खंड–3
(केवल कार्यालय उपयोग हेतु)

Volume-III
(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 2017 - मई 2018) (June 2017 - May 2018)

बैतरणी, सुर्बणरेखा एवं बूढाबलंग बेसिन

BAITARANI, SUBARNAREKHA & BURHABALANG BASIN

जल विज्ञानीय प्रेक्षण परिमंडल

HYDROLOGICAL OBSERVATION CIRCLE

भुवनेश्बर (BHUBANESWAR)

September: 2018

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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.

The basin encompassing the east flowing rivers in-between the Ganga and the Godavari basins viz. Subarnarekha, Burhabalang, Baitarani, Brahmani, Mahanadi, Rushikulya, Vamsadhara, Nagavali and Sarada has been identified as Mahanadi and Eastern Rivers Basin which is dealt by Mahanadi and Eastern Rivers Organisation (MERO), CWC, Bhubaneswar. Hydrological Observation Circle (HOC), Bhubaneswar under MERO carries out hydrological observation and flood forecasting activities in these 9 river basins flowing mainly through Odisha along with its neighbouring States of Jharkhand, Chattisgarh, Andhra Pradesh and West Bengal through two Divisions under its jurisdiction viz. Mahanadi Division (MD), Burla and Eastern Rivers Division (ERD), Bhubaneswar.

There are a total of 119 observation stations under MERO. Systematic gauge and discharge observations are regularly conducted at 42 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 are stored in a database through a custom made software "Surface Water Data Entry System (SWDES) and published in the form of Water Year Books. The present publication of Water Year Book contains Hydrological, Sediment and Water Quality data for the hydrological year 2017-18, i.e. from June 2017 to May 2018.

Water Year Book pertaining to the Hydrological Observation Circle, CWC, Bhubaneswar is published in four volumes. While 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 as Section-I, Sediment data as Section-II and Water Quality data as Section-III for respective river basins.

This Volume-III covers hydrological, sediment and water quality data for Water Year 2017-18 of eight sites of Subarnarekha, Burhabalang & Baitarani river basins and three effluent stations alongwith salient features and other important statistical information. Sincere effort put in by the officers and staff of ERD, CWC, Bhubaneswar namely, Smt. Dr. Shanthala Devi B.S, Extra Assistant Director Shri Prasan Kumar Samantara, Sxcientific Assistant and S.S. Mohanty, Senior Computer of Hydromet Section under the able leadership of Shri N.C.Nanda, Executive Engineer, in collecting & processing the data and bringing out this publication is highly commendable. The guidance and encouragement of Shri A. Nayak, Chief Engineer, MERO, Bhubaneswar and co-operation of the officials of H.O. Circle and Chief Engineer's office are duly acknowledged.

Place: Bhubaneswar
Date: September, 2018

(D.K. Jena)
Superintending Engineer
HOC, CWC
Bhubaneswar

LIST OF ABBREVIATIONS USED:

General:

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

Type of station:

G	:	Gauge (Water Level)
D	:	Discharge (Average discharge 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	:	gramme
l	:	litre

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BAITARANI, SUBARNAREKHA & BURHABALANG BASINS

BAITARANI BASIN

BAITARANI BASIN

1. GENERAL

1.1 Introduction

Baitarani is one of the important east flowing rivers of peninsular India, falling into Bay of Bengal. Major portion of its catchment lies in the state of Orissa and a small patch of the upper reach lies in Jharkhand. The river originates from the hill ranges of Keonjhar district of Orissa near Mankarancho village at an elevation of about 900 m. The total catchment area of this basin is 10,982 sq. km. The basin is situated approximately between East longitudes of 85°10' to 87°03' and between North latitudes of 20°35' to 22°15'. The basin is surrounded by the Brahmani basin on the south and west, the Subarnarekha basin on the north, the Burhabalang and the Bay of Bengal on the east. The river is flashy in nature, having a total length of 355 km, with the upper reach upto Anandpur in the hilly region. There is a considerable fall in elevation from RL 367 m at Champua to RL 28 m at Anandpur. State-wise distribution of the catchment area is tabulated below:

State-wise Catchment area distribution

Sl. No.	Name of State	Catchment Area (sq. km)	Percentage of total catchment area
1.	Jharkhand	736	6.7
2.	Orissa	10,246	93.3
	Total	**10,982**	**100.0**

Basin Map of Baitarani river system showing the various hydrological and hydro meteorological observation stations maintained by CWC, State Governments and India Meteorological Department, is enclosed herewith. Central Water Commission is maintaining 6 sites (including seasonal rainfall site at Thakurmunda which remains operative only during monsoon), out of which 2 are of GDSQ type, 3 are of G type and 1 is RF type.

1.2 River system

Details of the tributaries which join Baitarani River on both sides are tabulated below:

Name of River	River/Tributary	Length (km)	Catchment area (sq.km)	Percentage of total catchment area
Baitarani	Main stream	355.00	4112.45	37.45
Mohida	Left Tributary	33.99	222.74	2.03
Baradpara	Left Tributary	49.88	331.52	3.02
Kangira	Left Tributary	40.00	458.43	4.17
Orarai	Right Tributary	72.41	821.03	7.48
Korribhandhan	Left Tributary	88.50	116.29	1.07
Deo	Left Tributary	78.84	722.61	6.58
Kanjhari	Right Tributary	59.53	497.69	4.53
Sita	Right Tributary	38.62	505.05	4.60
Kusal	Right Tributary	59.53	530.95	4.83
Kusai	Right Tributary	78.84	870.24	7.92
Salandi	Left Tributary	144.00	1793.00	16.32
		Total	**10982**	**100.00**

1.3 Climatic Characteristics

The basin receives most of the rainfall from the South-West monsoons during the period from June to October. Summer months from March to May are highly humid. Moderate cold winter is experienced from November to February. The average annual rainfall for the basin is approximately 1450 mm. The maximum temperature varies from 25 to 38^0 C and the minimum from 12 to 24^0 C.

1.4 Geology

The rocks of the basin belong to the iron ore series of the Upper Dharwar system of the Archean group. There is intrusion of Epidorite with some Quartzite and at higher altitudes; intrusions of Hematite-Quartzite are seen. In the Zonal area of the Sundargarh district, Shales, Phyllites and Dolomites are found. At some places, Hematite deposits are seen over layers of Shale and Manganese. In the hills and forests between the Dhenkanal border and Anandpur, Quartzites, Shales, Phyllites, Granites and Genesis are also found

1.5 Site Details

Details of water storage/ diversion structures in the Baitarani Basin are as below:

Sl. No.	Name of Project	River	Status
1.	Akhuapada System	Baitarani	Existing
2.	Remal	Remal (Tributary of Kusei)	Existing
3.	Salandi	Salandi (Tributary of Baitarani)	Existing
4.	Kanupur	Baitarani	Under Construction
5.	Deo	Baitarani	Existing
6.	Kusei	(Tributary of Baitarani)	Existing
7.	Kanjhari	Baitarani	Existing
8.	Integrated Anandpur Barrage	Baitarani	Under Construction

2. STREAM FLOW DATA

2.1 Methodology

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 Anandpur and Champua sites of CWC.

The observed stage and discharge figures for each season (monsoon and non-monsoon) are plotted and a mean Stage V/s. 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 V/s. Discharge curves. Accordingly, the trend of the current curve is finalised. Finally, the discharges of the non observed days are computed from these Stage V/s. Discharge Curves.

2.2 Data Availability

Details of data availability for Baitarani Basin is tabulated below:

Sl. No.	Code No.	Station Name	Type	Data available From	To
1.	EC000K3	Anandpur	GDSQ		
			1) Gauge	07.03.72	Continuing
			2) Discharge	07.03.72	Continuing
			3) Sediment	26.08.72	-do-
			4) Water Quality	01.09.72	-do-
2.	EC000R5	Champua	GDSQ		
			1) Gauge	01.02.80	Continuing
			2) Discharge	20.07.90	Continuing
			3) Sediment	09.08.01	-do-
			4) Water Quality	08.09.01	-do-
3.	Keonjhar	Keonjhar	G		
			1)Gauge	01.10.94	Continuing
4.	Swampatana	Swampatana	G		
			1)Gauge	15.06.70	Continuing
5.	Akhuapada	Akhuapada	G		
			1)Gauge	01.06.73	Continuing

2.3 Explanatory Notes on 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 interpretation of data presented in this volume.

i) Water Year ranges from June 1st of one calendar year to May 31st 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-Chart 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 (In case of 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 (In case of 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 station (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) and to Raipur laboratory (under Mahanadi Division, Burla), 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, Aluminum, Ammonia, 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.

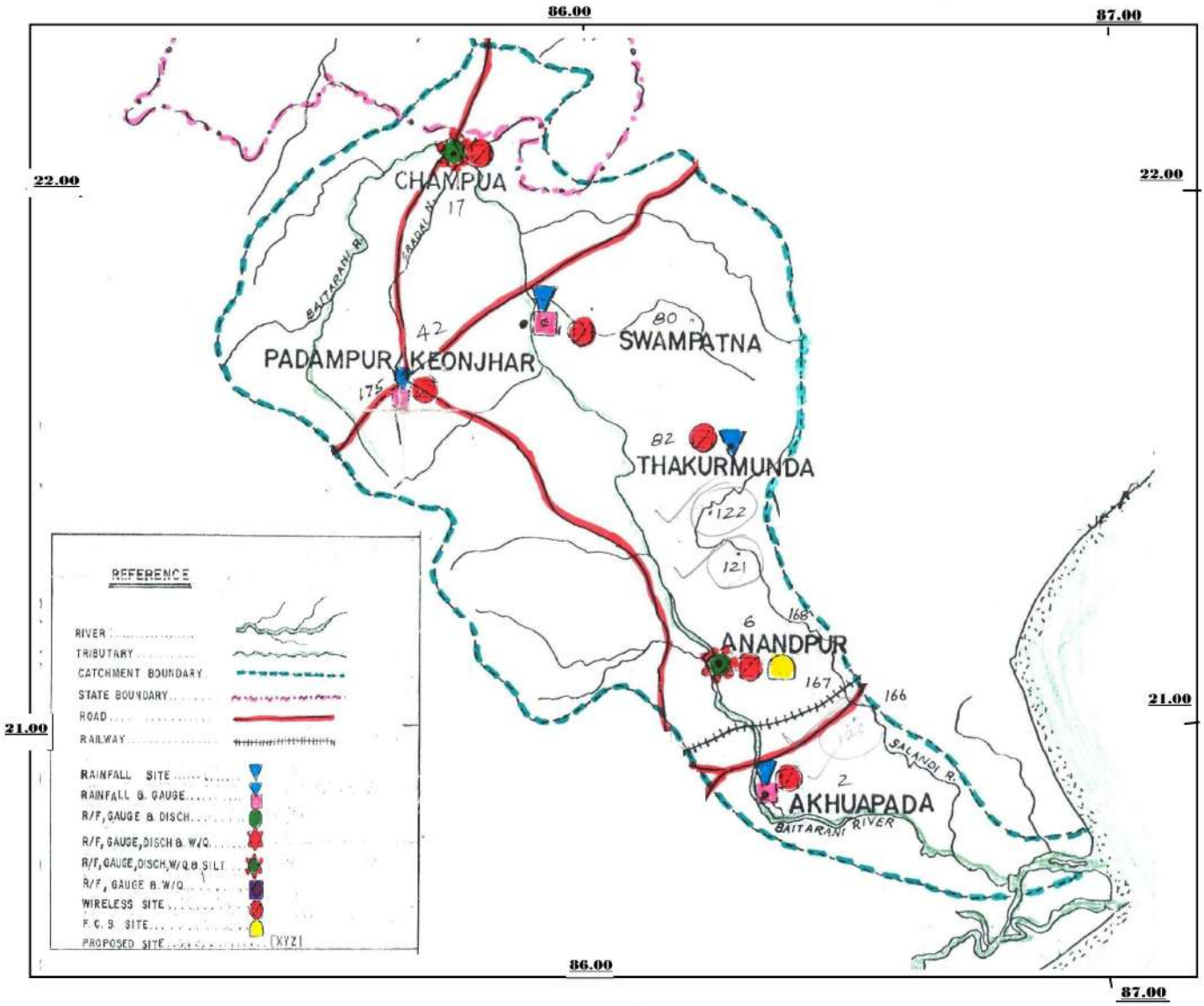
The following parameters are analyzed and recorded:

- Monthly Values: Physical; Chemical (mg/l); Biological (mg/l); Traces & Toxic (mg/l) and Chemical Indices.
- Average Values for the Year: 10 Years data to be given season wise averages:-
  - Average for Summer (March to June).
  - Average for Floods (July to October).
  - Average for Winter (November to February)

NAME OF THE SITES IN OPERATION UNDER BAITARANI BASIN

Sl. No	Station Name	River/ Tributary	Type	Latitude	Longitude	Max. Water Level & Discharge upto May,2018			
						WL	Date	Q.	Date
1.	Keonjhar	Aridi	G	21°-.40-'00"	85°-35-'00"	461.12	07/09/08	---	---
2.	Champua	Baitarini	GDSQ	22°-03 '-57"	85°-40-'56"	378.10	07/08/85	1705	23/09/11
3.	Ananadpur	Baitarini	GDSQ	22°-12 '-34"	86°-07-'83"	41.35	23/09/11	10394	19/08/75
4.	Swampatana	Baitarini	G	21°-37 '-00"	85°-55-'00"	315.66	14/08/75	---	---
5.	Akhuapada	Baitarini	G	20°-56 '-00"	86°-17-'00"	21.95	16/08/60	---	---
6	Thakurmunda	Baitarini	RF	21°-31'-00"	86°-09'-00"	---	---	---	---

Note : Thakurmunda is a seasonal rainfall site, remaining operative only during monsoon.


86.00
87.00
22.00
21.00
CHAMPUA
17
BAITARANI R.
SARDALI R.
PADAMPUR/KEONJHAR
42
175
SWAMPATNA
80
THAKURMUNDA
82
122
121
ANANDPUR
6
168
167
166
AKHUAPADA
2
SALANDI R.
BAITARANI RIVER
REFERENCE
RIVER
TRIBUTARY
CATCHMENT BOUNDARY
STATE BOUNDARY
ROAD
RAILWAY
RAINFALL SITE
RAINFALL & GAUGE
R/F, GAUGE & DISCH.
R/F, GAUGE, DISCH & W/Q
R/F, GAUGE, DISCH, W/Q & SILT
R/F, GAUGE & W/Q
WIRELESS SITE
F.C.S. SITE
PROPOSED SITE (XYZ)

HISTORY SHEET

Water Year : 2017-2018

Site	**: CHAMPUA**		**Code**	**: EC000R5**	
State	: Orissa		District		Keonjhar
Basin	: Brahmani-Baitarani		Independent River	:	Baitarani
Tributary	: Baitarani		Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	Baitarani
Division	: E.E., Bhubaneswar		Sub-Division	:	Bhubaneswar
Drainage Area	: 1710 Sq. Km.		Bank	:	Right
Latitude	: 22°03'57"		Longitude	:	85°40'56"
Zero of Gauge (m)	: 0 (m.s.l) 367 (m.s.l)		2/1/1980 6/1/1991	-	5/31/1991 12/31/2050
	Opening Date		Closing Date		
Gauge	: 2/1/1980				
Discharge	: 7/20/1990				
Sediment	: 8/9/2001				
Water Quality	: 9/8/2001				

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

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1991-1992	1010	376.350	8/13/1991	3.006	370.950	4/22/1992
1992-1993	159.1	372.760	8/1/1992	1.331	370.870	5/15/1993
1993-1994	479.5	374.160	7/16/1993	1.763	370.790	5/9/1994
1994-1995	652.8	375.700	7/20/1994	2.445	370.880	6/3/1994
1995-1996	403.5	374.470	8/10/1995	2.286	370.890	5/18/1996
1996-1997	503.2	374.890	6/23/1996	2.308	370.895	6/2/1996
1997-1998	752.6	375.075	8/6/1997	2.884	370.850	6/11/1997
1998-1999	343.0	373.465	9/11/1998	1.608	370.950	5/3/1999
1999-2000	880.0	375.620	10/19/1999	3.947	370.940	4/25/2000
2000-2001	439.0	374.020	7/18/2000	2.821	370.860	5/16/2001
2001-2002	499.7	373.720	7/22/2001	2.753	370.880	5/24/2002
2002-2003	105.2	372.680	9/10/2002	2.277	370.870	5/20/2003
2003-2004	430.7	375.285	10/9/2003	2.700	370.920	6/8/2003
2004-2005	363.0	374.585	8/21/2004	4.037	370.940	6/1/2004
2005-2006	920.8	376.120	6/29/2005	3.251	370.930	5/2/2006
2006-2007	420.7	374.820	8/23/2006	4.015	370.920	5/31/2007
2007-2008	731.3	376.895	8/20/2007	3.632	370.930	6/10/2007
2008-2009	538.9	372.310	6/18/2008	2.808	370.880	5/2/2009
2009-2010	263.2	373.270	7/22/2009	1.821	370.750	4/27/2010
2010-2011	204.6	372.950	7/26/2010	1.985	370.790	3/24/2011
2011-2012	1705	378.950	9/23/2011	1.821	370.780	5/31/2012
2012-2013	213.4	372.680	9/17/2012	0.425	370.820	5/24/2013
2013-2014	550.8	373.910	8/21/2013	3.001	370.920	6/4/2013
2014-2015	1159	376.090	8/5/2014	2.205	370.800	5/31/2015
2015-2016	309.8	373.160	7/28/2015	0.083	370.720	5/7/2016
2016-2017	325.1	373.340	8/18/2016	0.000	370.820	3/29/2017
2017-2018	740.0	374.790	7/24/2017	0.000	370.880	6/1/2017

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

Stage-Discharge Data for the period 2017 - 2018

Station Name : CHAMPUA (EC000R5) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**

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	370.880	0.000	370.240	11.92	372.640	181.0	371.840	68.53 *			371.450	35.04 *
2	370.880	4.063			372.605	177.6		73.85 *	371.820		371.440	34.42 *
3	370.870	3.691	371.290	13.48	372.665	184.9		75.42 *	371.980	85.96 *	371.430	33.37 *
4			371.310	13.70	372.580	175.0	371.890	71.66 *	372.420	151.7	371.430	33.37 *
5	370.840	3.547	371.640	40.24	372.630	181.7	371.810	65.72 *	372.180	120.7	371.420	32.34 *
6	370.860	3.659	371.610	37.86	372.600	177.0 *	371.930	74.16 *	372.010	89.14	371.410	32.11 *
7	370.870	3.795	371.590	36.28	372.530	166.0	371.850	70.35 *	371.910	77.86	371.400	31.46 *
8	370.910	4.297	371.560	33.01	372.500	156.3	371.870	71.73 *	371.840		371.390	30.99 *
9	370.920	4.598			372.480	148.7	371.850	70.10 *	371.830	71.32	371.390	30.92 *
10	370.900	4.100	371.520	30.44	372.460	142.7		94.44 *	371.810	68.73	371.380	30.19 *
11			371.500	28.28	372.430	136.1	372.160	124.0 *	371.740	64.96	371.370	29.50 *
12	370.890	3.949	371.480	243.5	372.390	127.8	371.950	77.65 *	371.810	69.19	371.320	22.67 *
13	370.880	3.811	371.810	50.05	372.400	131.2 *	372.190	127.5 *	371.780	68.23	371.250	13.11 *
14	370.870	3.679	372.290	91.57	372.410	134.5	372.050	102.5 *	371.770	67.36 *	371.230	12.80 *
15	370.870	3.629	372.060	77.80	372.370	120.7 *	372.210	128.7 *	371.740		371.220	12.53 *
16	370.900	3.810			372.340	110.3	372.080	109.0 *	371.630	51.02	371.210	12.21 *
17	370.890	3.767	371.660	43.64	372.310	105.0		83.42 *	371.580	48.09	371.230	12.71 *
18			371.630	41.16	372.415	135.3	371.840	68.07 *	371.560	43.25	371.130	12.83 *
19	370.870	3.554	371.600	38.24	372.350	126.0	372.190	121.1 *	371.530		371.220	12.62 *
20	370.870	3.522	371.790	50.63	372.210	108.5 *	372.140	106.9 *	371.570	50.01	371.240	13.04 *
21	370.220	12.69	371.710	45.20	371.980	79.67	372.070	96.34 *	372.460	152.3	371.220	12.31 *
22	370.260	13.28	371.650	41.02	371.870	69.54	371.830	76.33 *	372.040		371.210	12.08 *
23	370.170	10.21			371.810	66.14	371.810	74.18 *	371.840	72.28	371.190	11.64 *
24	370.020	7.090	374.790	740.0	372.330	141.7		69.14 *	371.760	65.77	371.180	11.78 *
25			373.640	348.7	372.210	130.7	371.820	75.86 *	371.680	60.79	371.170	11.42 *
26			373.360	303.9	371.940	78.63	371.840	77.65 *	371.610	54.22 *	371.170	11.42 *
27	370.255	12.99	373.020	254.5	371.850	66.80 *	371.860	78.16 *	371.590	51.30 *	371.160	11.17 *
28	370.230	12.46	372.840	224.0	371.870	69.43	371.775	70.40 *	371.540	46.65 *	371.160	11.10 *
29	370.270	12.88	372.790	204.4	371.840	68.50		67.29 *	371.510		371.150	10.94 *
30	370.310	13.20			371.820	66.39		74.20 *	371.480	39.13 *	371.150	10.82 *
31			372.690	186.8	371.790	64.41			371.470	37.05 *		
Ten-Daily Mean												
I Ten-Daily	370.881	3.528	371.345	27.12	372.569	169.1	371.863	73.60	371.978	95.06	371.414	32.42
II Ten-Daily	370.880	3.715	371.758	73.87	372.363	123.5	372.090	104.9	371.671	57.76	371.242	15.40
III Ten-Daily	370.217	11.85	372.943	260.9	371.937	81.99	371.858	75.96	371.725	64.39	371.176	11.47
Monthly												
Min.	370.020	0.000	370.240	11.92	371.790	64.41	371.775	65.72	371.470	37.05	371.130	10.82
Max.	370.920	13.28	374.790	740.0	372.665	184.9	372.210	128.7	372.460	152.3	371.450	35.04
Mean	370.668	6.251	372.041	124.2	372.278	123.5	371.950	84.81	371.783	71.13	371.277	19.76

Annual Runoff in MCM = 1104 Annual Runoff in mm = 646

Peak Observed Discharge = 740.0 cumecs on 24-Jul-17 Corres. Water Level :374.79 m

Lowest Observed Discharge = 0.000 cumecs on 01-Jun-17 Corres. Water Level :370.88 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

Stage-Discharge Data for the period 2017 - 2018

Station Name : CHAMPUA (EC000R5) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	371.140	10.47 *	371.010	5.742	404.950	4.977	370.860	3.450			370.760	2.380
2	371.140	10.47 *	371.010	5.682	370.950	4.937	370.860		370.890	3.806	370.790	2.683
3	371.140	10.47 *	371.010	5.600	370.950	4.896	370.860	3.416	404.880	3.741	370.800	2.782
4	371.130	10.04 *	404.000	5.504	370.940		370.860		404.880	3.701	370.820	2.827
5	371.130	10.15 *	404.000	5.603	370.940	4.731 *	370.850	3.366	404.870	3.572	370.810	2.789
6	371.130	10.08 *	404.000	5.711	404.940	4.674	404.850	3.350	404.870	3.567		
7	371.120	9.539 *	371.000		404.940	4.801	404.850	3.348	404.900	3.981	370.800	2.713
8	371.120	9.408 *	404.990	5.837	370.930		404.840	3.261			370.810	2.845
9	371.110	8.935 *	404.990	5.867	404.930	4.482	404.840	3.225	370.980	5.609	370.810	2.791
10	371.110	8.935 *	404.990	5.819	404.930	4.462	404.840	3.009	404.970	5.433	370.800	2.699
11	371.100	8.566 *	404.980	5.732	370.920		370.830		404.970	5.389	370.800	2.682
12	371.100	8.394 *	404.980	5.674	370.920	4.332	370.820	2.690	404.950	5.442	370.790	2.613
13	371.090	8.083 *	404.980	5.659	404.920	4.317	404.820	2.672	404.120	9.331		
14	371.080	7.827 *	370.980		404.920	4.358	404.820	2.538	404.050	6.977	370.780	2.528
15	371.080	7.710 *	370.970	5.464	370.920		404.180	2.502			370.780	2.533
16	371.070	7.542 *	404.970	5.434	404.910	4.229	404.810	2.568	370.980	5.762	370.780	2.466
17	371.070	7.542 *	404.970	5.392	404.910	4.241	404.810	2.534	404.900	4.390	370.800	2.630
18	371.060	7.180 *	404.970	5.345	370.910		370.800		404.890	4.171	370.800	2.589
19	371.060	7.087 *	404.970	5.285	370.900	4.173	370.800	2.458	404.870	4.089	370.790	2.473
20	371.050	6.915 *	404.970	5.292	404.900	4.141	404.800	2.465	404.860	3.784		
21	371.040	6.638 *	370.970		404.900	4.113	404.800	2.445	404.850	3.644	370.860	3.199
22	371.040	6.571 *	370.960	0.213	404.900	4.034	404.790	2.440			370.840	2.973
23	371.040	6.410 *	404.960	5.180	404.890	3.770	404.790	2.334	370.830	3.570	370.830	2.875
24	371.040	6.410 *	404.960	5.162	404.880	3.674	404.790	2.326	404.820	3.204	370.830	2.818
25	371.030	6.264 *	404.960	5.131	370.870		370.790		404.810	2.966	370.820	2.673
26	371.030	6.264 *	370.960		370.870	3.553	370.790	2.275	404.800	2.772	370.800	2.540
27	371.030	6.187 *	404.960	5.132	404.870	3.627	370.790	2.272	404.770	3.074		
28	371.030	6.130 *	370.960		404.870	3.534	404.790	2.244	404.770	3.008	370.790	2.443
29	371.020	5.964 *	404.950	5.040			370.790				370.790	2.391
30	371.020	5.878 *	404.950	5.020			370.780				370.830	2.848
31	371.020	5.878 *	404.950	5.145			404.780	2.207			370.820	2.707
Ten-Daily Mean												
I Ten-Daily	371.127	9.850	391.100	5.707	387.940	4.745	387.851	3.303	396.405	4.176	370.800	2.723
II Ten-Daily	371.076	7.685	398.174	5.475	387.913	4.256	391.149	2.553	400.954	5.482	370.790	2.564
III Ten-Daily	371.031	6.236	392.595	4.503	396.381	3.758	389.335	2.318	399.950	3.177	370.821	2.747
Monthly												
Min.	371.020	5.878	370.960	0.213	370.870	3.534	370.780	2.207	370.830	2.772	370.760	2.380
Max.	371.140	10.47	404.990	5.867	404.950	4.977	404.850	3.450	404.970	9.331	370.860	3.199
Mean	371.076	7.869	393.912	5.256	390.342	4.275	389.441	2.725	399.145	4.374	370.805	2.685

Peak Computed Discharge = 177.0 cumecs on 06-Aug-17 Corres. Water Level :372.6 m

Lowest Computed Discharge = 4.731 cumecs on 05-Feb-18 Corres. Water Level :370.94 m

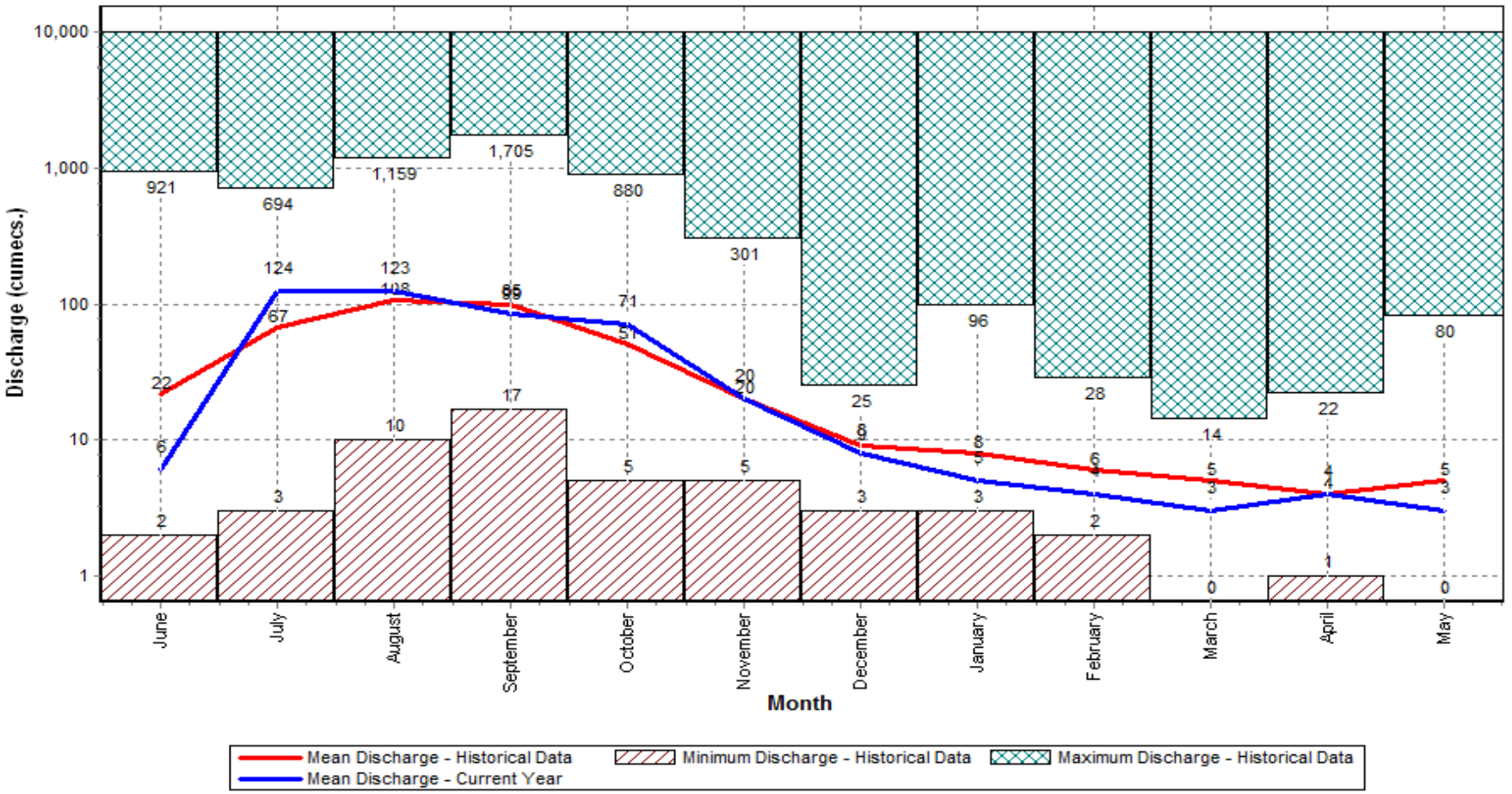
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2017-2018

Station Name : CHAMPUA (EC000R5) **Data considered : 1991-2018** **Division : E.E., Bhubaneswar**

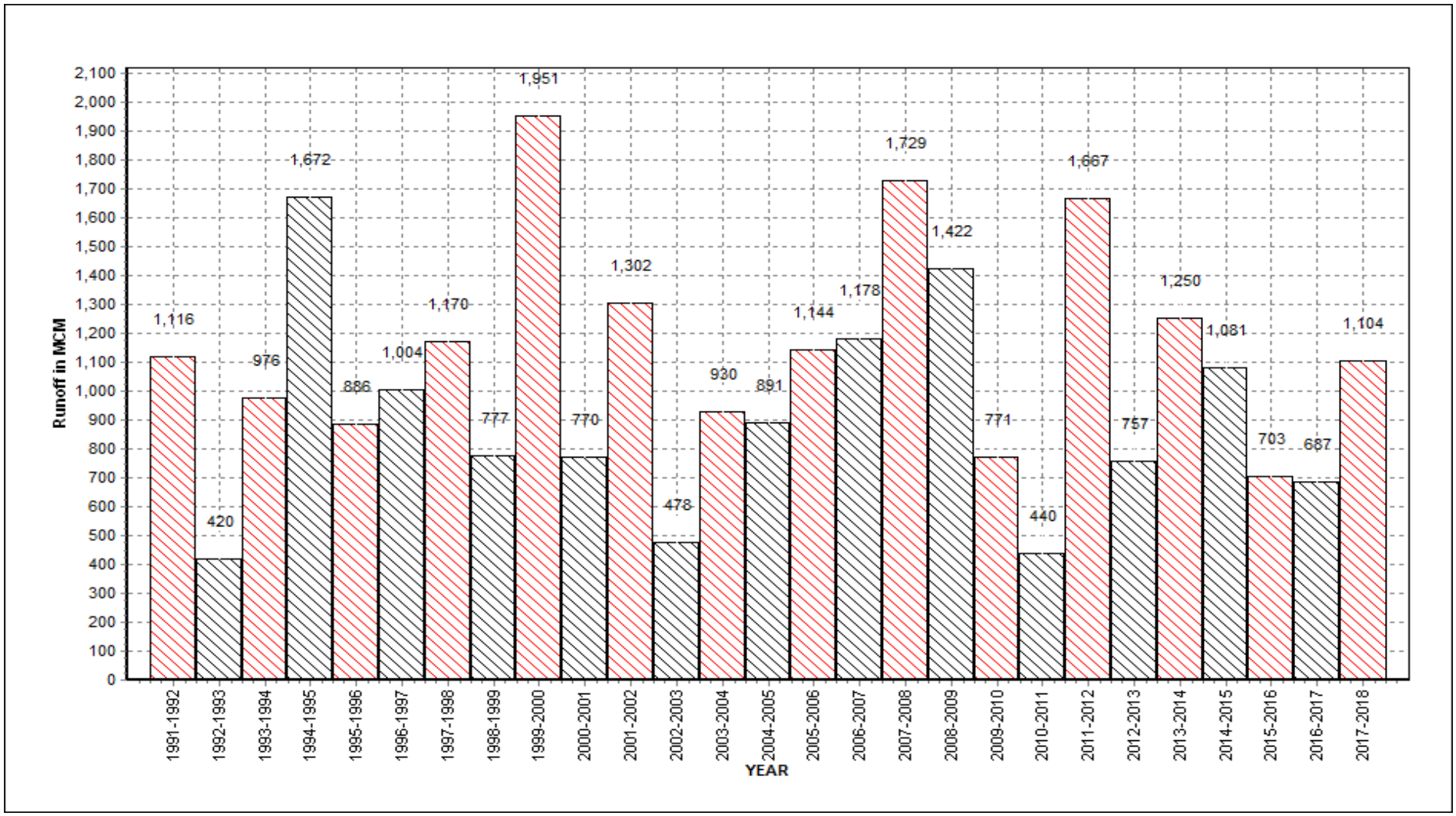
Local River : Baitarani **Sub-Division : Bhubaneswar**



Annual Runoff Values for the period: 1991 - 2018

Station Name : CHAMPUA (EC000R5) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**

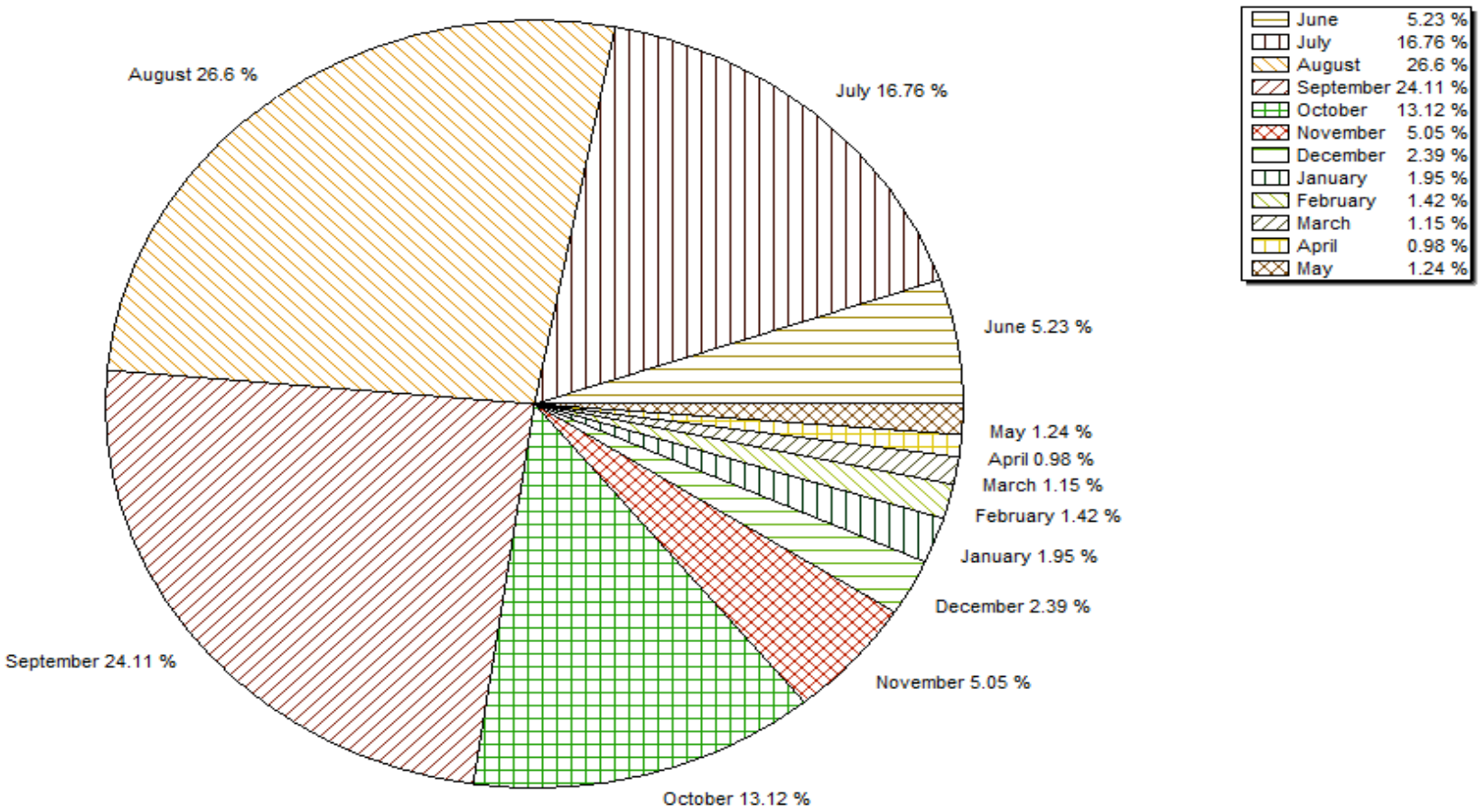


Note: Missing values have not been considered while arriving at Annual Runoff

Monthly Average Runoff based on period : 1991-2017

Station Name : CHAMPUA (EC000R5) **Division : E.E., Bhubaneswar**

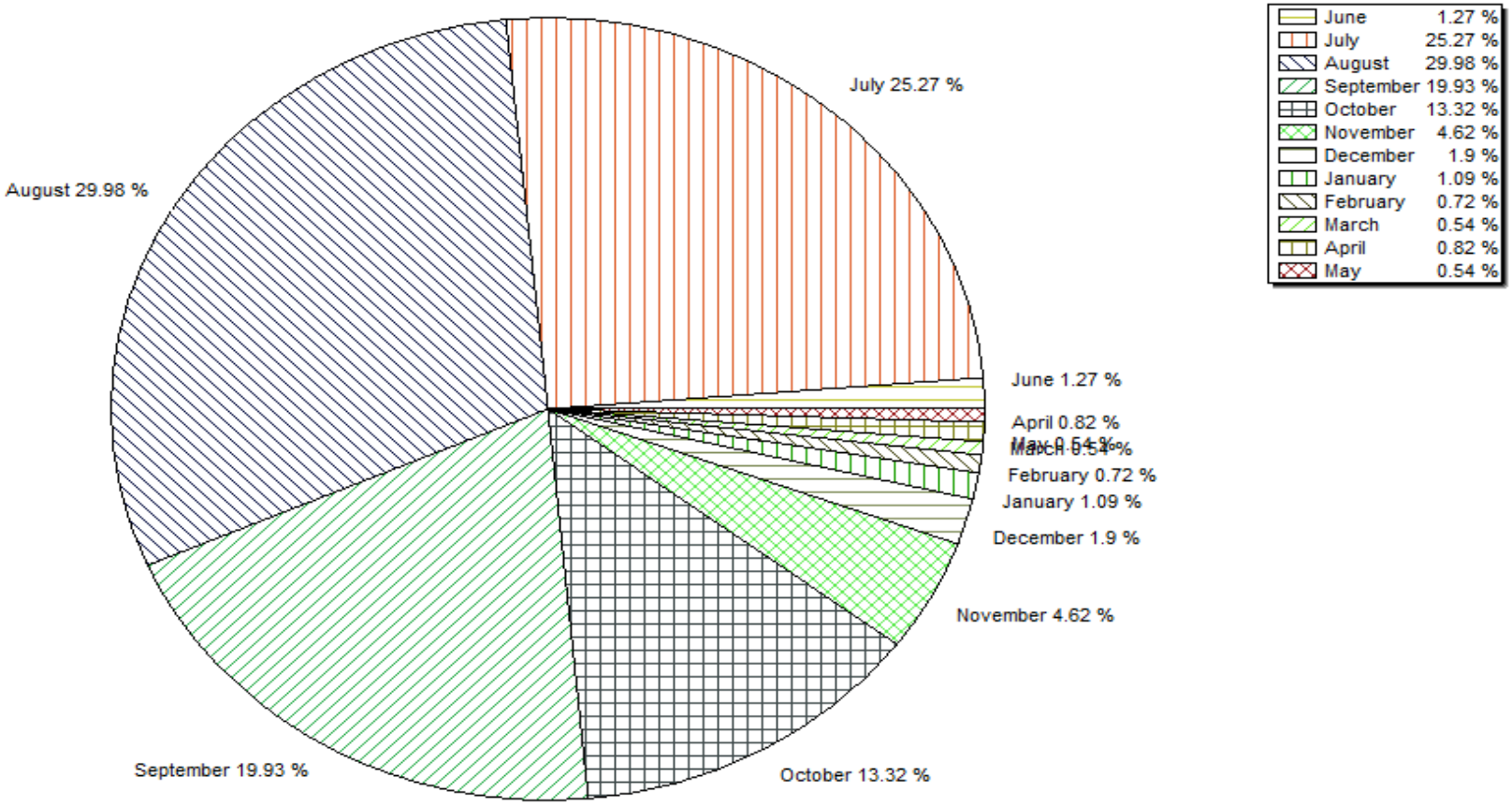
Local River : Baitarani **Sub-Division : Bhubaneswar**



Monthly Runoff for the Year : 2017-2018

Station Name : CHAMPUA (EC000R5) **Division : E.E., Bhubaneswar**

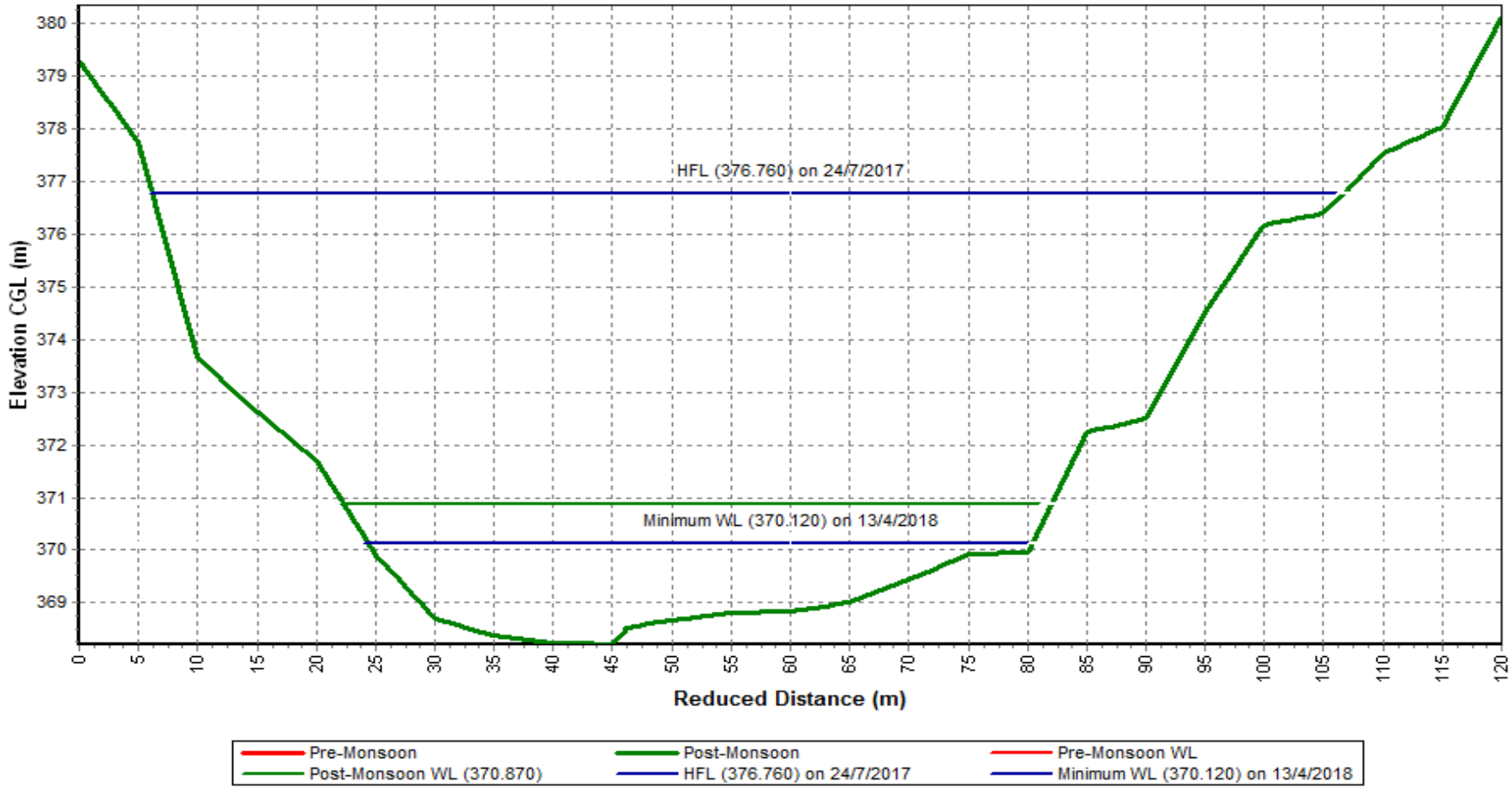
Local River : Baitarani **Sub-Division : Bhubaneswar**



Pre-Monsoon & Post-Monsoon X-Section for Water Year : 2017-2018

Station Name : CHAMPUA (EC000R5) **Division : E.E., Bhubaneswar**

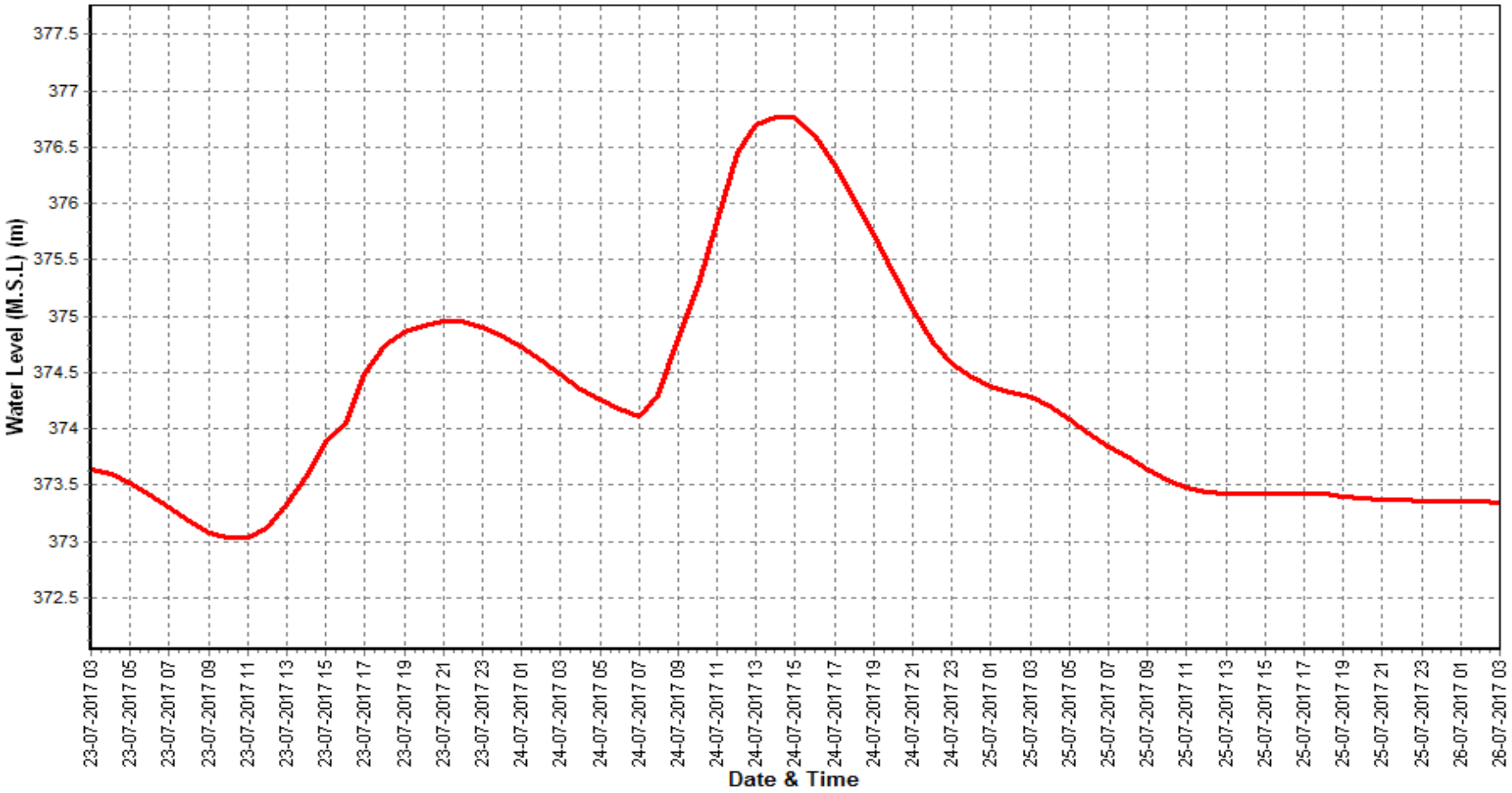
Local River : Baitarani **Sub-Division : Bhubaneswar**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2017-2018

Station Name : CHAMPUA (EC000R5) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**

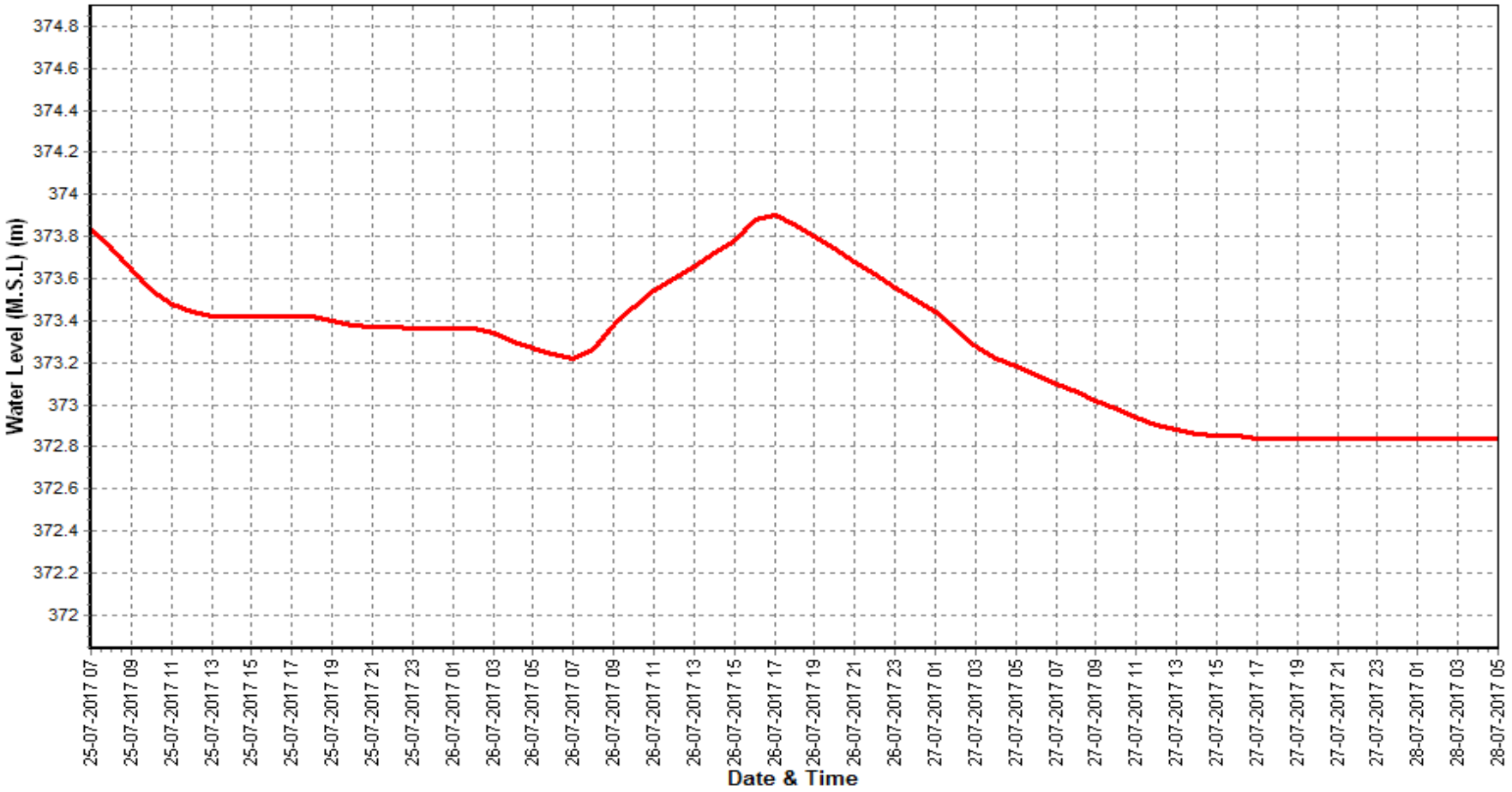


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2017-2018

Station Name : CHAMPUA (EC000R5) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**

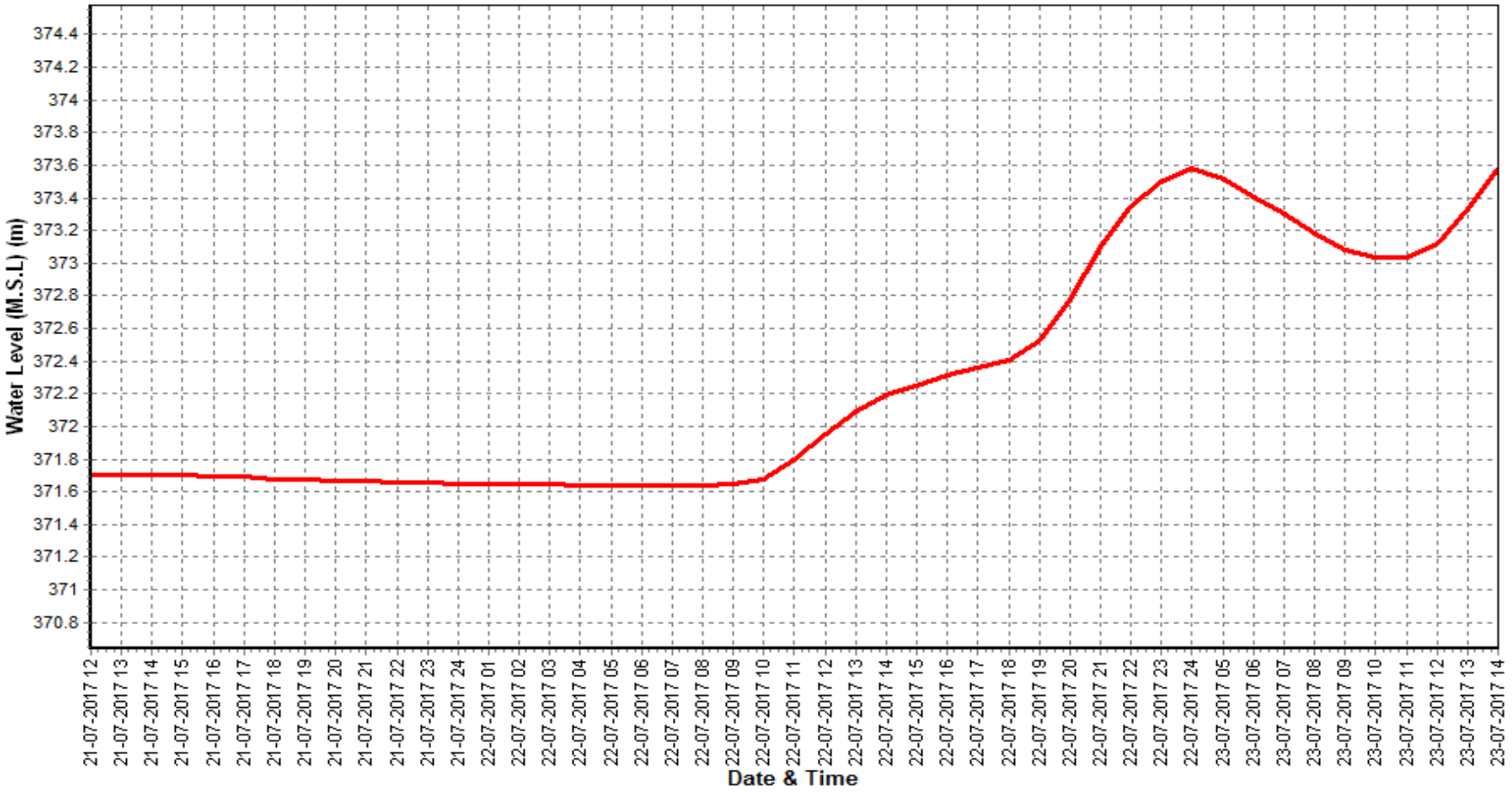


Time Span: 72 Hrs

Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2017-2018

Station Name : CHAMPUA (EC000R5) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**



Time Span: 72 Hrs

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : CHAMPUA (EC000R5) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**

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	0.000	0.000	0.000	0.031	0.031	0	11.92	0.000	0.000	0.290	0.290	299	181.0	0.000	0.067	0.500	0.567	8867
2	4.063	0.000	0.000	0.040	0.040	14							177.6	0.000	0.000	0.371	0.371	5693
3	3.691	0.000	0.000	0.040	0.040	13	13.48	0.000	0.000	0.369	0.369	430	184.9	0.000	0.061	0.214	0.275	4393
4							13.70	0.000	0.000	0.237	0.237	281	175.0	0.000	0.000	0.026	0.026	393
5	3.547	0.000	0.000	0.058	0.058	18	40.24	0.000	0.000	0.562	0.562	1954	181.7	0.000	0.000	0.276	0.276	4333
6	3.659	0.000	0.000	0.041	0.041	13	37.86	0.000	0.000	0.566	0.566	1851	177.0					
7	3.795	0.000	0.000	0.036	0.036	12	36.28	0.000	0.000	0.738	0.738	2313	166.0	0.000	0.000	0.250	0.250	3586
8	4.297	0.000	0.000	0.036	0.036	13	33.01	0.000	0.000	0.295	0.295	841	156.3	0.000	0.000	0.277	0.277	3741
9	4.598	0.000	0.000	0.020	0.020	8							148.7	0.000	0.000	0.290	0.290	3726
10	4.100	0.000	0.000	0.026	0.026	9	30.44	0.000	0.000	0.280	0.280	736	142.7	0.000	0.000	0.201	0.201	2478
11							28.28	0.000	0.000	0.270	0.270	660	136.1	0.000	0.000	0.194	0.194	2281
12	3.949	0.000	0.000	0.033	0.033	11	243.5	0.000	0.000	0.471	0.471	9909	127.8	0.000	0.000	0.147	0.147	1623
13	3.811	0.000	0.000	0.031	0.031	10	50.05	0.000	0.000	0.478	0.478	2067	131.2					
14	3.679	0.000	0.000	0.034	0.034	11	91.57	0.000	0.069	0.655	0.724	5728	134.5	0.000	0.000	0.317	0.317	3684
15	3.629	0.000	0.000	0.025	0.025	8	77.80	0.000	0.000	0.718	0.718	4826	120.7					
16	3.810	0.000	0.000	0.037	0.037	12							110.3	0.000	0.000	0.107	0.107	1020
17	3.767	0.000	0.000	0.056	0.056	18	43.64	0.000	0.000	0.468	0.468	1765	105.0	0.000	0.000	0.104	0.104	943
18							41.16	0.000	0.000	0.366	0.366	1302	135.3	0.000	0.000	0.217	0.217	2537
19	3.554	0.000	0.000	0.087	0.087	27	38.24	0.000	0.000	0.345	0.345	1140	126.0	0.000	0.000	0.317	0.317	3451
20	3.522	0.000	0.000	0.078	0.078	24	50.63	0.000	0.000	0.240	0.240	1050	108.5					
21	12.69	0.000	0.000	0.073	0.073	80	45.20	0.000	0.000	0.216	0.216	844	79.67	0.000	0.000	0.203	0.203	1397
22	13.28	0.000	0.000	0.113	0.113	130	41.02	0.000	0.000	0.216	0.216	766	69.54	0.000	0.000	0.187	0.187	1124
23	10.21	0.000	0.000	0.128	0.128	113							66.14	0.000	0.000	0.240	0.240	1371
24	7.090	0.000	0.000	0.146	0.146	89	740.0	0.101	0.164	0.716	0.981	62721	141.7	0.000	0.000	0.198	0.198	2424
25							348.7	0.086	0.125	0.514	0.725	21843	130.7	0.000	0.000	0.254	0.254	2868
26							303.9	0.076	0.100	0.561	0.737	19351	78.63	0.000	0.000	0.000	0.000	0
27	12.99	0.000	0.000	0.122	0.122	137	254.5	0.069	0.092	0.609	0.770	16931	66.80					
28	12.46	0.000	0.000	0.126	0.126	136	224.0	0.064	0.840	0.714	1.618	31314	69.43	0.000	0.000	0.000	0.000	0
29	12.88	0.000	0.000	0.138	0.138	154	204.4	0.000	0.075	0.624	0.699	12344	68.50	0.000	0.000	0.153	0.153	906
30	13.20	0.000	0.000	0.143	0.143	163							66.39	0.000	0.000	0.161	0.161	924
31							186.8	0.000	0.071	0.572	0.643	10378	64.41	0.000	0.000	0.170	0.170	946
Ten Daily Mean																		
Ten Daily I	3.528	0.000	0.000	0.036	0.036	11	27.12	0.000	0.000	0.417	0.417	1088	169.1	0.000	0.014	0.267	0.281	4134
Ten Daily II	3.715	0.000	0.000	0.048	0.048	15	73.87	0.000	0.008	0.446	0.453	3161	123.5	0.000	0.000	0.200	0.200	2220
Ten Daily III	11.85	0.000	0.000	0.124	0.124	125	260.9	0.044	0.163	0.527	0.734	19610	81.99	0.000	0.000	0.157	0.157	1196
Monthly Total						1222						213643						64708

Annual Sediment Load (Metric Tonnes) : 385502

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : CHAMPUA (EC000R5) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**

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	68.53	0.000	0.000	0.205	0.205	1214		0.000	0.000		1213.600		35.04	0.000	0.000	0.074	0.074	224
2	73.85												34.42	0.000	0.000	0.067	0.067	199
3	75.42						85.96			0.163			33.37	0.000	0.000	0.061	0.061	176
4	71.66	0.000	0.000	0.209	0.209	1294	151.7	0.000	0.000	0.168	0.168	2202	33.37					
5	65.72	0.000	0.000	0.234	0.234	1329	120.7	0.000	0.000	0.191	0.191	1992	32.34					
6	74.16	0.000	0.000	0.211	0.211	1352	89.14	0.000	0.000	0.170	0.170	1309	32.11	0.000	0.000	0.057	0.057	158
7	70.35	0.000	0.000	0.212	0.212	1289	77.86	0.000	0.000	0.181	0.181	1218	31.46	0.000	0.000	0.057	0.057	155
8	71.73	0.000	0.000	0.225	0.225	1394							30.99	0.000	0.000	0.055	0.055	147
9	70.10	0.000	0.000	0.207	0.207	1254	71.32	0.000	0.000	0.186	0.186	1146	30.92	0.000	0.000	0.064	0.064	171
10	94.44						68.73	0.000	0.000	0.108	0.108	641	30.19	0.000	0.000	0.062	0.062	162
11	124.0	0.000	0.000	0.222	0.222	2378	64.96	0.000	0.000	0.111	0.111	623	29.50	0.000	0.000	0.062	0.062	158
12	77.65	0.000	0.000	0.206	0.206	1382	69.19	0.000	0.000	0.107	0.107	640	22.67					
13	127.5	0.000	0.000	0.205	0.205	2258	68.23	0.000	0.000	0.106	0.106	625	13.11	0.000	0.000	0.059	0.059	67
14	102.5	0.000	0.000	0.250	0.250	2214	67.36	0.000	0.000	0.109	0.109	634	12.80	0.000	0.000	0.056	0.056	62
15	128.7	0.000	0.000	0.218	0.218	2424							12.53	0.000	0.000	0.056	0.056	61
16	109.0	0.000	0.000	0.322	0.322	3032	51.02	0.000	0.000	0.101	0.101	445	12.21	0.000	0.000	0.040	0.040	42
17	83.42						48.09	0.000	0.000	0.097	0.097	403	12.71	0.000	0.000	0.032	0.032	35
18	68.07	0.000	0.000	0.340	0.340	2000	43.25	0.000	0.000	0.100	0.100	374	12.83	0.000	0.000	0.030	0.030	33
19	121.1	0.000	0.000	0.166	0.166	1737							12.62					
20	106.9	0.000	0.000	0.151	0.151	1395	50.01	0.000	0.000	0.154	0.154	665	13.04	0.000	0.000	0.031	0.031	35
21	96.34	0.000	0.000	0.196	0.196	1631	152.3	0.000	0.000	0.168	0.168	2211	12.31	0.000	0.000	0.028	0.028	30
22	76.33	0.000	0.000	0.205	0.205	1352							12.08	0.000	0.000	0.027	0.027	28
23	74.18	0.000	0.000	0.184	0.184	1179	72.28	0.000	0.000	0.169	0.169	1055	11.64	0.000	0.000	0.026	0.026	26
24	69.14						65.77	0.000	0.000	0.123	0.123	699	11.78	0.000	0.000	0.022	0.022	22
25	75.86	0.000	0.000	0.201	0.201	1317	60.79	0.000	0.000	0.120	0.120	630	11.42	0.000	0.000	0.023	0.023	23
26	77.65	0.000	0.000	0.203	0.203	1362	54.22	0.000	0.000	0.109	0.109	511	11.42					
27	78.16	0.000	0.000	0.206	0.206	1391	51.30	0.000	0.000	0.102	0.102	452	11.17	0.000	0.000	0.024	0.024	23
28	70.40	0.000	0.000	0.185	0.185	1125	46.65	0.000	0.000	0.099	0.099	399	11.10	0.000	0.000	0.022	0.022	21
29	67.29												10.94	0.000	0.000	0.023	0.023	22
30	74.20						39.13	0.000	0.000	0.080	0.080	270	10.82	0.000	0.000	0.022	0.022	21
31							37.05	0.000	0.000	0.075	0.075	240						
Ten Daily Mean																		
Ten Daily I	73.60	0.000	0.000	0.215	0.215	1304	95.06	0.000	0.000	0.167	173.515	1418	32.42	0.000	0.000	0.062	0.062	174
Ten Daily II	104.9	0.000	0.000	0.231	0.231	2091	57.76	0.000	0.000	0.111	0.111	551	15.40	0.000	0.000	0.046	0.046	62
Ten Daily III	75.96	0.000	0.000	0.197	0.197	1337	64.39	0.000	0.000	0.116	0.116	719	11.47	0.000	0.000	0.024	0.024	24
Monthly																		
Total						37304						19385						2101

Annual Sediment Load (Metric Tonnes) : 385502

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : CHAMPUA (EC000R5) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**

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	10.47						5.742	0.000	0.000	0.021	0.021	10	4.977					
2	10.47						5.682						4.937					
3	10.47						5.600						4.896					
4	10.04	0.000	0.000	0.010	0.010	9	5.504											
5	10.15						5.603						4.731	0.000	0.000	0.028	0.028	11
6	10.08						5.711						4.674					
7	9.539												4.801					
8	9.408						5.837	0.000	0.000	0.014	0.014	7						
9	8.935						5.867						4.482					
10	8.935						5.819						4.462					
11	8.566	0.000	0.000	0.020	0.020	15	5.732											
12	8.394						5.674						4.332	0.000	0.000	0.024	0.024	9
13	8.083						5.659						4.317					
14	7.827												4.358					
15	7.710						5.464	0.000	0.000	0.012	0.012	6						
16	7.542						5.434						4.229					
17	7.542						5.392						4.241					
18	7.180	0.000	0.000	0.013	0.013	8	5.345											
19	7.087						5.285						4.173	0.000	0.000	0.018	0.018	6
20	6.915						5.292						4.141					
21	6.638												4.113					
22	6.571						0.213	0.000	0.000	0.015	0.015	0	4.034					
23	6.410						5.180						3.770					
24	6.410						5.162						3.674					
25	6.264						5.131											
26	6.264	0.000	0.000	0.016	0.016	9							3.553	0.000	0.000	0.023	0.023	7
27	6.187						5.132						3.627					
28	6.130												3.534					
29	5.964						5.040	0.000	0.000	0.015	0.015	7						
30	5.878						5.020											
31	5.878						5.145											
Ten Daily Mean																		
Ten Daily I	9.850	0.000	0.000	0.010	0.010	9	5.707	0.000	0.000	0.018	0.018	9	4.745	0.000	0.000	0.028	0.028	11
Ten Daily II	7.685	0.000	0.000	0.017	0.017	11	5.475	0.000	0.000	0.012	0.012	6	4.256	0.000	0.000	0.021	0.021	8
Ten Daily III	6.236	0.000	0.000	0.016	0.016	9	4.503	0.000	0.000	0.015	0.015	3	3.758	0.000	0.000	0.023	0.023	7
Monthly Total						40						30						34

Annual Sediment Load (Metric Tonnes) : 385502

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : CHAMPUA (EC000R5) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**

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	3.450												2.380	0.000	0.000	0.060	0.060	12
2							3.806	0.000	0.000	17.000	17.000	5590	2.683					
3	3.416						3.741						2.782					
4							3.701						2.827					
5	3.366	0.000	0.000	0.022	0.022	6	3.572						2.789					
6	3.350						3.567											
7	3.348						3.981						2.713	0.000	0.000	0.069	0.069	16
8	3.261												2.845					
9	3.225						5.609	0.000	0.000	22.780	22.780	11040	2.791					
10	3.009						5.433						2.699					
11							5.389						2.682					
12	2.690	0.000	0.000	0.021	0.021	5	5.442						2.613					
13	2.672						9.331											
14	2.538						6.977						2.528	0.000	0.000	0.023	0.023	5
15	2.502												2.533					
16	2.568						5.762	0.000	0.000	52.020	52.020	25897	2.466					
17	2.534						4.390						2.630					
18							4.171						2.589					
19	2.458	0.000	0.000	0.023	0.023	5	4.089						2.473					
20	2.465						3.784											
21	2.445						3.644						3.199	0.000	0.000	0.140	0.140	39
22	2.440												2.973					
23	2.334						3.570	0.000	0.000	14.270	14.270	4402	2.875					
24	2.326						3.204						2.818					
25							2.966						2.673					
26	2.275	0.000	0.000	0.020	0.020	4	2.772						2.540					
27	2.272						3.074											
28	2.244						3.008						2.443	0.000	0.000	0.062	0.062	13
29													2.391					
30													2.848					
31	2.207												2.707					
Ten Daily Mean																		
Ten Daily I	3.303	0.000	0.000	0.022	0.022	6	4.176	0.000	0.000	19.890	19.890	8315	2.723	0.000	0.000	0.065	0.065	14
Ten Daily II	2.553	0.000	0.000	0.022	0.022	5	5.482	0.000	0.000	52.020	52.020	25897	2.564	0.000	0.000	0.023	0.023	5
Ten Daily III	2.318	0.000	0.000	0.020	0.020	4	3.177	0.000	0.000	14.270	14.270	4402	2.747	0.000	0.000	0.101	0.101	26
Monthly																		
Total						20						46929						85

Annual Sediment Load (Metric Tonnes) : 385502

Annual Sediment Load for period : 2002-2018

Station Name : CHAMPUA (EC000R5) **Division : E.E., Bhubaneswar**

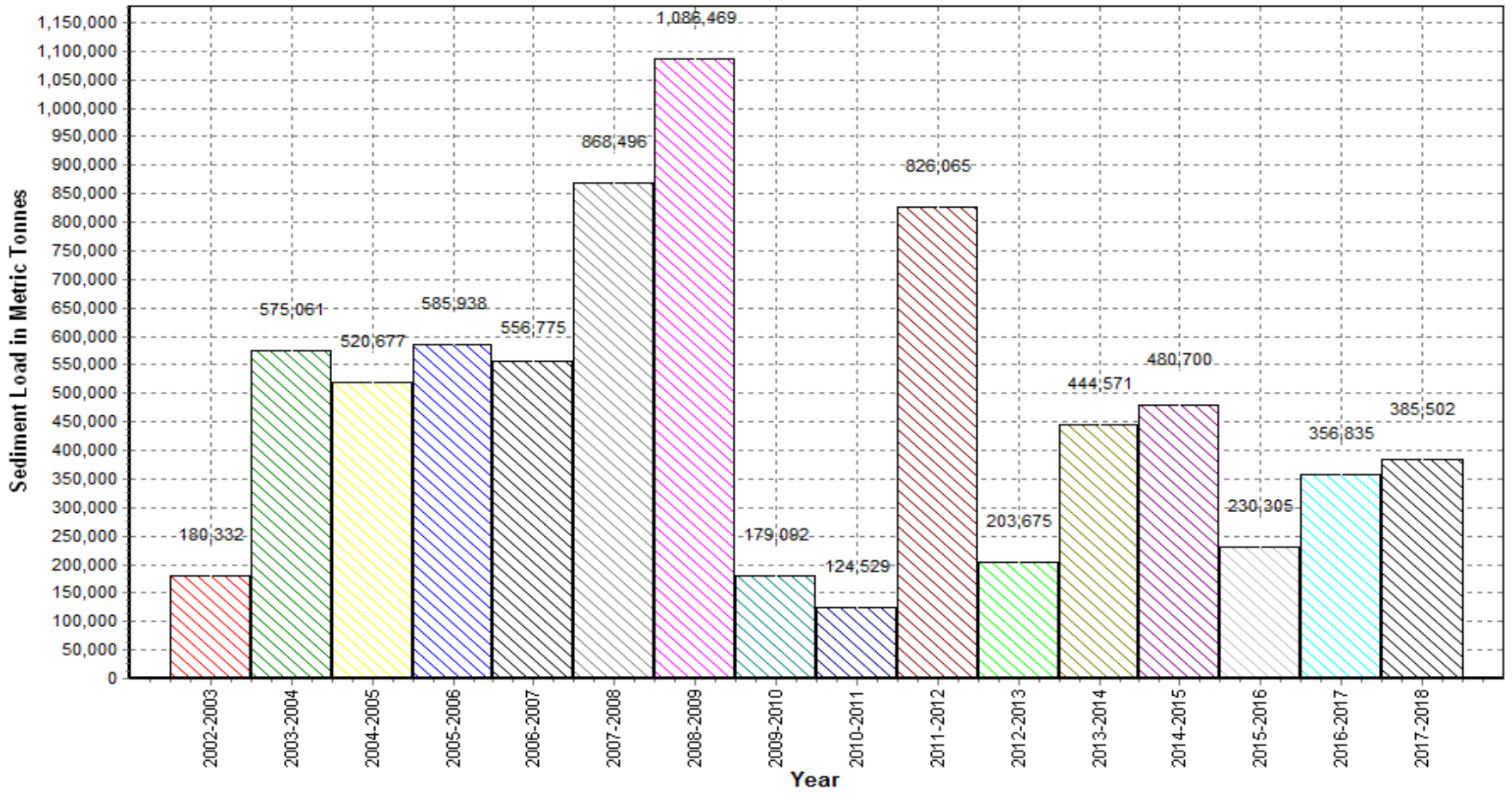
Local River : Baitarani **Sub-Division : Bhubaneswar**

Year	Monsoon (M.T.)	Non-Monsoon (M.T.)	Annual Load (M.T.)	Annual Run Off (MCM)
2002-2003	178766	1566	180332	478
2003-2004	573618	1443	575061	930
2004-2005	519075	1602	520677	891
2005-2006	583976	1962	585938	1144
2006-2007	554886	1890	556775	1178
2007-2008	865725	2771	868496	1729
2008-2009	1085022	1448	1086469	1422
2009-2010	178094	998	179092	771
2010-2011	119800	4729	124529	440
2011-2012	821117	4948	826065	1667
2012-2013	203423	252	203675	757
2013-2014	443770	802	444571	1250
2014-2015	480249	451	480700	1081
2015-2016	229591	714	230305	703
2016-2017	349563	7271	356835	687
2017-2018	338364	47138	385502	1104

Annual Sediment Load for the period: 2002-2018

Station Name : CHAMPUA (EC000R5) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**



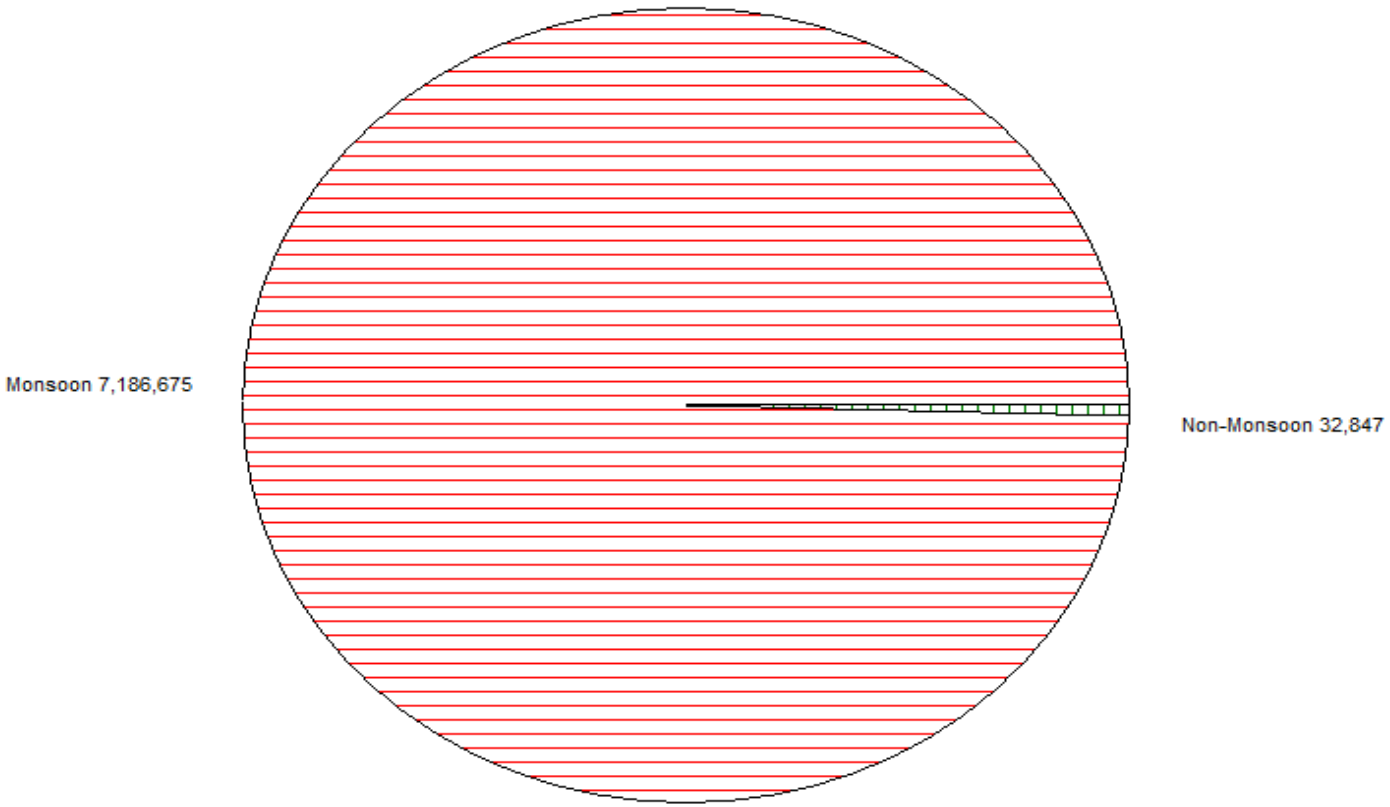
Seasonal Sediment Load for the period : 2002-2017

Station Name : CHAMPUA (EC000R5)

Local River : Baitarani

Division : E.E., Bhubaneswar

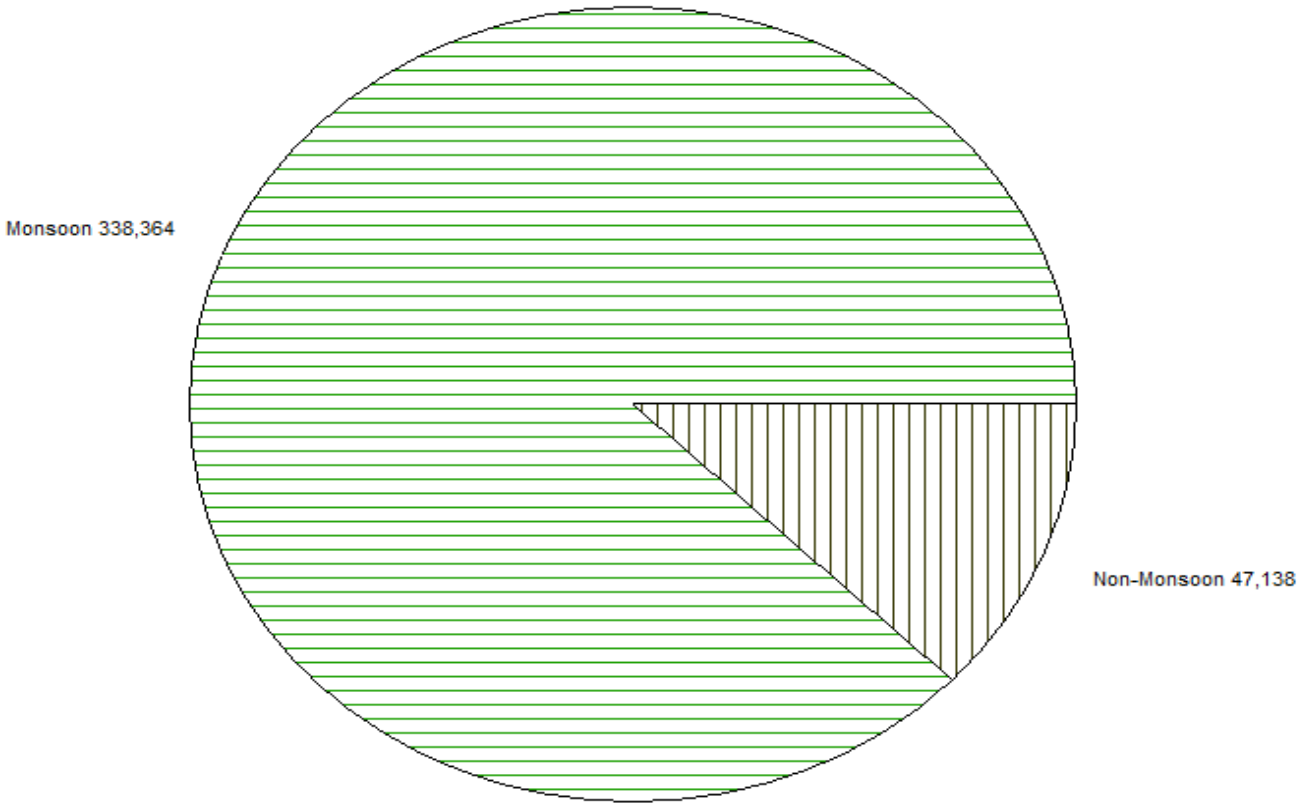
Sub-Division : Bhubaneswar



Seasonal Sediment Load for the Year: 2017-2018

Station Name : CHAMPUA (EC000R5) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**



Water Quality Datasheet for the period : 2017-2018

Station Name : CHAMPUA (EC000R5) **Division : E.E., Bhubaneswar**

Local River : Baitarani **River Water Analysis** **Sub-Division : Bhubaneswar**

S.No	Parameters	01/06/2017	01/07/2017	01/08/2017	01/09/2017	03/10/2017	01/11/2017	01/12/2017	01/01/2018	01/02/2018	01/03/2018	02/04/2018	01/05/2018
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Clear	Light Brown	Light Brown	Light Brown	Light Brown	Clear	Clear	Clear	Clear	Clear	Clear	Clear
3	EC_FLD (µmho/cm)	205	218	199	252	119	110	179	148	150	198	128	220
4	EC_GEN (µmho/cm)	190	210	190	240	114	107	171	145	145	192	120	218
5	Odour_Code (-)	odour free	odour free	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	7.4	7.5	7.2	7.1	6.9	7.5	7.5	7.8	8.0	7.2	7.4
7	pH_GEN (pH units)	7.2	7.3	7.4	7.3	7.2	6.8	7.6	7.4	8.0	7.9	7.1	7.3
8	Temp (deg C)	29.0	29.0	27.0	27.5	26.5	24.5	19.0	17.5	18.0	23.0	26.0	29.0
	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
2	ALK-TOT (mgCaCO3/L)	74	32	32	46	60	46	60	65	92	79	51	60
3	B (mg/L)	0.01	0.02	0.03	0.01	0.01	0.02	0.02	0.03	0.01	0.03	0.02	0.03
4	Ca (mg/L)	18	19	21	22	18	17	44	24	29	24	22	18
5	Cl (mg/L)	20.8	11.3	13.2	11.3	8.7	10.4	10.4	12.1	8.7	12.1	13.8	12.1
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
7	F (mg/L)	0.05	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)	0.6	0.5	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.5	0.4	0.5
9	HCO3 (mg/L)	90	39	39	56	73	56	73	79	113	96	62	73
10	K (mg/L)	4.2	1.8	1.3	1.6	2.1	2.3	2.4	2.5	0.8	0.9	1.3	3.0
11	Mg (mg/L)	8.8	9.7	10.7	10.7	7.2	4.8	10.3	7.2	7.9	10.3	8.7	4.8
12	Na (mg/L)	4.6	2.0	1.7	2.2	2.8	2.9	3.8	31.9	1.5	2.3	2.9	3.8
13	NO2+NO3 (mg N/L)	1.19	1.23	1.19	1.22	1.19	1.22	1.18	1.16	1.18	1.25	1.22	1.23
14	NO2-N (mgN/L)	0.01	0.03	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	NO3-N (mgN/L)	1.18	1.21	1.18	1.19	1.19	1.22	1.18	1.16	1.18	1.25	1.22	1.23
16	P-Tot (mgP/L)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
17	SiO2 (mg/L)	9.5	9.4	8.2	7.8	6.0	9.7	6.6	7.4	9.0	8.5	7.4	6.8
18	SO4 (mg/L)	10.8	12.6	13.3	4.0	11.4	11.6	11.8	11.9	12.0	3.4	6.4	8.8
	BIOLOGICAL/BACTERIOLOGICAL												
	TRACE & TOXIC												
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	44	48	52	56	46	43	111	59	72	59	56	46
2	HAR_Total (mgCaCO3/L)	81	89	97	101	76	62	154	89	105	102	92	66
3	Na% (%)	10	5	4	4	7	9	5	43	3	5	6	11
4	RSC (-)	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	SAR (-)	0.2	0.1	0.1	0.1	0.1	0.2	0.1	1.5	0.1	0.1	0.1	0.2
	PESTICIDES												

Water Quality Summary for the period : 2017-2018

Station Name : CHAMPUA (EC000R5) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	12	252	110	177
3	EC_GEN (µmho/cm)	12	240	107	170
4	pH_FLD (pH units)	12	8.0	6.9	7.4
5	pH_GEN (pH units)	12	8.0	6.8	7.4
6	Temp (deg C)	12	29.0	17.5	24.7
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	0.0	0.0	0
2	ALK-TOT (mgCaCO3/L)	12	92	32	58
3	B (mg/L)	12	0.03	0.01	0.02
4	Ca (mg/L)	12	44	17	23
5	Cl (mg/L)	12	20.8	8.7	12.1
6	CO3 (mg/L)	12	0.0	0.0	0
7	F (mg/L)	12	0.05	0.05	0.05
8	Fe (mg/L)	12	0.6	0.4	0.5
9	HCO3 (mg/L)	12	113	39	71
10	K (mg/L)	12	4.2	0.8	2
11	Mg (mg/L)	12	10.7	4.8	8.4
12	Na (mg/L)	12	31.9	1.5	5.2
13	NO2+NO3 (mg N/L)	12	1.25	1.16	1.2
14	NO2-N (mgN/L)	12	0.03	0.00	0.01
15	NO3-N (mgN/L)	12	1.25	1.16	1.2
16	P-Tot (mgP/L)	12	0.001	0.001	0.001
17	SiO2 (mg/L)	12	9.7	6.0	8
18	SO4 (mg/L)	12	13.3	3.4	9.8
	BIOLOGICAL/BACTERIOLOGICAL				
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	111	43	58
2	HAR_Total (mgCaCO3/L)	12	154	62	93
3	Na% (%)	12	43	3	9
4	RSC (-)	12	0.0	0.0	0
5	SAR (-)	12	1.5	0.1	0.2
	PESTICIDES				

Water Quality Seasonal Average for the period: 2003-2018

Station Name : CHAMPUA (EC000R5) **Division : E.E., Bhubaneswar**

Local River : Baitarani **River Water** **Sub-Division : Bhubaneswar**

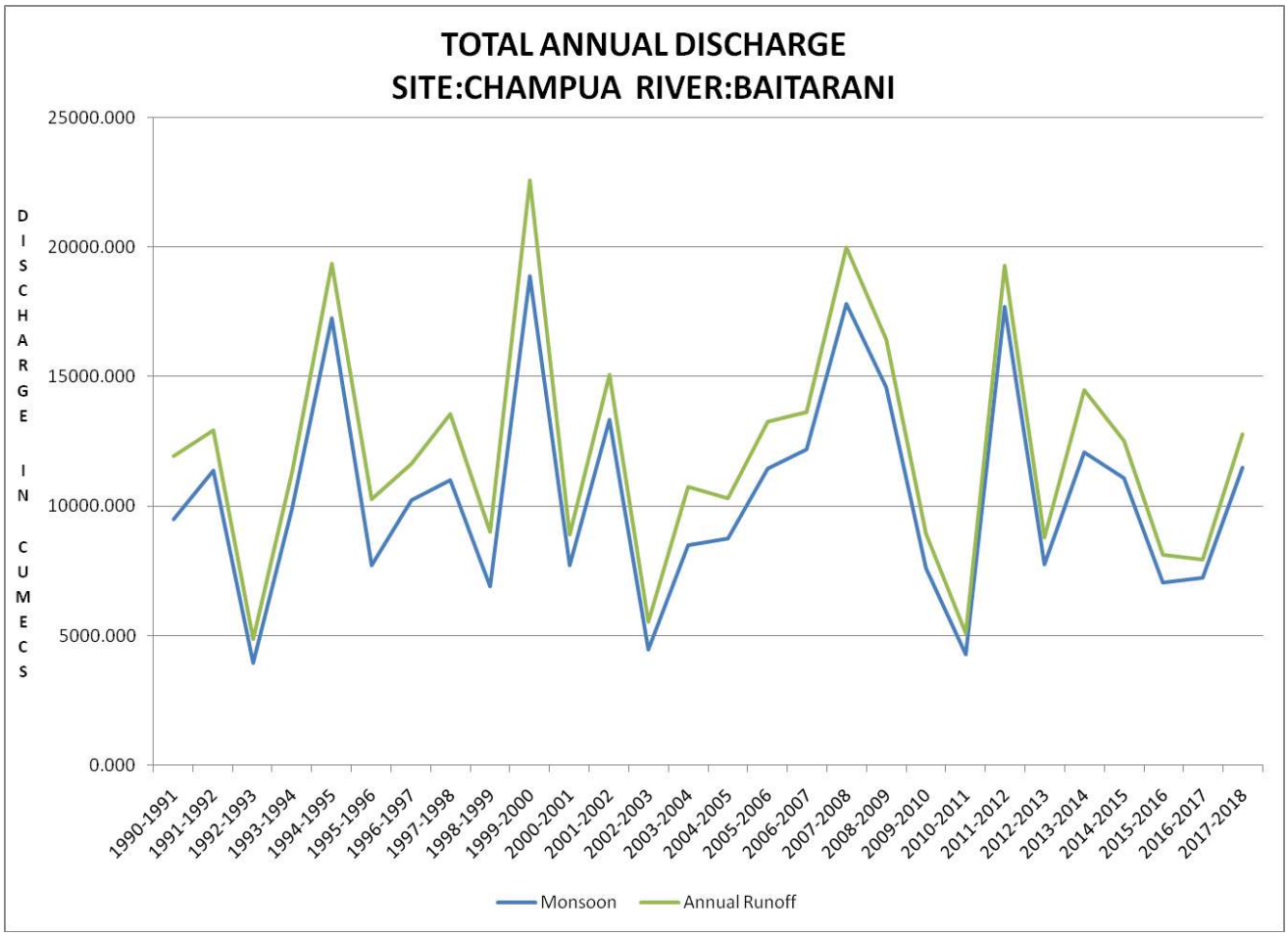
S.No	Parameters	Flood																				
		Jun - Oct																				
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
	PHYSICAL																						
1	Q (cumec)																						
2	EC_FLD (µmho/cm)		88			133		115	129	94	107	135	162	191	176	199		103			85		91
3	EC_GEN (µmho/cm)		88			131		115	129	94	107	135	162	189	179	189		103			78		91
4	pH_FLD (pH units)		7.6			7.5		7.6	7.6	8.1	7.6	7.4	7.3	6.8	7.5	7.3		7.8			7.5		7.5
5	pH_GEN (pH units)		7.6			7.5		7.6	7.6	8.1	7.6	7.4	7.3	7.0	7.5	7.3		7.8			7.5		7.5
6	Temp (deg C)		25.7			23.7		27.5	28.0	26.0	26.9	26.8	27.5	24.3	28.0	27.8		23.0			22.0		19.5
	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
2	ALK-TOT (mgCaCO3/L)		39			64		40	41	55		56		72	59	49					55		26
3	B (mg/L)		0.00			0.00		0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02		0.00			0.00		0.00
4	Ca (mg/L)		9			12		10	12	12	20	12	22	24	21	20		10			7		8
5	Cl (mg/L)		5.4			11.8		9.1	9.4	12.6	14.1	13.3	10.4	12.6	25.1	13.0		6.8			9.5		10.7
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
7	F (mg/L)		0.48			0.00		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05		0.56			0.00		0.00
8	Fe (mg/L)		0.1			0.0		0.0	0.1	0.0	1.4	0.1	0.6	0.4	0.8	0.5		0.3			0.0		0.0
9	HCO3 (mg/L)		33			54		44	50	68	108	64	88	88	71	60		51			26		32
10	K (mg/L)		1.6			1.8		1.6	1.7	1.4	3.8	1.0	2.8	4.6	4.9	2.2		1.3			0.4		1.0
11	Mg (mg/L)		2.9			4.2		4.9	4.9	3.6	4.1	2.2	9.7	12.6	11.0	9.4		3.4			1.8		3.4
12	Na (mg/L)		3.7			7.8		5.4	5.5	2.3	5.8	4.1	5.5	6.7	9.7	2.7		4.5			6.0		6.1
13	NO2+NO3 (mg N/L)		0.38			0.51		0.51	0.78	0.37	0.96	0.64	0.90	0.99	1.07	1.20		0.40			0.81		0.46
14	NO2-N (mgN/L)		0.00			0.00		0.00	0.00	0.07	0.01	0.00	0.00	0.02	0.04	0.02		0.00			0.00		0.00
15	NO3-N (mgN/L)		0.38			0.51		0.51	0.78	0.30	0.95	0.64	0.90	0.96	1.03	1.19		0.40			0.81		0.46
16	o-PO4-P (mg P/L)		0.000			0.000		0.000													0.000		0.000
17	P-Tot (mgP/L)		0.001			0.001		0.007	0.004	0.010	0.001	0.001	0.001	0.004	0.010	0.001		0.001			0.001		0.010
18	SiO2 (mg/L)		19.3			9.1		8.0	8.0	9.3	16.4	9.4	6.7	6.0	6.7	8.2		20.4			6.3		7.9
19	SO4 (mg/L)		6.4			4.6		5.4	5.1	7.4	14.2	13.7	8.9	5.8	8.8	10.4		1.6			2.7		2.2
	BIOLOGICAL/BACTERIOLOGICAL																						
	TRACE & TOXIC																						
	CHEMICAL INDICES																						
1	HAR_Ca (mgCaCO3/L)		22			31		24	29	29	51	30	55	59	52	49		26			19		20
2	HAR_Total (mgCaCO3/L)		32			48		44	50	44	68	39	95	111	98	88		40			26		34
3	Na% (%)		19			28		19	19	10	14	18	10	11	16	6		19			33		28
4	RSC (-)		0.0			0.0		0.0	0.0	0.3	0.4	0.3	0.0	0.0	0.0	0.0		0.0			0.0		0.0
5	SAR (-)		0.3			0.5		0.3	0.3	0.1	0.3	0.3	0.2	0.3	0.4	0.1		0.3			0.5		0.5
	PESTICIDES																						

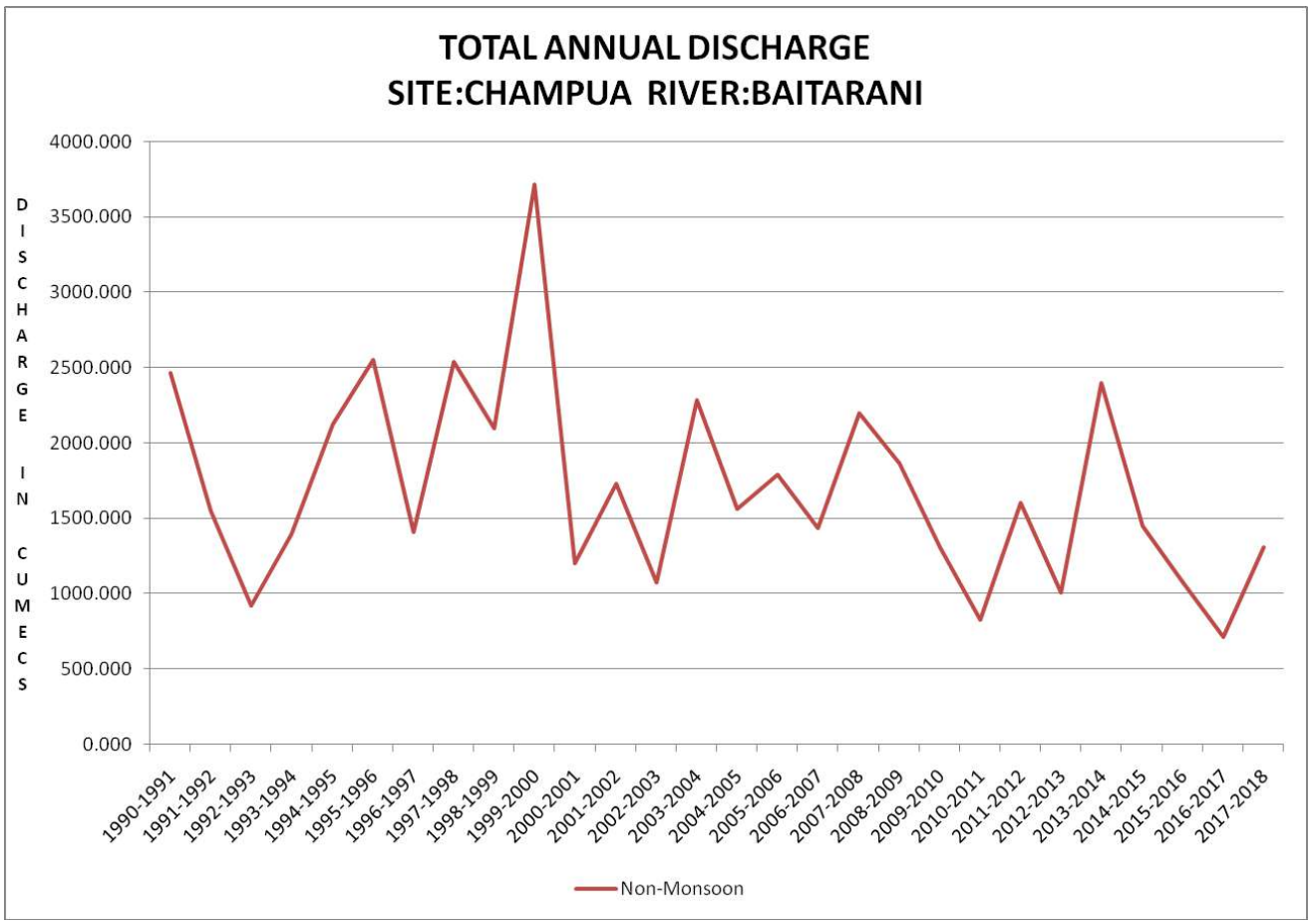
Water Quality Seasonal Average for the period: 2003-2018

