	0.008				
17	P-Tot (mgP/L)	0.012	0.011	0.001	0.002	0.003	0.001	0.010	0.001	0.001	0.001	0.001	0.010	0.001	0.001	0.001	0.001	0.007	0.001	0.002	0.001	0.001	0.010	0.001	0.001
18	SiO2 (mg/L)	25.4	12.3	8.6	9.1	9.1	7.8	8.8	11.6	8.0	5.6	6.0	6.6	8.3	9.2	9.5	21.7	16.3	8.9	9.4	8.9	5.5	8.8	12.0	9.1
19	SO4 (mg/L)	20.2	16.2	25.1	24.4	42.7	37.4	42.8	45.0	32.5	45.0	26.4	50.8	41.0	40.9	33.6	25.6	23.3	22.4	28.4	23.9	62.6	28.5	42.8	41.5
	BIOLOGICAL/BACTERIOLOGICAL																								
1	BOD3-27 (mg/L)	1.4	3.4	1.4	1.4	1.8	1.7	1.9	5.6	1.9	5.3	9.0	17.7	5.0	1.0	1.3	1.8	1.5	1.6	1.9	2.0	2.3	2.2	1.2	7.7
2	DO (mg/L)	5.8	5.6	5.6	5.3	4.5	5.4	3.8	5.0	5.6	3.2	4.4	5.0	3.8	3.5	2.8	7.4	7.2	6.3	6.9	7.9	6.2	6.5	7.2	5.9
3	DO_SAT% (%)	77	75	73	69	59	73	50	64	69	42	57	65	49	44	37	85	83	71	79	88	71	75	78	64
4	FCol-MPN (MPN/100mL)													94	138										
5	Tcol-MPN (MPN/100mL)													214	343										
	TRACE & TOXIC																								
1	Al (mg/L)	4.02																							
	CHEMICAL INDICES																								
1	HAR_Ca (mgCaCO3/L)	72	67	81	75	63	70	84	70	51	84	71	115	103	98	78	73	80	88	94	59	117	78	86	57