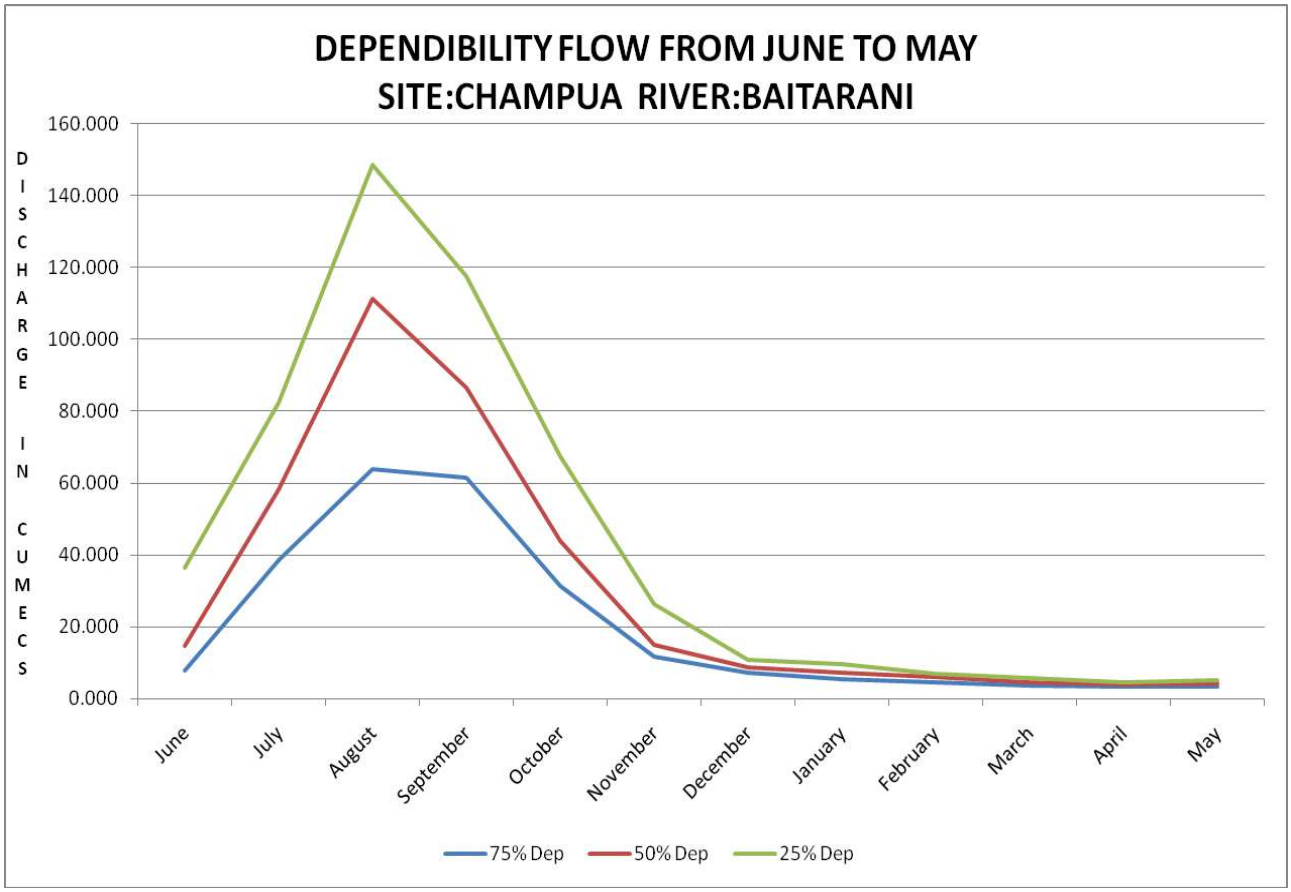
Station Name : CHAMPUA (EC000R5) **Division : E.E., Bhubaneswar**

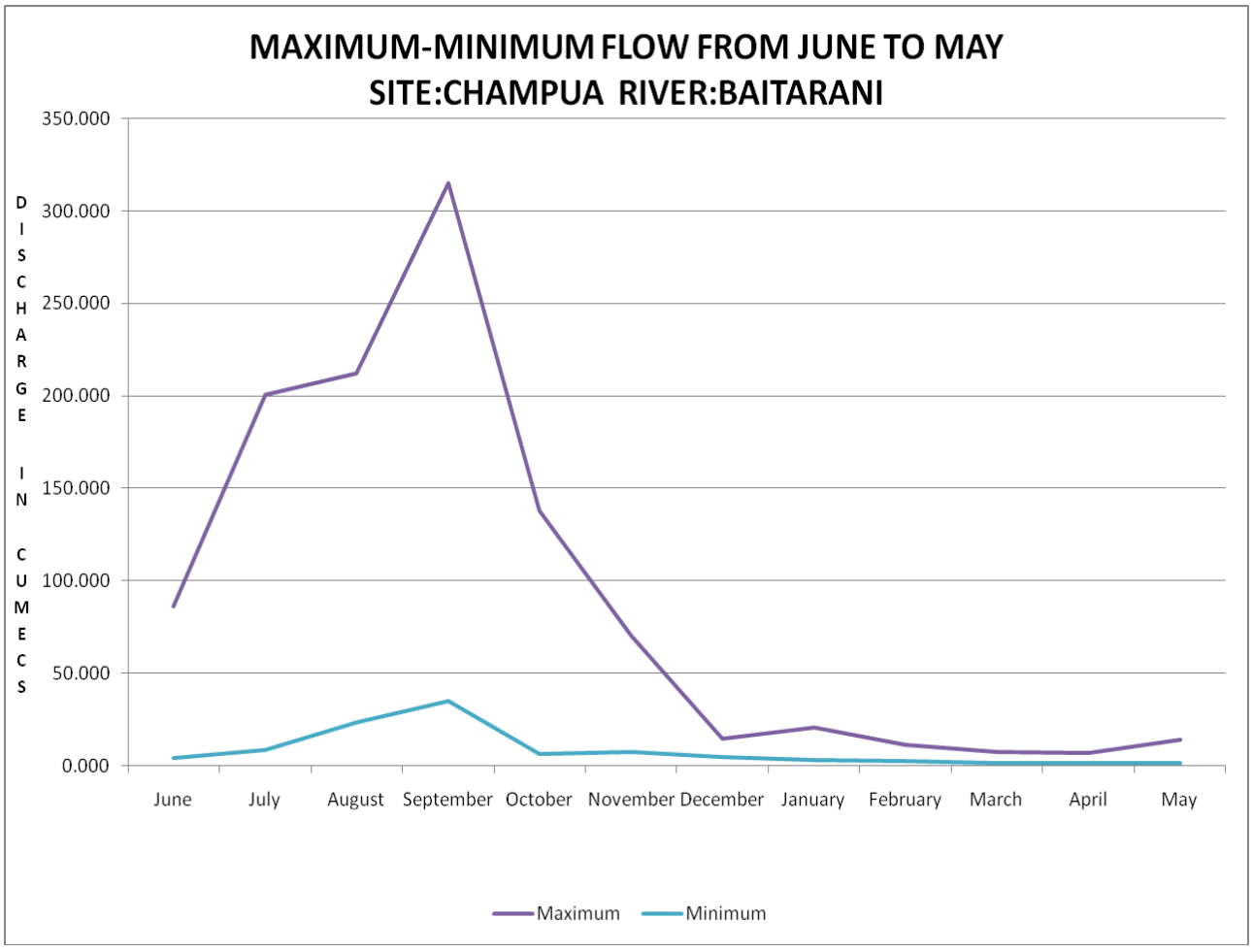
Local River : Baitarani **River Water** **Sub-Division : Bhubaneswar**

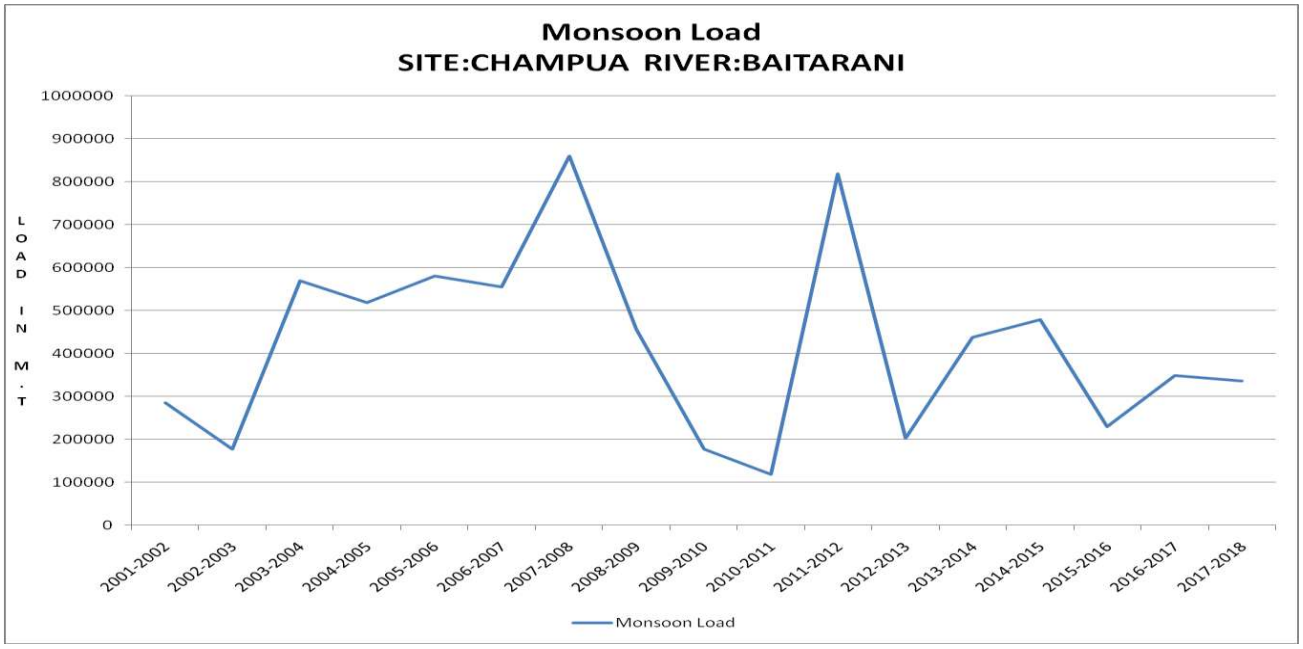
S.No	Parameters	Winter								Summer														
		Nov - Feb								Mar - May														
		2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	PHYSICAL																							
1	Q (cumec)																							
2	EC_FLD (µmho/cm)	183	106	101	120	200	269	212	147					100		142	195	138	103	114	180	254	165	182
3	EC_GEN (µmho/cm)	183	106	101	120	200	265	215	142					105		142	194	138	103	114	180	266	168	177
4	pH_FLD (pH units)	7.5	7.8	7.4	7.4	7.2	7.4	7.2	7.4					8.1		7.8	7.8	7.6	7.2	7.6	7.4	7.9	7.1	7.5
5	pH_GEN (pH units)	7.5	7.8	7.4	7.3	7.2	7.9	7.3	7.4					8.1		7.8	7.8	7.6	7.2	7.6	7.4	7.6	7.2	7.4
6	Temp (deg C)	21.5	19.0	19.6	25.3	18.8	27.5	24.5	19.8					22.5		28.0	26.5		23.1	26.5	26.5	23.0	27.0	26.0
	CHEMICAL																							
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0			6.9	0.0	0.0							0.0		0.0				0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	59	60	65			62	58	66							58		55				51	60	63
3	B (mg/L)	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.02					0.00		0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.03
4	Ca (mg/L)	14	12	15	14	10	21	42	28					11		13	18	18	20	13	22	29	61	21
5	Cl (mg/L)	15.1	12.3	18.7	14.3	11.3	17.9	18.9	10.4					7.8		5.6	15.1	24.5	22.6	12.5	32.1	24.5	7.5	12.7
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	8.3	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)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05					0.23		0.00	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
8	Fe (mg/L)	0.1	0.0	3.0	0.1	0.4	0.2	0.3	0.4							0.0	0.2	0.0	2.2	0.1	0.3	0.3	0.5	0.5
9	HCO3 (mg/L)	72	73	84	62	57	59	70	80					46		71	79	68	117	73	96	62	73	77
10	K (mg/L)	2.3	1.1	2.2	1.0	1.6	5.6	3.9	2.0					0.6		2.1	2.6	1.6	5.9	0.6	2.3	1.8	3.6	1.7
11	Mg (mg/L)	6.8	5.8	6.6	4.1	5.4	11.7	19.0	7.5					2.9		6.8	7.8	4.9	6.3	1.8	6.8	13.6	26.3	7.9
12	Na (mg/L)	8.6	2.6	7.4	4.2	9.0	13.1	19.0	10.0					5.8		3.3	7.9	2.9	12.6	3.2	9.8	37.0	24.1	3.0
13	NO2+NO3 (mg N/L)	0.72	0.36	1.02	0.56	0.95	0.81	0.99	1.18					0.90		0.38	0.94	0.39	0.95	0.67	0.81	0.78	1.23	1.23
14	NO2-N (mgN/L)	0.00	0.07	0.00	0.01	0.01	0.01	0.01	0.00					0.00		0.00	0.00	0.07	0.00	0.00	0.00	0.01	0.01	0.00
15	NO3-N (mgN/L)	0.72	0.29	1.02	0.55	0.93	0.80	0.97	1.18					0.90		0.38	0.94	0.32	0.95	0.67	0.81	0.77	1.22	1.23
16	o-PO4-P (mg P/L)													0.010		0.000								
17	P-Tot (mgP/L)	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001					0.050		0.010	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001
18	SiO2 (mg/L)	9.2	7.5	19.4	10.3	6.0	5.0	6.0	8.2					9.8		8.7	9.5	7.0	24.6	8.6	3.0	5.0	8.0	7.6
19	SO4 (mg/L)	5.4	1.3	4.0	11.7	1.8	54.0	5.4	11.9					1.9		2.0	2.9	29.7	6.5	16.2	12.6	52.9	6.0	6.2
	BIOLOGICAL/BACTERIOLOGICAL																							
	TRACE & TOXIC																							
	CHEMICAL INDICES																							
1	HAR_Ca (mgCaCO3/L)	34	30	38	35	26	52	104	71					28		32	44	44	49	32	56	72	152	53
2	HAR_Total (mgCaCO3/L)	62	54	66	52	48	101	183	103					40		60	77	64	75	39	84	129	262	86
3	Na% (%)	22	9	18	15	24	21	19	15					24		10	18	9	25	15	20	38	17	7
4	RSC (-)	0.0	0.2	0.1	0.1	0.1	0.0	0.0	0.0					0.0		0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0
5	SAR (-)	0.5	0.2	0.4	0.3	0.5	0.6	0.6	0.5					0.4		0.2	0.4	0.2	0.6	0.2	0.5	1.4	0.7	0.1
	PESTICIDES																							

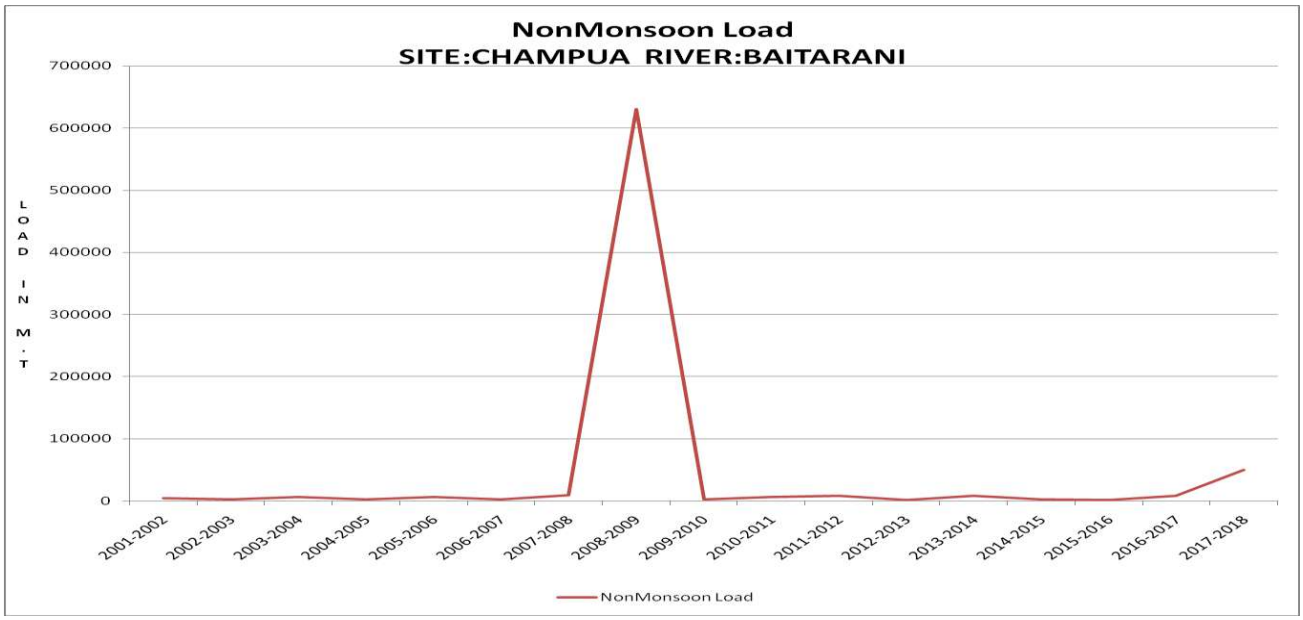

TOTAL ANNUAL DISCHARGE
SITE:CHAMPUA RIVER:BAITARANI
DISCHARGE IN CUMECS
25000.000
20000.000
15000.000
10000.000
5000.000
0.000
1990-1991
1991-1992
1992-1993
1993-1994
1994-1995
1995-1996
1996-1997
1997-1998
1998-1999
1999-2000
2000-2001
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
Monsoon
Annual Runoff

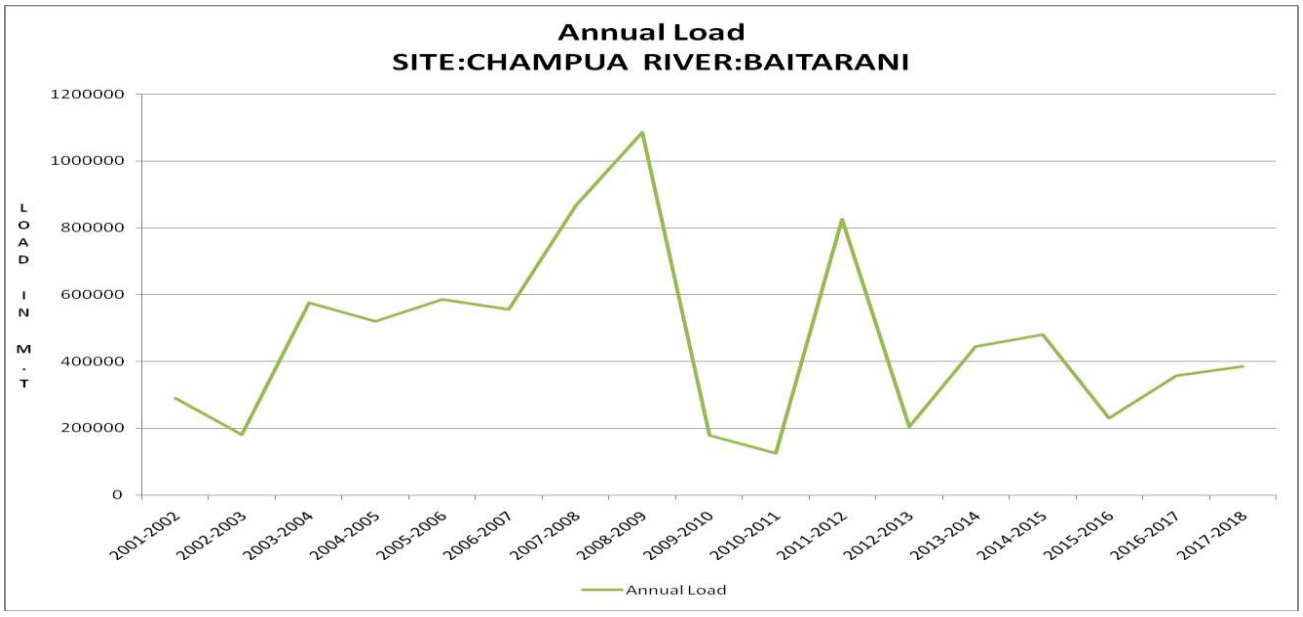

TOTAL ANNUAL DISCHARGE
SITE:CHAMPUA RIVER:BAITARANI
DISCHARGE IN CUMECS
4000.000
3500.000
3000.000
2500.000
2000.000
1500.000
1000.000
500.000
0.000
1990-1991
1991-1992
1992-1993
1993-1994
1994-1995
1995-1996
1996-1997
1997-1998
1998-1999
1999-2000
2000-2001
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
Non-Monsoon

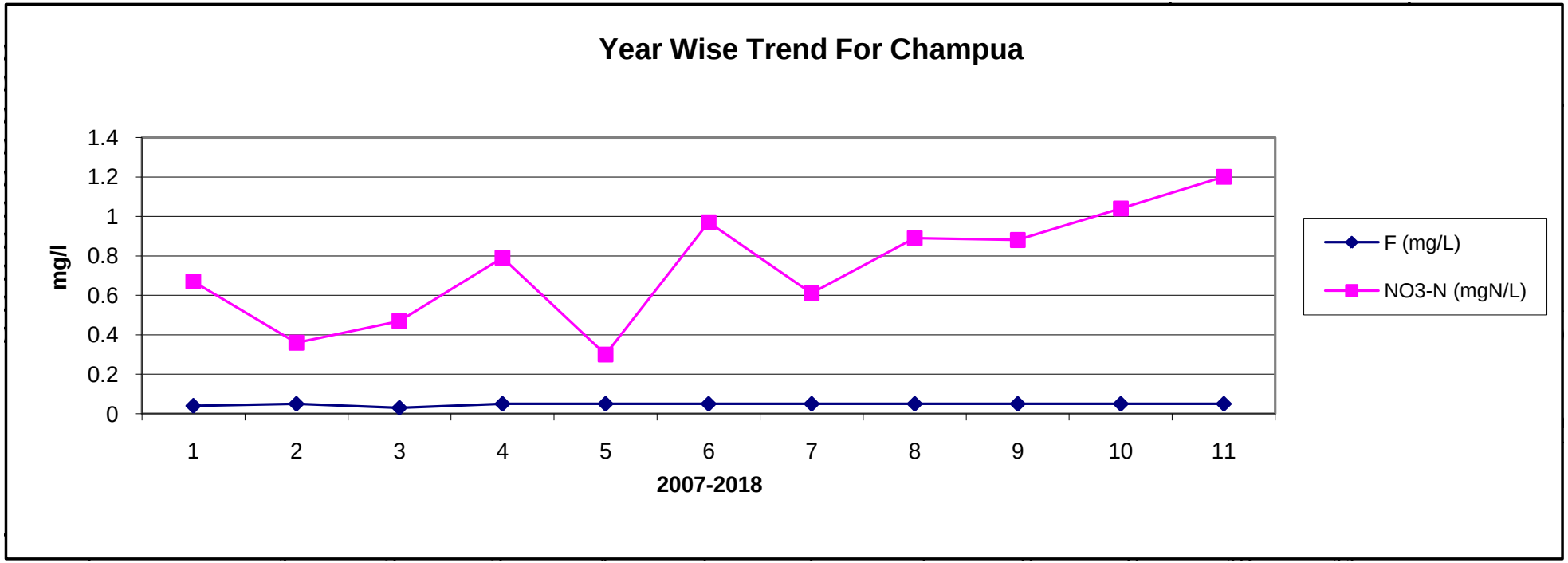

DEPENDIBILITY FLOW FROM JUNE TO MAY
SITE:CHAMPUA RIVER:BAITARANI
DISCHARGE IN CUMECS
160.000
140.000
120.000
100.000
80.000
60.000
40.000
20.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
75% Dep
50% Dep
25% Dep

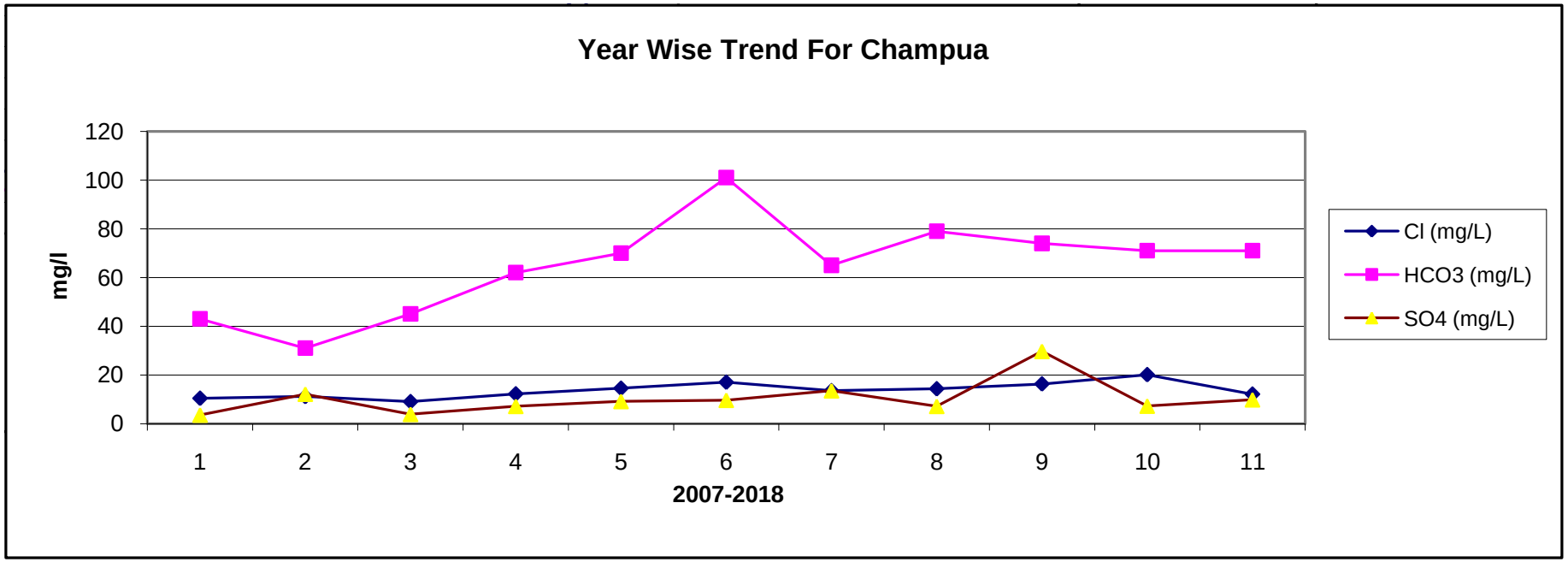

MAXIMUM-MINIMUM FLOW FROM JUNE TO MAY
SITE:CHAMPUA RIVER:BAITARANI
DISCHARGE IN CUMECS
350.000
300.000
250.000
200.000
150.000
100.000
50.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
Maximum
Minimum

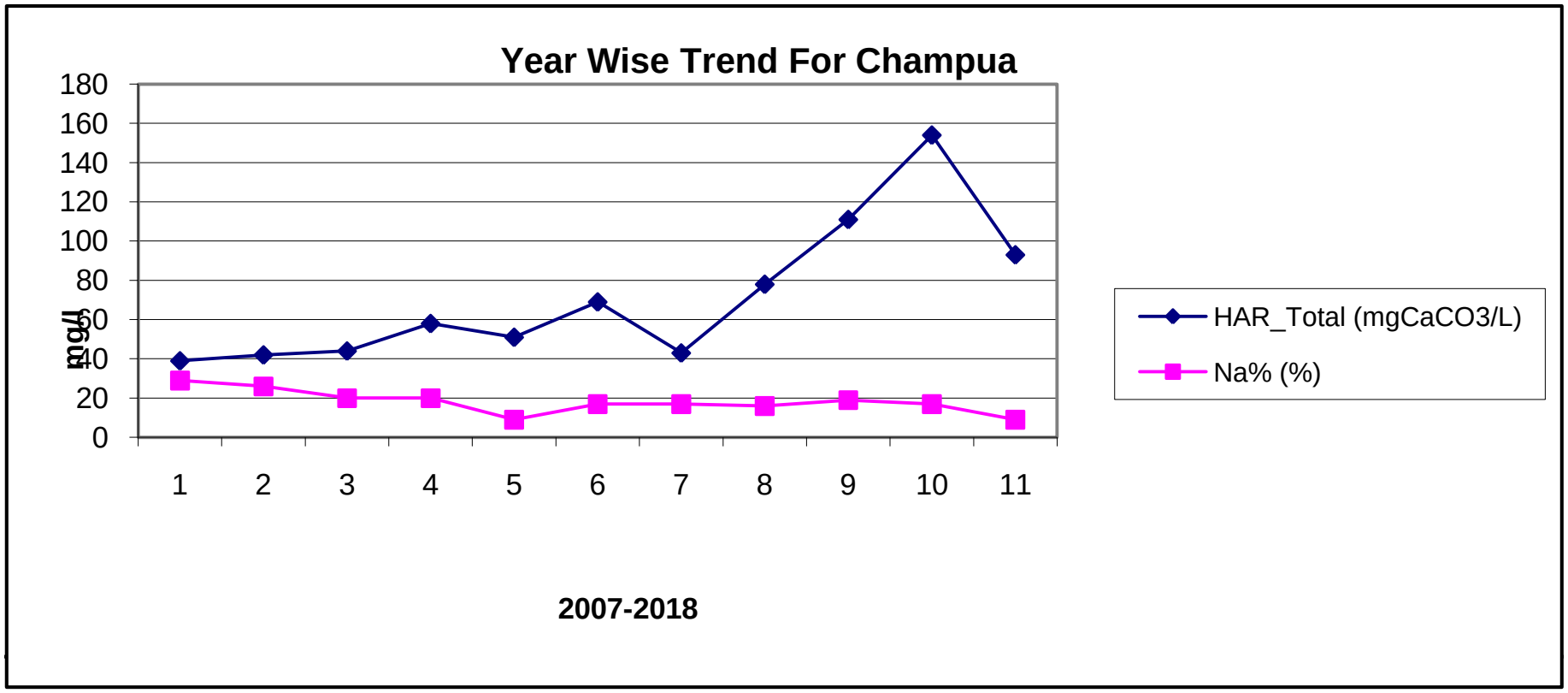

Monsoon Load
SITE:CHAMPUA RIVER:BAITARANI
LOAD IN M.T
1000000
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
Monsoon Load

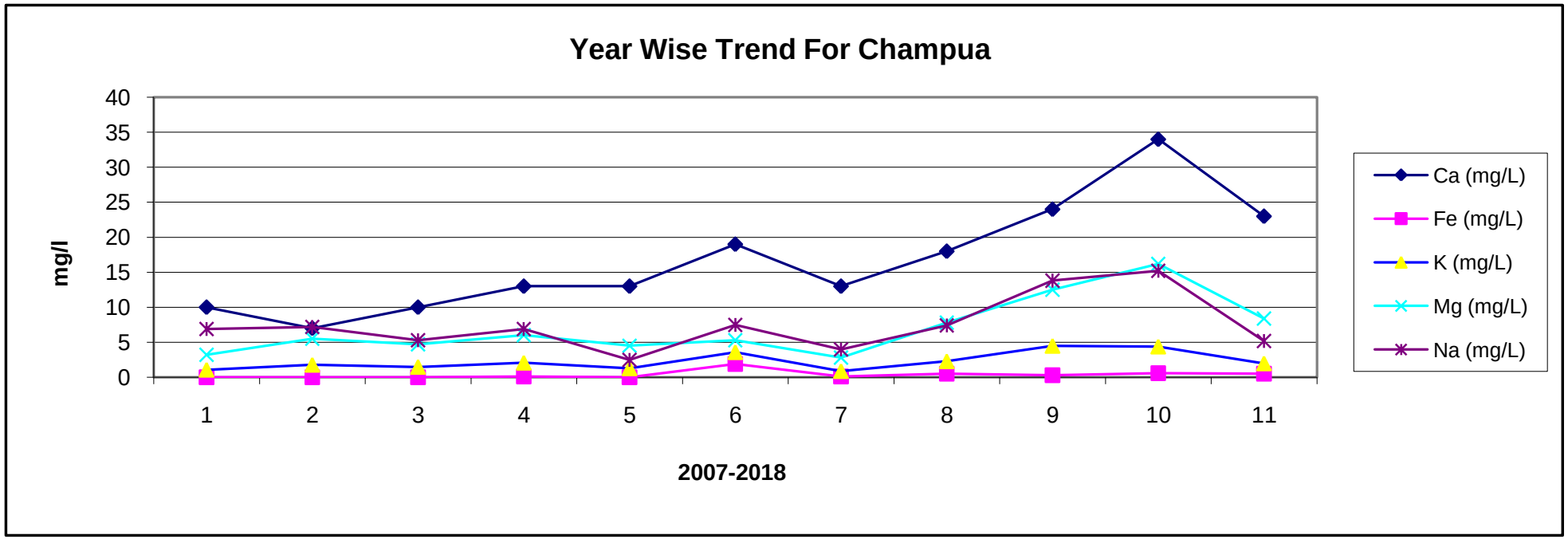

NonMonsoon Load
SITE:CHAMPUA RIVER:BAITARANI
LOAD IN M.T
700000
600000
500000
400000
300000
200000
100000
0
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
NonMonsoon Load


Annual Load
SITE:CHAMPUA RIVER:BAITARANI
LOAD IN M.T
1200000
1000000
800000
600000
400000
200000
0
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
Annual Load


Year Wise Trend For Champua
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
2007-2018
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend For Champua
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year Wise Trend For Champua
180
160
140
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For Champua
mg/l
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Ca (mg/L)
Fe (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

HISTORY SHEET

Water Year : 2017-2018

Site	:	**ANANDPUR**	**Code**	:	**EC000K3**
State	:	Orissa	District		Keonjhar
Basin	:	Brahmani-Baitarani	Independent River	:	Baitarani
Tributary	:	Baitarani	Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	Baitarani
Division	:	E.E., Bhubaneswar	Sub-Division	:	Bhubaneswar
Drainage Area	:	8570 Sq. Km.	Bank	:	Right
Latitude	:	21°12'34"	Longitude	:	86°07'23"
Zero of Gauge (m)	:	28 (m.s.l)	1/1/1970	-	12/31/2050
		Opening Date	Closing Date		
Gauge	:	3/7/1972			
Discharge	:	3/7/1972			
Sediment	:	6/1/1972			
Water Quality	:	9/1/1972			

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

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1972-1973	4426	38.745	9/12/1972	1.500	32.565	4/27/1973
1973-1974	8100	39.918	9/3/1973	2.700	32.415	5/13/1974
1974-1975	3902	39.005	8/16/1974	1.500	32.320	5/17/1975
1975-1976	10394	40.625	8/19/1975	3.400	32.295	5/9/1976
1976-1977	2299	38.195	8/14/1976	2.900	32.200	3/25/1977
1977-1978	1568	36.455	7/6/1977	3.500	32.300	4/19/1978
1978-1979	3254	38.535	9/2/1978	1.600	32.305	5/28/1979
1979-1980	4936	39.178	8/8/1979	0.996	32.130	5/15/1980
1980-1981	1078	36.023	6/23/1980	3.447	32.225	4/17/1981
1981-1982	2631	37.140	6/22/1981	3.492	32.290	5/10/1982
1982-1983	1635	36.830	8/22/1982	1.920	32.310	4/13/1983
1983-1984	4189	38.670	9/17/1983	1.338	32.665	5/10/1984
1984-1985	3666	38.480	8/27/1984	1.318	32.585	4/25/1985
1985-1986	7974	39.675	10/16/1985	4.100	32.710	4/21/1986
1986-1987	1052	36.353	10/3/1986	2.900	32.610	4/27/1987
1987-1988	869.4	35.945	7/18/1987	2.700	32.640	2/17/1988
1988-1989	4294	39.168	8/3/1988	0.500	32.380	5/11/1989
1989-1990	5482	39.345	8/4/1989	2.600	32.805	2/14/1990
1990-1991	2835	37.680	7/15/1990	2.570	32.650	5/23/1991
1991-1992	4760	38.900	8/13/1991	2.590	32.810	5/1/1992
1992-1993	869.4	35.990	8/16/1992	1.347	32.730	4/8/1993
1993-1994	4075	37.745	7/16/1993	2.000	32.990	4/3/1994

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	4223	38.650	6/29/1994	2.960	33.090	5/2/1995
1995-1996	5218	38.923	8/9/1995	3.105	33.100	5/23/1996
1996-1997	5450	39.095	6/23/1996	2.928	33.100	3/24/1997
1997-1998	5762	39.300	8/6/1997	5.260	33.140	6/1/1997
1998-1999	1363	36.650	9/13/1998	1.298	33.140	5/5/1999
1999-2000	5856	39.500	10/30/1999	9.590	33.390	4/13/2000
2000-2001	2528	38.210	9/15/2000	5.488	33.235	3/22/2001
2001-2002	2788	38.245	7/4/2001	4.953	33.200	5/16/2002
2002-2003	1030	36.715	9/11/2002	3.724	33.075	4/30/2003
2003-2004	1998	38.015	7/31/2003	3.256	33.175	5/28/2004
2004-2005	3728	38.565	8/21/2004	5.177	33.220	3/9/2005
2005-2006	4106	39.160	6/29/2005	4.500	33.145	5/7/2006
2006-2007	3134	38.730	8/23/2006	8.151	33.140	4/30/2007
2007-2008	5779	39.750	9/24/2007	8.678	33.125	6/1/2007
2008-2009	6328	68.140	6/18/2008	5.600	33.100	5/10/2009
2009-2010	1844	37.500	7/21/2009	2.000	33.160	5/2/2010
2010-2011	567.7	35.495	9/20/2010	3.844	32.890	4/1/2011
2011-2012	7424	40.085	9/23/2011	6.000	33.000	4/8/2012
2012-2013	750.0	36.720	8/12/2012	0.008	28.008	3/10/2013
2013-2014	4840	40.240	10/14/2013	2.933	32.880	5/24/2014
2014-2015	7689	40.920	8/5/2014	4.127	32.795	4/16/2015
2015-2016	2382	38.645	7/28/2015	0.000	32.520	5/11/2016
2016-2017	1435	36.310	8/18/2016	0.000	32.760	2/13/2017
2017-2018	2506	38.350	7/25/2017	0.000	32.770	1/5/2018

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

Stage-Discharge Data for the period 2017 - 2018

Station Name : ANANDPUR (EC000K3) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**

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	32.600	1.272	33.870	66.13	34.920	411.8	34.545	254.0	34.405	250.0 *	33.570	122.7
2	32.590	1.289			34.460	208.6			34.325	240.0 *	33.550	121.4
3	32.590	1.265	33.610	69.44	34.230	156.9			34.450	250.8	33.490	114.0
4			33.380	63.52	35.060	395.4	34.820	381.7	34.625	281.2		
5	32.690	2.374	33.580	67.20	35.170	410.4	34.480	290.0	34.645	293.9		
6	32.670	2.141	33.380	64.04	35.640	640.4 *	34.340	261.8	34.350	251.3	33.430	97.56
7	32.660	2.083	33.360	62.32	35.400	553.1	34.290	232.0	34.140	208.6	33.410	94.91
8	32.650	2.007	33.400	64.27	34.780	367.6	34.285	229.6	34.075	190.0 *	35.400	90.69
9	32.640	1.912			34.490	231.9	34.385	256.7	34.210	224.3	33.370	86.14
10	32.630	1.823	33.300	23.81	34.640	292.3			34.130	206.5	33.330	80.27
11			33.230	20.37	34.560	230.9	34.355	245.3	33.980	184.8	33.280	77.24
12	32.630	1.780	33.200	19.53	34.180	160.2	34.290	230.8	33.850	168.9		
13	32.620	1.733	33.350	24.69	34.050	140.0 *	34.560	287.8	33.790	152.8	33.200	68.59
14	32.620	1.689	33.460	27.70	34.280	173.0	34.760	337.2	33.790	150.6	33.180	65.32
15	32.610	1.630	34.045	47.59	34.825	340.0 *	34.880	369.3	34.090	195.0 *	33.300	78.59
16	32.610	1.638			35.155	395.0	34.570	295.8	33.940	159.3	33.550	99.61
17	31.700	2.444	34.120	64.72	34.910	380.4			33.740	145.5	33.160	58.04
18			34.000	50.17	34.970	384.5	34.330	259.6	33.590	140.9	33.150	56.96
19	28.000	32.68	33.900	47.30	35.200	407.4	35.285	407.2	33.550	130.0 *	33.275	132.3
20	32.670	2.304	34.060	83.63	34.850	350.0 *	35.215	381.8	33.970	180.3	33.380	79.19
21	32.670	2.274	34.130	89.62	34.580	244.6	35.010	320.8	36.110	940.3	33.270	68.43
22	32.680	2.325	34.100	88.99	34.395	214.9	34.590	260.5	35.730	390.0	33.240	67.28
23	32.760	4.253			34.170	167.3	34.410	244.7	35.010	328.8	33.130	53.29
24	32.840	4.649	37.630	2006	34.110	157.2			34.580	265.4	33.090	51.58
25			38.350	2506	34.470	223.0	34.225	228.6	34.485	245.8	33.060	49.27
26			36.100	956.8	34.530	245.5	34.095	212.4	34.255	225.1		
27	32.990	6.008	36.380	967.6	34.675	280.0 *	34.015	193.9	33.980	189.3	33.010	46.36
28	33.430	25.48	35.385	620.6	34.485	229.3	34.100	209.4	33.865	173.8	33.000	45.32
29	32.400	24.94	34.670	345.7	34.675	293.2			33.730	160.0	32.980	42.20
30	33.540	28.89			34.750	330.2			33.660	140.3	32.970	41.51
31			34.155	167.9	34.445	241.1			33.610	129.6		
Ten-Daily Mean												
I Ten-Daily	32.636	1.796	33.485	60.09	34.879	366.8	34.449	272.3	34.335	239.7	33.694	101.0
II Ten-Daily	31.932	5.737	33.707	42.86	34.698	296.1	34.694	312.8	33.829	160.8	33.275	79.54
III Ten-Daily	32.914	12.35	35.656	861.1	34.480	238.8	34.349	238.6	34.456	289.9	33.083	51.69
Monthly												
Min.	28.000	1.265	33.200	19.53	34.050	140.0	34.015	193.9	33.550	129.6	32.970	41.51
Max.	33.540	32.68	38.350	2506	35.640	640.4	35.285	407.2	36.110	940.3	35.400	132.3
Mean	32.500	6.435	34.313	331.4	34.679	298.6	34.515	277.9	34.215	232	33.338	76.49

Annual Runoff in MCM = 3301 Annual Runoff in mm = 385

Peak Observed Discharge = 2506 cumecs on 25-Jul-17 Corres. Water Level :38.35 m

Lowest Observed Discharge = 0.000 cumecs on 05-Jan-18 Corres. Water Level :32.77 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 2017 - 2018

Station Name : ANANDPUR (EC000K3) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	32.960	108.5	28.000	23.62	32.690	48.37	32.610	11.98	32.540	7.880 *	32.660	10.26
2	32.950	39.50 *	32.780	59.63	32.690	48.36	32.610	10.80 *	32.540	7.839 *	32.680	12.23
3	32.940	38.80 *	32.780	59.15	32.680	47.38	32.600	11.52	32.540	7.760 *	32.680	12.17
4	32.930	38.08	32.780	59.64	32.680	14.70 *	32.600	10.68 *	32.540	7.703 *	32.700	12.24
5	32.920	104.4	32.770	0.000	32.680	14.54	32.600	10.60	32.540	7.599 *	32.690	12.10
6	32.910	76.48	32.770	58.79	32.680	46.74	32.600	11.60	32.530	7.325 *		
7	32.900	76.21	32.770	21.50 *	32.670	46.55	32.600	11.48	32.530	7.222 *	32.680	10.84
8	32.890	74.20	32.770	21.30	32.670	46.13	32.600	11.37	32.530	7.200 *	32.670	11.69
9	32.890	69.13	32.760	58.38	32.660	15.64	32.590	11.50	32.530	7.185 *	32.670	11.64
10	32.880	35.60 *	32.762	57.78	32.660	15.06	32.590	10.98	32.550	8.920 *	32.660	11.45
11	32.880	35.31	32.760	57.48	32.660	13.70 *	32.590	9.800 *	32.570	8.065 *	32.660	11.34
12	32.880	72.63	32.750	56.41	32.650	13.66	32.590	9.740	32.580	8.143 *	32.660	10.16
13	32.870	72.23	32.750	56.41	32.650	14.62	32.590	10.92	32.620	10.45 *		
14	32.870	72.23	32.750	19.50 *	32.650	14.43	32.590	10.61	32.630	10.67 *	32.680	10.72
15	32.860	71.86	32.750	19.38	32.640	14.19	32.590	10.11	32.650	10.50 *	32.680	11.63
16	32.860	71.86	32.740	55.22	32.640	16.39	32.580	9.792	32.700	11.30 *	32.670	11.61
17	32.860	32.10 *	32.740	54.79	32.640	13.69	32.580	10.92	32.700	11.55 *	32.670	11.41
18	32.850	31.25	32.740	54.19	32.630	12.60 *	32.580	9.950 *	32.700	11.60 *	32.690	11.65
19	32.850	70.10	32.730	52.71	32.630	12.51	32.580	8.908	32.690	11.53 *	32.700	11.82
20	32.840	70.19	32.730	52.07	32.630	13.48	32.570	19.16	32.690	11.42 *		
21	32.840	69.94	32.730	17.60 *	32.620	13.16	32.570	9.615	32.680	11.21 *	32.690	10.45
22	32.830	67.30	32.720	17.45	32.620	12.90	32.570	9.469	32.680	11.15 *	32.710	12.00
23	32.820	66.44	32.720	50.78	32.620	12.94	32.560	9.353	32.680	11.11 *	32.730	12.24
24	32.820	27.00 *	32.710	50.48	32.610	11.37	32.560	9.274	32.670	10.93 *	32.750	12.34
25	32.810	26.80 *	32.710	49.97	32.620	11.40 *	32.560	8.320 *	32.670	10.75 *	32.760	12.70
26	32.810	26.65	32.710	17.00 *	32.610	12.46	32.560	8.262	32.670	10.61 *	32.750	12.55
27	32.810	64.32	32.700	48.39	32.610	11.87	32.560	9.049	32.660	10.43 *		
28	32.800	62.88	32.700	16.60 *	32.610	12.10	32.550	8.926	32.660	10.28 *	32.800	12.14
29	32.800	61.09	32.700	16.49			32.550	8.000 *	32.660	10.27 *	32.800	12.85
30	32.790	61.65	32.690	48.14			32.550	7.980 *	32.660	10.26 *	32.790	12.62
31	32.790	23.80 *	32.690	47.87			32.550	8.769			32.780	12.42
Ten-Daily Mean												
I Ten-Daily	32.917	66.09	32.294	41.98	32.676	34.35	32.600	11.25	32.537	7.663	32.677	11.63
II Ten-Daily	32.862	59.98	32.744	47.81	32.642	13.93	32.584	10.99	32.653	10.52	32.676	11.29
III Ten-Daily	32.811	50.71	32.707	34.61	32.615	12.27	32.558	8.820	32.669	10.70	32.756	12.23
Monthly												
Min.	32.790	23.80	28.000	0.000	32.610	11.37	32.550	7.980	32.530	7.185	32.660	10.16
Max.	32.960	108.5	32.780	59.64	32.690	48.37	32.610	19.16	32.700	11.60	32.800	12.85
Mean	32.862	58.66	32.586	41.25	32.646	20.75	32.580	10.3	32.620	9.629	32.706	11.75

Peak Computed Discharge = 640.4 cumecs on 06-Aug-17 Corres. Water Level :35.64 m

Lowest Computed Discharge = 7.185 cumecs on 09-Apr-18 Corres. Water Level :32.53 m

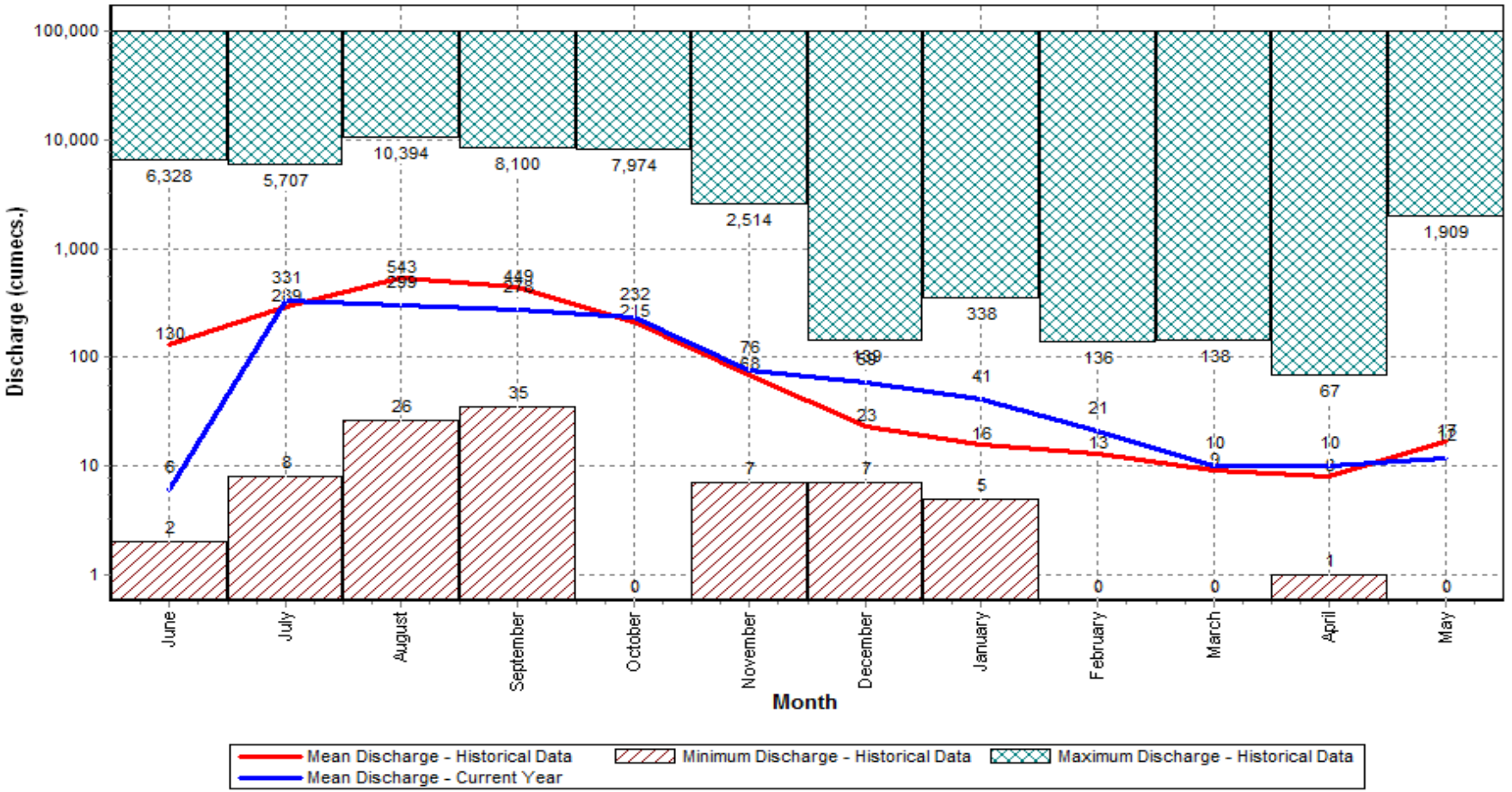
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2017-2018

Station Name : ANANDPUR (EC000K3) | **Data considered : 1972-2018** | **Division : E.E., Bhubaneswar**

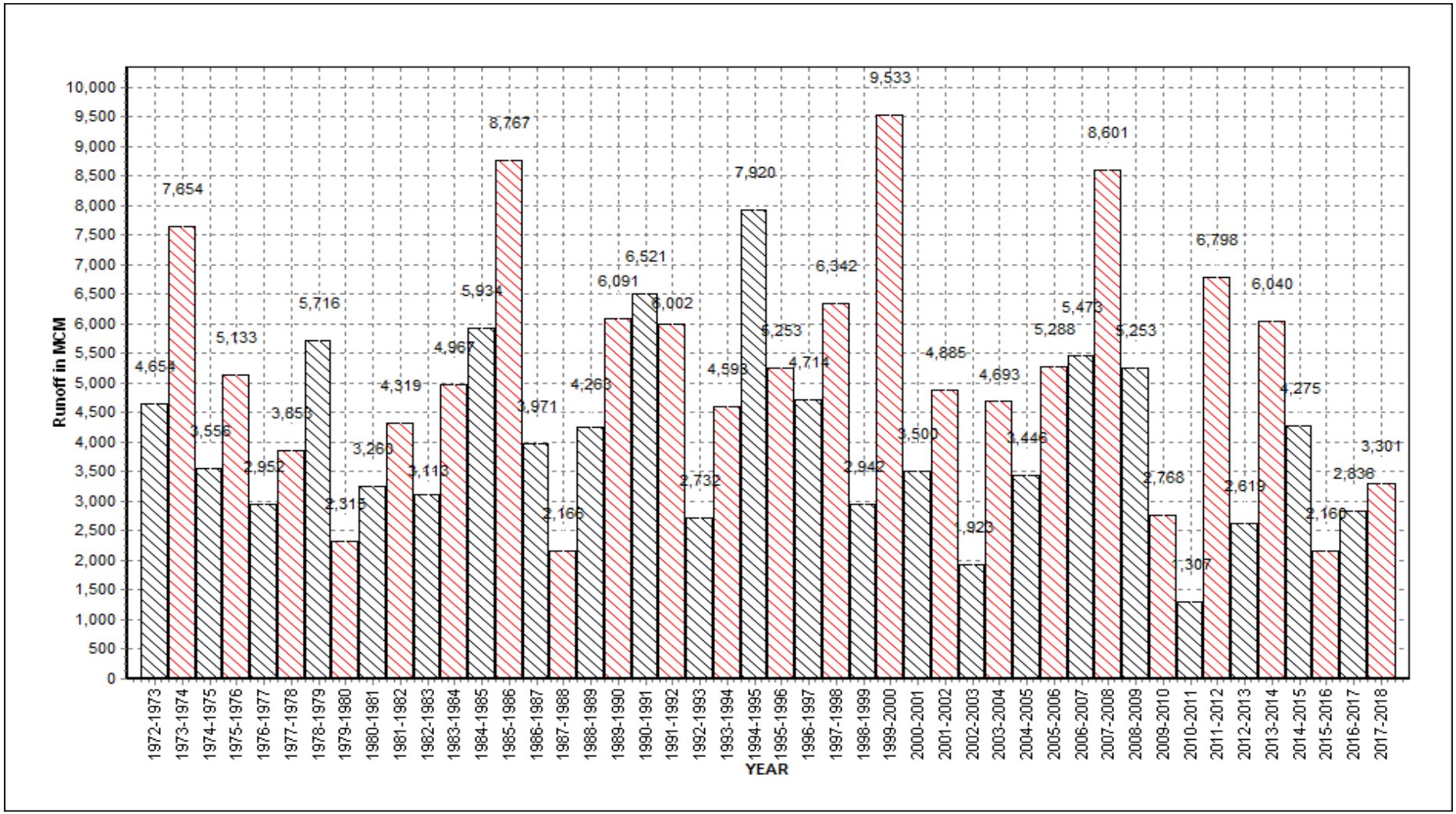
Local River : Baitarani | **Sub-Division : Bhubaneswar**



Annual Runoff Values for the period: 1972 - 2018

Station Name : ANANDPUR (EC000K3) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**

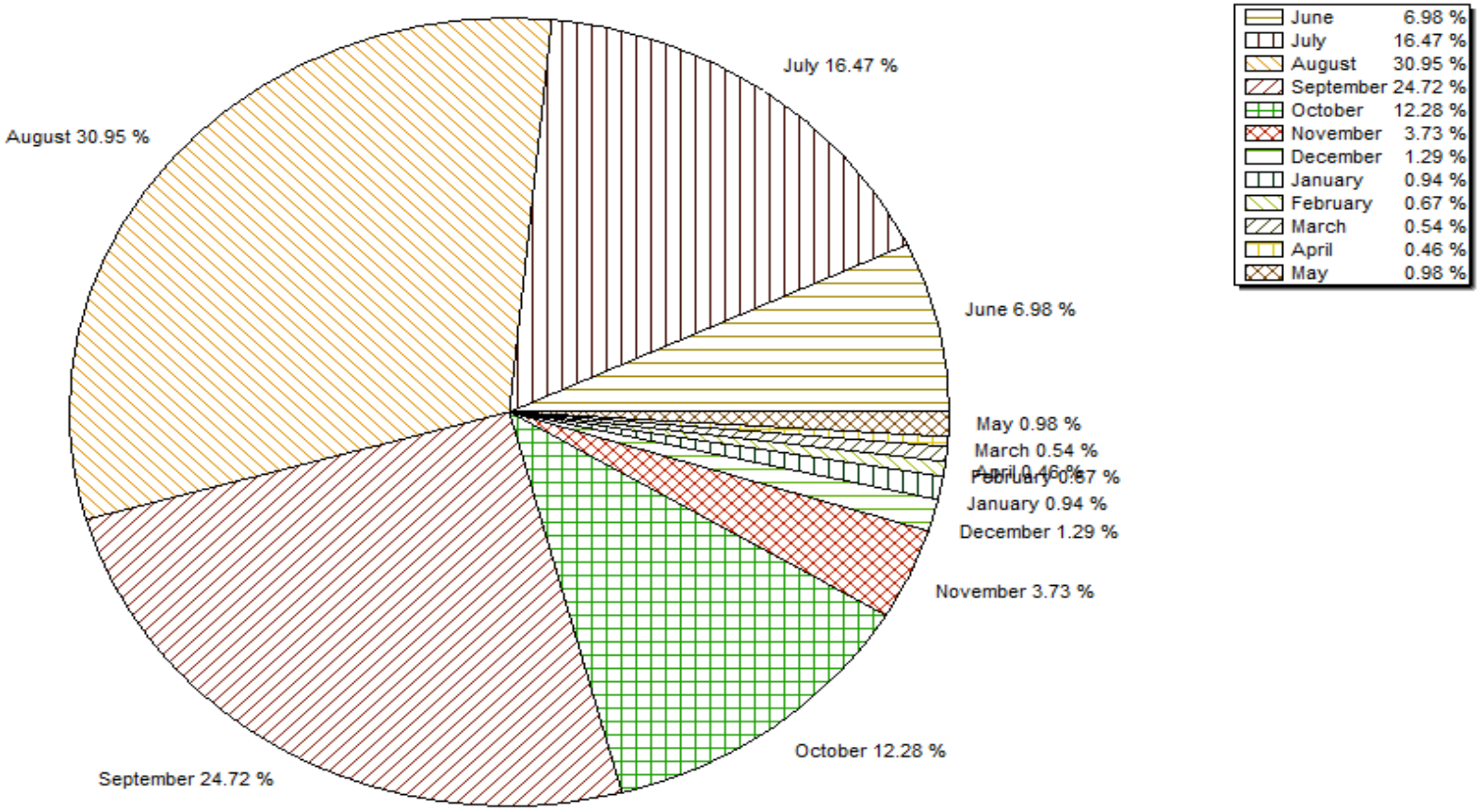


Note: Missing values have not been considered while arriving at Annual Runoff

Monthly Average Runoff based on period : 1972-2017

Station Name : ANANDPUR (EC000K3) **Division : E.E., Bhubaneswar**

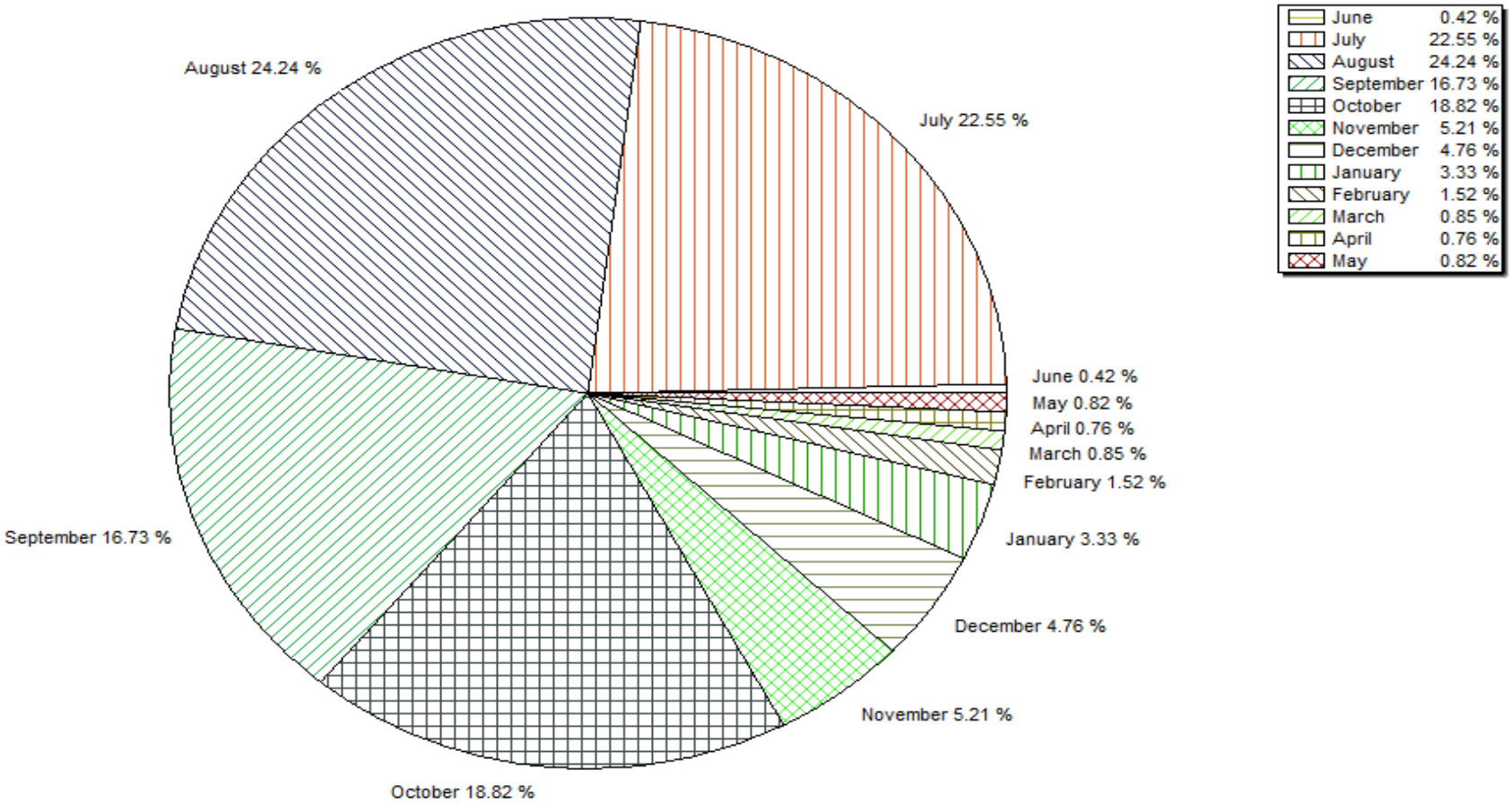
Local River : Baitarani **Sub-Division : Bhubaneswar**



Monthly Runoff for the Year : 2017-2018

Station Name : ANANDPUR (EC000K3) **Division : E.E., Bhubaneswar**

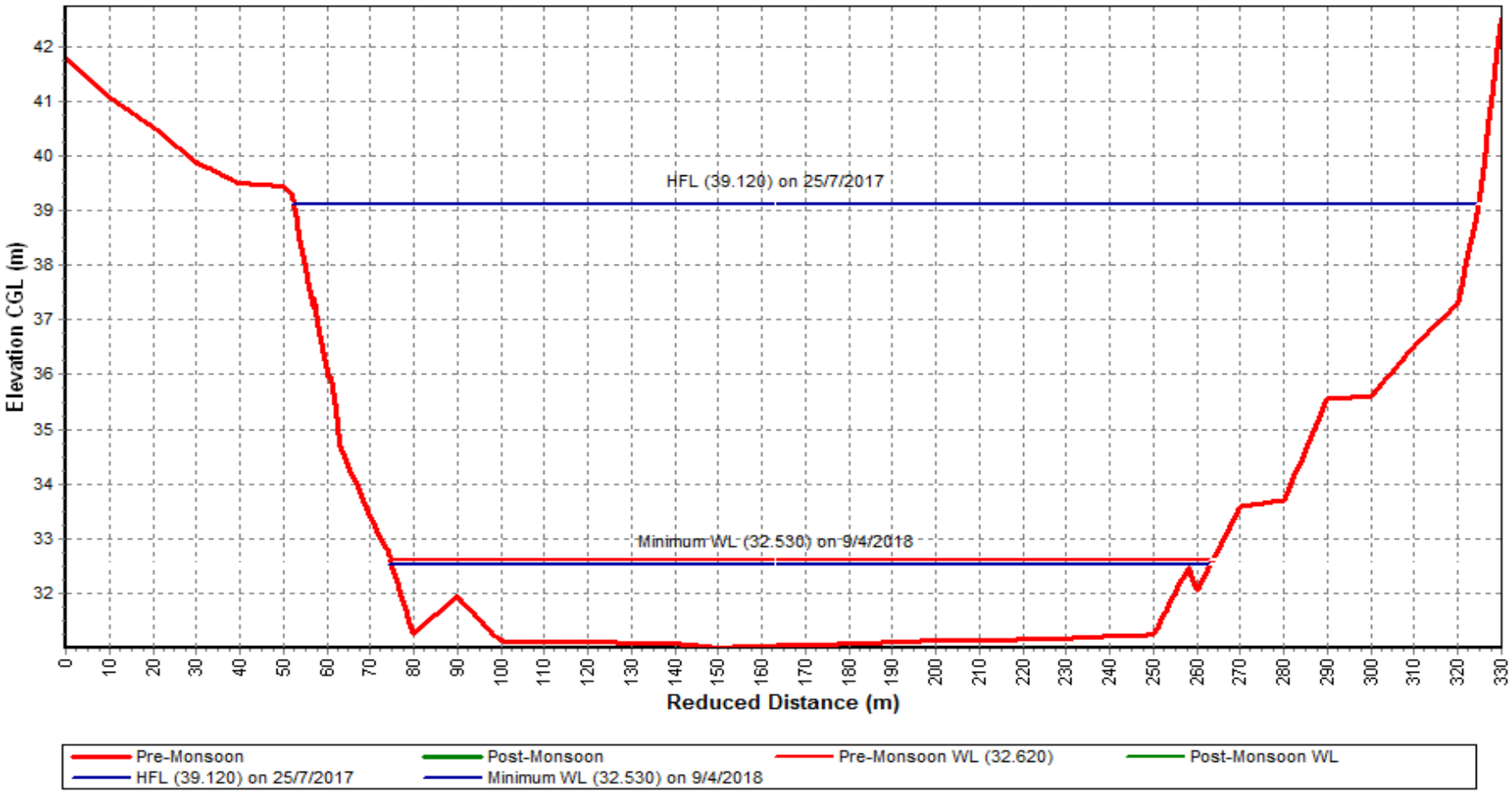
Local River : Baitarani **Sub-Division : Bhubaneswar**



Pre-Monsoon & Post-Monsoon X-Section for Water Year : 2017-2018

Station Name : ANANDPUR (EC000K3) **Division : E.E., Bhubaneswar**

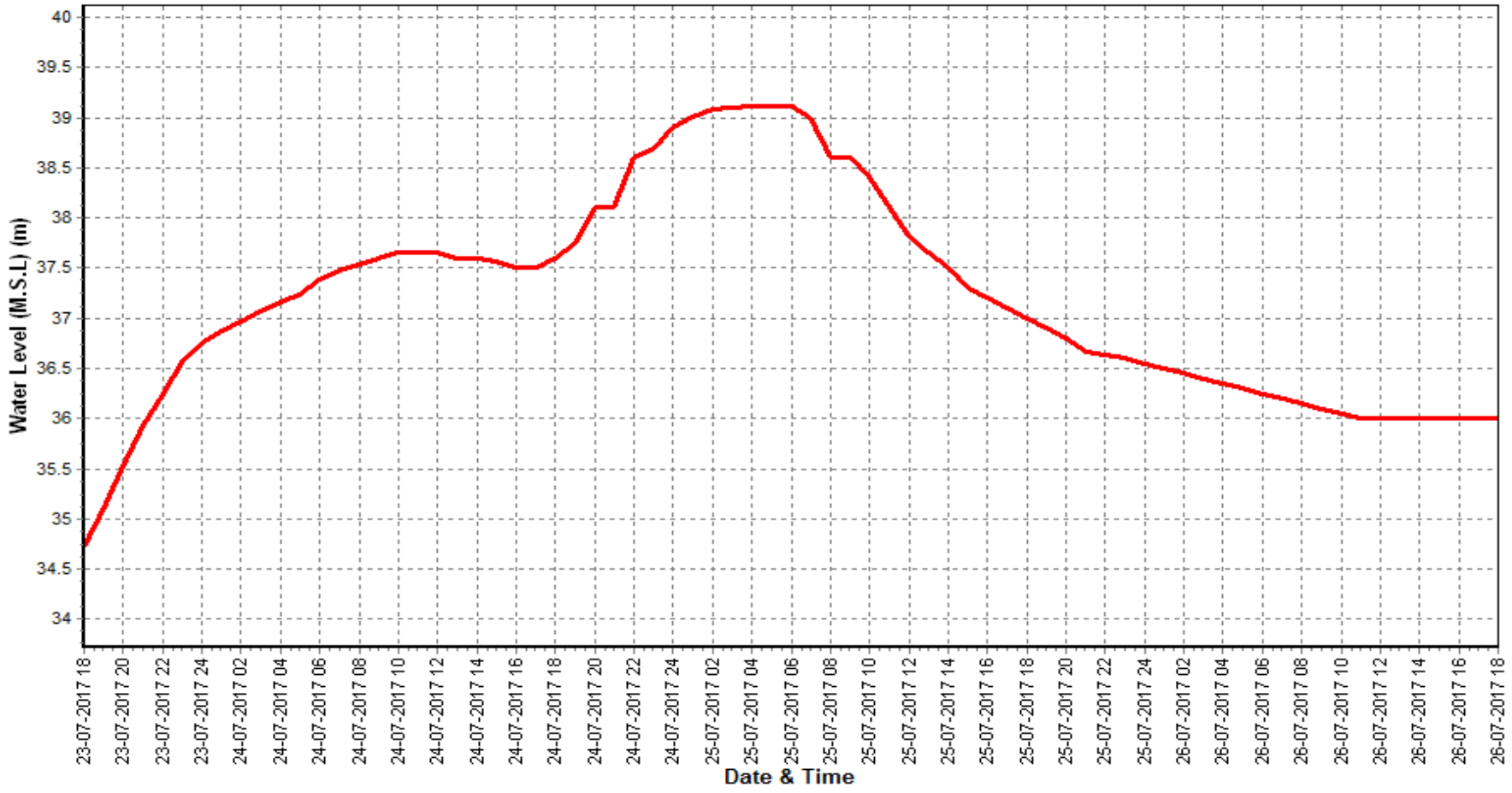
Local River : Baitarani **Sub-Division : Bhubaneswar**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2017-2018

Station Name : ANANDPUR (EC000K3) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**

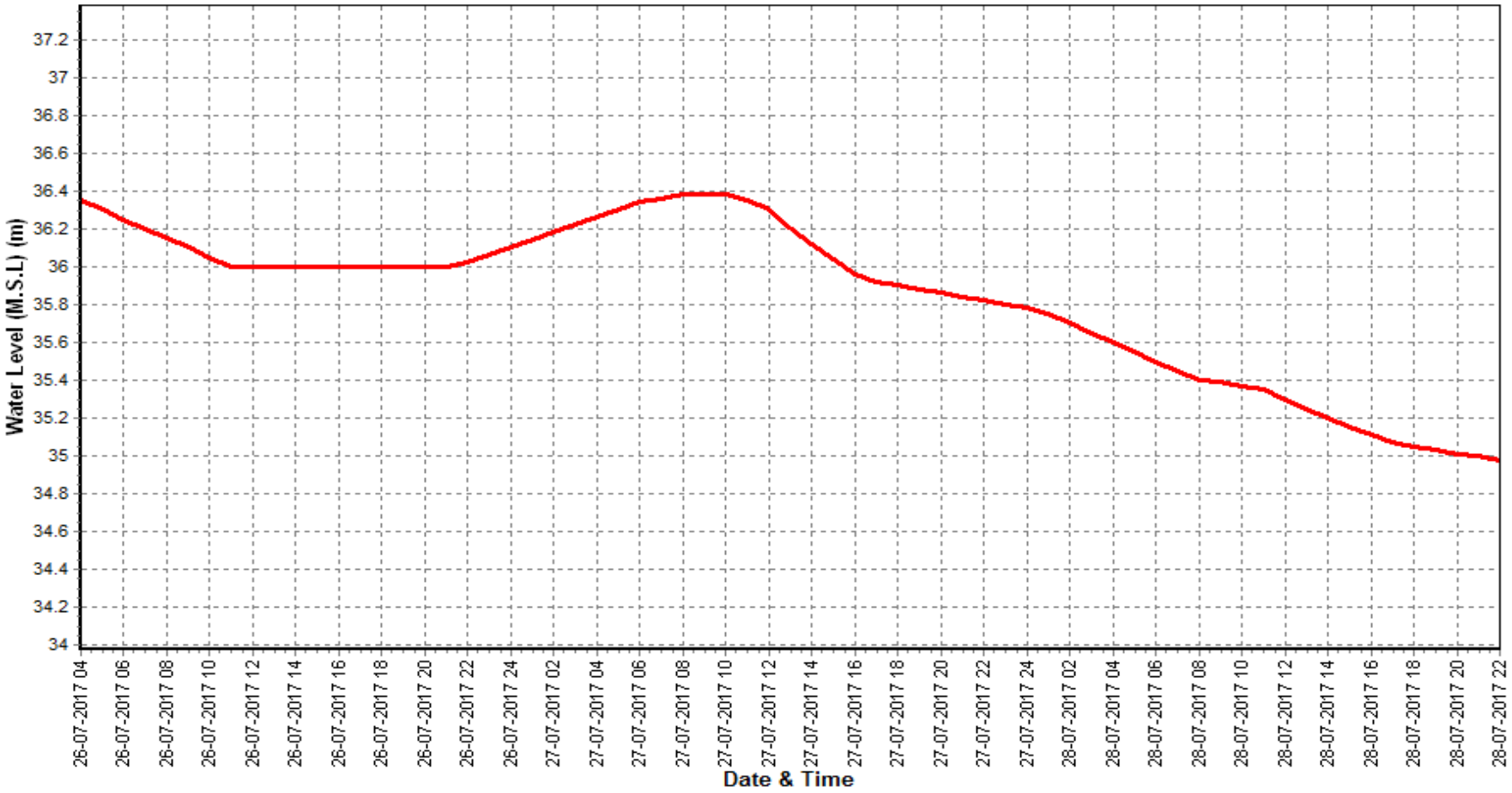


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2017-2018

Station Name : ANANDPUR (EC000K3) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**

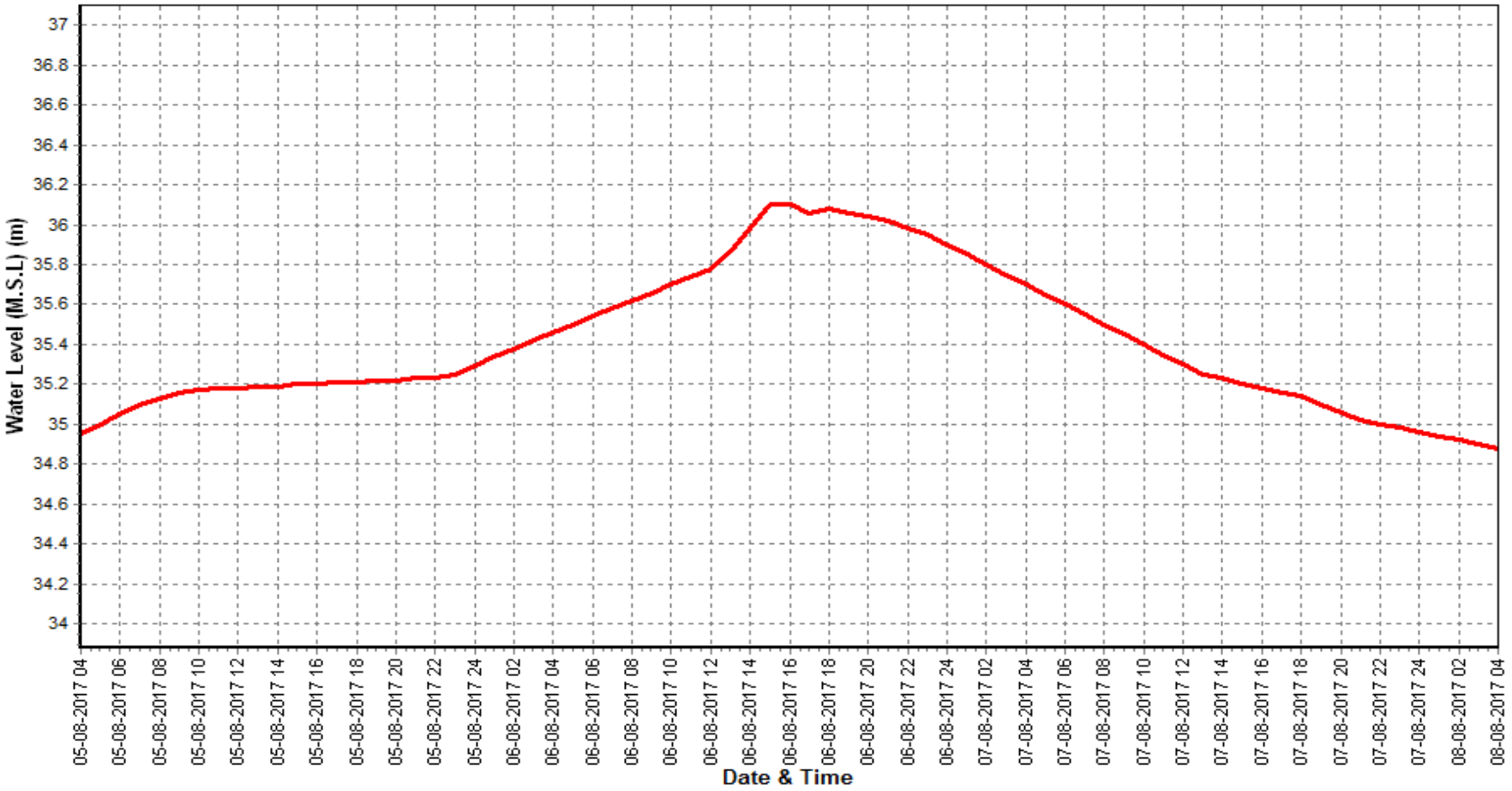


Time Span: 72 Hrs

Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2017-2018

Station Name : ANANDPUR (EC000K3) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**



Time Span: 72 Hrs

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : ANANDPUR (EC000K3) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**

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	1.272	0.000	0.000	5.060	5.060	556	66.13	0.000	0.050	0.076	0.126	720	411.8	0.064	0.067	0.086	0.217	7721
2	1.289	0.000	0.000	5.013	5.013	558							208.6	0.058	0.067	0.091	0.216	3893
3	1.265	0.000	0.000	4.700	4.700	514	69.44	0.000	0.079	0.147	0.226	1356	156.9	0.042	0.043	0.080	0.165	2237
4							63.52	0.000	0.079	0.064	0.143	785	395.4	0.045	0.049	0.125	0.219	7482
5	2.374	0.000	0.000	12.100	12.100	2482	67.20	0.000	0.080	0.070	0.150	871	410.4	0.063	0.065	0.091	0.219	7765
6	2.141	0.000	0.000	12.390	12.390	2292	64.04	0.000	0.080	0.065	0.145	802	640.4					
7	2.083	0.000	0.000	12.060	12.060	2170	62.32	0.000	0.078	0.060	0.138	743	553.1	0.057	0.086	0.110	0.253	12090
8	2.007	0.000	0.000	10.920	10.920	1894	64.27	0.000	0.082	0.064	0.146	811	367.6	0.050	0.052	0.087	0.189	6003
9	1.912	0.000	0.000	9.090	9.090	1502							231.9	0.049	0.058	0.101	0.208	4168
10	1.823	0.000	0.000	8.977	8.977	1414	23.81	0.000	0.074	0.061	0.135	278	292.3	0.056	0.057	0.113	0.226	5708
11							20.37	0.000	0.069	0.055	0.124	218	230.9	0.042	0.043	0.088	0.173	3451
12	1.780	0.000	0.000	8.920	8.920	1372	19.53	0.000	0.066	0.054	0.120	202	160.2	0.041	0.042	0.058	0.141	1952
13	1.733	0.000	0.000	8.982	8.982	1345	24.69	0.000	0.063	0.057	0.120	256	140.0					
14	1.689	0.000	0.000	8.170	8.170	1192	27.70	0.000	0.048	0.058	0.106	254	173.0	0.042	0.043	0.079	0.164	2451
15	1.630	0.000	0.000	7.740	7.740	1090	47.59	0.043	0.051	0.083	0.177	728	340.0					
16	1.638	0.000	0.000	7.780	7.780	1101							395.0	0.061	0.072	0.101	0.234	7986
17	2.444	0.000	0.000	12.250	12.250	2587	64.72	0.031	0.058	0.070	0.159	889	380.4	0.520	0.054	0.089	0.663	21791
18							50.17	0.035	0.064	0.072	0.171	741	384.5	0.062	0.072	0.092	0.226	7508
19	32.68	0.000	0.000	12.570	12.570	35492	47.30	0.031	0.059	0.061	0.151	617	407.4	0.062	0.069	0.097	0.228	8025
20	2.304	0.000	0.000	10.860	10.860	2162	83.63	0.029	0.051	0.064	0.144	1040	350.0					
21	2.274	0.000	0.000	12.180	12.180	2393	89.62	0.029	0.054	0.058	0.141	1092	244.6	0.078	0.075	0.131	0.284	6002
22	2.325	0.000	0.000	12.850	12.850	2581	88.99	0.029	0.053	0.056	0.138	1061	214.9	0.049	0.069	0.093	0.211	3918
23	4.253	0.000	0.000	20.570	20.570	7559							167.3	0.042	0.060	0.077	0.179	2587
24	4.649	0.000	0.000	22.800	22.800	9158	2006	0.107	0.091	0.239	0.437	75751	157.2	0.046	0.065	0.071	0.182	2472
25							2506	0.106	0.060	0.284	0.450	97445	223.0	0.048	0.067	0.094	0.209	4027
26							956.8	0.045	0.050	0.199	0.294	24304	245.5	0.047	0.066	0.095	0.208	4412
27	6.008	0.000	0.000	34.260	34.260	17784	967.6	0.046	0.049	0.236	0.331	27672	280.0					
28	25.48	0.000	0.000	140.740	140.740	309779	620.6	0.049	0.057	0.167	0.273	14638	229.3	0.046	0.066	0.088	0.200	3962
29	24.94	0.000	0.000	124.980	124.980	269309	345.7	0.048	0.055	0.116	0.219	6541	293.2	0.056	0.073	0.107	0.236	5978
30	28.89	0.000	0.000	152.260	152.260	380056							330.2	0.050	0.064	0.099	0.213	6077
31							167.9	0.038	0.042	0.073	0.153	2220	241.1	0.041	0.055	0.089	0.185	3854
Ten Daily Mean																		
Ten Daily I	1.796	0.000	0.000	8.923	8.923	1487	60.09	0.000	0.075	0.076	0.151	796	366.8	0.054	0.060	0.098	0.212	6341
Ten Daily II	5.737	0.000	0.000	9.659	9.659	5793	42.86	0.019	0.059	0.064	0.141	550	296.1	0.119	0.056	0.086	0.261	7595
Ten Daily III	12.35	0.000	0.000	65.080	65.080	124827	861.1	0.055	0.057	0.159	0.271	27858	238.8	0.050	0.066	0.094	0.211	4329
Monthly																		
Total						1058341						262036						153519

Annual Sediment Load (Metric Tonnes) : 5460772

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : ANANDPUR (EC000K3) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**

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	254.0	0.036	0.038	0.088	0.162	3555	250.0						122.7	0.047	0.059	0.075	0.181	1919
2							240.0						121.4	0.045	0.056	0.072	0.173	1815
3							250.8	0.046	0.047	0.076	0.169	3662	114.0	0.040	0.051	0.066	0.157	1546
4	381.7	0.210	0.039	0.095	0.344	11345	281.2	0.035	0.034	0.068	0.137	3329						
5	290.0	0.033	0.037	0.087	0.157	3934	293.9	0.036	0.038	0.071	0.145	3682						
6	261.8	0.021	0.039	0.087	0.147	3325	251.3	0.049	0.051	0.078	0.178	3865	97.56	0.041	0.056	0.067	0.164	1382
7	232.0	0.020	0.040	0.098	0.158	3167	208.6	0.034	0.046	0.069	0.149	2685	94.91	0.037	0.049	0.063	0.149	1222
8	229.6	0.022	0.042	0.098	0.162	3214	190.0						90.69	0.034	0.045	0.700	0.779	6104
9	256.7	0.021	0.039	0.093	0.153	3393	224.3	0.039	0.040	0.070	0.149	2888	86.14	0.032	0.042	0.056	0.130	968
10							206.5	0.041	0.059	0.072	0.172	3069	80.27	0.030	0.041	0.053	0.124	860
11	245.3	0.024	0.043	0.097	0.164	3476	184.8	0.041	0.061	0.067	0.169	2698	77.24	0.028	0.039	0.054	0.121	807
12	230.8	0.026	0.041	0.095	0.162	3230	168.9	0.045	0.067	0.071	0.183	2671						
13	287.8	0.026	0.041	0.094	0.161	4003	152.8	0.045	0.066	0.068	0.179	2363	68.59	0.027	0.038	0.051	0.116	687
14	337.2	0.043	0.044	0.122	0.209	6089	150.6	0.043	0.064	0.067	0.174	2264	65.32	0.025	0.040	0.510	0.575	3245
15	369.3	0.042	0.041	0.140	0.223	7115	195.0						78.59	0.030	0.042	0.052	0.124	842
16	295.8	0.037	0.040	0.090	0.167	4268	159.3	0.047	0.063	0.067	0.177	2436	99.61	0.039	0.058	0.062	0.159	1368
17							145.5	0.050	0.066	0.068	0.184	2313	58.04	0.025	0.038	0.046	0.109	547
18	259.6	0.052	0.048	0.082	0.182	4082	140.9	0.051	0.066	0.067	0.184	2240	56.96	0.023	0.035	0.045	0.103	507
19	407.2	0.064	0.065	0.138	0.267	9394	130.0						132.3					
20	381.8	0.060	0.630	0.110	0.800	26390	180.3	0.044	0.056	0.060	0.160	2492	79.19	0.033	0.041	0.055	0.129	883
21	320.8	0.044	0.048	0.102	0.194	5377	940.3	0.046	0.051	0.201	0.298	24210	68.43	0.000	0.039	0.052	0.091	538
22	260.5	0.039	0.047	0.085	0.171	3849	390.0						67.28	0.000	0.040	0.052	0.092	535
23	244.7	0.039	0.044	0.077	0.160	3383	328.8	0.043	0.062	0.153	0.258	7329	53.29	0.000	0.038	0.047	0.085	391
24							265.4	0.045	0.064	0.091	0.200	4586	51.58	0.000	0.036	0.046	0.082	365
25	228.6	0.038	0.042	0.075	0.155	3061	245.8	0.044	0.063	0.088	0.195	4141	49.27	0.000	0.034	0.048	0.082	349
26	212.4	0.045	0.050	0.089	0.184	3377	225.1	0.046	0.055	0.083	0.184	3579						
27	193.9	0.041	0.043	0.071	0.155	2597	189.3	0.038	0.046	0.063	0.147	2404	46.36	0.000	0.000	0.000	0.000	0
28	209.4	0.047	0.049	0.075	0.171	3094	173.8	0.039	0.049	0.063	0.151	2267	45.32	0.000	0.000	0.047	0.047	184
29							160.0						42.20	0.000	0.000	0.045	0.045	164
30							140.3	0.048	0.060	0.074	0.182	2206	41.51	0.000	0.000	0.042	0.042	151
31							129.6	0.051	0.036	0.077	0.164	1836						
Ten Daily Mean																		
Ten Daily I	272.3	0.052	0.039	0.092	0.183	4562	239.7	0.040	0.045	0.072	0.157	3311	101.0	0.038	0.050	0.144	0.232	1977
Ten Daily II	312.8	0.042	0.110	0.108	0.259	7561	160.8	0.046	0.064	0.067	0.176	2435	79.54	0.029	0.041	0.109	0.180	1111
Ten Daily III	238.6	0.042	0.046	0.082	0.170	3534	289.9	0.044	0.054	0.099	0.198	5840	51.69	0.000	0.021	0.042	0.063	297
Monthly																		
Total						124718						95217						27379

Annual Sediment Load (Metric Tonnes) : 5460772

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : ANANDPUR (EC000K3) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**

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	108.5						23.62	0.000	0.000	0.028	0.028	57	48.37					
2	39.50						59.63						48.36					
3	38.80						59.15						47.38					
4	38.08	0.000	0.000	0.038	0.038	125	59.64						14.70					
5	104.4						0.000						14.54	0.000	0.000	0.020	0.020	25
6	76.48						58.79						46.74					
7	76.21						21.50						46.55					
8	74.20						21.30	0.000	0.000	0.000	0.000	0	46.13					
9	69.13						58.38						15.64					
10	35.60						57.78						15.06					
11	35.31	0.000	0.000	0.036	0.036	110	57.48						13.70					
12	72.63						56.41						13.66	0.000	0.000	0.015	0.015	18
13	72.23						56.41						14.62					
14	72.23						19.50						14.43					
15	71.86						19.38	0.000	0.000	0.019	0.019	32	14.19					
16	71.86						55.22						16.39					
17	32.10						54.79						13.69					
18	31.25	0.000	0.000	0.034	0.034	92	54.19						12.60					
19	70.10						52.71						12.51	0.000	0.000	0.015	0.015	16
20	70.19						52.07						13.48					
21	69.94						17.60						13.16					
22	67.30						17.45	0.000	0.000	0.018	0.018	27	12.90					
23	66.44						50.78						12.94					
24	27.00						50.48						11.37	0.000	0.000	0.015	0.015	15
25	26.80						49.97						11.40					
26	26.65	0.000	0.000	0.031	0.031	71	17.00						12.46					
27	64.32						48.39						11.87					
28	62.88						16.60						12.10					
29	61.09						16.49	0.000	0.000	0.018	0.018	26						
30	61.65						48.14											
31	23.80						47.87											
Ten Daily Mean																		
Ten Daily I	66.09	0.000	0.000	0.038	0.038	125	41.98	0.000	0.000	0.014	0.014	29	34.35	0.000	0.000	0.020	0.020	25
Ten Daily II	59.98	0.000	0.000	0.035	0.035	101	47.81	0.000	0.000	0.019	0.019	32	13.93	0.000	0.000	0.015	0.015	17
Ten Daily III	50.71	0.000	0.000	0.031	0.031	71	34.61	0.000	0.000	0.018	0.018	26	12.27	0.000	0.000	0.015	0.015	15
Monthly Total						398						142						74

Annual Sediment Load (Metric Tonnes) : 5460772

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : ANANDPUR (EC000K3) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**

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	11.98						7.880						10.26	0.000	0.000	0.009	0.009	8
2	10.80						7.839	0.000	0.000	0.012	0.012	8	12.23					
3	11.52						7.760						12.17					
4	10.68						7.703						12.24					
5	10.60	0.000	0.000	0.013	0.013	12	7.599						12.10					
6	11.60						7.325											
7	11.48						7.222						10.84	0.000	0.000	0.008	0.008	7
8	11.37						7.200						11.69					
9	11.50						7.185	0.000	0.000	0.012	0.012	7	11.64					
10	10.98						8.920						11.45					
11	9.800						8.065						11.34					
12	9.740	0.000	0.000	0.013	0.013	11	8.143						10.16					
13	10.92						10.45											
14	10.61						10.67						10.72	0.000	0.000	0.008	0.008	7
15	10.11						10.50						11.63					
16	9.792						11.30	0.000	0.000	0.012	0.012	12	11.61					
17	10.92						11.55						11.41					
18	9.950						11.60						11.65					
19	8.908	0.000	0.000	0.012	0.012	9	11.53						11.82					
20	19.16						11.42											
21	9.615						11.21						10.45	0.000	0.000	0.007	0.007	6
22	9.469						11.15						12.00					
23	9.353						11.11	0.000	0.000	0.013	0.013	12	12.24					
24	9.274						10.93						12.34					
25	8.320						10.75						12.70					
26	8.262	0.000	0.000	0.013	0.013	9	10.61						12.55					
27	9.049						10.43											
28	8.926						10.28						12.14	0.000	0.000	0.007	0.007	7
29	8.000						10.27						12.85					
30	7.980						10.26						12.62					
31	8.769												12.42					
Ten Daily Mean																		
Ten Daily I	11.25	0.000	0.000	0.013	0.013	12	7.663	0.000	0.000	0.012	0.012	8	11.63	0.000	0.000	0.009	0.009	8
Ten Daily II	10.99	0.000	0.000	0.013	0.013	10	10.52	0.000	0.000	0.012	0.012	12	11.29	0.000	0.000	0.008	0.008	7
Ten Daily III	8.820	0.000	0.000	0.013	0.013	9	10.70	0.000	0.000	0.013	0.013	12	12.23	0.000	0.000	0.007	0.007	7
Monthly																		
Total						41						40						37

Annual Sediment Load (Metric Tonnes) : 5460772

Annual Sediment Load for period : 1972-2018

Station Name : ANANDPUR (EC000K3) **Division : E.E., Bhubaneswar**

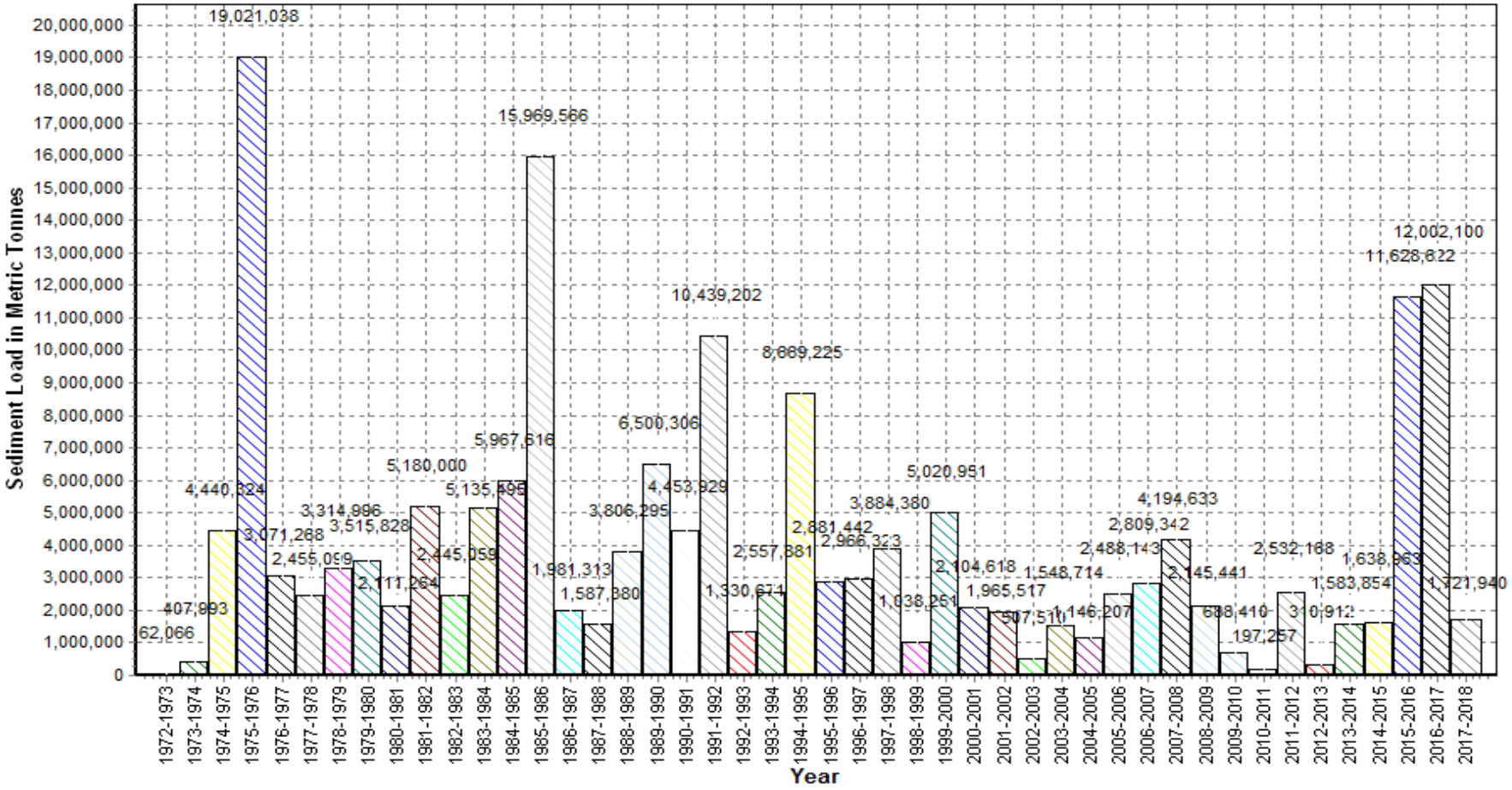
Local River : Baitarani **Sub-Division : Bhubaneswar**

Year	Monsoon (M.T.)	Non-Monsoon (M.T.)	Annual Load (M.T.)	Annual Run Off (MCM)
1972-1973	60141	1925	62066	4654
1973-1974	403492	4501	407993	7654
1974-1975	4425803	14522	4440324	3556
1975-1976	18975623	45415	19021038	5133
1976-1977	2829707	241561	3071268	2950
1977-1978	2405897	49202	2455099	3853
1978-1979	3312461	2535	3314996	5716
1979-1980	3481235	34593	3515828	2315
1980-1981	1988771	122493	2111264	3260
1981-1982	5141697	38303	5180000	4319
1982-1983	2384603	60456	2445059	3113
1983-1984	5132526	2969	5135495	4967
1984-1985	5919527	48089	5967616	5934
1985-1986	15938995	30571	15969566	8767
1986-1987	1967417	13896	1981313	3971
1987-1988	1449752	137628	1587380	2166
1988-1989	3754425	51870	3806295	4263
1989-1990	6456690	43615	6500306	6091
1990-1991	4442577	11352	4453929	6521
1991-1992	10340815	98387	10439202	6002
1992-1993	1263618	67053	1330671	2732
1993-1994	2551737	6144	2557881	4593
1994-1995	6265349	2403877	8669225	7920
1995-1996	2873624	7819	2881442	5253
1996-1997	2945811	20511	2966323	4670
1997-1998	3804487	79893	3884380	6342
1998-1999	1017179	21071	1038251	2942
1999-2000	5009740	11210	5020951	9520
2000-2001	2099965	4653	2104618	3500
2001-2002	1955255	10262	1965517	4885
2002-2003	499797	7713	507510	1923
2003-2004	1542136	6578	1548714	4693
2004-2005	1138740	7467	1146207	3446
2005-2006	2476820	11323	2488143	5288
2006-2007	2802117	7225	2809342	5473
2007-2008	4181890	12743	4194633	8601
2008-2009	2136834	8608	2145441	5253
2009-2010	685319	3090	688410	2768
2010-2011	191810	5447	197257	1307
2011-2012	2514495	17673	2532168	6798
2012-2013	310051	862	310912	2619
2013-2014	1579388	4465	1583854	6040
2014-2015	1636413	2550	1638963	4274
2015-2016	11627537	1085	11628622	2160
2016-2017	12001732	368	12002100	2810
2017-2018	1721209	731	1721940	3301

Annual Sediment Load for the period: 1972-2018

Station Name : ANANDPUR (EC000K3) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**



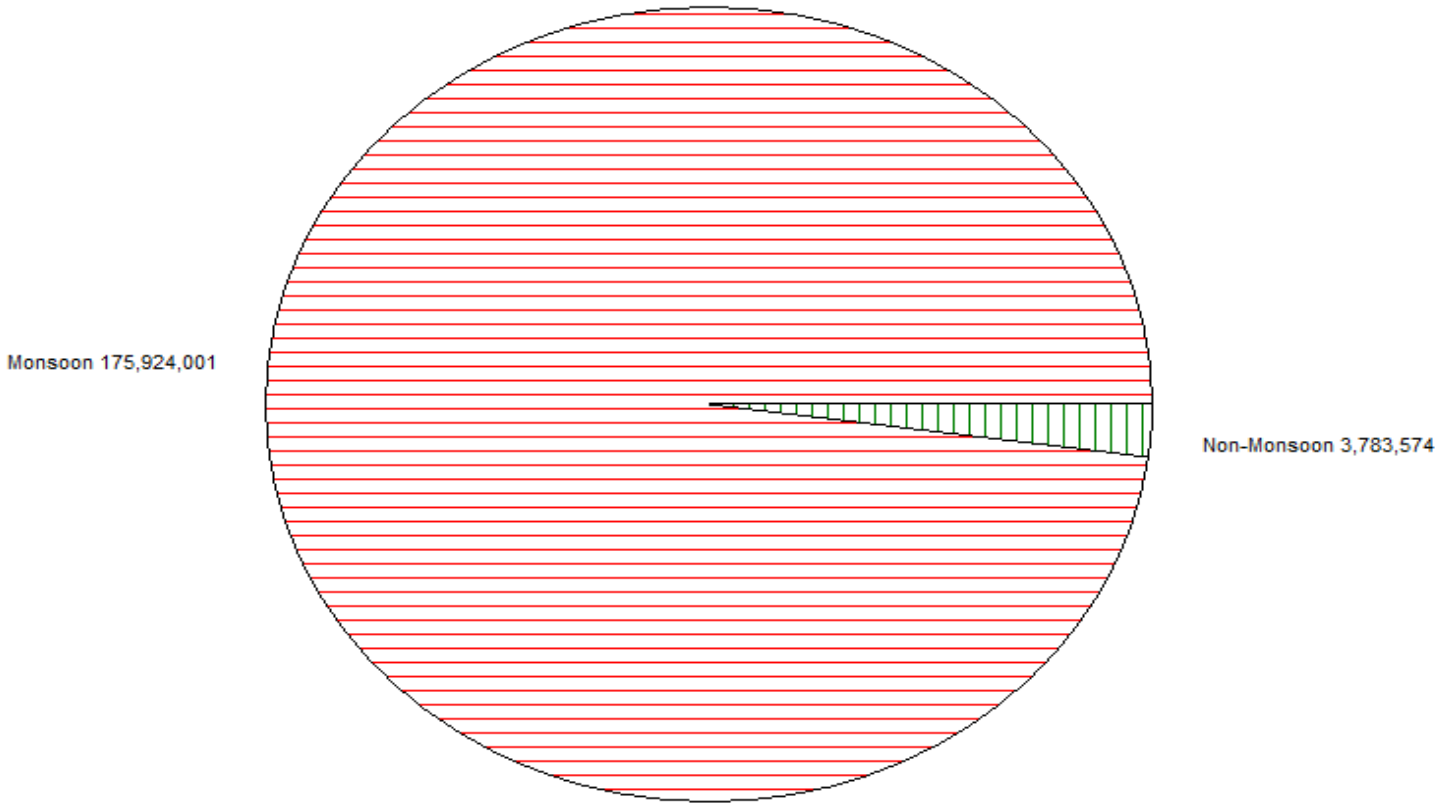
Seasonal Sediment Load for the period : 1972-2017

Station Name : ANANDPUR (EC000K3)

Local River : Baitarani

Division : E.E., Bhubaneswar

Sub-Division : Bhubaneswar



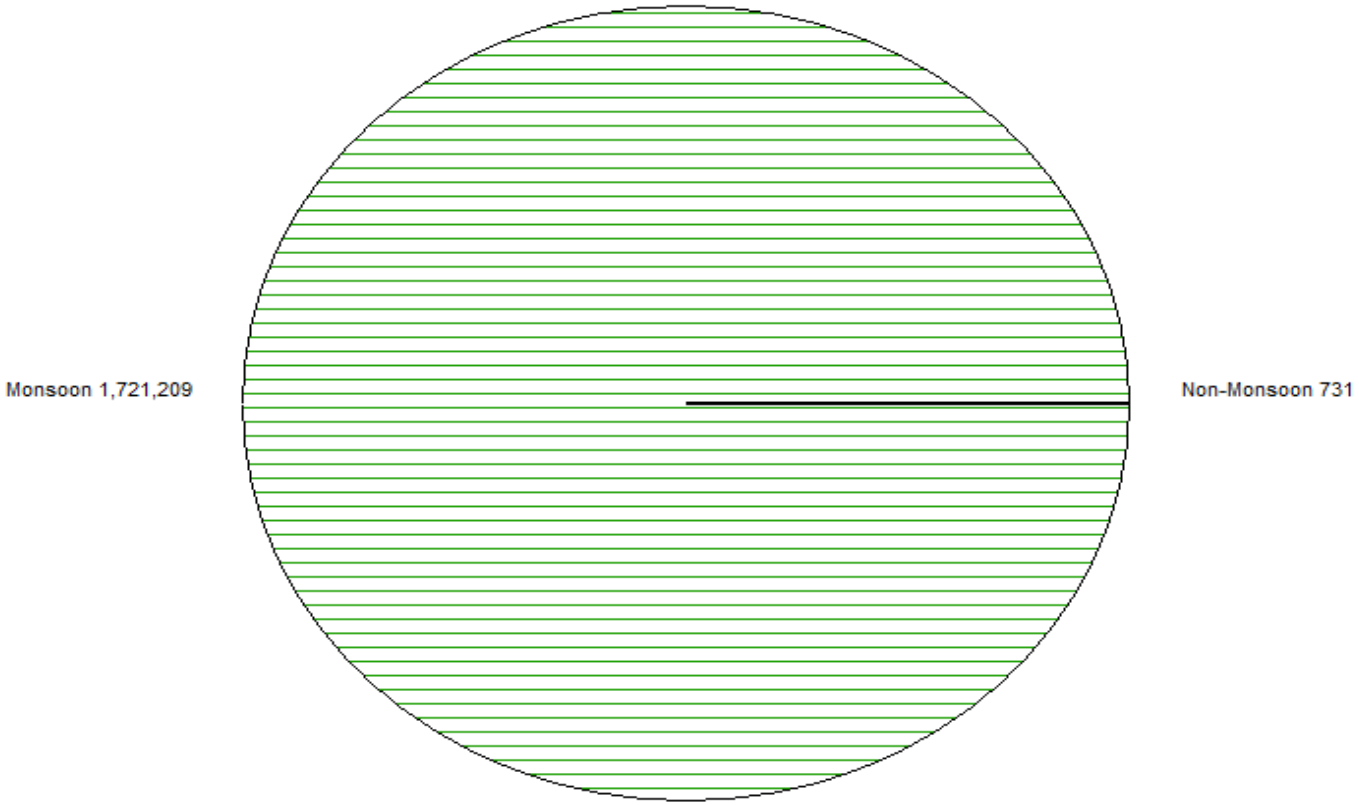
Seasonal Sediment Load for the Year: 2017-2018

Station Name : ANANDPUR (EC000K3)

Local River : Baitarani

Division : E.E., Bhubaneswar

Sub-Division : Bhubaneswar



Water Quality Datasheet for the period : 2017-2018

Station Name : ANANDPUR (EC000K3) **Division : E.E., Bhubaneswar**

Local River : Baitarani **River Water Analysis** **Sub-Division : Bhubaneswar**

S.No	Parameters	01/06/2017	01/07/2017	01/08/2017	01/09/2017	03/10/2017	01/11/2017	01/12/2017	01/01/2018	01/02/2018	01/03/2018	02/04/2018	01/05/2018
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Clear	Light Brown	Light Brown	Light Brown	Light Brown	Clear	Clear	Clear	Clear	Clear	Clear	Clear
3	EC_FLD (µmho/cm)	198	268	120	195	125	228	189	178	248	230	248	232
4	EC_GEN (µmho/cm)	186	262	114	188	121	182	178	170	241	235	240	239
5	Odour_Code (-)	odour free	odour free	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)	8.2	7.5	7.4	7.4	7.2	7.7	7.7	7.8	7.8	8.0	8.2	7.8
7	pH_GEN (pH units)	8.1	7.4	7.4	7.3	7.3	7.9	7.6	7.7	7.9	8.0	8.2	8.0
8	Temp (deg C)	30.0	30.5	29.5	28.5	27.0	23.5	18.0	14.5	17.5	23.0	28.0	25.0
	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
2	ALK-TOT (mgCaCO3/L)	69	55	32	55	51	65	69	79	74	129	102	74
3	B (mg/L)	0.03	0.02	0.02	0.03	0.01	0.03	0.02	0.03	0.02	0.03	0.01	0.02
4	Ca (mg/L)	32	34	35	37	17	21	37	26	14	31	26	14
5	Cl (mg/L)	17.0	17.0	11.3	13.2	10.4	10.4	12.1	26.0	13.8	15.6	15.6	15.6
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
7	F (mg/L)	0.05	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)	0.4	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.5
9	HCO3 (mg/L)	85	68	39	68	62	79	85	96	90	158	124	90
10	K (mg/L)	1.6	2.3	1.2	1.4	1.8	2.1	2.1	3.0	0.5	0.6	1.3	1.9
11	Mg (mg/L)	12.6	13.6	14.6	15.6	10.3	7.2	11.9	7.9	8.7	11.9	10.3	6.4
12	Na (mg/L)	8.3	7.6	3.1	3.7	3.9	4.5	4.8	5.3	5.1	5.7	6.0	8.4
13	NO2+NO3 (mg N/L)	1.25	1.26	1.19	1.25	1.15	1.21	1.18	1.15	1.12	1.22	1.19	1.23
14	NO2-N (mgN/L)	0.01	0.03	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	NO3-N (mgN/L)	1.23	1.23	1.15	1.23	1.15	1.21	1.18	1.15	1.12	1.22	1.19	1.23
16	P-Tot (mgP/L)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
17	SiO2 (mg/L)	8.5	9.3	8.0	7.8	6.4	9.6	7.8	8.7	6.5	9.5	7.2	7.6
18	SO4 (mg/L)	7.2	16.5	16.9	4.7	6.8	7.1	7.3	7.5	27.0	32.2	11.2	12.8
	BIOLOGICAL/BACTERIOLOGICAL												
1	BOD3-27 (mg/L)	1.2	1.0	0.6	0.4	0.6	0.2	0.2	0.4	1.0	0.4	1.0	0.8
2	DO (mg/L)	7.4	6.8	6.4	5.8	6.0	6.6	6.2	6.0	8.1	3.4	7.2	6.6
3	DO_SAT% (%)	97	89	83	74	75	76	65	58	84	39	91	79
4	FCol-MPN (MPN/100mL)	210	40	60	90	60	40	60	40	90	80	110	90
5	Tcol-MPN (MPN/100mL)	220	110	170	210	170	130	170	130	220	210	270	260
	TRACE & TOXIC												
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	80	84	88	92	42	52	92	65	36	78	65	36
2	HAR_Total (mgCaCO3/L)	133	141	149	157	85	82	141	98	72	128	108	62
3	Na% (%)	12	10	4	5	9	10	7	10	13	9	11	22
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
5	SAR (-)	0.3	0.3	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.5
	PESTICIDES												

Water Quality Summary for the period : 2017-2018

Station Name : ANANDPUR (EC000K3) **Division : E.E., Bhubaneswar**

Local River : Baitarani **Sub-Division : Bhubaneswar**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	12	268	120	205
3	EC_GEN (µmho/cm)	12	262	114	196
4	pH_FLD (pH units)	12	8.2	7.2	7.7
5	pH_GEN (pH units)	12	8.2	7.3	7.7
6	Temp (deg C)	12	30.5	14.5	24.6
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	0.0	0.0	0
2	ALK-TOT (mgCaCO3/L)	12	129	32	71
3	B (mg/L)	12	0.03	0.01	0.02
4	Ca (mg/L)	12	37	14	27
5	Cl (mg/L)	12	26.0	10.4	14.8
6	CO3 (mg/L)	12	0.0	0.0	0
7	F (mg/L)	12	0.05	0.05	0.05
8	Fe (mg/L)	12	0.5	0.4	0.5
9	HCO3 (mg/L)	12	158	39	87
10	K (mg/L)	12	3.0	0.5	1.6
11	Mg (mg/L)	12	15.6	6.4	10.9
12	Na (mg/L)	12	8.4	3.1	5.5
13	NO2+NO3 (mg N/L)	12	1.26	1.12	1.2
14	NO2-N (mgN/L)	12	0.04	0.00	0.01
15	NO3-N (mgN/L)	12	1.23	1.12	1.19
16	P-Tot (mgP/L)	12	0.001	0.001	0.001
17	SiO2 (mg/L)	12	9.6	6.4	8.1
18	SO4 (mg/L)	12	32.2	4.7	13.1
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	1.2	0.2	0.6
2	DO (mg/L)	12	8.1	3.4	6.3
3	DO_SAT% (%)	12	97	39	76
4	FCol-MPN (MPN/100mL)	12	210	40	81
5	Tcol-MPN (MPN/100mL)	12	270	110	189
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	92	36	68
2	HAR_Total (mgCaCO3/L)	12	157	62	113
3	Na% (%)	12	22	4	10
4	RSC (-)	12	0.2	0.0	0
5	SAR (-)	12	0.5	0.1	0.2
	PESTICIDES				

Water Quality Seasonal Average for the period: 2003-2018

Station Name : ANANDPUR (EC000K3) **Division : E.E., Bhubaneswar**

Local River : Baitarani **River Water** **Sub-Division : Bhubaneswar**

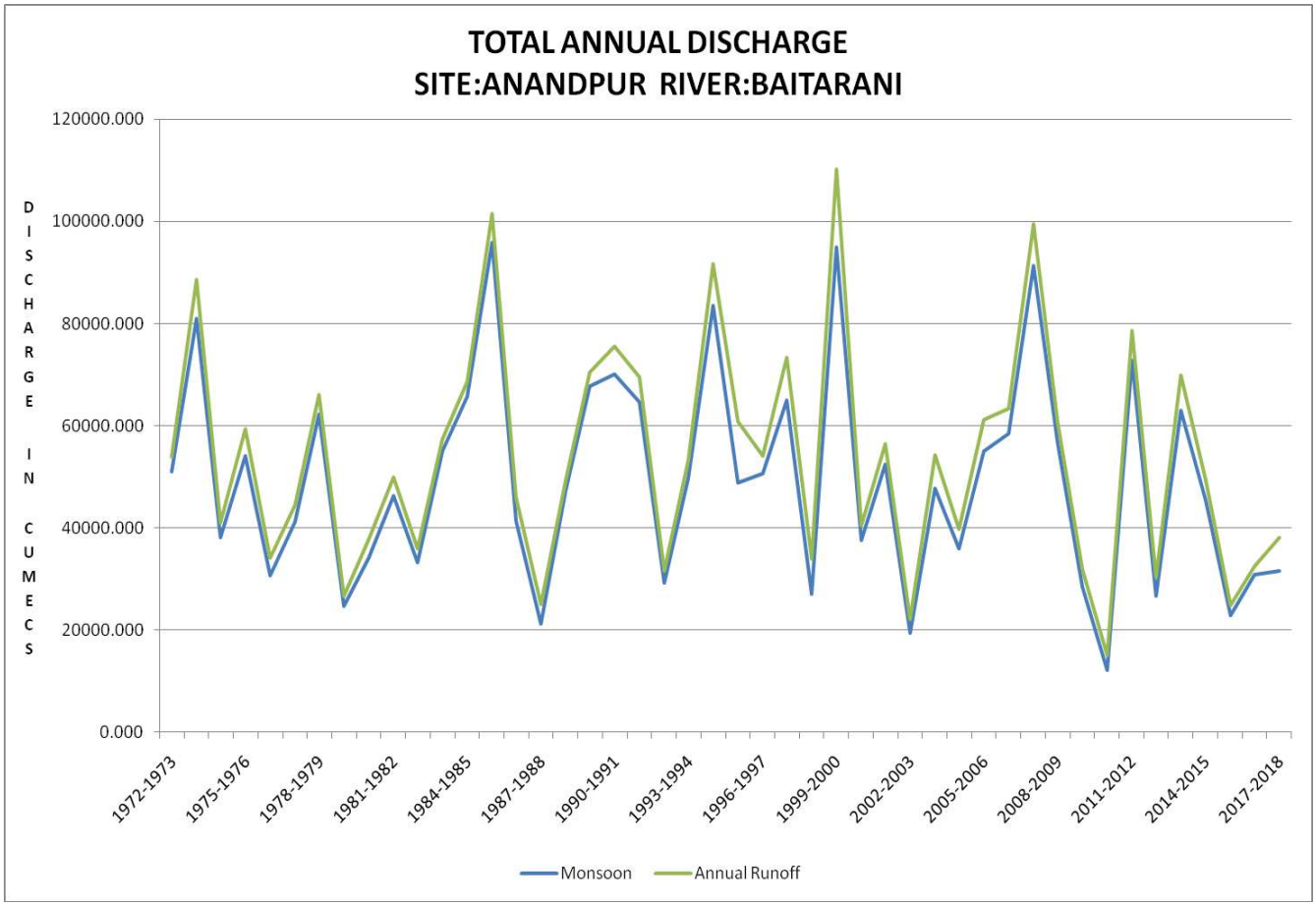
S.No	Parameters	Flood																					
		Jun - Oct																					
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
	PHYSICAL																						
1	Q (cumec)																						
2	EC_FLD (µmho/cm)	114	122	112	162	119		123	142	132	121	95	134	203	145	181	127	123	132	386	178		136
3	EC_GEN (µmho/cm)	119	121	109	158	110		123	142	127	121	95	134	203	148	174	139	129	128	216	172		136
4	pH_FLD (pH units)	7.6	7.7	7.7	7.5	7.8		7.9	7.9	8.3	7.6	7.5	7.7	7.4	7.7	7.5	7.4	7.8	8.0	8.1	8.1		8.0
5	pH_GEN (pH units)	7.4	7.6	7.8	7.5	7.9		7.9	7.9	8.2	7.6	7.5	7.7	7.5	7.8	7.5	7.2	7.8	8.0	8.1	8.1		8.0
6	Temp (deg C)	27.9	28.0	27.9	27.6	29.7		29.6	28.4	26.8	28.8	28.3	28.9	29.2	28.9	29.1	22.8	21.4	21.4	21.9	23.1		19.0
	CHEMICAL																						
1	Alk-Phen (mgCaCO3/L)				0.0	0.0		0.0	2.0	11.7	0.0			0.0	0.0	0.0				0.0	0.0		0.0
2	ALK-TOT (mgCaCO3/L)				80	35		31	43	102	64			70	59	53				96	55		37
3	B (mg/L)	0.00	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	0.00	0.00	0.00	0.00	0.00		0.00
4	Ca (mg/L)	10	11	11	18	12		11	13	12	14	14	12	21	38	31	10	12	13	22	17		11
5	Cl (mg/L)	8.9	12.4	11.0	15.5	9.8		9.2	11.5	15.8	15.8	17.5	15.8	13.6	35.1	13.8	13.0	11.1	10.3	17.8	15.4		13.6
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0		0.0	1.9	14.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
7	F (mg/L)	0.00	0.34	0.02	0.00	0.00		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.03	0.28	0.00	0.12	0.07		0.05
8	Fe (mg/L)	0.1	0.1	0.1	0.1	0.1		0.1	0.3	0.0	135.0	0.1	0.8	0.4	0.5	0.5	0.1	0.2	0.1	0.1	0.1		0.1
9	HCO3 (mg/L)	39	61	42	78	43		38	50	96	65	60	96	86	72	64	44	58	48	96	67		45
10	K (mg/L)	1.4	2.6	1.5	1.6	1.6		1.4	1.9	1.2	2.4	1.5	1.4	1.6	4.5	1.7	1.7	1.6	1.5	1.9	2.0		1.1
11	Mg (mg/L)	2.4	4.7	2.4	4.9	3.4		5.2	5.5	6.4	3.2	3.8	6.4	14.6	14.0	13.3	2.4	4.6	2.8	7.5	4.2		5.3
12	Na (mg/L)	6.1	9.1	7.1	9.6	6.6		5.3	6.5	4.1	7.5	11.6	4.8	5.6	18.5	5.3	9.2	6.5	7.2	11.6	10.7		7.7
13	NH3-N (mg N/L)																						
14	NO2+NO3 (mg N/L)	0.77	0.69	0.86	0.29	1.17		0.92	0.59	0.39	0.91	0.78	1.24	1.05	0.96	1.22	0.30	0.29	0.89	0.88	1.60		0.51
15	NO2-N (mgN/L)	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.07	0.00	0.01	0.02	0.01	0.02	0.02	0.00	0.00	0.00	0.01	0.00		0.00
16	NO3-N (mgN/L)	0.77	0.69	0.86	0.29	1.17		0.92	0.59	0.32	0.91	0.77	1.22	1.03	0.94	1.20	0.30	0.29	0.89	0.87	1.60		0.51
17	o-PO4-P (mg P/L)			0.000	0.019	0.000		0.021										0.000	0.000	0.013	0.000		0.000
18	P-Tot (mgP/L)	0.013	0.001	0.001	0.019	0.001		0.013	0.001	0.010	0.001	0.001	0.001	0.001	0.010	0.001	0.001	0.001	0.001	0.015	0.001		0.002
19	SiO2 (mg/L)	10.2	20.1	24.0	13.7	8.6		8.1	7.5	9.4	18.7	8.8	5.8	6.0	6.6	8.0	6.6	22.0	25.0	20.7	9.4		8.1
20	SO4 (mg/L)	1.3	2.7	1.6	1.4	3.9		11.3	7.7	10.3	24.7	19.5	14.9	8.5	19.4	10.4	0.9	1.9	2.2	5.1	4.0		7.4
	BIOLOGICAL/BACTERIOLOGICAL																						
1	BOD3-27 (mg/L)			0.7	1.0	1.0		1.3	1.2	1.3	0.6	0.8	1.0	0.8	1.4	0.8		1.0	0.7	0.8	0.9		1.2
2	COD (mg/L)								1.3														
3	DO (mg/L)			6.6	6.9	7.0		7.3	6.8	6.6	7.0	7.1	5.4	6.2	7.5	6.4		8.7	8.4	8.1	8.1		8.1
4	DO_SAT% (%)			84	87	92		96	87	83	90	91	70	81	97	84		94	95	92	94		88
5	FCol-MPN (MPN/100mL)				7	80		22	127		12					92				17	48		8
6	Tcol-MPN (MPN/100mL)				11	130		26	215		18					176				17	88		11
	TRACE & TOXIC																						
	CHEMICAL INDICES																						
1	HAR_Ca (mgCaCO3/L)	25	28	28	44	29		28	33	30	34	36	30	52	95	77	25	31	33	56	43		28
2	HAR_Total (mgCaCO3/L)	35	49	38	65	43		50	56	56	47	52	56	113	154	133	35	52	44	87	61		50
3	Na% (%)	27	27	29	22	25		19	20	14	22	32	15	10	20	8	35	22	25	24	27		24
4	RSC (-)	0.0	0.1	0.0	0.0	0.0		0.0	0.0	1.1	0.2	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
5	SAR (-)	0.5	0.6	0.5	0.5	0.4		0.3	0.4	0.2	0.5	0.7	0.3	0.2	0.6	0.2	0.7	0.4	0.5	0.6	0.6		0.5
	PESTICIDES																						

Water Quality Seasonal Average for the period: 2003-2018

Station Name : ANANDPUR (EC000K3) **Division : E.E., Bhubaneswar**

Local River : Baitarani **River Water** **Sub-Division : Bhubaneswar**

S.No	Parameters	Winter								Summer														
		Nov - Feb								Mar - May														
		2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	PHYSICAL																							
1	Q (cumec)																							
2	EC_FLD (µmho/cm)	195	123	163	117	167	357	317	211	176	155	166	154	150		174	244	157	197	147	233	271	226	237
3	EC_GEN (µmho/cm)	190	123	163	117	167	353	320	193	182	151	160	149	154		174	244	157	197	147	233	271	235	238
4	pH_FLD (pH units)	7.8	7.8	7.6	8.0	7.9	7.7	8.0	7.7	7.7	8.0	7.7	8.2	8.1		8.1	8.4	7.9	7.8	7.8	8.1	7.5	8.1	8.0
5	pH_GEN (pH units)	7.8	7.8	7.6	8.0	7.9	7.8	8.0	7.7	7.6	8.1	7.8	8.1	8.1		8.1	8.4	7.9	7.8	7.8	8.1	8.0	8.1	8.0
6	Temp (deg C)	20.9	21.3	19.8	21.1	20.9	20.6	21.0	18.4	27.0	27.3	26.8	26.3	25.7		27.3	23.7	27.0	27.7	28.1	26.3	27.0	28.0	25.3
	CHEMICAL																							
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0			4.6	0.0	0.0				0.0			1.3	3.9	0.0	0.0	0.0	0.0	18.4	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	74	61	76			70	62	72				92			59	90	69	69	46	16	100	86	102
3	B (mg/L)	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.00	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
4	Ca (mg/L)	16	16	17	15	14	20	44	25	16	14	16	14	17		15	17	21	24	15	24	31	55	24
5	Cl (mg/L)	13.7	9.9	17.3	19.3	10.4	17.4	12.3	15.6	12.7	10.3	10.4	13.2	10.5		13.6	14.5	20.7	16.9	17.0	20.9	22.0	14.5	15.6
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0		1.6	4.7	0.0	0.0	0.0	0.0	22.2	0.0	0.0
7	F (mg/L)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.13	0.04	0.00	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	0.0	1.7	0.1	0.3	0.4	0.5	0.4	0.1	0.3	0.1	0.3	0.1		0.1	0.4	0.0	0.4	0.0	0.4	0.4	0.5	0.5
9	HCO3 (mg/L)	90	75	86	78	73	75	76	87	71	68	82	63	63		69	100	85	94	54	67	77	105	124
10	K (mg/L)	1.3	1.1	2.8	1.6	1.0	2.0	10.8	1.9	1.9	2.5	1.7	2.0	0.7		1.4	7.9	2.3	3.1	1.6	2.0	2.4	4.4	1.3
11	Mg (mg/L)	9.0	6.1	6.6	3.2	8.1	10.7	15.3	8.9	5.2	5.0	6.6	4.9	4.5		7.5	12.2	5.5	6.6	4.2	7.5	12.6	19.8	9.5
12	Na (mg/L)	7.9	5.5	8.8	12.4	4.6	10.6	40.4	4.9	8.4	6.7	7.1	8.6	7.3		8.2	8.5	9.2	9.1	13.4	8.9	13.3	48.6	6.7
13	NH3-N (mg N/L)													0.05										
14	NO2+NO3 (mg N/L)	0.40	0.37	0.94	0.81	0.94	0.96	1.02	1.16	0.74	0.56	1.19	0.85	0.28		0.53	0.76	0.35	0.98	0.68	1.13	0.96	1.24	1.21
15	NO2-N (mgN/L)	0.00	0.07	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.07	0.01	0.00	0.00	0.00	0.02	0.00
16	NO3-N (mgN/L)	0.40	0.30	0.94	0.81	0.94	0.93	1.01	1.16	0.74	0.56	1.19	0.85	0.28		0.53	0.76	0.28	0.97	0.68	1.13	0.95	1.22	1.21
17	o-PO4-P (mg P/L)										0.000	0.000	0.010			0.000								
18	P-Tot (mgP/L)	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001	0.001	0.001	0.001	0.011	0.053		0.007	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001
19	SiO2 (mg/L)	7.3	10.0	16.5	11.5	4.8	5.5	7.0	8.2	18.4	20.7	24.8	15.4	11.8		8.4	9.3	11.0	19.1	9.6	3.8	5.3	8.5	8.1
20	SO4 (mg/L)	3.1	2.5	2.2	17.3	3.3	4.3	5.5	12.2	2.9	1.8	4.7	2.6	7.4		8.1	4.8	2.5	2.6	12.4	1.9	19.0	2.8	18.7
	BIOLOGICAL/BACTERIOLOGICAL																							
1	BOD3-27 (mg/L)	1.1	1.5	1.7	0.5	0.8	1.3	0.6	0.4		0.9	0.8	1.1	1.0		1.1	1.2	1.3	0.6	1.3	0.7	0.9	0.9	0.7
2	COD (mg/L)																							
3	DO (mg/L)	8.4	7.7	7.4	7.7	9.2	8.1	6.8	6.7		6.8	7.8	7.4	6.9		7.1	6.8	7.0	6.5	6.6	6.5	5.8	6.4	5.7
4	DO_SAT% (%)	93	87	81	86	102	90	75	71		86	97	92	85		89	79	88	83	83	81	73	81	70
5	FCol-MPN (MPN/100mL)	20		12				78	58				7	11		176	19		14				133	93
6	Tcol-MPN (MPN/100mL)	25		18				118	163				12	13		176	19		18				203	247
	TRACE & TOXIC																							
	CHEMICAL INDICES																							
1	HAR_Ca (mgCaCO3/L)	40	40	44	37	35	50	111	61	40	35	41	34	42		39	41	53	59	38	60	77	138	60
2	HAR_Total (mgCaCO3/L)	78	65	71	51	69	95	175	98	62	53	69	55	61		70	92	76	87	55	91	130	220	100
3	Na% (%)	18	15	20	34	13	18	32	10	22	20	18	25	20		20	16	19	18	34	17	18	33	14
4	RSC (-)	0.0	0.0	0.1	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.1	0.0	0.1	0.0	0.0	0.2	0.0	0.1
5	SAR (-)	0.4	0.3	0.5	0.8	0.2	0.5	1.3	0.2	0.5	0.4	0.4	0.5	0.4		0.4	0.4	0.5	0.4	0.8	0.4	0.5	1.4	0.3
	PESTICIDES																							


TOTAL ANNUAL DISCHARGE
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DISCHARGE IN CUMECS
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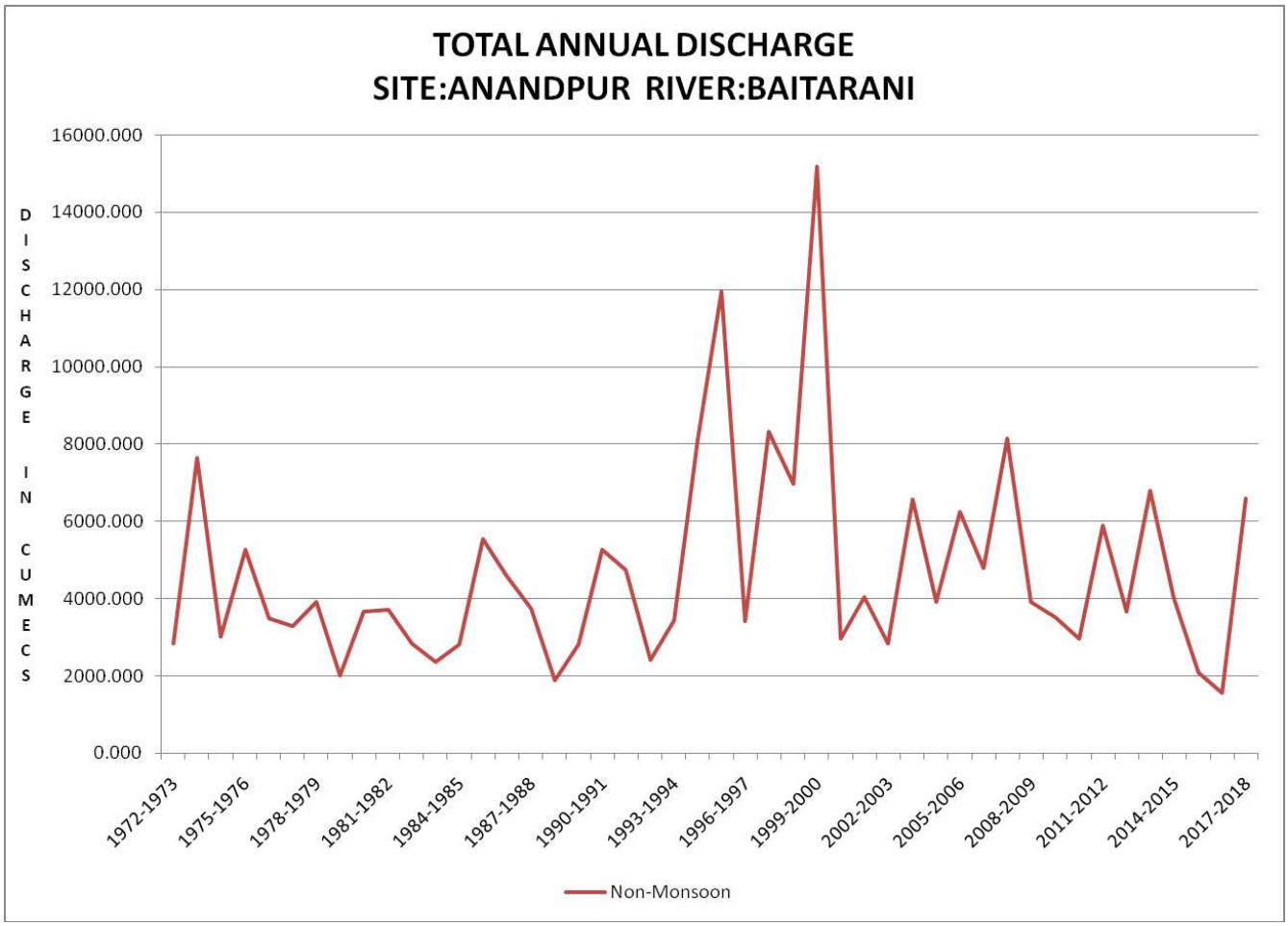
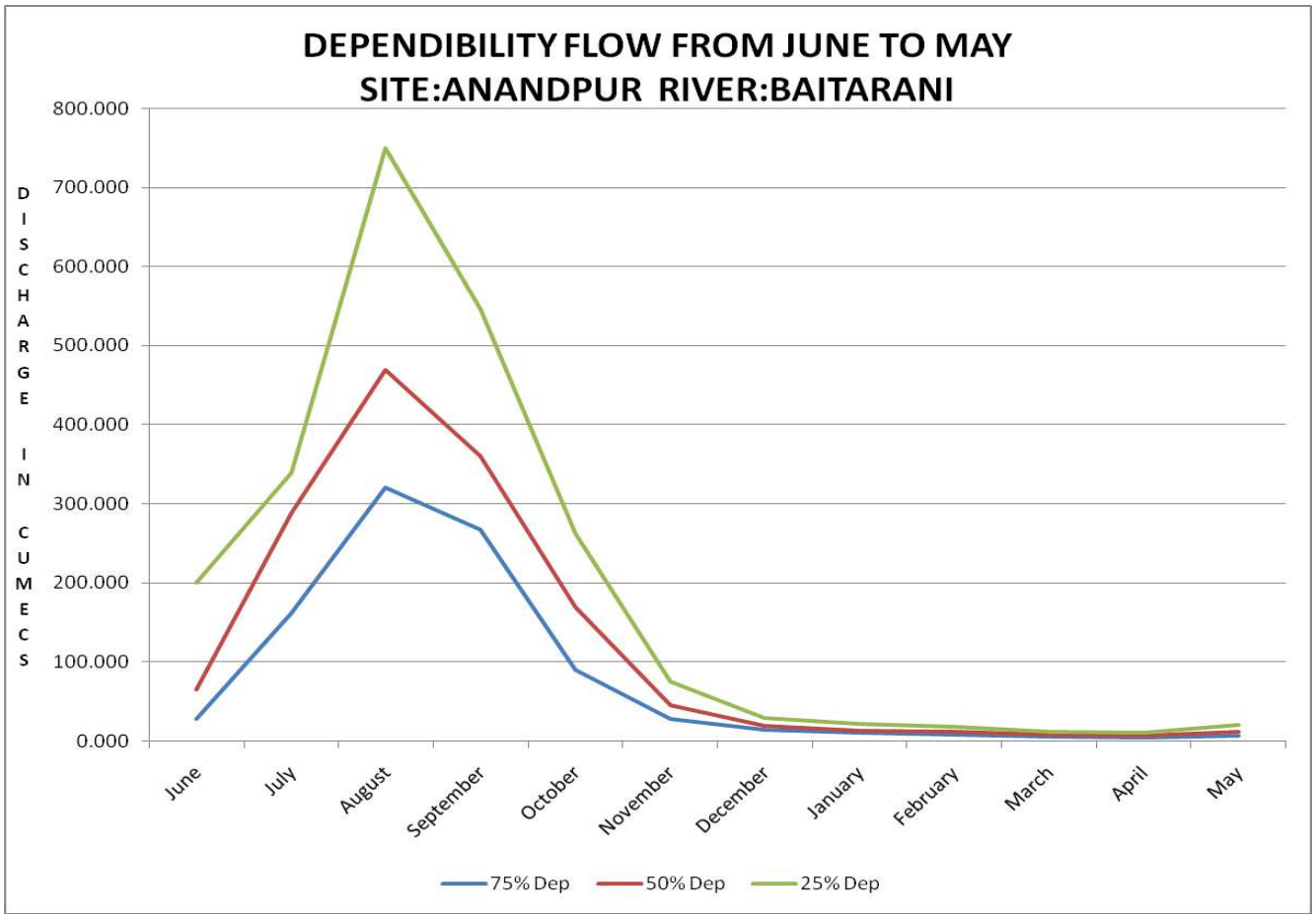
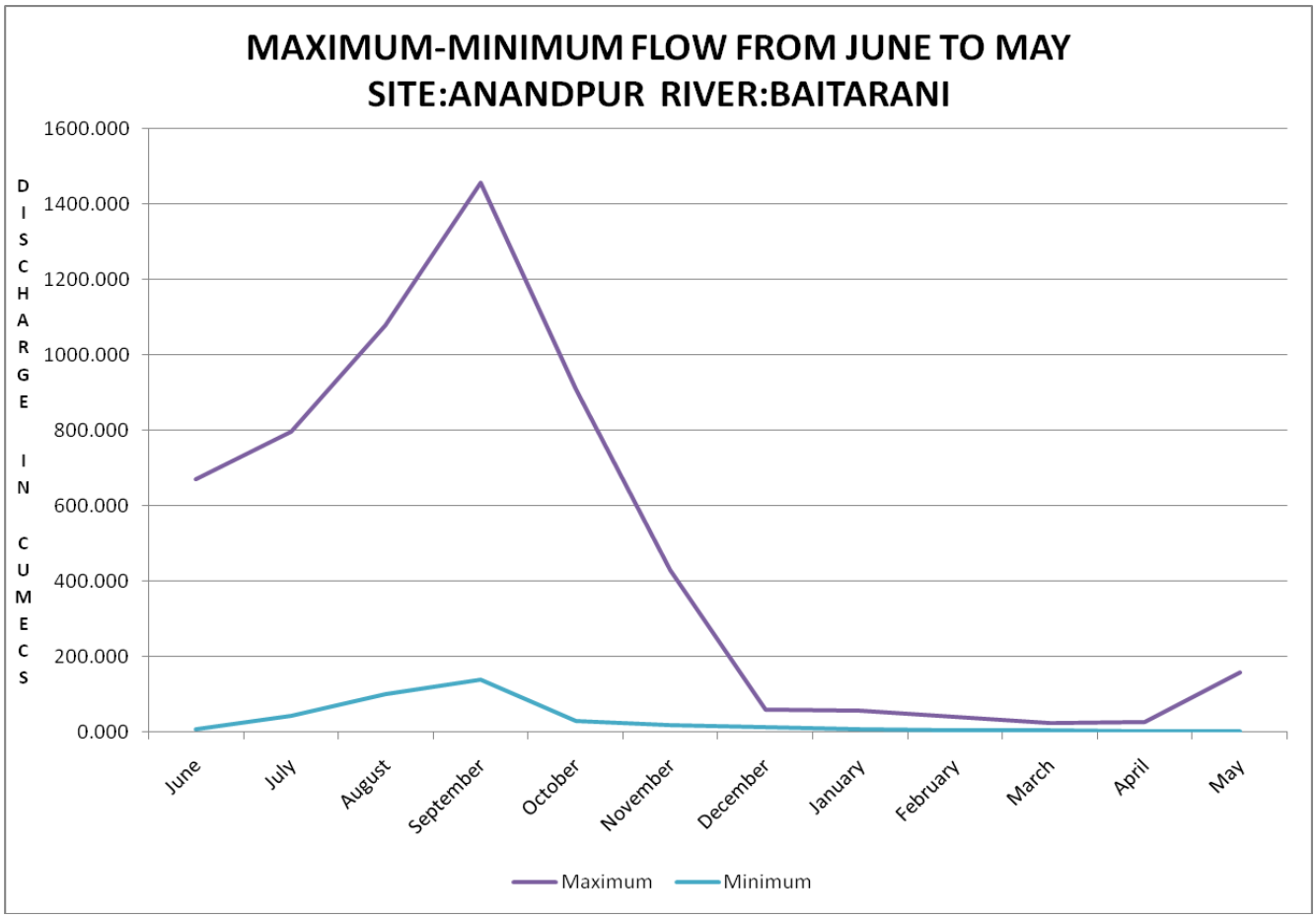
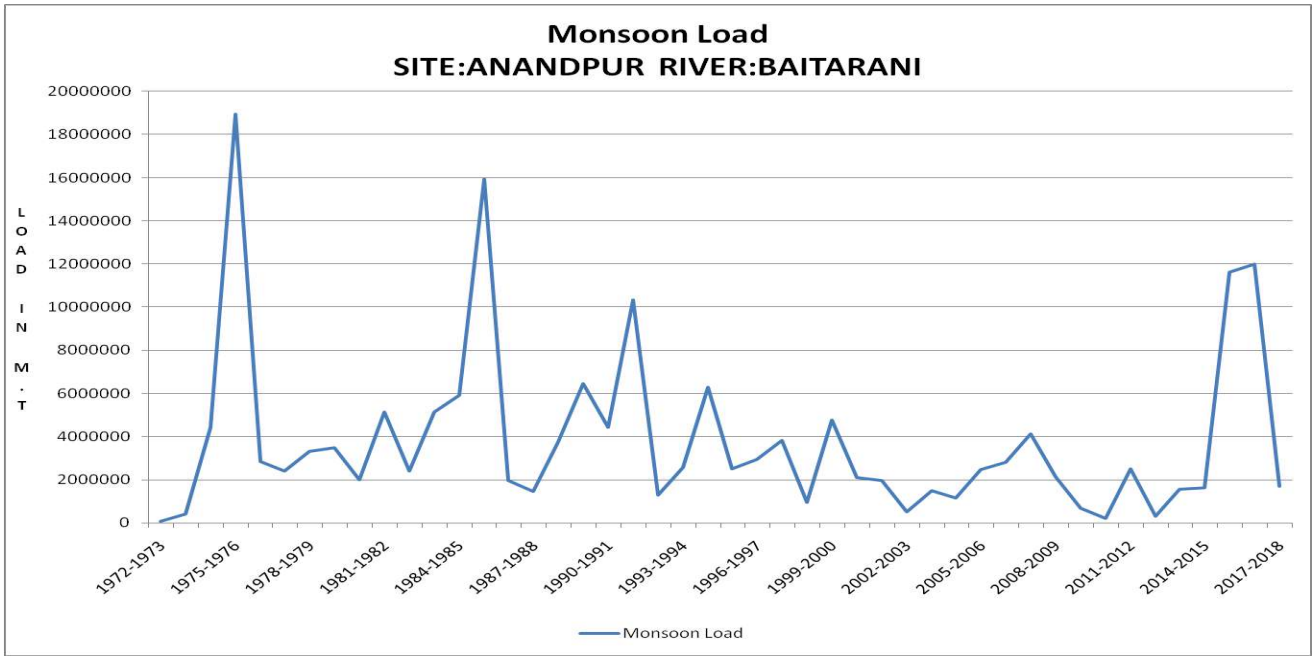
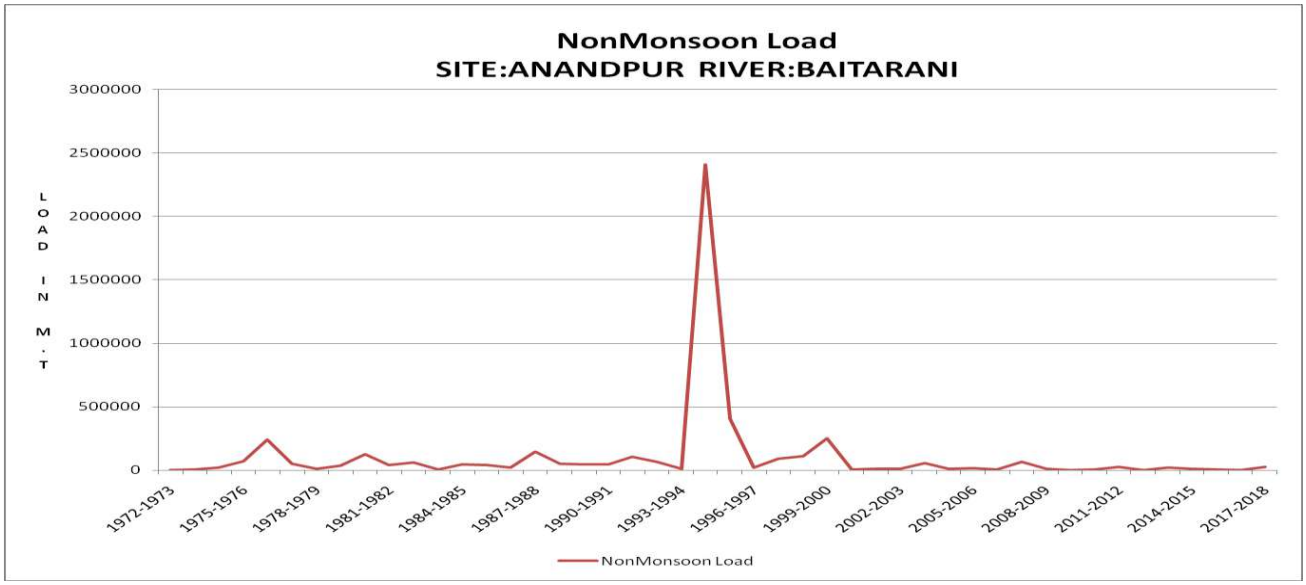
80000.000
60000.000
40000.000
20000.000
0.000
1972-1973
1975-1976
1978-1979
1981-1982
1984-1985
1987-1988
1990-1991
1993-1994
1996-1997
1999-2000
2002-2003
2005-2006
2008-2009
2011-2012
2014-2015
2017-2018
Monsoon
Annual Runoff

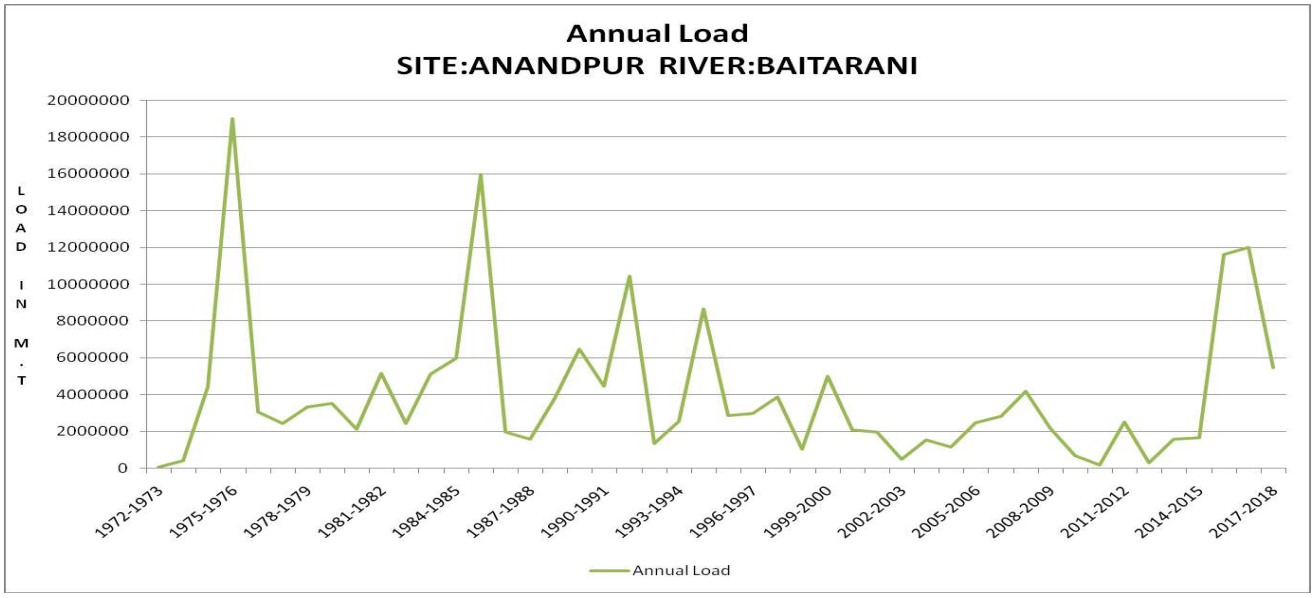

TOTAL ANNUAL DISCHARGE
SITE:ANANDPUR RIVER:BAITARANI
DISCHARGE IN CUMECS
16000.000
14000.000
12000.000
10000.000
8000.000
6000.000
4000.000
2000.000
0.000
1972-1973
1975-1976
1978-1979
1981-1982
1984-1985
1987-1988
1990-1991
1993-1994
1996-1997
1999-2000
2002-2003
2005-2006
2008-2009
2011-2012
2014-2015
2017-2018
Non-Monsoon

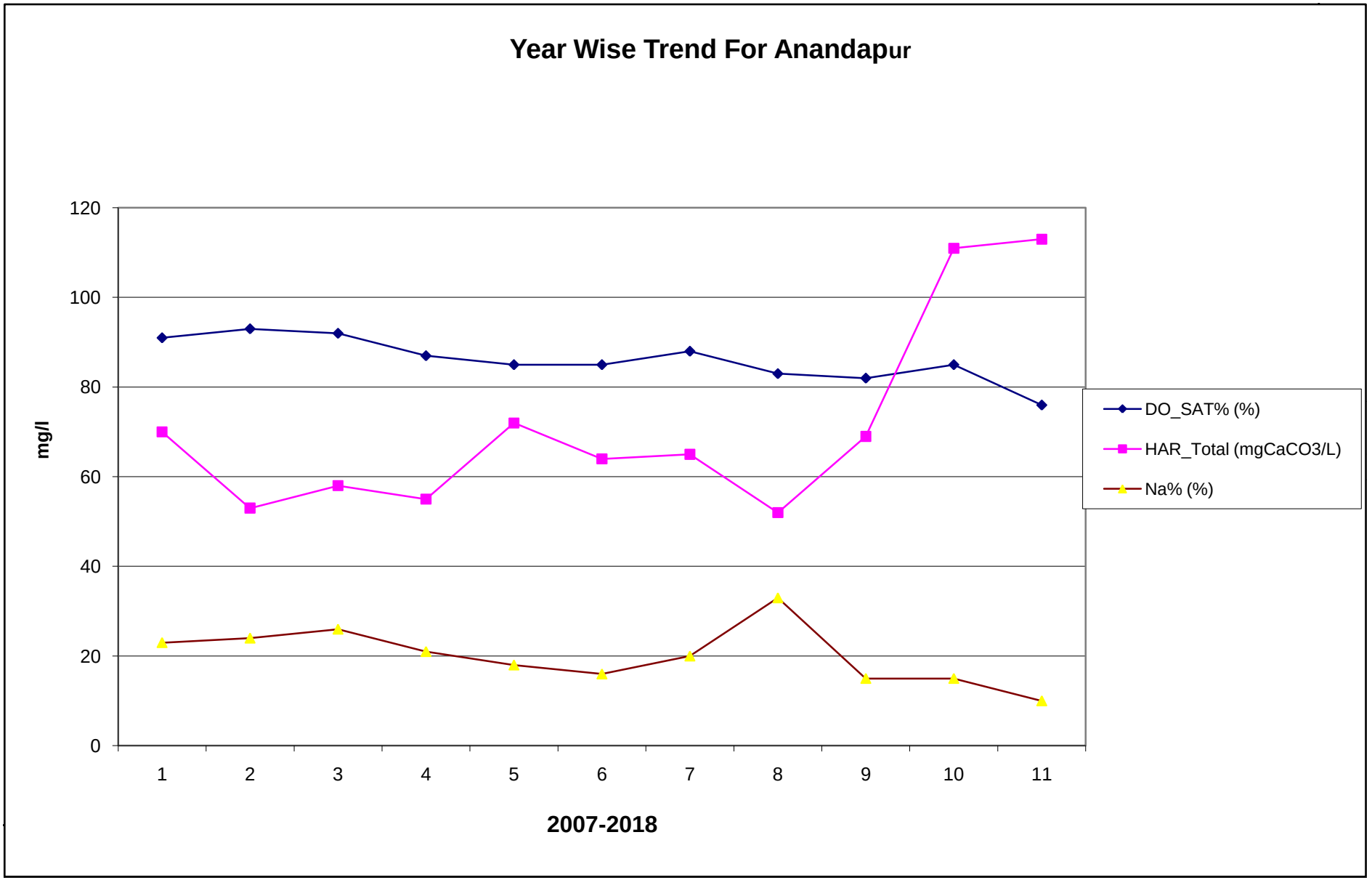

DEPENDIBILITY FLOW FROM JUNE TO MAY
SITE:ANANDPUR RIVER:BAITARANI
DISCHARGE IN CUMECS
800.000
700.000
600.000
500.000
400.000
300.000
200.000
100.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
75% Dep
50% Dep
25% Dep

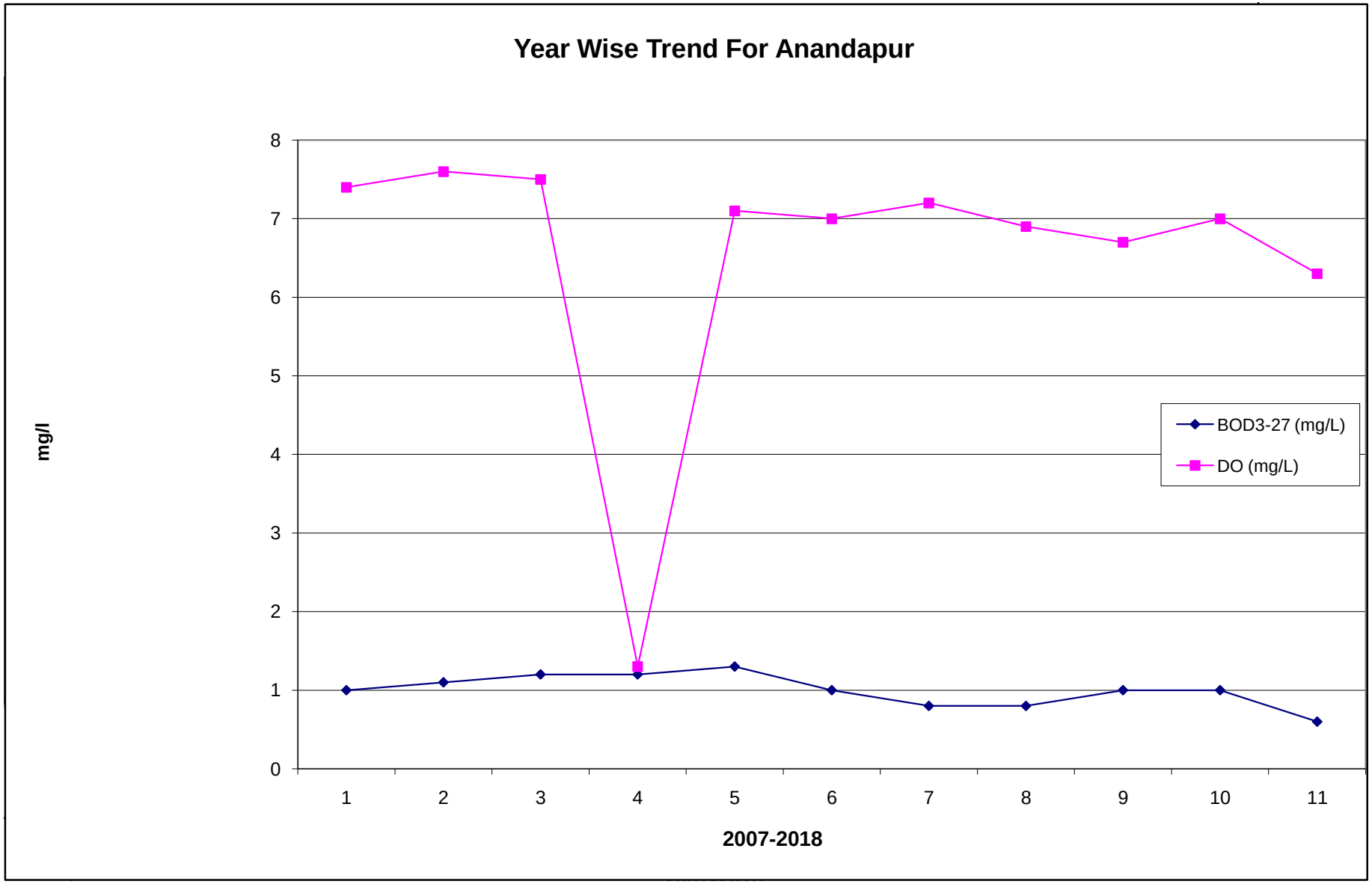

MAXIMUM-MINIMUM FLOW FROM JUNE TO MAY
SITE:ANANDPUR RIVER:BAITARANI
DISCHARGE IN CUMECS
1600.000
1400.000
1200.000
1000.000
800.000
600.000
400.000
200.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
Maximum
Minimum

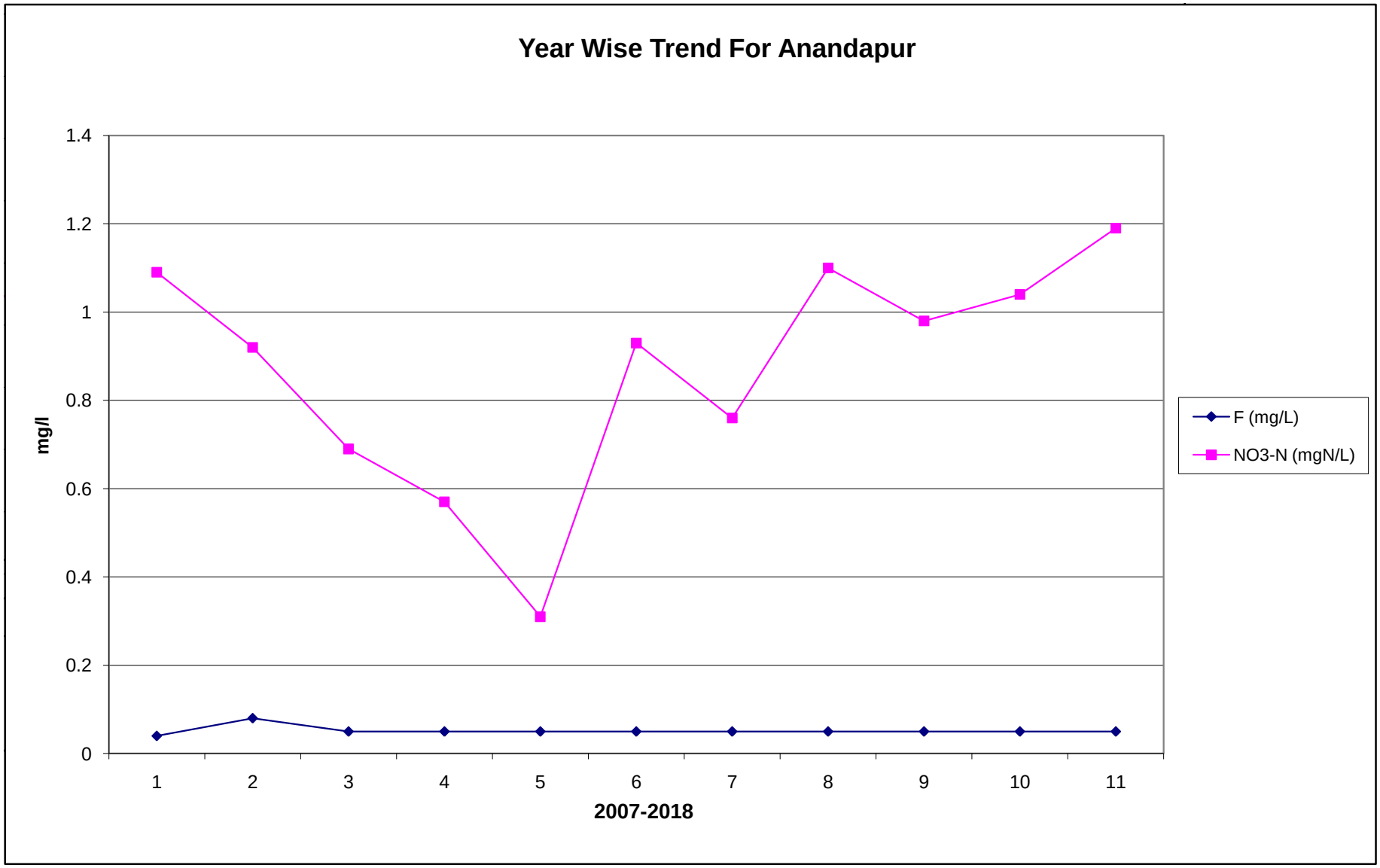

Monsoon Load
SITE:ANANDPUR RIVER:BAITARANI
LOAD IN M.T
20000000
18000000
16000000
14000000
12000000
10000000
8000000
6000000
4000000
2000000
0
1972-1973
1975-1976
1978-1979
1981-1982
1984-1985
1987-1988
1990-1991
1993-1994
1996-1997
1999-2000
2002-2003
2005-2006
2008-2009
2011-2012
2014-2015
2017-2018
Monsoon Load

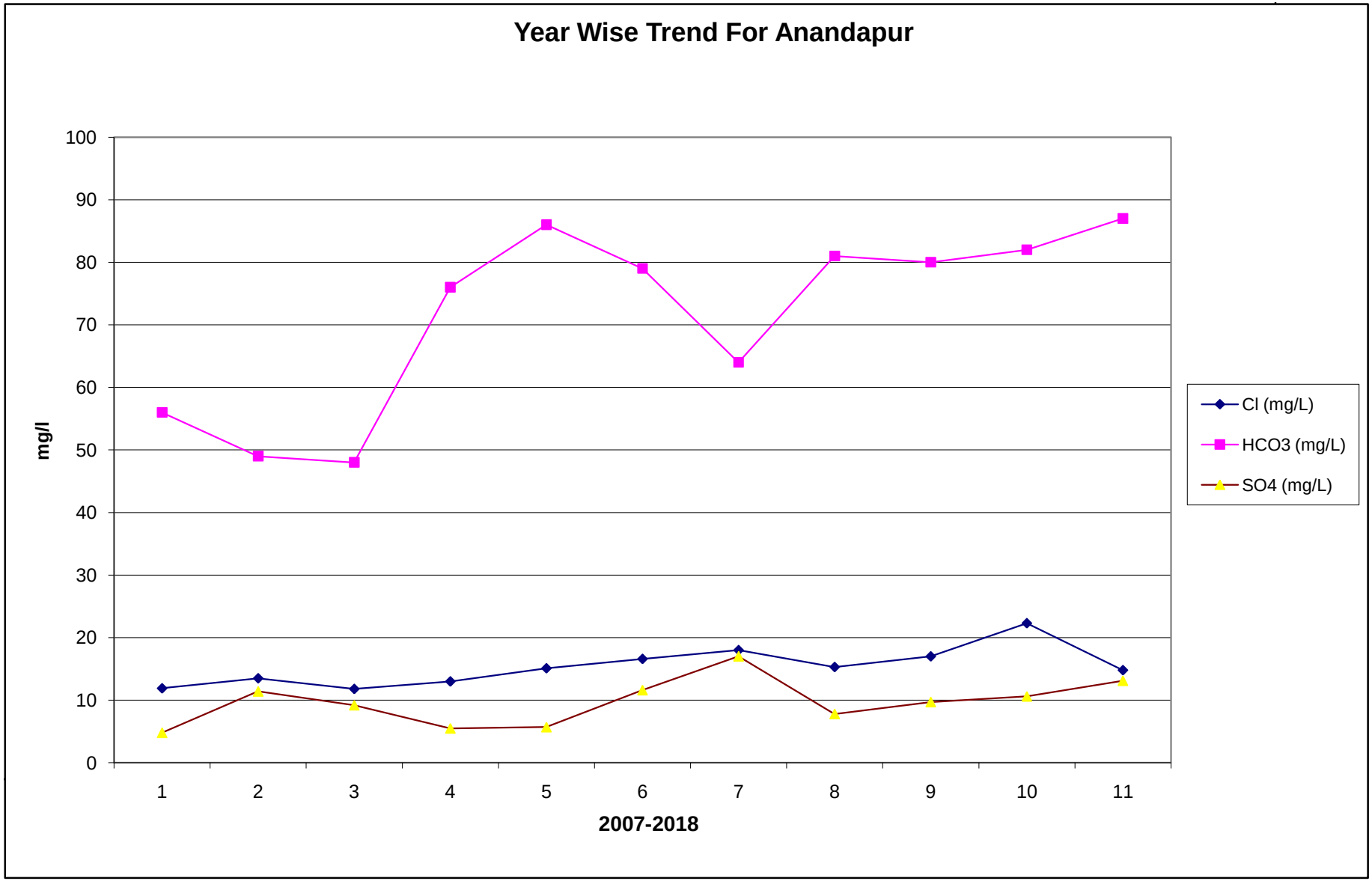

NonMonsoon Load
SITE:ANANDPUR RIVER:BAITARANI
LOAD IN M.T
3000000
2500000
2000000
1500000
1000000
500000
0
1972-1973
1975-1976
1978-1979
1981-1982
1984-1985
1987-1988
1990-1991
1993-1994
1996-1997
1999-2000
2002-2003
2005-2006
2008-2009
2011-2012
2014-2015
2017-2018
NonMonsoon Load

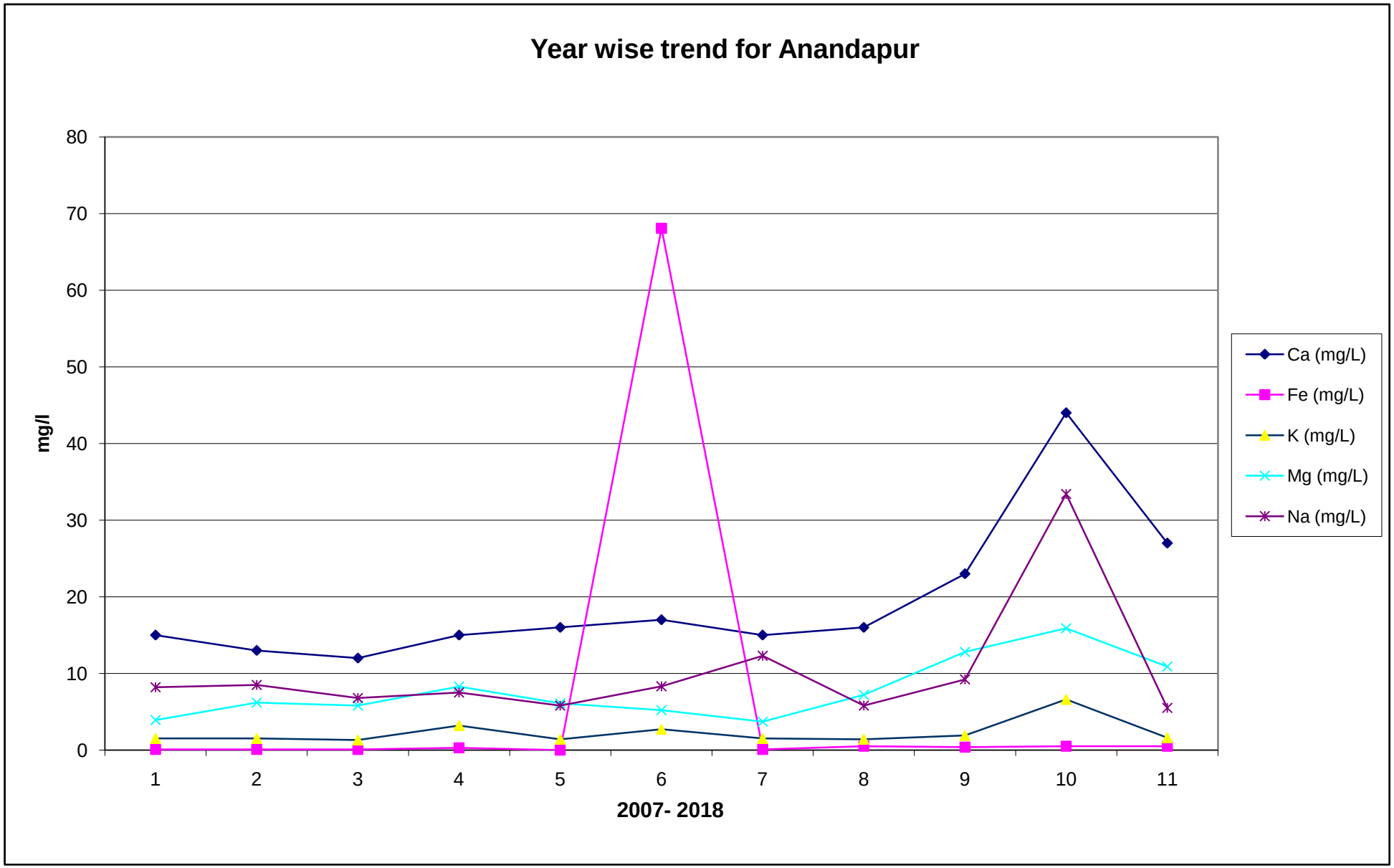

Annual Load
SITE:ANANDPUR RIVER:BAITARANI
LOAD IN M.T
20000000
18000000
16000000
14000000
12000000
10000000
8000000
6000000
4000000
2000000
0
1972-1973
1975-1976
1978-1979
1981-1982
1984-1985
1987-1988
1990-1991
1993-1994
1996-1997
1999-2000
2002-2003
2005-2006
2008-2009
2011-2012
2014-2015
2017-2018
Annual Load


Year Wise Trend For Anandapur
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
DO_SAT% (%)
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For Anandapur
mg/l
8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
9
10
11
2007-2018
BOD3-27 (mg/L)
DO (mg/L)


Year Wise Trend For Anandapur
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
2007-2018
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend For Anandapur
100
90
80
70
60
50
40
30
20
10
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year wise trend for Anandapur
80
70
60
50
40
30
20
10
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007- 2018
Ca (mg/L)
Fe (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

SUBARNAREKHA BASIN

SUBARNAREKHA BASIN

1. GENERAL

1.1ntroduction

Subarnarekha is one of the longest east flowing inter-state rivers. It originates near Nagri village in Ranchi district of Jharkhand at an elevation of 600 m. The total length of the river is about 395 km. The principal tributaries of the river are Kanchi, Kharkai and Karkari. The basin lies between north latitudes of 21^0 33' to 23^0 32' and east longitudes of 85^0 09' to 87^0 27' situated in the North-East corner of the peninsular India. It is bounded on the North-West by the Chhotnagpur Plateau, in the South-West by Brahmani basin, in the South by Burhabalang basin and in the South-East by the Bay of Bengal.

The total catchment area of the basin is 18,951 sq.km. State-wise distribution of the drainage area is tabulated below:

Sl. No.	Name of State	Catchment Area (sq. km)	Percentage of total catchment area
1.	Jharkhand	13,590	71.7
2.	Orissa	3,201	16.9
3.	West Bengal	2,160	11.4
	Total	**18,951**	**100.0**

Basin Map of Subarnarekha river system showing the various hydrological and hydro meteorological observation stations maintained by CWC, State Governments and the India Meteorological Department is enclosed herewith. Central Water Commission is maintaining six discharge sites in this basin of which Fekoghat and Jamsolaghat are seasonal discharge sites. Details are given in the table at the end of this chapter.

1.2 River System

The catchment areas of the important tributaries are given below:

Name of River	River/Tributary	Length (km)	Catchment area (sq.km)	Percentage of total catchment area
Subernarekha	Main Stream	395	7,383	39.0
Kanchi	Right Tributary	76	1,096	5.8
Karkari	Right Tributary	110	1,341	7.0
Kharkai	Right Tributary	136	6,611	34.9
Raru	Right Tributary	52	680	3.6
Garru	Right Tributary	58	640	3.4
Dulang	Left Tributary	84	1,200	6.3
	Total		**18,951**	**100.0**

1.3 Climatic Characteristics

The basin is generally influenced by the south-west monsoon, which onsets in the month of June and extends upto October. The average annual rainfall for the basin is around 1800 mm. The climate in the sub-basin is tropical with hot summers and mild winters. The mean monthly temperature varies from 40.5°C (May) to 9.00 °C (December). The highest temperature recorded is 47.2°C and the lowest is 2.8°C. Annual average maximum and minimum temperatures vary from 32.4° C to 18.0°C.

1.4 Geology

The geological formations occurring in the basin are (i) Pre-Cambrian or Achaean (ii) Tertiary and (iii) Alluvium plains. Out of these, Pre-Cambrian formations mostly cover Jharkhand and West Bengal regions and Tertiary and Alluvium plains cover the basin area in Orissa. The Achaean formations mostly comprise Geneiss, Micagenists, Phyllites, Dolomites and Granites. The underlying rock is highly undulating. This region contains some of the richest coal and ore deposits like iron and bauxite.

1.5 Site Details

Sl. No.	Name of Project	River	Status
1.	Torlow	(Tributary of Kharkai)	Existing
2.	Kadkai (Icha dam)	Kharkai	Existing
3.	Nesa	Nesa	Existing
4.	Kanchi	Kanchi	Existing
5.	Aradih	Kanchi	Existing
6.	Kokro	Kokro	Existing
7.	Roru	Barager	Existing
8.	Bamninala	Bamninala	Existing
9.	Bijoy	Sanjal	Existing
10.	Sona weir	Sona	Existing
11.	Kharkai Dam	Kharkai	Ongoing
12.	Kharkai Barrage	Kharkai	Ongoing
13.	Chandil Dam	Subernarekha	Ongoing
14.	Galudih Barrage	Subernarekha	Ongoing

2. STREAM FLOW DATA

2.1 Methodology

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 detailed as listed above..

The observed stage and discharge figures for each season (monsoon and non-monsoon) are plotted and a mean Stage V/s. 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 V/s. Discharge curves. Accordingly, the trend of the current curve is finalised. Finally, the discharges of the non observed days are computed from these Stage V/s. Discharge Curves.

2.2 Data Availability

Sl. No.	Code No.	Station Name	Type	Data available From	To
1.	ES000R3	Muri	GDQ	G-20.08.88 D-01.11.89 Q-01.05.91	Continuing -do- -do-
2.	ES000N5	Jamshedpur	GDSQ	G-24.06.71 D-01.02.72 S-27.11.72 Q-01.09.72	Continuing -do- -do- -do-
3.	ESB00D5	Adityapur	GDSQ	G-23.06.71 D-22.11.71 S-02.06.75 Q-01.01.76	Continuing -do- -do- -do-
4.	ES000K7	Ghatsila	GDSQ	G-16.03.71 D-16.03.71 S-30.12.72 Q-01.09.72	Continuing -do- -do- -do-
5.	ESA00F3	Fekoghat	F.F &GD	G-01.07.87 D-18.06.88	Continuing -do- (Seasonal)
6.		Jamsholaghat	GD	G -21.06.73 D -17.06.04	Continuing -do- (Seasonal)
7.		Rajghat	GD	G -01.06.72 D -01.03.13	Continuing -do-
8.		Gopiballavpur	GD	G -07.08.14 D -15.09.14	Continuing
9.	-	Ghatsila Rd Bridge *	Q	Q-01.04.91	Continuing
10.	-	Baridhi Nala *	Q	Q-01.04.91	Continuing
11.	-	Kulpatanga *	Q	Q-01.04.91	Continuing

Note: * These are Water Quality sample collection points. No regular CWC set up exists.

2.3 Explanatory Notes on 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 interpretation of data presented in this volume.

i) Water Year ranges from June 1st of one calendar year to May 31st 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-Chart 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 (In case of 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 (In case of 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 station (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 outside) 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) and to Raipur laboratory (under Mahanadi Division, Burla), 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, Aluminum, Ammonia, 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.

The following parameters are analyzed and recorded:

- Monthly Values: Physical; Chemical (mg/l); Biological (mg/l); Traces & Toxic (mg/l) and Chemical Indices.

- Average Values for the Year: 10 Years data to be given season wise averages:-

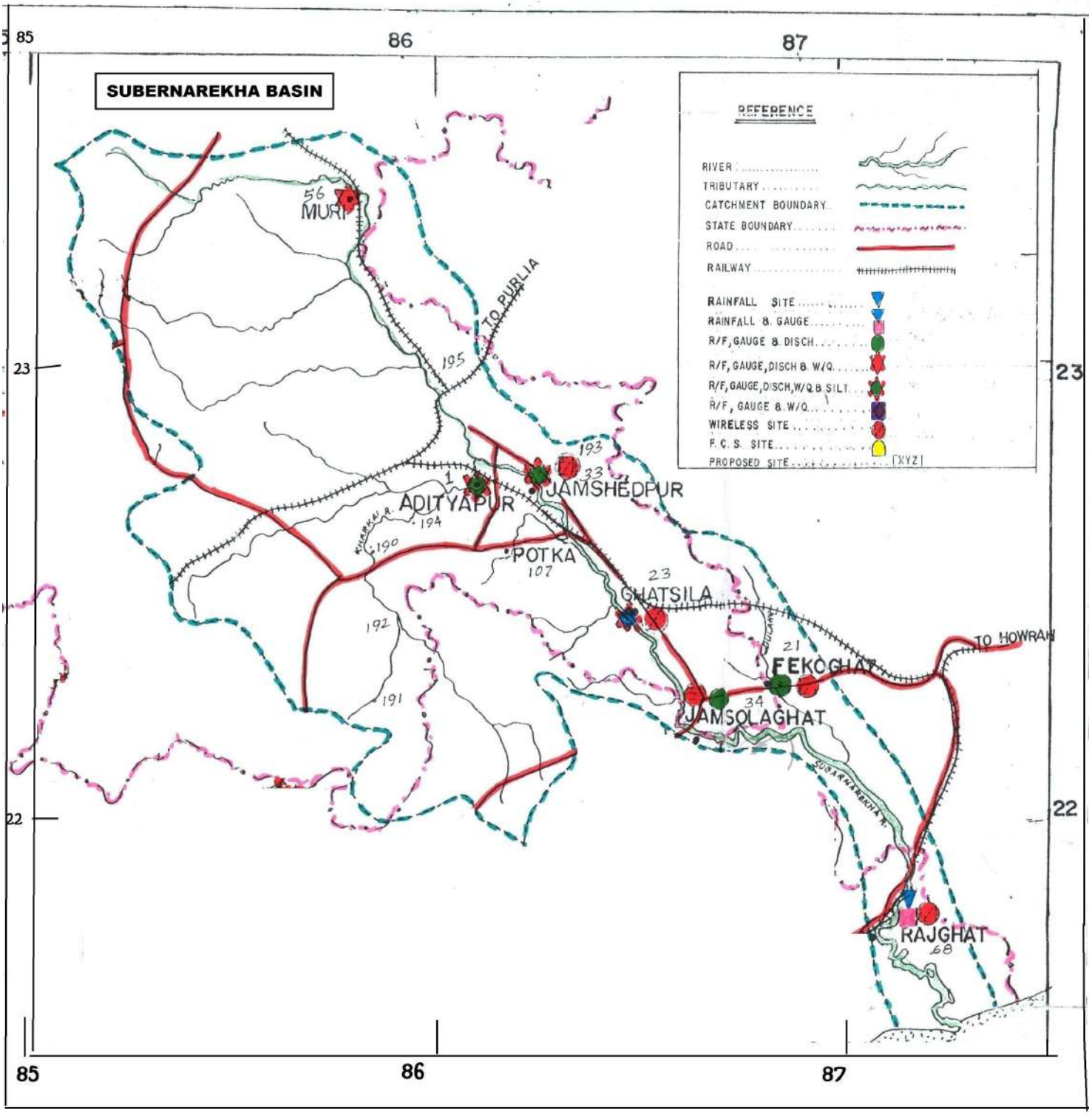
    - Average for Summer (March to June).
    - Average for Floods (July to October).
    - Average for Winter (November to February)

NAME OF THE SITES IN OPERATION UNDER SUBARNAREKHA BASIN

Sl. No.	Station Name	River/ Tributary	Type	Latitude	Longitude	Max. Water Level & Discharge upto May,2018			
						WL	Date	Q.	Date
1.	Adityapur	Kharkhai	GDSQ	22° 47' 29"	86° 10' 06"	137.80	18/06/08	6700	06/08/97
2.	Fekoghat	Dulong	GD	22° 18' 28"	86° 55' 11"	48.78	27/06/88	1488	28/06/97
3.	Ghatsila	Subarnarekha	GDSQ	22° 34' 49"	86° 20' 08"	86.835	13/10/73	10582	06/08/97
4.	Jamshedpur	Subarnarekha	GDSQ	22° 47' 00"	86° 12' 00"	129.82	12/10/73	8770	21/08/13
5.	Jamsholaghat	Subarnarekha	GD	22° 13' 08"	86° 43' 00"	56.755	03/09/78	2721	13/08/07
6.	Muri	Subarnarekha	GDQ	22° 48' 56"	86° 12' 47"	238.12	09/07/08	481	27/07/17
7.	Rajghat	Subarnarekha	G	21° 46' 04"	87° 09' 51"	12.69	19/07/08	4144	03/05/16
8.	Gopiballavpur	Subarnarekha	GD			38.15	27/07/15	2092	20/06/17

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

Sl. No.	Station Name	River/tributary	Type	Co-ordinates	
				Latitude	longitude
1	Ghatsila road bridge	Subarnrekha	Q	22^{o}-35 '-15"	86^{o}-27 '-12"
2	Baridhinala	Baridhinala	Q	86^{o}-14 '-33"	22^{o}-49 '-05"
3	Kulpatanga	Kharkhai	Q	86^{o}-06 '-10"	22^{o}-49 '-04"


SUBERNAREKHA BASIN
REFERENCE
RIVER
TRIBUTARY
CATCHMENT BOUNDARY
STATE BOUNDARY
ROAD
RAILWAY
RAINFALL SITE
RAINFALL & GAUGE
R/F, GAUGE & DISCH
R/F, GAUGE, DISCH & W/Q
R/F, GAUGE, DISCH, W/Q & SILT
R/F, GAUGE & W/Q
WIRELESS SITE
F.C.S. SITE
PROPOSED SITE [XYZ]
85
86
87
23
22
56
MURI
TO PURLIA
195
193
33
1
ADITYAPUR
JAMSHEDPUR
194
190
KHARKAI R.
POTKA
107
23
GHATSILA
192
191
21
FEKOGHAT
TO HOWRAH
34
JAMSOLAGHAT
SUBARNAREKHA R.
RAJGHAT
68

HISTORY SHEET

Water Year : 2017-2018

Site	**:**	**MURI**	**Code**	**:**	**ES000R3**
State	:	Jharkhand	District		Ranchi
Basin	:	Subarnarekha	Independent River	:	Subarnarekha
Tributary	:	-	Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	Subarnarekha
Division	:	E.E., Bhubaneswar	Sub-Division	:	Balasore
Drainage Area	:	1330 Sq. Km.	Bank	:	Right
Latitude	:	22°48'56"	Longitude	:	86°12'47"
Zero of Gauge (m)	:	231 (m.s.l)	8/20/1988	-	8/20/2028
		Opening Date	Closing Date		
Gauge	:	8/20/1988			
Discharge	:	11/1/1989			
Sediment	:				
Water Quality	:	5/1/1991			

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

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1990-1991	350.1	235.840	10/5/1990	0.700	234.595	6/14/1990
1991-1992	431.3	236.400	9/7/1991	0.640	234.460	6/5/1991
1992-1993	133.5	236.010	8/7/1992	0.081	234.230	5/28/1993
1993-1994	72.72	235.120	8/21/1993	0.209	234.260	6/1/1993
1994-1995	296.0	237.335	7/9/1994	0.743	234.380	5/31/1995
1995-1996	261.8	236.990	9/6/1995	0.466	234.395	5/29/1996
1996-1997	226.2	236.580	8/23/1996	0.150	234.365	6/4/1996
1997-1998	189.0	236.680	8/7/1997	0.061	234.290	6/12/1997
1998-1999	209.4	236.720	9/12/1998	0.090	234.270	6/12/1998
1999-2000	220.6	236.540	7/29/1999	0.098	234.470	4/22/2000
2000-2001	65.25	235.240	7/27/2000	0.200	234.270	5/27/2001
2001-2002	141.1	235.970	8/31/2001	0.270	234.320	6/3/2001
2002-2003	74.57	235.500	9/11/2002	0.424	234.180	5/31/2003
2003-2004	123.7	236.035	10/9/2003	0.000	234.135	6/13/2003
2004-2005	93.20	235.450	10/7/2004	0.322	234.070	5/31/2005
2005-2006	83.78	235.250	8/22/2005	0.000	234.050	6/23/2005
2006-2007	428.2	237.500	9/24/2006	0.000	233.540	4/10/2007
2007-2008	225.9	236.020	8/18/2007	0.198	233.640	4/24/2008
2008-2009	206.7	237.025	7/9/2008	0.180	233.640	5/23/2009
2009-2010	118.0	236.020	9/7/2009	0.000	233.480	5/25/2010
2010-2011	44.80	234.515	9/16/2010	0.000	233.390	6/16/2010
2011-2012	140.0	236.200	8/14/2011	0.000	233.560	6/8/2011
2012-2013	86.97	234.590	9/17/2012	0.000	233.250	5/23/2013
2013-2014	145.0	235.440	10/14/2013	0.000	233.260	5/22/2014
2014-2015	90.00	234.500	9/21/2014	0.000	233.440	3/3/2015
2015-2016	92.57	233.980	7/27/2015	0.000	233.280	2/22/2016
2016-2017	95.43	234.780	8/18/2016	0.000	233.280	3/21/2017
2017-2018	481.0	237.000	7/27/2017	2.600	233.160	3/30/2018

Stage-Discharge Data for the period 2017 - 2018

Station Name : MURI (ES000R3) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

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	233.600	17.03	233.560	15.90	234.020	46.52	234.150	90.05	233.750	75.00 *	233.930	38.48
2	233.600	16.99	233.870	33.00 *	234.090	51.52	234.030	85.50 *	233.850	78.00 *	234.000	40.41
3	233.580	16.56	233.810	33.01	234.300	68.92	234.150	92.00 *	233.900	80.54	233.980	40.53
4	233.450	14.00 *	233.810	32.88	234.245	48.58	234.150	92.95	234.020	82.24	233.560	35.00 *
5	233.610	17.50	233.780	31.62	235.920	350.9	234.140	90.01	234.170	92.49	233.470	32.00 *
6	233.580	16.64	233.680	24.10	235.950	350.0 *	234.140	92.29	234.280	95.17	233.550	35.91
7	233.760	31.80	233.630	22.06	234.525	175.2	234.130	91.00	233.830	77.71	234.070	47.90
8	233.750	31.24	233.830	34.04	234.400	113.3	233.790	69.82	234.290	97.00 *	234.060	48.05
9	234.110	59.64	233.660	24.00 *	234.270	53.95	234.180	91.22	233.970	90.13	233.740	35.26
10	234.120	54.30	233.580	17.41	234.300	68.99	234.200	92.00 *	233.990	90.33	233.700	30.38
11	234.080	54.00 *	234.020	46.50	234.360	96.54	233.720	68.35	233.920	89.01	233.730	33.31
12	234.120	60.13	233.800	29.05	234.430	128.2	234.060	88.35	234.000	90.65	233.910	38.00 *
13	234.120	60.19	233.760	31.80	234.390	128.0 *	233.880	82.76	234.250	96.47	234.300	48.65
14	234.120	60.07	234.050	49.93	234.350	92.33	233.870	83.09	234.200	93.11	234.130	52.46
15	234.120	60.08	233.850	35.81	234.400	92.00 *	233.820	78.28	234.000	80.00 *	233.980	46.22
16	234.120	60.07	233.850	35.80 *	234.605	222.3	234.065	85.39	233.840	66.83	234.010	47.01
17	233.700	23.54	233.700	25.30	234.365	97.48	233.790	82.00 *	233.970	69.26	233.980	45.72
18	233.580	16.64 *	233.650	23.04	234.530	180.1	234.000	83.53	233.990	71.77	233.970	46.30
19	233.740	31.75	233.690	24.23	234.310	96.15	234.020	84.89	234.160	80.00 *	233.950	45.00 *
20	233.610	17.50	233.740	31.96	234.340	92.00 *	233.860	78.84	234.120	75.40	233.970	45.78
21	233.570	16.13	234.160	60.87	234.300	95.50	234.190	92.13	233.930	66.92	233.950	45.20
22	233.750	31.45	234.700	76.61	234.240	93.88	233.840	77.31	234.120	75.00 *	233.960	45.34
23	233.810	32.83	234.360	130.0 *	234.260	94.37	234.185	91.83	233.810	65.33	233.920	43.86
24	233.670	24.66	234.570	73.65	234.240	93.60	233.900	83.00 *	233.830	65.71	233.950	44.88
25	233.620	16.60 *	235.500	153.0	234.260	94.33	233.830	81.67	233.900	66.07	233.530	18.24
26	233.580	16.50 *	236.800	334.0	234.240	93.60	233.810	81.19	233.920	67.17	233.910	44.00 *
27	233.540	15.74	237.000	481.0	234.210	93.60 *	233.745	75.15	233.820	64.79	233.510	16.28
28	233.530	11.33	234.550	136.1	234.200	91.31	233.775	71.32	234.050	74.98	233.490	16.21
29	233.530	13.63	234.310	107.5	234.250	94.03	234.310	95.00 *	233.780	66.00 *	233.680	28.96
30	233.560	15.82	234.440	107.0 *	234.220	92.59	234.300	95.20 *	233.920	68.17	233.870	35.79
31			234.090	50.92	234.180	91.27			234.010	70.02		
Ten-Daily Mean												
I Ten-Daily	233.716	27.57	233.721	26.80	234.602	132.8	234.106	88.68	234.005	85.86	233.806	38.39
II Ten-Daily	233.931	44.40	233.811	33.34	234.408	122.5	233.909	81.55	234.045	81.25	233.993	44.85
III Ten-Daily	233.616	19.47	234.953	155.5	234.236	93.46	233.988	84.38	233.917	68.20	233.777	33.88
Monthly												
Min.	233.450	11.33	233.560	15.90	234.020	46.52	233.720	68.35	233.750	64.79	233.470	16.21
Max.	234.120	60.19	237.000	481.0	235.950	350.9	234.310	95.20	234.290	97.00	234.300	52.46
Mean	233.754	30.48	234.187	74.58	234.410	115.5	234.001	84.87	233.987	78.11	233.859	39.04

Annual Runoff in MCM = 1333 Annual Runoff in mm = 1002

Peak Observed Discharge = 481.0 cumecs on 27-Jul-17 Corres. Water Level :237 m

Lowest Observed Discharge = 2.838 cumecs on 28-Mar-18 Corres. Water Level :233.17 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 2017 - 2018

Station Name : MURI (ES000R3) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	233.840	35.47	233.450	15.10	233.370	7.399	233.680	32.89	233.410	13.50 *	233.280	7.277
2	233.480	13.00 *	233.430	13.11	233.370	7.328	233.650	31.50 *	233.400	12.87	233.270	6.125
3	233.470	13.00 *	233.420	12.65	233.370	7.399	233.360	8.043	233.310	10.52	233.320	8.493
4	233.470	12.37	233.420	12.20	233.370	7.000 *	233.320	8.000 *	233.300	10.00	233.600	17.87
5	233.490	13.83	233.410	12.05	233.370	7.256	233.300	7.581	233.280	9.013	233.430	12.92
6	233.470	12.88	234.000	46.60	233.360	7.221	233.300	7.616	233.260	8.005	233.390	10.00 *
7	233.470	12.66	233.600	27.00 *	233.360	7.185	233.290	7.438	233.340	11.30	233.370	9.506
8	233.470	12.95	233.850	33.54	233.350	7.043	233.250	5.158	233.390	12.80 *	233.360	9.271
9	233.470	12.95	233.770	28.96	233.350	7.007	233.260	5.479	233.360	12.18	233.340	8.879
10	233.460	12.90 *	233.830	35.35	233.850	36.56	233.250	5.208	233.360	12.18	233.330	8.473
11	233.460	12.85	234.000	48.13	233.900	38.50 *	233.800	38.00 *	233.370	12.53	233.360	9.468
12	233.460	12.88	233.990	47.70	233.700	27.58	234.050	49.06	233.350	11.49	233.310	7.545
13	233.460	12.85	233.950	46.31	233.500	15.95	233.440	14.24	233.340	11.12	233.300	7.300 *
14	233.460	12.88	233.900	43.00 *	233.500	16.01	233.420	13.27	233.320	10.40 *	233.380	10.03
15	233.450	12.74	233.720	30.36	233.520	17.52	233.360	9.262	233.310	10.00 *	233.340	8.395
16	233.450	12.48	233.470	14.50	233.580	19.93	233.320	8.225	233.290	8.507	233.320	7.961
17	233.450	12.65 *	233.420	12.25	233.650	26.22	233.320	8.190	233.280	7.826	233.310	7.640
18	233.450	12.70	233.400	10.78	233.430	12.00 *	233.280	6.500 *	233.420	13.02	233.310	7.640
19	233.420	12.90	233.900	45.82	233.430	12.30	233.260	6.061	233.420	13.02	233.300	7.085
20	233.420	12.47	234.000	51.21	233.700	32.90	233.250	5.250	233.440	14.00	233.320	7.900 *
21	233.420	12.40	233.560	16.00 *	233.420	11.67	233.240	5.207	233.440	14.01	233.350	9.019
22	233.420	12.40	233.420	10.29	233.420	11.60	233.240	5.122	233.350	11.41 *	233.340	8.661
23	233.430	12.93	233.400	7.791	233.420	11.39	233.230	5.122	233.350	11.41	233.640	20.82
24	233.430	12.90 *	233.390	7.720	233.420	11.12	233.210	5.036	233.320	10.02	233.560	17.54
25	233.420	12.55 *	233.390	7.720	233.410	11.00 *	233.200	4.000 *	233.280	8.003	233.580	17.96
26	233.430	12.93	233.380	7.600 *	233.430	11.61	233.190	3.948	233.260	7.006	233.430	13.58
27	233.410	12.33	233.380	7.648	233.420	11.64	233.190	3.969	233.240	6.018	233.420	13.10 *
28	233.410	12.25	233.380	7.600 *	233.700	32.94	233.170	2.838	233.300	10.01	233.430	13.47
29			233.380	7.612			233.160	2.600 *	233.300	10.01 *	233.420	13.10
30			233.380	7.541			233.160	2.600 *	233.270	8.500 *	233.450	13.99
31			233.370	7.399			233.420	13.40			233.480	15.13
Ten-Daily Mean												
I Ten-Daily	233.509	15.20	233.618	23.65	233.412	10.14	233.366	11.89	233.341	11.24	233.369	9.882
II Ten-Daily	233.448	12.74	233.775	35.01	233.591	21.89	233.450	15.81	233.354	11.19	233.325	8.096
III Ten-Daily	233.421	12.59	233.403	8.629	233.455	14.12	233.219	4.895	233.311	9.640	233.464	14.22
Monthly												
Min.	233.410	12.25	233.370	7.399	233.350	7.000	233.160	2.600	233.240	6.018	233.270	6.125
Max.	233.840	35.47	234.000	51.21	233.900	38.50	234.050	49.06	233.440	14.01	233.640	20.82
Mean	233.462	13.57	233.592	21.99	233.488	15.47	233.341	10.67	233.335	10.69	233.388	10.84

Peak Computed Discharge = 350.0 cumecs on 06-Aug-17 Corres. Water Level :235.95 m

Lowest Computed Discharge = 2.600 cumecs on 29-Mar-18 Corres. Water Level :233.16 m

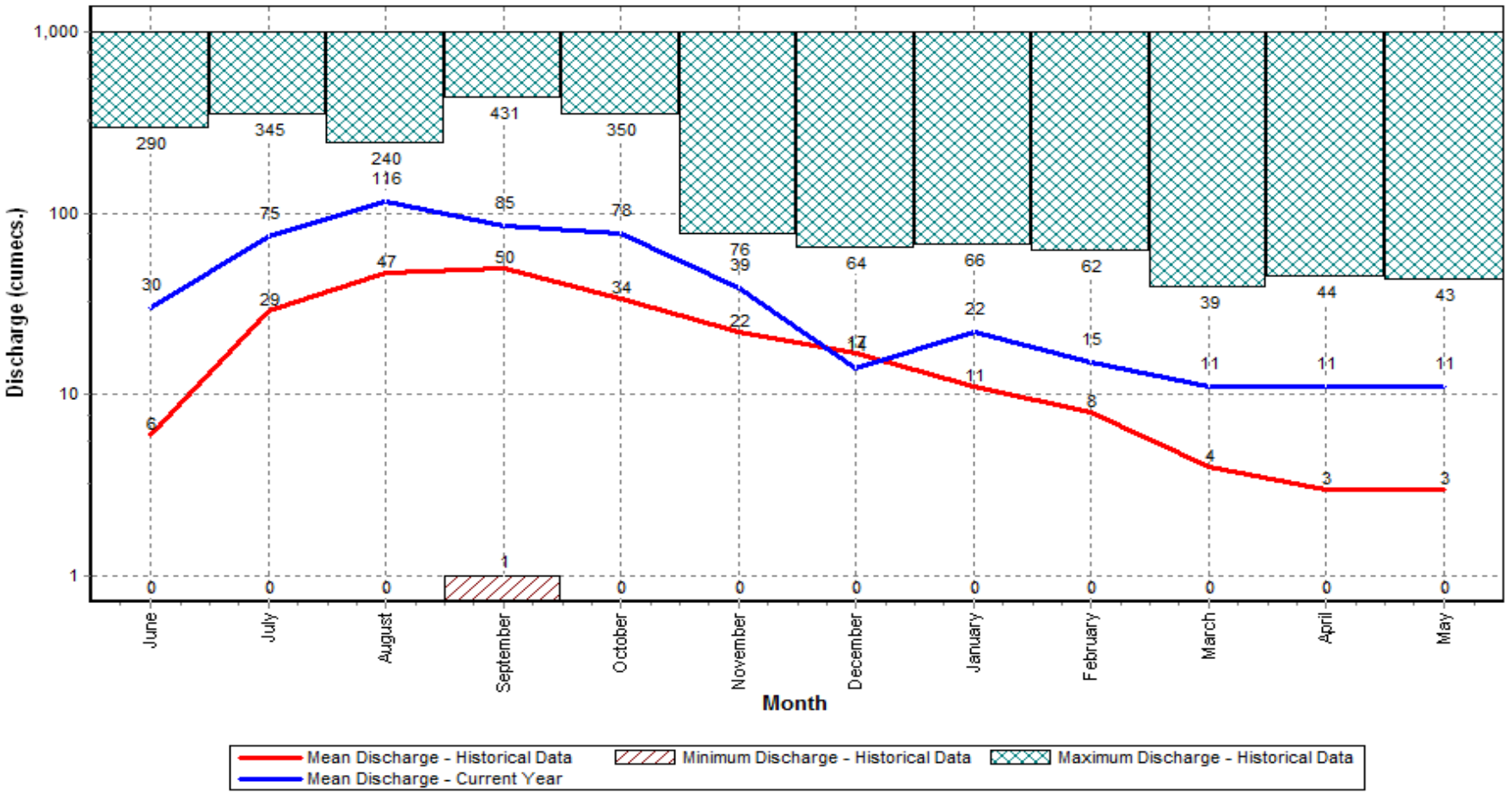
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2017-2018

Station Name : MURI (ES000R3) | **Data considered : 1990-2018** | **Division : E.E., Bhubaneswar**

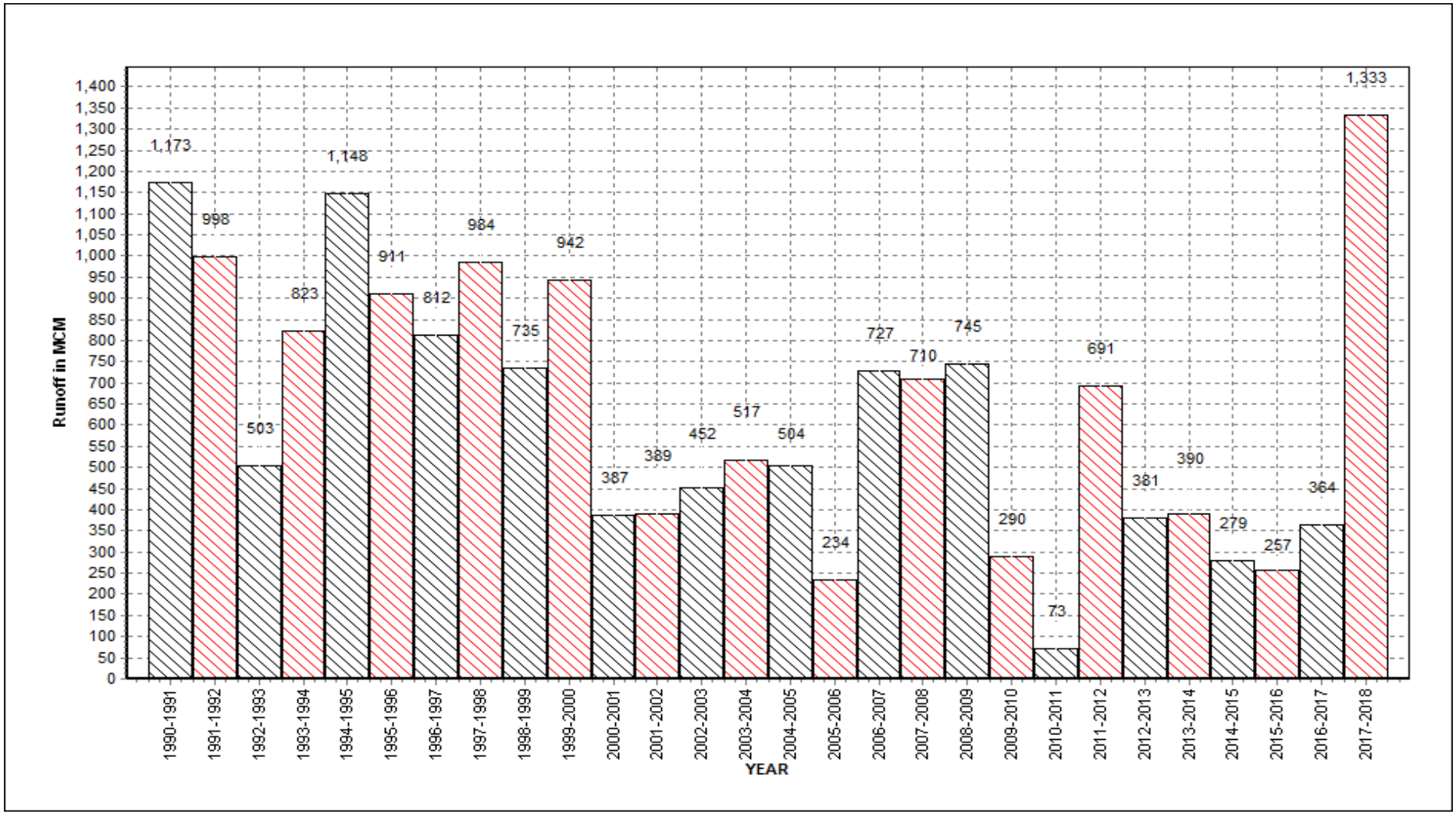
Local River : Subarnarekha | **Sub-Division : Balasore**



Annual Runoff Values for the period: 1990 - 2018

Station Name : MURI (ES000R3) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

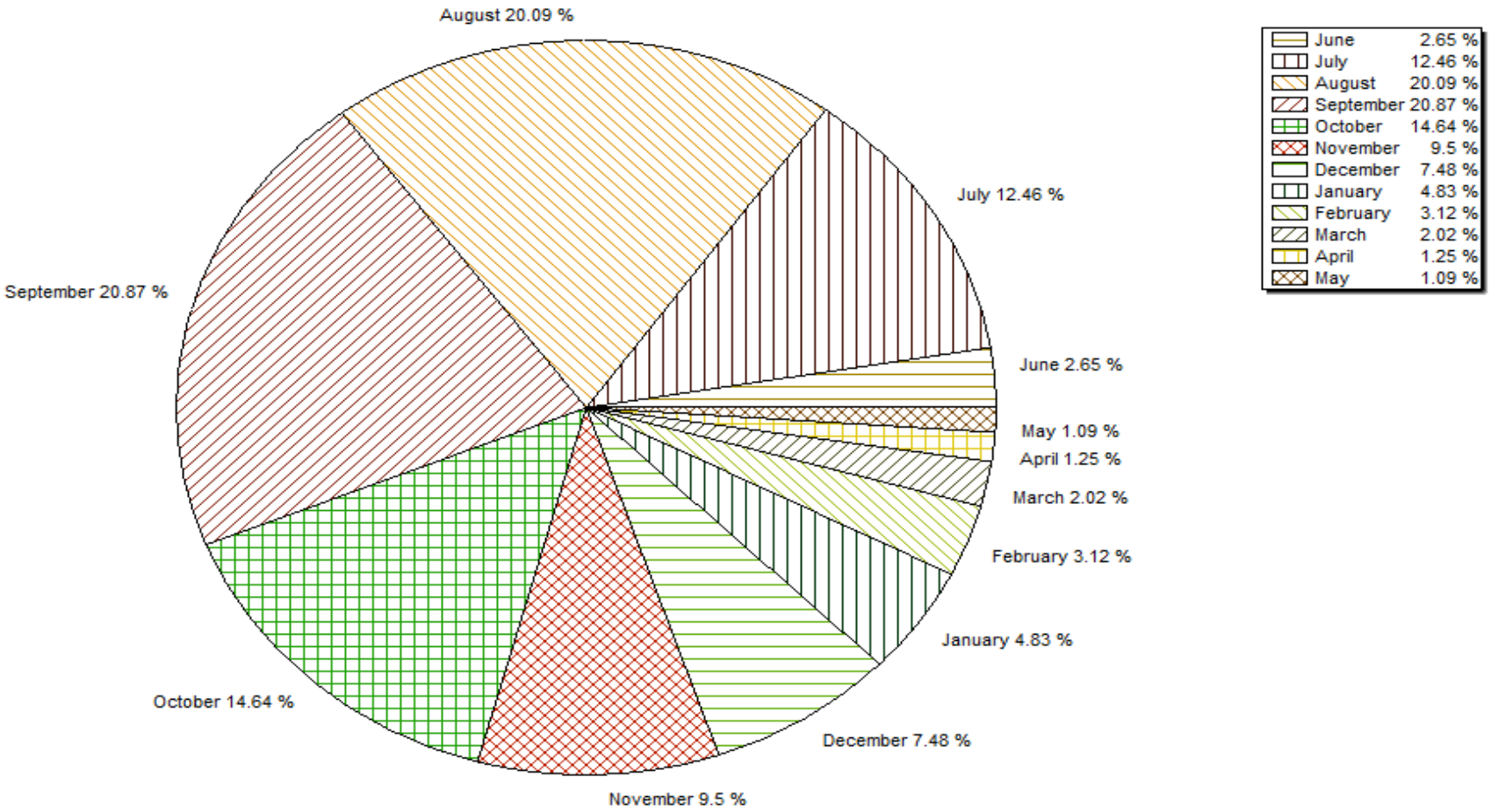


Note: Missing values have not been considered while arriving at Annual Runoff

Monthly Average Runoff based on period : 1990-2017

Station Name : MURI (ES000R3)
Local River : Subarnarekha

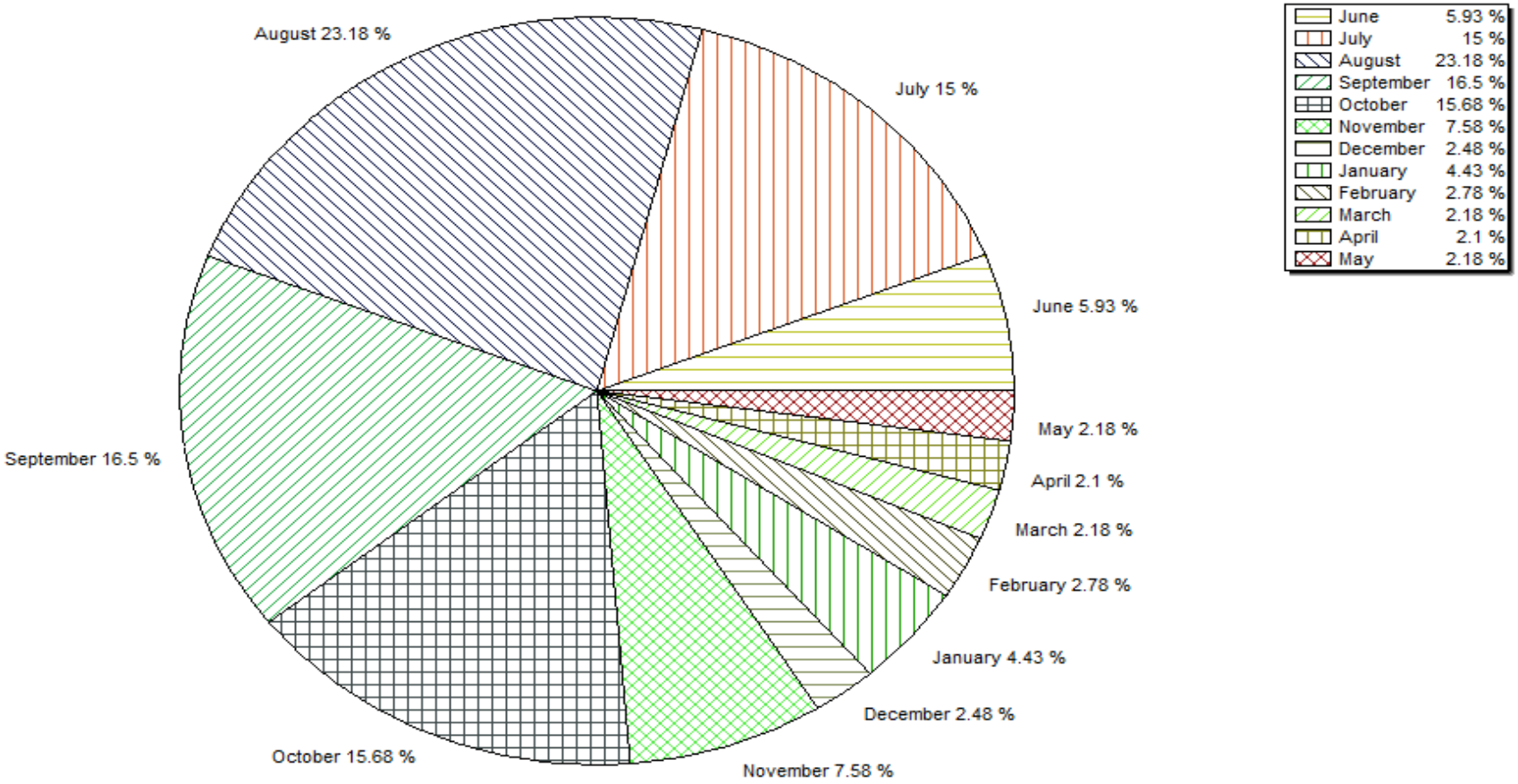
Division : E.E., Bhubaneswar
Sub-Division : Balasore