2	HAR_Total (mgCaCO3/L)	103	95	129	120	107	116	137	105	77	137	123	178	174	149	116	106	122	135	153	102	184	111	153	87
3	Na% (%)	22	23	22	23	21	20	18	16	30	18	12	18	12	26	26	21	17	19	18	20	17	23	16	26
4	RSC (-)	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2
5	SAR (-)	0.6	0.6	0.6	0.6	0.5	0.5	0.6	0.4	0.8	0.6	0.3	0.6	0.4	1.1	0.9	0.6	0.5	0.5	0.6	0.5	0.6	0.7	0.5	0.7
	PESTICIDES																								

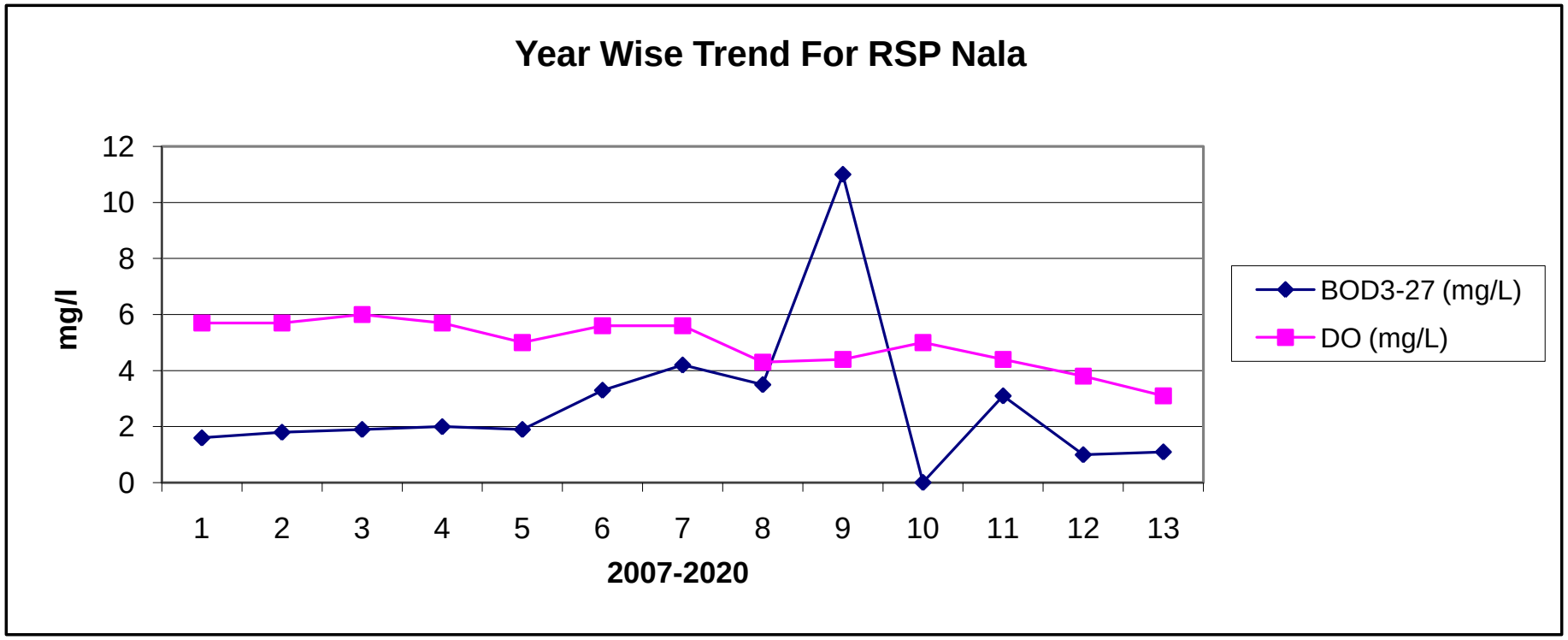
Water Quality Seasonal Average for the period: 2005-2020

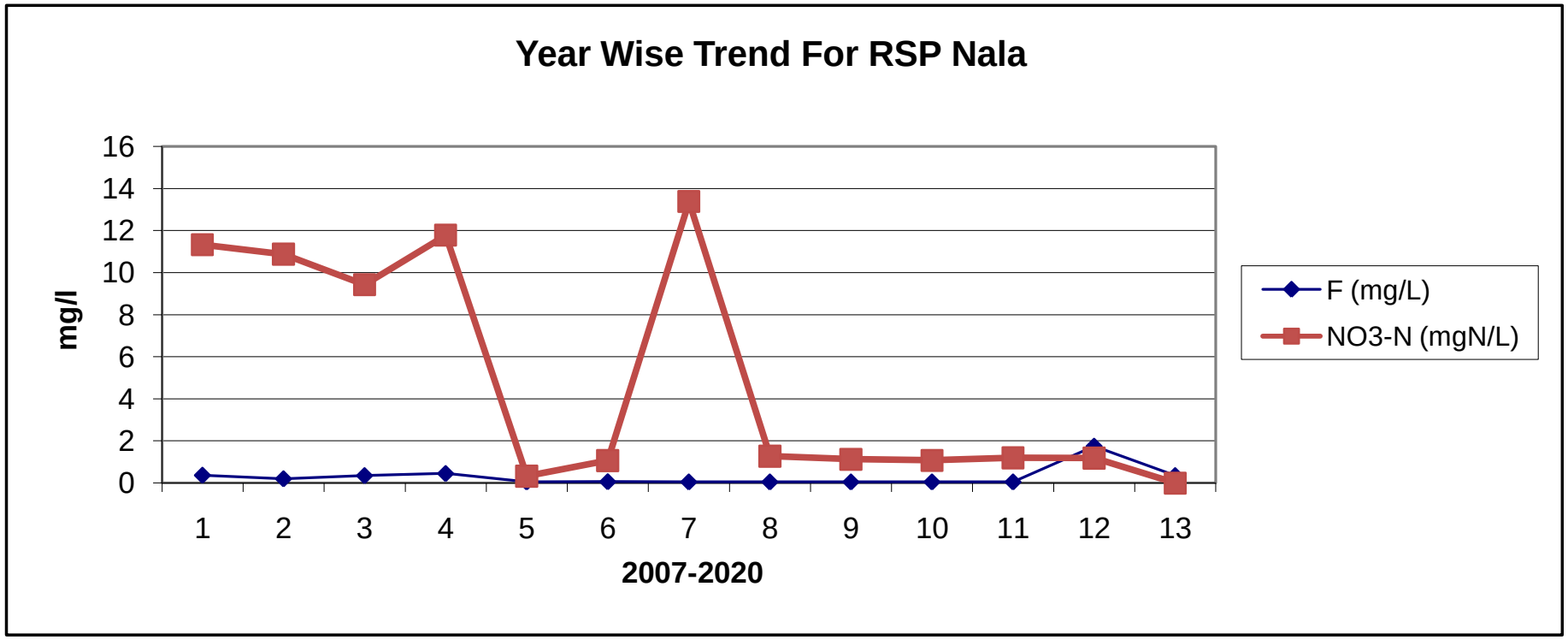
Station Name : RSP (RSP) **Division : E.E., Bhubaneswar**

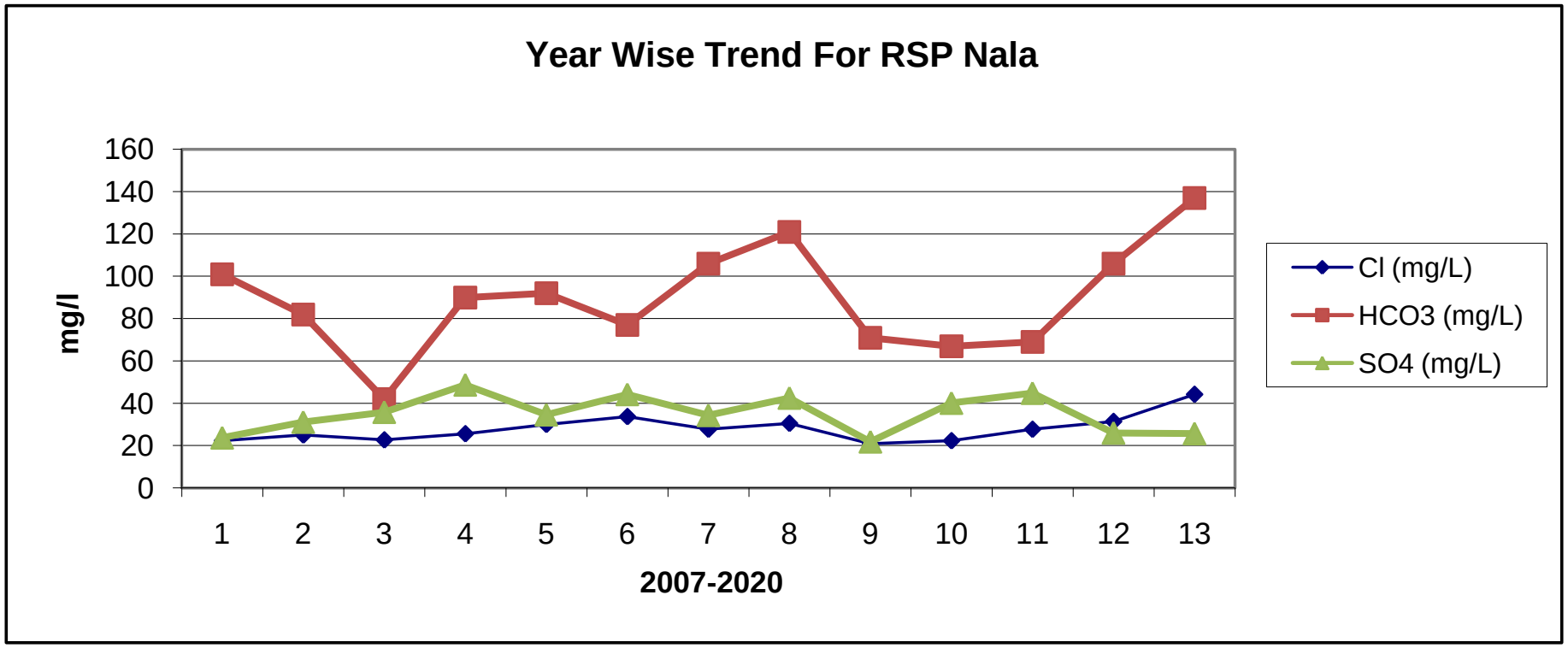
Local River : RSP Nala **River Water** **Sub-Division : Sambalpur**

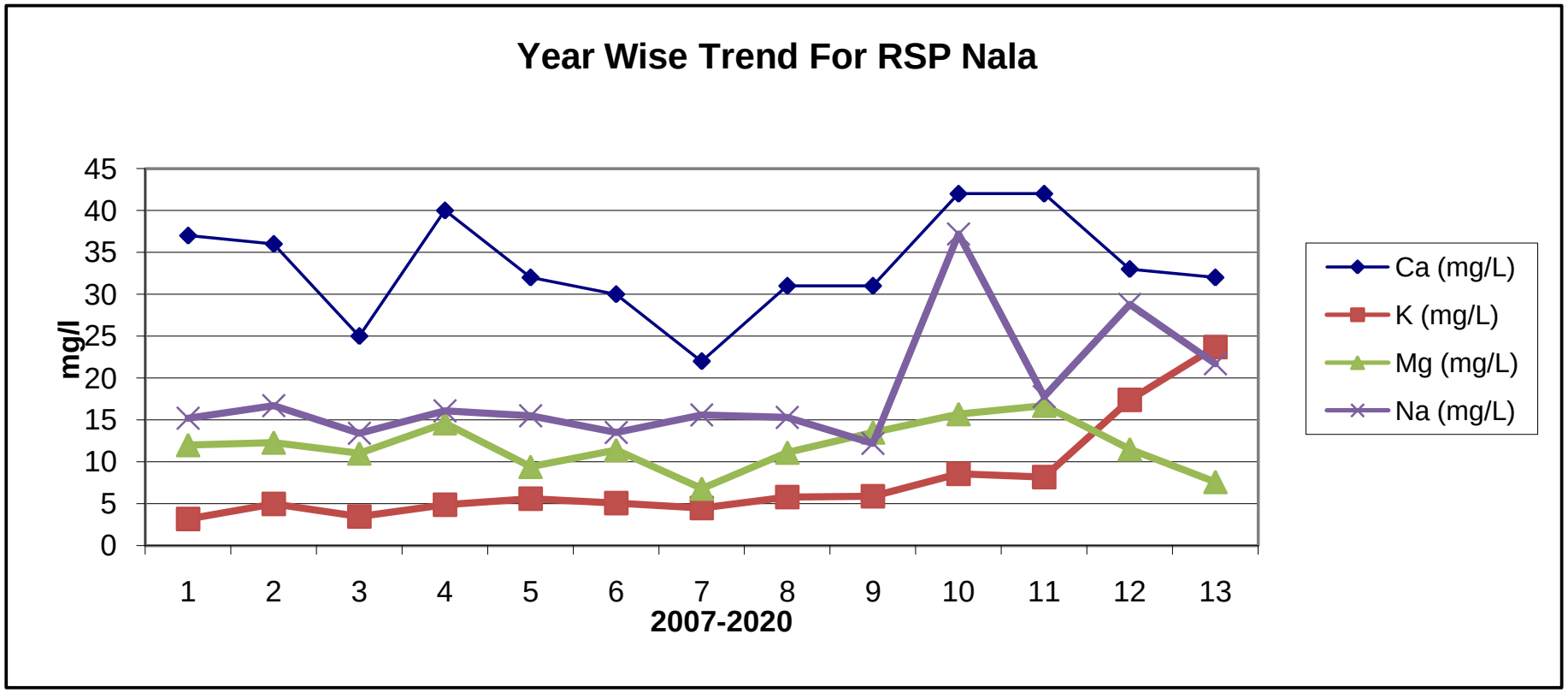
S.No	Parameters							Summer														
								Mar - May														
		2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	PHYSICAL																					
1	Q (cumec)																					
2	EC_FLD (µmho/cm)	460	877	617	401	343	374	382	398	454	450	343	523	337	473	357	634	814	568	472	405	20
3	EC_GEN (µmho/cm)	460	878	619	398	339	490	377	393	457	450	343	523	337	473	357	634	815	567	470	407	184