Monthly Runoff for the Year : 2017-2018

Station Name : MURI (ES000R3) **Division : E.E., Bhubaneswar**

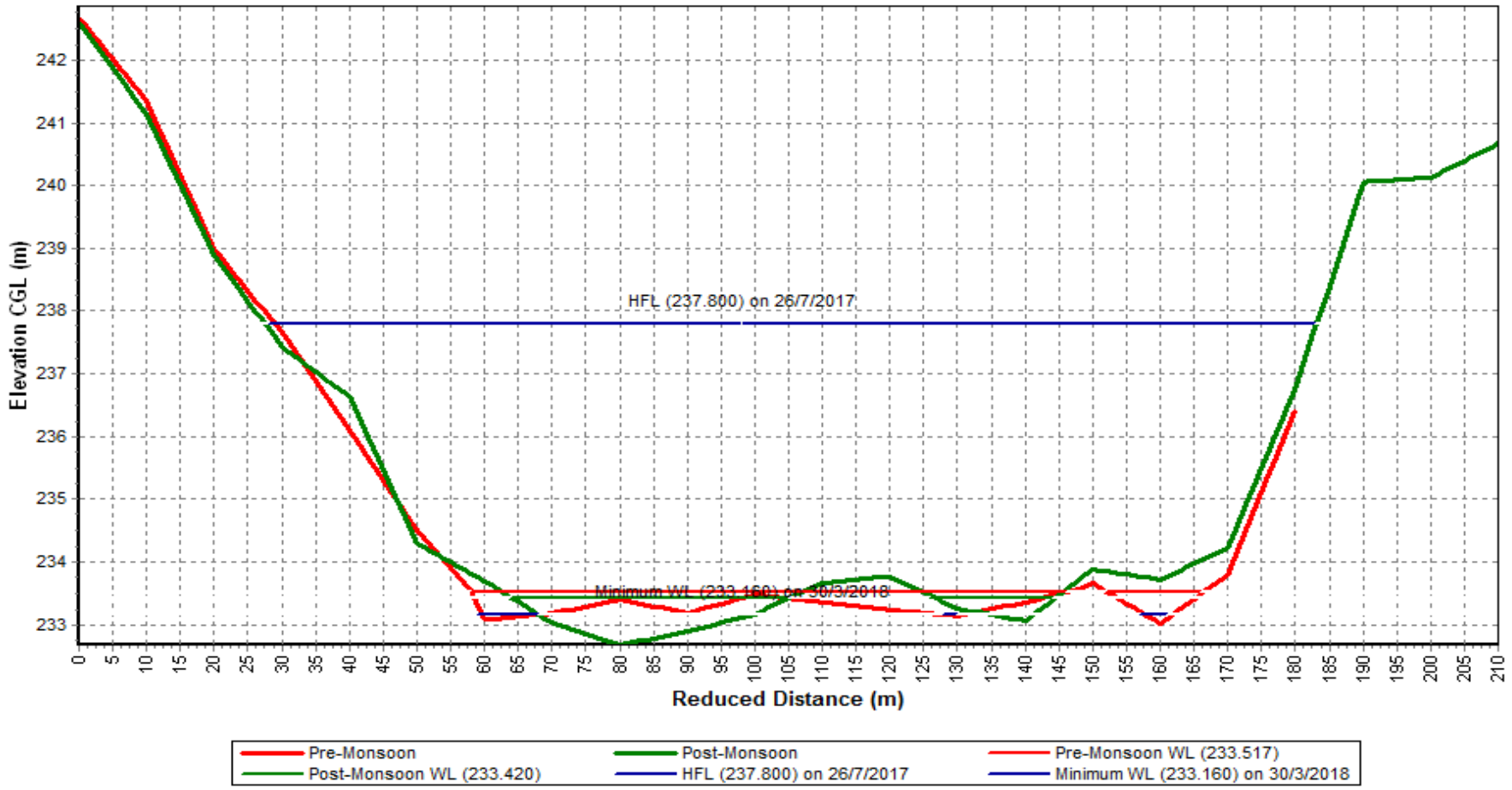
Local River : Subarnarekha **Sub-Division : Balasore**



Pre-Monsoon & Post-Monsoon X-Section for Water Year : 2017-2018

Station Name : MURI (ES000R3) **Division : E.E., Bhubaneswar**

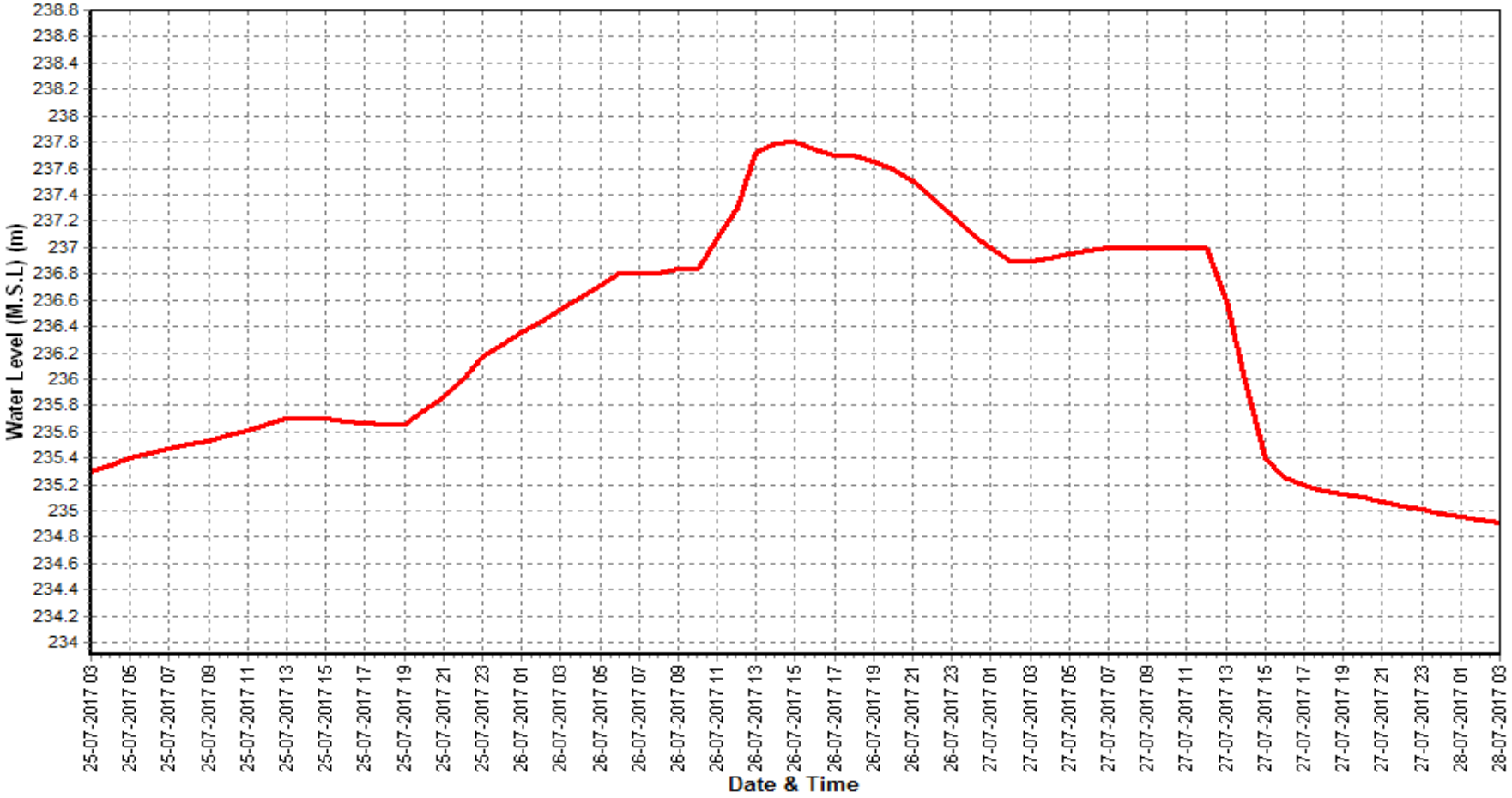
Local River : Subarnarekha **Sub-Division : Balasore**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2017-2018

Station Name : MURI (ES000R3) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

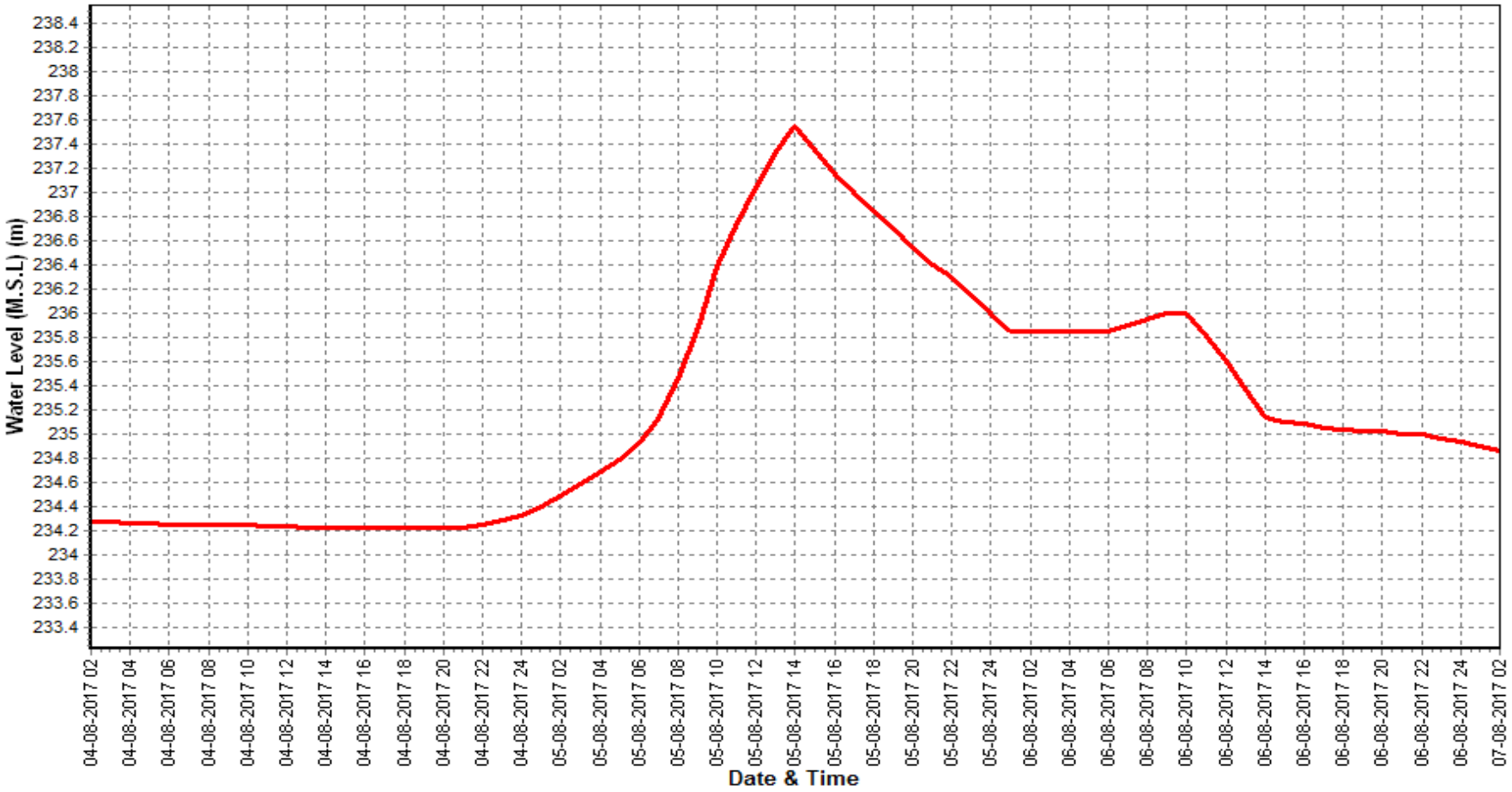


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2017-2018

Station Name : MURI (ES000R3) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

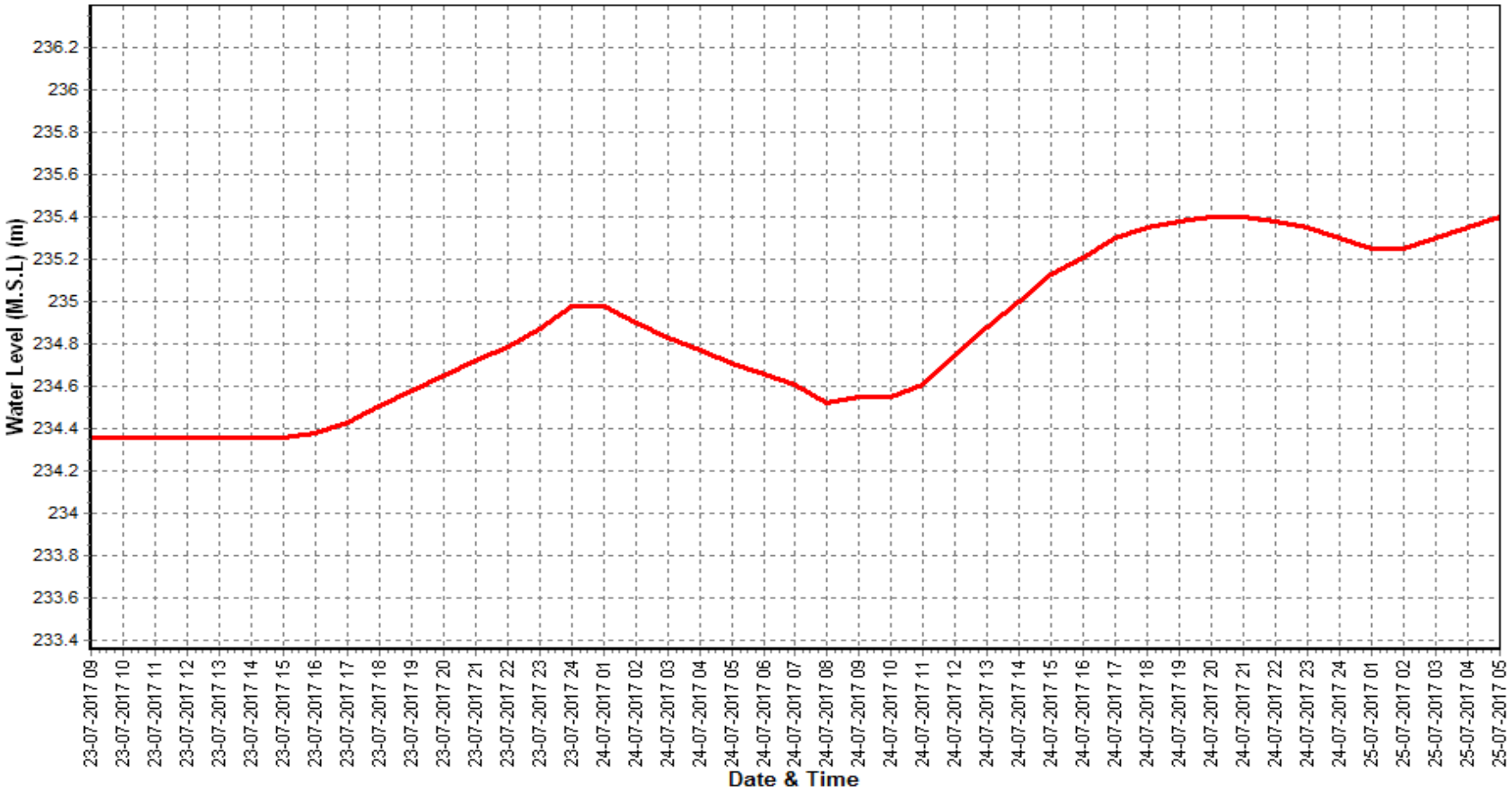


Time Span: 72 Hrs

Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2017-2018

Station Name : MURI (ES000R3) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**



Time Span: 72 Hrs

Water Quality Datasheet for the period : 2017-2018

Station Name : MURI (ES000R3) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **River Water Analysis** **Sub-Division : Balasore**

S.No	Parameters	01/06/2017	01/07/2017	01/08/2017	01/09/2017	03/10/2017	01/11/2017	01/12/2017	01/01/2018	01/02/2018	01/03/2018	02/04/2018	01/05/2018
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Clear	Light Brown	Light Brown	Light Brown	Light Brown	Clear	Clear	Clear	Clear	Clear	Clear	Clear
3	EC_FLD (µmho/cm)	278	340	263	211	279	215	258	288	222	345	488	315
4	EC_GEN (µmho/cm)	270	336	257	201	285	208	247	281	218	338	484	307
5	Odour_Code (-)	odour free	odour free	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	8.5	7.7	7.2	7.7	7.6	7.6	7.9	7.7	7.9	7.5	8.0
7	pH_GEN (pH units)	7.6	8.6	7.6	7.1	7.9	7.5	7.5	7.9	7.8	7.8	7.4	7.9
8	Temp (deg C)	29.0	29.0	30.0	31.0	28.5	25.5	19.0	18.5	17.0	20.5	25.0	27.5
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	0.0	9.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
2	ALK-TOT (mgCaCO3/L)	83	106	74	74	88	83	79	88	106	83		102
3	B (mg/L)	0.02	0.01	0.01	0.02	0.01	0.02	0.03	0.02	0.02	0.03	0.02	0.01
4	Ca (mg/L)	26	27	29	30	27	29	38	37	51	35	33	26
5	Cl (mg/L)	39.6	64.1	20.8	18.9	13.8	15.6	22.5	22.5	22.5	24.2	24.2	34.6
6	CO3 (mg/L)	0.0	11.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.05	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)	0.4	0.5	0.5	0.4	0.5	0.4	1.6	0.5	0.5	0.5	0.5	0.5
9	HCO3 (mg/L)	101	107	90	90	107	101	96	107	130	101	113	124
10	K (mg/L)	4.8	3.2	2.3	2.6	3.0	3.2	3.6	3.8	1.3	1.9	2.2	5.1
11	Mg (mg/L)	8.8	9.7	10.7	12.6	11.1	12.7	11.2	13.5	10.3	14.3	18.3	7.9
12	Na (mg/L)	14.2	16.4	10.5	11.0	11.6	11.9	12.3	22.8	24.1	25.3	26.2	24.5
13	NO2+NO3 (mg N/L)	1.22	1.23	1.16	1.18	1.25	1.13	1.21	1.16	1.18	1.12	1.19	1.25
14	NO2-N (mgN/L)	0.03	0.01	0.04	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	NO3-N (mgN/L)	1.19	1.22	1.12	1.15	1.25	1.13	1.21	1.16	1.18	1.12	1.19	1.25
16	P-Tot (mgP/L)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
17	SiO2 (mg/L)	8.0	8.0	8.4	9.0	7.5	8.6	9.1	6.8	7.4	9.5	9.5	8.6
18	SO4 (mg/L)	34.4	17.4	17.7	13.0	15.7	15.6	14.8	14.9	10.0	36.5	15.3	11.4
	BIOLOGICAL/BACTERIOLOGICAL												
1	BOD3-27 (mg/L)	1.8	0.8	0.4	0.6	1.0	0.4	1.0	1.4	0.8	0.4	1.0	1.0
2	DO (mg/L)	5.8	6.8	5.4	4.2	5.6	5.4	7.2	6.8	6.8	3.6	5.8	6.0
3	DO_SAT% (%)	75	88	71	56	71	65	77	71	70	39	70	75
4	FCol-MPN (MPN/100mL)	80	120	90	40	90	40	40	40	110	80	90	110
5	Tcol-MPN (MPN/100mL)	210	270	170	130	170	110	130	170	260	210	220	270
	TRACE & TOXIC												
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	64	68	72	76	69	72	95	92	127	88	82	65
2	HAR_Total (mgCaCO3/L)	101	109	117	129	115	125	141	148	170	148	158	98
3	Na% (%)	23	24	16	15	18	17	16	25	23	27	26	34
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
5	SAR (-)	0.6	0.7	0.4	0.4	0.5	0.5	0.5	0.8	0.8	0.9	0.9	1.1
	PESTICIDES												

Water Quality Summary for the period : 2017-2018

Station Name : MURI (ES000R3) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	12	488	211	292
3	EC_GEN (µmho/cm)	12	484	201	286
4	pH_FLD (pH units)	12	8.5	7.2	7.7
5	pH_GEN (pH units)	12	8.6	7.1	7.7
6	Temp (deg C)	12	31.0	17.0	25
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	11	9.3	0.0	0.8
2	ALK-TOT (mgCaCO3/L)	11	106	74	88
3	B (mg/L)	12	0.03	0.01	0.02
4	Ca (mg/L)	12	51	26	32
5	Cl (mg/L)	12	64.1	13.8	26.9
6	CO3 (mg/L)	12	11.2	0.0	0.9
7	F (mg/L)	12	0.05	0.05	0.05
8	Fe (mg/L)	12	1.6	0.4	0.6
9	HCO3 (mg/L)	12	130	90	106
10	K (mg/L)	12	5.1	1.3	3.1
11	Mg (mg/L)	12	18.3	7.9	11.8
12	Na (mg/L)	12	26.2	10.5	17.6
13	NO2+NO3 (mg N/L)	12	1.25	1.12	1.19
14	NO2-N (mgN/L)	12	0.04	0.00	0.01
15	NO3-N (mgN/L)	12	1.25	1.12	1.18
16	P-Tot (mgP/L)	12	0.001	0.001	0.001
17	SiO2 (mg/L)	12	9.5	6.8	8.4
18	SO4 (mg/L)	12	36.5	10.0	18.1
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	1.8	0.4	0.9
2	DO (mg/L)	12	7.2	3.6	5.7
3	DO_SAT% (%)	12	88	39	69
4	FCol-MPN (MPN/100mL)	12	120	40	78
5	Tcol-MPN (MPN/100mL)	12	270	110	193
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	127	64	81
2	HAR_Total (mgCaCO3/L)	12	170	98	130
3	Na% (%)	12	34	15	22
4	RSC (-)	12	0.1	0.0	0
5	SAR (-)	12	1.1	0.4	0.7
	PESTICIDES				

Water Quality Seasonal Average for the period: 2003-2018

Station Name : MURI (ES000R3) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **River Water** **Sub-Division : Balasore**

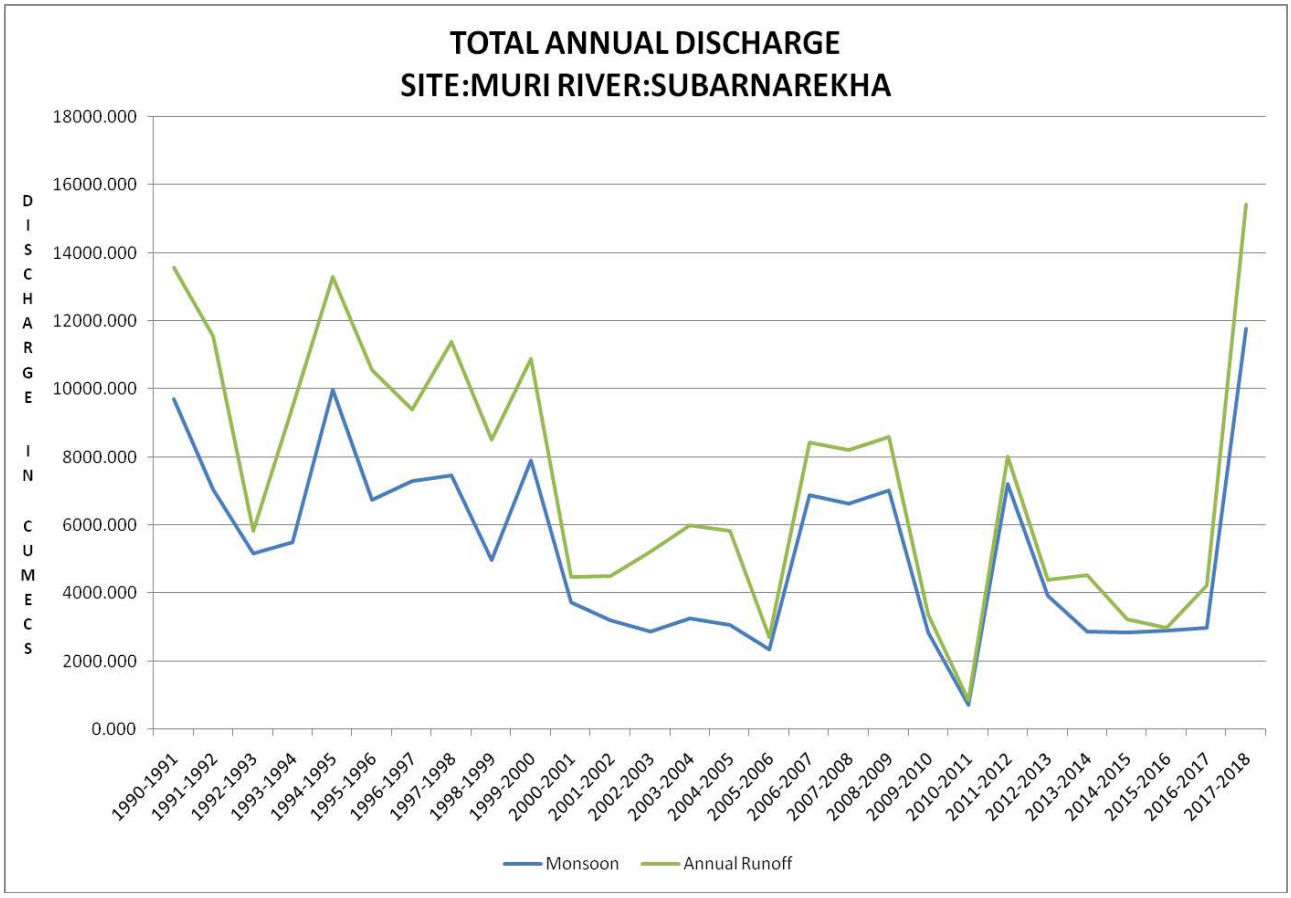
S.No	Parameters	Flood															Winter								
		Jun - Oct															Nov - Feb								
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
	PHYSICAL																								
1	Q (cumec)																								
2	EC_FLD (µmho/cm)	264	260	271	199	264		430	401	296	320	215	288	532	442	274	209	185	295	217	213		233	398	230
3	EC_GEN (µmho/cm)	264	260	268	194	262		430	401	296	320	215	288	540	445	270	209	185	290	215	201		233	398	230
4	pH_FLD (pH units)	7.7	8.0	8.1	8.1	8.1		8.2	8.7	8.4	7.8	7.8	8.1	7.9	8.4	7.7	7.4	7.9	8.3	8.1	8.1		7.9	8.3	7.8
5	pH_GEN (pH units)	7.7	8.0	8.2	8.1	8.1		8.2	8.7	8.4	7.8	7.8	8.1	8.0	8.5	7.7	7.5	7.9	8.4	8.1	8.1		7.9	8.3	7.8
6	Temp (deg C)	30.3	29.6	28.8	28.2	29.4		28.4	29.5	28.8	29.2	27.6	29.4	30.2	30.0	29.5	19.8	19.0	19.4	20.5	19.1		21.6	21.3	20.4
	CHEMICAL																								
1	Alk-Phen (mgCaCO3/L)					0.0		5.6	19.9	4.4		0.0	0.0	8.3	0.0	1.9					0.0		0.0	10.2	4.6
2	ALK-TOT (mgCaCO3/L)					74		50	132	75		113	56	123	113	85					57		57	113	91
3	B (mg/L)	0.00	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	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.01
4	Ca (mg/L)	19	23	22	19	22		27	26	19	25	29	19	24	37	28	21	16	23	19	16		17	26	28
5	Cl (mg/L)	29.8	20.5	31.3	23.8	28.3		52.5	38.7	34.3	29.4	24.2	34.3	20.0	50.9	31.4	19.4	19.4	31.1	23.9	26.6		25.3	43.2	22.2
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0		6.7	19.2	5.3	0.0	0.0	0.0	10.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0		0.0	12.3	5.5
7	F (mg/L)	0.16	0.61	0.20	0.10	0.10		0.27	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.38	0.14	0.15	0.00		0.17	0.05	0.05
8	Fe (mg/L)		0.1	0.1	0.2	0.1		0.2	0.2	0.0	1.4	0.1	0.3	0.4	0.6	0.4		0.1	0.1	0.2	0.1		0.1	0.1	0.0
9	HCO3 (mg/L)	78	106	89	65	91		47	92	81	104	119	79	130	138	99	83	69	82	77	69		69	113	100
10	K (mg/L)	2.6	3.0	2.4	2.6	2.8		4.2	3.5	3.8	3.1	2.7	3.8	3.3	8.7	3.2	2.2	2.6	2.7	2.9	2.7		2.8	3.2	2.6
11	Mg (mg/L)	5.9	9.3	6.9	3.7	9.1		12.7	16.1	7.2	10.9	6.6	7.2	10.9	11.7	10.6	4.2	4.1	5.5	5.2	5.1		8.7	12.9	9.2
12	Na (mg/L)	22.1	13.5	22.9	15.1	19.0		38.0	24.8	24.1	25.3	17.4	24.1	20.3	45.5	12.7	13.6	13.9	22.2	17.1	17.9		15.7	31.9	13.4
13	NO2+NO3 (mg N/L)	1.83	1.13	2.64	1.06	1.67		2.83	3.51	0.39	0.83	0.75	1.41	1.16	0.99	1.21	0.49	0.79	2.68	0.95	1.47		1.43	1.25	0.43
14	NO2-N (mgN/L)	0.00	0.02	0.00	0.00	0.00		0.00	0.00	0.07	0.00	0.01	0.01	0.02	0.05	0.02	0.02	0.01	0.00	0.00	0.02		0.02	0.00	0.07
15	NO3-N (mgN/L)	1.83	1.11	2.64	1.06	1.67		2.83	3.51	0.32	0.83	0.74	1.41	1.14	0.94	1.19	0.48	0.78	2.68	0.95	1.45		1.41	1.25	0.36
16	o-PO4-P (mg P/L)	0.052		0.000	0.000	0.000		0.053										0.000	0.013	0.000	0.000		0.047		
17	P-Tot (mgP/L)	0.001	0.001	0.001	0.001	0.001		0.001	0.001	0.010	0.001	0.002	0.001	0.001	0.010	0.001	0.001	0.001	0.013	0.001	0.001		0.001	0.001	0.010
18	SiO2 (mg/L)	12.0	20.6	23.8	10.0	9.4		8.9	8.5	9.6	12.4	9.4	5.6	5.8	6.4	8.2	13.2	21.3	22.1	17.9	9.7		8.3	5.5	10.0
19	SO4 (mg/L)	7.5	9.4	6.6	7.2	12.4		58.6	18.1	21.4	27.2	36.5	21.4	27.2	30.7	19.6	0.8	6.5	7.8	8.7	8.5		13.7	18.1	9.8
	BIOLOGICAL/BACTERIOLOGICAL																								
1	BOD3-27 (mg/L)	1.0	0.8	1.1	1.2	1.1		1.3	1.3	1.5	4.8	0.6	0.5	1.2	1.0	0.9	0.7	1.3	1.0	1.0	1.7		1.4	1.4	2.0
2	DO (mg/L)	6.2	7.0	6.7	6.9	6.8		7.0	7.4	7.0	5.5	6.8	5.8	6.1	8.0	5.5	8.3	8.0	8.2	8.2	7.9		7.8	8.4	7.8
3	DO_SAT% (%)	82	91	87	88	89		89	96	91	71	86	76	80	106	72	90	86	88	90	84		88	94	86
4	FCol-MPN (MPN/100mL)															84									
5	Tcol-MPN (MPN/100mL)															190									
	TRACE & TOXIC																								
	CHEMICAL INDICES																								
1	HAR_Ca (mgCaCO3/L)	48	58	54	47	54		68	66	46	62	72	46	61	92	70	53	41	59	46	41		43	65	71
2	HAR_Total (mgCaCO3/L)	73	84	83	63	92		121	133	76	107	99	76	106	141	114	70	63	82	68	62		80	119	109
3	Na% (%)	39	23	38	33	31		34	26	38	32	26	38	27	40	19	30	33	38	33	37		29	35	21
4	RSC (-)	0.1	0.0	0.1	0.0	0.0		0.0	0.0	0.2	0.0	0.2	0.1	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
5	SAR (-)	1.2	0.6	1.2	0.8	0.9		1.3	0.9	1.2	1.1	0.8	1.2	0.9	1.8	0.5	0.7	0.8	1.2	0.9	1.0		0.8	1.3	0.6
	PESTICIDES																								

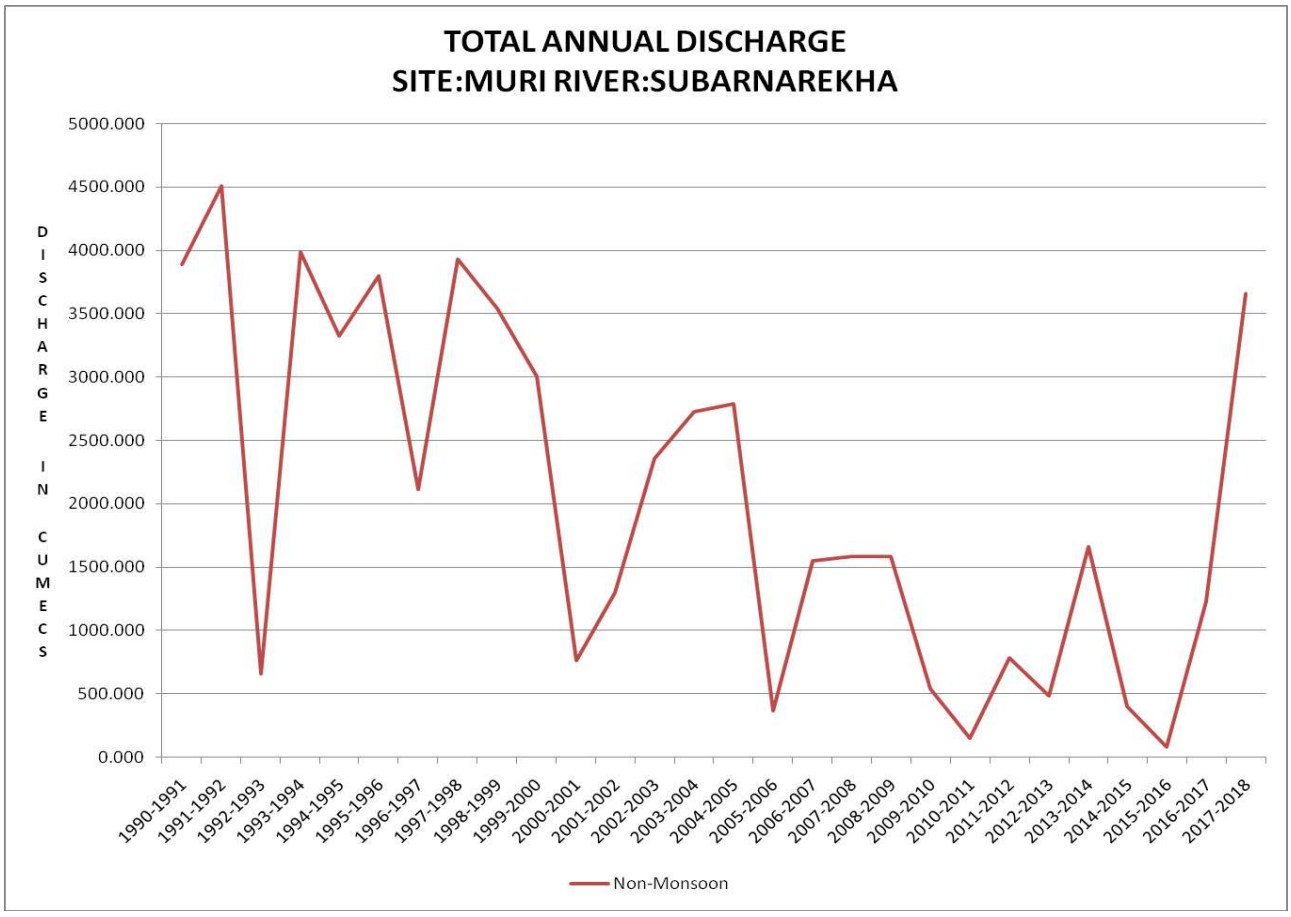
Water Quality Seasonal Average for the period: 2003-2018

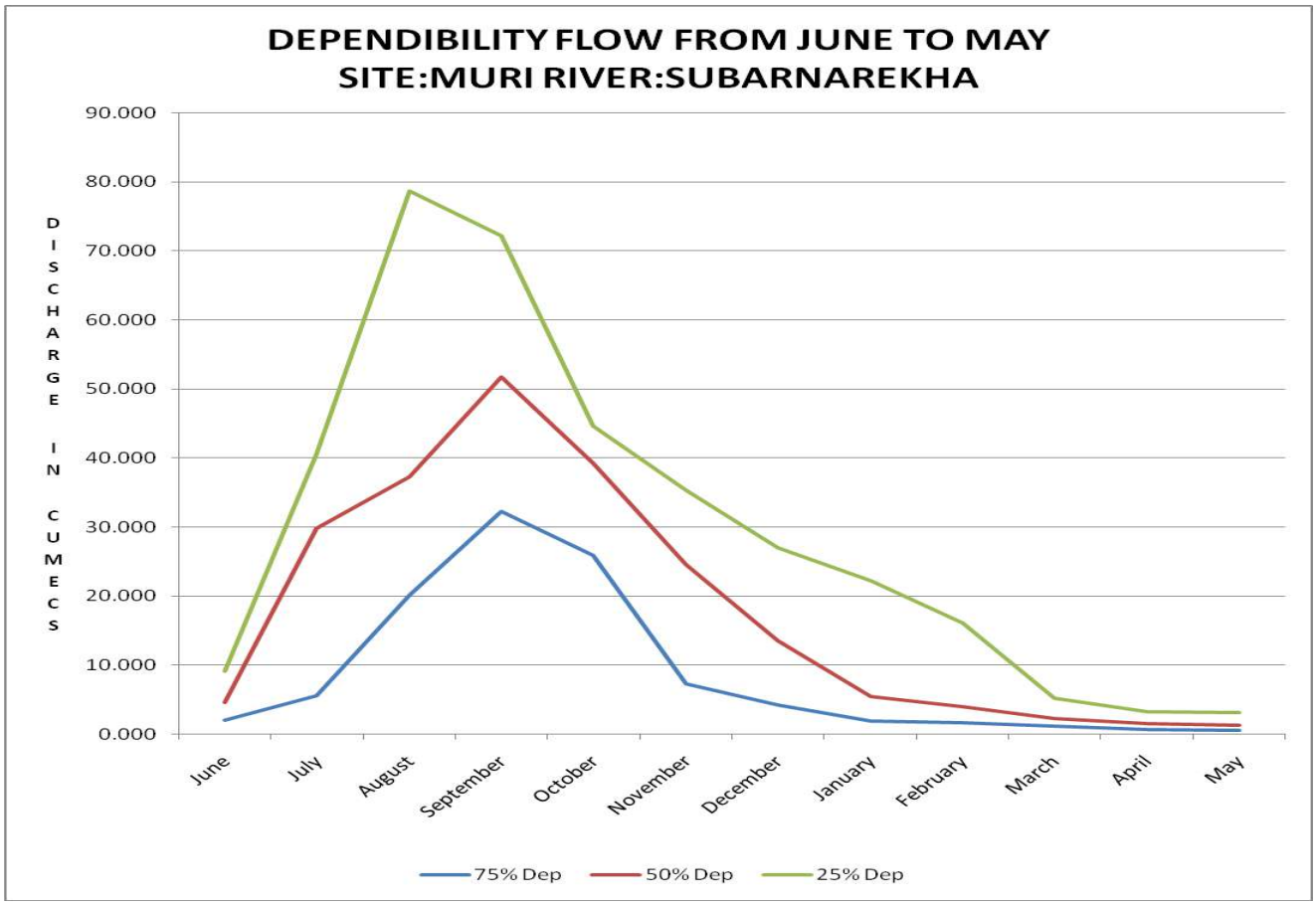
Station Name : MURI (ES000R3) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **River Water** **Sub-Division : Balasore**

S.No	Parameters							Summer														
								Mar - May														
		2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	PHYSICAL																					
1	Q (cumec)																					
2	EC_FLD (µmho/cm)	253	216	335	657	564	246	203	244	336	372	388		260	700	503	480	323	389	895	458	383
3	EC_GEN (µmho/cm)	253	216	335	659	566	239	203	242	330	370	380		260	820	503	480	323	389	896	464	376
4	pH_FLD (pH units)	7.6	8.0	8.1	8.0	8.5	7.7	7.8	8.2	8.2	8.1	8.7		8.2	8.9	8.3	8.2	8.2	7.6	8.4	8.0	7.8
5	pH_GEN (pH units)	7.6	8.0	8.1	8.2	8.5	7.7	7.8	8.3	8.2	8.1	8.8		8.2	8.9	8.3	8.2	8.2	7.6	8.6	8.1	7.7
6	Temp (deg C)	23.6	20.3	19.9	20.6	20.4	20.0	27.0	25.0	25.0	27.7	25.5		24.0	25.5	25.3	25.0	25.8	25.5	26.0	26.0	24.3
	CHEMICAL																					
1	Alk-Phen (mgCaCO3/L)			0.0	5.8	0.0	0.0				0.0	0.8		0.0	27.3	0.0			0.0	12.3	0.0	0.0
2	ALK-TOT (mgCaCO3/L)			74	103	72	89				222	137		70	163	111			45	163	119	92
3	B (mg/L)	0.00	0.00	0.00	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.02	0.02
4	Ca (mg/L)	23	30	26	36	42	39	19	22	32	33	46		17	51	32	22	29	26	38	45	31
5	Cl (mg/L)	24.5	33.9	24.0	15.6	41.9	20.8	18.4	19.2	27.9	25.7	22.7		31.0	57.2	33.9	41.8	33.1	21.8	42.7	32.7	27.7
6	CO3 (mg/L)	0.0	0.0	0.0	6.9	0.0	0.0	0.0	0.0	0.0	0.0	1.0		0.0	32.9	0.0	0.0	0.0	0.0	14.8	0.0	0.0
7	F (mg/L)	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.35	0.74	0.30	0.05		0.01	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
8	Fe (mg/L)	1.3	0.1	0.2	0.5	0.4	0.8		0.1	0.1	0.2	0.1		0.1	0.3	0.0	1.5	0.1	0.3	0.3	0.4	0.5
9	HCO3 (mg/L)	57	137	97	111	88	108	75	108	121	143	165		86	132	135	151	113	78	169	145	113
10	K (mg/L)	3.3	2.7	2.8	2.7	20.8	3.0	2.9	2.1	2.7	3.4	6.6		3.7	5.3	3.1	4.2	2.5	2.6	3.0	33.2	3.1
11	Mg (mg/L)	7.3	9.0	4.4	13.1	13.9	11.9	4.6	8.4	11.4	14.1	7.0		8.7	24.6	9.1	4.9	8.1	9.7	14.9	15.9	13.5
12	Na (mg/L)	17.5	22.2	16.1	18.3	54.6	17.8	13.8	13.0	20.4	16.6	15.6		21.4	42.3	48.9	58.6	21.6	25.7	45.1	71.4	25.3
13	NO2+NO3 (mg N/L)	0.86	0.88	0.94	1.14	1.10	1.17	0.76	0.65	4.94	2.11	1.23		0.77	3.12	0.39	0.91	0.87	1.13	0.98	1.16	1.19
14	NO2-N (mgN/L)	0.00	0.01	0.01	0.00	0.01	0.00	0.02	0.01	0.00	0.00	0.00		0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00
15	NO3-N (mgN/L)	0.86	0.87	0.93	1.14	1.10	1.17	0.74	0.64	4.94	2.11	1.23		0.74	3.12	0.32	0.91	0.87	1.13	0.98	1.16	1.19
16	o-PO4-P (mg P/L)								0.010	0.055	0.000	0.010		0.050								
17	P-Tot (mgP/L)	0.001	0.001	0.001	0.010	0.010	0.001	0.001	0.001	0.055	0.001	0.050		0.001	0.001	0.010	0.001	0.002	0.001	0.010	0.010	0.001
18	SiO2 (mg/L)	13.0	12.3	3.9	5.5	6.5	8.0	11.1	22.1	19.8	15.4	9.7		9.6	5.0	10.0	13.0	12.2	5.0	5.7	7.1	9.2
19	SO4 (mg/L)	12.5	46.1	15.0	16.6	26.3	13.8	5.2	4.8	9.1	12.9	14.8		10.4	76.4	41.1	28.2	40.7	26.5	24.1	29.4	21.1
	BIOLOGICAL/BACTERIOLOGICAL																					
1	BOD3-27 (mg/L)	0.4	0.9	0.8	1.3	2.5	0.9	0.8	1.0	1.3	1.7	1.4		1.6	1.7	1.6	1.1	2.5	0.8	0.8	1.8	0.8
2	DO (mg/L)	7.8	8.0	9.8	9.5	10.0	6.5	6.9	6.9	7.6	6.9	6.6		7.1	7.5	6.9	6.5	7.4	5.1	6.0	6.4	5.1
3	DO_SAT% (%)	92	88	106	105	109	71	85	83	91	88	81		84	91	83	78	90	62	73	80	61
4	FCol-MPN (MPN/100mL)					105	58														100	93
5	Tcol-MPN (MPN/100mL)					293	168														187	233
	TRACE & TOXIC																					
	CHEMICAL INDICES																					
1	HAR_Ca (mgCaCO3/L)	58	76	66	89	104	96	47	54	80	82	115		41	128	80	55	71	64	96	114	78
2	HAR_Total (mgCaCO3/L)	88	114	84	144	162	146	66	72	128	140	144		78	231	118	76	105	105	158	180	135
3	Na% (%)	29	29	28	21	38	20	30	24	26	20	21		36	28	42	56	30	33	31	41	29
4	RSC (-)	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0		0.0	0.0	0.4	1.0	0.0	0.0	0.8	0.0	0.0
5	SAR (-)	0.8	0.9	0.8	0.7	1.9	0.6	0.7	0.6	0.8	0.6	0.6		1.1	1.2	2.2	3.0	0.9	1.3	1.6	2.3	1.0
	PESTICIDES																					


TOTAL ANNUAL DISCHARGE
SITE:MURI RIVER:SUBARNAREKHA
DISCHARGE IN CUMECS
18000.000
16000.000
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
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
Monsoon
Annual Runoff


TOTAL ANNUAL DISCHARGE
SITE:MURI RIVER:SUBARNAREKHA
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
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
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
Non-Monsoon


DEPENDIBILITY FLOW FROM JUNE TO MAY
SITE:MURI RIVER:SUBARNAREKHA
DISCHARGE IN CUMECS
90.000
80.000
70.000
60.000
50.000
40.000
30.000
20.000
10.000
0.000
June
July
August
September
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November
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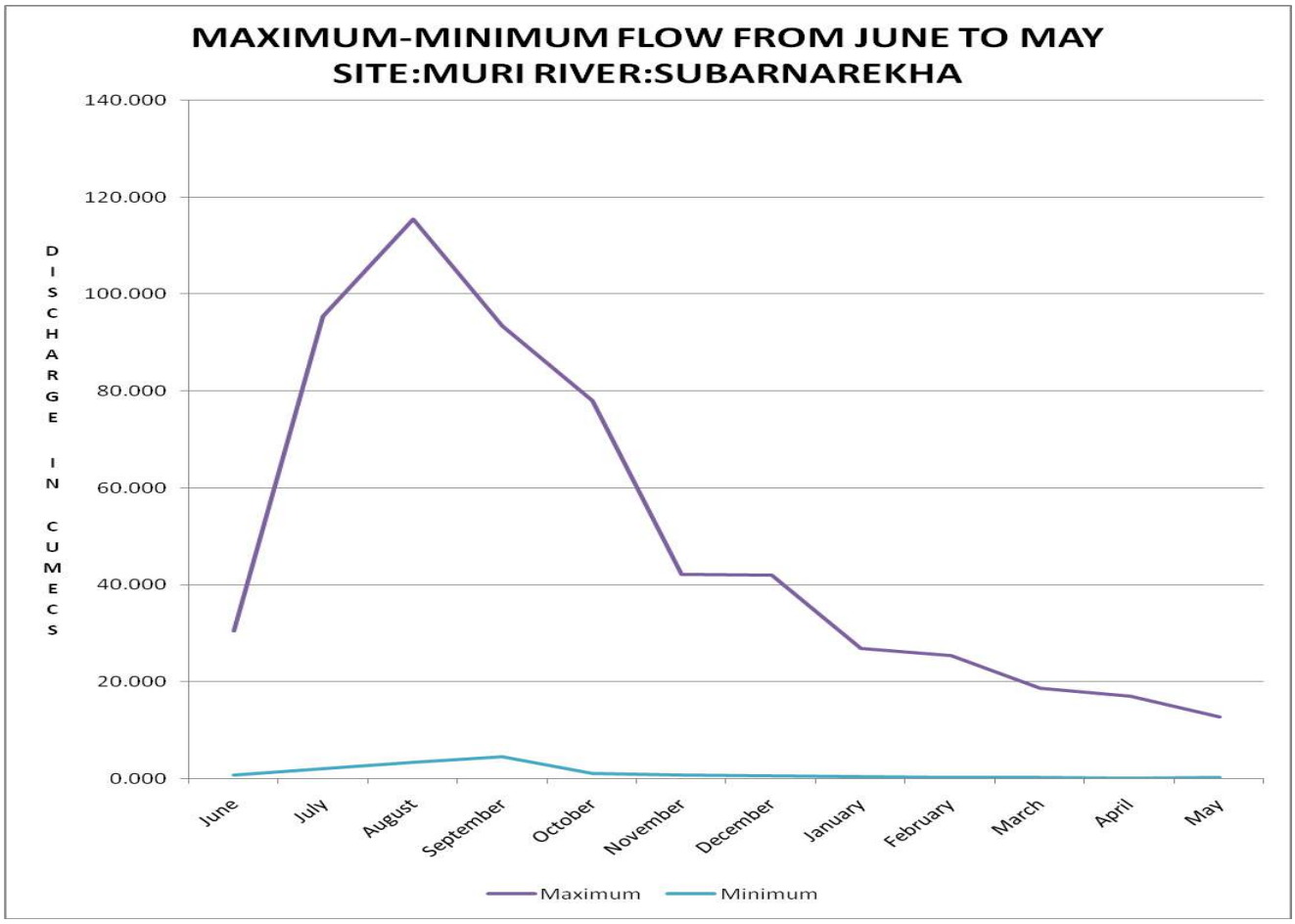
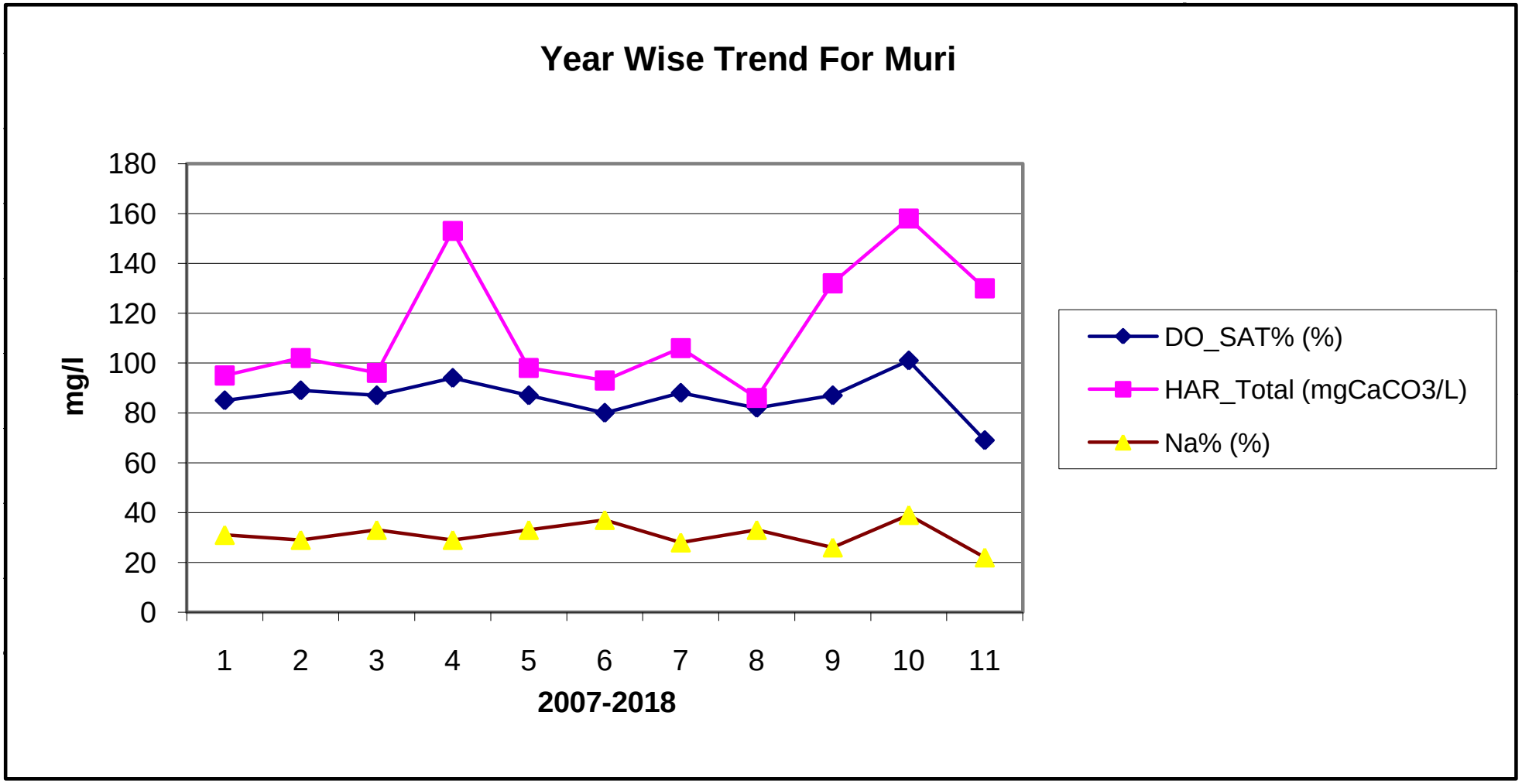
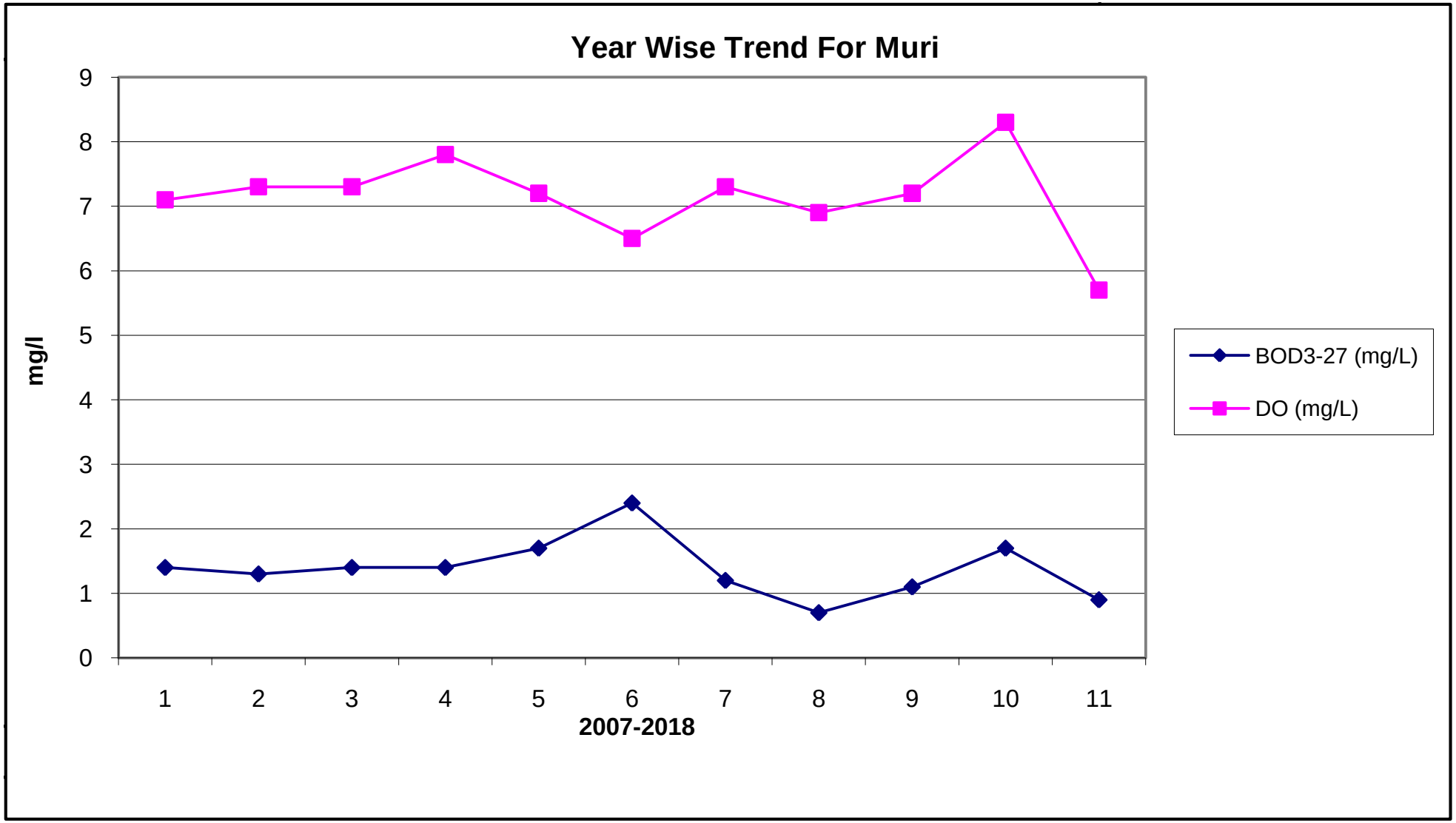
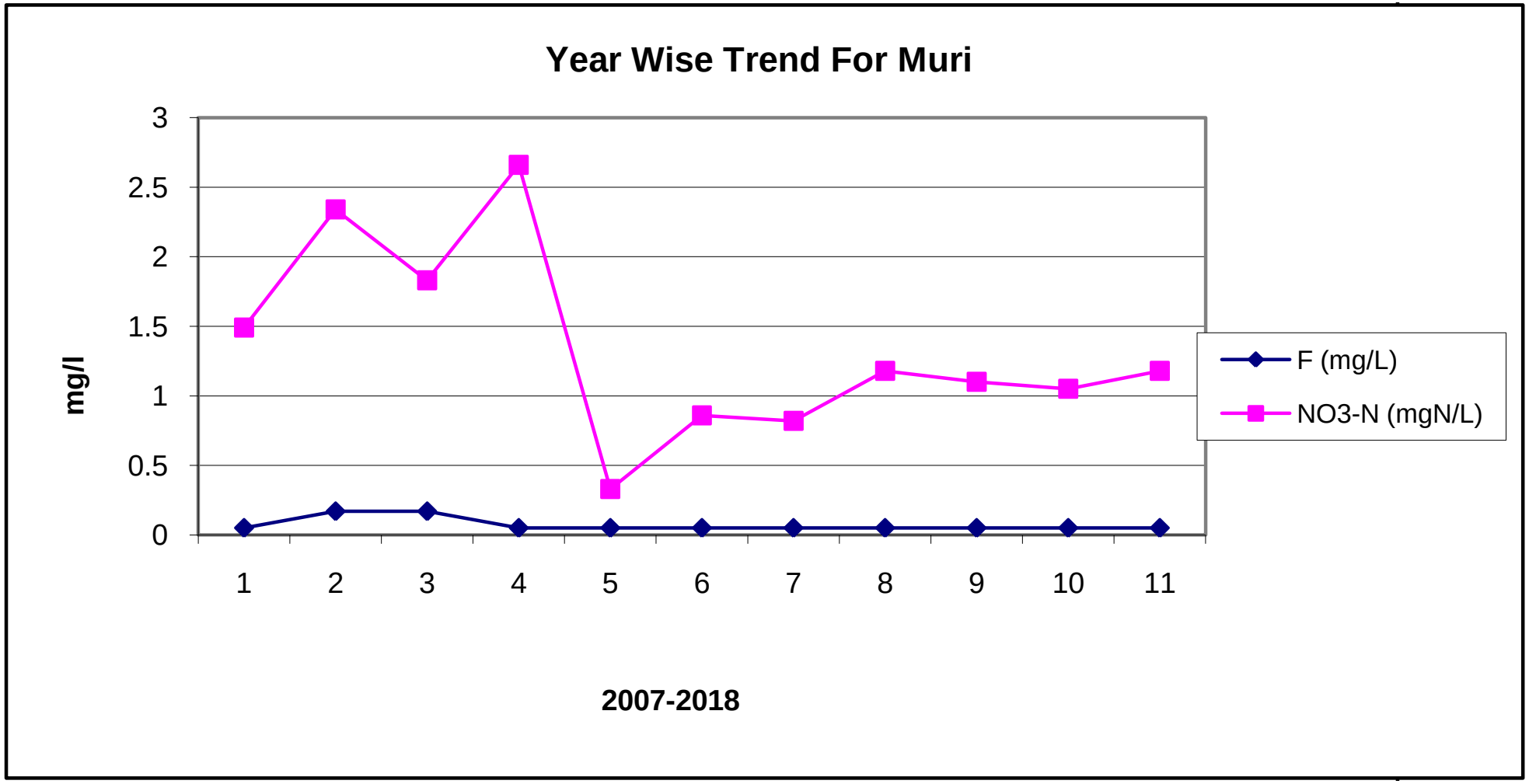
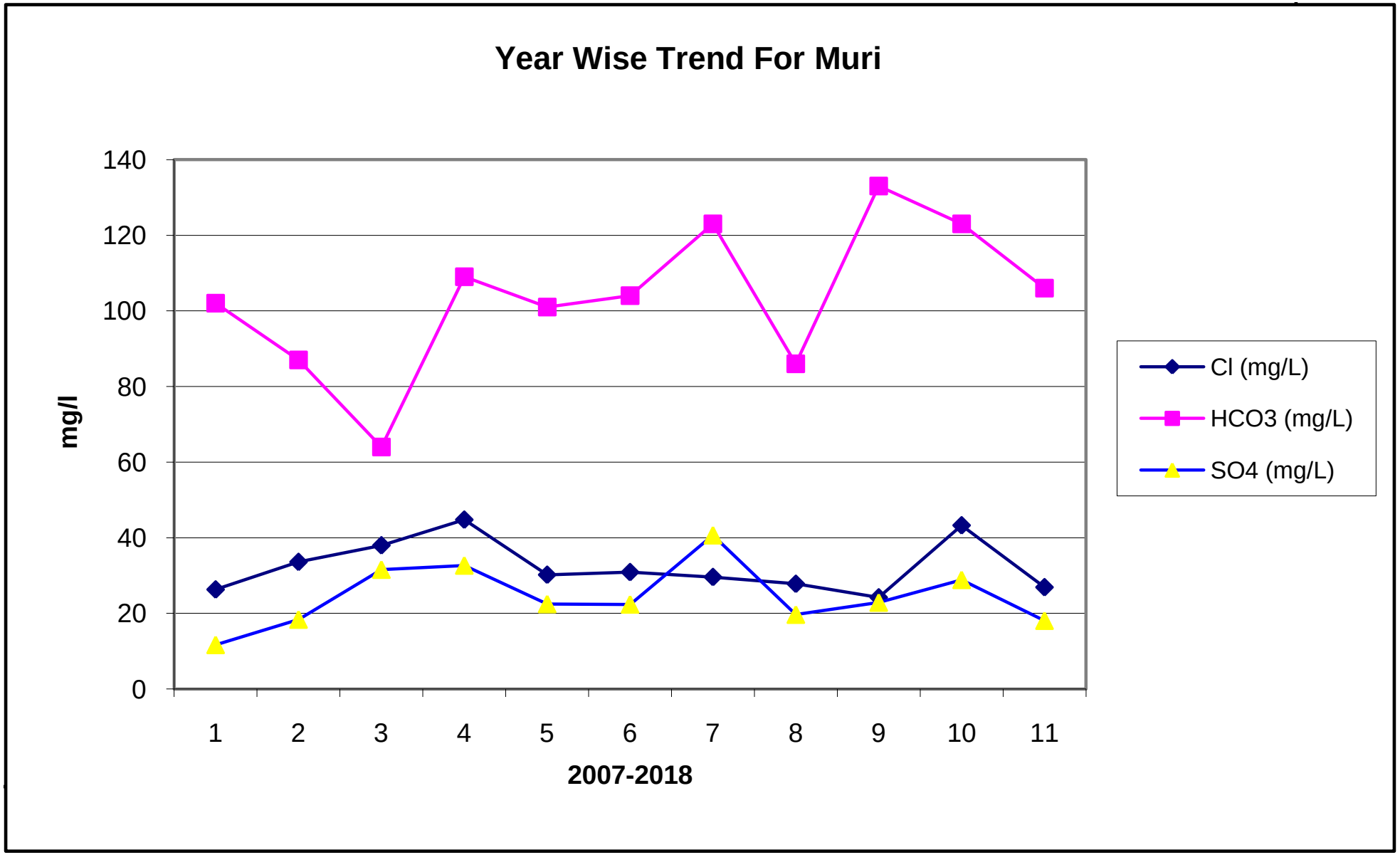
March
April
May
75% Dep
50% Dep
25% Dep

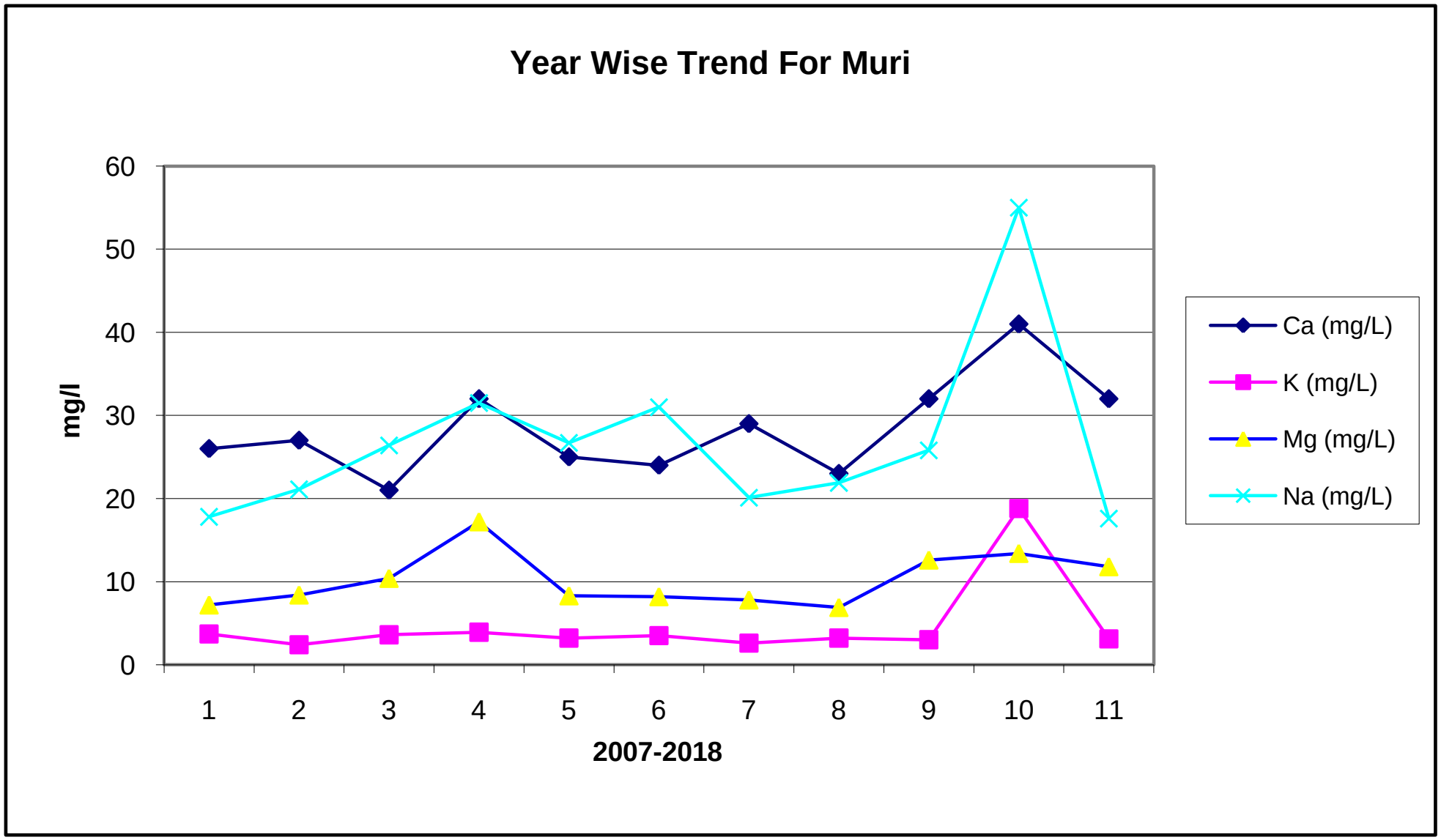

MAXIMUM-MINIMUM FLOW FROM JUNE TO MAY
SITE:MURI RIVER:SUBARNAREKHA
DISCHARGE IN CUMECS
140.000
120.000
100.000
80.000
60.000
40.000
20.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
Maximum
Minimum


Year Wise Trend For Muri
180
160
140
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
DO_SAT% (%)
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For Muri
mg/l
9
8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
9
10
11
2007-2018
BOD3-27 (mg/L)
DO (mg/L)


Year Wise Trend For Muri
mg/l
3
2.5
2
1.5
1
0.5
0
1
2
3
4
5
6
7
8
9
10
11
2007-2018
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend For Muri
140
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year Wise Trend For Muri
60
50
40
30
20
10
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Ca (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

HISTORY SHEET

Water Year : 2017-2018

Site	:	**ADITYAPUR**	**Code**	:	**ESB00D5**
State	:	Jharkhand	District		Purba Singbhum
Basin	:	Subarnarekha	Independent River	:	Subarnarekha
Tributary	:	Kharkhai	Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	Kharkhai
Division	:	E.E., Bhubaneswar	Sub-Division	:	Balasore
Drainage Area	:	6309 Sq. Km.	Bank	:	Left
Latitude	:	22°47'29"	Longitude	:	86°10'06"
Zero of Gauge (m)	:	125 (m.s.l) 123 (m.s.l)	11/22/1971 6/1/1972	-	5/31/1972 12/31/2031
		Opening Date	Closing Date		
Gauge	:	6/23/1971			
Discharge	:	11/22/1971			
Sediment	:	2/6/1975			
Water Quality	:	1/1/1976			

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

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1972-1973	1711	131.598	8/14/1972	0.000	125.615	11/5/1972
1973-1974	3431	133.225	#########	0.500	125.150	5/10/1974
1974-1975	5812	137.130	9/30/1974	0.400	124.645	5/18/1975
1975-1976	6416	137.560	8/20/1975	0.060	124.993	5/12/1976
1976-1977	1690	131.500	9/12/1976	0.500	124.810	3/15/1977
1977-1978	3020	133.400	8/7/1977	1.500	124.820	6/5/1977
1978-1979	895.7	125.325	6/27/1978	0.200	125.125	5/16/1979
1979-1980	650.0	128.905	8/8/1979	0.080	125.140	5/27/1980
1980-1981	524.7	128.880	7/3/1980	0.309	125.275	4/19/1981
1981-1982	1883	131.610	6/22/1981	0.379	125.190	5/31/1982
1982-1983	819.2	129.680	8/7/1982	0.367	125.175	6/3/1982
1983-1984	2081	131.160	9/5/1983	1.078	125.050	5/7/1984
1984-1985	2959	132.673	8/27/1984	0.460	124.870	5/4/1985
1985-1986	4532	135.000	#########	0.820	124.670	4/6/1986
1986-1987	614.5	128.960	8/5/1986	0.900	125.025	4/15/1987
1987-1988	1335	130.250	7/20/1987	0.470	124.925	4/11/1988
1988-1989	1231	130.780	8/4/1988	0.056	124.880	5/12/1989
1989-1990	2500	132.650	8/5/1989	1.110	124.940	5/10/1990
1990-1991	2137	130.975	9/4/1990	1.220	124.820	5/18/1991
1991-1992	3517	132.900	8/23/1991	1.004	124.660	5/1/1992
1992-1993	770.0	128.900	9/27/1992	1.096	124.650	6/6/1992

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	1000	129.320	8/15/1993	1.085	124.600	5/15/1994
1994-1995	4101	133.295	8/4/1994	0.669	124.590	5/10/1995
1995-1996	2340	131.880	8/9/1995	0.494	124.440	5/25/1996
1996-1997	2692	133.075	7/26/1996	0.177	124.495	4/30/1997
1997-1998	6700	136.400	8/6/1997	0.524	124.520	6/2/1997
1998-1999	1200	129.700	9/13/1998	0.772	124.460	5/11/1999
1999-2000	3300	133.430	8/8/1999	1.234	124.490	4/22/2000
2000-2001	933.7	130.700	7/26/2000	0.857	124.450	2/28/2001
2001-2002	3970	133.750	7/12/2001	0.710	124.430	5/23/2002
2002-2003	938.5	129.400	9/11/2002	0.760	124.440	6/3/2002
2003-2004	556.8	127.790	10/9/2003	1.400	124.410	6/1/2003
2004-2005	2828	131.850	8/21/2004	1.614	124.420	5/26/2005
2005-2006	1041	129.440	6/30/2005	2.000	124.420	4/11/2006
2006-2007	5180	133.700	7/30/2006	2.941	124.440	4/9/2007
2007-2008	3879	133.700	8/20/2007	2.759	124.440	6/9/2007
2008-2009	5856	136.950	6/18/2008	2.000	124.410	4/26/2009
2009-2010	1848	130.225	9/8/2009	1.880	124.380	3/14/2010
2010-2011	139.7	126.410	9/20/2010	0.860	124.390	4/19/2011
2011-2012	2400	132.620	9/23/2011	1.061	124.430	6/2/2011
2012-2013	967.6	128.675	6/22/2012	1.490	124.350	4/12/2013
2013-2014	3033	131.200	9/20/2013	2.038	124.380	7/22/2013
2014-2015	1931	129.600	7/21/2014	1.880	124.140	3/26/2015
2015-2016	2030	132.620	7/29/2015	1.846	124.130	4/11/2016
2016-2017	3496	131.400	8/18/2016	2.810	124.200	5/14/2017
2017-2018	3590	131.475	7/24/2017	2.500	124.210	5/16/2018

Stage-Discharge Data for the period 2017 - 2018

Station Name : ADITYAPUR (ESB00D5) **Division : E.E., Bhubaneswar**

Local River : Kharkhai **Sub-Division : Balasore**

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	124.480	22.43	124.600	31.11	126.490	337.9	125.780	180.2	125.680	164.0 *	124.980	69.91
2	124.420	17.98	124.710	50.00 *	126.075	218.2	125.900	180.0 *	125.730	170.0 *	124.940	66.97
3	124.340	10.37	125.885	180.9	126.490	364.9	127.420	200.0 *	126.355	344.2	124.900	63.79
4	124.310	6.700 *	125.315	116.5	126.600	382.0	126.265	290.6	126.675	388.9	124.880	59.00 *
5	124.290	6.777	125.035	78.84	128.360	1373	125.835	179.8	125.970	205.1	124.850	58.00 *
6	124.280	5.646	124.895	58.02	128.980	1373 *	125.535	144.9	125.960	204.5	124.820	53.94
7	124.350	10.24	124.900	57.86	127.375	618.9	125.475	142.6	125.680	164.5	124.780	50.69
8	124.310	8.396	124.810	55.55	126.780	394.0	125.445	135.2	125.670	164.0 *	124.760	49.82
9	124.300	8.230	124.750	55.50 *	126.745	391.3	125.370	130.9	125.820	195.3	124.740	47.92
10	124.270	4.937	124.765	50.45	126.390	326.2	125.530	144.9 *	125.655	159.4	124.740	47.87
11	124.250	5.600 *	124.770	50.29	126.275	298.3	125.400	133.9	125.570	145.2	124.720	47.58
12	124.280	5.979	124.755	47.83	125.875	182.4	125.405	134.1	125.430	158.2	124.720	47.30 *
13	124.270	5.566	124.670	42.61	125.840	182.0 *	125.430	136.1	125.505	143.3	124.710	47.25
14	124.310	6.696	125.075	78.72	126.360	343.4	125.375	129.3	125.495	142.3	124.700	47.17
15	124.420	15.97	125.330	141.3	126.840	402.0 *	125.305	116.1	125.730	171.0 *	124.690	47.12
16	124.350	9.970	125.120	78.80 *	127.815	822.2	125.360	130.4	125.475	138.4	124.660	43.10
17	124.290	6.752	125.020	79.60	126.875	423.8	125.380	130.0 *	125.290	110.5	124.660	42.57
18	124.310	6.700 *	125.000	77.95	127.295	613.3	125.485	141.9	125.140	94.73	124.650	42.04
19	124.260	5.463	125.105	78.04	127.195	596.7	125.650	139.8	125.130	94.00 *	124.650	42.00 *
20	124.425	18.02	125.005	77.58	127.190	596.0 *	126.625	388.8	125.205	97.23	124.680	47.35
21	124.320	8.210	125.095	79.09	126.840	402.5	126.295	300.9	125.905	183.7	124.940	66.53
22	124.300	7.869	126.100	287.7	126.575	380.3	126.040	220.0	127.370	480.0 *	124.920	64.97
23	124.310	8.179	127.860	553.6 *	126.290	303.8	125.690	156.3	126.620	381.3	124.860	59.35
24	124.330	9.973	131.475	3590	126.500	367.7	125.490	156.0 *	126.170	292.3	124.780	50.79
25	124.410	15.90 *	131.040	3589	126.145	291.5	125.460	139.6	125.675	162.2	124.670	44.21
26	124.590	28.80 *	129.850	2224	125.880	183.5	125.420	135.7	125.585	136.0	124.620	41.00 *
27	124.560	27.67	129.875	2341	125.650	152.0 *	125.285	103.2	125.515	143.6	124.580	35.14
28	124.570	28.70	128.340	553.5	125.675	152.2	125.295	103.3	125.275	103.3	124.560	30.42
29	124.700	42.52	126.540	378.9	127.405	619.8	125.310	103.3 *	125.170	87.00 *	124.550	30.26
30	124.670	39.65	126.050	378.0 *	126.725	386.2	125.870	180.0 *	125.080	75.70	124.540	29.70
31			127.090	481.3	126.075	214.0			125.020	72.88		
Ten-Daily Mean												
I Ten-Daily	124.335	10.17	124.967	73.48	127.029	577.9	125.856	172.9	125.920	216.0	124.839	56.79
II Ten-Daily	124.316	8.672	124.985	75.27	126.756	446.0	125.541	158.1	125.397	129.5	124.684	45.35
III Ten-Daily	124.476	21.75	128.120	1314	126.342	314.0	125.615	159.8	125.762	192.6	124.702	45.24
Monthly												
Min.	124.250	4.937	124.600	31.11	125.650	152.0	125.285	103.2	125.020	72.88	124.540	29.70
Max.	124.700	42.52	131.475	3590	128.980	1373	127.420	388.8	127.370	480.0	124.980	69.91
Mean	124.376	13.53	126.091	514.3	126.697	441.7	125.671	163.6	125.695	179.8	124.742	49.13

Annual Runoff in MCM = 3749 Annual Runoff in mm = 594

Peak Observed Discharge = 3590 cumecs on 24-Jul-17 Corres. Water Level :131.475 m

Lowest Observed Discharge = 2.500 cumecs on 16-May-18 Corres. Water Level :124.21 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 2017 - 2018

Station Name : ADITYAPUR (ESB00D5) **Division : E.E., Bhubaneswar**

Local River : Kharkhai **Sub-Division : Balasore**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	124.530	29.48	124.360	9.944	124.290	5.783	124.240	3.799	124.210	3.040 *	124.240	4.011
2	124.520	29.00 *	124.360	9.914	124.290	5.758	124.240	3.800 *	124.210	3.038	124.240	4.014
3	124.510	28.30 *	124.350	9.445	124.290	5.752	124.240	3.795	124.210	3.012	124.240	4.012
4	124.500	27.63	124.350	9.458	124.290	5.740 *	124.240	3.790 *	124.210	3.007	124.230	3.525
5	124.490	27.15	124.350	9.423	124.280	5.242	124.240	3.794	124.210	3.001	124.260	4.979
6	124.490	27.02	124.350	9.440	124.280	5.225	124.240	3.793	124.210	2.994	124.250	4.900 *
7	124.470	21.16	124.340	8.700 *	124.280	5.217	124.230	3.597	124.210	2.988	124.240	4.019
8	124.460	20.27	124.340	8.710	124.280	5.215	124.230	3.594	124.230	3.500 *	124.230	3.528
9	124.450	19.61	124.340	8.728	124.270	4.897	124.230	3.592	124.270	4.946	124.230	3.520
10	124.450	19.60 *	124.340	8.713	124.270	4.894	124.230	3.589	124.280	5.507	124.230	3.524
11	124.440	18.15	124.340	8.729	124.270	4.880 *	124.230	3.590 *	124.370	10.50	124.220	3.031
12	124.440	18.29	124.330	8.069	124.270	4.890	124.230	3.588	124.620	28.22	124.220	3.036
13	124.440	18.18	124.330	8.013	124.270	4.886	124.230	3.583	124.560	22.26	124.220	3.040 *
14	124.430	17.07	124.330	8.010 *	124.270	4.882	124.230	3.581	124.480	17.00 *	124.220	3.039
15	124.430	17.00	124.330	8.064	124.260	4.622	124.230	3.576	124.390	11.00 *	124.220	3.039
16	124.430	16.94	124.330	8.016	124.260	4.619	124.220	3.394	124.310	6.451	124.210	2.500
17	124.420	14.70 *	124.320	7.421	124.260	4.617	124.220	3.393	124.240	3.697	124.260	4.994
18	124.420	14.70	124.320	7.435	124.260	4.600 *	124.220	3.390 *	124.460	18.39	124.260	4.996
19	124.410	13.48	124.320	7.439	124.260	4.607	124.220	3.388	124.420	13.60	124.250	4.502
20	124.400	12.47	124.320	7.482	124.250	4.298	124.220	3.383	124.380	10.01	124.250	4.500 *
21	124.400	12.33	124.320	7.420 *	124.250	4.294	124.220	3.380	124.340	7.071	124.250	4.087
22	124.390	12.09	124.310	6.855	124.250	4.290	124.220	3.378	124.320	6.000 *	124.250	4.066
23	124.380	11.80	124.310	6.878	124.250	4.286	124.220	3.375	124.300	5.221	124.240	3.706
24	124.380	11.80 *	124.310	6.817	124.250	4.283	124.220	3.373	124.280	4.815	124.240	3.710
25	124.380	11.80 *	124.310	6.814	124.250	4.270 *	124.210	3.230 *	124.260	4.505	124.240	3.703
26	124.370	10.56	124.300	6.260 *	124.250	4.282	124.210	3.226	124.240	3.801	124.280	5.194
27	124.370	10.55	124.300	6.239	124.250	4.281	124.210	3.223	124.220	3.007	124.280	5.190 *
28	124.370	10.49	124.300	6.260 *	124.240	3.882	124.210	3.221	124.240	3.807	124.280	5.192
29			124.300	6.246			124.210	3.220 *	124.230	3.180 *	124.280	5.183
30			124.300	6.224			124.210	3.220 *	124.300	6.000 *	124.810	38.45
31			124.290	5.985			124.210	3.216			124.550	27.62
Ten-Daily Mean												
I Ten-Daily	124.487	24.92	124.348	9.248	124.282	5.372	124.236	3.714	124.225	3.503	124.239	4.003
II Ten-Daily	124.426	16.10	124.327	7.868	124.263	4.690	124.225	3.487	124.423	14.11	124.233	3.668
III Ten-Daily	124.380	11.43	124.305	6.545	124.249	4.233	124.214	3.278	124.273	4.741	124.336	9.646
Monthly												
Min.	124.370	10.49	124.290	5.985	124.240	3.882	124.210	3.216	124.210	2.988	124.210	2.500
Max.	124.530	29.48	124.360	9.944	124.290	5.783	124.240	3.800	124.620	28.22	124.810	38.45
Mean	124.435	17.92	124.326	7.844	124.266	4.803	124.225	3.486	124.307	7.453	124.272	5.897

Peak Computed Discharge = 1373 cumecs on 06-Aug-17 Corres. Water Level :128.98 m

Lowest Computed Discharge = 3.040 cumecs on 01-Apr-18 Corres. Water Level :124.21 m

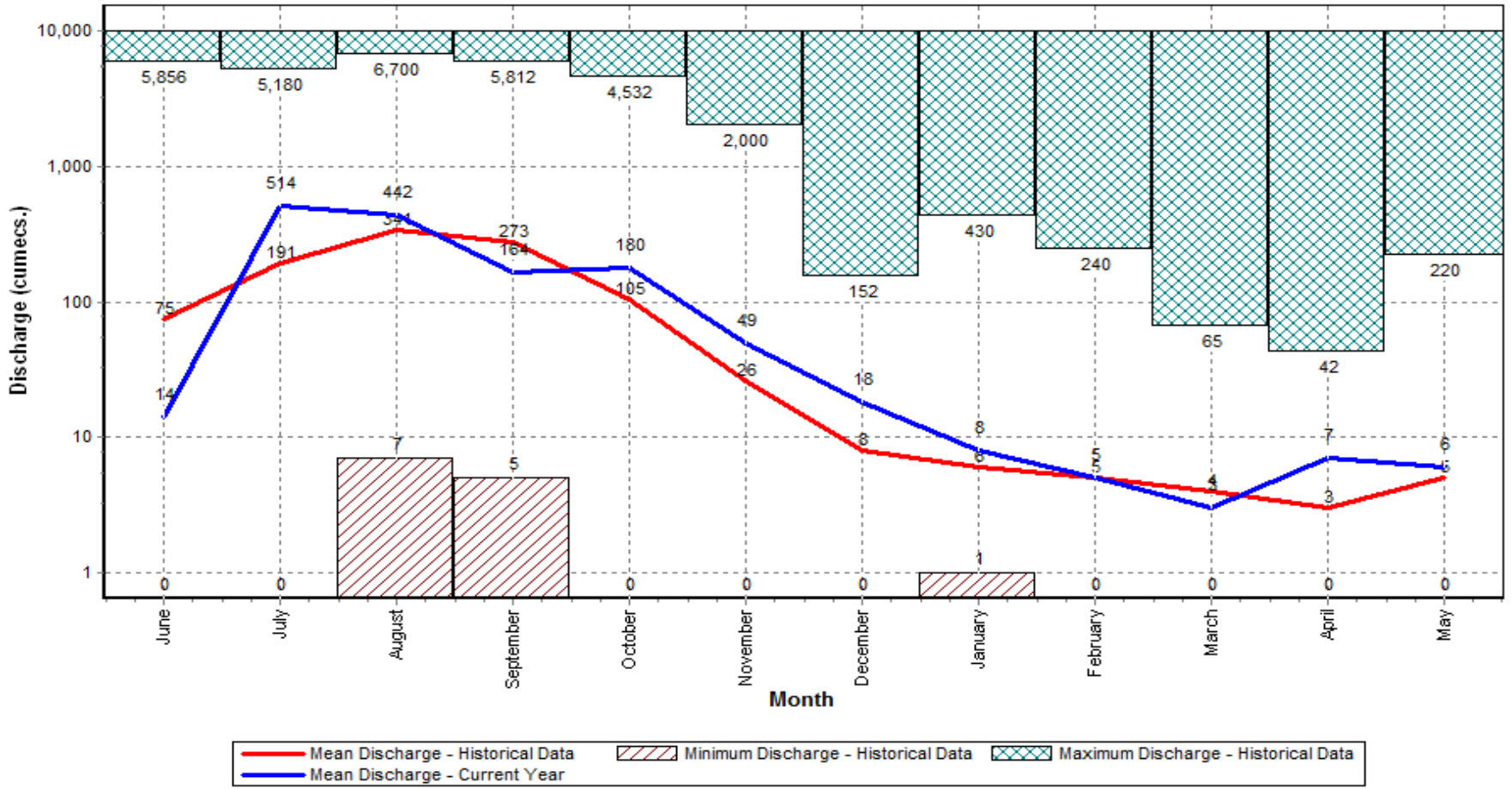
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2017-2018

Station Name : ADITYAPUR (ESB00D5) **Data considered : 1972-2018** **Division : E.E., Bhubaneswar**

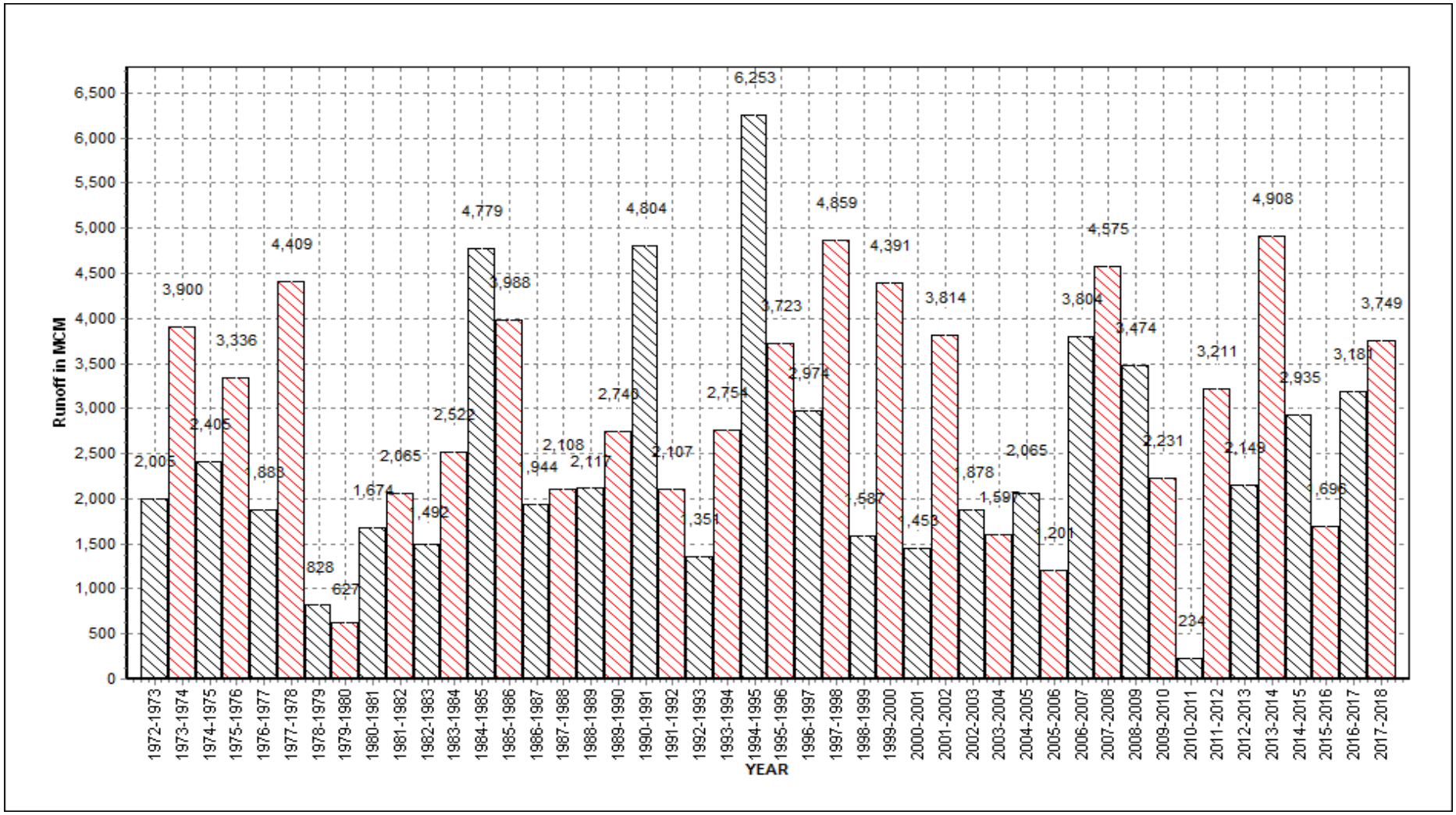
Local River : Kharkhai **Sub-Division : Balasore**



Annual Runoff Values for the period: 1972 - 2018

Station Name : ADITYAPUR (ESB00D5) **Division : E.E., Bhubaneswar**

Local River : Kharkhai **Sub-Division : Balasore**

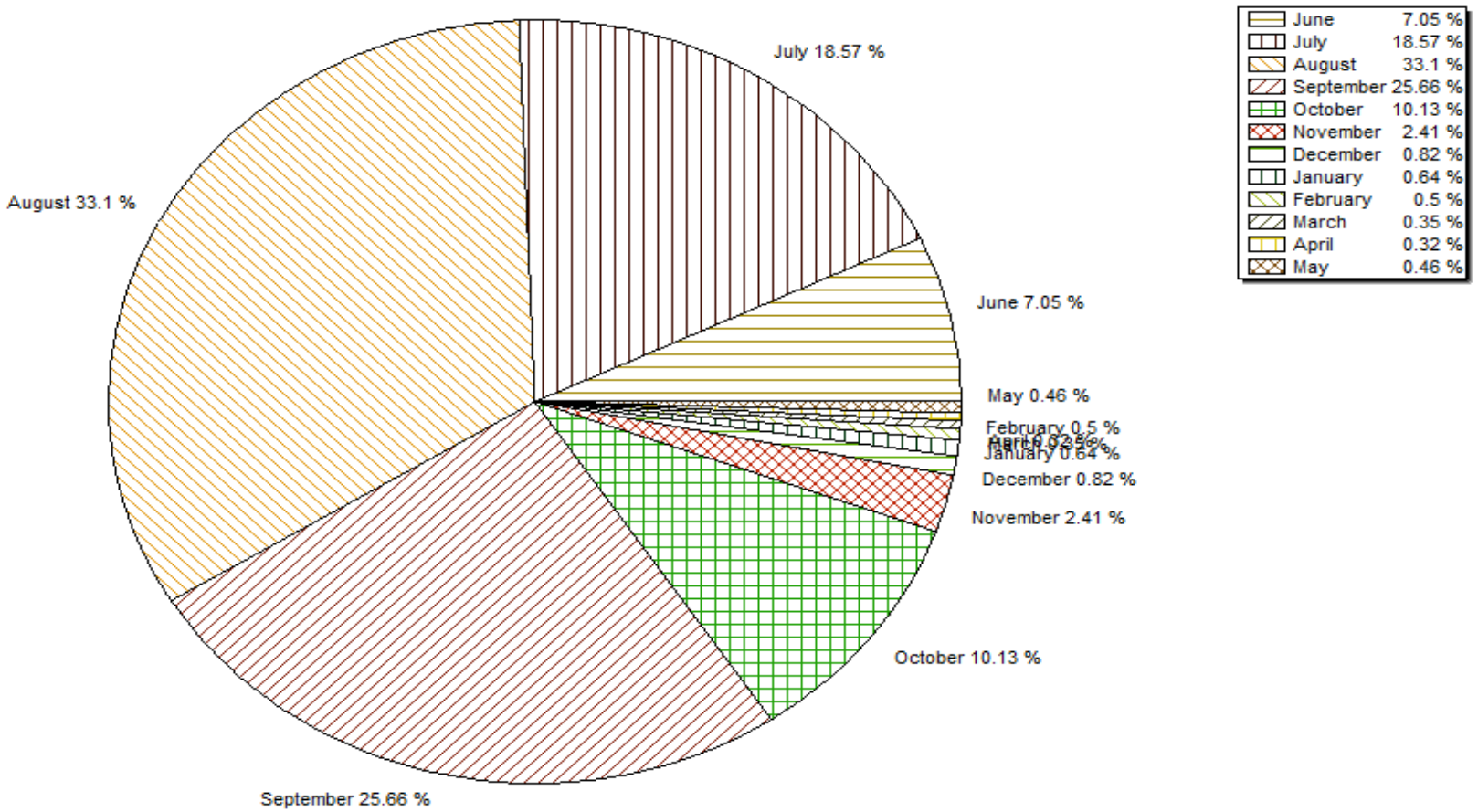


Note: Missing values have not been considered while arriving at Annual Runoff

Monthly Average Runoff based on period : 1972-2017

Station Name : ADITYAPUR (ESB00D5) **Division : E.E., Bhubaneswar**

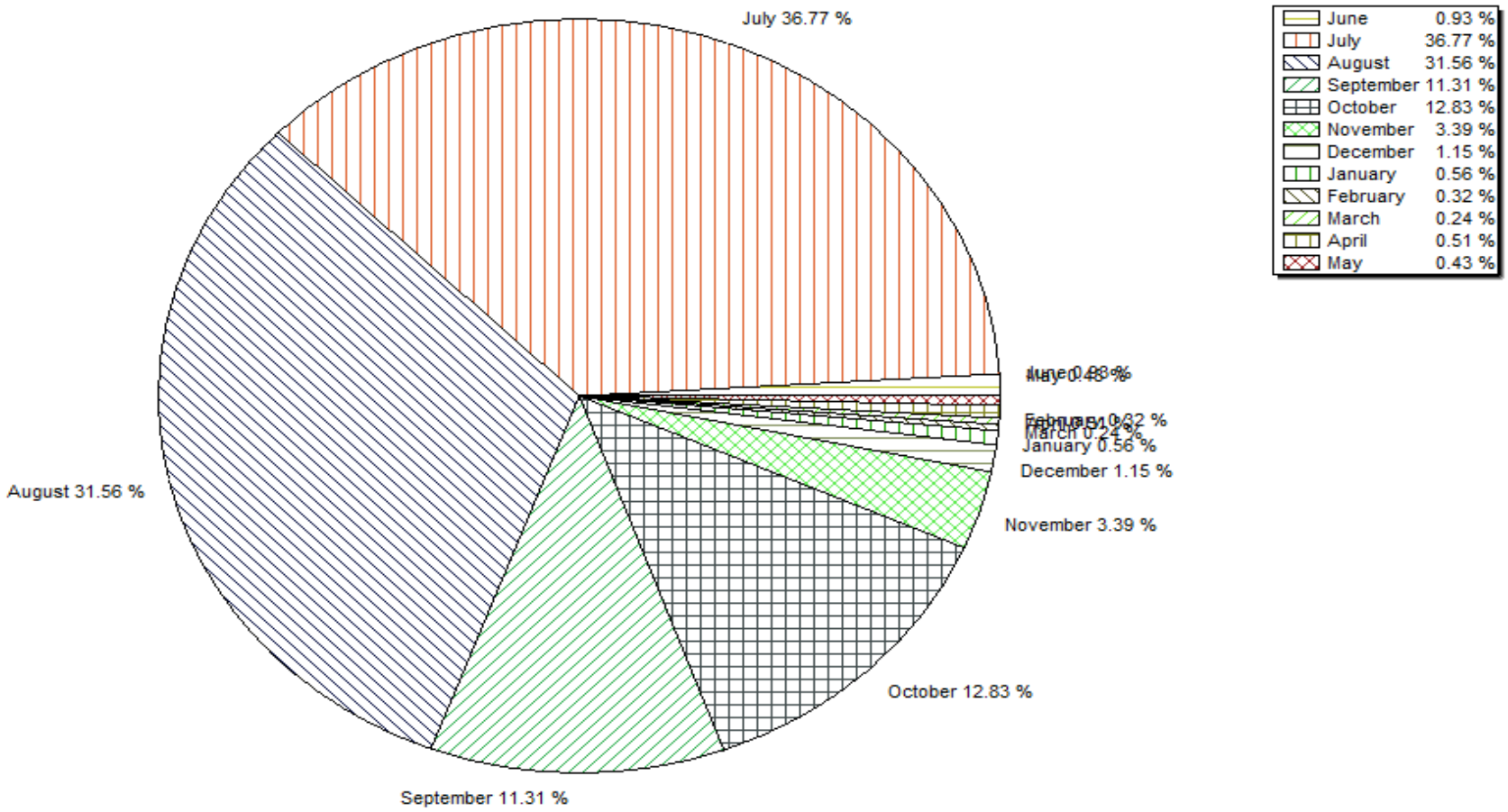
Local River : Kharkhai **Sub-Division : Balasore**



Monthly Runoff for the Year : 2017-2018

Station Name : ADITYAPUR (ESB00D5) **Division : E.E., Bhubaneswar**

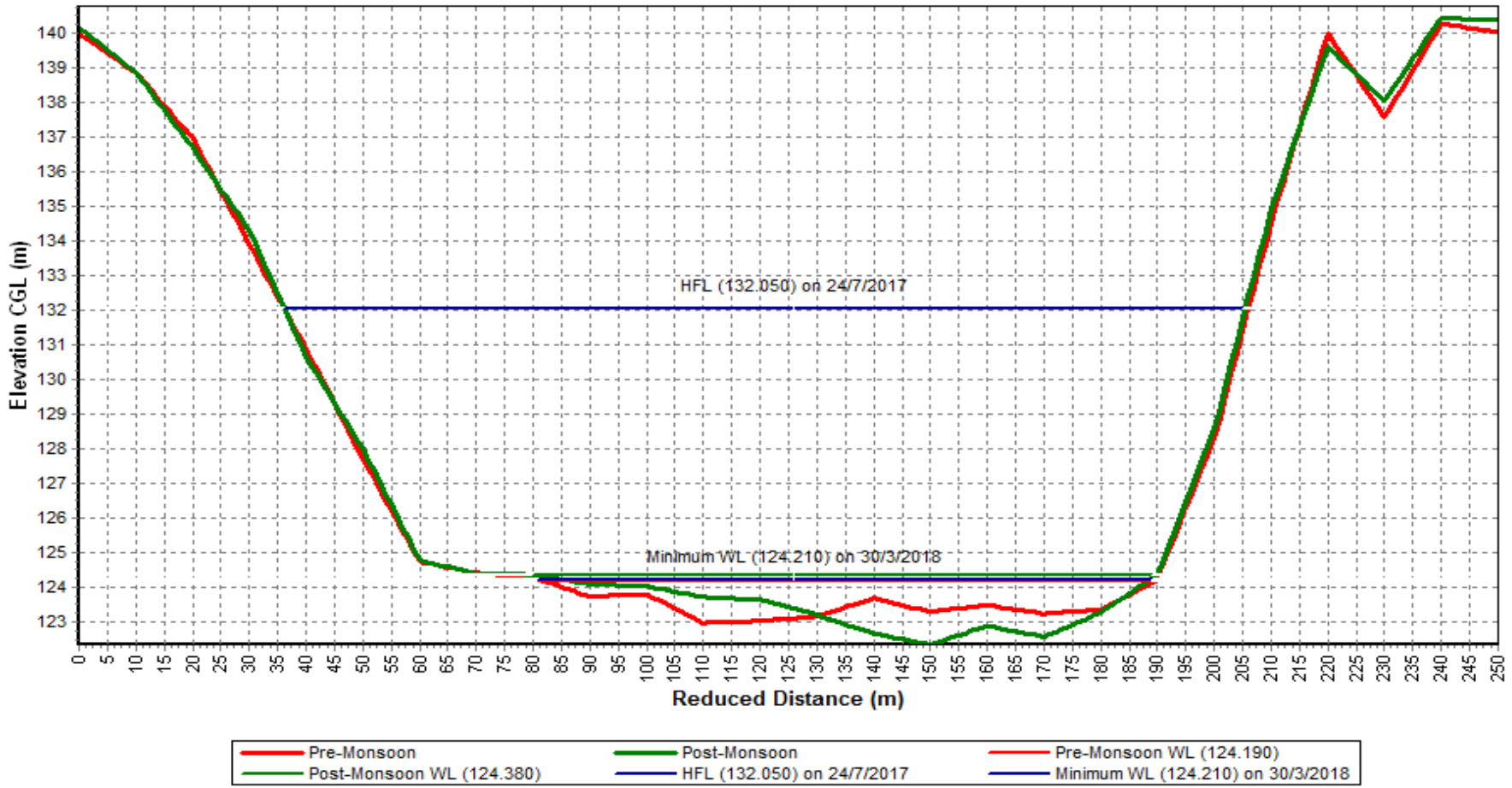
Local River : Kharkhai **Sub-Division : Balasore**



Pre-Monsoon & Post-Monsoon X-Section for Water Year : 2017-2018

Station Name : ADITYAPUR (ESB00D5) **Division : E.E., Bhubaneswar**

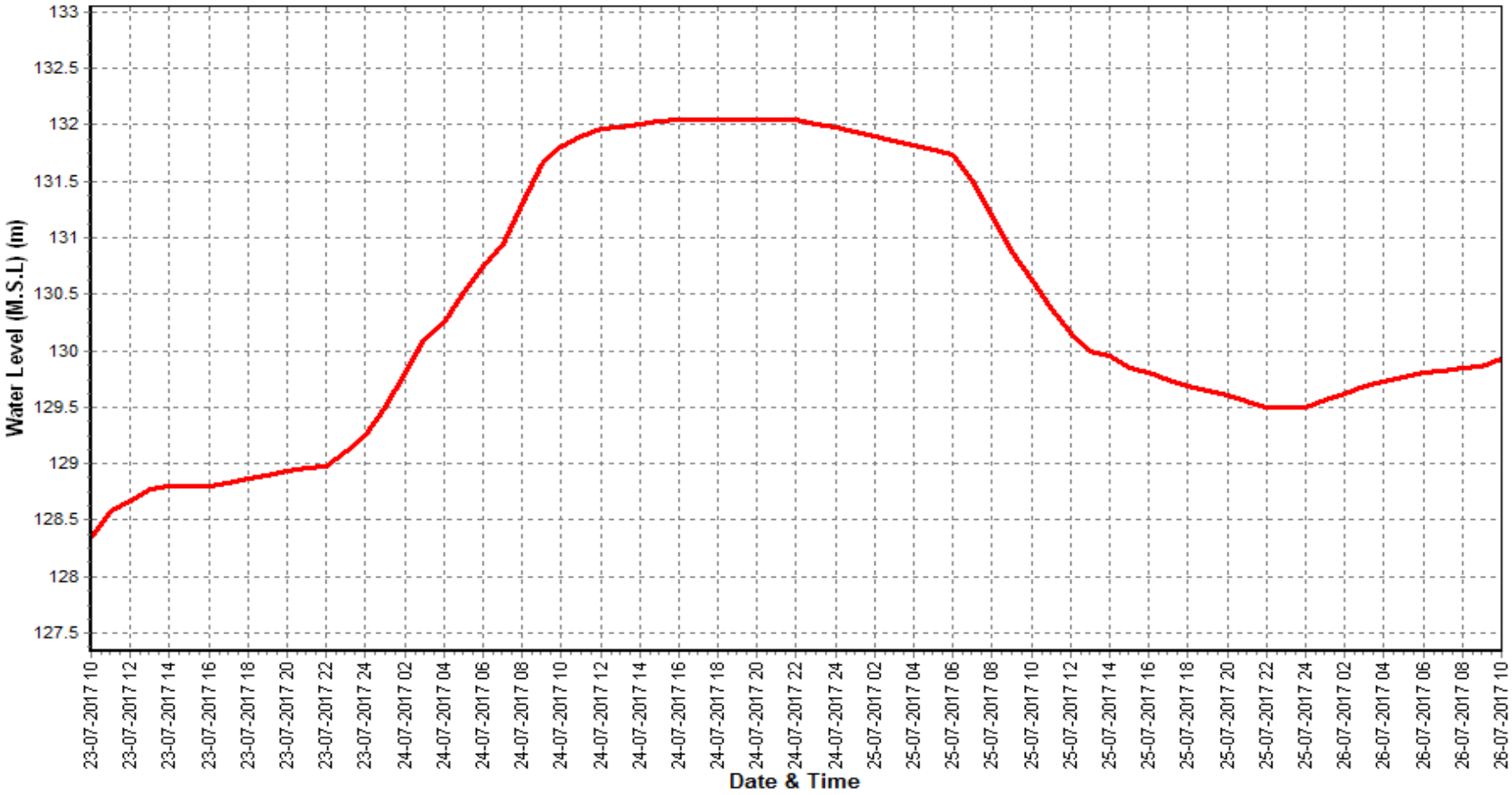
Local River : Kharkhai **Sub-Division : Balasore**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2017-2018

Station Name : ADITYAPUR (ESB00D5) **Division : E.E., Bhubaneswar**

Local River : Kharkhai **Sub-Division : Balasore**

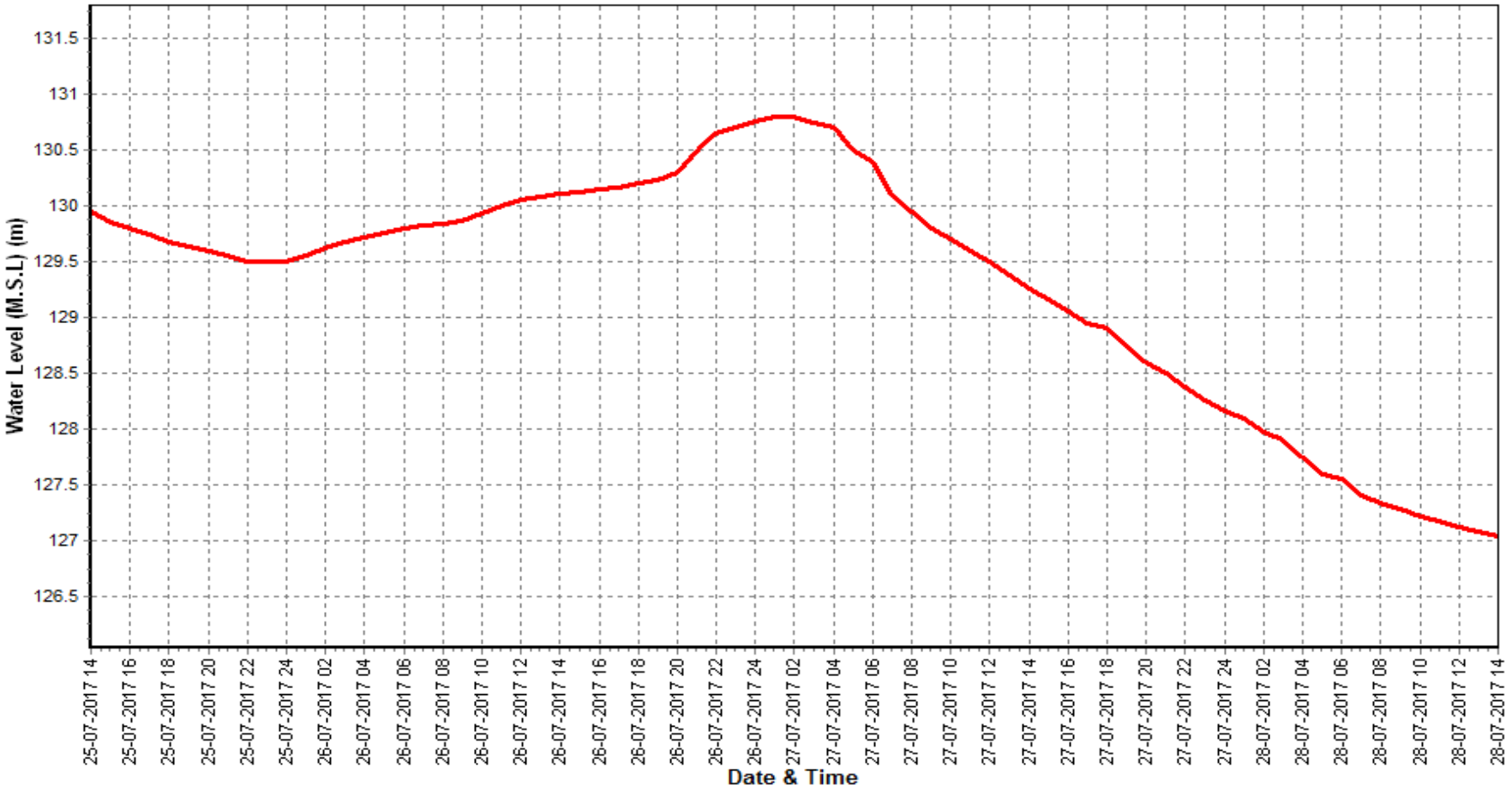


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2017-2018

Station Name : ADITYAPUR (ESB00D5) **Division : E.E., Bhubaneswar**

Local River : Kharkhai **Sub-Division : Balasore**

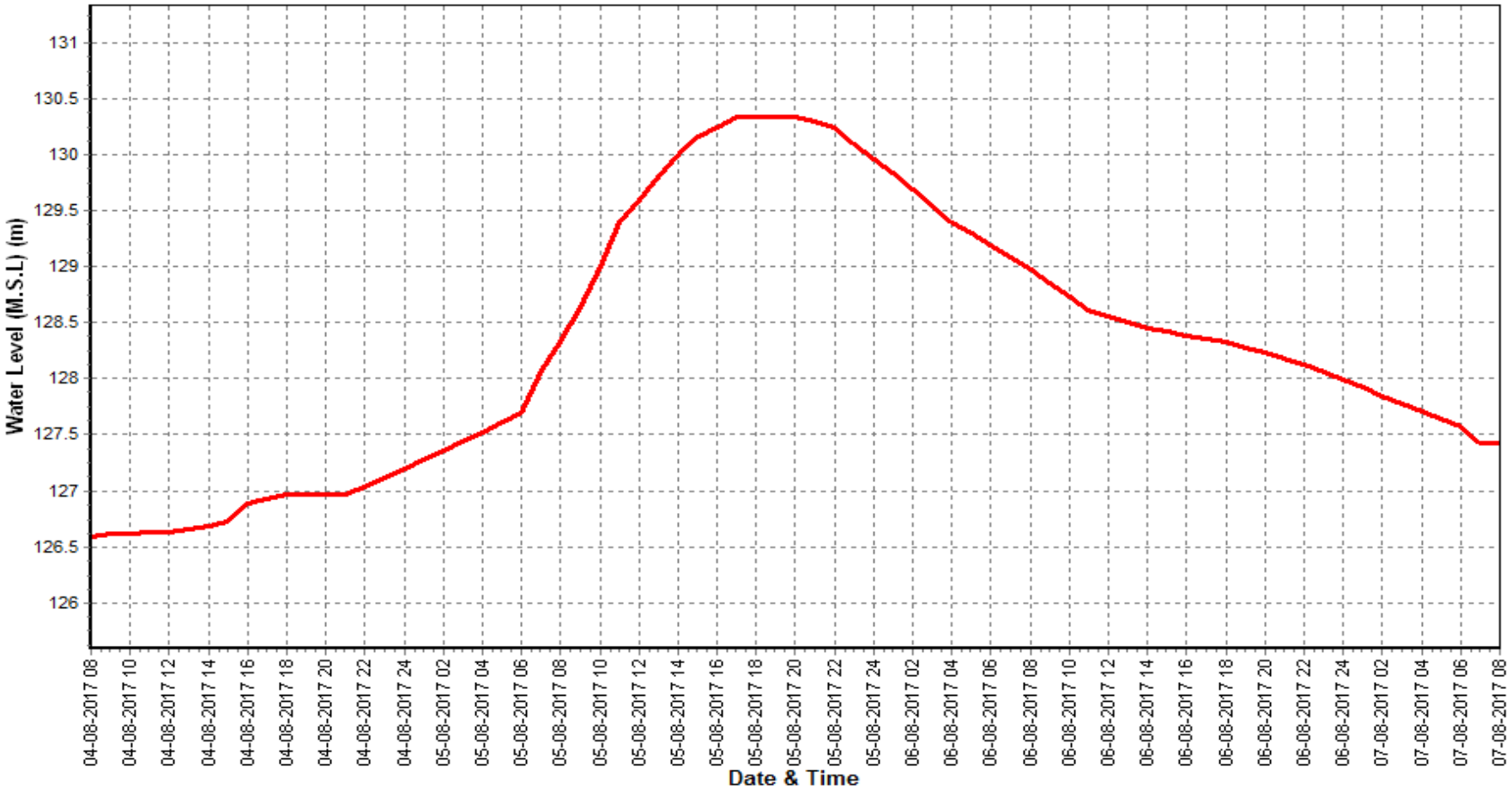


Time Span: 72 Hrs

Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2017-2018

Station Name : ADITYAPUR (ESB00D5) **Division : E.E., Bhubaneswar**

Local River : Kharkhai **Sub-Division : Balasore**



Time Span: 72 Hrs

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : ADITYAPUR (ESB00D5) **Division : E.E., Bhubaneswar**

Local River : Kharkhai **Sub-Division : Balasore**

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	22.43	0.000	0.000	0.112	0.112	217	31.11	0.000	0.000	0.079	0.079	212	337.9	0.000	0.000	0.274	0.274	8000
2	17.98	0.000	0.000	0.148	0.148	230	50.00	0.000	0.000	0.079	0.079	341	218.2	0.000	0.000	0.190	0.190	3582
3	10.37	0.000	0.000	0.162	0.162	145	180.9	0.000	0.000	0.188	0.188	2939	364.9	0.000	0.000	0.132	0.132	4161
4	6.700	0.000	0.000	0.162	0.162	94	116.5	0.000	0.000	0.166	0.166	1671	382.0	0.000	0.000	0.194	0.194	6402
5	6.777	0.000	0.000	0.310	0.310	182	78.84	0.000	0.000	0.187	0.187	1274	1373	0.000	0.000	0.794	0.794	94161
6	5.646	0.000	0.000	0.158	0.158	77	58.02	0.000	0.000	0.190	0.190	952	1373	0.000	0.000	0.794	0.794	94176
7	10.24	0.000	0.000	0.132	0.132	117	57.86	0.000	0.000	0.104	0.104	520	618.9	0.000	0.000	0.176	0.176	9411
8	8.396	0.000	0.000	0.138	0.138	100	55.55	0.000	0.000	0.136	0.136	653	394.0	0.000	0.000	0.060	0.060	2042
9	8.230	0.000	0.000	0.159	0.159	113	55.50	0.000	0.000	0.136	0.136	652	391.3	0.000	0.000	0.160	0.160	5410
10	4.937	0.000	0.000	0.160	0.160	68	50.45	0.000	0.000	0.046	0.046	200	326.2	0.000	0.000	0.176	0.176	4961
11	5.600	0.000	0.000	0.160	0.160	77	50.29	0.000	0.000	0.132	0.132	574	298.3	0.000	0.000	0.182	0.182	4691
12	5.979	0.000	0.000	0.190	0.190	98	47.83	0.000	0.000	0.158	0.158	653	182.4	0.000	0.000	0.148	0.148	2332
13	5.566	0.000	0.000	0.180	0.180	87	42.61	0.000	0.000	0.102	0.102	375	182.0	0.000	0.000	0.148	0.148	2327
14	6.696	0.000	0.000	0.150	0.150	87	78.72	0.000	0.000	0.142	0.142	966	343.4	0.000	0.000	0.136	0.136	4035
15	15.97	0.000	0.000	0.072	0.072	99	141.3	0.000	0.000	0.153	0.153	1867	402.0	0.000	0.000	0.136	0.136	4724
16	9.970	0.000	0.000	0.138	0.138	119	78.80	0.000	0.000	0.153	0.153	1042	822.2	0.000	0.000	0.434	0.434	30829
17	6.752	0.000	0.000	0.175	0.175	102	79.60	0.000	0.000	0.156	0.156	1073	423.8	0.000	0.000	0.343	0.343	12559
18	6.700	0.000	0.000	0.175	0.175	101	77.95	0.000	0.000	0.144	0.144	970	613.3	0.000	0.000	0.248	0.248	13140
19	5.463	0.000	0.000	0.196	0.196	93	78.04	0.000	0.000	0.224	0.224	1510	596.7	0.000	0.000	0.182	0.182	9383
20	18.02	0.000	0.000	0.206	0.206	321	77.58	0.000	0.000	0.116	0.116	778	596.0	0.000	0.000	0.182	0.182	9372
21	8.210	0.000	0.000	0.154	0.154	109	79.09	0.000	0.000	0.086	0.086	588	402.5	0.000	0.000	0.118	0.118	4103
22	7.869	0.000	0.000	0.179	0.179	122	287.7	0.000	0.000	0.232	0.232	5767	380.3	0.000	0.000	0.156	0.156	5126
23	8.179	0.000	0.000	0.068	0.068	48	553.6	0.000	0.000	0.232	0.232	11097	303.8	0.000	0.000	0.116	0.116	3045
24	9.973	0.000	0.000	0.188	0.188	162	3590	0.000	0.000	1.136	1.136	352326	367.7	0.000	0.000	0.172	0.172	5465
25	15.90	0.000	0.000	0.188	0.188	258	3589	0.000	0.000	0.448	0.448	138920	291.5	0.000	0.000	0.106	0.106	2669
26	28.80	0.000	0.000	0.188	0.188	468	2224	0.000	0.000	0.278	0.278	53418	183.5	0.000	0.000	0.132	0.132	2093
27	27.67	0.000	0.000	0.148	0.148	354	2341	0.000	0.000	0.266	0.266	53803	152.0	0.000	0.000	0.132	0.132	1734
28	28.70	0.000	0.000	0.126	0.126	312	553.5	0.000	0.000	0.268	0.268	12818	152.2	0.000	0.000	0.154	0.154	2025
29	42.52	0.000	0.000	0.117	0.117	430	378.9	0.000	0.000	0.142	0.142	4649	619.8	0.000	0.000	0.218	0.218	11675
30	39.65	0.000	0.000	0.142	0.142	486	378.0	0.000	0.000	0.142	0.142	4638	386.2	0.000	0.000	0.110	0.110	3670
31							481.3	0.000	0.000	0.260	0.260	10811	214.0	0.000	0.000	0.116	0.116	2144
Ten Daily Mean																		
Ten Daily I	10.17	0.000	0.000	0.164	0.164	134	73.48	0.000	0.000	0.131	0.131	942	577.9	0.000	0.000	0.295	0.295	23231
Ten Daily II	8.672	0.000	0.000	0.164	0.164	118	75.27	0.000	0.000	0.148	0.148	981	446.0	0.000	0.000	0.214	0.214	9339
Ten Daily III	21.75	0.000	0.000	0.150	0.150	275	1314	0.000	0.000	0.317	0.317	58985	314.0	0.000	0.000	0.139	0.139	3977
Monthly																		
Total						5276						668057						369448

Annual Sediment Load (Metric Tonnes) : 1216032

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : ADITYAPUR (ESB00D5) **Division : E.E., Bhubaneswar**

Local River : Kharkhai **Sub-Division : Balasore**

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	180.2	0.000	0.000	0.118	0.118	1837	164.0	0.000	0.000	0.174	0.174	2466	69.91	0.000	0.000	0.204	0.204	1232
2	180.0	0.000	0.000	0.118	0.118	1835	170.0	0.000	0.000	0.174	0.174	2556	66.97	0.000	0.000	0.096	0.096	556
3	200.0	0.000	0.000	0.118	0.118	2039	344.2	0.000	0.000	0.174	0.174	5175	63.79	0.000	0.000	0.076	0.076	419
4	290.6	0.000	0.000	0.108	0.108	2711	388.9	0.000	0.000	0.212	0.212	7124	59.00	0.000	0.000	0.076	0.076	387
5	179.8	0.000	0.000	0.076	0.076	1181	205.1	0.000	0.000	0.246	0.246	4358	58.00	0.000	0.000	0.076	0.076	381
6	144.9	0.000	0.000	0.098	0.098	1227	204.5	0.000	0.000	0.104	0.104	1838	53.94	0.000	0.000	0.076	0.076	354
7	142.6	0.000	0.000	0.118	0.118	1454	164.5	0.000	0.000	0.084	0.084	1194	50.69	0.000	0.000	0.107	0.107	469
8	135.2	0.000	0.000	0.116	0.116	1355	164.0	0.000	0.000	0.084	0.084	1190	49.82	0.000	0.000	0.068	0.068	293
9	130.9	0.000	0.000	0.090	0.090	1018	195.3	0.000	0.000	0.090	0.090	1518	47.92	0.000	0.000	0.046	0.046	190
10	144.9	0.000	0.000	0.090	0.090	1127	159.4	0.000	0.000	0.130	0.130	1791	47.87	0.000	0.000	0.116	0.116	480
11	133.9	0.000	0.000	0.046	0.046	532	145.2	0.000	0.000	0.106	0.106	1329	47.58	0.000	0.000	0.150	0.150	617
12	134.1	0.000	0.000	0.088	0.088	1020	158.2	0.000	0.000	0.108	0.108	1476	47.30	0.000	0.000	0.150	0.150	613
13	136.1	0.000	0.000	0.132	0.132	1552	143.3	0.000	0.000	0.096	0.096	1189	47.25	0.000	0.000	0.130	0.130	531
14	129.3	0.000	0.000	0.150	0.150	1676	142.3	0.000	0.000	0.112	0.112	1377	47.17	0.000	0.000	0.116	0.116	473
15	116.1	0.000	0.000	0.090	0.090	903	171.0	0.000	0.000	0.112	0.112	1655	47.12	0.000	0.000	0.126	0.126	513
16	130.4	0.000	0.000	0.166	0.166	1870	138.4	0.000	0.000	0.134	0.134	1602	43.10	0.000	0.000	0.036	0.036	134
17	130.0	0.000	0.000	0.166	0.166	1865	110.5	0.000	0.000	0.104	0.104	993	42.57	0.000	0.000	0.140	0.140	515
18	141.9	0.000	0.000	0.166	0.166	2036	94.73	0.000	0.000	0.136	0.136	1113	42.04	0.000	0.000	0.140	0.140	509
19	139.8	0.000	0.000	0.128	0.128	1546	94.00	0.000	0.000	0.136	0.136	1105	42.00	0.000	0.000	0.148	0.148	537
20	388.8	0.000	0.000	0.102	0.102	3427	97.23	0.000	0.000	0.110	0.110	924	47.35	0.000	0.000	0.100	0.100	409
21	300.9	0.000	0.000	0.138	0.138	3588	183.7	0.000	0.000	0.662	0.662	10509	66.53	0.000	0.000	0.028	0.028	161
22	220.0	0.000	0.000	0.110	0.110	2091	480.0	0.000	0.000	0.662	0.662	27454	64.97	0.000	0.000	0.130	0.130	730
23	156.3	0.000	0.000	0.180	0.180	2431	381.3	0.000	0.000	0.124	0.124	4085	59.35	0.000	0.000	0.144	0.144	738
24	156.0	0.000	0.000	0.180	0.180	2426	292.3	0.000	0.000	0.040	0.040	1010	50.79	0.000	0.000	0.102	0.102	448
25	139.6	0.000	0.000	0.156	0.156	1882	162.2	0.000	0.000	0.120	0.120	1682	44.21	0.000	0.000	0.078	0.078	298
26	135.7	0.000	0.000	0.094	0.094	1102	136.0	0.000	0.000	0.084	0.084	987	41.00	0.000	0.000	0.100	0.100	354
27	103.2	0.000	0.000	0.092	0.092	820	143.6	0.000	0.000	0.078	0.078	968	35.14	0.000	0.000	0.100	0.100	304
28	103.3	0.000	0.000	0.104	0.104	928	103.3	0.000	0.000	0.136	0.136	1213	30.42	0.000	0.000	0.100	0.100	263
29	103.3	0.000	0.000	0.104	0.104	928	87.00	0.000	0.000	0.136	0.136	1022	30.26	0.000	0.000	0.100	0.100	261
30	180.0	0.000	0.000	0.104	0.104	1617	75.70	0.000	0.000	0.066	0.066	432	29.70	0.000	0.000	0.100	0.100	257
31							72.88	0.000	0.000	0.100	0.100	630						
Ten Daily Mean																		
Ten Daily I	172.9	0.000	0.000	0.105	0.105	1578	216.0	0.000	0.000	0.147	0.147	2921	56.79	0.000	0.000	0.094	0.094	476
Ten Daily II	158.1	0.000	0.000	0.123	0.123	1643	129.5	0.000	0.000	0.115	0.115	1276	45.35	0.000	0.000	0.124	0.124	485
Ten Daily III	159.8	0.000	0.000	0.126	0.126	1781	192.6	0.000	0.000	0.201	0.201	4545	45.24	0.000	0.000	0.098	0.098	381
Monthly Total						50025						91965						13424

Annual Sediment Load (Metric Tonnes) : 1216032

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : ADITYAPUR (ESB00D5) **Division : E.E., Bhubaneswar**

Local River : Kharkhai **Sub-Division : Balasore**

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	29.48	0.000	0.000	0.156	0.156	397	9.944	0.000	0.000	0.066	0.066	57	5.783	0.000	0.000	0.212	0.212	106
2	29.00	0.000	0.000	0.156	0.156	391	9.914	0.000	0.000	0.066	0.066	57	5.758	0.000	0.000	0.212	0.212	105
3	28.30	0.000	0.000	0.156	0.156	381	9.445	0.000	0.000	0.066	0.066	54	5.752	0.000	0.000	0.212	0.212	105
4	27.63	0.000	0.000	0.156	0.156	372	9.458	0.000	0.000	0.066	0.066	54	5.740	0.000	0.000	0.212	0.212	105
5	27.15	0.000	0.000	0.156	0.156	366	9.423	0.000	0.000	0.066	0.066	54	5.242	0.000	0.000	0.212	0.212	96
6	27.02	0.000	0.000	0.156	0.156	364	9.440	0.000	0.000	0.066	0.066	54	5.225	0.000	0.000	0.212	0.212	96
7	21.16	0.000	0.000	0.156	0.156	285	8.700	0.000	0.000	0.066	0.066	50	5.217	0.000	0.000	0.212	0.212	96
8	20.27	0.000	0.000	0.156	0.156	273	8.710	0.000	0.000	0.120	0.120	90	5.215	0.000	0.000	0.212	0.212	96
9	19.61	0.000	0.000	0.156	0.156	264	8.728	0.000	0.000	0.120	0.120	90	4.897	0.000	0.000	0.166	0.166	70
10	19.60	0.000	0.000	0.156	0.156	264	8.713	0.000	0.000	0.120	0.120	90	4.894	0.000	0.000	0.166	0.166	70
11	18.15	0.000	0.000	0.168	0.168	263	8.729	0.000	0.000	0.120	0.120	91	4.880	0.000	0.000	0.166	0.166	70
12	18.29	0.000	0.000	0.168	0.168	266	8.069	0.000	0.000	0.120	0.120	84	4.890	0.000	0.000	0.166	0.166	70
13	18.18	0.000	0.000	0.168	0.168	264	8.013	0.000	0.000	0.120	0.120	83	4.886	0.000	0.000	0.166	0.166	70
14	17.07	0.000	0.000	0.168	0.168	248	8.010	0.000	0.000	0.120	0.120	83	4.882	0.000	0.000	0.166	0.166	70
15	17.00	0.000	0.000	0.168	0.168	247	8.064	0.000	0.000	0.154	0.154	107	4.622	0.000	0.000	0.166	0.166	66
16	16.94	0.000	0.000	0.168	0.168	246	8.016	0.000	0.000	0.154	0.154	107	4.619	0.000	0.000	0.096	0.096	38
17	14.70	0.000	0.000	0.168	0.168	213	7.421	0.000	0.000	0.154	0.154	99	4.617	0.000	0.000	0.096	0.096	38
18	14.70	0.000	0.000	0.156	0.156	198	7.435	0.000	0.000	0.154	0.154	99	4.600	0.000	0.000	0.096	0.096	38
19	13.48	0.000	0.000	0.156	0.156	182	7.439	0.000	0.000	0.154	0.154	99	4.607	0.000	0.000	0.096	0.096	38
20	12.47	0.000	0.000	0.156	0.156	168	7.482	0.000	0.000	0.154	0.154	100	4.298	0.000	0.000	0.096	0.096	36
21	12.33	0.000	0.000	0.156	0.156	166	7.420	0.000	0.000	0.154	0.154	99	4.294	0.000	0.000	0.096	0.096	36
22	12.09	0.000	0.000	0.156	0.156	163	6.855	0.000	0.000	0.110	0.110	65	4.290	0.000	0.000	0.096	0.096	36
23	11.80	0.000	0.000	0.156	0.156	159	6.878	0.000	0.000	0.110	0.110	65	4.286	0.000	0.000	0.700	0.700	259
24	11.80	0.000	0.000	0.156	0.156	159	6.817	0.000	0.000	0.110	0.110	65	4.283	0.000	0.000	0.700	0.700	259
25	11.80	0.000	0.000	0.156	0.156	159	6.814	0.000	0.000	0.110	0.110	65	4.270	0.000	0.000	0.700	0.700	258
26	10.56	0.000	0.000	0.226	0.226	206	6.260	0.000	0.000	0.110	0.110	59	4.282	0.000	0.000	0.700	0.700	259
27	10.55	0.000	0.000	0.226	0.226	206	6.239	0.000	0.000	0.110	0.110	59	4.281	0.000	0.000	0.700	0.700	259
28	10.49	0.000	0.000	0.226	0.226	205	6.260	0.000	0.000	0.110	0.110	59	3.882	0.000	0.000	0.700	0.700	235
29							6.246	0.000	0.000	0.126	0.126	68						
30							6.224	0.000	0.000	0.126	0.126	68						
31							5.985	0.000	0.000	0.126	0.126	65						
Ten Daily Mean																		
Ten Daily I	24.92	0.000	0.000	0.156	0.156	336	9.248	0.000	0.000	0.082	0.082	65	5.372	0.000	0.000	0.203	0.203	95
Ten Daily II	16.10	0.000	0.000	0.164	0.164	229	7.868	0.000	0.000	0.140	0.140	95	4.690	0.000	0.000	0.131	0.131	54
Ten Daily III	11.43	0.000	0.000	0.182	0.182	178	6.545	0.000	0.000	0.118	0.118	67	4.233	0.000	0.000	0.549	0.549	200
Monthly Total						7077						2338						3081

Annual Sediment Load (Metric Tonnes) : 1216032

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : ADITYAPUR (ESB00D5) **Division : E.E., Bhubaneswar**

Local River : Kharkhai **Sub-Division : Balasore**

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	3.799	0.000	0.000	0.138	0.138	45	3.040	0.000	0.000	0.146	0.146	38	4.011	0.000	0.000	0.136	0.136	47
2	3.800	0.000	0.000	0.138	0.138	45	3.038	0.000	0.000	0.146	0.146	38	4.014	0.000	0.000	0.136	0.136	47
3	3.795	0.000	0.000	0.138	0.138	45	3.012	0.000	0.000	0.146	0.146	38	4.012	0.000	0.000	0.136	0.136	47
4	3.790	0.000	0.000	0.138	0.138	45	3.007	0.000	0.000	0.146	0.146	38	3.525	0.000	0.000	0.136	0.136	41
5	3.794	0.000	0.000	0.138	0.138	45	3.001	0.000	0.000	0.146	0.146	38	4.979	0.000	0.000	0.134	0.134	58
6	3.793	0.000	0.000	0.138	0.138	45	2.994	0.000	0.000	0.164	0.164	42	4.900	0.000	0.000	0.134	0.134	57
7	3.597	0.000	0.000	0.138	0.138	43	2.988	0.000	0.000	0.164	0.164	42	4.019	0.000	0.000	0.134	0.134	47
8	3.594	0.000	0.000	0.138	0.138	43	3.500	0.000	0.000	0.164	0.164	50	3.528	0.000	0.000	0.134	0.134	41
9	3.592	0.000	0.000	0.115	0.115	36	4.946	0.000	0.000	0.164	0.164	70	3.520	0.000	0.000	0.134	0.134	41
10	3.589	0.000	0.000	0.115	0.115	36	5.507	0.000	0.000	0.164	0.164	78	3.524	0.000	0.000	0.134	0.134	41
11	3.590	0.000	0.000	0.115	0.115	36	10.50	0.000	0.000	0.164	0.164	149	3.031	0.000	0.000	0.134	0.134	35
12	3.588	0.000	0.000	0.115	0.115	36	28.22	0.000	0.000	0.164	0.164	400	3.036	0.000	0.000	0.130	0.130	34
13	3.583	0.000	0.000	0.115	0.115	36	22.26	0.000	0.000	0.046	0.046	88	3.040	0.000	0.000	0.130	0.130	34
14	3.581	0.000	0.000	0.115	0.115	36	17.00	0.000	0.000	0.046	0.046	68	3.039	0.000	0.000	0.130	0.130	34
15	3.576	0.000	0.000	0.115	0.115	36	11.00	0.000	0.000	0.046	0.046	44	3.039	0.000	0.000	0.130	0.130	34
16	3.394	0.000	0.000	0.167	0.167	49	6.451	0.000	0.000	0.046	0.046	26	2.500	0.000	0.000	0.130	0.130	28
17	3.393	0.000	0.000	0.167	0.167	49	3.697	0.000	0.000	0.046	0.046	15	4.994	0.000	0.000	0.130	0.130	56
18	3.390	0.000	0.000	0.167	0.167	49	18.39	0.000	0.000	0.046	0.046	73	4.996	0.000	0.000	0.130	0.130	56
19	3.388	0.000	0.000	0.167	0.167	49	13.60	0.000	0.000	0.046	0.046	54	4.502	0.000	0.000	0.130	0.130	51
20	3.383	0.000	0.000	0.167	0.167	49	10.01	0.000	0.000	0.062	0.062	54	4.500	0.000	0.000	0.130	0.130	51
21	3.380	0.000	0.000	0.167	0.167	49	7.071	0.000	0.000	0.062	0.062	38	4.087	0.000	0.000	0.130	0.130	46
22	3.378	0.000	0.000	0.167	0.167	49	6.000	0.000	0.000	0.062	0.062	32	4.066	0.000	0.000	0.130	0.130	46
23	3.375	0.000	0.000	0.229	0.229	67	5.221	0.000	0.000	0.062	0.062	28	3.706	0.000	0.000	0.130	0.130	42
24	3.373	0.000	0.000	0.229	0.229	67	4.815	0.000	0.000	0.062	0.062	26	3.710	0.000	0.000	0.130	0.130	42
25	3.230	0.000	0.000	0.229	0.229	64	4.505	0.000	0.000	0.062	0.062	24	3.703	0.000	0.000	0.130	0.130	42
26	3.226	0.000	0.000	0.229	0.229	64	3.801	0.000	0.000	0.062	0.062	20	5.194	0.000	0.000	0.136	0.136	61
27	3.223	0.000	0.000	0.229	0.229	64	3.007	0.000	0.000	0.062	0.062	16	5.190	0.000	0.000	0.136	0.136	61
28	3.221	0.000	0.000	0.229	0.229	64	3.807	0.000	0.000	0.062	0.062	20	5.192	0.000	0.000	0.136	0.136	61
29	3.220	0.000	0.000	0.229	0.229	64	3.180	0.000	0.000	0.062	0.062	17	5.183	0.000	0.000	0.136	0.136	61
30	3.220	0.000	0.000	0.229	0.229	64	6.000	0.000	0.000	0.062	0.062	32	38.45	0.000	0.000	0.136	0.136	452
31	3.216	0.000	0.000	0.229	0.229	64							27.62	0.000	0.000	0.136	0.136	325
Ten Daily Mean																		
Ten Daily I	3.714	0.000	0.000	0.133	0.133	43	3.503	0.000	0.000	0.155	0.155	47	4.003	0.000	0.000	0.135	0.135	47
Ten Daily II	3.487	0.000	0.000	0.141	0.141	42	14.11	0.000	0.000	0.071	0.071	97	3.668	0.000	0.000	0.130	0.130	41
Ten Daily III	3.278	0.000	0.000	0.218	0.218	62	4.741	0.000	0.000	0.062	0.062	25	9.646	0.000	0.000	0.133	0.133	112
Monthly Total						1528						1696						2116

Annual Sediment Load (Metric Tonnes) : 1216032

Annual Sediment Load for period : 1975-2018

Station Name : ADITYAPUR (ESB00D5) **Division : E.E., Bhubaneswar**

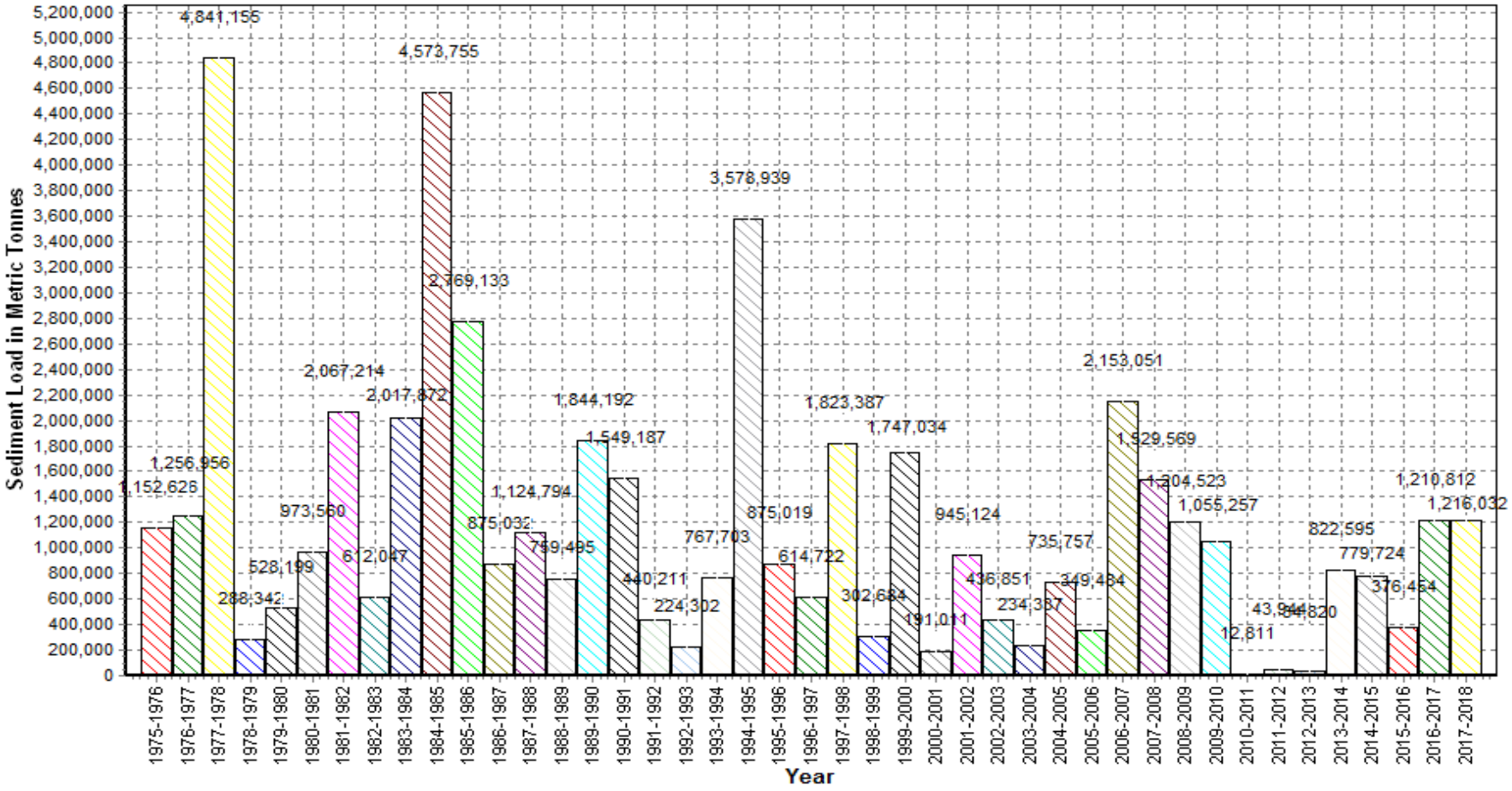
Local River : Kharkhai **Sub-Division : Balasore**

Year	Monsoon (M.T.)	Non-Monsoon (M.T.)	Annual Load (M.T.)	Annual Run Off (MCM)
1975-1976	1151131	1494	1152626	3336
1976-1977	1256133	823	1256956	1883
1977-1978	4835077	6078	4841155	4409
1978-1979	288002	340	288342	828
1979-1980	524423	3776	528199	627
1980-1981	928082	45479	973560	1674
1981-1982	2043532	23682	2067214	2065
1982-1983	606944	5103	612047	1492
1983-1984	2014081	3792	2017872	2522
1984-1985	4573074	681	4573755	4779
1985-1986	2756086	13046	2769133	3988
1986-1987	864289	10743	875032	1944
1987-1988	1122440	2354	1124794	2108
1988-1989	737224	22272	759495	2117
1989-1990	1831524	12668	1844192	2740
1990-1991	1543769	5419	1549187	4804
1991-1992	438272	1940	440211	2107
1992-1993	222561	1742	224302	1351
1993-1994	765125	2578	767703	2754
1994-1995	3535876	43063	3578939	6253
1995-1996	873616	1403	875019	3716
1996-1997	614582	139	614722	2974
1997-1998	1805168	18218	1823387	4859
1998-1999	301871	813	302684	1587
1999-2000	1745055	1979	1747034	4391
2000-2001	190605	406	191011	1453
2001-2002	944168	956	945124	3814
2002-2003	433997	2854	436851	1878
2003-2004	232565	1772	234337	1597
2004-2005	732934	2823	735757	2065
2005-2006	345089	4394	349484	1201
2006-2007	2151212	1839	2153051	3804
2007-2008	1527750	1819	1529569	4575
2008-2009	1203124	1399	1204523	3474
2009-2010	1054676	582	1055257	2231
2010-2011	12288	523	12811	234
2011-2012	43578	366	43944	3211
2012-2013	33992	827	34820	2149
2013-2014	809099	13496	822595	4908
2014-2015	772606	7117	779724	2935
2015-2016	369441	7013	376454	1696
2016-2017	1197572	13240	1210812	3181
2017-2018	1198196	17836	1216032	3749

Annual Sediment Load for the period: 1975-2018

Station Name : ADITYAPUR (ESB00D5) **Division : E.E., Bhubaneswar**

Local River : Kharkhai **Sub-Division : Balasore**



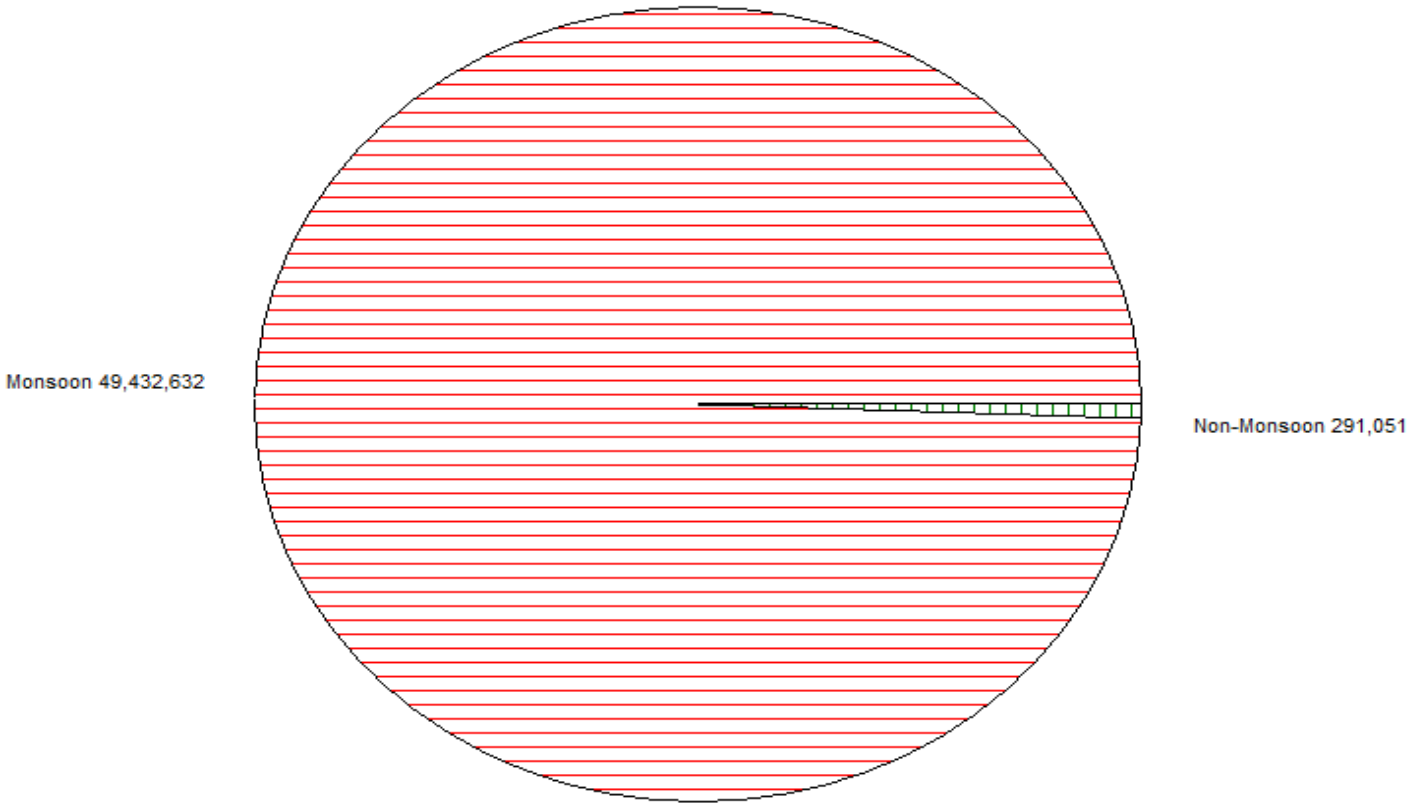
Seasonal Sediment Load for the period : 1975-2017

Station Name : ADITYAPUR (ESB00D5)

Local River : Kharkhai

Division : E.E., Bhubaneswar

Sub-Division : Balasore



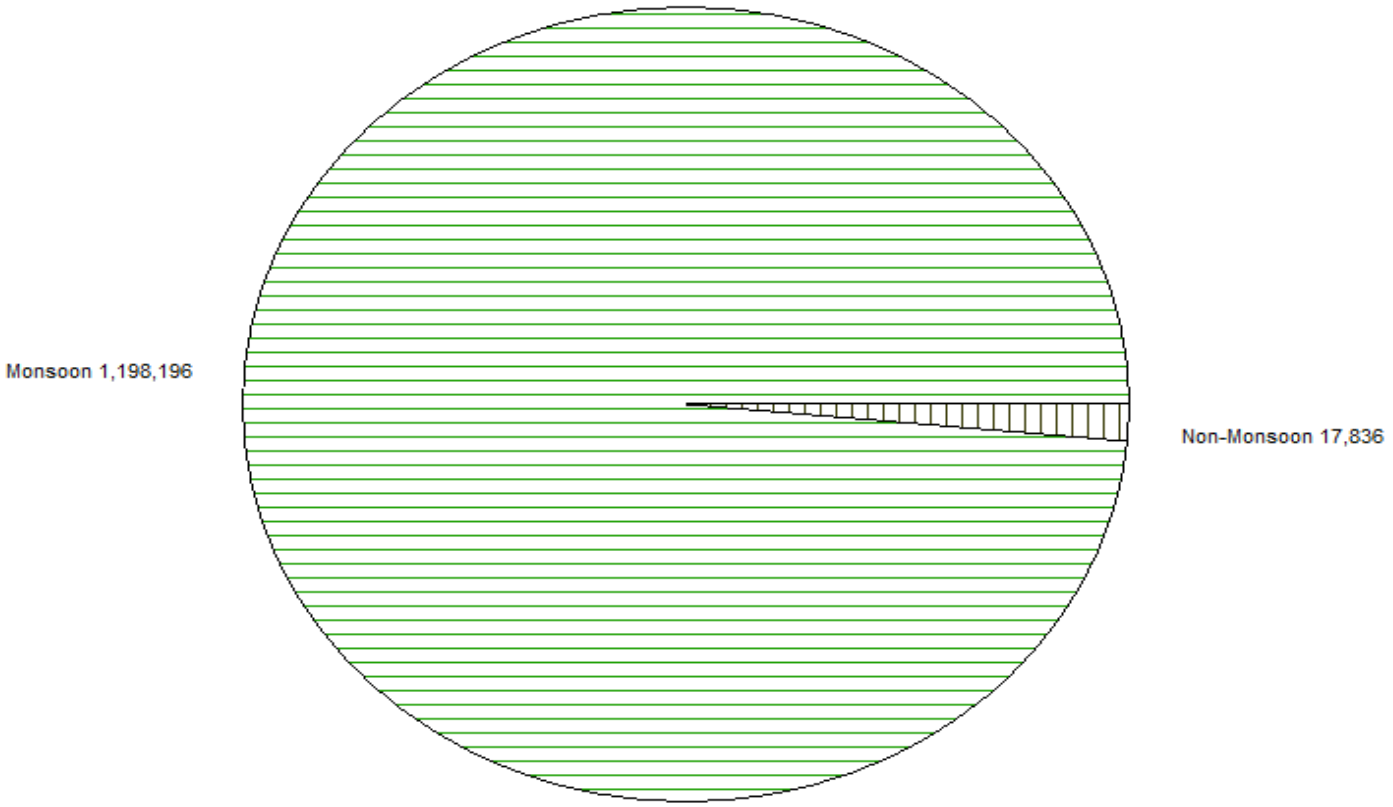
Seasonal Sediment Load for the Year: 2017-2018

Station Name : ADITYAPUR (ESB00D5)

Division : E.E., Bhubaneswar

Local River : Kharkhai

Sub-Division : Balasore



Water Quality Datasheet for the period : 2017-2018

Station Name : ADITYAPUR (ESB00D5) **Division : E.E., Bhubaneswar**

Local River : Kharkhai **River Water Analysis** **Sub-Division : Balasore**

S.No	Parameters	01/06/2017	01/07/2017	01/08/2017	01/09/2017	03/10/2017	01/11/2017	01/12/2017	01/01/2018	01/02/2018	01/03/2018	02/04/2018	01/05/2018
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Clear	Light Brown	Light Brown	Light Brown	Light Brown	Clear	Clear	Clear	Clear	Clear	Clear	Clear
3	EC_FLD (µmho/cm)	545	358	185	230	250	281	320	420	588	880	960	540
4	EC_GEN (µmho/cm)	555	350	180	225	257	276	326	414	584	881	974	538
5	Odour_Code (-)	odour free	odour free	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	7.7	7.7	7.7	7.8	7.9	7.8	7.5	7.4	7.4	7.2	7.4
7	pH_GEN (pH units)	7.4	7.7	7.6	7.8	7.9	7.9	7.9	7.5	7.3	7.5	7.3	7.3
8	Temp (deg C)	30.5	31.0	30.0	29.5	30.5	26.5	20.0	17.5	18.0	23.0	24.0	26.0
	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
2	ALK-TOT (mgCaCO3/L)	97	92	55	79	92	97	115	120	102	134	180	121
3	B (mg/L)	0.02	0.03	0.01	0.02	0.01	0.02	0.01	0.01	0.02	0.02	0.01	0.02
4	Ca (mg/L)	40	42	42	43	33	34	50	52	67	51	52	42
5	Cl (mg/L)	15.1	30.2	13.2	9.4	12.1	12.1	13.8	26.0	50.2	39.8	70.9	45.0
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
7	F (mg/L)	0.05	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)	0.4	0.5	0.4	0.5	0.5	0.5	0.4	0.5	0.4	0.5	0.4	0.5
9	HCO3 (mg/L)	118	113	68	96	113	118	141	147	124	163	220	148
10	K (mg/L)	3.5	2.9	1.4	1.9	2.1	2.9	3.3	3.3	3.1	4.2	4.8	10.4
11	Mg (mg/L)	10.7	11.7	12.6	13.6	14.3	12.7	15.9	17.5	28.6	29.4	30.2	18.3
12	Na (mg/L)	30.7	19.3	4.3	4.9	5.1	5.8	6.3	60.9	93.5	94.0	98.0	39.1
13	NO2+NO3 (mg N/L)	1.13	1.22	1.13	1.16	1.18	1.23	1.19	1.22	1.18	1.23	1.21	1.25
14	NO2-N (mgN/L)	0.01	0.01	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	NO3-N (mgN/L)	1.12	1.21	1.12	1.12	1.18	1.23	1.19	1.22	1.18	1.23	1.21	1.25
16	P-Tot (mgP/L)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
17	SiO2 (mg/L)	8.0	9.5	7.6	6.0	6.9	8.2	9.3	6.3	7.2	8.7	9.5	6.7
18	SO4 (mg/L)	53.3	31.6	32.0	2.0	2.3	2.5	2.7	2.8	5.8	11.2	8.4	7.3
	BIOLOGICAL/BACTERIOLOGICAL												
1	BOD3-27 (mg/L)	1.4	1.2	0.6	0.6	0.6	1.0	0.6	1.8	0.2	2.0	0.8	1.2
2	DO (mg/L)	1.6	5.6	6.6	6.0	5.8	6.2	7.0	4.6	5.8	4.6	9.3	5.2
3	DO_SAT% (%)	21	75	87	78	76	76	76	47	61	53	111	64
4	FCol-MPN (MPN/100mL)	110	70	40	60	40	80	90	110	90	110	70	120
5	Tcol-MPN (MPN/100mL)	170	140	170	210	170	210	230	260	230	270	170	300
	TRACE & TOXIC												
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	100	104	104	108	82	85	124	131	167	127	131	105
2	HAR_Total (mgCaCO3/L)	145	153	157	165	141	138	190	204	286	250	256	181
3	Na% (%)	31	21	6	6	7	8	7	39	41	45	45	31
4	RSC (-)	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	SAR (-)	1.1	0.7	0.1	0.2	0.2	0.2	0.2	1.9	2.4	2.6	2.7	1.3
	PESTICIDES												

Water Quality Summary for the period : 2017-2018

Station Name : ADITYAPUR (ESB00D5) **Division : E.E., Bhubaneswar**

Local River : Kharkhai **Sub-Division : Balasore**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	12	960	185	463
3	EC_GEN (µmho/cm)	12	974	180	463
4	pH_FLD (pH units)	12	7.9	7.2	7.6
5	pH_GEN (pH units)	12	7.9	7.3	7.6
6	Temp (deg C)	12	31.0	17.5	25.5
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	0.0	0.0	0
2	ALK-TOT (mgCaCO3/L)	12	180	55	107
3	B (mg/L)	12	0.03	0.01	0.02
4	Ca (mg/L)	12	67	33	46
5	Cl (mg/L)	12	70.9	9.4	28.1
6	CO3 (mg/L)	12	0.0	0.0	0
7	F (mg/L)	12	0.05	0.05	0.05
8	Fe (mg/L)	12	0.5	0.4	0.5
9	HCO3 (mg/L)	12	220	68	131
10	K (mg/L)	12	10.4	1.4	3.6
11	Mg (mg/L)	12	30.2	10.7	17.9
12	Na (mg/L)	12	98.0	4.3	38.5
13	NO2+NO3 (mg N/L)	12	1.25	1.13	1.19
14	NO2-N (mgN/L)	12	0.04	0.00	0.01
15	NO3-N (mgN/L)	12	1.25	1.12	1.19
16	P-Tot (mgP/L)	12	0.001	0.001	0.001
17	SiO2 (mg/L)	12	9.5	6.0	7.8
18	SO4 (mg/L)	12	53.3	2.0	13.5
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	2.0	0.2	1
2	DO (mg/L)	12	9.3	1.6	5.7
3	DO_SAT% (%)	12	111	21	69
4	FCol-MPN (MPN/100mL)	12	120	40	83
5	Tcol-MPN (MPN/100mL)	12	300	140	211
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	167	82	114
2	HAR_Total (mgCaCO3/L)	12	286	138	189
3	Na% (%)	12	45	6	24
4	RSC (-)	12	0.0	0.0	0
5	SAR (-)	12	2.7	0.1	1.1
	PESTICIDES				

Water Quality Seasonal Average for the period: 2003-2018

Station Name : ADITYAPUR (ESB00D5) **Division : E.E., Bhubaneswar**

Local River : Kharkhai **River Water** **Sub-Division : Balasore**

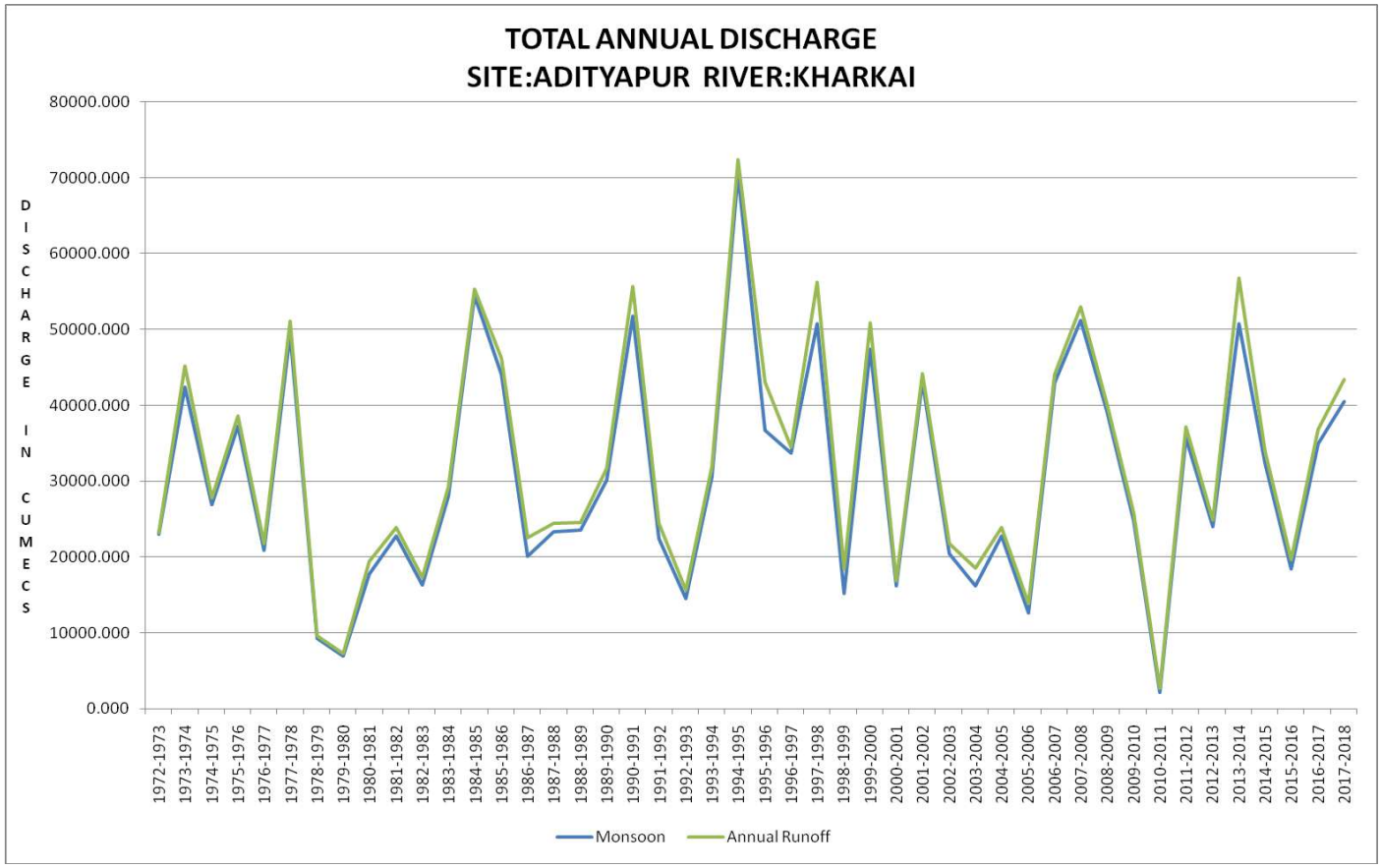
S.No	Parameters	Flood																					
		Jun - Oct																					
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
	PHYSICAL																						
1	Q (cumec)																						
2	EC_FLD (µmho/cm)	274	270	224	199	233		243	302	266	324	160	257	510	313	314	240	253	272	288	302		368
3	EC_GEN (µmho/cm)	274	270	219	195	227		243	302	266	324	160	257	507	317	313	240	253	268	290	298		368
4	pH_FLD (pH units)	7.7	7.9	7.9	8.0	7.9		7.9	8.0	8.3	7.8	7.6	8.0	7.6	7.7	7.7	7.7	8.2	8.1	8.0	8.4		7.9
5	pH_GEN (pH units)	7.7	7.9	7.9	8.1	8.0		7.9	8.0	8.3	7.8	7.6	8.0	7.5	7.7	7.7	7.7	8.2	8.2	8.1	8.4		7.9
6	Temp (deg C)	28.6	28.9	28.6	28.4	28.1		27.5	29.3	28.0	30.4	24.5	30.5	30.4	30.5	30.3	20.0	17.5	17.8	18.3	15.3		18.6
	CHEMICAL																						
1	Alk-Phen (mgCaCO3/L)					0.0		2.4	0.8	11.0		0.0	0.0	0.0	0.0	0.0					0.0		0.0
2	ALK-TOT (mgCaCO3/L)					69		64	90	101		79	74	88	97	83					95		84
3	B (mg/L)	0.00	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	0.00	0.00	0.00	0.00	0.00		0.00
4	Ca (mg/L)	30	26	26	22	23		23	29	21	27	21	21	34	62	40	26	25	28	33	28		37
5	Cl (mg/L)	17.4	24.8	18.6	15.7	17.9		18.3	24.5	21.5	25.6	23.8	21.5	23.0	35.5	16.0	19.1	15.7	23.5	25.6	21.7		22.8
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0		2.9	1.0	13.3	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	0.60	0.00	0.00	0.19		0.25	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.52	0.00	0.00	0.30		0.18
8	Fe (mg/L)		0.1	0.1	0.2	0.1		0.2	0.1	0.0	1.3	0.1	0.4	0.4	0.5	0.5		0.1	0.2	0.2	0.2		0.2
9	HCO3 (mg/L)	112	113	85	86	84		72	108	96	99	88	96	107	118	101	101	122	113	110	116		107
10	K (mg/L)	1.9	4.6	2.2	1.7	2.0		1.9	3.7	1.7	2.9	1.7	1.7	2.1	6.9	2.4	2.1	1.4	2.6	1.9	3.4		2.1
11	Mg (mg/L)	8.2	7.8	5.9	5.1	6.6		8.7	9.7	7.8	8.4	23.9	7.8	7.8	22.5	12.6	4.9	9.5	5.8	5.4	9.9		12.4
12	Na (mg/L)	12.1	16.7	11.6	10.6	12.5		10.5	15.3	12.9	14.3	13.1	12.9	13.0	34.1	12.9	14.2	10.3	16.0	18.0	14.8		15.3
13	NH3-N (mg N/L)																						
14	NO2+NO3 (mg N/L)	1.00	0.63	2.49	0.95	2.44		1.14	0.69	0.40	0.76	0.83	1.17	0.94	0.96	1.17	0.56	0.59	1.03	3.87	0.74		4.03
15	NO2-N (mgN/L)	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.07	0.00	0.01	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00		0.00
16	NO3-N (mgN/L)	1.00	0.63	2.49	0.95	2.44		1.14	0.69	0.33	0.76	0.82	1.15	0.92	0.93	1.15	0.56	0.59	1.03	3.87	0.74		4.03
17	o-PO4-P (mg P/L)			0.000	0.000	0.000		0.020											0.000	0.013	0.000		0.035
18	P-Tot (mgP/L)	0.001	0.041	0.001	0.001	0.001		0.003	0.002	0.010	0.001	0.001	0.001	0.003	0.010	0.001	0.001	0.001	0.001	0.014	0.001		0.001
19	SiO2 (mg/L)	15.8	30.1	28.3	10.2	10.5		9.0	7.6	9.0	11.6	9.5	6.8	5.6	6.6	7.6	12.9	31.9	21.8	14.6	10.5		9.5
20	SO4 (mg/L)	13.8	6.2	10.6	3.2	9.9		18.2	19.0	12.7	22.7	28.1	38.9	8.0	47.2	24.2	1.7	3.2	1.5	3.1	20.3		34.8
	BIOLOGICAL/BACTERIOLOGICAL																						
1	BOD3-27 (mg/L)	1.0	1.1	1.2	1.0	1.3		1.5	1.9	2.1	8.7	0.7	0.6	12.7	20.8	0.9	1.7	1.4	1.3	1.5	1.5		2.0
2	DO (mg/L)	5.6	5.5	6.7	6.6	6.6		6.2	5.6	6.2	5.3	6.7	5.5	4.9	8.3	5.1	8.2	8.2	7.8	8.0	8.6		7.6
3	DO_SAT% (%)	72	71	86	85	85		79	73	79	70	79	73	65	110	67	90	86	81	84	84		81
4	FCol-MPN (MPN/100mL)															64							
5	Tcol-MPN (MPN/100mL)															172							
	TRACE & TOXIC																						
	CHEMICAL INDICES																						
1	HAR_Ca (mgCaCO3/L)	74	64	64	55	58		57	71	52	67	53	52	85	154	100	64	63	70	82	71		93
2	HAR_Total (mgCaCO3/L)	108	93	89	76	86		93	112	84	101	152	84	117	248	152	84	111	94	105	112		145
3	Na% (%)	21	24	23	22	24		19	22	22	19	24	22	18	22	14	26	18	26	27	24		18
4	RSC (-)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.4	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0		0.0
5	SAR (-)	0.5	0.7	0.5	0.5	0.6		0.5	0.6	0.6	0.6	0.6	0.6	0.5	0.9	0.5	0.7	0.4	0.7	0.8	0.7		0.5
	PESTICIDES																						

Water Quality Seasonal Average for the period: 2003-2018

Station Name : ADITYAPUR (ESB00D5) | **Division : E.E., Bhubaneswar**

Local River : Kharkhai | **River Water** | **Sub-Division : Balasore**

S.No	Parameters	Winter								Summer															
		Nov - Feb								Mar - May															
		2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	PHYSICAL																							
1	Q (cumec)																							
2	EC_FLD (µmho/cm)	623	308	328	272	440	959	672	402	357	343	483	358	390		943	1723	623	740	453	1078	997	693	793
3	EC_GEN (µmho/cm)	623	308	328	272	440	957	674	400	357	347	480	357	403		943	1723	623	740	453	1060	996	660	798
4	pH_FLD (pH units)	7.6	8.0	7.5	8.1	8.3	7.6	7.7	7.6	7.7	7.5	7.6	8.1	8.2		7.8	8.4	7.5	7.3	7.6	7.5	7.8	7.6	7.3
5	pH_GEN (pH units)	7.6	8.0	7.5	8.1	8.3	7.6	7.8	7.6	7.7	7.7	7.7	8.1	8.2		7.8	8.4	7.5	7.3	7.6	7.5	7.8	7.7	7.3
6	Temp (deg C)	20.3	19.8	18.9	21.6	20.5	21.6	20.9	20.5	24.7	26.3	27.3	23.3	24.7		28.7	24.7	27.3	27.8	27.0	26.7	26.8	27.2	24.3
	CHEMICAL																							
1	Alk-Phen (mgCaCO3/L)	0.0	0.0			0.0	0.0	0.0	0.0				0.0	0.0		5.3	41.0	0.0			0.0	6.1	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	129	128			111	88	89	109				194	132		176	265	143			80	203	127	145
3	B (mg/L)	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.00	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
4	Ca (mg/L)	50	34	29	25	31	31	54	51	40	38	46	42	49		67	100	53	42	38	42	66	50	48
5	Cl (mg/L)	53.7	18.4	26.4	24.9	16.5	15.1	18.4	25.5	30.0	22.7	35.7	24.2	26.2		90.4	171.0	44.0	38.4	36.4	26.8	96.2	66.6	51.9
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		6.4	32.9	0.0	0.0	0.0	0.0	7.4	0.0	0.0
7	F (mg/L)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.17	0.00	0.22	0.05		0.12	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.05
8	Fe (mg/L)	0.1	0.0	1.3	0.1	0.2	0.4	0.7	0.4		0.1	0.1	0.3	0.1		0.3	0.1	0.0	1.4	0.1	0.4	0.5	0.4	0.5
9	HCO3 (mg/L)	152	156	144	121	135	107	108	132	103	165	183	143	161		202	299	175	106	149	116	233	155	177
10	K (mg/L)	4.0	1.9	2.5	2.4	1.6	2.4	21.1	3.1	2.3	2.1	4.2	3.2	3.9		12.5	19.4	7.0	3.6	5.2	3.2	14.8	6.5	6.5
11	Mg (mg/L)	20.7	12.6	13.1	6.4	9.2	8.0	20.2	18.7	7.1	11.7	17.7	9.5	9.4		27.9	49.3	18.1	16.9	15.0	15.9	35.0	19.4	25.9
12	Na (mg/L)	37.9	15.1	20.5	18.7	13.3	16.6	56.3	41.6	19.5	14.4	23.9	16.8	16.2		69.3	125.1	38.1	30.9	27.7	23.9	83.5	65.0	77.0
13	NH3-N (mg N/L)													0.05										
14	NO2+NO3 (mg N/L)	0.79	0.39	0.83	0.99	0.98	0.97	1.12	1.21	7.48	0.71	4.00	5.52	2.49		9.44	1.93	0.38	0.94	0.96	0.86	0.87	1.09	1.23
15	NO2-N (mgN/L)	0.00	0.07	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.02	0.00
16	NO3-N (mgN/L)	0.79	0.33	0.83	0.99	0.98	0.96	1.10	1.21	7.48	0.71	4.00	5.52	2.49		9.44	1.93	0.31	0.94	0.95	0.86	0.86	1.06	1.23
17	o-PO4-P (mg P/L)										0.005	0.038	0.003			0.180								
18	P-Tot (mgP/L)	0.001	0.010	0.001	0.001	0.001	0.010	0.008	0.001	0.001	0.001	0.038	0.004	0.050		0.001	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001
19	SiO2 (mg/L)	7.4	9.0	11.3	9.5	5.3	5.5	7.0	7.8	18.7	27.2	29.7	16.3	12.3		9.9	7.9	9.3	12.7	11.1	6.7	6.0	8.0	8.3
20	SO4 (mg/L)	82.3	14.8	16.9	35.1	45.3	10.9	17.0	3.5	13.1	2.3	22.6	8.5	12.7		108.4	228.3	50.0	54.4	45.5	45.0	15.6	72.6	9.0
	BIOLOGICAL/BACTERIOLOGICAL																							
1	BOD3-27 (mg/L)	1.9	2.7	1.8	0.5	7.4	0.9	10.0	0.9	13.7	1.6	17.3	1.4	2.1		20.0	8.7	18.0	0.9	0.8	33.5	40.0	33.1	1.3
2	DO (mg/L)	6.2	6.7	7.5	8.1	7.6	5.7	6.8	5.9	6.9	6.1	5.8	6.6	5.4		0.0	2.5	1.9	5.3	4.3	1.9	4.6	3.8	6.4
3	DO_SAT% (%)	69	73	81	92	84	64	75	65	83	76	74	76	64		0	28	21	68	54	24	58	45	76
4	FCol-MPN (MPN/100mL)							115	93														80	100
5	Tcol-MPN (MPN/100mL)							255	233														123	247
	TRACE & TOXIC																							
	CHEMICAL INDICES																							
1	HAR_Ca (mgCaCO3/L)	124	86	73	62	78	77	134	127	100	94	114	106	122		167	250	132	105	96	105	166	126	121
2	HAR_Total (mgCaCO3/L)	210	139	128	88	117	111	218	204	130	132	188	145	161		283	455	208	175	158	171	311	207	229
3	Na% (%)	26	19	25	31	19	24	33	24	25	17	21	20	19		34	37	28	27	27	22	37	40	40
4	RSC (-)	0.0	0.0	0.1	0.3	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	0.3	0.0	0.0
5	SAR (-)	1.1	0.6	0.8	0.9	0.5	0.7	1.7	1.2	0.7	0.5	0.8	0.6	0.6		1.8	2.6	1.2	1.0	1.0	0.8	2.5	2.0	2.2
	PESTICIDES																							


TOTAL ANNUAL DISCHARGE
SITE:ADITYAPUR RIVER:KHARKAI
DISCHARGE IN CUMECS
80000.000
70000.000
60000.000
50000.000
40000.000
30000.000
20000.000
10000.000
0.000
1972-1973
1973-1974
1974-1975
1975-1976
1976-1977
1977-1978
1978-1979
1979-1980
1980-1981
1981-1982
1982-1983
1983-1984
1984-1985
1985-1986
1986-1987
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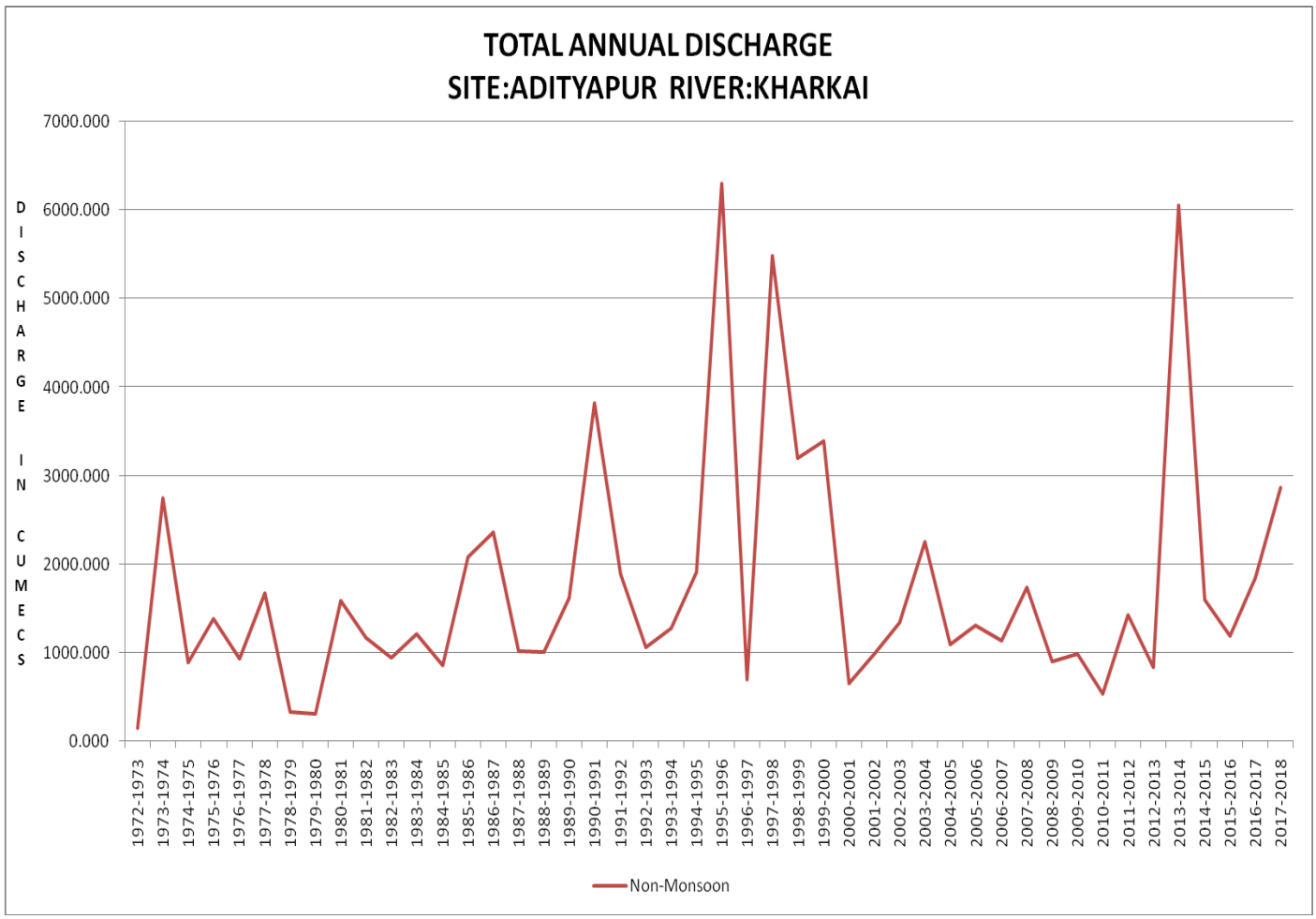
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
Monsoon
Annual Runoff


TOTAL ANNUAL DISCHARGE
SITE:ADITYAPUR RIVER:KHARKAI
DISCHARGE IN CUMECS
7000.000
6000.000
5000.000
4000.000
3000.000
2000.000
1000.000
0.000
1972-1973
1973-1974
1974-1975
1975-1976
1976-1977
1977-1978
1978-1979
1979-1980
1980-1981
1981-1982
1982-1983
1983-1984
1984-1985
1985-1986
1986-1987
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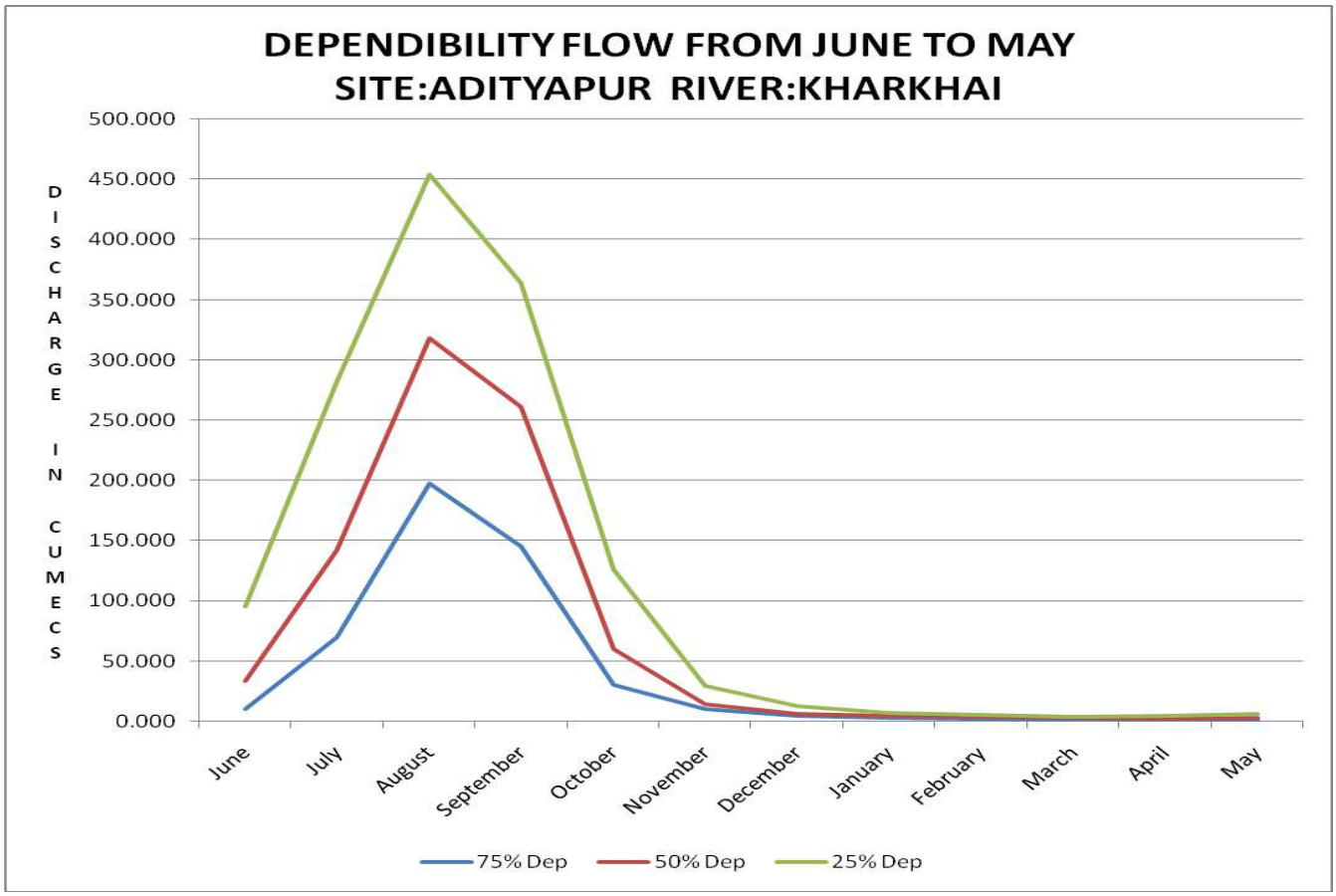
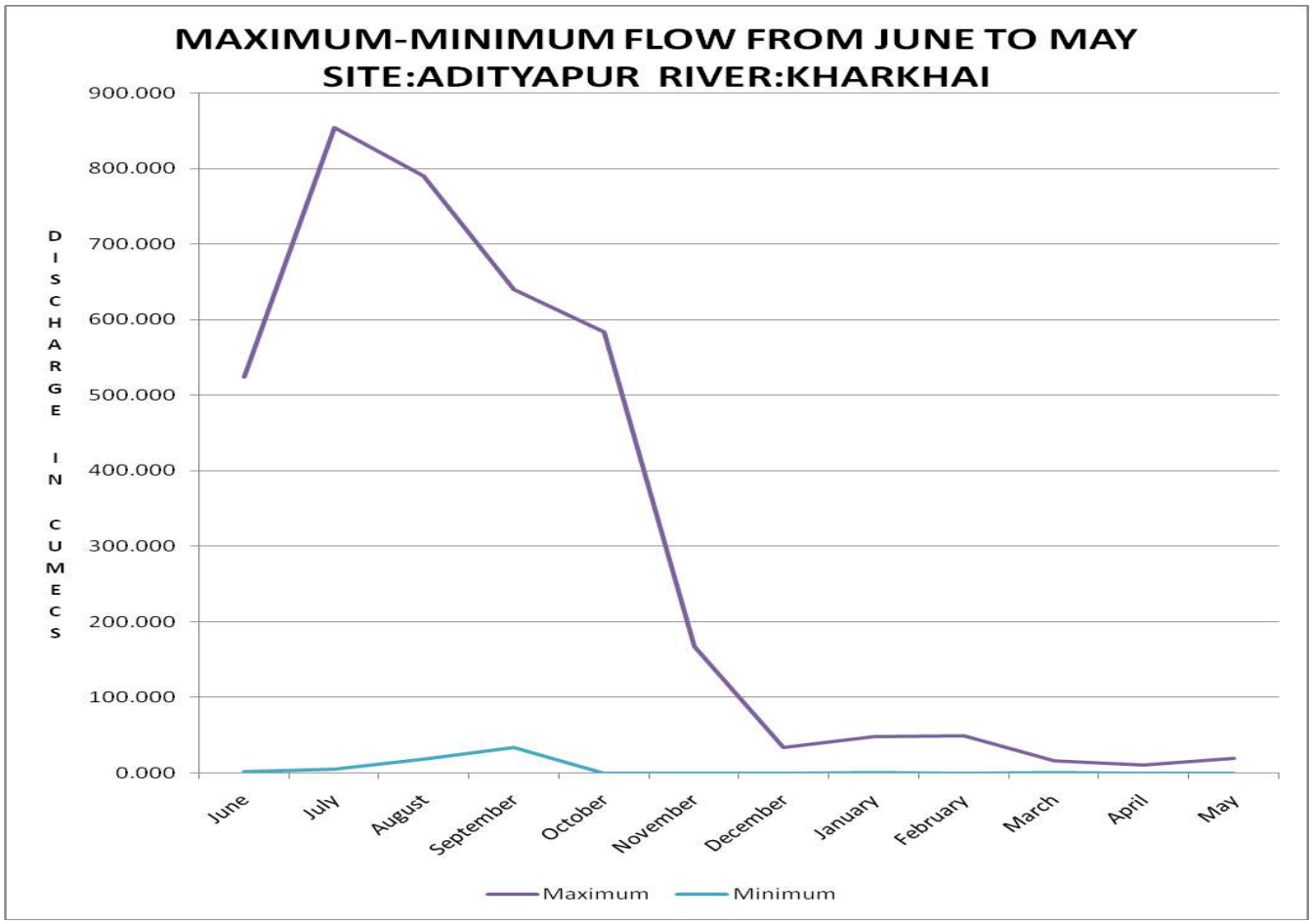
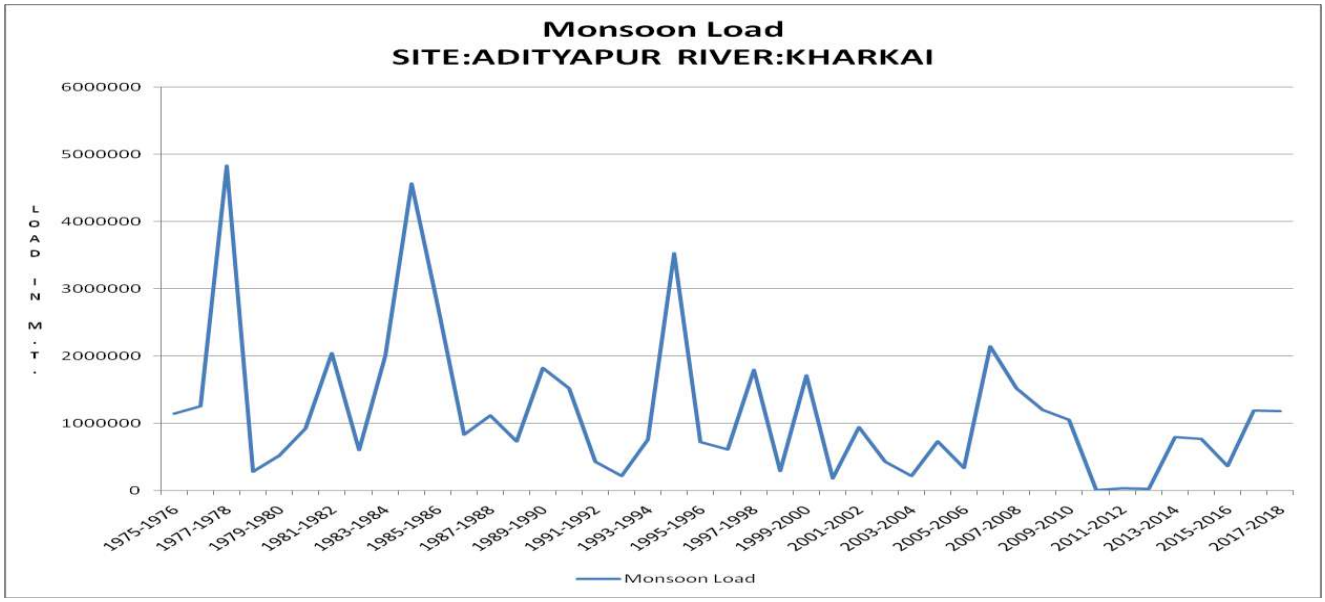
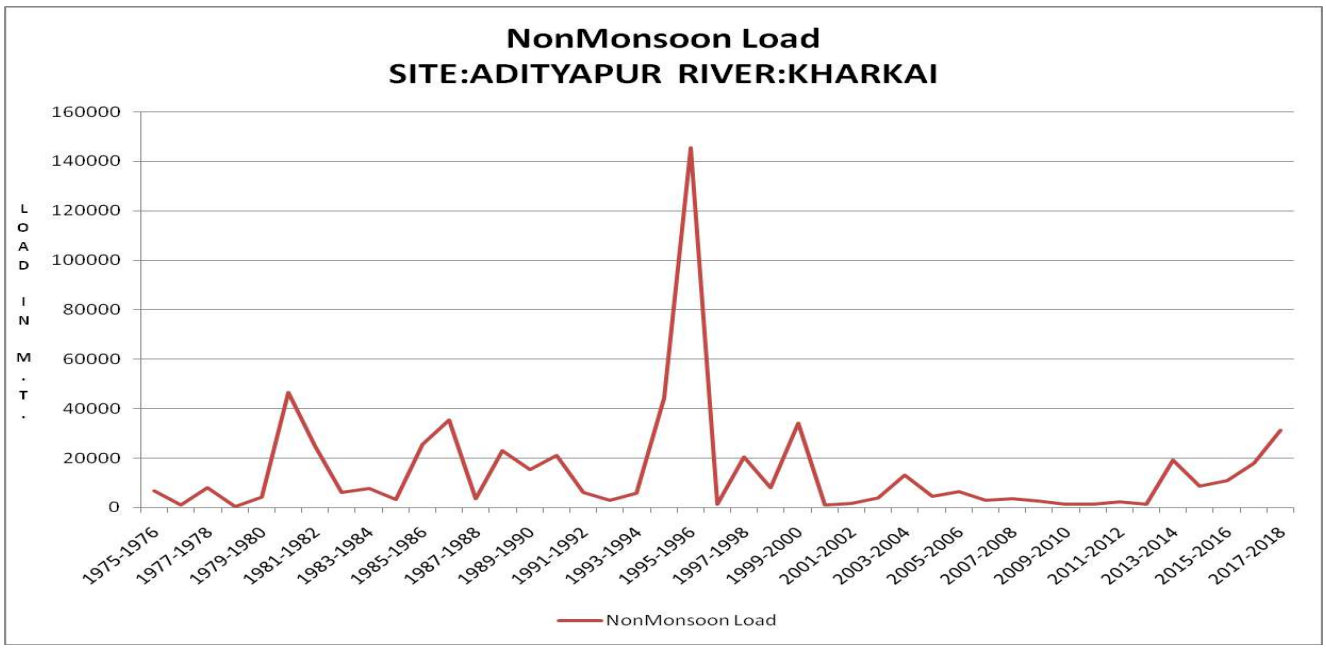
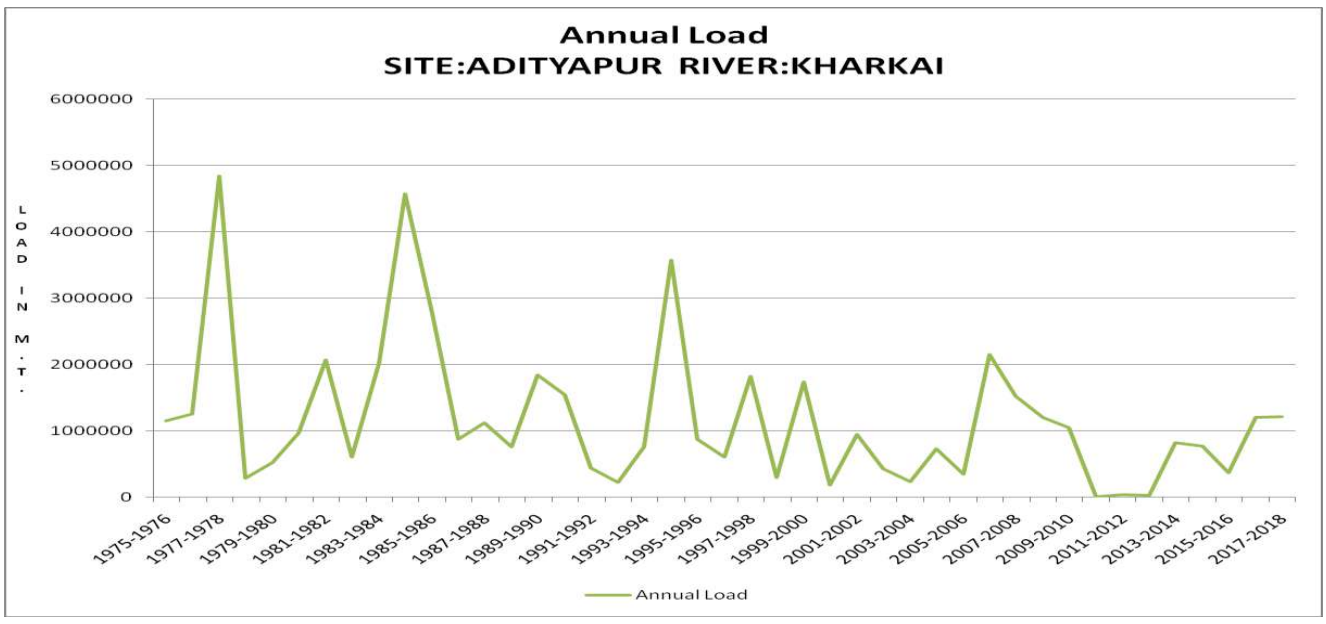
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
Non-Monsoon

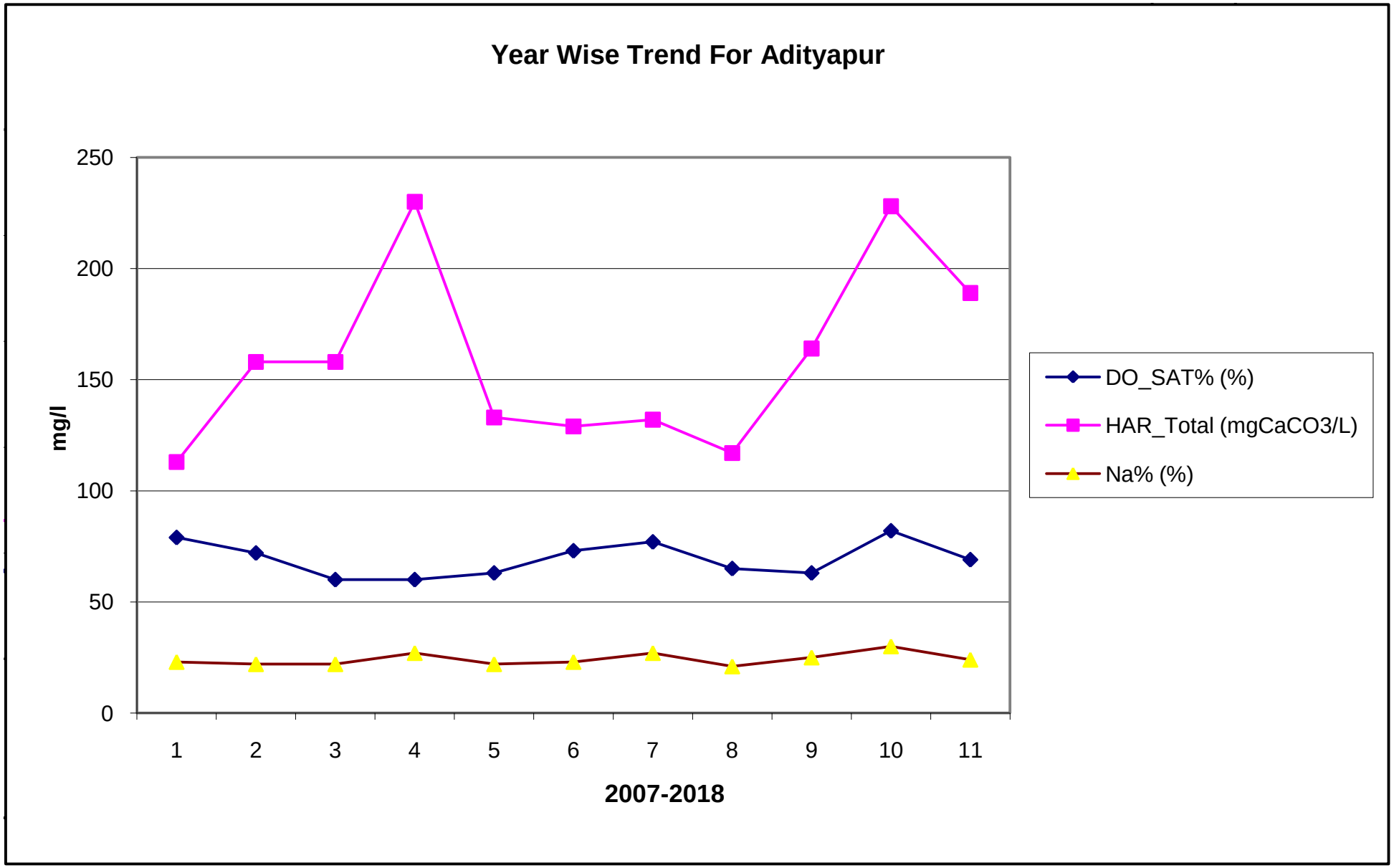

DEPENDIBILITY FLOW FROM JUNE TO MAY
SITE:ADITYAPUR RIVER:KHARKHAI
DISCHARGE IN CUMECS
500.000
450.000
400.000
350.000
300.000
250.000
200.000
150.000
100.000
50.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
75% Dep
50% Dep
25% Dep

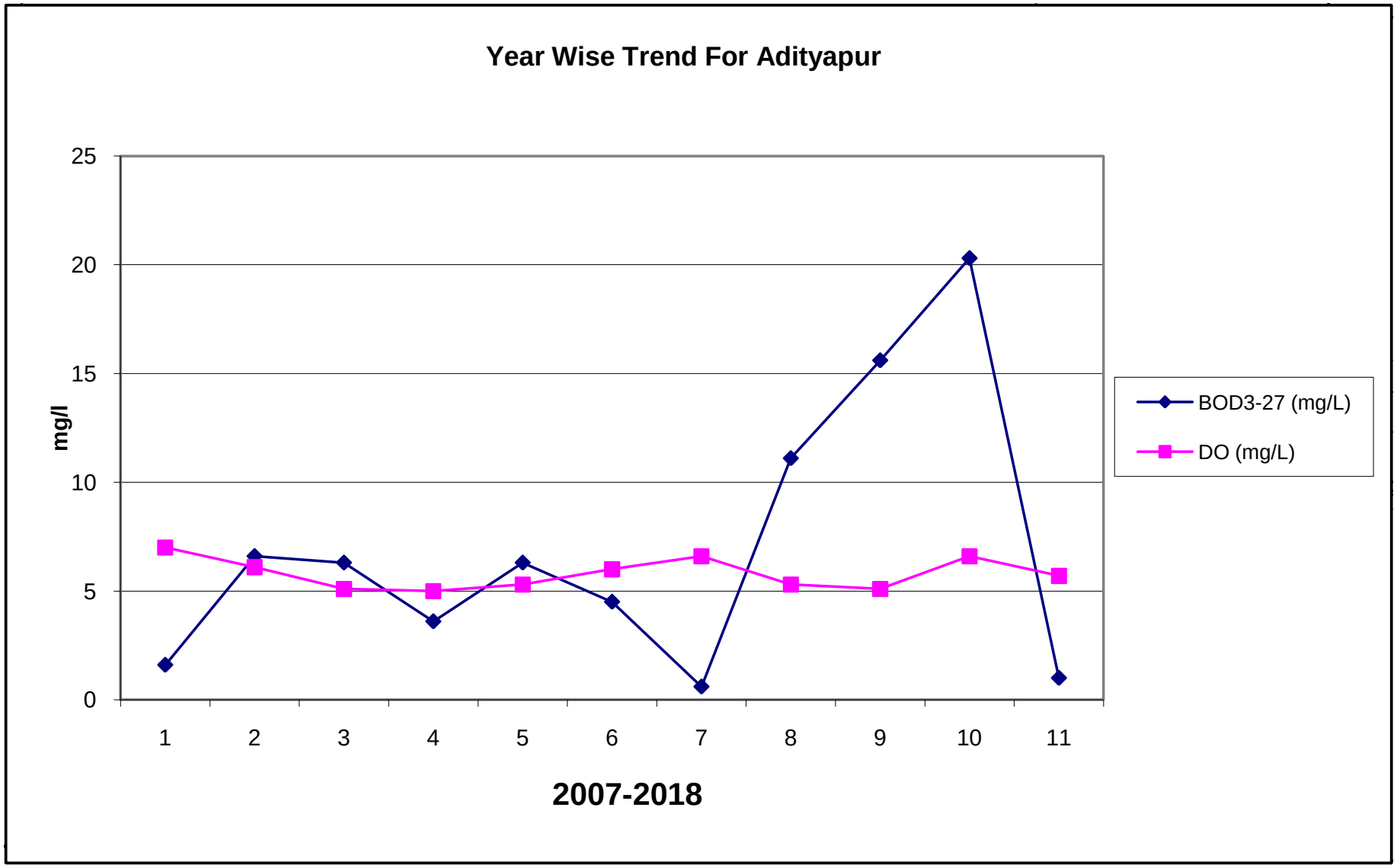

MAXIMUM-MINIMUM FLOW FROM JUNE TO MAY
SITE:ADITYAPUR RIVER:KHARKHAI
DISCHARGE IN CUMECS
900.000
800.000
700.000
600.000
500.000
400.000
300.000
200.000
100.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
Maximum
Minimum