4	pH_FLD (pH units)	7.7	7.5	7.7	7.5	7.9	8.2	7.4	7.6	7.4	7.7	7.4	7.5	7.3	7.7	7.6	7.4	7.0	7.3	7.4	7.6	8.1
5	pH_GEN (pH units)	7.7	7.5	7.7	7.5	7.9	7.7	7.5	7.6	7.4	7.7	7.4	7.5	7.3	7.7	7.6	7.4	6.9	7.5	7.4	7.6	7.5
6	Temp (deg C)	21.0	20.3	21.0	17.0	21.3	24.8	28.4	28.5	28.5	27.0	26.7	26.3	28.7	23.7	25.7	27.0	26.4	23.7	26.0	26.7	
	CHEMICAL																					
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	10.4	0.0		0.0	0.0	0.0	0.0	0.0	
2	ALK-TOT (mgCaCO3/L)	102	52	55	74	99	95		151		73	39	92	73	109		110	49	59	55	96	
3	B (mg/L)	0.00	0.01	0.01	0.02	0.02		0.07	0.00	0.20	0.00	0.55	0.15	0.01	0.00	0.00	0.00	0.01	0.02	0.02	0.02	
4	Ca (mg/L)	29	22	38	44	24	33	42	44	49	42	25	50	31	27	22	29	47	40	41	32	31
5	Cl (mg/L)	37.2	17.4	18.9	33.8	35.0	54.1	19.3	18.3	29.1	30.9	28.5	30.8	27.0	33.6	26.1	26.9	30.8	31.4	27.1	33.0	35.5
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
7	F (mg/L)	0.05	0.05	0.05	0.05	0.31	0.23	0.77	0.34	0.32	0.18	0.41	0.38	0.05	0.06	0.05	0.05	0.05	0.05	0.05		
8	Fe (mg/L)	0.3	0.5	0.6	0.5	0.4		0.2	0.2	0.1	0.2	0.1	0.1	0.0	0.9	0.1	0.4	0.4	0.5	0.4		