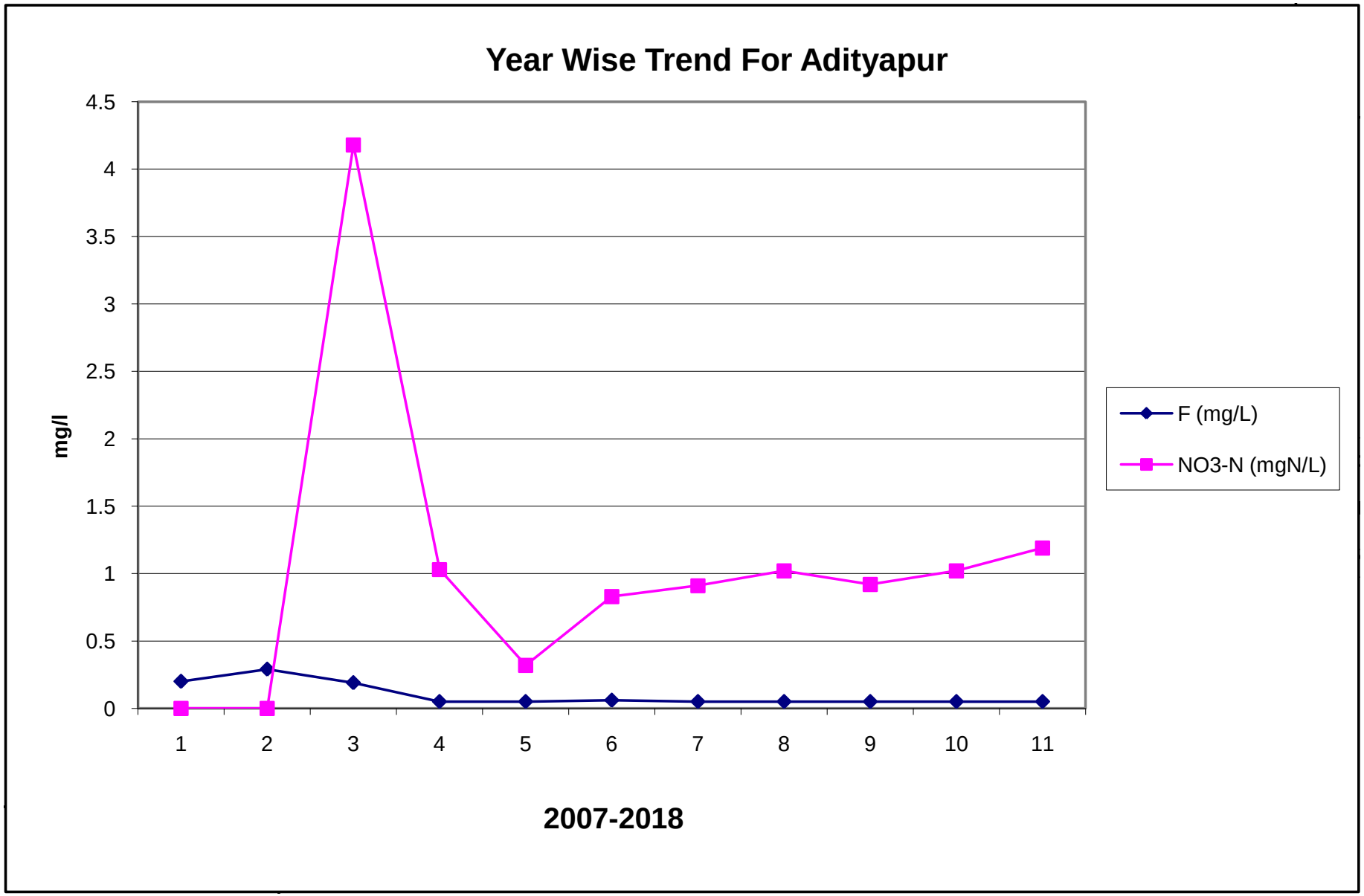

Monsoon Load
SITE:ADITYAPUR RIVER:KHARKAI
LOAD IN M.T.
6000000
5000000
4000000
3000000
2000000
1000000
0
1975-1976
1977-1978
1979-1980
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
Monsoon Load

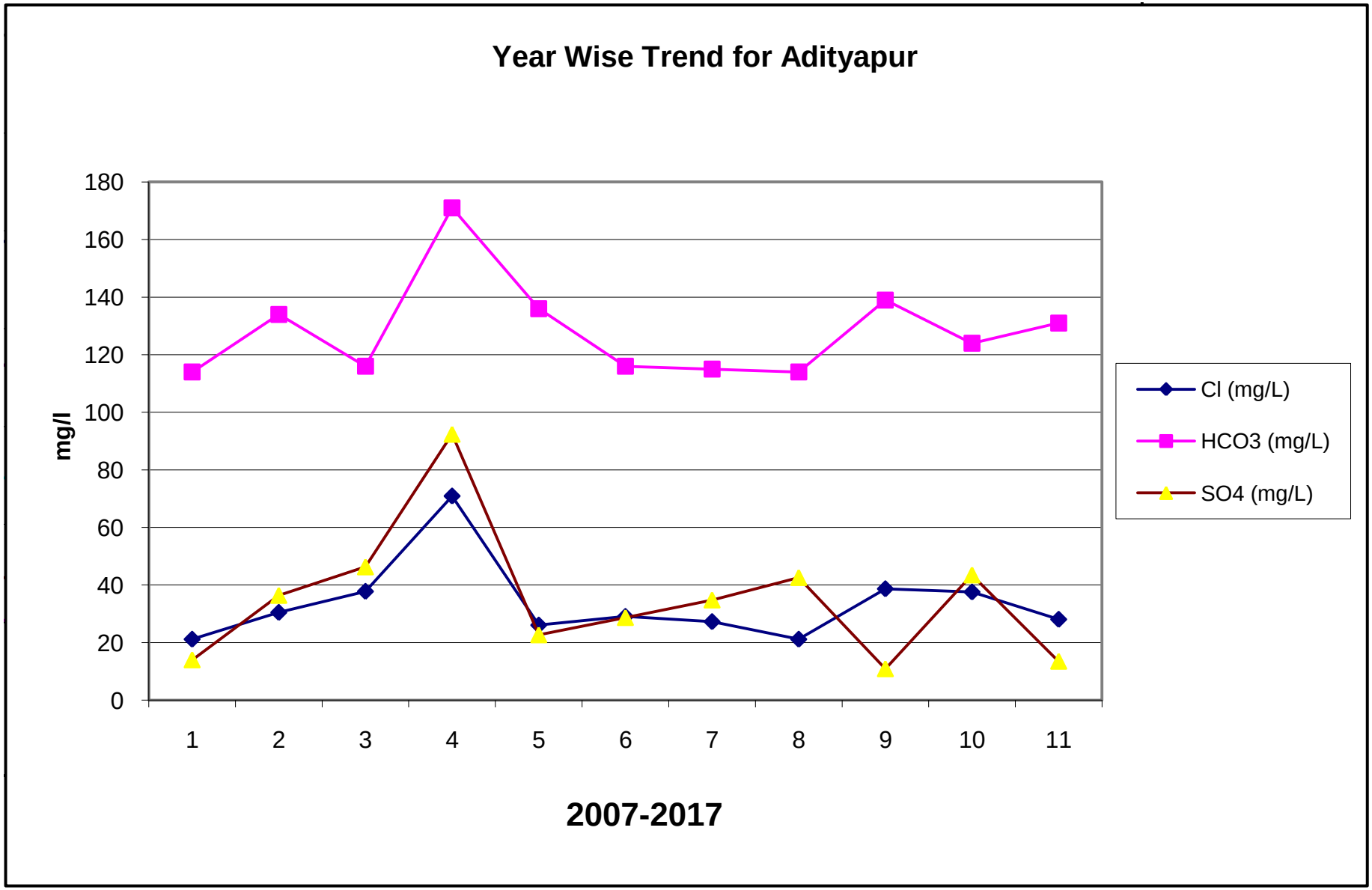

NonMonsoon Load
SITE:ADITYAPUR RIVER:KHARKAI
LOAD IN M.T.
160000
140000
120000
100000
80000
60000
40000
20000
0
1975-1976
1977-1978
1979-1980
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
NonMonsoon Load

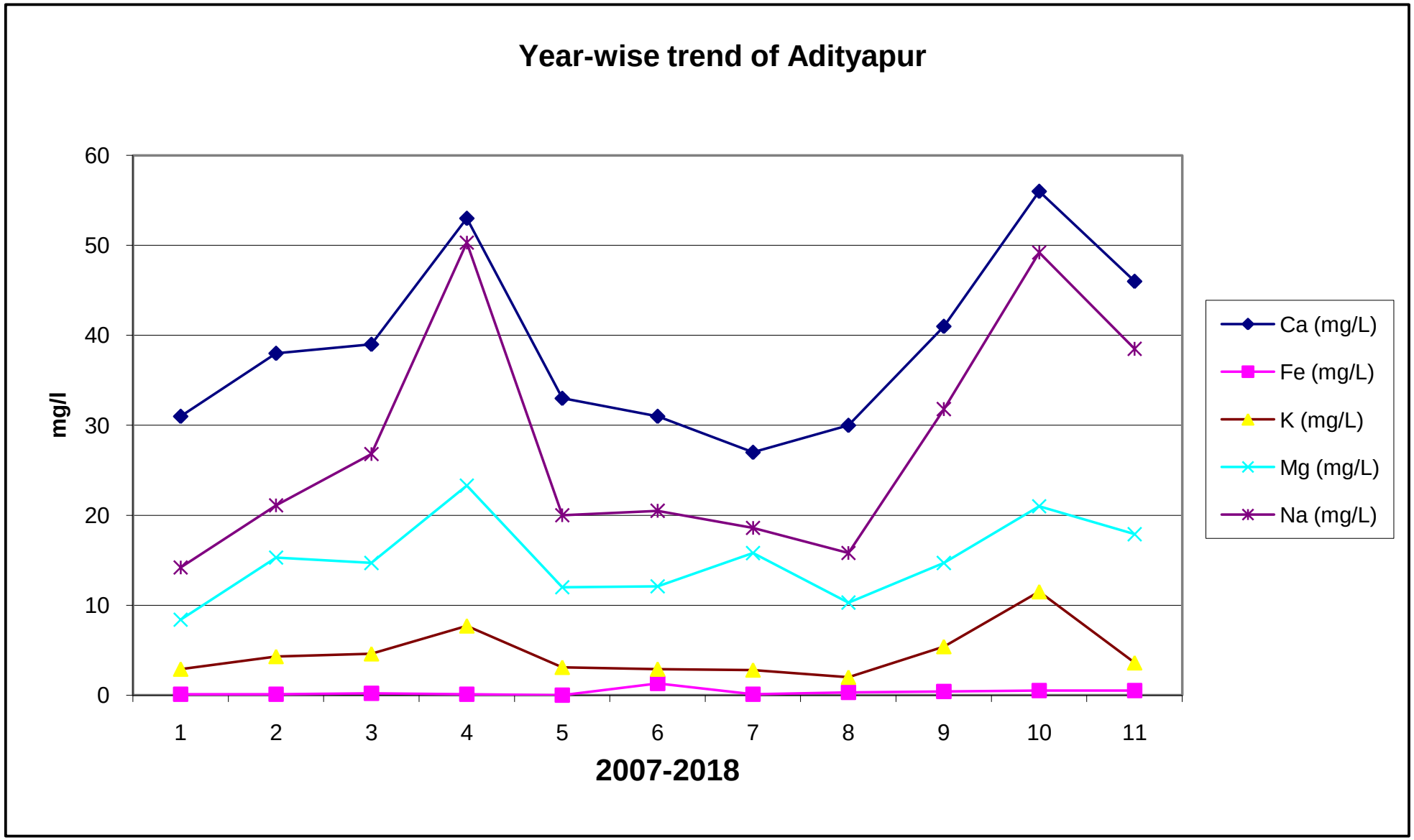

Annual Load
SITE:ADITYAPUR RIVER:KHARKAI
LOAD IN M.T.
6000000
5000000
4000000
3000000
2000000
1000000
0
1975-1976
1977-1978
1979-1980
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
Annual Load


Year Wise Trend For Adityapur
250
200
150
100
50
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
DO_SAT% (%)
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For Adityapur
25
20
15
10
5
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
BOD3-27 (mg/L)
DO (mg/L)


Year Wise Trend For Adityapur
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend for Adityapur
180
160
140
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2017
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year-wise trend of Adityapur
mg/l
60
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Ca (mg/L)
Fe (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

HISTORY SHEET

Water Year : 2017-2018

Site	:	**JAMSHEDPUR**	**Code**	:	**ES000N5**
State	:	Jharkhand	District		Purba Singbhum
Basin	:	Subarnarekha	Independent River	:	Subarnarekha
Tributary	:	-	Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	Subarnarekha
Division	:	E.E., Bhubaneswar	Sub-Division	:	Balasore
Drainage Area	:	12649 Sq. Km.	Bank	:	Right
Latitude	:	22°47'00"	Longitude	:	86°12'00"
Zero of Gauge (m)	:	111 (m.s.l)	6/24/1971	-	6/24/2021
		Opening Date	Closing Date		
Gauge	:	6/24/1971			
Discharge	:	2/1/1972			
Sediment	:	11/27/1972			
Water Quality	:	9/1/1972			

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

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1972-1973	2533	120.850	9/12/1972	0.000	114.625	6/15/1972
1973-1974	7674	126.255	9/3/1973	1.100	114.730	3/17/1974
1974-1975	7695	124.755	9/30/1974	0.661	114.500	4/14/1975
1975-1976	8367	125.500	8/20/1975	0.230	114.725	2/28/1976
1976-1977	7908	124.700	9/18/1976	0.086	114.780	2/12/1977
1977-1978	6830	123.150	8/7/1977	0.067	114.730	4/14/1978
1978-1979	4122	124.465	9/3/1978	1.350	114.780	5/29/1979
1979-1980	1949	119.650	8/9/1979	0.076	114.950	2/22/1980
1980-1981	960.3	118.050	6/24/1980	2.420	114.800	3/25/1981
1981-1982	1697	119.600	6/22/1981	0.365	114.700	5/12/1982
1982-1983	1172	119.000	8/21/1982	0.420	114.690	6/4/1982
1983-1984	2408	119.850	9/5/1983	2.100	114.770	5/6/1984
1984-1985	3654	122.850	8/9/1984	1.670	114.795	6/4/1984
1985-1986	4593	124.390	#########	0.225	114.875	4/21/1986
1986-1987	1117	119.720	8/5/1986	0.870	114.820	6/12/1986
1987-1988	2956	121.875	8/28/1987	0.990	114.875	5/25/1988
1988-1989	3051	123.150	6/28/1988	0.001	114.990	5/21/1989
1989-1990	2780	121.727	8/5/1989	0.977	114.815	5/2/1990
1990-1991	2280	120.700	7/15/1990	0.900	114.815	5/19/1991
1991-1992	3451	122.625	8/23/1991	4.812	114.860	4/11/1992
1992-1993	1680	118.300	9/27/1992	0.219	114.765	2/9/1993
1993-1994	1524	118.270	9/15/1993	1.814	114.840	6/16/1993

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	4836	122.650	8/4/1994	0.680	114.695	5/10/1995
1995-1996	3464	120.575	#########	1.159	114.830	4/19/1996
1996-1997	4436	121.350	8/7/1996	0.400	114.780	3/14/1997
1997-1998	6254	124.575	8/6/1997	14.43	115.410	6/12/1997
1998-1999	2362	120.080	9/13/1998	2.681	114.450	5/31/1999
1999-2000	3785	121.870	8/8/1999	6.356	114.990	6/10/1999
2000-2001	2270	119.650	7/26/2000	4.500	114.920	5/13/2001
2001-2002	4092	121.700	7/12/2001	6.039	115.000	5/14/2002
2002-2003	1625	119.020	9/12/2002	7.058	115.000	6/6/2002
2003-2004	1212	118.180	#########	4.122	114.860	3/30/2004
2004-2005	3201	120.145	8/21/2004	6.080	114.810	5/27/2005
2005-2006	1150	118.250	6/30/2005	5.739	114.800	6/3/2005
2006-2007	3320	120.950	8/23/2006	7.082	114.830	5/31/2007
2007-2008	3856	122.650	7/6/2007	4.500	114.800	4/14/2008
2008-2009	7382	124.950	6/18/2008	7.680	114.520	4/18/2009
2009-2010	3578	121.165	9/8/2009	7.196	115.070	4/26/2010
2010-2011	240.0	116.250	9/19/2010	6.000	114.800	4/3/2011
2011-2012	4548	122.270	9/23/2011	8.500	115.080	5/30/2012
2012-2013	2020	120.400	8/15/2012	7.155	115.030	6/18/2012
2013-2014	8770	123.300	8/21/2013	9.895	115.150	5/26/2014
2014-2015	3686	121.300	8/5/2014	8.217	115.020	#########
2015-2016	4107	122.250	7/29/2015	9.233	115.060	4/29/2016
2016-2017	6468	122.960	8/19/2016	10.69	114.980	4/17/2017
2017-2018	8237	122.820	7/27/2017	23.21	115.260	6/20/2017

Stage-Discharge Data for the period 2017 - 2018

Station Name : JAMSHEDPUR (ES000N5) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

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	115.360	27.48	115.360	28.23	117.940	1707	116.440	343.8	116.280	300.0 *	115.900	224.5
2	115.320	27.19	115.560	214.7 *	117.780	884.4	116.500	343.0 *	116.100	290.0 *	115.480	143.5
3	115.320	27.88	116.110	338.9	117.260	618.9	117.620	350.0 *	116.400	329.2	115.420	134.4
4	115.300	27.00 *	115.840	303.3	117.360	691.5	116.820	444.8	116.250	309.3	115.420	134.0 *
5	115.280	24.75	115.660	252.5	118.450	1413	116.570	384.2	117.180	556.3	115.420	134.0 *
6	115.280	24.38	115.560	229.5	120.820	1850 *	116.400	322.9	117.160	568.3	115.380	131.0
7	115.280	24.23	115.520	216.1	119.830	1815	116.360	322.4	116.550	367.9	115.360	127.0
8	115.300	24.73	115.460	194.7	119.400	1505	116.340	316.0	116.500	355.0 *	115.340	96.38
9	115.300	25.00	115.420	189.5 *	117.960	995.8	115.780	128.8	116.480	346.9	115.340	96.38
10	115.300	24.76	115.420	189.5	117.200	578.8	115.820	130.0 *	116.620	388.8	115.340	96.10
11	115.300	24.70 *	115.400	176.3	116.750	427.7	115.740	111.8	116.600	377.5	115.340	95.82
12	115.280	24.24	115.420	181.3	116.540	391.0	115.720	101.1	116.020	246.7	115.320	95.00 *
13	115.280	24.21	115.440	192.9	116.500	390.0 *	115.780	126.0	116.020	244.8	115.320	95.60
14	115.280	24.12	115.560	214.7	117.140	554.9	115.760	119.6	116.140	288.3	115.300	95.46
15	115.270	23.90	115.720	253.2	117.880	550.0 *	115.720	108.5	116.100	280.0 *	115.300	93.71
16	115.270	23.77	115.620	220.0 *	119.100	1464	115.700	104.6	115.990	237.4	115.680	131.4
17	115.260	23.45	115.580	221.3	118.660	1324	115.760	130.0 *	115.850	213.8	115.300	56.87
18	115.260	23.40 *	115.540	207.9	118.450	1232	116.100	277.4	115.800	206.6	115.280	55.22
19	115.260	23.40	115.600	226.5	118.280	1164	116.180	294.5	115.800	206.0 *	115.420	72.00 *
20	115.260	23.21	115.600	226.6	118.180	1160 *	116.760	418.9	115.620	179.4	115.500	75.45
21	115.300	25.18	115.600	217.7	117.510	748.0	116.800	468.2	115.910	227.6	115.580	80.22
22	115.300	25.30	116.390	440.4	117.300	642.9	116.690	397.9	117.540	780.0 *	115.580	79.80
23	115.320	27.34	117.480	460.0 *	117.160	556.6	116.530	370.2	117.680	807.0	115.580	79.48
24	115.340	28.28	121.170	3895	116.860	467.5	116.140	280.0 *	117.200	597.4	115.580	79.94
25	115.320	27.30 *	121.870	5702	116.740	416.1	116.080	268.4	116.880	477.5	115.580	79.83
26	115.320	27.35 *	122.620	7627	116.980	505.6	116.100	276.9	115.800	207.7	115.700	95.00 *
27	115.330	27.43	122.820	8237	116.920	505.0 *	116.120	281.2	115.800	196.9	115.650	89.10
28	115.340	28.27	119.540	2566	116.450	343.0	116.040	252.4	116.000	243.5	115.300	65.30
29	115.350	28.72	118.060	1781	117.490	707.4	116.220	260.0 *	115.960	232.0 *	115.300	65.81
30	115.370	32.95	117.680	450.0 *	117.130	538.5	116.520	370.0 *	115.920	229.8	115.260	54.46
31			118.010	1768	116.660	402.8			115.920	228.7		
Ten-Daily Mean												
I Ten-Daily	115.304	25.74	115.591	215.7	118.400	1206	116.465	308.6	116.552	381.2	115.440	131.7
II Ten-Daily	115.272	23.84	115.548	212.1	117.748	865.8	115.922	179.2	115.994	248.0	115.376	86.65
III Ten-Daily	115.329	27.81	119.204	3013	117.018	530.3	116.324	322.5	116.419	384.4	115.511	76.89
Monthly												
Min.	115.260	23.21	115.360	28.23	116.450	343.0	115.700	101.1	115.620	179.4	115.260	54.46
Max.	115.370	32.95	122.820	8237	120.820	1850	117.620	468.2	117.680	807.0	115.900	224.5
Mean	115.302	25.8	116.859	1207	117.699	856.5	116.237	270.1	116.325	339.4	115.442	98.42

Annual Runoff in MCM = 8311 Annual Runoff in mm = 657

Peak Observed Discharge = 8237 cumecs on 27-Jul-17 Corres. Water Level :122.82 m

Lowest Observed Discharge = 23.21 cumecs on 20-Jun-17 Corres. Water Level :115.26 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 2017 - 2018

Station Name : JAMSHEDPUR (ES000N5) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	115.260	53.00	115.200	81.12	115.140	65.08	115.120	42.97	115.070	37.81 *	115.360	74.10
2	115.240	50.00 *	115.200	81.15	115.140	65.07	115.120	42.97 *	115.070	37.81	115.300	64.96
3	115.240	50.00 *	115.180	79.25	115.140	65.08	115.120	42.98	115.070	37.31	115.300	64.97
4	115.240	50.01	115.180	79.25	115.140	65.00 *	115.120	42.98 *	115.070	36.82	115.280	60.07
5	115.240	50.02	115.180	79.25	115.140	65.08	115.120	42.98	115.070	36.82	115.280	60.09
6	115.200	46.06	115.180	79.24	115.140	65.08	115.120	42.97	115.070	36.45	115.280	60.09 *
7	115.200	46.01	115.180	79.20 *	115.140	65.07	115.120	42.97	115.070	36.29	115.280	60.09
8	115.240	50.02	115.180	79.28	115.140	65.08	115.100	41.21	115.100	39.03 *	115.280	60.09
9	115.260	51.23	115.180	79.24	115.140	65.04	115.100	41.22	115.100	39.03	115.260	55.08
10	115.260	51.20 *	115.180	79.24	115.140	65.02	115.100	41.22	115.100	38.71	115.260	55.06
11	115.240	50.07	115.180	79.26	115.140	65.00 *	115.100	41.22 *	115.100	38.99	115.260	55.09
12	115.240	50.06	115.160	77.56	115.120	45.05	115.100	41.22	115.360	75.52	115.260	55.06
13	115.240	50.10	115.160	77.52	115.120	45.07	115.100	41.22	115.300	69.44	115.240	50.07 *
14	115.240	50.04	115.160	77.50 *	115.120	45.02	115.100	41.22	115.300	69.44 *	115.240	50.07
15	115.240	50.03	115.160	77.56	115.120	45.09	115.100	41.22	115.300	69.44 *	115.240	50.06
16	115.240	50.08	115.160	77.58	115.120	45.05	115.100	41.23	115.300	69.44	115.240	50.07
17	115.240	50.00 *	115.160	77.50	115.120	45.09	115.100	41.23	115.280	66.00	115.240	50.06
18	115.240	50.06	115.160	77.57	115.120	45.00 *	115.100	41.22 *	115.280	65.32	115.240	50.06
19	115.220	46.08	115.160	77.58	115.120	45.09	115.100	41.21	115.300	68.55	115.240	50.06
20	115.220	46.08	115.160	77.52	115.120	45.06	115.100	41.21	115.280	63.31	115.240	50.06 *
21	115.220	46.07	115.160	77.50 *	115.120	45.08	115.100	41.21	115.280	63.08	115.240	50.05
22	115.220	46.06	115.180	79.47	115.120	45.08	115.080	39.50	115.280	63.08 *	115.240	50.06
23	115.220	46.02	115.180	79.47	115.120	45.07	115.080	39.50	115.280	63.07	115.240	50.06
24	115.220	46.00 *	115.180	79.46	115.120	45.07	115.080	39.51	115.280	62.79	115.240	50.06
25	115.220	46.00 *	115.180	79.50	115.120	45.00 *	115.080	39.51 *	115.280	62.64	115.240	50.06
26	115.220	46.09	115.180	79.50 *	115.120	45.04	115.080	39.51	115.280	62.37	115.240	50.06
27	115.220	46.03	115.180	79.43	115.120	45.03	115.080	39.50	115.280	61.23	115.240	50.06 *
28	115.220	46.02	115.180	79.40 *	115.120	45.03	115.080	39.50	115.280	61.37	115.240	50.06
29			115.160	75.74			115.080	39.49 *	115.300	62.57 *	115.240	50.06
30			115.140	70.63			115.080	39.48 *	115.300	62.57 *	115.240	50.06
31			115.140	70.62			115.070	38.02			115.240	50.06
Ten-Daily Mean												
I Ten-Daily	115.238	49.76	115.184	79.62	115.140	65.06	115.114	42.45	115.079	37.61	115.288	61.46
II Ten-Daily	115.236	49.26	115.162	77.72	115.122	47.05	115.100	41.22	115.280	65.55	115.244	51.07
III Ten-Daily	115.220	46.04	115.169	77.34	115.120	45.05	115.081	39.52	115.284	62.48	115.240	50.06
Monthly												
Min.	115.200	46.00	115.140	70.62	115.120	45.00	115.070	38.02	115.070	36.29	115.240	50.05
Max.	115.260	53.00	115.200	81.15	115.140	65.08	115.120	42.98	115.360	75.52	115.360	74.10
Mean	115.232	48.52	115.172	78.2	115.128	52.91	115.098	41.01	115.214	55.21	115.257	54.06

Peak Computed Discharge = 1850 cumecs on 06-Aug-17 Corres. Water Level :120.82 m

Lowest Computed Discharge = 23.40 cumecs on 18-Jun-17 Corres. Water Level :115.26 m

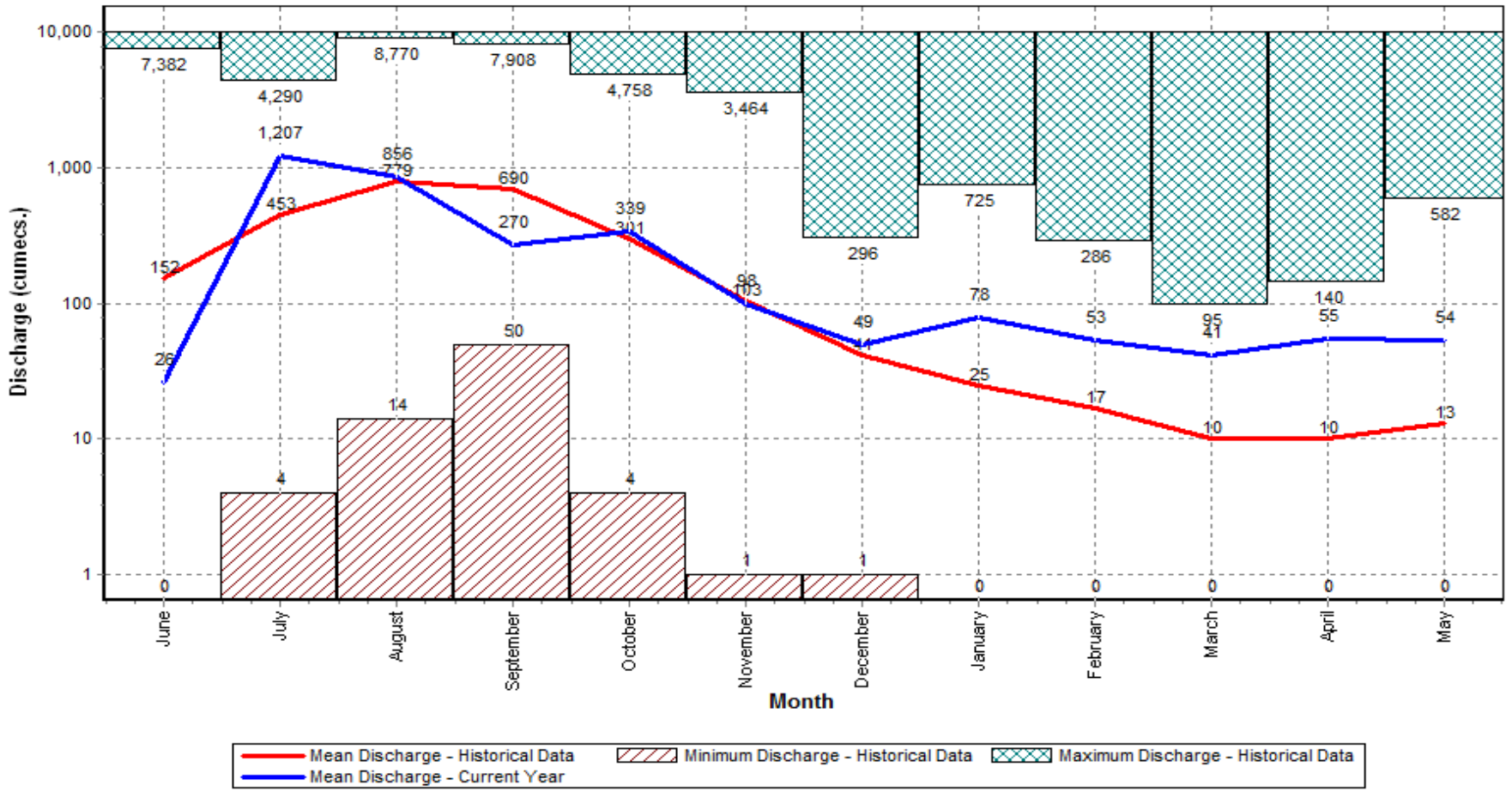
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2017-2018

Station Name : JAMSHEDPUR (ES000N5) **Data considered : 1972-2018** **Division : E.E., Bhubaneswar**

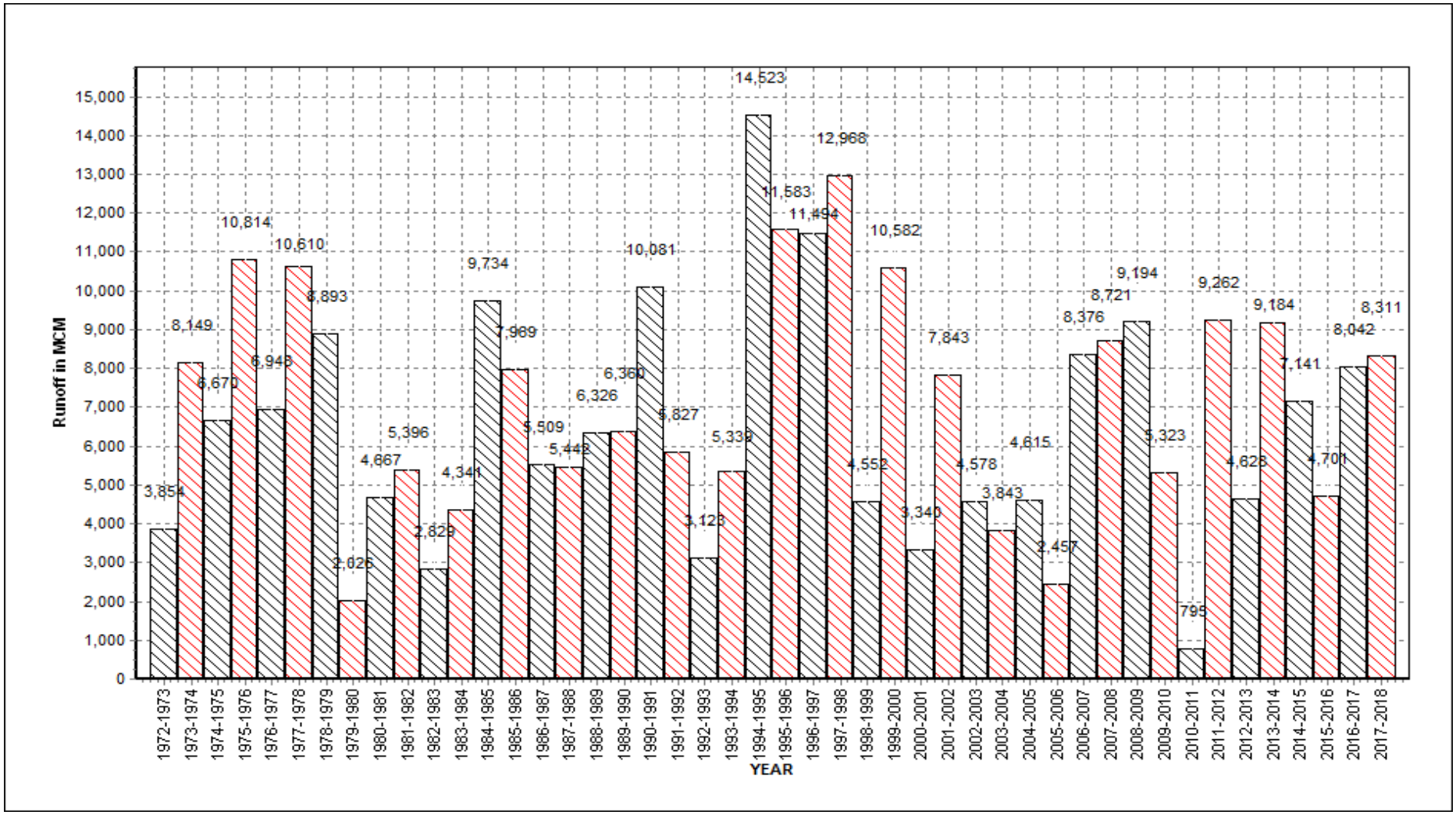
Local River : Subarnarekha **Sub-Division : Balasore**



Annual Runoff Values for the period: 1972 - 2018

Station Name : JAMSHEDPUR (ES000N5) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**



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

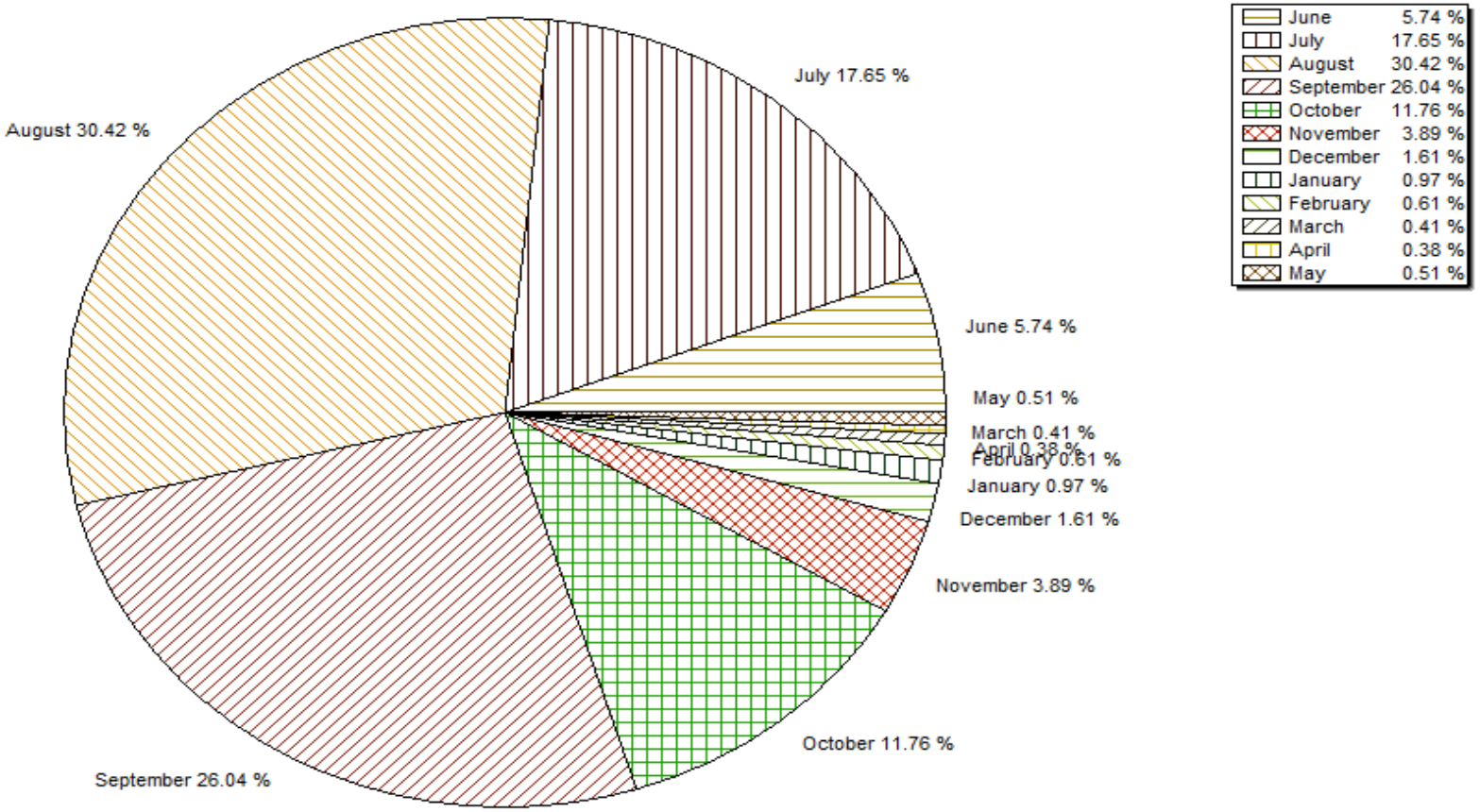
Monthly Average Runoff based on period : 1972-2017

Station Name : JAMSHEDPUR (ES000N5)

Local River : Subarnarekha

Division : E.E., Bhubaneswar

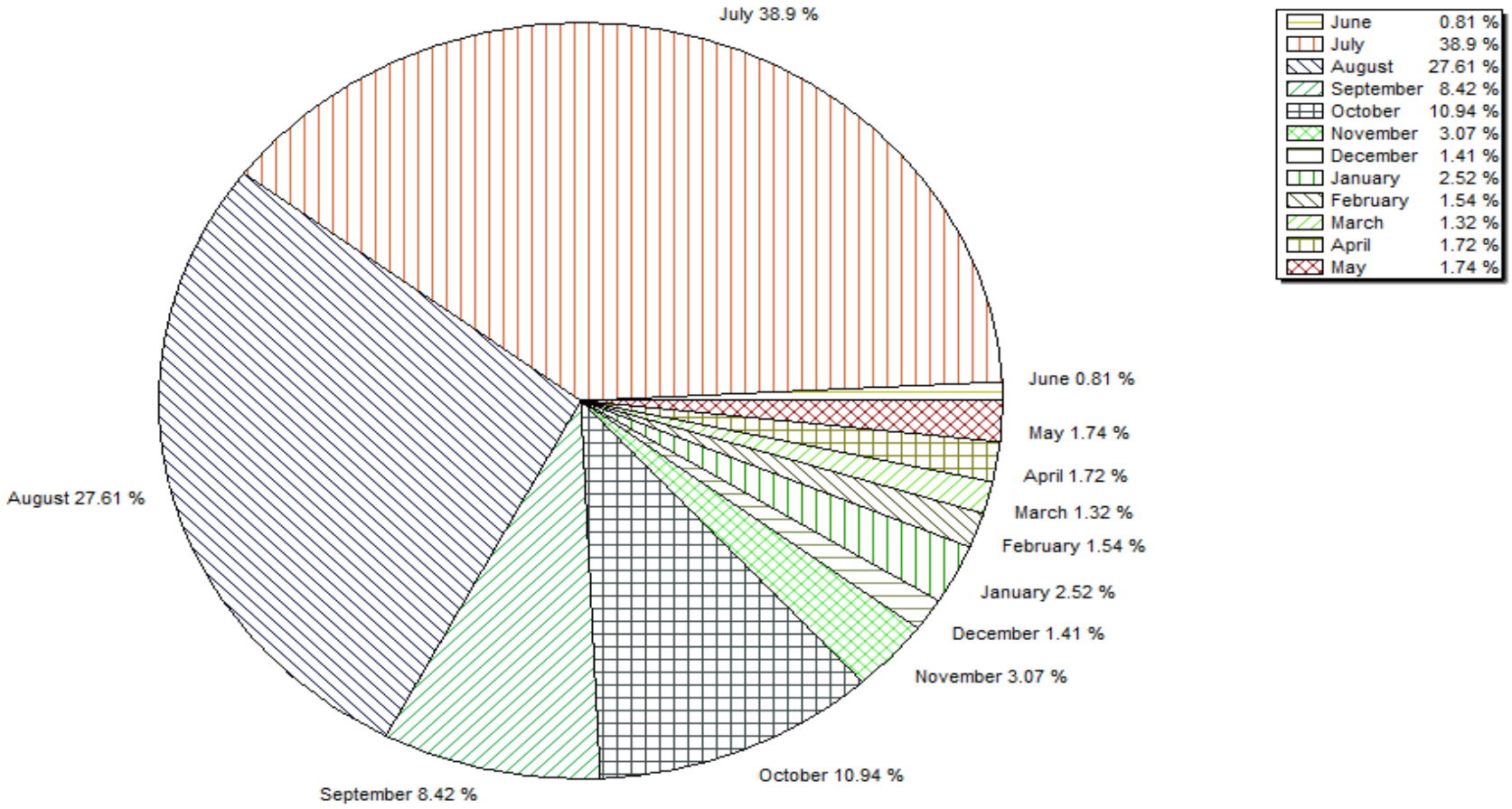
Sub-Division : Balasore



Monthly Runoff for the Year : 2017-2018

Station Name : JAMSHEDPUR (ES000N5) **Division : E.E., Bhubaneswar**

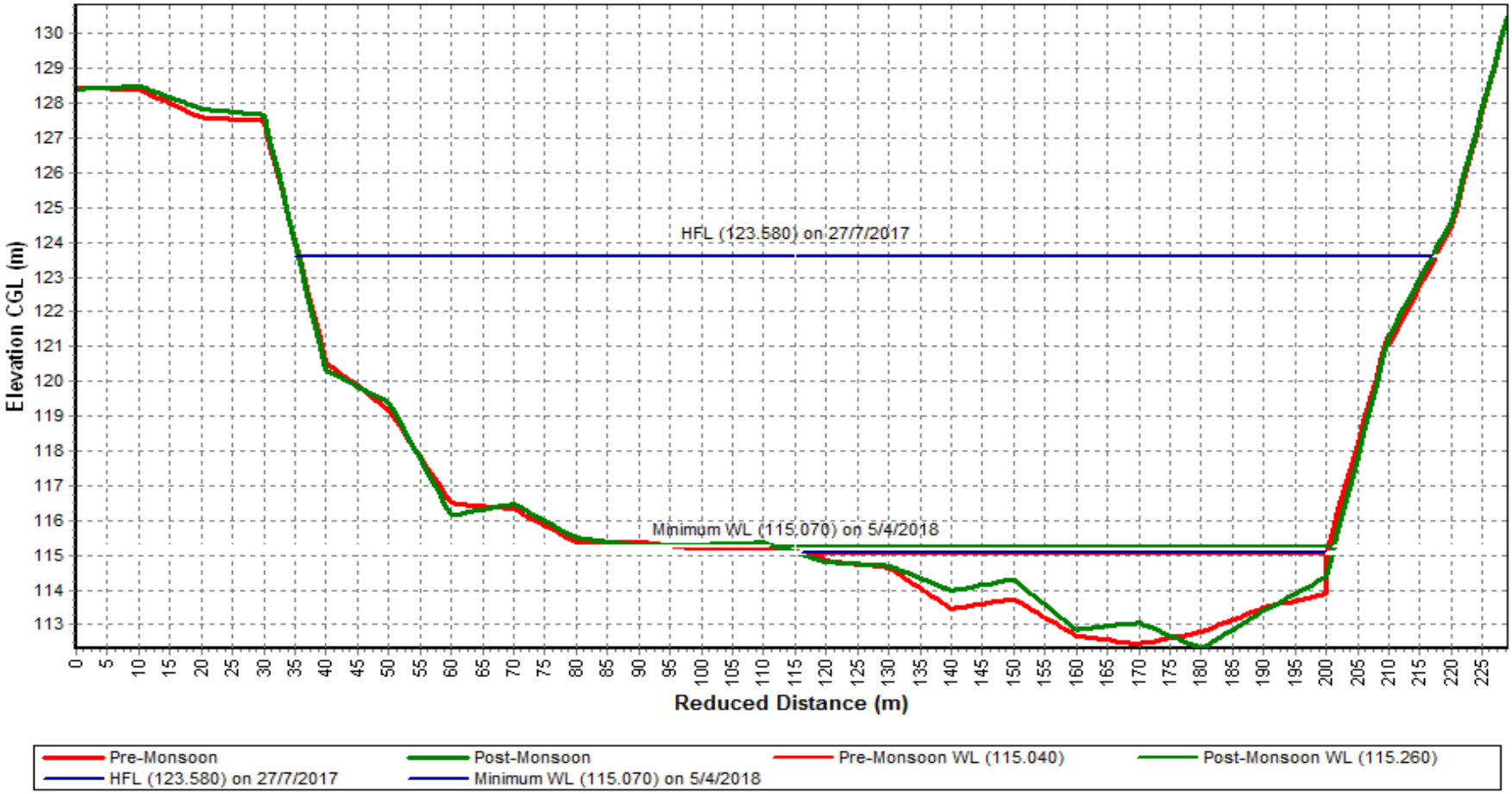
Local River : Subarnarekha **Sub-Division : Balasore**



Pre-Monsoon & Post-Monsoon X-Section for Water Year : 2017-2018

Station Name : JAMSHEDPUR (ES000N5) **Division : E.E., Bhubaneswar**

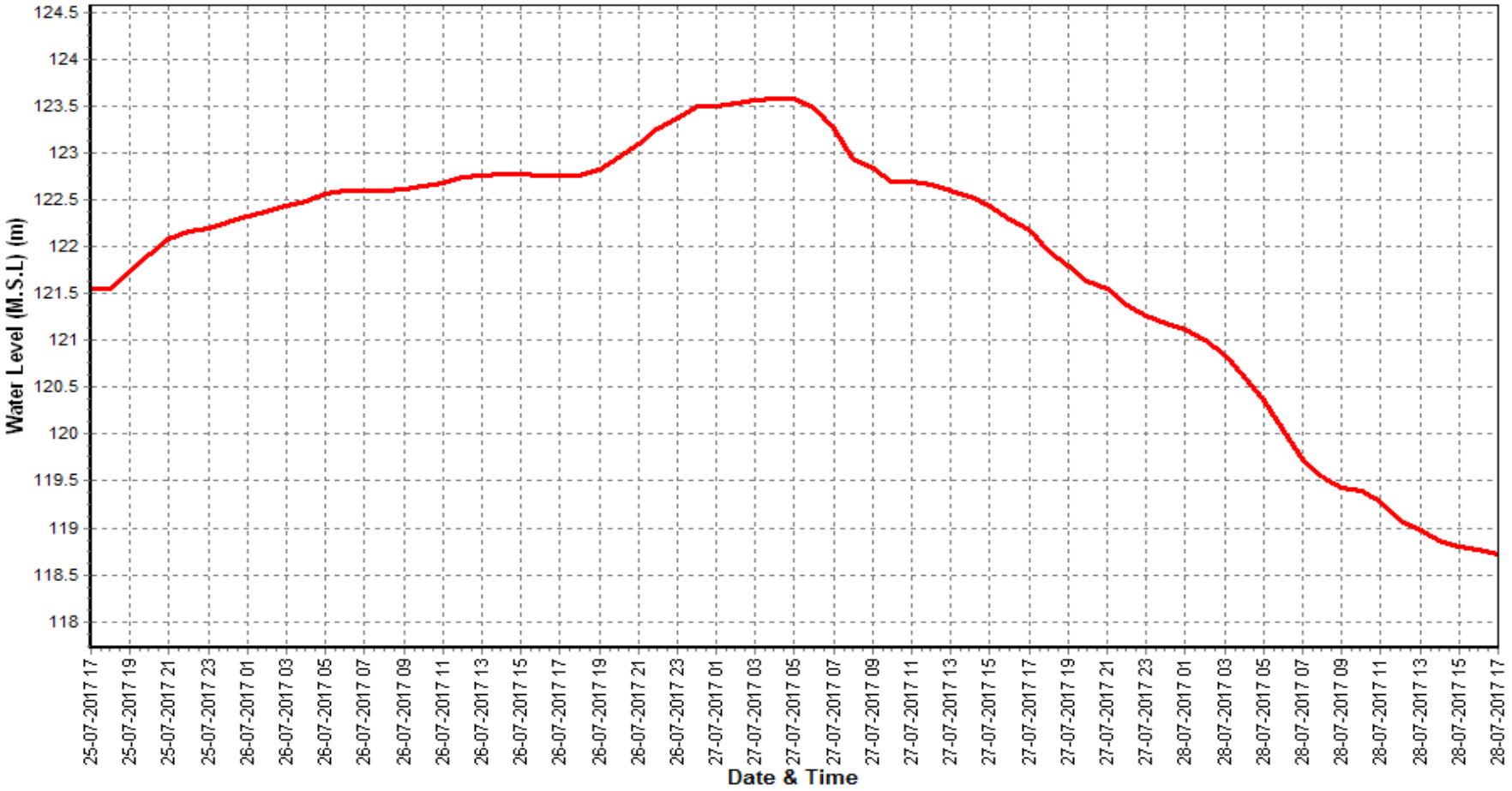
Local River : Subarnarekha **Sub-Division : Balasore**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2017-2018

Station Name : JAMSHEDPUR (ES000N5) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

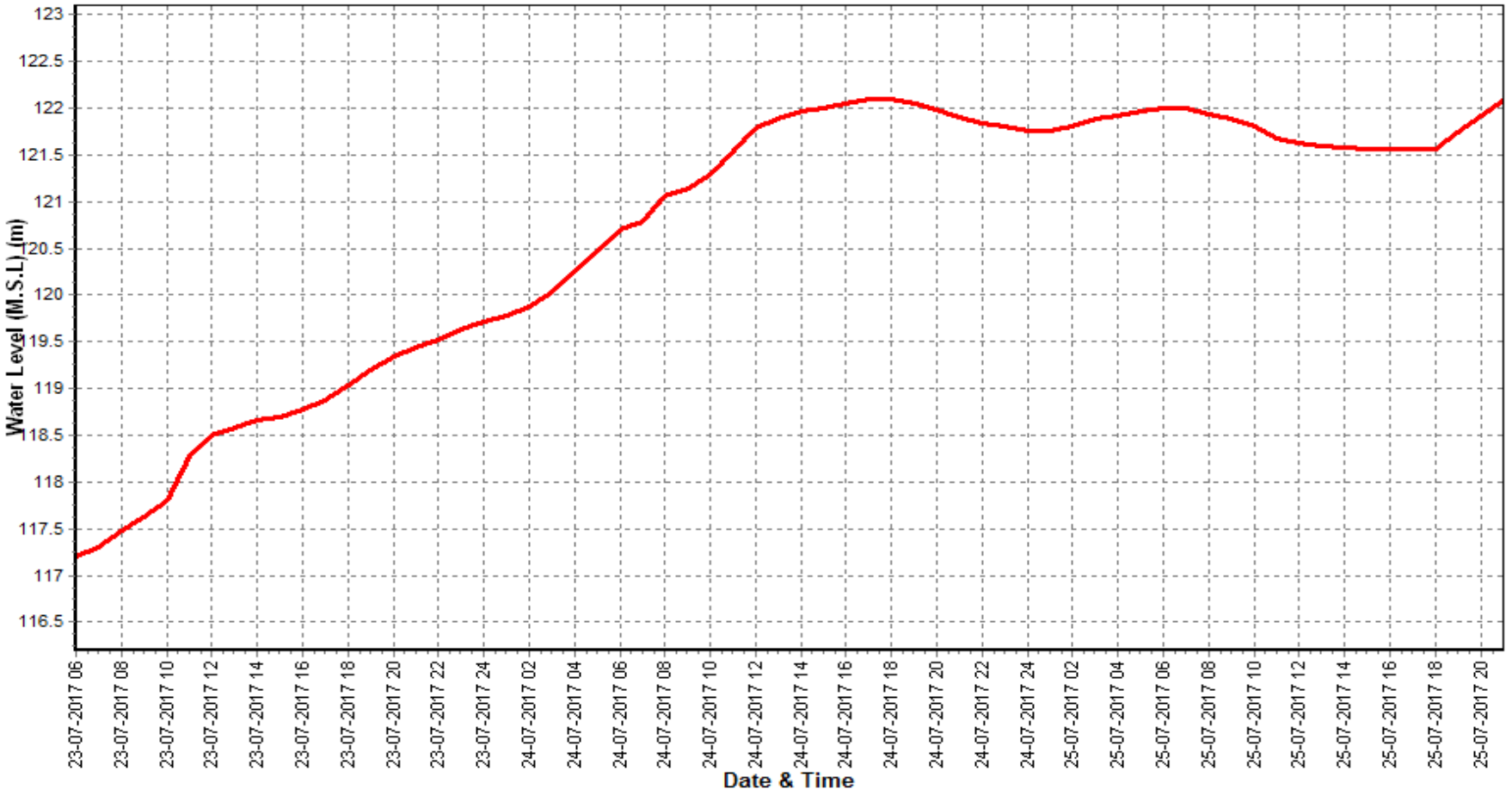


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2017-2018

Station Name : JAMSHEDPUR (ES000N5) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

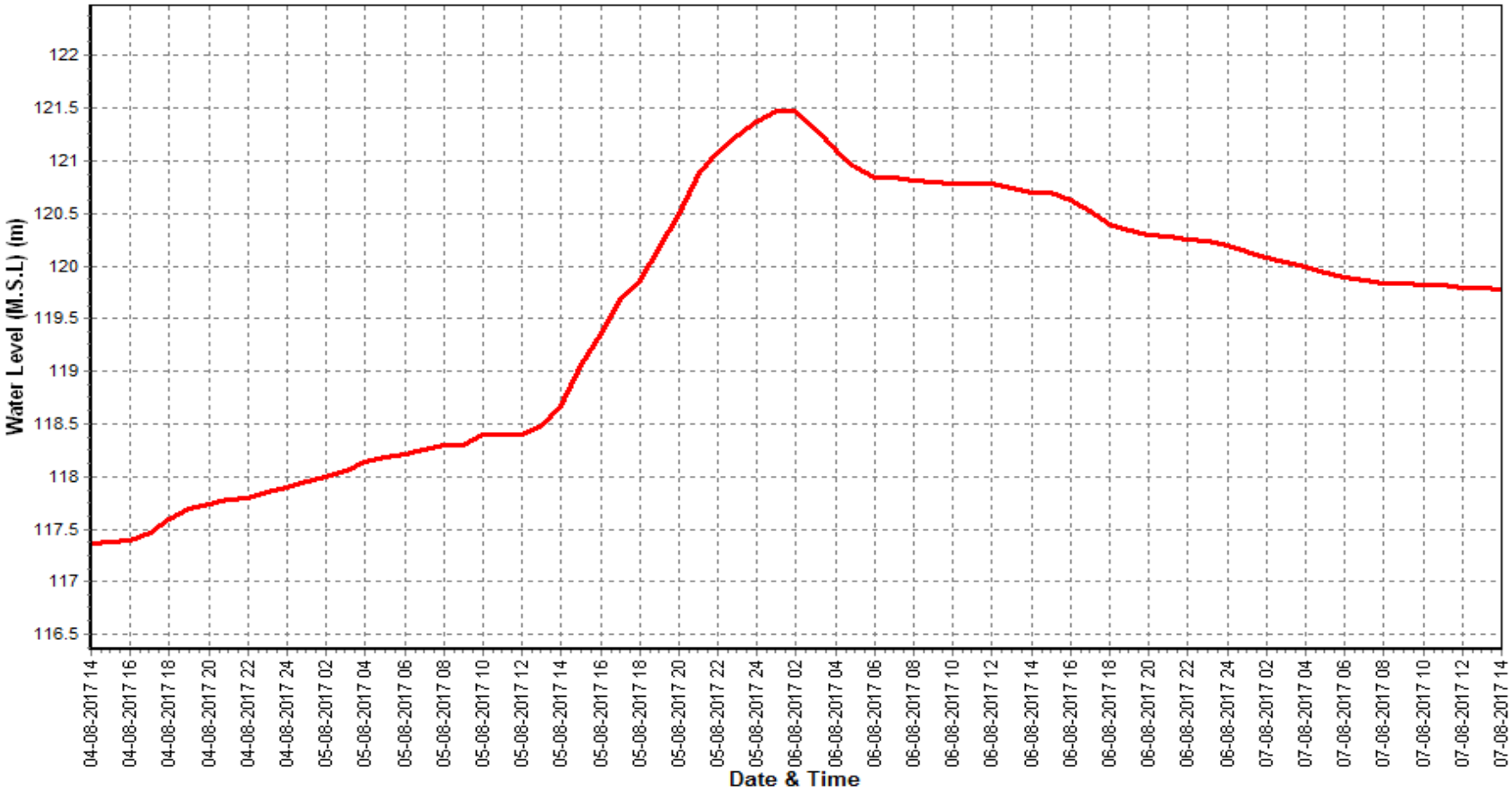


Time Span: 72 Hrs

Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2017-2018

Station Name : JAMSHEDPUR (ES000N5) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**



Time Span: 72 Hrs

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : JAMSHEDPUR (ES000N5) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

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	27.48	0.000	0.000	0.013	0.013	32	28.23	0.000	0.000	0.047	0.047	115	1707	0.000	0.000	0.120	0.120	17696
2	27.19	0.000	0.000	0.010	0.010	23	214.7	0.000	0.000	0.047	0.047	874	884.4	0.000	0.000	0.117	0.117	8941
3	27.88	0.000	0.000	0.008	0.008	19	338.9	0.000	0.000	0.054	0.054	1590	618.9	0.000	0.000	0.113	0.113	6059
4	27.00	0.000	0.000	0.010	0.010	23	303.3	0.000	0.000	0.053	0.053	1386	691.5	0.000	0.000	0.115	0.115	6870
5	24.75	0.000	0.000	0.070	0.070	150	252.5	0.000	0.000	0.051	0.051	1122	1413	0.000	0.000	0.125	0.125	15256
6	24.38	0.000	0.000	0.009	0.009	19	229.5	0.000	0.000	0.052	0.052	1021	1850	0.000	0.000	0.125	0.125	19980
7	24.23	0.000	0.000	0.013	0.013	28	216.1	0.000	0.000	0.059	0.059	1102	1815	0.000	0.000	0.133	0.133	20904
8	24.73	0.000	0.000	0.015	0.015	32	194.7	0.000	0.000	0.053	0.053	896	1505	0.000	0.000	0.125	0.125	16256
9	25.00	0.000	0.000	0.010	0.010	22	189.5	0.000	0.000	0.053	0.053	873	995.8	0.000	0.000	0.117	0.117	10041
10	24.76	0.000	0.000	0.010	0.010	21	189.5	0.000	0.000	0.052	0.052	847	578.8	0.000	0.000	0.113	0.113	5666
11	24.70	0.000	0.000	0.008	0.008	17	176.3	0.000	0.000	0.050	0.050	762	427.7	0.000	0.000	0.107	0.107	3943
12	24.24	0.000	0.000	0.008	0.008	17	181.3	0.000	0.000	0.053	0.053	835	391.0	0.000	0.000	0.103	0.103	3490
13	24.21	0.000	0.000	0.010	0.010	21	192.9	0.000	0.000	0.055	0.055	917	390.0	0.000	0.000	0.103	0.103	3481
14	24.12	0.000	0.000	0.008	0.008	17	214.7	0.000	0.000	0.057	0.057	1052	554.9	0.000	0.000	0.110	0.110	5274
15	23.90	0.000	0.000	0.008	0.008	17	253.2	0.000	0.000	0.057	0.057	1240	550.0	0.000	0.000	0.110	0.110	5227
16	23.77	0.000	0.000	0.010	0.010	21	220.0	0.000	0.000	0.057	0.057	1078	1464	0.000	0.000	0.122	0.122	15389
17	23.45	0.000	0.000	0.007	0.007	14	221.3	0.000	0.000	0.057	0.057	1084	1324	0.000	0.000	0.117	0.117	13354
18	23.40	0.000	0.000	0.007	0.007	14	207.9	0.000	0.000	0.055	0.055	988	1232	0.000	0.000	0.115	0.115	12243
19	23.40	0.000	0.000	0.007	0.007	14	226.5	0.000	0.000	0.058	0.058	1141	1164	0.000	0.000	0.113	0.113	11398
20	23.21	0.000	0.000	0.005	0.005	10	226.6	0.000	0.000	0.057	0.057	1110	1160	0.000	0.000	0.113	0.113	11355
21	25.18	0.000	0.000	0.017	0.017	37	217.7	0.000	0.000	0.037	0.037	690	748.0	0.000	0.000	0.108	0.108	6999
22	25.30	0.000	0.000	0.018	0.018	39	440.4	0.000	0.000	0.032	0.032	1206	642.9	0.000	0.000	0.103	0.103	5738
23	27.34	0.000	0.000	0.027	0.027	64	460.0	0.000	0.000	0.032	0.032	1260	556.6	0.000	0.000	0.102	0.102	4891
24	28.28	0.000	0.000	0.028	0.028	68	3895	0.000	0.000	0.133	0.133	44862	467.5	0.000	0.000	0.098	0.098	3971
25	27.30	0.000	0.000	0.028	0.028	66	5702	0.000	0.000	0.140	0.140	68975	416.1	0.000	0.000	0.097	0.097	3477
26	27.35	0.000	0.000	0.028	0.028	66	7627	0.000	0.000	0.143	0.143	93971	505.6	0.000	0.000	0.100	0.100	4368
27	27.43	0.000	0.000	0.023	0.023	54	8237	0.000	0.000	0.150	0.150	106746	505.0	0.000	0.000	0.100	0.100	4363
28	28.27	0.000	0.000	0.025	0.025	61	2566	0.000	0.000	0.138	0.138	30666	343.0	0.000	0.000	0.095	0.095	2815
29	28.72	0.000	0.000	0.028	0.028	69	1781	0.000	0.000	0.128	0.128	19738	707.4	0.000	0.000	0.102	0.102	6216
30	32.95	0.000	0.000	0.032	0.032	90	450.0	0.000	0.000	0.128	0.128	4988	538.5	0.000	0.000	0.100	0.100	4653
31							1768	0.000	0.000	0.127	0.127	19350	402.8	0.000	0.000	0.560	0.560	19487
Ten Daily Mean																		
Ten Daily I	25.74	0.000	0.000	0.017	0.017	37	215.7	0.000	0.000	0.052	0.052	982	1206	0.000	0.000	0.120	0.120	12767
Ten Daily II	23.84	0.000	0.000	0.008	0.008	16	212.1	0.000	0.000	0.056	0.056	1021	865.8	0.000	0.000	0.111	0.111	8515
Ten Daily III	27.81	0.000	0.000	0.025	0.025	62	3013	0.000	0.000	0.108	0.108	35678	530.3	0.000	0.000	0.142	0.142	6089
Monthly Total						1146						412484						279800

Annual Sediment Load (Metric Tonnes) : 1035526

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : JAMSHEDPUR (ES000N5) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

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	343.8	0.000	0.000	0.090	0.090	2673	300.0	0.000	0.000	0.058	0.058	1511	224.5	0.000	0.000	0.042	0.042	809
2	343.0	0.000	0.000	0.090	0.090	2667	290.0	0.000	0.000	0.058	0.058	1461	143.5	0.000	0.000	0.040	0.040	496
3	350.0	0.000	0.000	0.090	0.090	2722	329.2	0.000	0.000	0.058	0.058	1658	134.4	0.000	0.000	0.035	0.035	406
4	444.8	0.000	0.000	0.917	0.917	35238	309.3	0.000	0.000	0.057	0.057	1515	134.0	0.000	0.000	0.035	0.035	405
5	384.2	0.000	0.000	0.087	0.087	2878	556.3	0.000	0.000	0.068	0.068	3283	134.0	0.000	0.000	0.035	0.035	405
6	322.9	0.000	0.000	0.083	0.083	2324	568.3	0.000	0.000	0.067	0.067	3275	131.0	0.000	0.000	0.033	0.033	377
7	322.4	0.000	0.000	0.078	0.078	2181	367.9	0.000	0.000	0.060	0.060	1907	127.0	0.000	0.000	0.033	0.033	365
8	316.0	0.000	0.000	0.077	0.077	2094	355.0	0.000	0.000	0.060	0.060	1840	96.38	0.000	0.000	0.035	0.035	291
9	128.8	0.000	0.000	0.067	0.067	742	346.9	0.000	0.000	0.057	0.057	1700	96.38	0.000	0.000	0.033	0.033	277
10	130.0	0.000	0.000	0.067	0.067	749	388.8	0.000	0.000	0.058	0.058	1958	96.10	0.000	0.000	0.033	0.033	276
11	111.8	0.000	0.000	0.063	0.063	612	377.5	0.000	0.000	0.057	0.057	1849	95.82	0.000	0.000	0.035	0.035	290
12	101.1	0.000	0.000	0.062	0.062	539	246.7	0.000	0.000	0.053	0.053	1136	95.00	0.000	0.000	0.035	0.035	287
13	126.0	0.000	0.000	0.068	0.068	743	244.8	0.000	0.000	0.052	0.052	1094	95.60	0.000	0.000	0.035	0.035	289
14	119.6	0.000	0.000	0.065	0.065	672	288.3	0.000	0.000	0.055	0.055	1370	95.46	0.000	0.000	0.033	0.033	275
15	108.5	0.000	0.000	0.062	0.062	578	280.0	0.000	0.000	0.055	0.055	1331	93.71	0.000	0.000	0.032	0.032	257
16	104.6	0.000	0.000	0.058	0.058	527	237.4	0.000	0.000	0.052	0.052	1060	131.4	0.000	0.000	0.043	0.043	491
17	130.0	0.000	0.000	0.058	0.058	655	213.8	0.000	0.000	0.047	0.047	862	56.87	0.000	0.000	0.037	0.037	180
18	277.4	0.000	0.000	0.062	0.062	1479	206.6	0.000	0.000	0.048	0.048	862	55.22	0.000	0.000	0.035	0.035	167
19	294.5	0.000	0.000	6.330	6.330	161089	206.0	0.000	0.000	0.048	0.048	860	72.00	0.000	0.000	0.035	0.035	218
20	418.9	0.000	0.000	0.068	0.068	2472	179.4	0.000	0.000	0.047	0.047	724	75.45	0.000	0.000	0.042	0.042	272
21	468.2	0.000	0.000	0.070	0.070	2832	227.6	0.000	0.000	0.048	0.048	950	80.22	0.000	0.000	0.047	0.047	324
22	397.9	0.000	0.000	0.063	0.063	2176	780.0	0.000	0.000	0.048	0.048	3255	79.80	0.000	0.000	0.043	0.043	299
23	370.2	0.000	0.000	0.058	0.058	1865	807.0	0.000	0.000	0.078	0.078	5460	79.48	0.000	0.000	0.040	0.040	275
24	280.0	0.000	0.000	0.058	0.058	1410	597.4	0.000	0.000	0.073	0.073	3783	79.94	0.000	0.000	0.033	0.033	230
25	268.4	0.000	0.000	0.058	0.058	1352	477.5	0.000	0.000	0.070	0.070	2888	79.83	0.000	0.000	0.035	0.035	241
26	276.9	0.000	0.000	0.056	0.056	1345	207.7	0.000	0.000	0.050	0.050	897	95.00	0.000	0.000	0.035	0.035	287
27	281.2	0.000	0.000	0.055	0.055	1336	196.9	0.000	0.000	0.047	0.047	794	89.10	0.000	0.000	0.048	0.048	372
28	252.4	0.000	0.000	0.053	0.053	1162	243.5	0.000	0.000	0.052	0.052	1088	65.30	0.000	0.000	0.030	0.030	169
29	260.0	0.000	0.000	0.053	0.053	1197	232.0	0.000	0.000	0.052	0.052	1036	65.81	0.000	0.000	0.028	0.028	161
30	370.0	0.000	0.000	0.053	0.053	1704	229.8	0.000	0.000	0.050	0.050	993	54.46	0.000	0.000	0.030	0.030	141
31							228.7	0.000	0.000	0.047	0.047	923						
Ten Daily Mean																		
Ten Daily I	308.6	0.000	0.000	0.165	0.165	5427	381.2	0.000	0.000	0.060	0.060	2011	131.7	0.000	0.000	0.035	0.035	411
Ten Daily II	179.2	0.000	0.000	0.690	0.690	16937	248.0	0.000	0.000	0.051	0.051	1115	86.65	0.000	0.000	0.036	0.036	273
Ten Daily III	322.5	0.000	0.000	0.058	0.058	1638	384.4	0.000	0.000	0.056	0.056	2006	76.89	0.000	0.000	0.037	0.037	250
Monthly																		
Total						240012						53324						9334

Annual Sediment Load (Metric Tonnes) : 1035526

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : JAMSHEDPUR (ES000N5) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

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	53.00	0.000	0.000	0.032	0.032	145	81.12	0.000	0.000	0.267	0.267	1871	65.08	0.000	0.000	0.019	0.019	104
2	50.00	0.000	0.000	0.032	0.032	137	81.15	0.000	0.000	0.267	0.267	1872	65.07	0.000	0.000	0.019	0.019	104
3	50.00	0.000	0.000	0.032	0.032	137	79.25	0.000	0.000	0.267	0.267	1828	65.08	0.000	0.000	0.019	0.019	104
4	50.01	0.000	0.000	0.032	0.032	137	79.25	0.000	0.000	0.267	0.267	1828	65.00	0.000	0.000	0.019	0.019	104
5	50.02	0.000	0.000	0.032	0.032	137	79.25	0.000	0.000	0.267	0.267	1828	65.08	0.000	0.000	0.019	0.019	104
6	46.06	0.000	0.000	0.032	0.032	126	79.24	0.000	0.000	0.267	0.267	1828	65.08	0.000	0.000	0.019	0.019	104
7	46.01	0.000	0.000	0.032	0.032	126	79.20	0.000	0.000	0.267	0.267	1827	65.07	0.000	0.000	0.019	0.019	104
8	50.02	0.000	0.000	0.032	0.032	137	79.28	0.000	0.000	0.250	0.250	1712	65.08	0.000	0.000	0.019	0.019	104
9	51.23	0.000	0.000	0.032	0.032	140	79.24	0.000	0.000	0.250	0.250	1712	65.04	0.000	0.000	0.018	0.018	102
10	51.20	0.000	0.000	0.032	0.032	140	79.24	0.000	0.000	0.250	0.250	1712	65.02	0.000	0.000	0.018	0.018	102
11	50.07	0.000	0.000	0.032	0.032	137	79.26	0.000	0.000	0.250	0.250	1712	65.00	0.000	0.000	0.018	0.018	102
12	50.06	0.000	0.000	0.032	0.032	137	77.56	0.000	0.000	0.250	0.250	1675	45.05	0.000	0.000	0.018	0.018	71
13	50.10	0.000	0.000	0.032	0.032	137	77.52	0.000	0.000	0.250	0.250	1675	45.07	0.000	0.000	0.018	0.018	71
14	50.04	0.000	0.000	0.032	0.032	137	77.50	0.000	0.000	0.250	0.250	1674	45.02	0.000	0.000	0.018	0.018	71
15	50.03	0.000	0.000	0.032	0.032	137	77.56	0.000	0.000	0.023	0.023	156	45.09	0.000	0.000	0.018	0.018	71
16	50.08	0.000	0.000	0.032	0.032	137	77.58	0.000	0.000	0.023	0.023	156	45.05	0.000	0.000	0.017	0.017	65
17	50.00	0.000	0.000	0.032	0.032	137	77.50	0.000	0.000	0.023	0.023	156	45.09	0.000	0.000	0.017	0.017	65
18	50.06	0.000	0.000	0.028	0.028	122	77.57	0.000	0.000	0.023	0.023	156	45.00	0.000	0.000	0.017	0.017	65
19	46.08	0.000	0.000	0.028	0.028	113	77.58	0.000	0.000	0.023	0.023	156	45.09	0.000	0.000	0.017	0.017	65
20	46.08	0.000	0.000	0.028	0.028	113	77.52	0.000	0.000	0.023	0.023	156	45.06	0.000	0.000	0.017	0.017	65
21	46.07	0.000	0.000	0.028	0.028	113	77.50	0.000	0.000	0.023	0.023	156	45.08	0.000	0.000	0.017	0.017	65
22	46.06	0.000	0.000	0.028	0.028	113	79.47	0.000	0.000	0.025	0.025	172	45.08	0.000	0.000	0.017	0.017	65
23	46.02	0.000	0.000	0.028	0.028	113	79.47	0.000	0.000	0.025	0.025	172	45.07	0.000	0.000	0.019	0.019	72
24	46.00	0.000	0.000	0.028	0.028	112	79.46	0.000	0.000	0.025	0.025	172	45.07	0.000	0.000	0.019	0.019	72
25	46.00	0.000	0.000	0.028	0.028	112	79.50	0.000	0.000	0.025	0.025	172	45.00	0.000	0.000	0.019	0.019	72
26	46.09	0.000	0.000	0.028	0.028	113	79.50	0.000	0.000	0.025	0.025	172	45.04	0.000	0.000	0.019	0.019	72
27	46.03	0.000	0.000	0.028	0.028	113	79.43	0.000	0.000	0.025	0.025	172	45.03	0.000	0.000	0.019	0.019	72
28	46.02	0.000	0.000	0.028	0.028	113	79.40	0.000	0.000	0.025	0.025	172	45.03	0.000	0.000	0.019	0.019	72
29							75.74	0.000	0.000	0.022	0.022	142						
30							70.63	0.000	0.000	0.022	0.022	132						
31							70.62	0.000	0.000	0.022	0.022	132						
Ten Daily Mean																		
Ten Daily I	49.76	0.000	0.000	0.032	0.032	136	79.62	0.000	0.000	0.262	0.262	1802	65.06	0.000	0.000	0.018	0.018	104
Ten Daily II	49.26	0.000	0.000	0.031	0.031	131	77.72	0.000	0.000	0.114	0.114	767	47.05	0.000	0.000	0.017	0.017	71
Ten Daily III	46.04	0.000	0.000	0.028	0.028	113	77.34	0.000	0.000	0.024	0.024	160	45.05	0.000	0.000	0.018	0.018	70
Monthly																		
Total						3571						27456						2309

Annual Sediment Load (Metric Tonnes) : 1035526

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : JAMSHEDPUR (ES000N5) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

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	42.97	0.000	0.000	0.016	0.016	60	37.81	0.000	0.000	0.013	0.013	42	74.10	0.000	0.000	0.015	0.015	97
2	42.97	0.000	0.000	0.016	0.016	60	37.81	0.000	0.000	0.013	0.013	42	64.96	0.000	0.000	0.015	0.015	85
3	42.98	0.000	0.000	0.016	0.016	60	37.31	0.000	0.000	0.013	0.013	42	64.97	0.000	0.000	0.015	0.015	85
4	42.98	0.000	0.000	0.016	0.016	60	36.82	0.000	0.000	0.013	0.013	41	60.07	0.000	0.000	0.015	0.015	78
5	42.98	0.000	0.000	0.016	0.016	60	36.82	0.000	0.000	0.013	0.013	41	60.09	0.000	0.000	0.015	0.015	78
6	42.97	0.000	0.000	0.016	0.016	60	36.45	0.000	0.000	0.015	0.015	47	60.09	0.000	0.000	0.015	0.015	78
7	42.97	0.000	0.000	0.016	0.016	60	36.29	0.000	0.000	0.015	0.015	47	60.09	0.000	0.000	0.015	0.015	78
8	41.21	0.000	0.000	0.016	0.016	58	39.03	0.000	0.000	0.015	0.015	51	60.09	0.000	0.000	0.015	0.015	78
9	41.22	0.000	0.000	0.014	0.014	50	39.03	0.000	0.000	0.015	0.015	51	55.08	0.000	0.000	0.013	0.013	64
10	41.22	0.000	0.000	0.014	0.014	50	38.71	0.000	0.000	0.015	0.015	50	55.06	0.000	0.000	0.013	0.013	64
11	41.22	0.000	0.000	0.014	0.014	50	38.99	0.000	0.000	0.015	0.015	51	55.09	0.000	0.000	0.013	0.013	64
12	41.22	0.000	0.000	0.014	0.014	50	75.52	0.000	0.000	0.015	0.015	98	55.06	0.000	0.000	0.013	0.013	64
13	41.22	0.000	0.000	0.014	0.014	50	69.44	0.000	0.000	0.024	0.024	141	50.07	0.000	0.000	0.013	0.013	58
14	41.22	0.000	0.000	0.014	0.014	50	69.44	0.000	0.000	0.024	0.024	141	50.07	0.000	0.000	0.013	0.013	58
15	41.22	0.000	0.000	0.014	0.014	50	69.44	0.000	0.000	0.024	0.024	141	50.06	0.000	0.000	0.013	0.013	58
16	41.23	0.000	0.000	0.015	0.015	55	69.44	0.000	0.000	0.024	0.024	141	50.07	0.000	0.000	0.013	0.013	58
17	41.23	0.000	0.000	0.015	0.015	55	66.00	0.000	0.000	0.024	0.024	134	50.06	0.000	0.000	0.013	0.013	58
18	41.22	0.000	0.000	0.015	0.015	55	65.32	0.000	0.000	0.024	0.024	133	50.06	0.000	0.000	0.012	0.012	50
19	41.21	0.000	0.000	0.015	0.015	55	68.55	0.000	0.000	0.024	0.024	139	50.06	0.000	0.000	0.012	0.012	50
20	41.21	0.000	0.000	0.015	0.015	55	63.31	0.000	0.000	0.018	0.018	98	50.06	0.000	0.000	0.012	0.012	50
21	41.21	0.000	0.000	0.015	0.015	55	63.08	0.000	0.000	0.018	0.018	98	50.05	0.000	0.000	0.012	0.012	50
22	39.50	0.000	0.000	0.015	0.015	53	63.08	0.000	0.000	0.018	0.018	98	50.06	0.000	0.000	0.012	0.012	50
23	39.50	0.000	0.000	0.013	0.013	44	63.07	0.000	0.000	0.018	0.018	98	50.06	0.000	0.000	0.012	0.012	50
24	39.51	0.000	0.000	0.013	0.013	44	62.79	0.000	0.000	0.018	0.018	97	50.06	0.000	0.000	0.012	0.012	50
25	39.51	0.000	0.000	0.013	0.013	44	62.64	0.000	0.000	0.018	0.018	97	50.06	0.000	0.000	0.012	0.012	50
26	39.51	0.000	0.000	0.013	0.013	44	62.37	0.000	0.000	0.018	0.018	96	50.06	0.000	0.000	0.010	0.010	42
27	39.50	0.000	0.000	0.013	0.013	44	61.23	0.000	0.000	0.018	0.018	95	50.06	0.000	0.000	0.010	0.010	42
28	39.50	0.000	0.000	0.013	0.013	44	61.37	0.000	0.000	0.018	0.018	95	50.06	0.000	0.000	0.010	0.010	42
29	39.49	0.000	0.000	0.013	0.013	44	62.57	0.000	0.000	0.018	0.018	97	50.06	0.000	0.000	0.010	0.010	42
30	39.48	0.000	0.000	0.013	0.013	44	62.57	0.000	0.000	0.018	0.018	97	50.06	0.000	0.000	0.010	0.010	42
31	38.02	0.000	0.000	0.013	0.013	42							50.06	0.000	0.000	0.010	0.010	42
Ten Daily Mean																		
Ten Daily I	42.45	0.000	0.000	0.016	0.016	58	37.61	0.000	0.000	0.014	0.014	45	61.46	0.000	0.000	0.015	0.015	79
Ten Daily II	41.22	0.000	0.000	0.015	0.015	52	65.55	0.000	0.000	0.021	0.021	122	51.07	0.000	0.000	0.013	0.013	57
Ten Daily III	39.52	0.000	0.000	0.013	0.013	45	62.48	0.000	0.000	0.018	0.018	97	50.06	0.000	0.000	0.011	0.011	46
Monthly																		
Total						1598						2636						1856

Annual Sediment Load (Metric Tonnes) : 1035526

Annual Sediment Load for period : 1973-2018

Station Name : JAMSHEDPUR (ES000N5) **Division : E.E., Bhubaneswar**

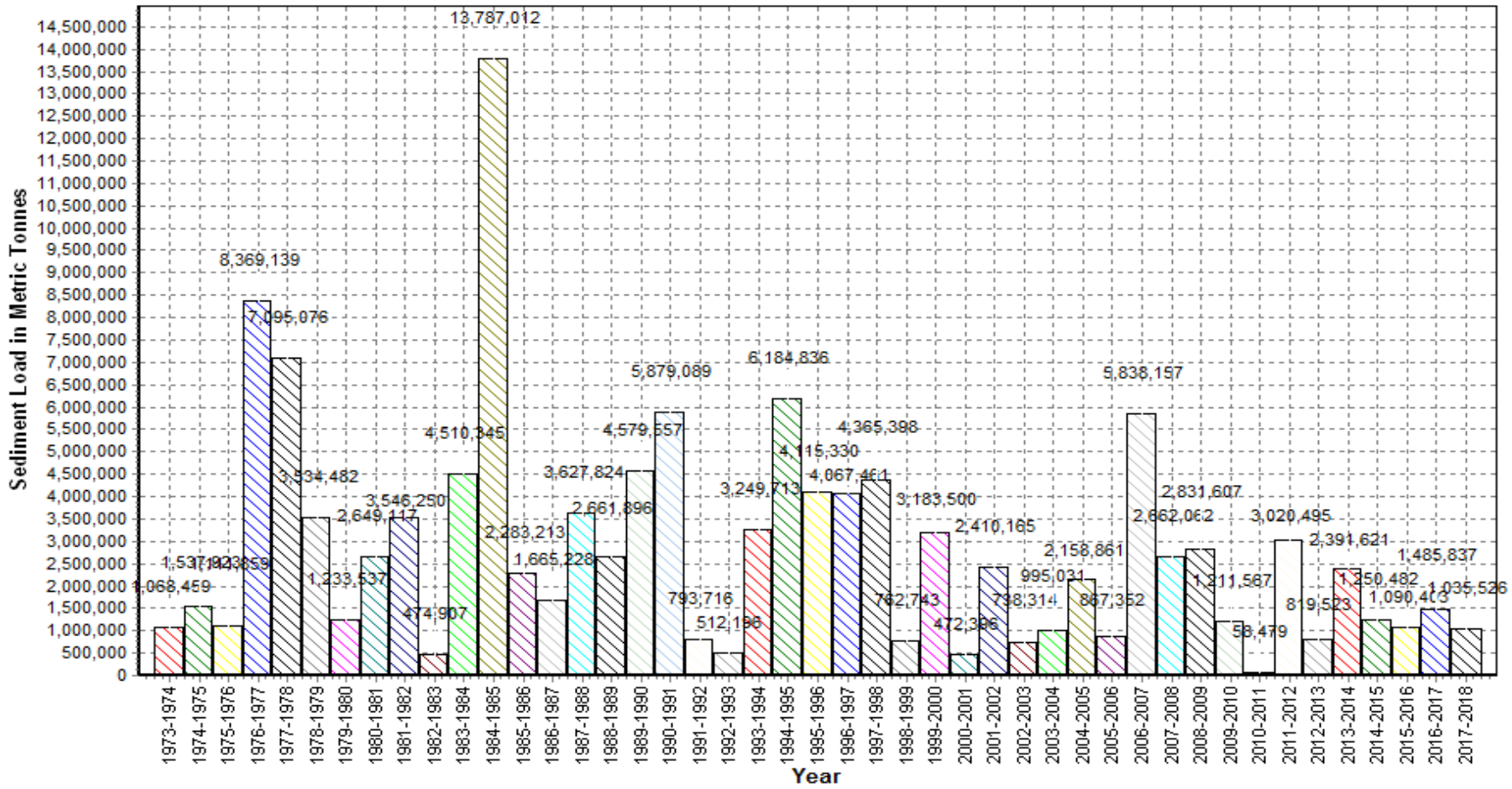
Local River : Subarnarekha **Sub-Division : Balasore**

Year	Monsoon (M.T.)	Non-Monsoon (M.T.)	Annual Load (M.T.)	Annual Run Off (MCM)
1973-1974	1068248	211	1068459	8149
1974-1975	1537923	0	1537923	6670
1975-1976	1111859	0	1111859	10814
1976-1977	8274424	94715	8369139	6948
1977-1978	7090119	4957	7095076	10610
1978-1979	3525517	8964	3534482	8893
1979-1980	1229436	4101	1233537	2026
1980-1981	2573679	75437	2649117	4667
1981-1982	3534712	11538	3546250	5396
1982-1983	469706	5201	474907	2829
1983-1984	4508651	1695	4510345	4341
1984-1985	13783405	3607	13787012	9734
1985-1986	2230948	52265	2283213	7969
1986-1987	1197523	467705	1665228	5509
1987-1988	3618081	9742	3627824	5442
1988-1989	2653330	8566	2661896	6326
1989-1990	4572461	7096	4579557	6331
1990-1991	5858316	20773	5879089	10081
1991-1992	780902	12814	793716	5824
1992-1993	510889	1307	512196	3123
1993-1994	3243095	6618	3249713	5339
1994-1995	6124335	60501	6184836	14523
1995-1996	4050479	64851	4115330	11583
1996-1997	4062817	4643	4067461	11494
1997-1998	4286352	79046	4365398	12968
1998-1999	743811	18933	762743	4552
1999-2000	3174341	9158	3183500	10582
2000-2001	470089	2307	472396	3340
2001-2002	2383840	26325	2410165	7843
2002-2003	685114	53200	738314	4578
2003-2004	970631	24399	995031	3843
2004-2005	2152535	6325	2158861	4615
2005-2006	849622	17730	867352	2457
2006-2007	5800155	38002	5838157	8376
2007-2008	2651605	10458	2662062	8720
2008-2009	2803252	28355	2831607	9194
2009-2010	1153452	58115	1211567	5322
2010-2011	53147	5332	58479	795
2011-2012	2996260	24235	3020495	9262
2012-2013	796162	23362	819523	4628
2013-2014	2375509	16112	2391621	9184
2014-2015	1242693	7789	1250482	7133
2015-2016	1086878	3524	1090403	4657
2016-2017	1480342	5495	1485837	8042
2017-2018	996100	39426	1035526	8311

Annual Sediment Load for the period: 1973-2018

Station Name : JAMSHEDPUR (ES000N5) **Division : E.E., Bhubaneswar**

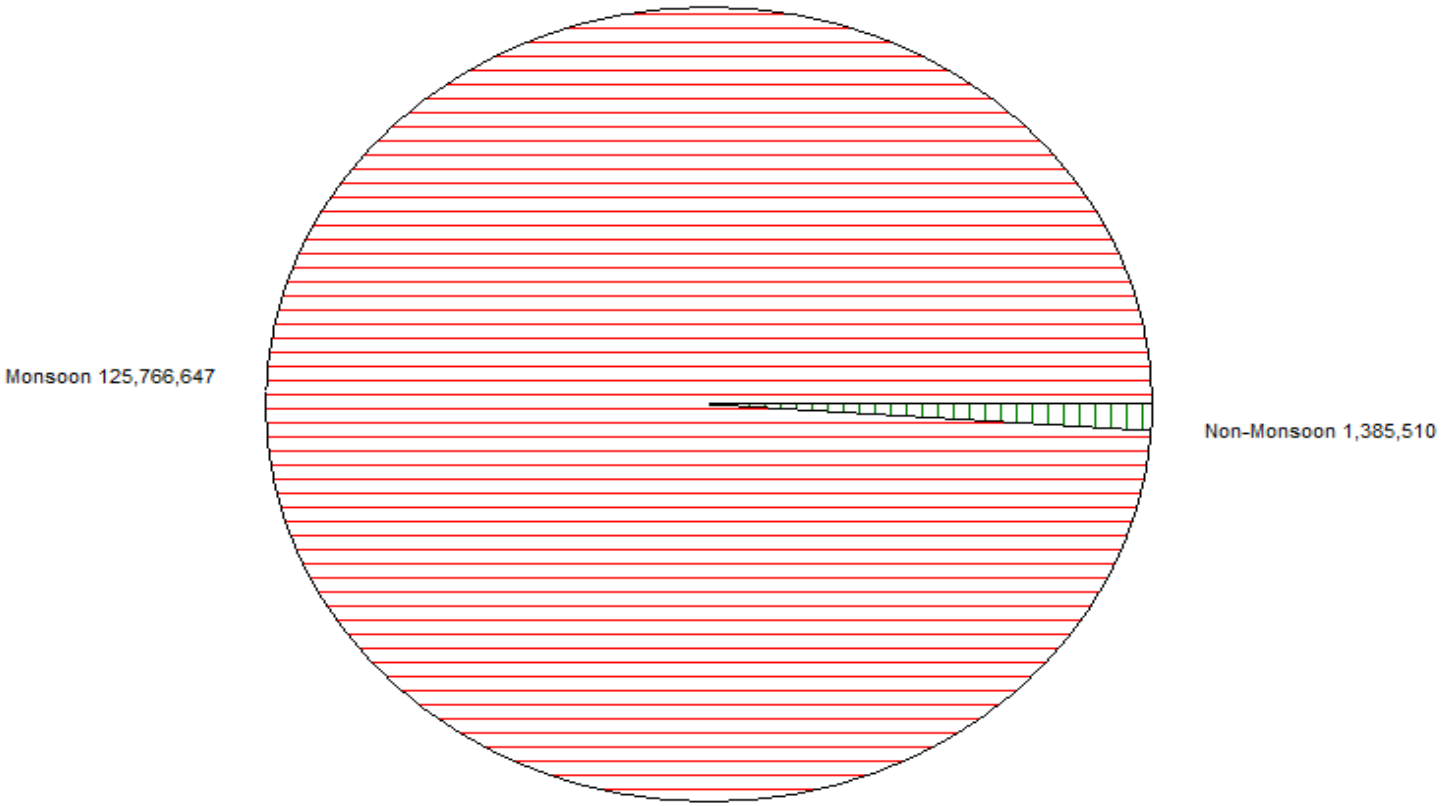
Local River : Subarnarekha **Sub-Division : Balasore**



Seasonal Sediment Load for the period : 1973-2017

Station Name : JAMSHEDPUR (ES000N5)
Local River : Subarnarekha

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



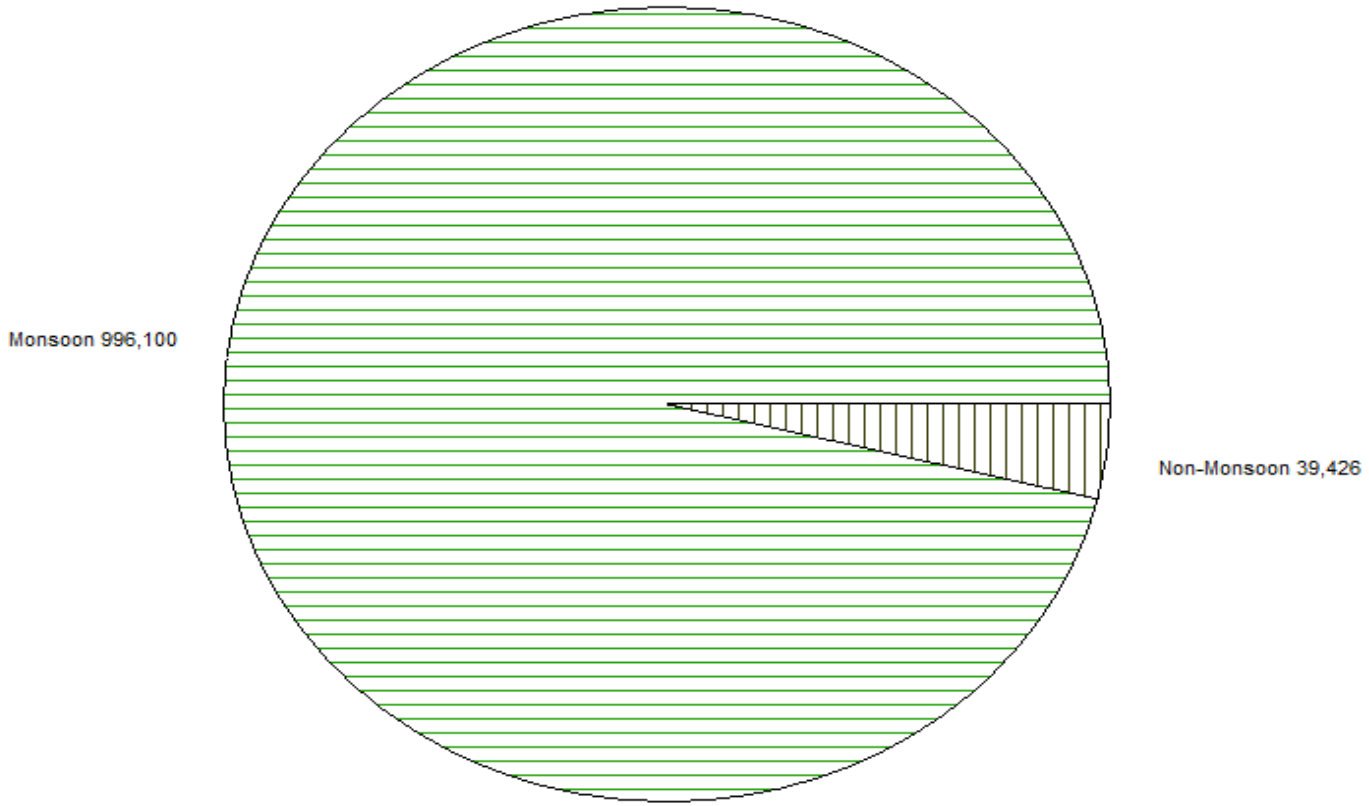
Seasonal Sediment Load for the Year: 2017-2018

Station Name : JAMSHEDPUR (ES000N5)

Local River : Subarnarekha

Division : E.E., Bhubaneswar

Sub-Division : Balasore



Water Quality Datasheet for the period : 2017-2018

Station Name : JAMSHEDPUR (ES000N5) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **River Water Analysis** **Sub-Division : Balasore**

S.No	Parameters	01/06/2017	01/07/2017	01/08/2017	01/09/2017	03/10/2017	01/11/2017	01/12/2017	01/01/2018	01/02/2018	01/03/2018	02/04/2018	01/05/2018
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Clear	Light Brown	Light Brown	Light Brown	Light Brown	Clear	Clear	Clear	Clear	Clear	Clear	Clear
3	EC_FLD (µmho/cm)	369	330	182	238	226	267	278	332	458	488	438	365
4	EC_GEN (µmho/cm)	365	337	178	230	229	263	270	328	451	484	440	362
5	Odour_Code (-)	odour free	odour free	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	7.5	7.5	7.6	7.6	7.6	7.5	8.2	7.4	7.3	7.1	7.7
7	pH_GEN (pH units)	7.3	7.6	7.5	7.5	7.7	7.7	7.6	8.1	7.3	7.2	7.2	7.6
8	Temp (deg C)	26.0	27.0	26.0	27.0	24.5	24.5	20.5	16.5	19.0	23.5	27.0	20.6
	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
2	ALK-TOT (mgCaCO3/L)	92	92	51	69	92	83	92	102	92	92	92	88
3	B (mg/L)	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.03	0.02	0.01	0.03	0.01
4	Ca (mg/L)	66	63	58	59	33	29	44	37	39	34	35	25
5	Cl (mg/L)	54.7	22.6	17.0	7.5	10.4	13.8	19.0	20.8	24.2	26.0	26.0	24.2
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
7	F (mg/L)	0.05	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)	0.4	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4
9	HCO3 (mg/L)	113	113	62	85	113	101	113	124	113	113	113	107
10	K (mg/L)	5.0	2.8	1.9	2.2	2.6	2.8	2.9	3.2	1.6	2.1	2.5	3.3
11	Mg (mg/L)	25.3	26.2	26.2	27.2	11.1	11.1	12.7	11.2	14.3	11.9	15.9	8.7
12	Na (mg/L)	19.8	15.5	4.8	5.1	5.6	5.9	6.4	16.9	21.8	22.6	23.4	17.8
13	NO2+NO3 (mg N/L)	1.15	1.22	1.19	1.15	1.23	1.18	1.15	1.19	1.22	1.25	1.19	1.23
14	NO2-N (mgN/L)	0.04	0.01	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	NO3-N (mgN/L)	1.11	1.21	1.19	1.12	1.23	1.18	1.15	1.19	1.22	1.25	1.19	1.23
16	P-Tot (mgP/L)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
17	SiO2 (mg/L)	8.0	8.5	7.6	9.3	6.0	8.9	9.5	6.0	7.9	8.5	9.7	8.1
18	SO4 (mg/L)	32.0	23.1	22.7	5.8	9.2	9.4	9.6	9.7	2.9	26.7	24.2	18.3
	BIOLOGICAL/BACTERIOLOGICAL												
1	BOD3-27 (mg/L)	1.2	1.0	0.6	0.6	0.4	0.2	1.2	0.4	1.0	2.2	0.6	2.0
2	DO (mg/L)	1.8	5.8	6.4	6.2	5.8	5.6	7.0	6.4	6.2	1.4	3.2	5.8
3	DO_SAT% (%)	22	72	78	77	68	66	77	64	66	16	40	63
4	FCol-MPN (MPN/100mL)	140	90	60	90	80	90	110	90	120	90	60	90
5	Tcol-MPN (MPN/100mL)	210	220	170	260	210	220	270	260	270	210	170	220
	TRACE & TOXIC												
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	164	156	144	148	82	72	111	92	98	85	88	62
2	HAR_Total (mgCaCO3/L)	270	266	254	262	128	118	164	138	158	135	154	98
3	Na% (%)	14	11	4	4	9	10	8	21	23	26	25	27
4	RSC (-)	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	SAR (-)	0.5	0.4	0.1	0.1	0.2	0.2	0.2	0.6	0.8	0.8	0.8	0.8
	PESTICIDES												

Water Quality Summary for the period : 2017-2018

Station Name : JAMSHEDPUR (ES000N5) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	12	488	182	331
3	EC_GEN (µmho/cm)	12	484	178	328
4	pH_FLD (pH units)	12	8.2	7.1	7.5
5	pH_GEN (pH units)	12	8.1	7.2	7.5
6	Temp (deg C)	12	27.0	16.5	23.5
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	0.0	0.0	0
2	ALK-TOT (mgCaCO3/L)	12	102	51	87
3	B (mg/L)	12	0.03	0.01	0.02
4	Ca (mg/L)	12	66	25	43
5	Cl (mg/L)	12	54.7	7.5	22.2
6	CO3 (mg/L)	12	0.0	0.0	0
7	F (mg/L)	12	0.05	0.05	0.05
8	Fe (mg/L)	12	0.5	0.4	0.5
9	HCO3 (mg/L)	12	124	62	106
10	K (mg/L)	12	5.0	1.6	2.7
11	Mg (mg/L)	12	27.2	8.7	16.8
12	Na (mg/L)	12	23.4	4.8	13.8
13	NO2+NO3 (mg N/L)	12	1.25	1.15	1.2
14	NO2-N (mgN/L)	12	0.04	0.00	0.01
15	NO3-N (mgN/L)	12	1.25	1.11	1.19
16	P-Tot (mgP/L)	12	0.001	0.001	0.001
17	SiO2 (mg/L)	12	9.7	6.0	8.2
18	SO4 (mg/L)	12	32.0	2.9	16.1
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	2.2	0.2	0.9
2	DO (mg/L)	12	7.0	1.4	5.1
3	DO_SAT% (%)	12	78	16	59
4	FCol-MPN (MPN/100mL)	12	140	60	93
5	Tcol-MPN (MPN/100mL)	12	270	170	224
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	164	62	109
2	HAR_Total (mgCaCO3/L)	12	270	98	179
3	Na% (%)	12	27	4	15
4	RSC (-)	12	0.0	0.0	0
5	SAR (-)	12	0.8	0.1	0.5
	PESTICIDES				

Water Quality Seasonal Average for the period: 2003-2018

Station Name : JAMSHEDPUR (ES000N5) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **River Water** **Sub-Division : Balasore**

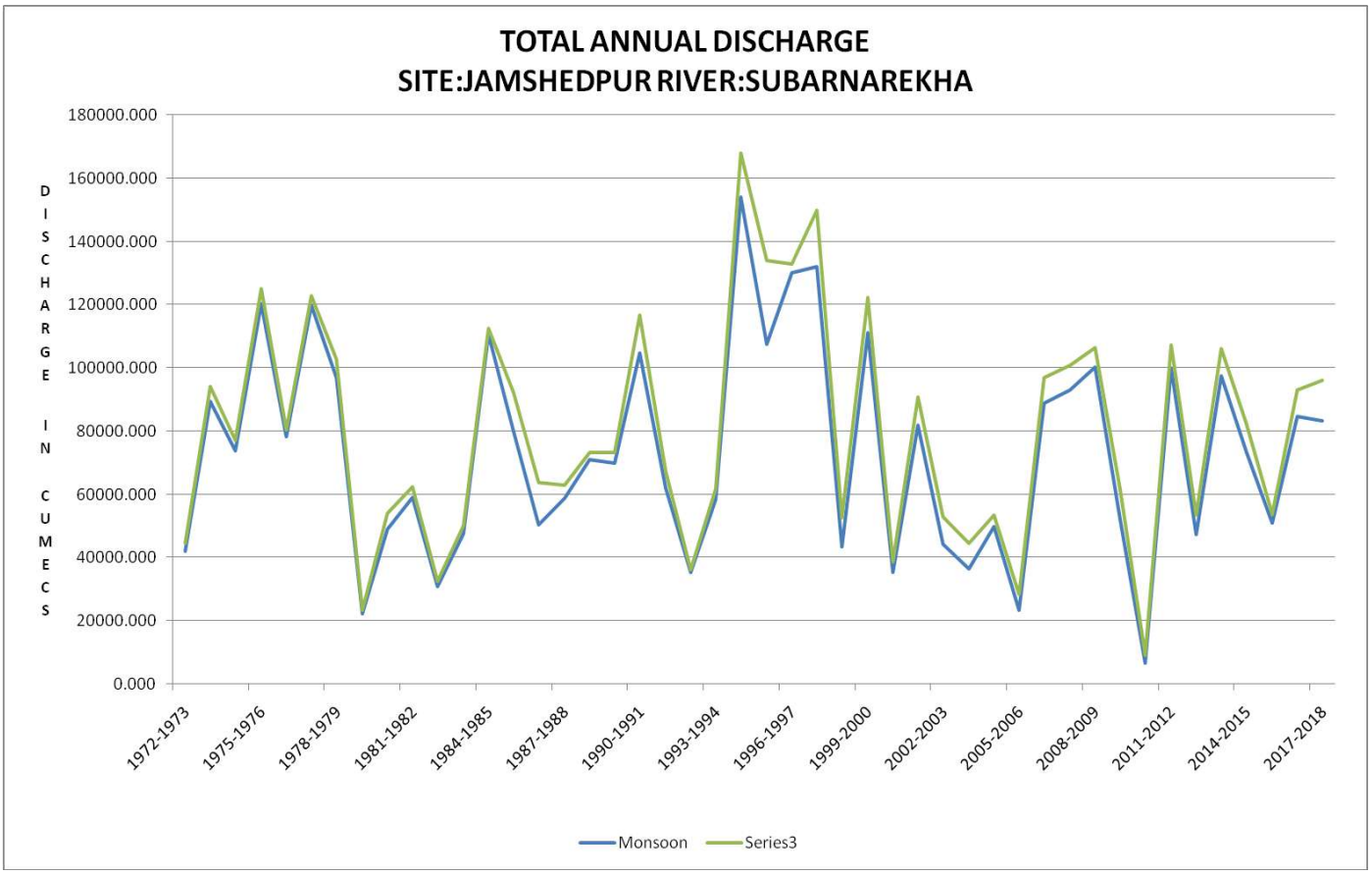
S.No	Parameters	Flood																				
		Jun - Oct																				
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009
	PHYSICAL																					
1	Q (cumec)																					
2	EC_FLD (µmho/cm)	225	250	255	199	233	206	242	368	290	218	177	256	470	289	269	229	222	264	299	247	
3	EC_GEN (µmho/cm)	225	250	249	195	228	206	242	368	290	218	177	256	477	292	268	229	222	260	295	243	
4	pH_FLD (pH units)	7.7	7.9	7.6	7.8	7.9	7.8	7.8	8.1	8.1	7.6	7.6	7.8	7.2	7.4	7.5	7.6	8.0	8.2	8.1	7.9	
5	pH_GEN (pH units)	7.7	7.9	7.7	7.9	7.9	7.8	7.8	8.1	8.1	7.6	7.5	7.8	7.4	7.5	7.5	7.6	8.0	8.2	8.1	8.0	
6	Temp (deg C)	29.6	30.5	29.1	29.7	29.4	29.6	30.2	29.3	29.5	31.0	28.7	29.4	28.2	26.5	26.1	22.2	22.9	20.4	20.8	20.3	
	CHEMICAL																					
1	Alk-Phen (mgCaCO3/L)					0.0	0.0	0.0	4.0	5.5			0.0	0.0	0.0	0.0					0.0	
2	ALK-TOT (mgCaCO3/L)					74	60	60	113	99			189	66	108	79					86	
3	B (mg/L)	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.00	
4	Ca (mg/L)	23	21	25	21	20	17	22	33	26	24	27	20	35	72	56	26	19	25	29	23	
5	Cl (mg/L)	20.9	20.6	25.5	16.5	21.1	18.7	16.7	26.4	37.0	18.5	29.7	37.0	15.5	26.0	22.4	14.8	19.3	24.6	24.4	18.9	
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	6.7	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)	0.04	0.46	0.19	0.04	0.03	0.08	0.08	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.52	0.07	0.08	0.00	
8	Fe (mg/L)		0.1	0.1	0.2	0.2	0.3	0.2	0.2	0.0	0.7	0.2	0.3	0.4	0.6	0.5	0.0	0.1	0.1	0.1	0.2	
9	HCO3 (mg/L)	91	108	98	85	90	73	73	119	107	95	110	107	80	132	97	94	95	102	110	105	
10	K (mg/L)	2.4	4.5	4.4	2.2	2.7	1.9	1.8	4.6	1.5	1.9	1.6	1.5	2.2	6.8	2.9	2.4	1.9	3.1	2.6	2.2	
11	Mg (mg/L)	4.3	8.0	7.3	5.0	7.0	8.0	7.8	12.8	8.2	6.8	3.8	8.2	11.7	24.1	23.2	5.7	8.0	6.8	6.7	8.2	
12	Na (mg/L)	15.6	14.5	17.0	10.9	14.9	13.6	10.3	16.2	10.9	8.1	13.8	10.9	10.4	34.8	10.2	11.0	12.5	16.4	17.7	12.9	
13	NH3-N (mg N/L)																					
14	NO2+NO3 (mg N/L)	0.61	0.97	2.23	1.01	0.66	0.59	0.82	0.92	0.39	0.85	0.80	1.16	1.19	1.10	1.19	1.08	0.66	0.86	1.22	1.03	
15	NO2-N (mgN/L)	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.02	0.02	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	
16	NO3-N (mgN/L)	0.61	0.97	2.22	1.01	0.66	0.59	0.82	0.92	0.32	0.85	0.78	1.14	1.19	1.09	1.17	1.08	0.66	0.86	1.22	1.03	
17	o-PO4-P (mg P/L)	0.134	0.000	0.025	0.000	0.000		0.038	0.083										0.000	0.010	0.000	
18	P-Tot (mgP/L)	0.001	0.017	0.025	0.001	0.001	0.008	0.001	0.053	0.010	0.001	0.003	0.001	0.001	0.010	0.001	0.001	0.001	0.001	0.011	0.001	
19	SiO2 (mg/L)	11.6	22.0	21.9	11.2	9.7	9.4	9.2	9.2	9.2	12.2	10.9	5.2	6.2	6.4	7.9	16.4	22.0	23.8	12.2	9.5	
20	SO4 (mg/L)	7.2	7.2	9.4	5.0	11.5	11.7	15.9	19.9	36.6	50.5	37.3	36.6	11.9	30.3	18.6	8.5	5.1	4.8	7.6	8.2	
	BIOLOGICAL/BACTERIOLOGICAL																					
1	BOD3-27 (mg/L)	1.0	1.1	1.7	1.8	1.8	1.9	2.5	17.6	9.7	1.3	0.9	1.3	8.6	1.0	0.8	1.7	1.9	2.3	6.4	1.9	
2	DO (mg/L)	5.0	5.7	6.0	6.4	6.4	5.9	5.9	4.8	5.4	6.0	6.4	5.4	4.1	5.6	5.2	7.7	7.1	8.0	4.8	7.6	
3	DO_SAT% (%)	66	76	78	84	84	77	78	62	72	80	83	70	52	69	64	87	82	88	54	83	
4	FCol-MPN (MPN/100mL)															92						
5	Tcol-MPN (MPN/100mL)															214						
	TRACE & TOXIC																					
1	Al (mg/L)				4.72																	
	CHEMICAL INDICES																					
1	HAR_Ca (mgCaCO3/L)	57	54	63	52	50	44	55	83	65	60	68	51	88	179	139	64	48	62	72	57	
2	HAR_Total (mgCaCO3/L)	75	84	93	72	79	75	87	137	99	88	84	85	137	279	236	88	80	90	100	91	
3	Na% (%)	31	23	25	25	27	28	20	20	18	16	26	19	14	21	8	21	25	27	27	24	
4	RSC (-)	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
5	SAR (-)	0.8	0.7	0.7	0.6	0.7	0.7	0.5	0.6	0.4	0.4	0.7	0.5	0.4	0.9	0.3	0.5	0.6	0.8	0.8	0.6	
	PESTICIDES																					

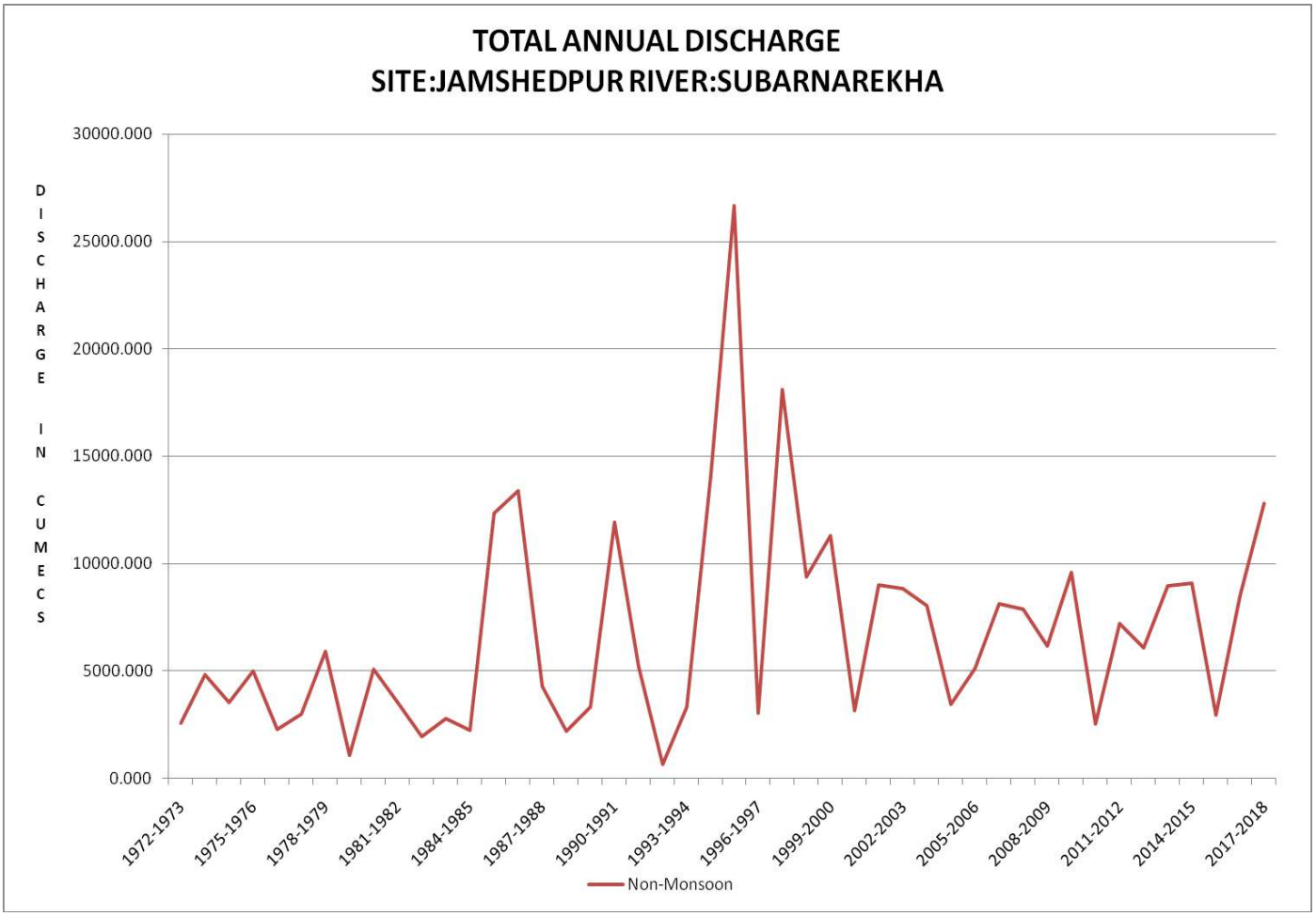
Water Quality Seasonal Average for the period: 2003-2018

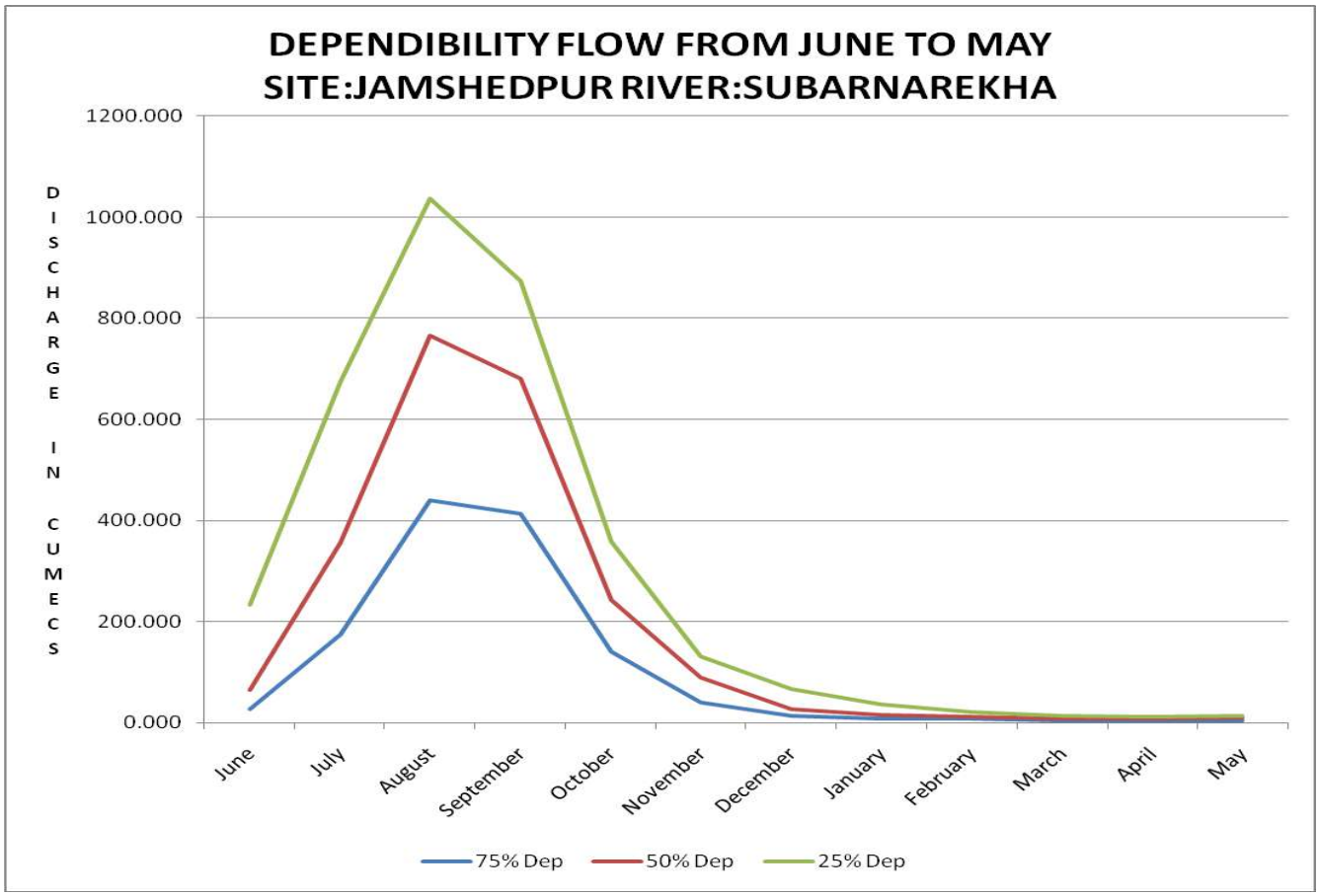
Station Name : JAMSHEDPUR (ES000N5) **Division : E.E., Bhubaneswar**

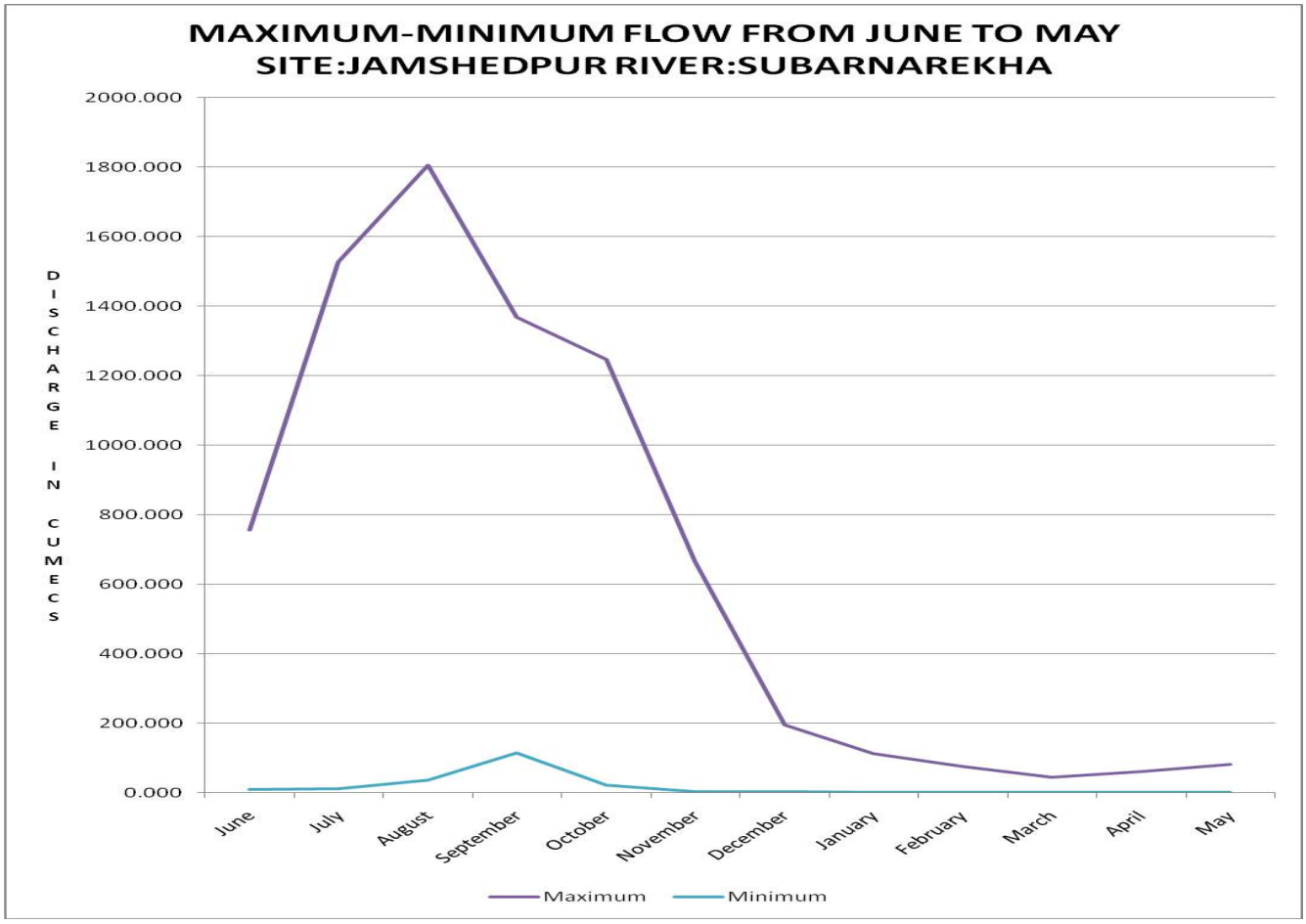
Local River : Subarnarekha **River Water** **Sub-Division : Balasore**

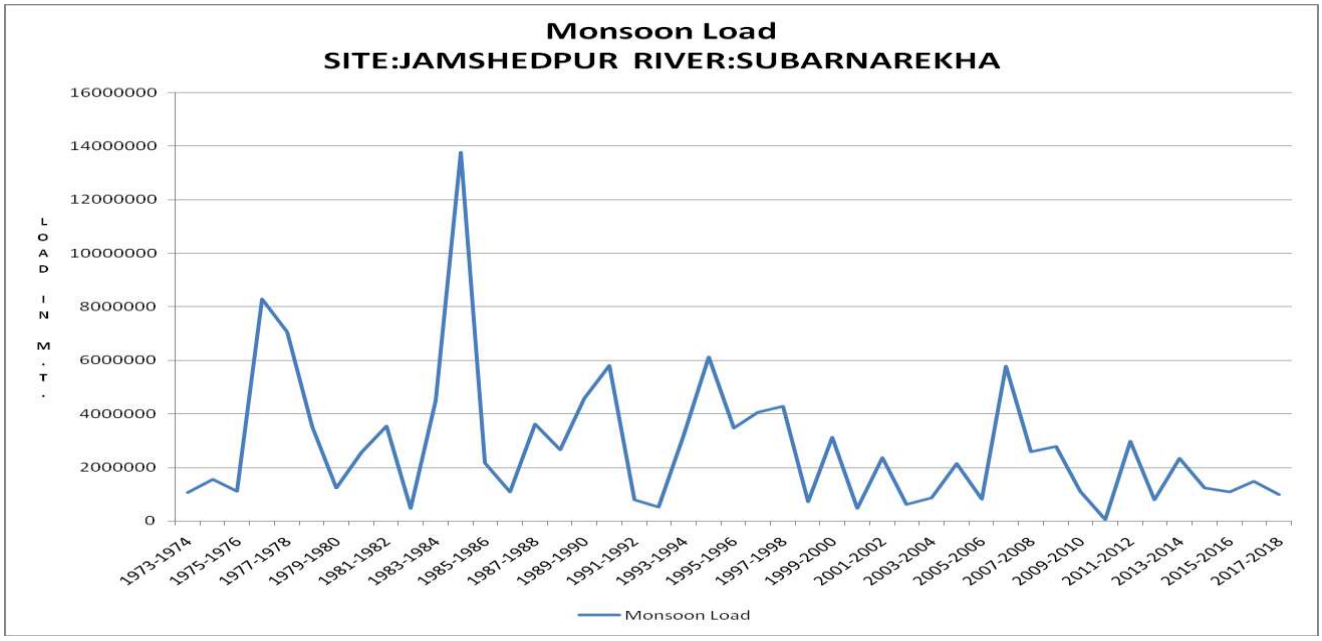
Winter									Summer														
Nov - Feb									Mar - May														
2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
258	353	330	265	208	333	703	510	334	247	512	294	296	338		673	397	243	257	260	503	719	299	430
258	353	330	265	208	333	709	513	328	247	507	290	293	333		673	397	243	257	243	503	723	293	429
7.9	7.4	7.9	7.3	7.7	7.6	7.7	7.6	7.7	7.6	7.7	7.6	7.7	7.9		7.4	8.1	7.5	7.4	7.3	7.9	7.8	7.4	7.4
7.8	7.4	7.9	7.3	7.7	7.6	7.6	7.6	7.7	7.6	7.9	7.6	7.8	7.9		7.4	8.1	7.5	7.4	7.3	7.9	7.8	7.5	7.3
19.8	21.0	21.8	20.1	19.3	19.4	21.1	19.3	20.1	26.8	26.3	26.7	26.3	25.7		26.3	24.1	27.0	26.8	26.5	27.7	29.2	25.2	23.7
0.0	0.0	0.0				3.5	0.0	0.0				0.0	0.0		0.0	20.5	0.0				6.1	0.0	0.0
69	94	91				73	88	92				153	111		193	165	85				132	94	91
0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.02		0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.02	0.02
21	28	27	20	23	24	32	61	37	26	54	31	23	35		48	38	38	20	40	40	60	58	31
19.4	24.5	28.3	21.2	27.7	28.8	16.0	18.8	19.5	21.0	39.0	25.0	37.5	19.7		44.6	25.1	34.6	21.1	43.7	32.2	25.8	21.4	25.4
0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	30.6	0.0	0.0	0.0	0.0	7.4	0.0	0.0
0.09	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.16	0.17	0.06	0.08	0.05		0.35	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
0.2	0.2	0.0	0.8	0.1	0.2	0.3	0.7	0.5		0.1	0.1	0.3	0.3		0.2	0.2	0.0	1.4	0.1	0.2	0.4	0.3	0.5
84	126	111	104	111	106	80	107	113	95	212	114	94	136		236	112	103	91	168	81	147	115	111
1.7	2.9	1.9	2.6	2.0	1.9	3.4	13.4	2.6	2.4	8.0	2.6	2.3	3.2		5.2	3.2	2.6	2.6	3.0	2.4	3.0	16.4	2.6
10.2	14.1	9.5	9.0	6.4	5.3	8.5	24.1	12.3	5.7	12.6	6.5	6.0	11.1		27.9	14.3	7.8	4.8	10.3	10.4	25.0	22.4	12.2
13.2	18.1	10.3	13.8	16.0	9.8	18.2	57.6	12.7	14.5	25.0	18.6	23.6	12.5		27.3	16.1	16.8	14.0	22.1	16.8	30.7	76.8	21.3
													0.05					0.00					
1.13	0.65	0.39	0.82	1.09	1.06	1.03	1.09	1.18	0.72	0.77	0.97	0.51	1.00		3.04	0.78	0.40	0.85	1.04	1.25	0.94	1.18	1.22
0.00	0.00	0.07	0.00	0.02	0.02	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00		0.03	0.00	0.07	0.29	0.03	0.00	0.00	0.01	0.00
1.13	0.65	0.32	0.82	1.06	1.04	1.02	1.06	1.18	0.72	0.77	0.97	0.51	1.00		3.00	0.77	0.33	0.85	1.01	1.25	0.94	1.17	1.22
0.025										0.067	0.045	0.007			0.253								
0.001	0.001	0.010	0.001	0.002	0.001	0.010	0.010	0.001	0.001	0.001	0.046	0.024	0.050		0.001	0.001	0.010	0.001	0.005	0.001	0.010	0.010	0.001
9.0	5.3	11.3	13.0	11.2	5.1	6.0	6.5	8.1	12.7	22.2	17.5	18.0	9.5		9.5	8.0	11.3	13.0	12.5	4.3	5.7	7.7	8.8
17.1	26.3	9.2	13.4	35.7	8.8	15.3	25.0	7.9	8.7	20.2	8.7	2.3	14.9		33.9	15.5	31.7	18.4	75.8	32.9	9.8	19.1	23.1
2.8	2.3	7.1	0.8	1.0	10.6	0.7	1.9	0.7	13.7	52.0	9.0	6.8	20.0		2.4	3.4	2.6	1.1	2.0	1.2	39.7	39.5	1.6
6.7	5.5	5.4	6.1	6.9	5.8	5.7	6.4	6.3	3.3	1.5	3.4	4.3	2.4		4.6	4.3	4.9	5.8	3.8	4.4	1.8	1.7	3.4
73	62	61	67	75	62	63	69	68	42	19	42	53	29		54	50	61	71	45	55	24	21	40
							118	103														70	80
							195	255														150	200
53	71	67	50	58	59	79	153	93	65	135	78	58	89		120	95	95	50	101	100	151	144	78
96	130	107	88	85	81	115	254	144	88	162	105	83	135		236	154	127	70	144	143	255	237	129
23	23	17	26	29	20	25	31	15	26	22	27	39	17		23	19	22	30	25	20	22	39	26
0.0	0.0	0.0	0.2	0.2	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	0.3	0.0	0.0	0.0	0.0
0.6	0.7	0.4	0.7	0.8	0.5	0.7	1.6	0.5	0.7	0.8	0.8	1.2	0.5		0.8	0.6	0.7	0.7	0.8	0.6	0.9	2.2	0.8

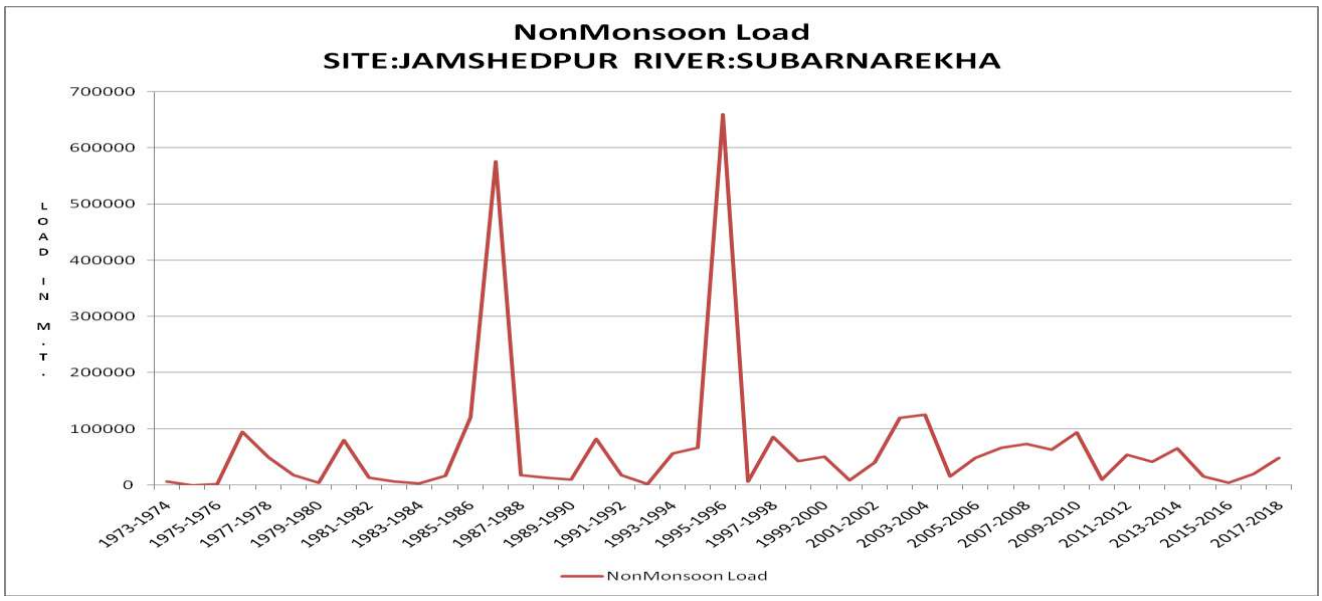

TOTAL ANNUAL DISCHARGE
SITE:JAMSHEDPUR RIVER:SUBARNAREKHA
DISCHARGE IN CUMECS
180000.000
160000.000
140000.000
120000.000
100000.000
80000.000
60000.000
40000.000
20000.000
0.000
1972-1973
1975-1976
1978-1979
1981-1982
1984-1985
1987-1988
1990-1991
1993-1994
1996-1997
1999-2000
2002-2003
2005-2006
2008-2009
2011-2012
2014-2015
2017-2018
Monsoon
Series3

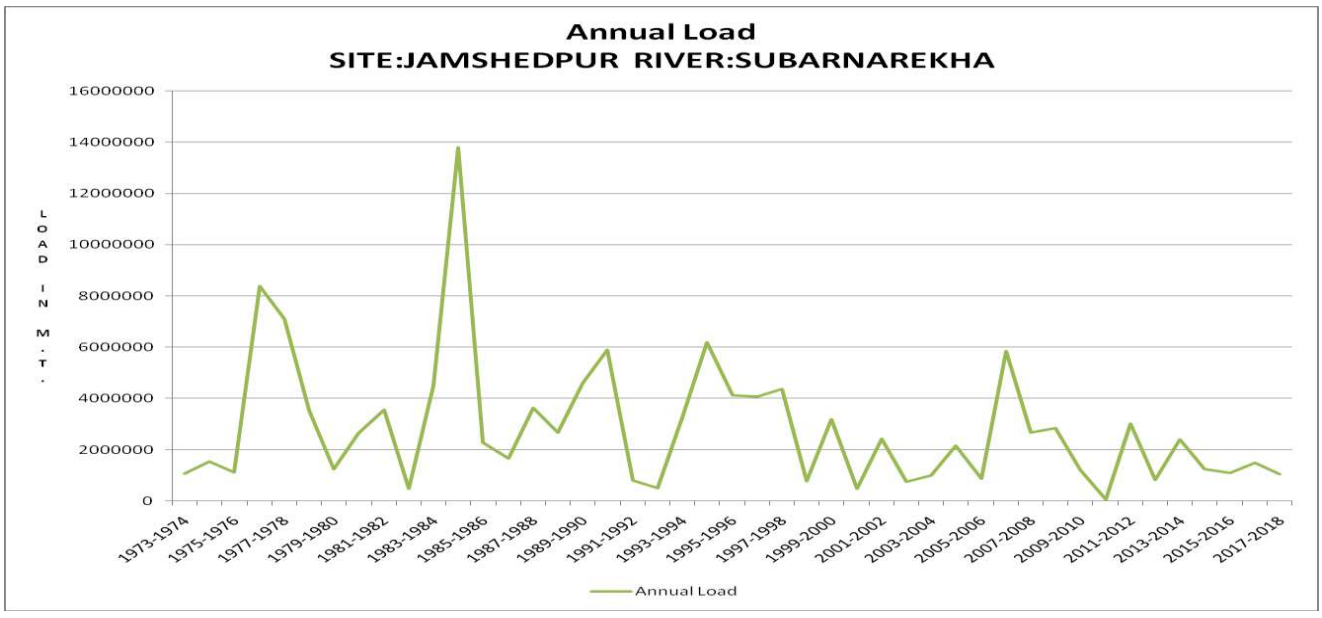

TOTAL ANNUAL DISCHARGE
SITE:JAMSHEDPUR RIVER:SUBARNAREKHA
DISCHARGE IN CUMECS
30000.000
25000.000
20000.000
15000.000
10000.000
5000.000
0.000
1972-1973
1975-1976
1978-1979
1981-1982
1984-1985
1987-1988
1990-1991
1993-1994
1996-1997
1999-2000
2002-2003
2005-2006
2008-2009
2011-2012
2014-2015
2017-2018
Non-Monsoon

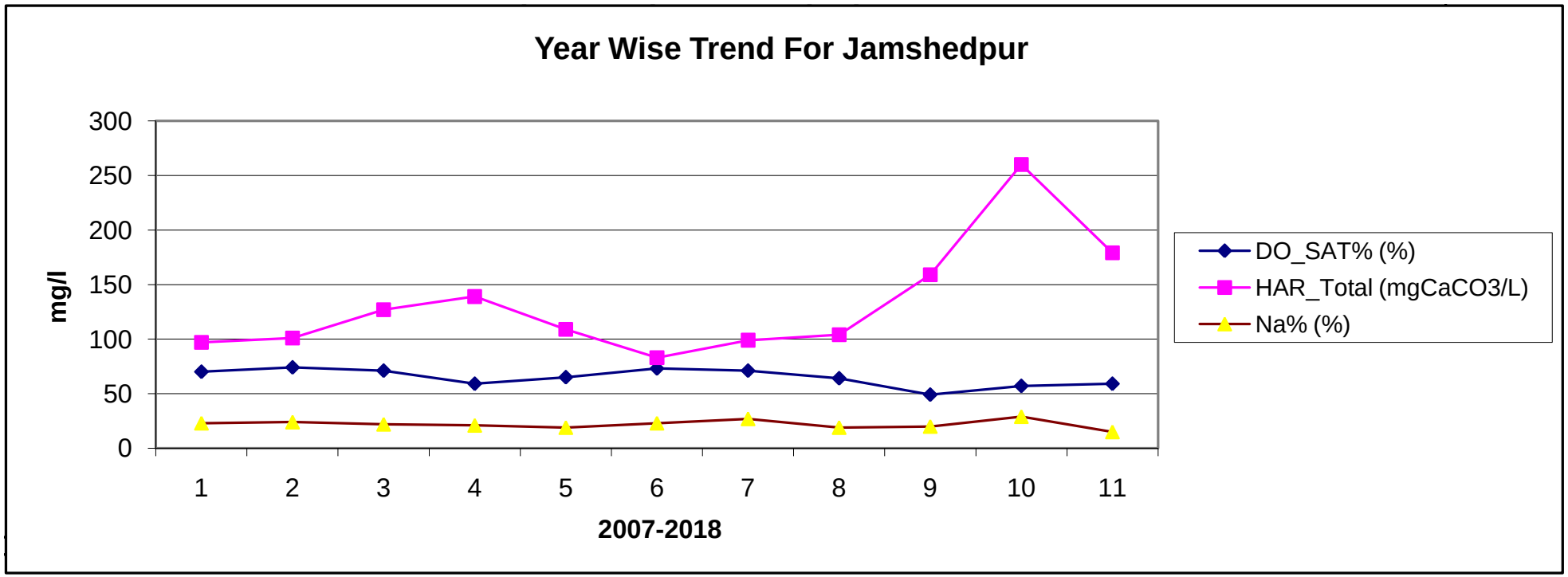

DEPENDIBILITY FLOW FROM JUNE TO MAY
SITE:JAMSHEDPUR RIVER:SUBARNAREKHA
DISCHARGE IN CUMECS
1200.000
1000.000
800.000
600.000
400.000
200.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
75% Dep
50% Dep
25% Dep

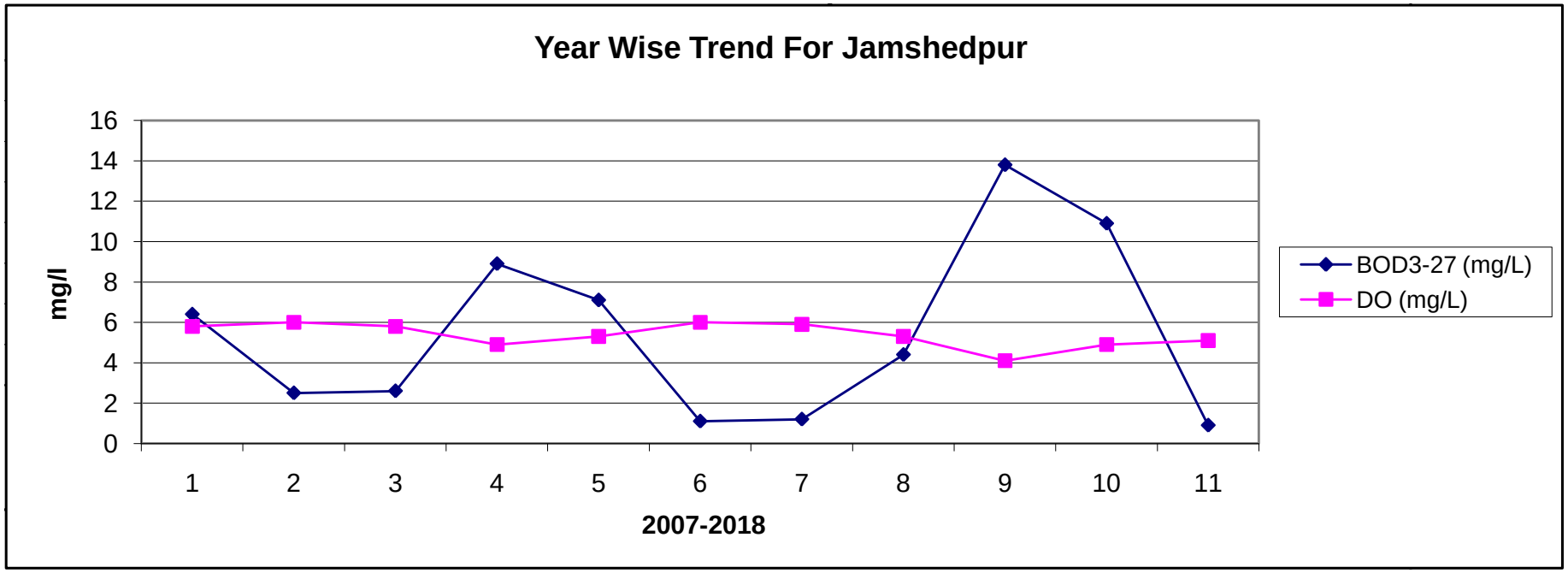

MAXIMUM-MINIMUM FLOW FROM JUNE TO MAY
SITE:JAMSHEDPUR RIVER:SUBARNAREKHA
DISCHARGE IN CUMECS
2000.000
1800.000
1600.000
1400.000
1200.000
1000.000
800.000
600.000
400.000
200.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
Maximum
Minimum

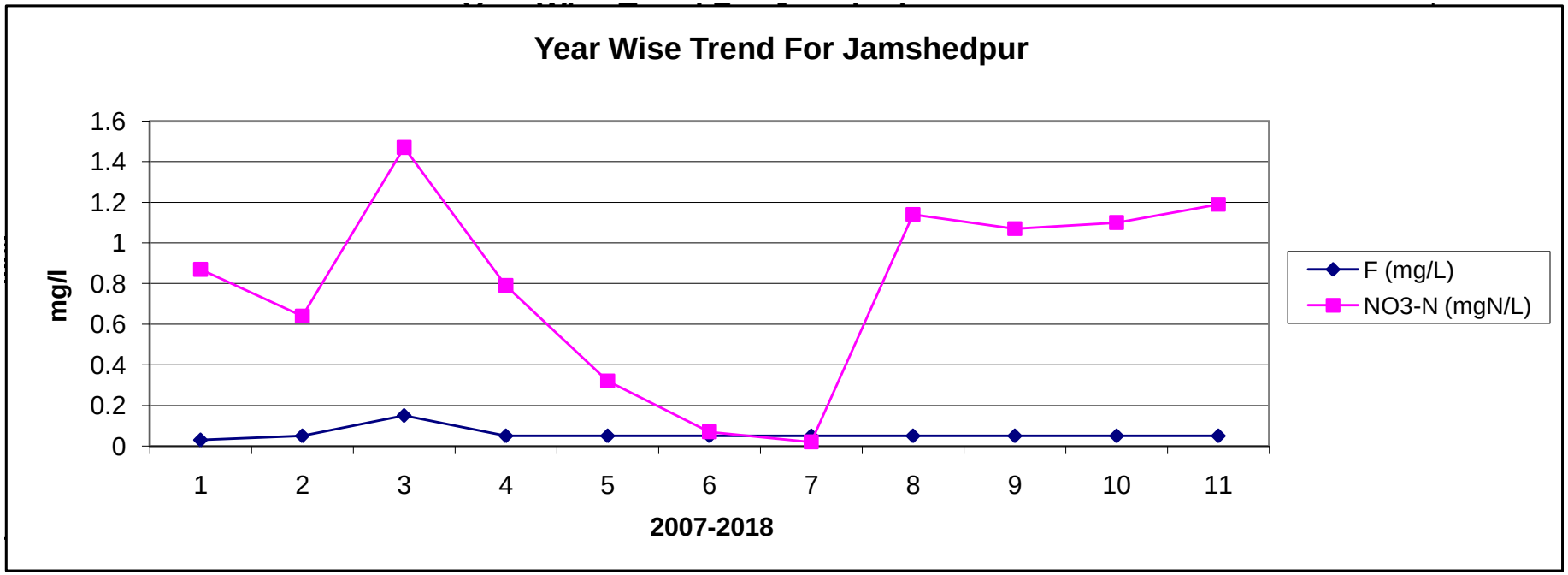

Monsoon Load
SITE:JAMSHEDPUR RIVER:SUBARNAREKHA
LOAD IN M.T.
16000000
14000000
12000000
10000000
8000000
6000000
4000000
2000000
0
1973-1974
1975-1976
1977-1978
1979-1980
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
Monsoon Load

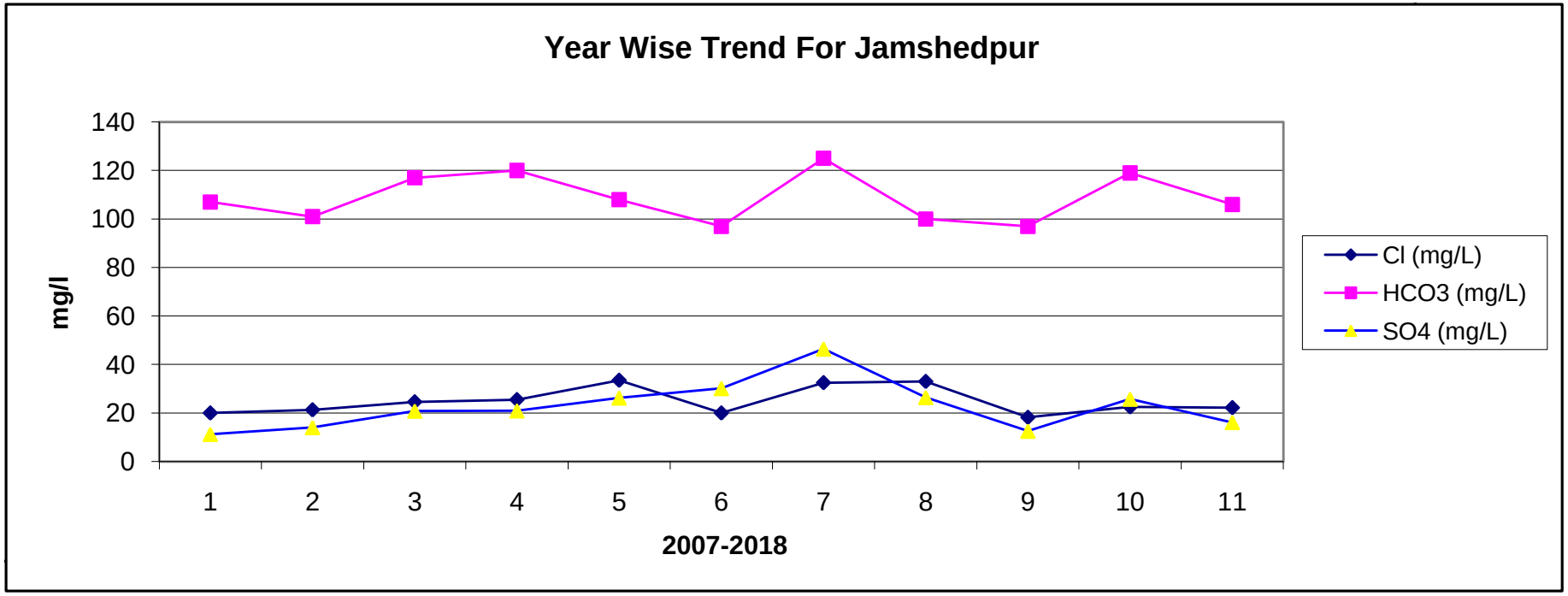

NonMonsoon Load
SITE:JAMSHEDPUR RIVER:SUBARNAREKHA
LOAD IN M.T.
700000
600000
500000
400000
300000
200000
100000
0
1973-1974
1975-1976
1977-1978
1979-1980
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
NonMonsoon Load

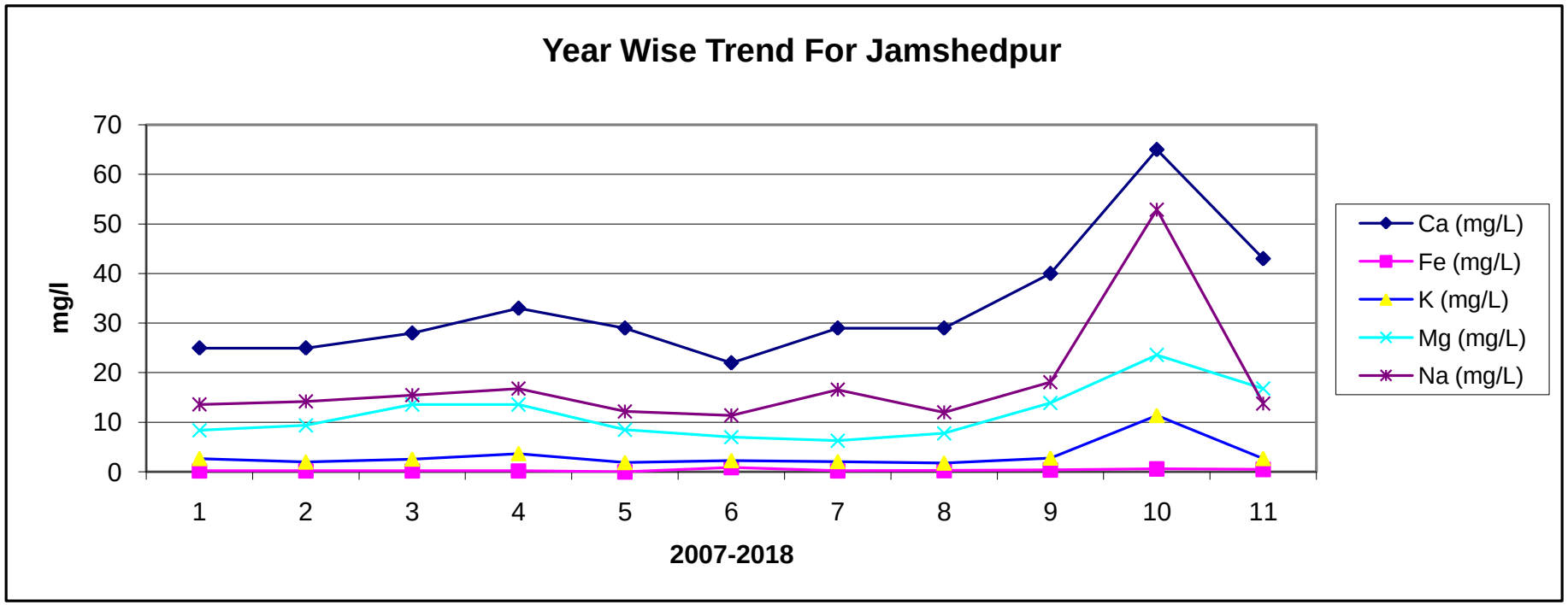

Annual Load
SITE:JAMSHEDPUR RIVER:SUBARNAREKHA
LOAD IN M.T.
16000000
14000000
12000000
10000000
8000000
6000000
4000000
2000000
0
1973-1974
1975-1976
1977-1978
1979-1980
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
Annual Load


Year Wise Trend For Jamshedpur
300
250
200
150
100
50
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
DO_SAT% (%)
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For Jamshedpur
16
14
12
10
8
6
4
2
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
BOD3-27 (mg/L)
DO (mg/L)


Year Wise Trend For Jamshedpur
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
2007-2018
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend For Jamshedpur
140
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year Wise Trend For Jamshedpur
70
60
50
40
30
20
10
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Ca (mg/L)
Fe (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

HISTORY SHEET

Water Year : 2017-2018

Site	:	**GHATSHILA**	**Code**	:	**ES000K7**
State	:	Jharkhand	District		Purba Singbhum
Basin	:	Subarnarekha	Independent River	:	Subarnarekha
Tributary	:	-	Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	Subarnarekha
Division	:	E.E., Bhubaneswar	Sub-Division	:	Balasore
Drainage Area	:	14176 Sq. Km.	Bank	:	Left
Latitude	:	22°34'49"	Longitude	:	86°10'06"
Zero of Gauge (m)	:	45 (m.s.l)	3/16/1971	-	4/20/1972
		72 (m.s.l)	4/21/1972	-	3/16/2031
		Opening Date	Closing Date		
Gauge	:	3/16/1971			
Discharge	:	3/16/1971			
Sediment	:	12/30/1972			
Water Quality	:	9/1/1972			

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

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1971-1972	5820	54.825	8/10/1971	1.000	74.363	5/22/1972
1972-1973	1968	80.360	9/12/1972	0.600	74.418	6/3/1972
1973-1974	8102	84.915	#########	1.000	74.340	5/7/1974
1974-1975	9580	85.050	8/17/1974	1.100	74.310	4/15/1975
1975-1976	8424	83.695	8/20/1975	0.900	74.338	5/10/1976
1976-1977	8792	82.450	9/18/1976	1.032	74.000	6/4/1976
1977-1978	5560	82.200	8/7/1977	1.890	74.105	4/17/1978
1978-1979	9210	84.680	9/3/1978	2.280	74.055	5/31/1979
1979-1980	2386	79.140	8/9/1979	1.280	74.020	6/6/1979
1980-1981	910.7	77.920	9/7/1980	5.110	74.230	4/14/1981
1981-1982	972.5	78.510	8/21/1981	1.080	74.295	5/16/1982
1982-1983	1474	78.950	8/21/1982	0.730	74.255	4/13/1983
1983-1984	1686	79.105	9/7/1983	1.830	74.395	5/8/1984
1984-1985	3845	81.730	8/9/1984	1.386	74.135	5/2/1985
1985-1986	8630	82.450	#########	0.500	74.280	5/11/1986
1986-1987	1480	79.050	7/8/1986	1.100	74.230	5/31/1987
1987-1988	5086	80.800	8/28/1987	1.220	74.220	6/1/1987
1988-1989	6666	82.685	6/28/1988	1.100	73.945	5/26/1989
1989-1990	5400	81.560	8/5/1989	1.900	74.040	4/27/1990
1990-1991	3068	79.955	8/3/1990	2.000	74.125	5/19/1991
1991-1992	3776	80.410	8/23/1991	2.000	74.200	5/24/1992

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

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1992-1993	2020	79.120	9/27/1992	0.679	74.180	2/22/1993
1993-1994	1761	78.705	9/15/1993	3.080	74.315	5/10/1994
1994-1995	5989	81.860	8/4/1994	1.219	74.030	5/9/1995
1995-1996	3745	80.370	9/18/1995	2.777	74.470	4/23/1996
1996-1997	5867	80.590	6/23/1996	1.238	74.100	3/15/1997
1997-1998	10582	83.650	8/6/1997	15.68	74.460	6/12/1997
1998-1999	3015	79.850	9/13/1998	9.500	74.280	4/30/1999
1999-2000	5400	81.560	8/8/1999	4.728	74.230	3/22/2000
2000-2001	2521	79.080	7/26/2000	5.921	74.260	2/24/2001
2001-2002	4699	81.280	7/12/2001	11.29	74.530	5/7/2002
2002-2003	2037	79.000	9/12/2002	11.33	74.300	5/30/2003
2003-2004	1703	78.440	#########	7.697	74.320	4/24/2004
2004-2005	4000	80.260	8/22/2004	5.113	74.240	5/3/2005
2005-2006	1602	78.210	6/30/2005	4.238	74.130	3/30/2006
2006-2007	4600	81.220	7/30/2006	14.50	74.130	4/15/2007
2007-2008	6061	82.315	7/7/2007	16.30	73.920	3/23/2008
2008-2009	9609	84.590	6/18/2008	21.40	74.010	2/13/2009
2009-2010	4192	80.555	9/8/2009	0.399	73.600	3/12/2010
2010-2011	410.9	75.800	9/20/2010	20.12	73.770	1/4/2011
2011-2012	5580	80.890	9/23/2011	40.51	74.180	6/10/2011
2012-2013	2300	79.080	8/15/2012	18.07	74.180	3/19/2013
2013-2014	4886	81.650	8/21/2013	16.94	73.600	7/1/2013
2014-2015	5619	76.980	9/3/2014	30.00	74.280	6/1/2014
2015-2016	1747	81.350	7/29/2015	17.00	74.300	4/17/2016
2016-2017	4012	80.940	9/6/2016	14.40	74.190	6/19/2016
2017-2018	5191	81.520	7/27/2017	10.04	74.520	5/15/2018

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

Stage-Discharge Data for the period 2017 - 2018

Station Name : GHATSHILA (ES000K7) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

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	74.780	33.85	74.360	33.99	77.740	1090	76.060	245.3	75.830	212.0 *	75.300	135.9
2	74.800	34.01	74.600	32.90 *	77.540	918.3	76.190	268.0 *	75.800	211.0 *	75.240	133.4
3	74.790	33.72	74.620	32.92	77.500	643.9	76.960	260.0 *	75.770	210.2	74.950	106.0
4	74.790	33.70 *	74.760	33.62	77.040	756.2	76.600	470.0	75.930	225.4	74.950	105.0 *
5	74.780	33.33	74.980	38.45	77.480	830.6	76.290	376.2	77.050	329.3	74.950	105.2 *
6	74.760	33.11	74.860	34.38	79.870	2892 *	76.190	268.6	76.980	302.4	74.920	102.5
7	74.760	32.92	74.840	63.85	79.190	2877	76.040	254.2	75.970	231.3	74.900	100.4
8	74.750	32.74	74.815	210.4	78.630	1972	75.800	216.7	75.880	220.0 *	74.870	95.63
9	74.750	32.46	74.780	33.59 *	78.170	1818	75.750	218.1	76.120	233.5	74.870	94.66
10	74.740	32.27	74.780	33.59	77.520	912.7	75.280	141.0 *	76.070	220.9	74.900	93.27
11	74.740	32.20 *	74.780	33.67	76.720	461.2	75.150	144.9	76.210	215.4	74.900	93.35
12	74.750	37.15	74.800	33.96	76.100	256.5	75.060	117.0	75.920	204.5	74.900	93.00 *
13	74.750	40.57	74.950	53.44	75.770	250.0 *	75.290	141.9	75.630	161.6	74.880	89.02
14	74.750	45.28	74.480	61.31	76.090	249.4	75.300	143.5	75.720	167.6	74.860	92.06
15	74.740	42.64	75.020	63.13	77.050	339.0 *	75.060	127.7	75.820	171.0 *	74.850	90.44
16	74.740	41.67	74.880	60.00 *	78.110	1289	75.120	136.1	75.860	170.0	74.850	88.24
17	74.740	43.90	75.150	74.18	78.150	1240	75.200	128.9 *	75.640	161.7	74.880	91.15
18	74.760	32.77	75.250	76.57	77.900	772.1	75.170	128.8	75.375	137.0	74.860	87.16
19	74.760	32.70 *	75.040	75.55	78.000	789.6	75.560	144.5	75.370	145.0 *	74.870	87.00 *
20	74.760	33.13	75.320	80.95	77.820	460.0 *	76.040	267.0	75.420	148.3	74.900	89.07
21	74.780	31.51	75.180	76.61	77.340	498.9	76.650	325.7	76.200	216.3	74.400	73.80
22	74.800	33.63	75.690	224.2	77.240	432.3	76.300	243.9	75.830	210.0 *	74.380	71.80
23	74.800	33.84	76.290	230.2 *	77.000	339.7	76.250	241.3	76.780	448.0	74.850	77.91
24	74.800	33.64	79.730	3968	76.360	247.3	75.940	220.0 *	76.150	210.4	74.840	76.79
25	74.810	33.66 *	80.990	4650	76.230	240.5	75.420	149.9	75.720	163.6	74.860	86.75
26	74.830	48.79 *	81.040	4963	76.400	249.9	75.170	130.0	75.380	145.4	74.860	86.00 *
27	74.840	49.01	81.520	5191	76.640	460.0 *	75.200	129.0	75.160	135.8	74.880	90.96
28	74.840	50.39	79.400	3045	76.250	238.9	75.370	137.2	75.220	139.6	74.880	89.93
29	74.840	50.16	78.010	1605	76.030	226.2	75.530	140.0 *	75.250	140.0 *	74.870	87.75
30	74.830	48.79	77.860	1095 *	76.930	498.3	75.490	135.0 *	75.310	143.8	74.850	82.30
31			77.450	1095	76.560	468.3			75.400	142.9		
Ten-Daily Mean												
I Ten-Daily	74.770	33.21	74.740	54.77	78.068	1471	76.116	271.8	76.140	239.6	74.985	107.2
II Ten-Daily	74.749	38.20	74.967	61.28	77.171	610.7	75.295	148.0	75.697	168.2	74.875	90.05
III Ten-Daily	74.817	41.34	78.469	2377	76.635	354.6	75.732	185.2	75.673	190.5	74.767	82.40
Monthly												
Min.	74.740	31.51	74.360	32.90	75.770	226.2	75.060	117.0	75.160	135.8	74.380	71.80
Max.	74.840	50.39	81.520	5191	79.870	2892	76.960	470.0	77.050	448.0	75.300	135.9
Mean	74.779	37.58	76.136	880.8	77.270	797.3	75.714	201.7	75.831	199.2	74.876	93.22

Annual Runoff in MCM = 6380 Annual Runoff in mm = 450

Peak Observed Discharge = 5191 cumecs on 27-Jul-17 Corres. Water Level :81.52 m

Lowest Observed Discharge = 10.04 cumecs on 15-May-18 Corres. Water Level :74.52 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

Stage-Discharge Data for the period 2017 - 2018

Station Name : GHATSHILA (ES000K7) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	74.820	76.20	74.680	71.19	74.520	32.08	74.470	16.43	74.500	12.86 *	74.570	12.76
2	74.820	76.00 *	74.680	71.10	74.520	32.07	74.470	16.40 *	74.500	12.86	74.570	12.76
3	74.820	76.00 *	74.650	66.25	74.500	24.08	74.470	16.43	74.520	12.98	74.570	12.76
4	74.680	72.67	74.640	64.69	74.500	24.00 *	74.470	16.40 *	74.520	12.98	74.570	12.75
5	74.520	68.04	74.640	64.52	74.500	24.08	74.460	15.58	74.510	12.95	74.550	11.56
6	74.500	67.04	74.640	64.59	74.510	28.18	74.460	15.57	74.510	12.95	74.550	11.56 *
7	74.480	65.93	74.640	64.50 *	74.510	28.17	74.480	17.37	74.510	12.94	74.550	11.56
8	74.620	69.82	74.620	60.08	74.510	28.16	74.480	17.37	74.510	12.94 *	74.540	11.05
9	74.660	71.79	74.620	60.09	74.500	24.08	74.480	17.36	74.530	13.02	74.540	11.05
10	74.680	73.00 *	74.620	60.04	74.500	24.08	74.490	18.38	74.530	13.02	74.540	11.05
11	74.700	73.62	74.600	55.53	74.500	24.00 *	74.490	18.38 *	74.530	13.01	74.540	11.05
12	74.720	73.98	74.600	55.52	74.500	24.07	74.490	18.38	74.540	13.05	74.520	10.06
13	74.730	74.03	74.580	52.01	74.490	20.11	74.490	18.38	74.640	13.51	74.520	10.06 *
14	74.730	73.71	74.580	52.00 *	74.490	20.10	74.490	18.37	74.700	13.80 *	74.520	10.05
15	74.740	74.06	74.580	52.18	74.510	28.18	74.480	17.35	74.650	13.50 *	74.520	10.04
16	74.740	73.92	74.570	49.89	74.510	28.17	74.480	17.35	74.620	13.41	74.530	10.49
17	74.740	73.95 *	74.570	49.88	74.510	28.17	74.480	17.34	74.620	13.41	74.540	11.05
18	74.750	74.03	74.570	49.88	74.510	28.10 *	74.480	17.34 *	74.620	13.40	74.540	11.06
19	74.750	73.99	74.560	47.51	74.500	24.09	74.480	17.33	74.600	13.31	74.540	11.06
20	74.750	74.06	74.560	47.52	74.500	24.09	74.500	19.48	74.600	13.30	74.540	11.06 *
21	74.750	73.87	74.560	47.50 *	74.500	24.08	74.500	19.47	74.600	13.30	74.550	11.56
22	74.740	73.74	74.550	44.51	74.500	24.19	74.500	19.47	74.600	13.30 *	74.550	11.56
23	74.740	73.50	74.550	44.51	74.490	20.09	74.500	19.46	74.580	13.20	74.560	12.42
24	74.740	73.45 *	74.550	44.52	74.490	20.09	74.500	19.45	74.580	13.21	74.560	12.42
25	74.740	73.43 *	74.540	41.96	74.490	20.00 *	74.510	20.70 *	74.580	13.20	74.560	12.42
26	74.730	72.99	74.540	41.60 *	74.490	20.08	74.510	20.70	74.570	13.10	74.570	13.32
27	74.710	71.87	74.540	41.45	74.480	16.07	74.510	20.69	74.570	13.11	74.570	13.32 *
28	74.690	70.62	74.540	41.30 *	74.480	16.06	74.510	20.68	74.570	13.11	74.580	14.46
29			74.530	37.51			74.510	20.60 *	74.560	13.00 *	74.580	14.46
30			74.530	37.52			74.500	19.44 *	74.560	13.00 *	74.580	14.43
31			74.530	37.50			74.500	19.44			74.570	14.12
Ten-Daily Mean												
I Ten-Daily	74.660	71.65	74.643	64.71	74.507	26.90	74.473	16.73	74.514	12.95	74.555	11.89
II Ten-Daily	74.735	73.93	74.577	51.19	74.502	24.91	74.486	17.97	74.612	13.37	74.531	10.60
III Ten-Daily	74.730	72.93	74.542	41.81	74.490	20.08	74.505	20.01	74.577	13.15	74.566	13.13
Monthly												
Min.	74.480	65.93	74.530	37.50	74.480	16.06	74.460	15.57	74.500	12.86	74.520	10.04
Max.	74.820	76.20	74.680	71.19	74.520	32.08	74.510	20.70	74.700	13.80	74.580	14.46
Mean	74.707	72.83	74.586	52.22	74.500	24.24	74.488	18.29	74.568	13.16	74.551	11.91

Peak Computed Discharge = 2892 cumecs on 06-Aug-17 Corres. Water Level :79.87 m

Lowest Computed Discharge = 10.06 cumecs on 13-May-18 Corres. Water Level :74.52 m

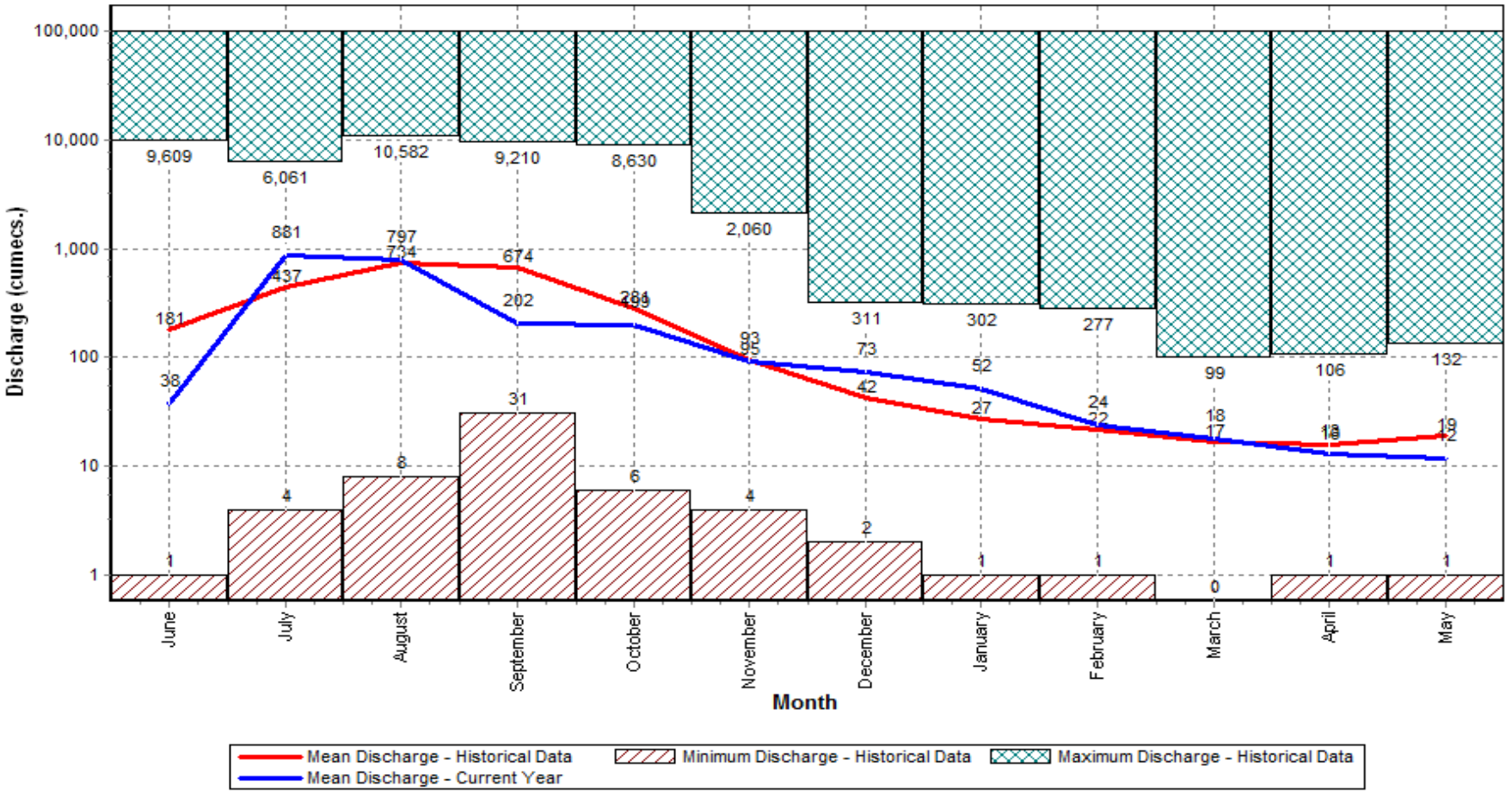
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2017-2018

Station Name : GHATSHILA (ES000K7) **Data considered : 1971-2018** **Division : E.E., Bhubaneswar**

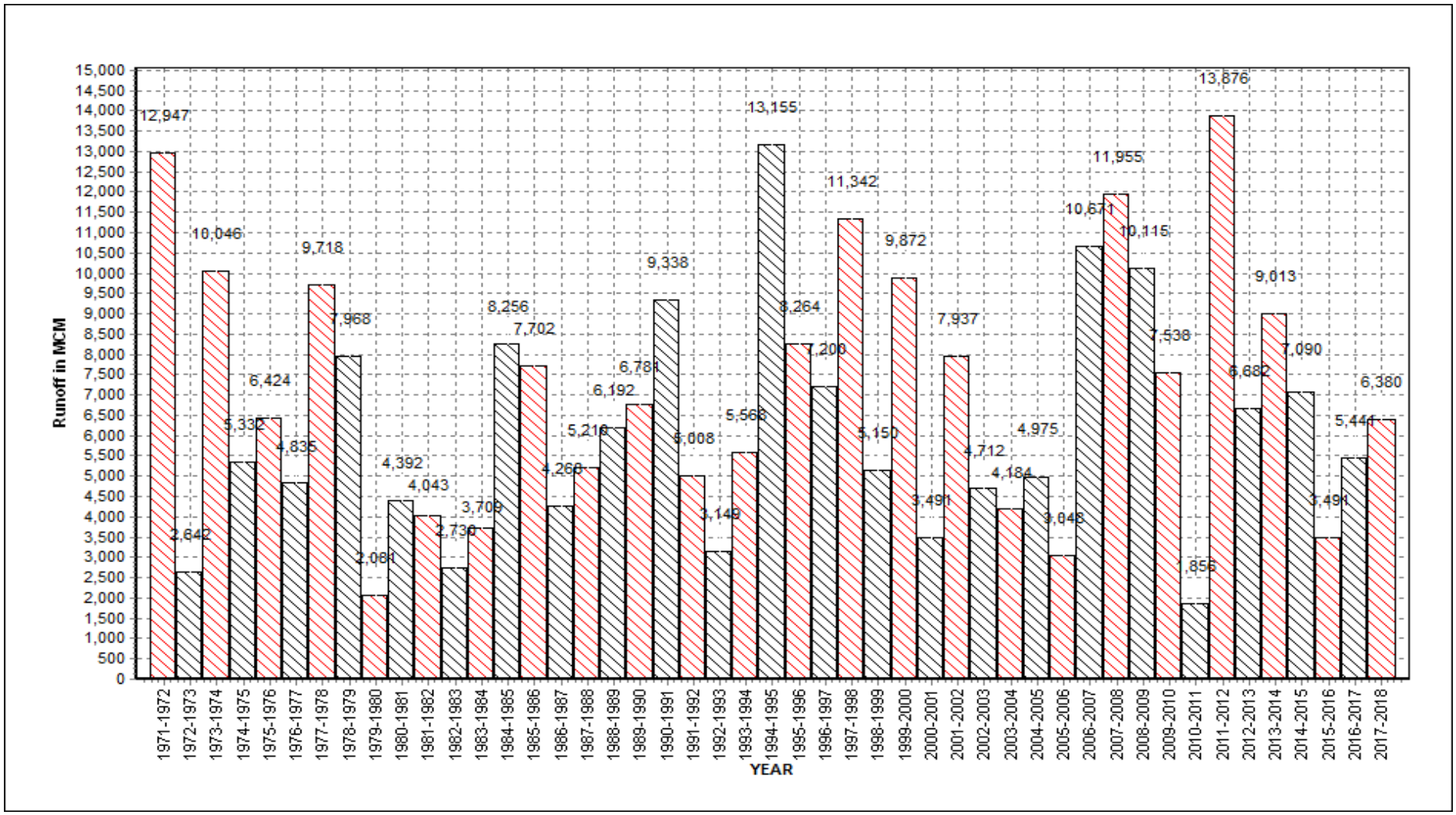
Local River : Subarnarekha **Sub-Division : Balasore**



Annual Runoff Values for the period: 1971 - 2018

Station Name : GHATSHILA (ES000K7) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

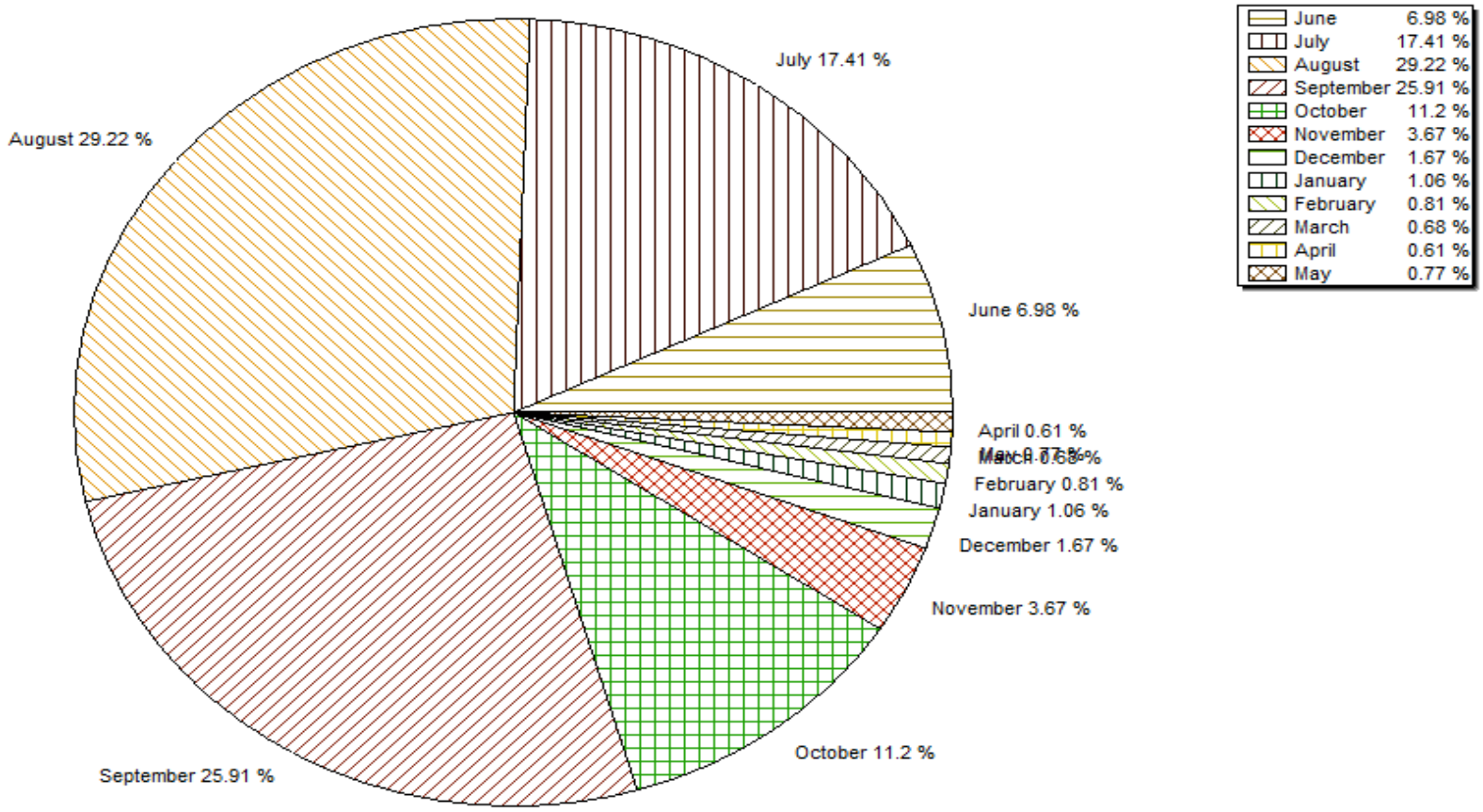


Note: Missing values have not been considered while arriving at Annual Runoff

Monthly Average Runoff based on period : 1971-2017

Station Name : GHATSHILA (ES000K7) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**



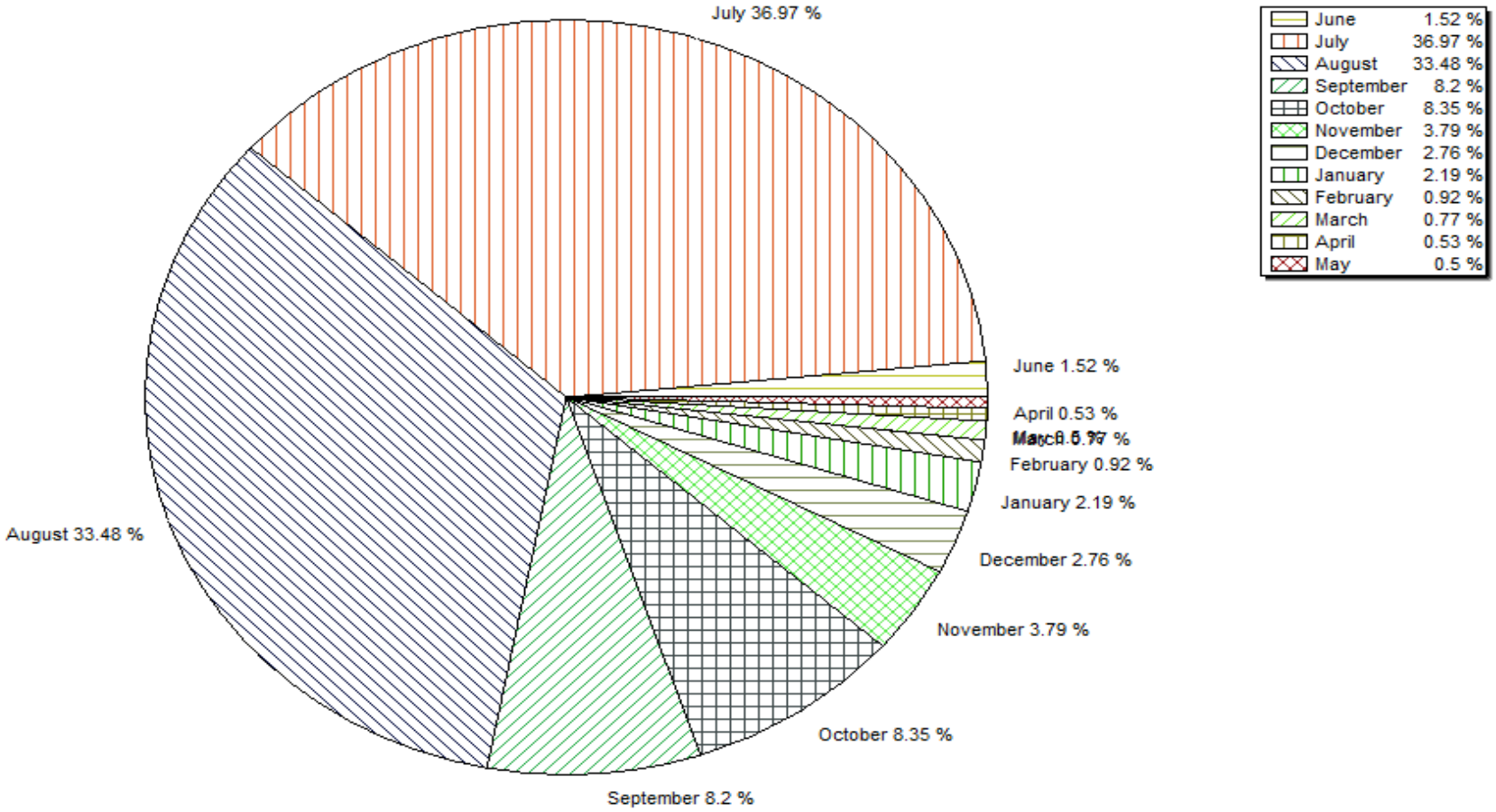
Monthly Runoff for the Year : 2017-2018

Station Name : GHATSHILA (ES000K7)

Local River : Subarnarekha

Division : E.E., Bhubaneswar

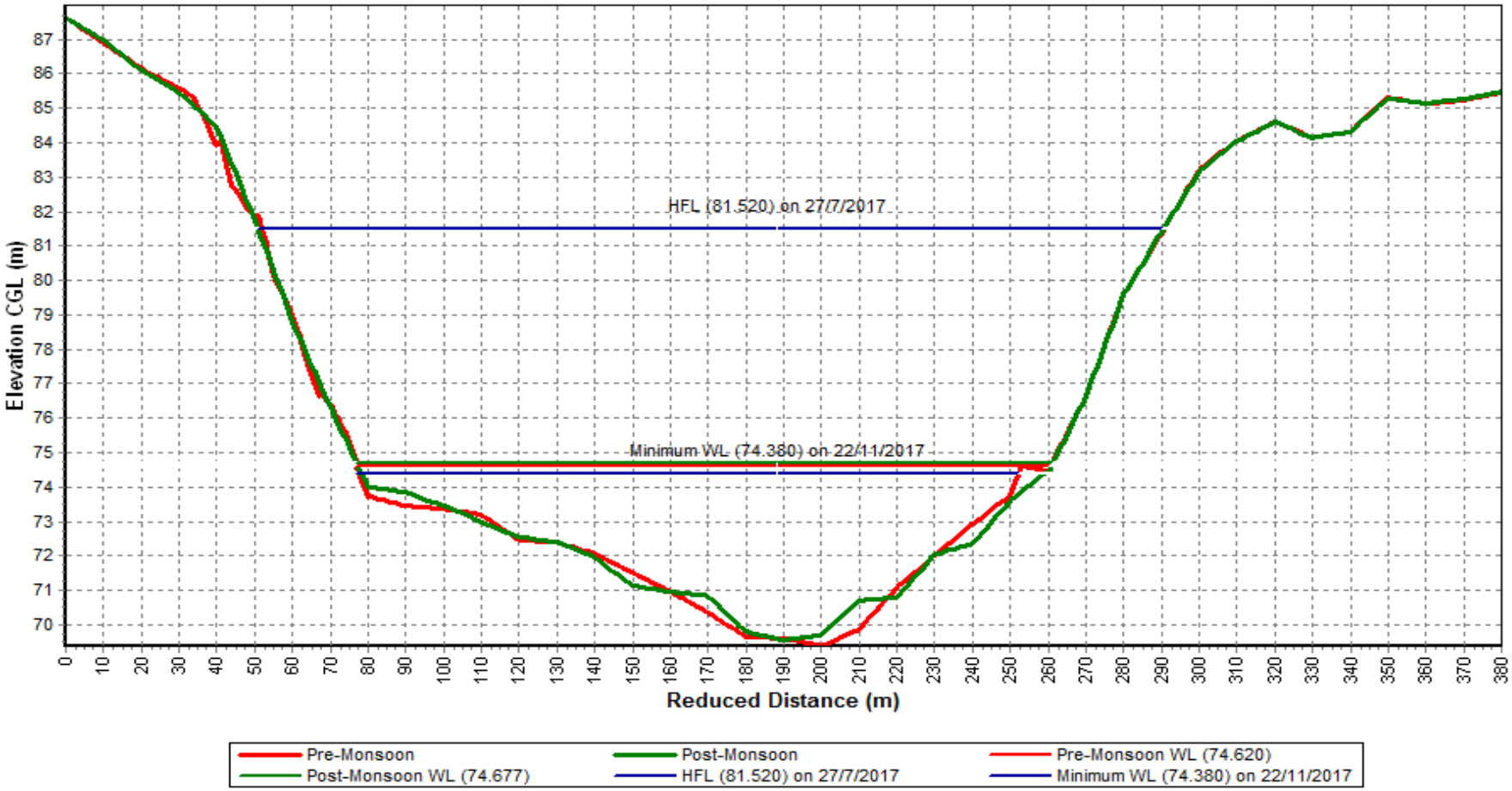
Sub-Division : Balasore



Pre-Monsoon & Post-Monsoon X-Section for Water Year : 2017-2018

Station Name : GHATSHILA (ES000K7) **Division : E.E., Bhubaneswar**

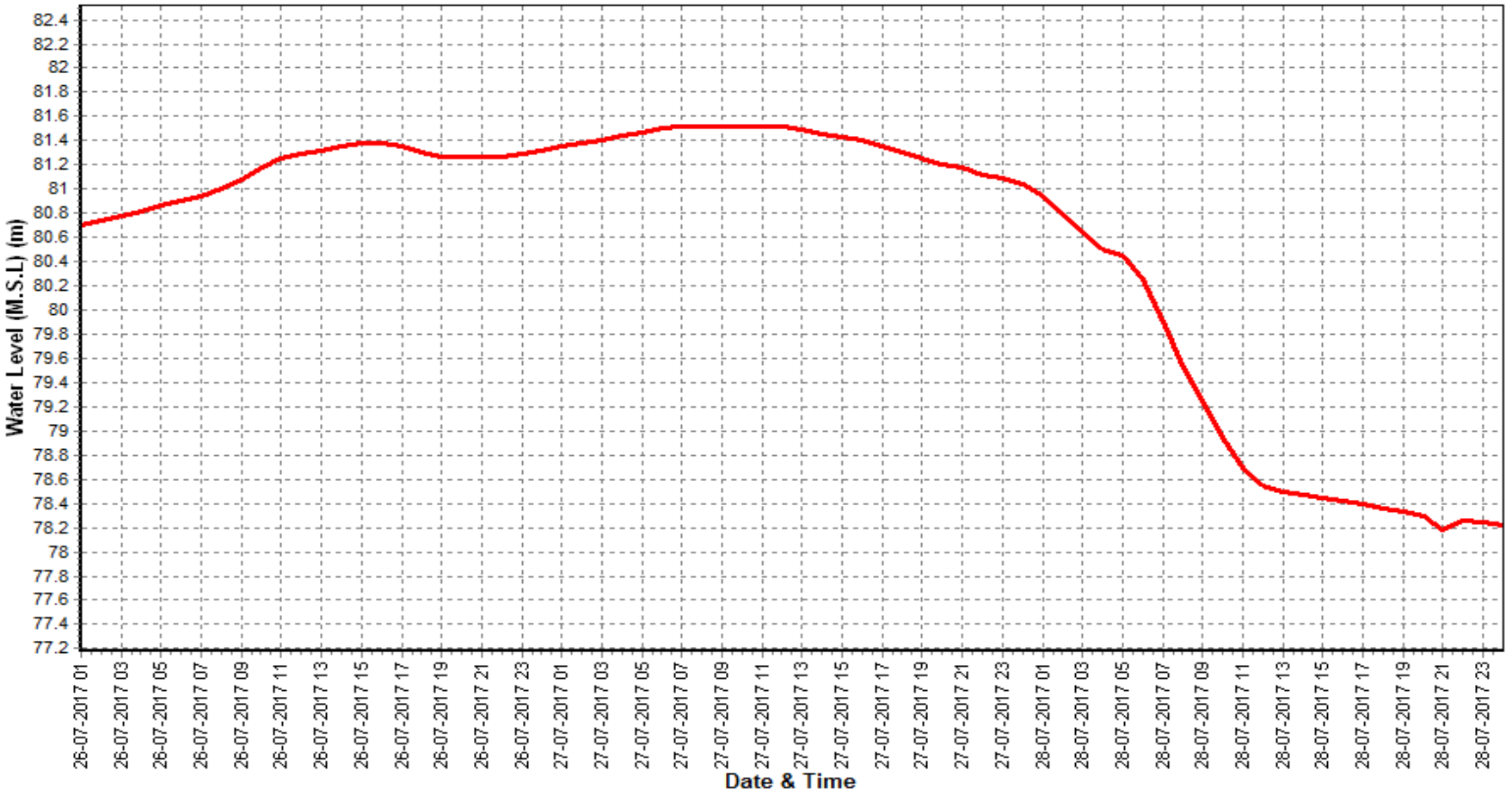
Local River : Subarnarekha **Sub-Division : Balasore**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2017-2018

Station Name : GHATSHILA (ES000K7) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

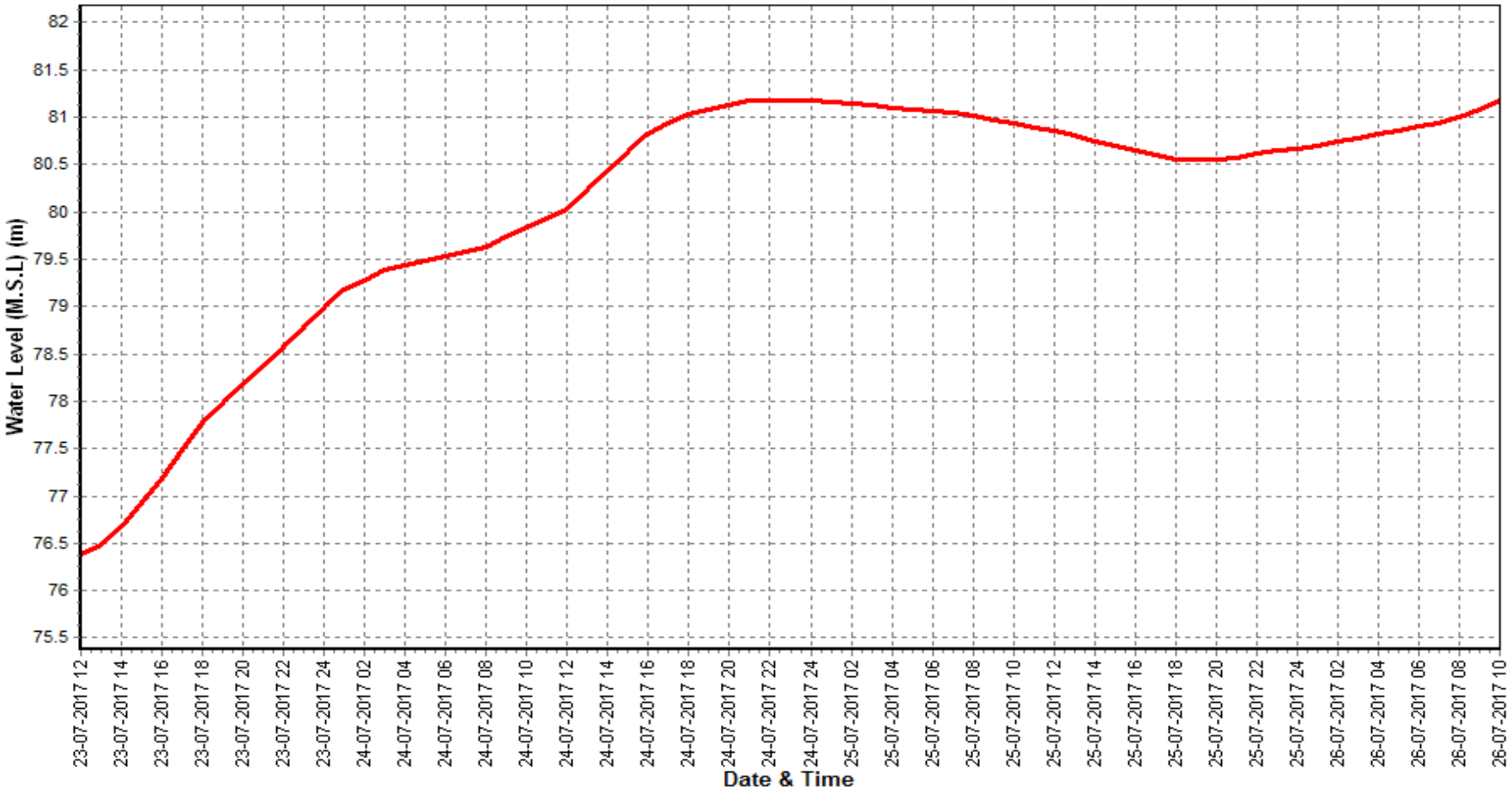


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2017-2018

Station Name : GHATSHILA (ES000K7) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

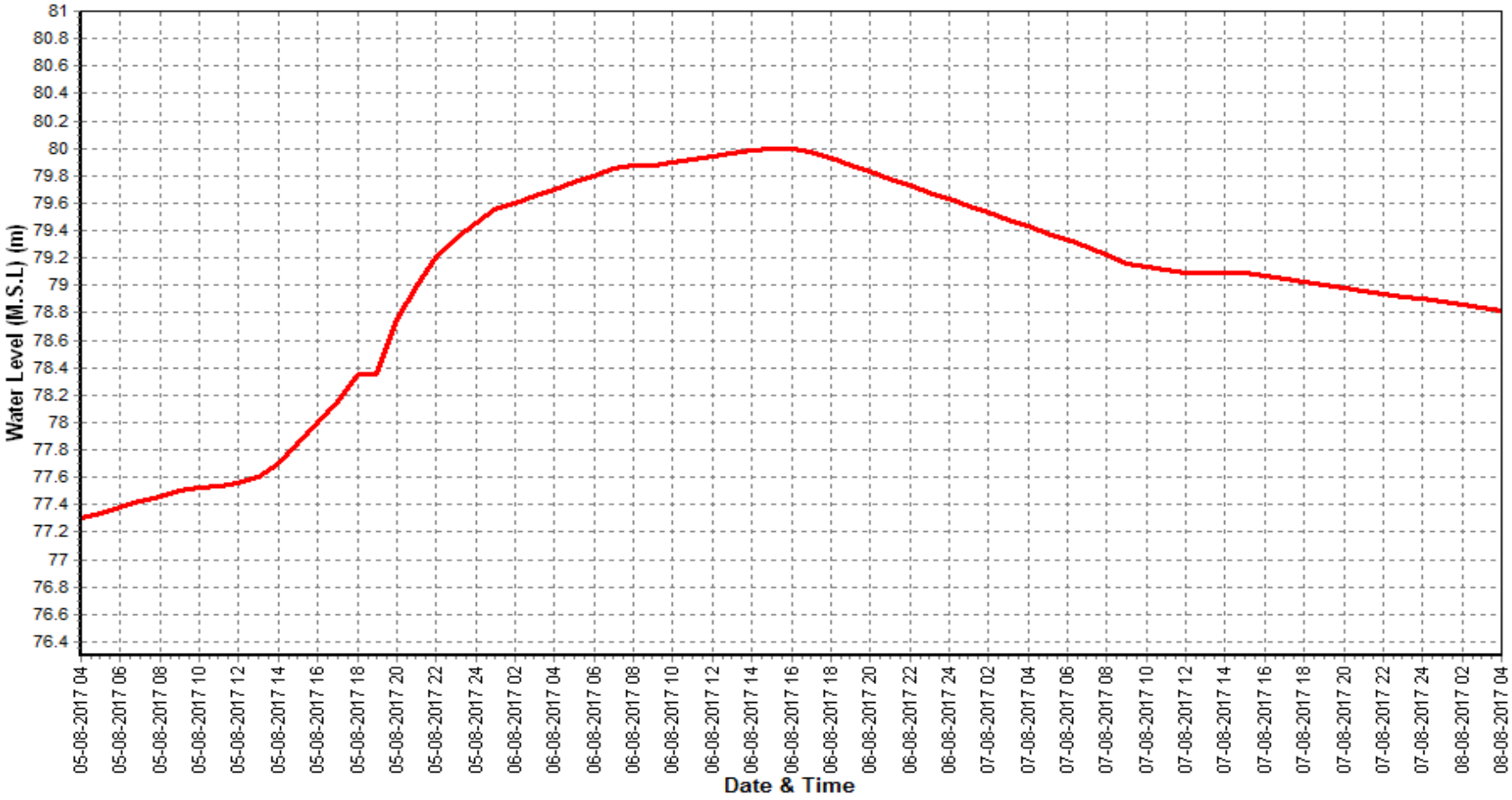


Time Span: 72 Hrs

Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2017-2018

Station Name : GHATSHILA (ES000K7) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**



Time Span: 72 Hrs

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : GHATSHILA (ES000K7) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

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	33.85	0.000	0.000	0.030	0.030	88	33.99	0.000	0.000	0.028	0.028	83	1090	0.000	0.000	0.058	0.058	5443
2	34.01	0.000	0.000	0.030	0.030	88	32.90	0.000	0.000	0.028	0.028	81	918.3	0.000	0.000	0.056	0.056	4404
3	33.72	0.000	0.000	0.030	0.030	87	32.92	0.000	0.000	0.028	0.028	81	643.9	0.000	0.000	0.053	0.053	2965
4	33.70						33.62	0.000	0.000	0.030	0.030	88	756.2	0.000	0.000	0.058	0.058	3776
5	33.33	0.000	0.000	0.303	0.303	873	38.45	0.000	0.000	0.028	0.028	93	830.6	0.000	0.000	0.056	0.056	3983
6	33.11	0.000	0.000	0.302	0.302	864	34.38	0.000	0.000	0.030	0.030	90	2892	0.000	0.000	0.056	0.056	13868
7	32.92	0.000	0.000	0.030	0.030	86	63.85	0.000	0.000	0.018	0.018	97	2877	0.000	0.000	0.338	0.338	83968
8	32.74	0.000	0.000	0.028	0.028	79	210.4	0.000	0.000	0.018	0.018	318	1972	0.000	0.000	0.056	0.056	9457
9	32.46	0.000	0.000	0.030	0.030	85	33.59	0.000	0.000	0.033	0.033	94	1818	0.000	0.000	0.060	0.060	9423
10	32.27	0.000	0.000	0.028	0.028	78	33.59	0.000	0.000	0.033	0.033	94	912.7	0.000	0.000	0.056	0.056	4377
11	32.20	0.000	0.000	0.028	0.028	78	33.67	0.000	0.000	0.033	0.033	95	461.2	0.000	0.000	0.058	0.058	2303
12	37.15	0.000	0.000	0.020	0.020	64	33.96	0.000	0.000	0.030	0.030	89	256.5	0.000	0.000	0.034	0.034	742
13	40.57	0.000	0.000	0.020	0.020	70	53.44	0.000	0.000	0.023	0.023	104	250.0	0.000	0.000	0.034	0.034	724
14	45.28	0.000	0.000	0.018	0.018	68	61.31	0.000	0.000	0.021	0.021	111	249.4	0.000	0.000	0.035	0.035	750
15	42.64	0.000	0.000	0.018	0.018	64	63.13	0.000	0.000	0.021	0.021	113	339.0	0.000	0.000	0.035	0.035	1019
16	41.67	0.000	0.000	0.018	0.018	63	60.00	0.000	0.000	0.021	0.021	108	1289	0.000	0.000	0.051	0.051	5690
17	43.90	0.000	0.000	0.020	0.020	76	74.18	0.000	0.000	0.019	0.019	119	1240	0.000	0.000	0.056	0.056	5948
18	32.77	0.000	0.000	0.028	0.028	80	76.57	0.000	0.000	0.018	0.018	116	772.1	0.000	0.000	0.053	0.053	3556
19	32.70	0.000	0.000	0.028	0.028	79	75.55	0.000	0.000	0.019	0.019	121	789.6	0.000	0.000	0.058	0.058	3943
20	33.13	0.000	0.000	0.030	0.030	87	80.95	0.000	0.000	0.017	0.017	117	460.0	0.000	0.000	0.058	0.058	2297
21	31.51	0.000	0.000	0.030	0.030	83	76.61	0.000	0.000	0.018	0.018	116	498.9	0.000	0.000	0.053	0.053	2297
22	33.63	0.000	0.000	0.033	0.033	94	224.2	0.000	0.000	0.018	0.018	347	432.3	0.000	0.000	0.049	0.049	1823
23	33.84	0.000	0.000	0.030	0.030	89	230.2	0.000	0.000	0.018	0.018	356	339.7	0.000	0.000	0.051	0.051	1500
24	33.64	0.000	0.000	0.029	0.029	83	3968	0.000	0.000	0.060	0.060	20571	247.3	0.000	0.000	0.036	0.036	761
25	33.66	0.000	0.000	0.029	0.029	83	4650	0.000	0.000	0.058	0.058	23221	240.5	0.000	0.000	0.034	0.034	709
26	48.79	0.000	0.000	0.029	0.029	121	4963	0.000	0.000	0.062	0.062	26672	249.9	0.000	0.000	0.036	0.036	767
27	49.01	0.000	0.000	0.018	0.018	74	5191	0.000	0.000	0.060	0.060	26910	460.0	0.000	0.000	0.036	0.036	1411
28	50.39	0.000	0.000	0.018	0.018	76	3045	0.000	0.000	0.056	0.056	14602	238.9	0.000	0.000	0.034	0.034	692
29	50.16	0.000	0.000	0.015	0.015	65	1605	0.000	0.000	0.062	0.062	8626	226.2	0.000	0.000	0.032	0.032	620
30	48.79	0.000	0.000	0.015	0.015	63	1095	0.000	0.000	0.062	0.062	5885	498.3	0.000	0.000	0.053	0.053	2295
31							1095	0.000	0.000	0.056	0.056	5252	468.3	0.000	0.000	0.049	0.049	1974
Ten Daily Mean																		
Ten Daily I	33.21	0.000	0.000	0.090	0.090	259	54.77	0.000	0.000	0.027	0.027	112	1471	0.000	0.000	0.084	0.084	14166
Ten Daily II	38.20	0.000	0.000	0.023	0.023	73	61.28	0.000	0.000	0.022	0.022	109	610.7	0.000	0.000	0.047	0.047	2697
Ten Daily III	41.34	0.000	0.000	0.024	0.024	83	2377	0.000	0.000	0.048	0.048	12051	354.6	0.000	0.000	0.042	0.042	1350
Monthly Total						3890						134770						183483

Annual Sediment Load (Metric Tonnes) : 383903

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : GHATSHILA (ES000K7) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

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	245.3	0.000	0.000	0.033	0.033	695	212.0	0.000	0.000	0.031	0.031	562	135.9	0.000	0.000	0.023	0.023	271
2	268.0						211.0	0.000	0.000	0.031	0.031	560	133.4	0.000	0.000	0.022	0.022	248
3	260.0	0.000	0.000	0.033	0.033	737	210.2	0.000	0.000	0.031	0.031	557	106.0	0.000	0.000	0.022	0.022	204
4	470.0	0.000	0.000	0.051	0.051	2075	225.4	0.000	0.000	0.032	0.032	625	105.0	0.000	0.000	0.022	0.022	202
5	376.2	0.000	0.000	0.049	0.049	1590	329.3	0.000	0.000	0.047	0.047	1329	105.2	0.000	0.000	0.022	0.022	203
6	268.6	0.000	0.000	0.032	0.032	747	302.4	0.000	0.000	0.042	0.042	1103	102.5	0.000	0.000	0.021	0.021	182
7	254.2	0.000	0.000	0.031	0.031	674	231.3	0.000	0.000	0.031	0.031	613	100.4	0.000	0.000	0.021	0.021	179
8	216.7	0.000	0.000	0.032	0.032	594	220.0	0.000	0.000	0.031	0.031	584	95.63	0.000	0.000	0.022	0.022	178
9	218.1	0.000	0.000	0.030	0.030	562	233.5	0.000	0.000	0.029	0.029	591	94.66	0.000	0.000	0.020	0.020	164
10	141.0	0.000	0.000	0.030	0.030	363	220.9	0.000	0.000	0.030	0.030	569	93.27	0.000	0.000	0.027	0.027	215
11	144.9	0.000	0.000	0.031	0.031	388	215.4	0.000	0.000	0.029	0.029	545	93.35	0.000	0.000	0.024	0.024	197
12	117.0	0.000	0.000	0.029	0.029	296	204.5	0.000	0.000	0.029	0.029	504	93.00	0.000	0.000	0.024	0.024	196
13	141.9	0.000	0.000	0.029	0.029	360	161.6	0.000	0.000	0.027	0.027	370	89.02	0.000	0.000	0.027	0.027	205
14	143.5	0.000	0.000	0.029	0.029	357	167.6	0.000	0.000	0.026	0.026	382	92.06	0.000	0.000	0.020	0.020	159
15	127.7	0.000	0.000	0.030	0.030	332	171.0	0.000	0.000	0.026	0.026	390	90.44	0.000	0.000	0.021	0.021	163
16	136.1	0.000	0.000	0.031	0.031	361	170.0	0.000	0.000	0.027	0.027	400	88.24	0.000	0.000	0.019	0.019	147
17	128.9	0.000	0.000	0.031	0.031	342	161.7	0.000	0.000	0.025	0.025	352	91.15	0.000	0.000	0.019	0.019	150
18	128.8	0.000	0.000	0.029	0.029	323	137.0	0.000	0.000	0.023	0.023	271	87.16	0.000	0.000	0.018	0.018	139
19	144.5	0.000	0.000	0.029	0.029	364	145.0	0.000	0.000	0.023	0.023	287	87.00	0.000	0.000	0.018	0.018	138
20	267.0	0.000	0.000	0.031	0.031	704	148.3	0.000	0.000	0.024	0.024	304	89.07	0.000	0.000	0.018	0.018	142
21	325.7	0.000	0.000	0.044	0.044	1250	216.3	0.000	0.000	0.026	0.026	480	73.80	0.000	0.000	0.017	0.017	107
22	243.9	0.000	0.000	0.029	0.029	617	210.0	0.000	0.000	0.033	0.033	604	71.80	0.000	0.000	0.018	0.018	110
23	241.3	0.000	0.000	0.029	0.029	594	448.0	0.000	0.000	0.033	0.033	1289	77.91	0.000	0.000	0.018	0.018	118
24	220.0	0.000	0.000	0.029	0.029	546	210.4	0.000	0.000	0.023	0.023	425	76.79	0.000	0.000	0.019	0.019	124
25	149.9	0.000	0.000	0.029	0.029	372	163.6	0.000	0.000	0.023	0.023	325	86.75	0.000	0.000	0.017	0.017	127
26	130.0	0.000	0.000	0.029	0.029	322	145.4	0.000	0.000	0.024	0.024	296	86.00	0.000	0.000	0.017	0.017	126
27	129.0	0.000	0.000	0.029	0.029	319	135.8	0.000	0.000	0.023	0.023	271	90.96	0.000	0.000	0.019	0.019	146
28	137.2	0.000	0.000	0.030	0.030	358	139.6	0.000	0.000	0.023	0.023	279	89.93	0.000	0.000	0.019	0.019	151
29	140.0	0.000	0.000	0.030	0.030	365	140.0	0.000	0.000	0.023	0.023	279	87.75	0.000	0.000	0.018	0.018	135
30	135.0	0.000	0.000	0.030	0.030	352	143.8	0.000	0.000	0.024	0.024	303	82.30	0.000	0.000	0.017	0.017	120
31							142.9	0.000	0.000	0.022	0.022	275						
Ten Daily Mean																		
Ten Daily I	271.8	0.000	0.000	0.036	0.036	893	239.6	0.000	0.000	0.033	0.033	709	107.2	0.000	0.000	0.022	0.022	205
Ten Daily II	148.0	0.000	0.000	0.030	0.030	383	168.2	0.000	0.000	0.026	0.026	380	90.05	0.000	0.000	0.021	0.021	164
Ten Daily III	185.2	0.000	0.000	0.031	0.031	509	190.5	0.000	0.000	0.025	0.025	439	82.40	0.000	0.000	0.018	0.018	127
Monthly																		
Total						16959						15725						4948