9	HCO3 (mg/L)	124	63	68	90	121	131	87	97	155	89	48	112	64	133	111	134	60	71	68	117	172
10	K (mg/L)	6.4	5.2	7.3	8.5	7.4	27.6	3.2	3.7	3.3	5.0	4.3	5.4	3.7	6.6	6.2	3.6	10.9	9.1	7.6	35.6	15.0
11	Mg (mg/L)	10.7	11.7	14.6	15.9	9.9	4.7	12.1	12.9	14.0	12.6	12.3	18.5	6.2	10.4	7.3	9.0	17.5	18.5	16.7	12.5	13.2
12	Na (mg/L)	15.5	12.3	40.4	19.1	25.4	20.6	13.6	12.4	19.3	20.9	16.4	19.3	15.0	20.5	16.5	14.5	18.1	62.6	26.7	35.8	27.5
13	NO2+NO3 (mg N/L)	1.12	1.13	1.11	1.21	1.18		19.35	14.69	9.16	10.62	11.53	20.07	0.41	1.04	11.65	1.15	1.08	1.12	1.22		
14	NO2-N (mgN/L)	0.00	0.00	0.01	0.00	0.00		1.18	0.07	0.07	0.30	0.39	0.00	0.07	0.00	0.01	0.00	0.00	0.01	0.00		
15	NO3-N (mgN/L)	1.12	1.13	1.10	1.21	1.18		18.17	14.62	9.09	10.32	11.14	20.07	0.34	1.04	11.64	1.15	1.08	1.11	1.22		
16	o-PO4-P (mg P/L)							0.000	0.000	0.012		0.000										
17	P-Tot (mgP/L)	0.001	0.010	0.010	0.001	0.001		0.001	0.001	0.034	0.002	0.007	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001	0.001	
18	SiO2 (mg/L)	5.8	5.8	6.5	8.4	9.0		19.1	16.8	9.6	9.3	8.8	4.1	8.7	12.0	8.1	6.7	5.3	7.7	7.5	9.0	
19	SO4 (mg/L)	44.4	24.3	15.1	51.2	11.4	16.7	27.6	28.8	23.3	45.9	40.1	49.3	29.2	44.8	27.8	35.9	10.7	55.4	42.7	20.6	30.1
	BIOLOGICAL/BACTERIOLOGICAL																					
1	BOD3-27 (mg/L)	3.3	1.3	3.8	2.1	1.2	0.9	1.9	1.6	1.8	2.4	1.8	1.9	1.4	2.3	3.3	0.8	27.1	1.9	1.1	0.7	0.8
2	DO (mg/L)	6.9	5.4	6.2	4.6	5.2	3.1	5.7	4.9	4.9	5.0	5.8	5.3	5.2	4.6	5.2	2.7	3.1	3.3	5.0	2.5	4.3
3	DO_SAT% (%)	78	58	68	47	58	38	73	62	63	63	71	66	67	53	62	34	39	38	62	32	
4	FCol-MPN (MPN/100mL)			95	88														77	120		
5	Tcol-MPN (MPN/100mL)			275	255														123	323		
	TRACE & TOXIC																					
1	Al (mg/L)									0.05												
	CHEMICAL INDICES																					
1	HAR_Ca (mgCaCO3/L)	73	55	96	111	61	83	104	111	121	106	63	124	77	67	54	73	118	100	101	80	78
2	HAR_Total (mgCaCO3/L)	117	104	157	177	102	103	154	164	180	158	114	201	103	111	84	111	190	177	171	132	133
3	Na% (%)	21	19	32	18	32	26	16	14	19	22	23	17	23	27	28	21	17	41	24	29	28
4	RSC (-)	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.1	0.0	0.0	0.0	0.0	
5	SAR (-)	0.6	0.5	1.4	0.6	1.1	0.9	0.5	0.4	0.6	0.7	0.7	0.6	0.6	0.9	0.8	0.6	0.6	2.0	0.9	1.4	1.0
	PESTICIDES																					


Year Wise Trend For RSP Nala
200
180
160
140
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
DO_SAT% (%)
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For RSP Nala
mg/l
12
10
8
6
4
2
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
BOD3-27 (mg/L)
DO (mg/L)


Year Wise Trend For RSP Nala
mg/l
16
14
12
10
8
6
4
2
0
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend For RSP Nala
160
140
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year Wise Trend For RSP Nala
45
40
35
30
25
20
15
10
5
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
12
13
2007-2020
Ca (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

LIST OF PERSONS INVOLVED IN THE PREPARATION OF WATER YEAR BOOK

1. Dr. D.R. Mohanty, Executive Engineer, ERD, CWC, Bhubaneswar
2. Sri. A.Rajasekhar, Executive Engineer, ERD, CWC, Bhubaneswar
3. Sri Rounak J. Rathi,AEE,ERD,CWC,Bhubaneswar
4. Sri. S. Chakraborty, SDE, Brahmani Sub-Division, Rourkela
5. Sri. N.K.Bhuyan, ARO, ERD, CWC, Bhubaneswar
6. Sri A.K.Behera,SRA,ERD,CWC,Bhubaneswar
7. Sri P.K.Barik, JE(HQS), ERD, CWC, Bhubaneswar
8. Sri. P.K. Samantara, EAD, ERD, CWC, Bhubaneswar

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