Annual Sediment Load (Metric Tonnes) : 383903

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : GHATSHILA (ES000K7) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

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	76.20	0.000	0.000	0.017	0.017	109	71.19	0.000	0.000	0.142	0.142	873	32.08	0.000	0.000	0.012	0.012	34
2	76.00	0.000	0.000	0.017	0.017	109	71.10	0.000	0.000	0.142	0.142	872	32.07	0.000	0.000	0.012	0.012	34
3	76.00	0.000	0.000	0.017	0.017	109	66.25	0.000	0.000	0.142	0.142	813	24.08	0.000	0.000	0.012	0.012	25
4	72.67	0.000	0.000	0.017	0.017	104	64.69	0.000	0.000	0.142	0.142	794	24.00	0.000	0.000	0.012	0.012	25
5	68.04	0.000	0.000	0.017	0.017	98	64.52	0.000	0.000	0.142	0.142	792	24.08	0.000	0.000	0.012	0.012	25
6	67.04	0.000	0.000	0.017	0.017	96	64.59	0.000	0.000	0.142	0.142	792	28.18	0.000	0.000	0.012	0.012	29
7	65.93	0.000	0.000	0.017	0.017	95	64.50	0.000	0.000	0.142	0.142	791	28.17	0.000	0.000	0.012	0.012	29
8	69.82	0.000	0.000	0.017	0.017	100	60.08	0.000	0.000	0.143	0.143	742	28.16	0.000	0.000	0.012	0.012	29
9	71.79	0.000	0.000	0.017	0.017	103	60.09	0.000	0.000	0.143	0.143	742	24.08	0.000	0.000	0.014	0.014	30
10	73.00	0.000	0.000	0.017	0.017	105	60.04	0.000	0.000	0.143	0.143	742	24.08	0.000	0.000	0.014	0.014	30
11	73.62	0.000	0.000	0.016	0.016	101	55.53	0.000	0.000	0.143	0.143	686	24.00	0.000	0.000	0.014	0.014	30
12	73.98	0.000	0.000	0.016	0.016	102	55.52	0.000	0.000	0.143	0.143	686	24.07	0.000	0.000	0.014	0.014	30
13	74.03	0.000	0.000	0.016	0.016	102	52.01	0.000	0.000	0.143	0.143	643	20.11	0.000	0.000	0.014	0.014	25
14	73.71	0.000	0.000	0.016	0.016	101	52.00	0.000	0.000	0.143	0.143	642	20.10	0.000	0.000	0.014	0.014	25
15	74.06	0.000	0.000	0.016	0.016	102	52.18	0.000	0.000	0.131	0.131	591	28.18	0.000	0.000	0.014	0.014	35
16	73.92	0.000	0.000	0.016	0.016	102	49.89	0.000	0.000	0.131	0.131	565	28.17	0.000	0.000	0.014	0.014	35
17	73.95	0.000	0.000	0.016	0.016	102	49.88	0.000	0.000	0.131	0.131	565	28.17	0.000	0.000	0.014	0.014	35
18	74.03	0.000	0.000	0.017	0.017	107	49.88	0.000	0.000	0.131	0.131	565	28.10	0.000	0.000	0.014	0.014	35
19	73.99	0.000	0.000	0.017	0.017	107	47.51	0.000	0.000	0.131	0.131	538	24.09	0.000	0.000	0.014	0.014	30
20	74.06	0.000	0.000	0.017	0.017	107	47.52	0.000	0.000	0.131	0.131	538	24.09	0.000	0.000	0.014	0.014	30
21	73.87	0.000	0.000	0.017	0.017	107	47.50	0.000	0.000	0.131	0.131	538	24.08	0.000	0.000	0.014	0.014	30
22	73.74	0.000	0.000	0.017	0.017	106	44.51	0.000	0.000	0.121	0.121	465	24.19	0.000	0.000	0.014	0.014	30
23	73.50	0.000	0.000	0.017	0.017	106	44.51	0.000	0.000	0.121	0.121	465	20.09	0.000	0.000	0.014	0.014	25
24	73.45	0.000	0.000	0.017	0.017	106	44.52	0.000	0.000	0.121	0.121	465	20.09	0.000	0.000	0.014	0.014	25
25	73.43	0.000	0.000	0.017	0.017	106	41.96	0.000	0.000	0.121	0.121	439	20.00	0.000	0.000	0.014	0.014	25
26	72.99	0.000	0.000	0.016	0.016	100	41.60	0.000	0.000	0.121	0.121	435	20.08	0.000	0.000	0.014	0.014	25
27	71.87	0.000	0.000	0.016	0.016	99	41.45	0.000	0.000	0.121	0.121	433	16.07	0.000	0.000	0.014	0.014	20
28	70.62	0.000	0.000	0.016	0.016	97	41.30	0.000	0.000	0.121	0.121	432	16.06	0.000	0.000	0.014	0.014	20
29							37.51	0.000	0.000	0.107	0.107	347						
30							37.52	0.000	0.000	0.107	0.107	347						
31							37.50	0.000	0.000	0.107	0.107	347						
Ten Daily Mean																		
Ten Daily I	71.65	0.000	0.000	0.017	0.017	103	64.71	0.000	0.000	0.142	0.142	795	26.90	0.000	0.000	0.013	0.013	29
Ten Daily II	73.93	0.000	0.000	0.016	0.016	103	51.19	0.000	0.000	0.136	0.136	602	24.91	0.000	0.000	0.014	0.014	31
Ten Daily III	72.93	0.000	0.000	0.016	0.016	103	41.81	0.000	0.000	0.118	0.118	428	20.08	0.000	0.000	0.014	0.014	25
Monthly Total						2886						18684						798

Annual Sediment Load (Metric Tonnes) : 383903

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : GHATSHILA (ES000K7) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

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	16.43	0.000	0.000	0.012	0.012	16	12.86	0.000	0.000	0.014	0.014	15	12.76	0.000	0.000	0.018	0.018	19
2	16.40	0.000	0.000	0.012	0.012	16	12.86	0.000	0.000	0.014	0.014	15	12.76	0.000	0.000	0.018	0.018	19
3	16.43	0.000	0.000	0.012	0.012	16	12.98	0.000	0.000	0.014	0.014	16	12.76	0.000	0.000	0.018	0.018	19
4	16.40	0.000	0.000	0.012	0.012	16	12.98	0.000	0.000	0.014	0.014	16	12.75	0.000	0.000	0.018	0.018	19
5	15.58	0.000	0.000	0.012	0.012	15	12.95	0.000	0.000	0.014	0.014	16	11.56	0.000	0.000	0.018	0.018	18
6	15.57	0.000	0.000	0.012	0.012	15	12.95	0.000	0.000	0.014	0.014	16	11.56	0.000	0.000	0.018	0.018	18
7	17.37	0.000	0.000	0.012	0.012	17	12.94	0.000	0.000	0.014	0.014	16	11.56	0.000	0.000	0.018	0.018	18
8	17.37	0.000	0.000	0.012	0.012	17	12.94	0.000	0.000	0.014	0.014	16	11.05	0.000	0.000	0.018	0.018	17
9	17.36	0.000	0.000	0.012	0.012	17	13.02	0.000	0.000	0.014	0.014	16	11.05	0.000	0.000	0.018	0.018	17
10	18.38	0.000	0.000	0.012	0.012	18	13.02	0.000	0.000	0.014	0.014	16	11.05	0.000	0.000	0.018	0.018	17
11	18.38	0.000	0.000	0.012	0.012	18	13.01	0.000	0.000	0.014	0.014	16	11.05	0.000	0.000	0.018	0.018	17
12	18.38	0.000	0.000	0.012	0.012	18	13.05	0.000	0.000	0.014	0.014	16	10.06	0.000	0.000	0.019	0.019	16
13	18.38	0.000	0.000	0.012	0.012	18	13.51	0.000	0.000	0.018	0.018	21	10.06	0.000	0.000	0.019	0.019	16
14	18.37	0.000	0.000	0.012	0.012	18	13.80	0.000	0.000	0.018	0.018	21	10.05	0.000	0.000	0.019	0.019	16
15	17.35	0.000	0.000	0.012	0.012	17	13.50	0.000	0.000	0.018	0.018	21	10.04	0.000	0.000	0.019	0.019	16
16	17.35	0.000	0.000	0.012	0.012	17	13.41	0.000	0.000	0.018	0.018	21	10.49	0.000	0.000	0.019	0.019	17
17	17.34	0.000	0.000	0.014	0.014	21	13.41	0.000	0.000	0.018	0.018	21	11.05	0.000	0.000	0.019	0.019	18
18	17.34	0.000	0.000	0.014	0.014	21	13.40	0.000	0.000	0.018	0.018	20	11.06	0.000	0.000	0.019	0.019	18
19	17.33	0.000	0.000	0.014	0.014	21	13.31	0.000	0.000	0.018	0.018	20	11.06	0.000	0.000	0.018	0.018	18
20	19.48	0.000	0.000	0.014	0.014	24	13.30	0.000	0.000	0.017	0.017	20	11.06	0.000	0.000	0.018	0.018	18
21	19.47	0.000	0.000	0.014	0.014	24	13.30	0.000	0.000	0.017	0.017	20	11.56	0.000	0.000	0.018	0.018	18
22	19.47	0.000	0.000	0.014	0.014	24	13.30	0.000	0.000	0.017	0.017	20	11.56	0.000	0.000	0.018	0.018	18
23	19.46	0.000	0.000	0.014	0.014	24	13.20	0.000	0.000	0.017	0.017	20	12.42	0.000	0.000	0.018	0.018	20
24	19.45	0.000	0.000	0.014	0.014	24	13.21	0.000	0.000	0.017	0.017	20	12.42	0.000	0.000	0.018	0.018	20
25	20.70	0.000	0.000	0.014	0.014	26	13.20	0.000	0.000	0.017	0.017	20	12.42	0.000	0.000	0.018	0.018	20
26	20.70	0.000	0.000	0.014	0.014	26	13.10	0.000	0.000	0.017	0.017	20	13.32	0.000	0.000	0.018	0.018	20
27	20.69	0.000	0.000	0.014	0.014	26	13.11	0.000	0.000	0.017	0.017	20	13.32	0.000	0.000	0.018	0.018	20
28	20.68	0.000	0.000	0.014	0.014	26	13.11	0.000	0.000	0.017	0.017	20	14.46	0.000	0.000	0.018	0.018	22
29	20.60	0.000	0.000	0.014	0.014	26	13.00	0.000	0.000	0.017	0.017	20	14.46	0.000	0.000	0.018	0.018	22
30	19.44	0.000	0.000	0.014	0.014	24	13.00	0.000	0.000	0.017	0.017	20	14.43	0.000	0.000	0.018	0.018	22
31	19.44	0.000	0.000	0.014	0.014	24							14.12	0.000	0.000	0.018	0.018	21
Ten Daily Mean																		
Ten Daily I	16.73	0.000	0.000	0.012	0.012	17	12.95	0.000	0.000	0.014	0.014	16	11.89	0.000	0.000	0.018	0.018	18
Ten Daily II	17.97	0.000	0.000	0.013	0.013	20	13.37	0.000	0.000	0.017	0.017	20	10.60	0.000	0.000	0.019	0.019	17
Ten Daily III	20.01	0.000	0.000	0.014	0.014	25	13.15	0.000	0.000	0.017	0.017	20	13.13	0.000	0.000	0.018	0.018	20
Monthly																		
Total						635						550						576

Annual Sediment Load (Metric Tonnes) : 383903

Annual Sediment Load for period : 1973-2018

Station Name : GHATSHILA (ES000K7) **Division : E.E., Bhubaneswar**

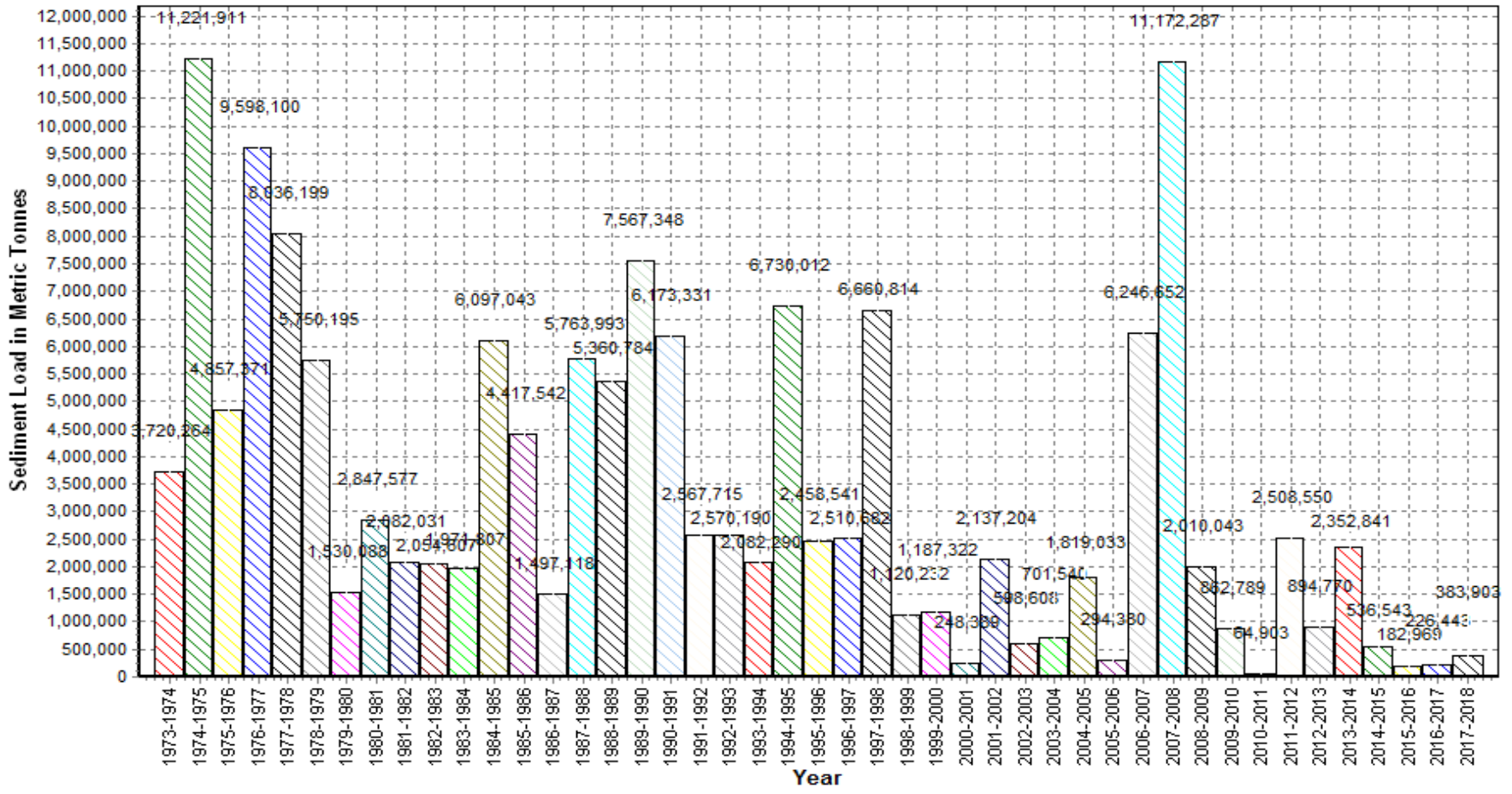
Local River : Subarnarekha **Sub-Division : Balasore**

Year	Monsoon (M.T.)	Non-Monsoon (M.T.)	Annual Load (M.T.)	Annual Run Off (MCM)
1973-1974	3710541	9724	3720264	10046
1974-1975	11216411	5500	11221911	5332
1975-1976	4835503	21868	4857371	6424
1976-1977	9534127	63973	9598100	4835
1977-1978	8023490	12710	8036199	9718
1978-1979	5729988	20207	5750195	7873
1979-1980	1522045	8042	1530088	2081
1980-1981	2781916	65661	2847577	4392
1981-1982	2072685	9345	2082031	4043
1982-1983	2043672	10935	2054607	2730
1983-1984	1968814	2993	1971807	3709
1984-1985	6093516	3527	6097043	8256
1985-1986	4413784	3758	4417542	7702
1986-1987	1487648	9471	1497118	4268
1987-1988	5750036	13958	5763993	5210
1988-1989	5355921	4862	5360784	6192
1989-1990	7554215	13133	7567348	6781
1990-1991	6158738	14592	6173331	9337
1991-1992	2530789	36926	2567715	5007
1992-1993	2568006	2184	2570190	3148
1993-1994	2075188	7102	2082290	5568
1994-1995	6712243	17769	6730012	13155
1995-1996	2454144	4397	2458541	8264
1996-1997	2502298	8384	2510682	7110
1997-1998	6520952	139862	6660814	11342
1998-1999	1083889	36343	1120232	5150
1999-2000	1172898	14424	1187322	9872
2000-2001	248389	0	248389	3491
2001-2002	2115624	21580	2137204	7937
2002-2003	590640	7968	598608	4711
2003-2004	674002	27539	701540	4184
2004-2005	1810346	8686	1819033	4975
2005-2006	293790	590	294380	3048
2006-2007	6156100	90552	6246652	10671
2007-2008	11146331	25956	11172287	11955
2008-2009	2009046	996	2010043	10115
2009-2010	862365	424	862789	7538
2010-2011	48318	16585	64903	1856
2011-2012	2505608	2942	2508550	13876
2012-2013	852447	42323	894770	6682
2013-2014	2325630	27211	2352841	9013
2014-2015	531207	5337	536543	7090
2015-2016	178117	4852	182969	3491
2016-2017	209666	16776	226443	5441
2017-2018	359774	24129	383903	6380

Annual Sediment Load for the period: 1973-2018

Station Name : GHATSHILA (ES000K7) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**



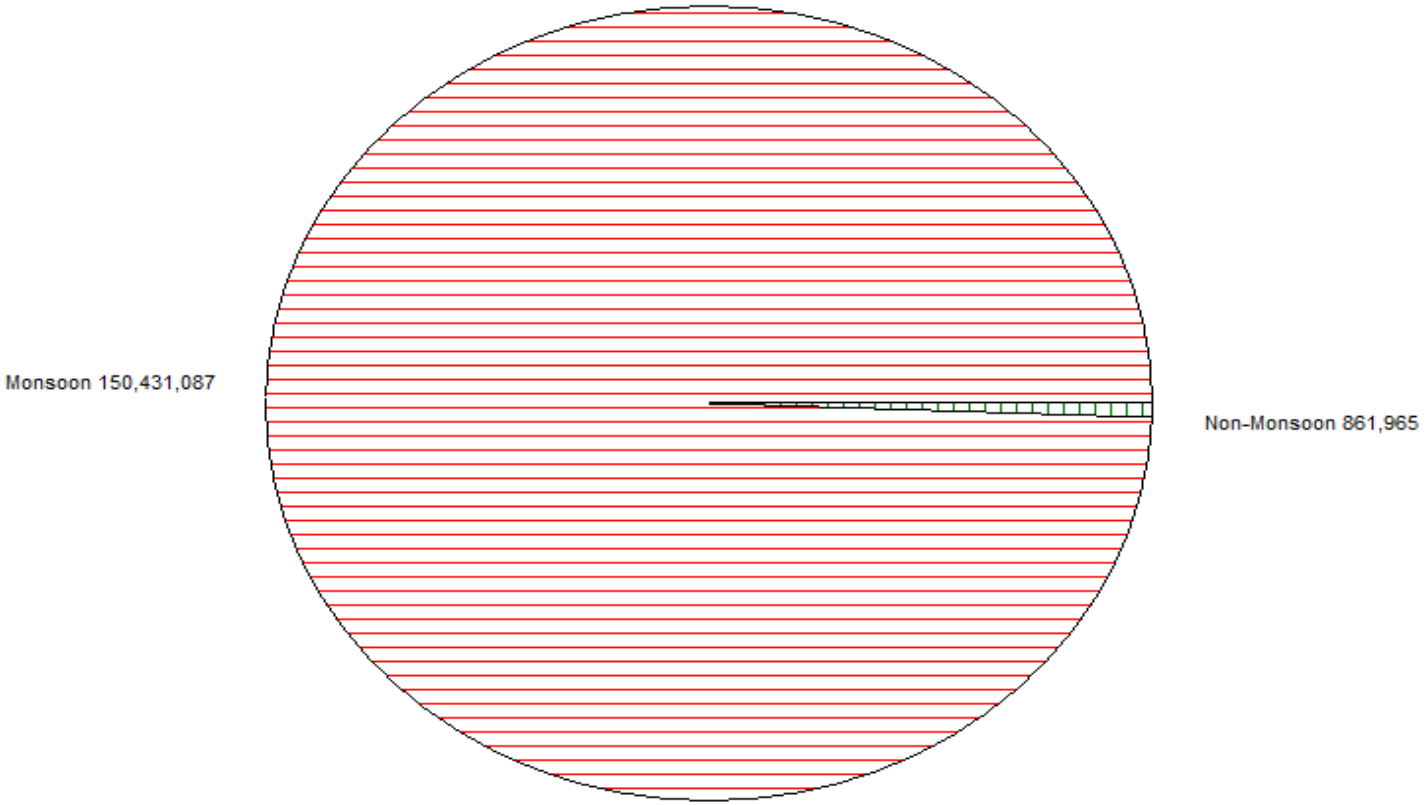
Seasonal Sediment Load for the period : 1973-2017

Station Name : GHATSHILA (ES000K7)

Local River : Subarnarekha

Division : E.E., Bhubaneswar

Sub-Division : Balasore



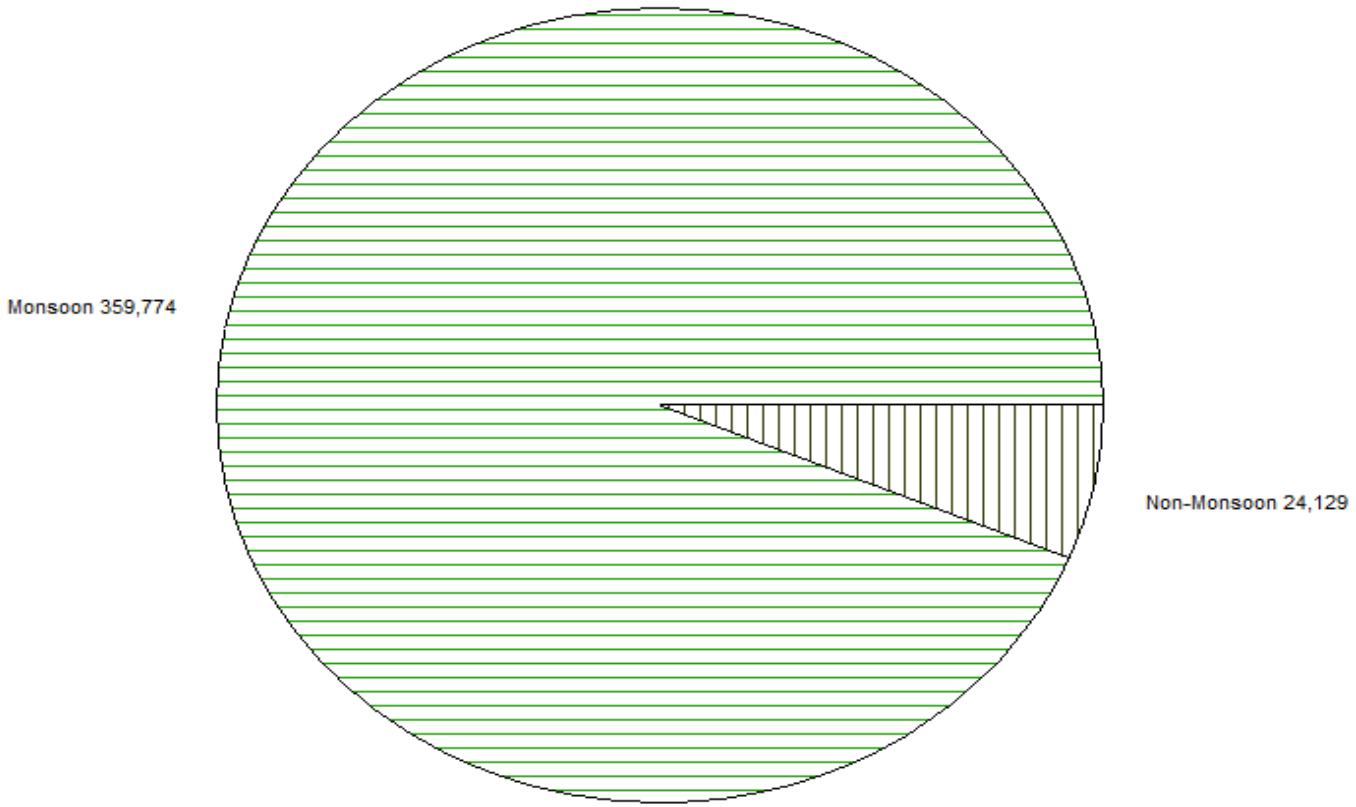
Seasonal Sediment Load for the Year: 2017-2018

Station Name : GHATSHILA (ES000K7)

Local River : Subarnarekha

Division : E.E., Bhubaneswar

Sub-Division : Balasore



Water Quality Datasheet for the period : 2017-2018

Station Name : GHATSHILA (ES000K7) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **River Water Analysis** **Sub-Division : Balasore**

S.No	Parameters	6/1/2017	7/1/2017	8/1/2017	9/1/2017	10/3/2017	11/1/2017	12/1/2017	1/1/2018	2/1/2018	3/1/2018	4/2/2018	5/1/2018
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Clear	Light Brown	Light Brown	Light Brown	Light Brown	Clear	Clear	Clear	Clear	Clear	Clear	Clear
3	EC_FLD (µmho/cm)	460	440	186	255	282	270	315	430	388	498	487	499
4	EC_GEN (µmho/cm)	467	435	198	264	285	267	306	427	382	488	492	497
5	Odour_Code (-)	odour free	odour free	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	7.6	7.7	7.7	7.7	7.7	7.4	7.8	7.6	7.6	7.5	8.2
7	pH_GEN (pH units)	7.7	7.5	7.6	7.6	7.8	7.6	7.3	7.7	7.6	7.5	7.6	8.1
8	Temp (deg C)	30.0	30.5	26.0	26.5	28.0	26.5	20.5	18.0	15.5	23.0	26.0	30.0
	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
2	ALK-TOT (mgCaCO3/L)	92	88	55	65	92	83	88	92	83	120	83	102
3	B (mg/L)	0.02	0.01	0.02	0.02	0.01	0.03	0.02	0.01	0.03	0.01	0.01	0.03
4	Ca (mg/L)	51	50	51	50	31	30	46	35	51	54	38	31
5	Cl (mg/L)	43.4	32.1	15.1	15.1	10.4	15.6	15.6	32.9	36.3	39.8	26.0	38.1
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
7	F (mg/L)	0.05	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)	0.5	0.4	0.5	0.4	0.5	0.4	0.5	0.5	0.4	0.5	0.4	0.5
9	HCO3 (mg/L)	113	107	68	79	113	101	107	113	101	147	101	124
10	K (mg/L)	6.1	4.1	2.0	2.1	2.6	2.8	3.3	3.5	2.4	2.9	2.6	4.8
11	Mg (mg/L)	20.4	21.4	21.4	21.4	10.3	11.1	18.3	15.9	15.1	19.1	13.5	13.5
12	Na (mg/L)	24.3	23.8	6.0	6.8	7.0	7.6	7.9	48.3	51.0	52.4	53.8	35.1
13	NO2+NO3 (mg N/L)	1.06	1.19	1.19	1.25	1.22	1.16	1.21	1.16	1.19	1.23	1.18	1.21
14	NO2-N (mgN/L)	0.01	0.00	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	NO3-N (mgN/L)	1.05	1.19	1.18	1.22	1.22	1.16	1.21	1.16	1.19	1.23	1.18	1.21
16	P-Tot (mgP/L)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
17	SiO2 (mg/L)	8.5	8.5	9.1	7.8	6.2	9.7	8.5	6.7	7.1	8.5	9.0	7.8
18	SO4 (mg/L)	41.0	44.2	40.2	18.4	26.2	26.4	26.5	26.8	26.8	34.7	22.1	35.3
	BIOLOGICAL/BACTERIOLOGICAL												
1	BOD3-27 (mg/L)	1.0	1.2	0.6	0.4	0.4	1.6	0.6	0.2	1.0	0.4	0.6	2.4
2	DO (mg/L)	6.2	6.0	6.0	6.0	6.2	6.4	6.8	5.8	7.0	3.4	6.2	6.6
3	DO_SAT% (%)	81	79	73	74	79	78	74	61	69	39	76	87
4	FCol-MPN (MPN/100mL)	130	140	60	60	60	40	40	60	80	60	40	110
5	Tcol-MPN (MPN/100mL)	330	300	140	130	140	170	140	170	210	170	140	220
	TRACE & TOXIC												
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	128	124	128	124	78	75	114	88	127	134	95	78
2	HAR_Total (mgCaCO3/L)	213	213	217	213	121	122	190	154	190	213	151	135
3	Na% (%)	19	19	6	6	11	12	8	40	37	35	43	35
4	RSC (-)	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	SAR (-)	0.7	0.7	0.2	0.2	0.3	0.3	0.2	1.7	1.6	1.6	1.9	1.3
	PESTICIDES												

Water Quality Summary for the period : 2017-2018

Station Name : GHATSHILA (ES000K7) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	12	499	186	376
3	EC_GEN (µmho/cm)	12	497	198	376
4	pH_FLD (pH units)	12	8.2	7.4	7.7
5	pH_GEN (pH units)	12	8.1	7.3	7.6
6	Temp (deg C)	12	30.5	15.5	25
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	0.0	0.0	0
2	ALK-TOT (mgCaCO3/L)	12	120	55	87
3	B (mg/L)	12	0.03	0.01	0.02
4	Ca (mg/L)	12	54	30	43
5	Cl (mg/L)	12	43.4	10.4	26.7
6	CO3 (mg/L)	12	0.0	0.0	0
7	F (mg/L)	12	0.05	0.05	0.05
8	Fe (mg/L)	12	0.5	0.4	0.4
9	HCO3 (mg/L)	12	147	68	106
10	K (mg/L)	12	6.1	2.0	3.3
11	Mg (mg/L)	12	21.4	10.3	16.8
12	Na (mg/L)	12	53.8	6.0	27
13	NO2+NO3 (mg N/L)	12	1.25	1.06	1.19
14	NO2-N (mgN/L)	12	0.03	0.00	0
15	NO3-N (mgN/L)	12	1.23	1.05	1.18
16	P-Tot (mgP/L)	12	0.001	0.001	0.001
17	SiO2 (mg/L)	12	9.7	6.2	8.1
18	SO4 (mg/L)	12	44.2	18.4	30.7
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	2.4	0.2	0.9
2	DO (mg/L)	12	7.0	3.4	6
3	DO_SAT% (%)	12	87	39	73
4	FCol-MPN (MPN/100mL)	12	140	40	73
5	Tcol-MPN (MPN/100mL)	12	330	130	188
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	134	75	108
2	HAR_Total (mgCaCO3/L)	12	217	121	178
3	Na% (%)	12	43	6	23
4	RSC (-)	12	0.0	0.0	0
5	SAR (-)	12	1.9	0.2	0.9
	PESTICIDES				

Water Quality Seasonal Average for the period: 2003-2018

Station Name : GHATSHILA (ES000K7) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **River Water** **Sub-Division : Balasore**

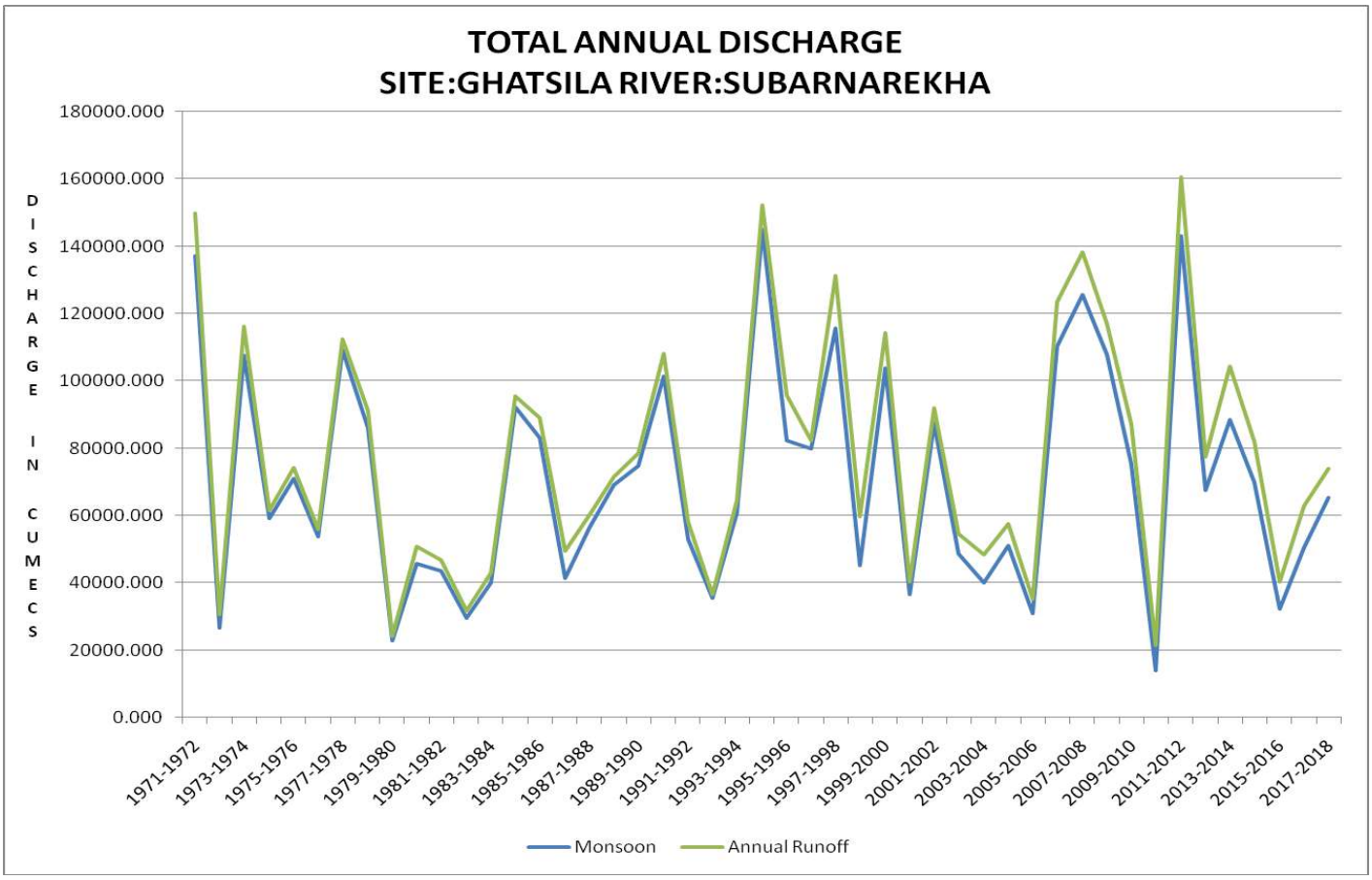
S.No	Parameters	Flood															Winter							
		Jun - Oct															Nov - Feb							
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
	PHYSICAL																							
1	Q (cumec)																							
2	EC_FLD (µmho/cm)	326	310	248	236	279		245	377	259	246	212	302	492	310	325	438	268	349	328	274		333	503
3	EC_GEN (µmho/cm)	326	310	246	231	273		245	377	259	246	212	302	493	313	330	438	268	348	328	270		333	503
4	pH_FLD (pH units)	7.6	7.8	7.7	7.8	7.8		7.8	8.0	8.2	7.2	7.3	7.6	7.4	7.5	7.7	7.6	7.8	7.9	7.9	8.0		7.9	7.5
5	pH_GEN (pH units)	7.6	7.8	7.7	7.8	7.9		7.8	8.0	8.2	7.5	7.3	7.6	7.4	7.6	7.6	7.6	7.8	7.9	7.9	8.1		7.9	7.5
6	Temp (deg C)	30.0	29.1	29.1	30.1	27.4		27.7	27.2	28.0	27.6	27.6	28.8	27.8	24.5	28.2	19.0	22.3	19.8	19.9	16.9		17.6	18.1
	CHEMICAL																							
1	Alk-Phen (mgCaCO3/L)					0.0		0.0	7.2	10.8				0.0	0.0	0.0					0.0		0.0	0.0
2	ALK-TOT (mgCaCO3/L)					89		58	99	85				77	100	79					89		73	106
3	B (mg/L)	0.00	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	0.00	0.00	0.00	0.00	0.00		0.00	0.00
4	Ca (mg/L)	33	38	24	24	28		21	33	21	25	25	21	34	57	47	42	28	37	35	27		22	39
5	Cl (mg/L)	24.1	14.5	16.7	16.4	17.0		18.7	21.9	20.7	20.7	26.9	20.7	20.4	37.0	23.2	36.3	15.6	26.2	23.9	21.2		26.2	42.0
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0		0.0	8.6	13.0	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)	0.11	0.67	0.00	0.51	0.57		0.12	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.13	0.61	0.52	0.30	0.57		0.36	0.05
8	Fe (mg/L)		0.1	0.3	0.4	0.3		0.4	0.5	0.0	1.2	0.3	3.1	0.4	0.4	0.4		0.1	0.2	0.3	0.5		0.3	0.5
9	HCO3 (mg/L)	109	103	98	89	108		61	103	78	82	91	78	94	122	96	149	117	148	121	109		89	129
10	K (mg/L)	2.6	5.7	3.8	2.3	3.1		2.5	4.2	3.3	2.8	4.2	3.3	3.4	14.1	3.4	4.6	3.2	3.8	3.8	3.4		3.0	4.9
11	Mg (mg/L)	8.9	7.7	7.0	6.7	9.3		9.1	15.6	9.3	6.8	7.5	9.3	9.9	23.5	19.0	12.0	9.2	9.7	8.0	8.0		17.0	19.9
12	Na (mg/L)	17.3	10.0	12.1	11.9	11.8		12.2	14.1	10.9	10.5	17.0	10.9	14.2	60.6	13.6	25.5	10.8	18.6	16.5	14.8		17.4	29.5
13	NH3-N (mg N/L)																							
14	NO2+NO3 (mg N/L)	2.57	1.47	1.97	2.40	1.30		2.01	1.80	0.41	0.84	1.01	1.41	0.99	0.95	1.18	1.23	1.04	1.98	1.41	1.37		1.24	2.73
15	NO2-N (mgN/L)	0.00	0.02	0.00	0.00	0.00		0.00	0.00	0.07	0.00	0.02	0.02	0.03	0.04	0.01	0.00	0.00	0.00	0.00	0.00		0.00	0.02
16	NO3-N (mgN/L)	2.57	1.44	1.97	2.40	1.30		2.01	1.80	0.34	0.84	0.99	1.40	0.96	0.91	1.17	1.23	1.04	1.98	1.41	1.37		1.24	2.71
17	o-PO4-P (mg P/L)	0.062		0.012	0.000	0.000		0.012											0.000	0.000	0.005		0.005	
18	P-Tot (mgP/L)	0.001	0.013	0.003	0.001	0.001		0.011	0.001	0.010	0.001	0.001	0.001	0.001	0.010	0.001	0.001	0.001	0.001	0.001	0.005		0.002	0.001
19	SiO2 (mg/L)	14.0	22.3	23.4	8.5	9.1		8.2	8.1	9.4	11.8	11.4	5.6	5.6	6.4	8.0	19.8	22.1	23.3	12.9	9.4		9.2	5.7
20	SO4 (mg/L)	18.6	44.8	8.3	11.4	17.2		26.7	36.7	22.4	64.0	32.7	21.6	27.0	55.0	34.0	23.0	12.6	10.8	20.9	14.5		42.5	61.4
	BIOLOGICAL/BACTERIOLOGICAL																							
1	BOD3-27 (mg/L)	0.8	1.7	0.9	1.0	1.0		1.2	5.2	1.2	0.8	0.8	0.5	0.8	1.0	0.7	1.0	1.3	0.9	1.1	1.1		1.9	1.6
2	DO (mg/L)	6.4	7.0	6.4	6.9	7.1		6.4	6.5	6.3	5.5	6.4	5.3	5.5	6.9	6.0	7.8	8.0	8.6	8.2	8.4		8.9	7.9
3	DO_SAT% (%)	84	91	83	92	89		81	82	81	70	81	69	70	82	77	84	91	93	90	83		93	84
4	FCol-MPN (MPN/100mL)															90								
5	Tcol-MPN (MPN/100mL)															208								
	TRACE & TOXIC																							
1	Al (mg/L)		0.90	2.20												0.00				5.26				
	CHEMICAL INDICES																							
1	HAR_Ca (mgCaCO3/L)	83	95	60	60	69		54	83	52	62	62	52	86	143	117	105	70	93	87	68		54	97
2	HAR_Total (mgCaCO3/L)	120	106	90	88	108		92	148	91	90	93	91	127	241	196	155	104	133	120	101		125	180
3	Na% (%)	23	15	22	23	20		23	18	19	20	27	19	19	33	12	25	18	23	22	23		23	26
4	RSC (-)	0.0	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	0.0		0.0	0.0
5	SAR (-)	0.6	0.4	0.5	0.5	0.5		0.6	0.5	0.5	0.5	0.8	0.5	0.6	1.7	0.4	0.8	0.5	0.7	0.7	0.6		0.7	1.0
	PESTICIDES																							

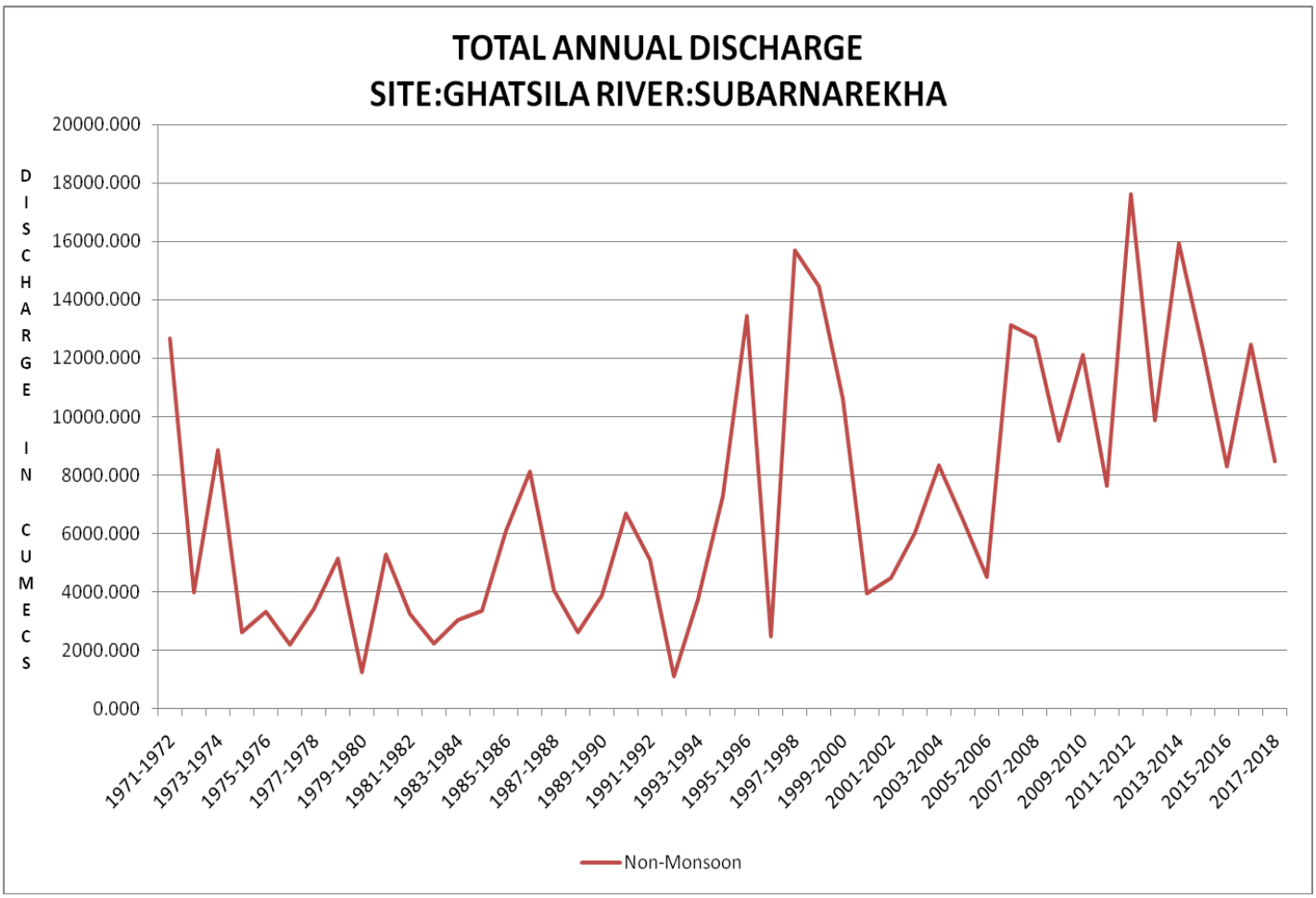
Water Quality Seasonal Average for the period: 2003-2018

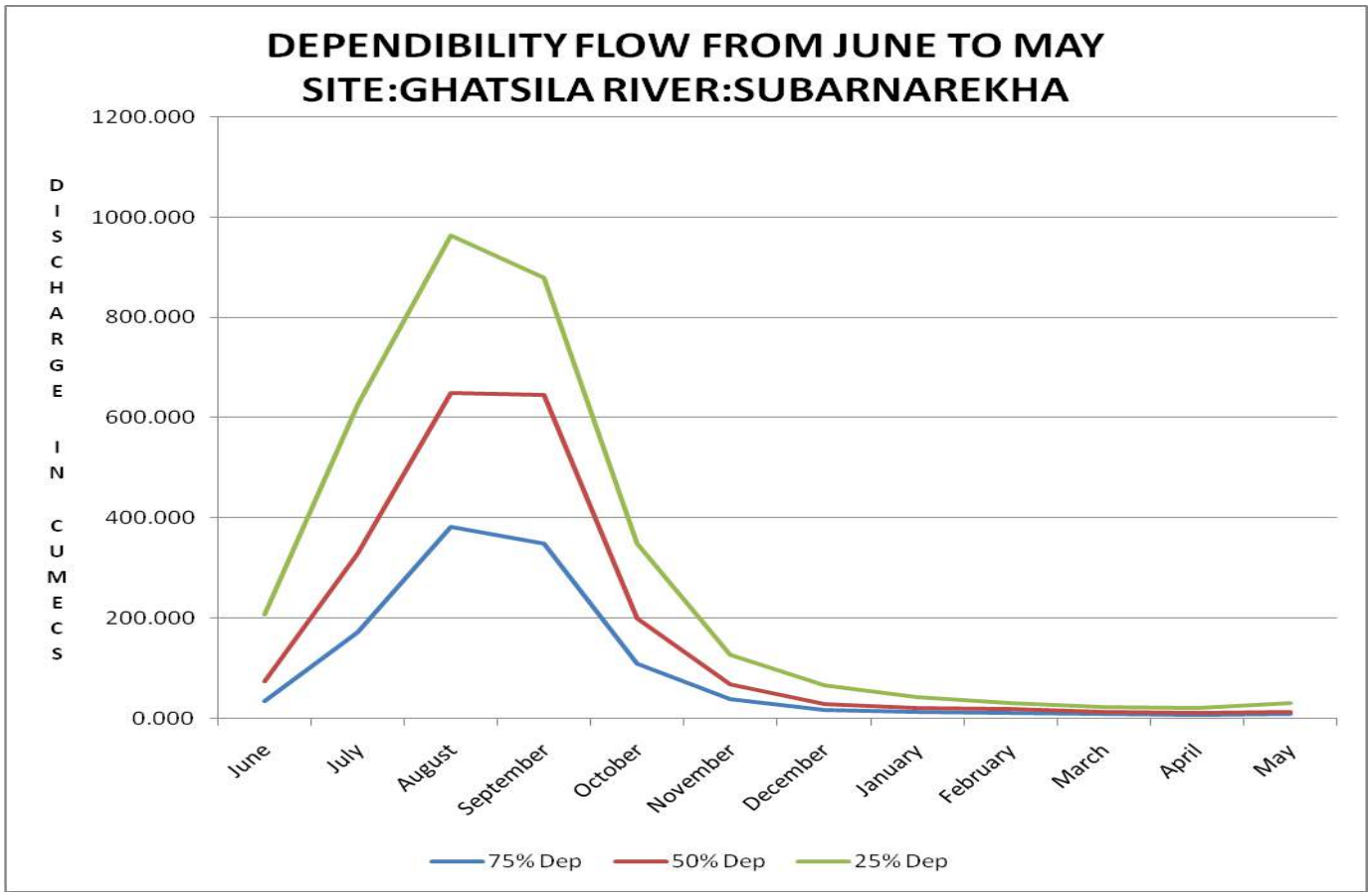
Station Name : GHATSHILA (ES000K7) **Division : E.E., Bhubaneswar**

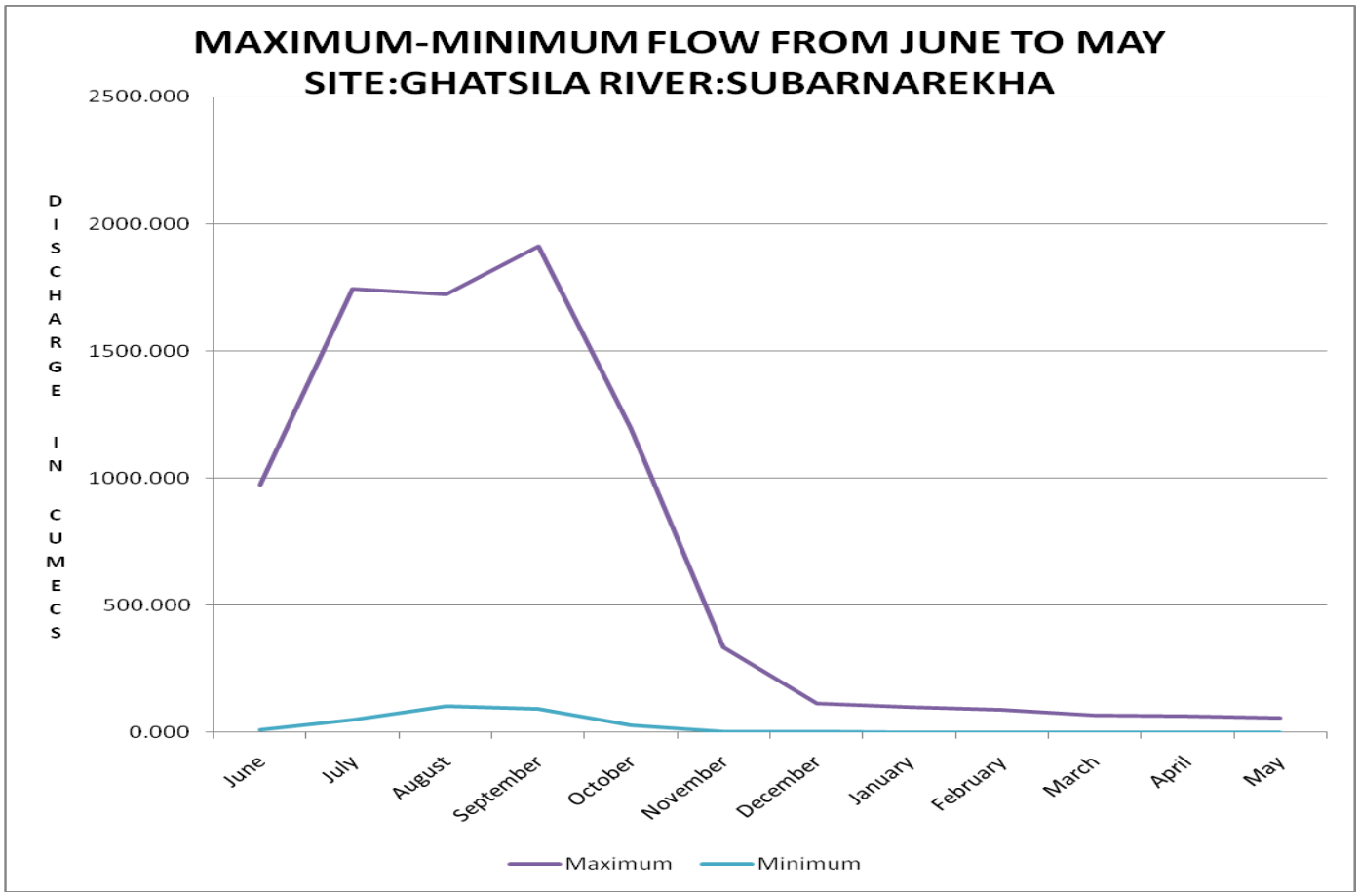
Local River : Subarnarekha **River Water** **Sub-Division : Balasore**

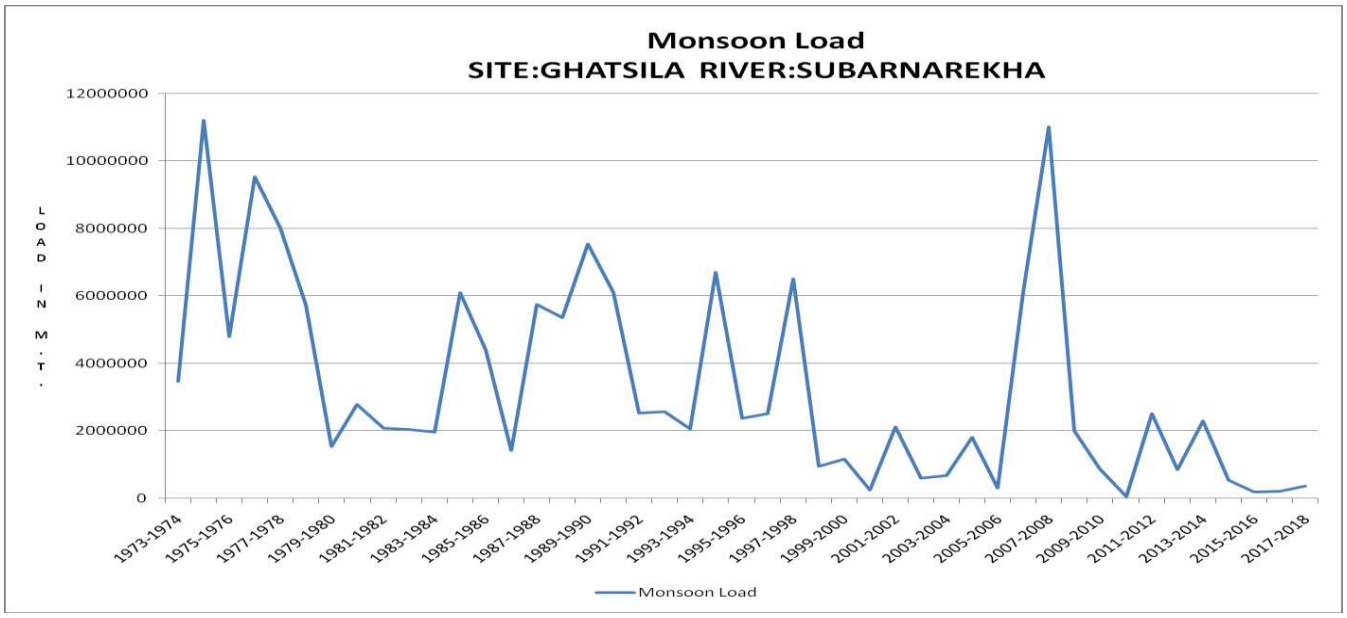
S.No	Parameters								Summer														
									Mar - May														
		2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	PHYSICAL																						
1	Q (cumec)																						
2	EC_FLD (µmho/cm)	275	301	265	470	765	581	351	493	402	421	439	455		403	540	310	537	333	556	719	443	495
3	EC_GEN (µmho/cm)	275	301	265	470	766	585	346	493	397	413	437	467		403	540	310	537	333	556	722	447	492
4	pH_FLD (pH units)	7.6	7.8	7.8	7.7	7.6	8.2	7.6	8.0	7.6	7.5	7.9	8.1		8.1	8.1	7.7	7.7	7.6	7.6	7.9	7.9	7.7
5	pH_GEN (pH units)	7.6	7.8	7.8	7.7	7.7	8.2	7.5	7.8	7.4	7.5	8.0	8.2		8.1	8.1	7.7	7.7	7.6	7.6	8.1	7.8	7.7
6	Temp (deg C)	18.8	17.3	21.4	18.9	19.9	18.4	20.1	27.5	25.7	26.5	24.2	24.5		26.7	23.0	25.3	25.7	26.8	26.7	26.0	24.7	26.3
	CHEMICAL																						
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0	0.0	2.3	0.0	0.0				0.0	0.0		0.0	15.6	0.0	0.0			19.9	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	83	79	75	65	115	72	87				231	170		97	129	77	83			129	80	102
3	B (mg/L)	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.00	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
4	Ca (mg/L)	31	31	22	28	36	59	41	53	39	44	40	49		28	45	34	21	24	31	49	66	41
5	Cl (mg/L)	27.3	32.1	27.3	25.0	17.4	13.7	25.1	25.5	32.4	30.0	32.9	26.4		39.0	46.5	25.8	23.5	28.4	22.2	59.1	29.5	34.6
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	18.8	0.0	0.0	0.0	0.0	24.0	0.0	0.0
7	F (mg/L)	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.97	0.40	0.49	0.55	0.05		0.99	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.05
8	Fe (mg/L)	0.0	1.3	0.1	0.3	0.3	0.3	0.4		0.1	0.1	0.6	0.8		0.1	0.6	0.0	1.2	0.4	0.4	0.3	0.5	0.5
9	HCO3 (mg/L)	101	96	96	96	135	87	106	187	115	153	149	208		119	120	94	81	96	72	109	98	124
10	K (mg/L)	2.9	5.9	3.0	2.8	6.1	17.0	3.0	2.4	3.6	4.4	5.6	3.9		5.5	5.8	13.1	8.5	2.9	12.2	10.8	30.4	3.4
11	Mg (mg/L)	7.8	11.4	6.2	7.8	9.0	24.1	15.1	14.9	12.0	10.6	18.1	17.5		15.9	16.8	9.1	9.4	7.9	9.4	19.1	26.6	15.4
12	Na (mg/L)	12.3	23.6	14.1	12.6	26.4	45.5	28.7	19.1	20.3	20.4	22.0	16.9		26.9	29.9	26.1	30.5	15.3	24.1	65.8	45.9	47.1
13	NH3-N (mg N/L)												0.05										
14	NO2+NO3 (mg N/L)	0.42	0.82	1.08	0.81	1.05	1.13	1.18	0.78	0.78	2.29	2.25	1.15		0.89	5.42	0.38	0.78	1.23	0.92	0.95	1.20	1.21
15	NO2-N (mgN/L)	0.07	0.00	0.02	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.07	0.00	0.03	0.00	0.00	0.03	0.00
16	NO3-N (mgN/L)	0.35	0.82	1.05	0.78	1.04	1.12	1.18	0.78	0.78	2.29	2.25	1.15		0.89	5.42	0.31	0.78	1.20	0.92	0.95	1.18	1.21
17	o-PO4-P (mg P/L)										0.000	0.007			0.023								
18	P-Tot (mgP/L)	0.010	0.001	0.001	0.001	0.010	0.010	0.001	0.001	0.001	0.001	0.007	0.050		0.001	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001
19	SiO2 (mg/L)	9.3	12.0	11.3	4.4	5.8	6.5	8.0	18.2	22.9	24.5	16.5	9.6		9.1	8.2	10.3	11.3	11.1	5.0	5.3	7.8	8.4
20	SO4 (mg/L)	30.8	42.3	32.5	25.7	30.5	32.4	26.6	31.8	51.9	19.8	42.3	14.8		44.0	44.9	22.0	46.2	35.4	21.6	27.2	31.1	30.7
	BIOLOGICAL/BACTERIOLOGICAL																						
1	BOD3-27 (mg/L)	1.4	0.7	0.7	0.6	0.9	1.1	0.8	1.2	0.8	0.9	1.1	1.1		1.0	1.9	1.7	0.9	1.5	1.1	0.9	1.1	1.1
2	DO (mg/L)	7.2	8.7	7.5	8.9	8.8	8.9	6.5	7.3	5.9	7.6	6.7	6.1		7.2	6.9	6.4	5.0	5.9	5.6	5.2	6.1	5.4
3	DO_SAT% (%)	77	91	84	95	96	94	71	92	72	94	79	72		89	80	78	62	73	70	64	73	67
4	FCol-MPN (MPN/100mL)						68	55														90	70
5	Tcol-MPN (MPN/100mL)						125	173														183	177
	TRACE & TOXIC																						
1	Al (mg/L)																						
	CHEMICAL INDICES																						
1	HAR_Ca (mgCaCO3/L)	77	78	56	69	90	146	101	133	97	110	100	121		71	112	84	53	61	78	123	164	102
2	HAR_Total (mgCaCO3/L)	110	126	82	101	128	247	164	195	147	154	176	194		137	182	122	92	94	117	203	275	166
3	Na% (%)	19	28	27	20	30	27	24	18	24	22	20	16		29	26	28	39	26	26	38	24	38
4	RSC (-)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
5	SAR (-)	0.5	0.9	0.7	0.5	1.0	1.3	1.0	0.6	0.8	0.7	0.7	0.5		1.0	1.0	1.0	1.4	0.7	1.0	2.2	1.2	1.6
	PESTICIDES																						

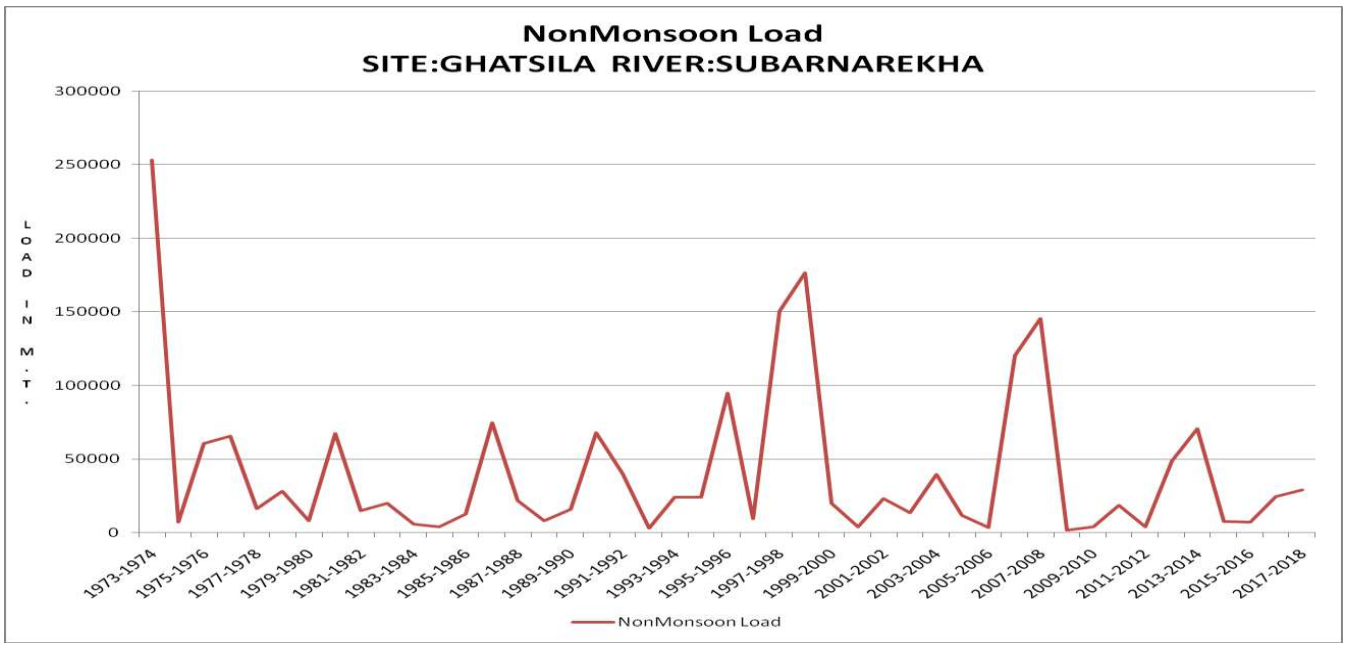

TOTAL ANNUAL DISCHARGE
SITE:GHATSILA RIVER:SUBARNAREKHA
DISCHARGE IN CUMECS
180000.000
160000.000
140000.000
120000.000
100000.000
80000.000
60000.000
40000.000
20000.000
0.000
1971-1972
1973-1974
1975-1976
1977-1978
1979-1980
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
Monsoon
Annual Runoff

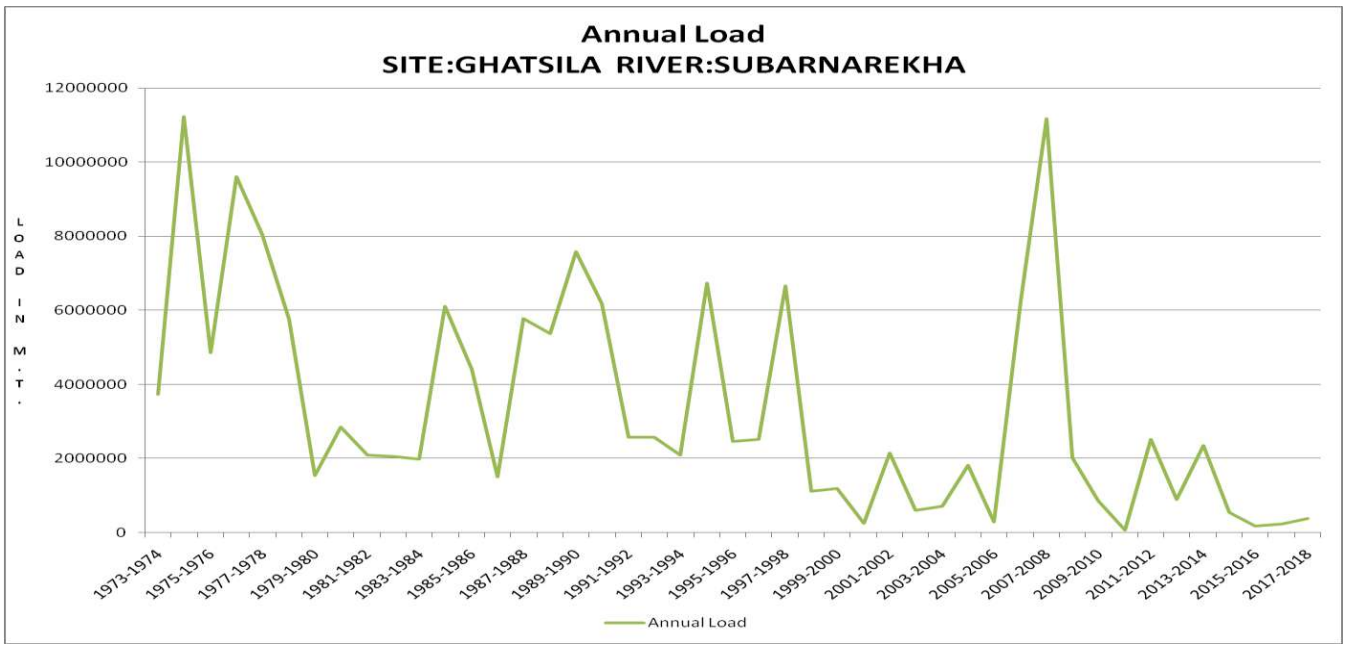

TOTAL ANNUAL DISCHARGE
SITE:GHATSILA RIVER:SUBARNAREKHA
DISCHARGE IN CUMECS
20000.000
18000.000
16000.000
14000.000
12000.000
10000.000
8000.000
6000.000
4000.000
2000.000
0.000
1971-1972
1973-1974
1975-1976
1977-1978
1979-1980
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
Non-Monsoon

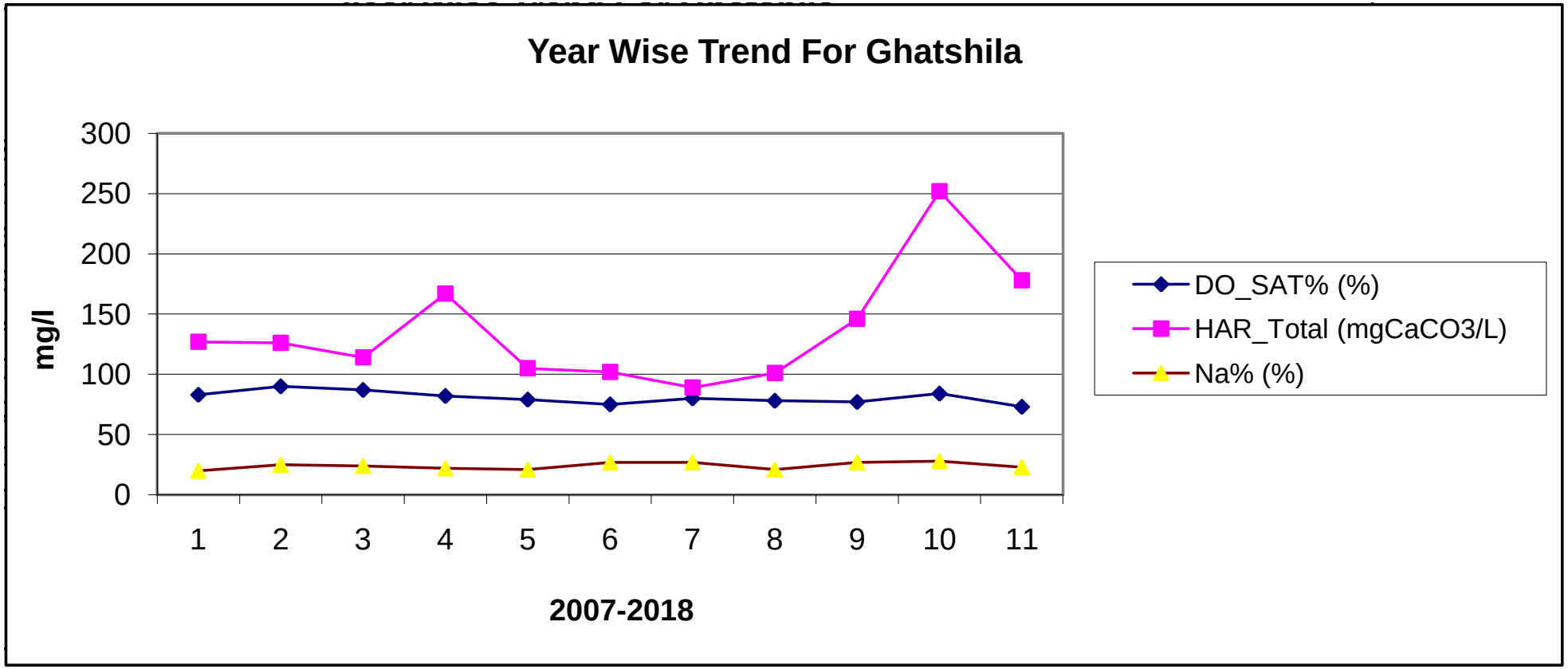

DEPENDIBILITY FLOW FROM JUNE TO MAY
SITE:GHATSILA RIVER:SUBARNAREKHA
DISCHARGE IN CUMECS
1200.000
1000.000
800.000
600.000
400.000
200.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
75% Dep
50% Dep
25% Dep

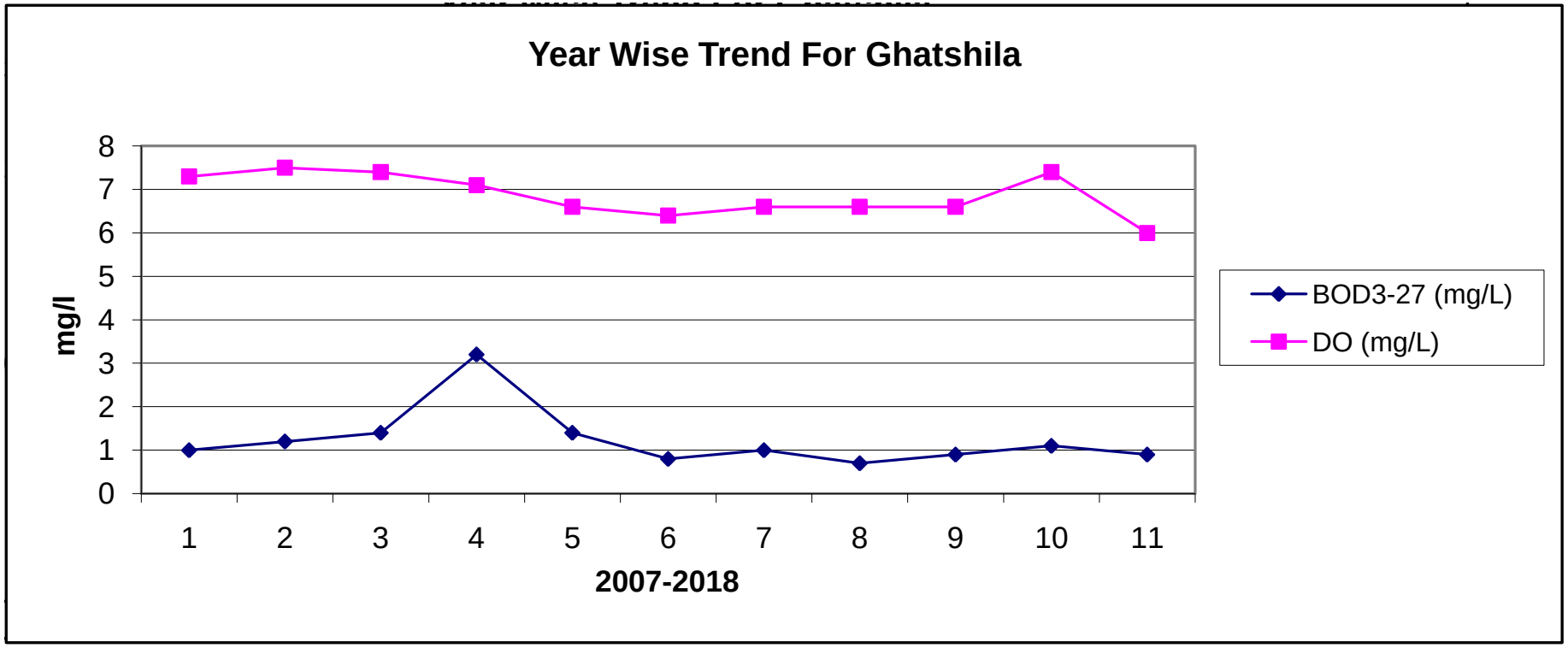

MAXIMUM-MINIMUM FLOW FROM JUNE TO MAY
SITE:GHATSILA RIVER:SUBARNAREKHA
DISCHARGE IN CUMECS
2500.000
2000.000
1500.000
1000.000
500.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
Maximum
Minimum

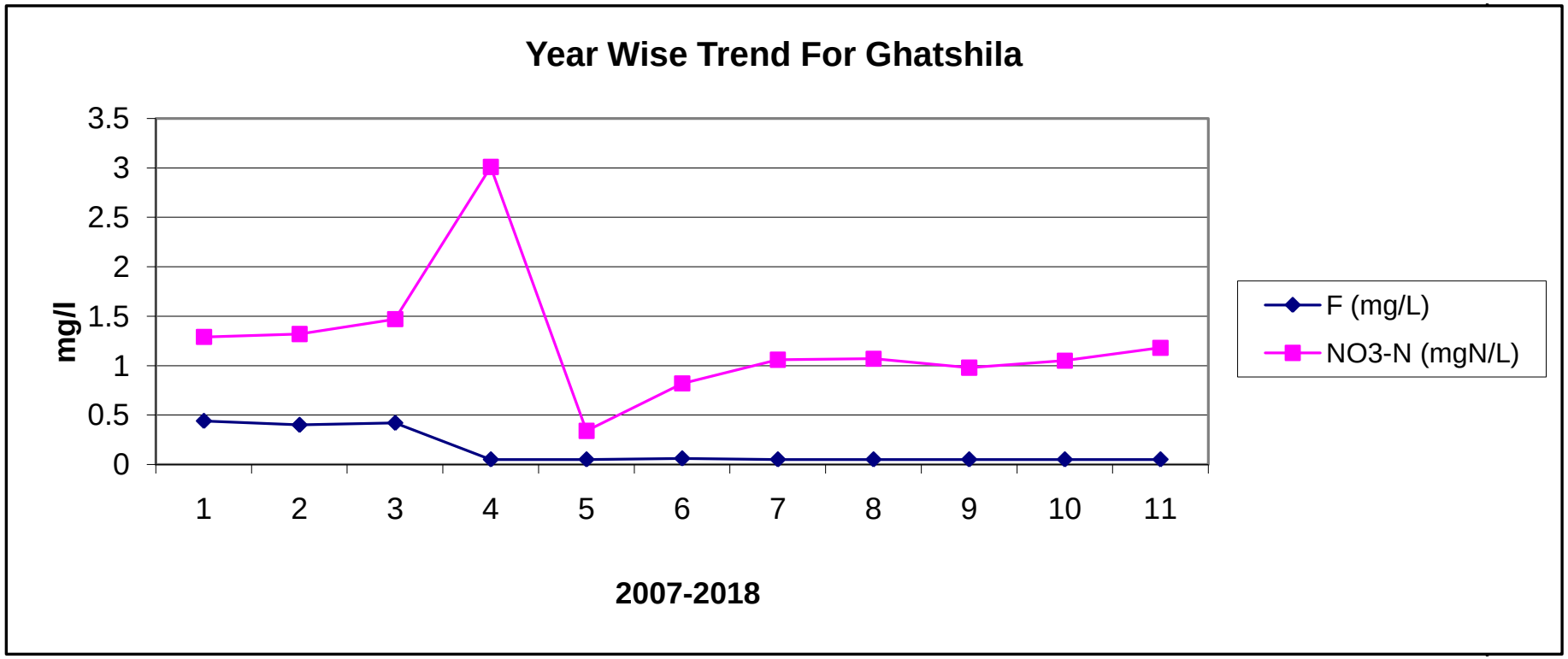

Monsoon Load
SITE:GHATSILA RIVER:SUBARNAREKHA
LOAD IN M.T.
12000000
10000000
8000000
6000000
4000000
2000000
0
1973-1974
1975-1976
1977-1978
1979-1980
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
Monsoon Load

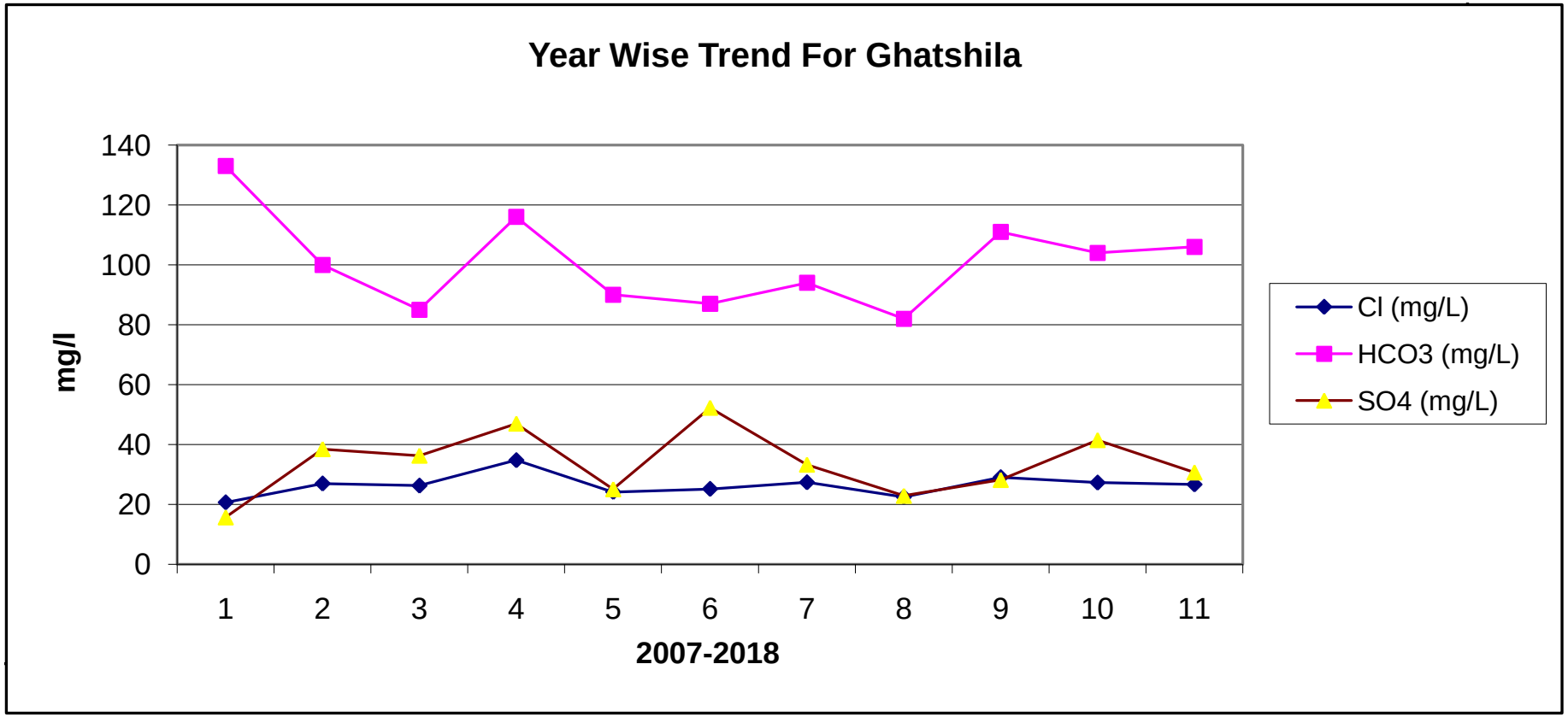

NonMonsoon Load
SITE:GHATSILA RIVER:SUBARNAREKHA
LOAD IN M.T.
300000
250000
200000
150000
100000
50000
0
1973-1974
1975-1976
1977-1978
1979-1980
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
NonMonsoon Load

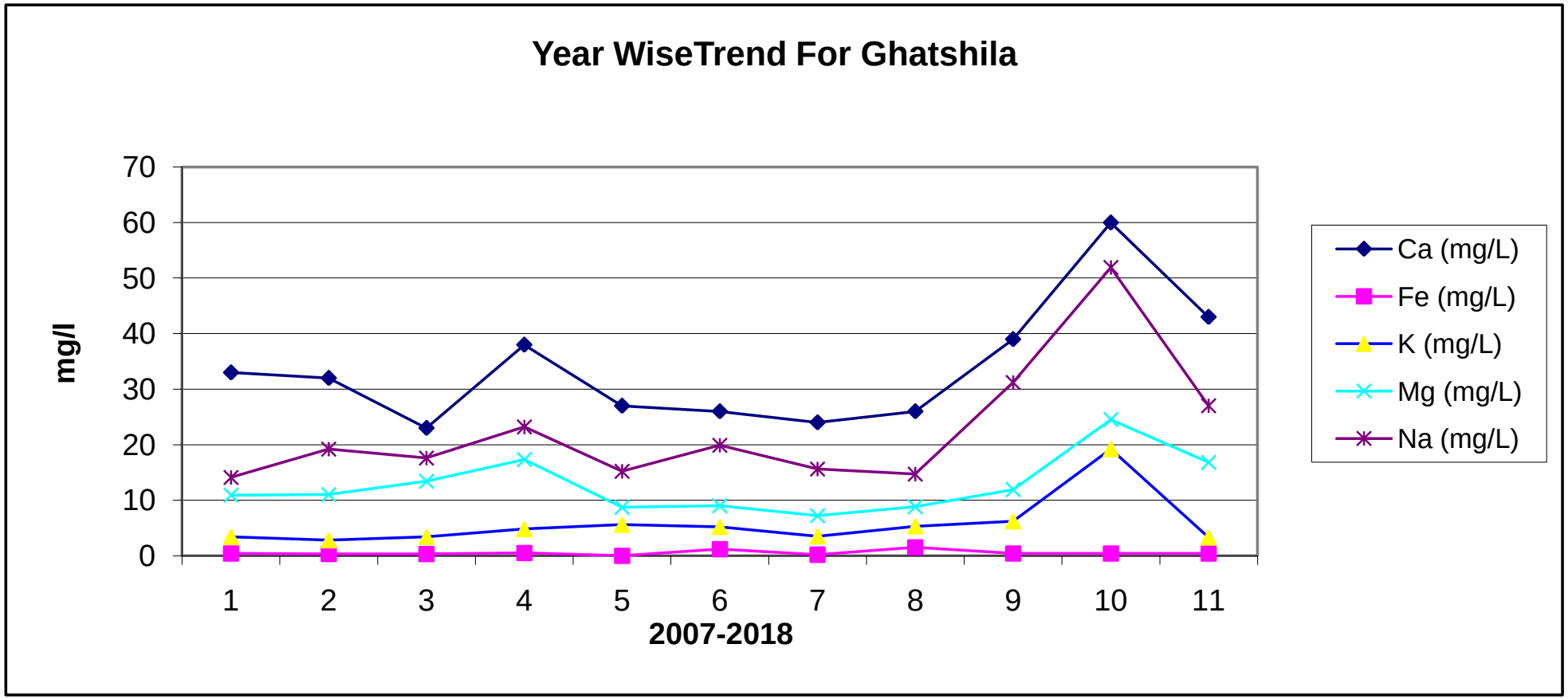

Annual Load
SITE:GHATSILA RIVER:SUBARNAREKHA
LOAD IN M.T.
12000000
10000000
8000000
6000000
4000000
2000000
0
1973-1974
1975-1976
1977-1978
1979-1980
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
Annual Load


Year Wise Trend For Ghatshila
300
250
200
150
100
50
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
DO_SAT% (%)
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For Ghatshila
mg/l
8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
9
10
11
2007-2018
BOD3-27 (mg/L)
DO (mg/L)


Year Wise Trend For Ghatshila
3.5
3
2.5
2
1.5
1
0.5
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend For Ghatshila
140
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year WiseTrend For Ghatshila
mg/l
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Ca (mg/L)
Fe (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

HISTORY SHEET

Water Year : 2017-2018

Site	**:**	**FEKOGHAT**	**Code**	**:**	**ESA00F3**
State	:	West Bengal	District		Mednipur
Basin	:	Subarnarekha	Independent River	:	Subarnarekha
Tributary	:	Dulang	Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	Dulang
Division	:	E.E., Bhubaneswar	Sub-Division	:	Balasore
Drainage Area	:	700 Sq. Km.	Bank	:	Left
Latitude	:	22°18'28"	Longitude	:	86°55'11"
Zero of Gauge (m)	:	41.48 (m.s.l)	7/1/1987	-	11/30/2004
		40 (m.s.l)	12/1/2004	-	1/31/2020
		40 (m.s.l)	7/1/2005	-	7/1/2017
		Opening Date	Closing Date		
Gauge	:	7/1/1987			
Discharge	:	6/18/1988			
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**
1990-1991	331.7	44.920	9/4/1990	2.104	41.900	6/29/1990
1991-1992	255.8	44.540	7/22/1991	1.240	41.840	7/14/1991
1992-1993	129.5	43.920	8/8/1992	3.070	41.840	7/9/1992
1993-1994	176.0	43.880	9/14/1993	5.559	42.000	7/22/1993
1994-1995	275.3	44.820	7/20/1994	6.026	42.150	9/30/1994
1995-1996	280.1	44.720	9/27/1995	1.887	41.640	7/1/1995
1996-1997	219.0	44.300	7/26/1996	0.420	41.500	6/20/1996
1997-1998	1488	47.660	6/28/1997	3.775	41.700	6/24/1997
1998-1999	532.0	44.840	9/10/1998	1.127	41.460	6/19/1998
1999-2000	685.0	45.320	8/7/1999	3.310	41.840	8/3/1999
2000-2001	153.0	43.260	9/20/2000	1.330	41.560	7/6/2000
2001-2002	597.5	45.200	8/31/2001	6.454	41.640	9/28/2001
2002-2003	392.2	44.140	9/11/2002	2.198	41.380	7/16/2002
2003-2004	509.3	44.830	10/8/2003	2.571	41.580	6/18/2003
2004-2005	420.1	44.280	8/8/2004	2.861	41.540	7/1/2004
2005-2006	375.0	43.960	9/14/2005	0.610	41.320	6/23/2005
2006-2007	410.0	45.890	9/21/2006	3.095	41.480	6/17/2006
2007-2008	650.4	50.000	7/6/2007	3.985	41.560	7/3/2007
2008-2009	480.2	47.060	6/18/2008	21.45	41.780	10/6/2008
2009-2010	195.0	44.420	9/7/2009	0.897	41.260	6/26/2009
2010-2011	40.00	42.180	9/19/2010	1.010	41.260	6/24/2010
2011-2012	200.0	45.100	6/19/2011	10.50	41.460	7/31/2011
2012-2013	179.6	43.770	9/7/2012	0.960	41.220	6/20/2012
2013-2014	569.5	46.160	8/21/2013	9.600	41.540	7/21/2013
2014-2015	60.51	42.360	9/2/2014	1.268	41.100	6/19/2014
2015-2016	78.30	43.260	7/28/2015	0.965	41.000	6/10/2015
2016-2017	246.6	44.360	9/6/2016	0.000	42.080	8/2/2016
2017-2018	155.8	43.150	7/26/2017	2.000	41.080	7/9/2017

Stage-Discharge Data for the period 2017 - 2018

Station Name : FEKOGHAT (ESA00F3) **Division : E.E., Bhubaneswar**

Local River : Dulang **Sub-Division : Balasore**

Day	Jun		Jul		Aug		Sep		Oct	
	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q
1	41.040		41.080	2.298	41.710	24.19	41.760	44.30	41.540	42.00 *
2	41.040		41.100	2.352	41.900	30.95	42.240	68.70 *	41.500	40.00 *
3	41.020		41.100	2.325	41.820	29.08	42.180	68.00 *	41.480	39.78
4	41.020		41.080	2.278	42.100	41.12	41.890	51.12	41.460	39.48
5	41.020		41.080	2.268	43.020	135.5	41.700	45.96	41.420	38.70
6	41.000		41.100	2.253	42.560	42.00 *	42.090	63.05	41.500	46.49
7	41.000		41.080	2.139	42.060	42.35	41.710	45.93	41.440	44.25
8	41.000		41.060	2.084	41.800	34.56	41.610	42.28	41.840	56.00 *
9	41.020		41.080	2.000 *	41.700	32.68	41.760	48.94	41.660	50.76
10	41.020		41.060	2.147	41.720	35.33	41.780	49.00 *	41.620	49.36
11	41.020		41.080	2.139	41.870	41.24	41.780	51.18	41.600	46.60
12	41.040		41.570	28.38	41.730	36.16	41.680	46.08	41.820	52.73
13	41.060		41.540	20.20	41.720	36.00 *	41.700	47.65	41.660	52.61
14	41.040		41.670	22.58	42.090	48.08	41.770	51.84	41.650	46.26
15	41.020		41.560	21.36	42.280	60.00 *	41.850	62.42	41.660	46.00 *
16	41.020		41.560	21.00 *	42.250	60.46	41.810	46.31	41.580	44.87
17	41.000		41.540	20.83	42.390	67.92	41.640	46.00 *	41.500	42.08
18	41.000		41.480	17.26	42.150	59.78	41.920	50.99	41.460	40.49
19	41.000		41.420	15.82	42.340	68.23	42.390	73.79	41.540	43.00 *
20	41.000		41.460	18.25	42.520	66.80 *	42.250	68.78	41.730	48.92
21	41.060		42.010	33.50	42.310	66.36	42.030	64.85	42.950	95.67
22	41.080		41.810	27.45	42.050	53.93	41.820	57.74	42.620	84.00 *
23	41.060		42.340	33.60 *	41.810	47.51	41.640	52.94	42.130	68.36
24	41.060		44.300	35.00 *	41.590	42.94	41.580	43.20 *	41.860	46.62
25	41.040		44.580	36.30 *	41.580	39.77	41.480	43.02	41.700	41.69
26	41.060		43.150	155.8	41.620	38.81	41.400	38.33	41.660	39.49
27	41.120		43.010	135.2	41.660	39.00 *	41.460	39.34	41.580	36.55
28	41.100		42.500	62.71	41.670	42.25	41.460	39.04	41.520	35.00
29	41.120		42.100	40.53	42.360	63.47	41.720	45.90 *	41.480	34.00 *
30	41.080		41.900	28.00 *	42.190	56.90	41.640	45.00 *	41.460	33.23
31			41.740	25.82	41.930	47.10			41.440	31.74
Ten-Daily Mean										
I Ten-Daily	41.018		41.082	2.092	42.039	44.77	41.872	52.73	41.546	44.68
II Ten-Daily	41.020		41.488	18.78	42.134	54.47	41.879	54.50	41.620	46.36
III Ten-Daily	41.078		42.676	55.81	41.888	48.91	41.623	46.94	41.855	49.67
Monthly										
Min.	41.000		41.060	2.000	41.580	24.19	41.400	38.33	41.420	31.74
Max.	41.120		44.580	155.8	43.020	135.5	42.390	73.79	42.950	95.67
Mean	41.039		41.779	32.4	42.016	49.37	41.791	51.39	41.679	46.99

Annual Runoff in MCM = 461 Annual Runoff in mm = 659

Peak Observed Discharge = 155.8 cumecs on 26-Jul-17 Corres. Water Level :43.15 m

Lowest Observed Discharge = 2.084 cumecs on 08-Jul-17 Corres. Water Level :41.06 m

Peak Computed Discharge = 84.00 cumecs on 22-Oct-17 Corres. Water Level :42.62 m

Lowest Computed Discharge = 2.000 cumecs on 09-Jul-17 Corres. Water Level :41.08 m

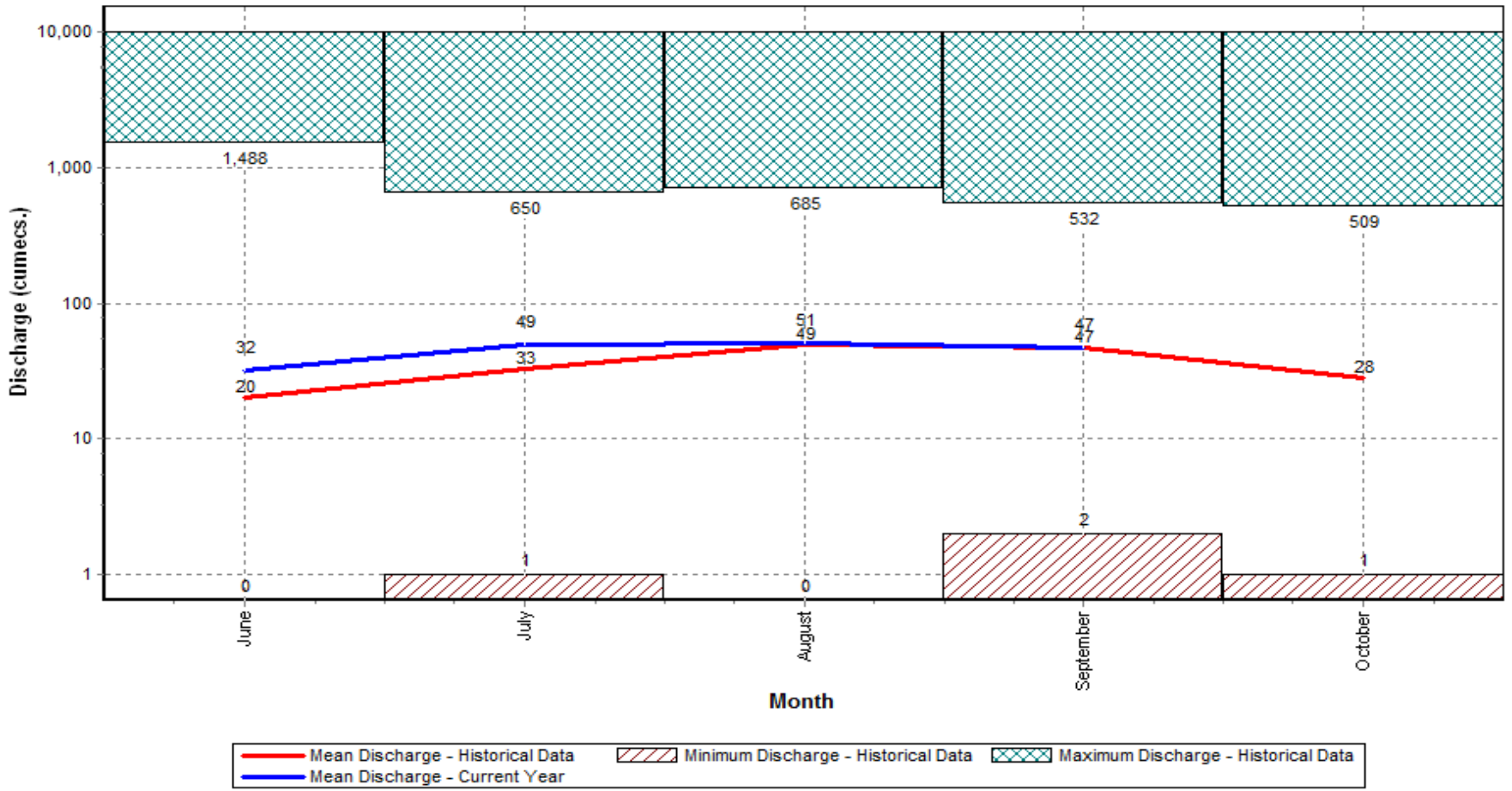
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2017-2018

Station Name : FEKOGHAT (ESA00F3) **Data considered : 1990-2018** **Division : E.E., Bhubaneswar**

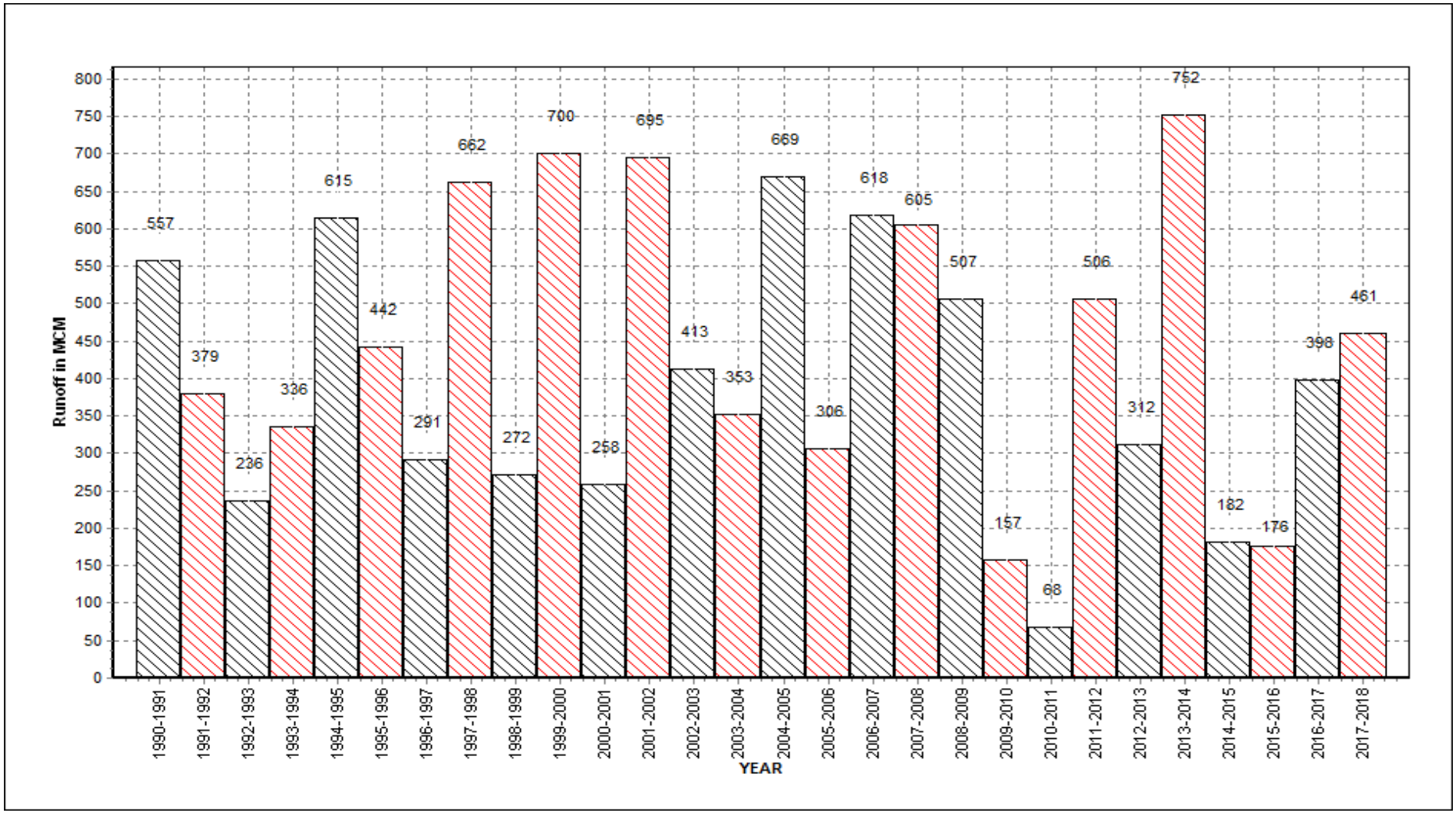
Local River : Dulang **Sub-Division : Balasore**



Annual Runoff Values for the period: 1990 - 2018

Station Name : FEKOGHAT (ESA00F3) **Division : E.E., Bhubaneswar**

Local River : Dulang **Sub-Division : Balasore**

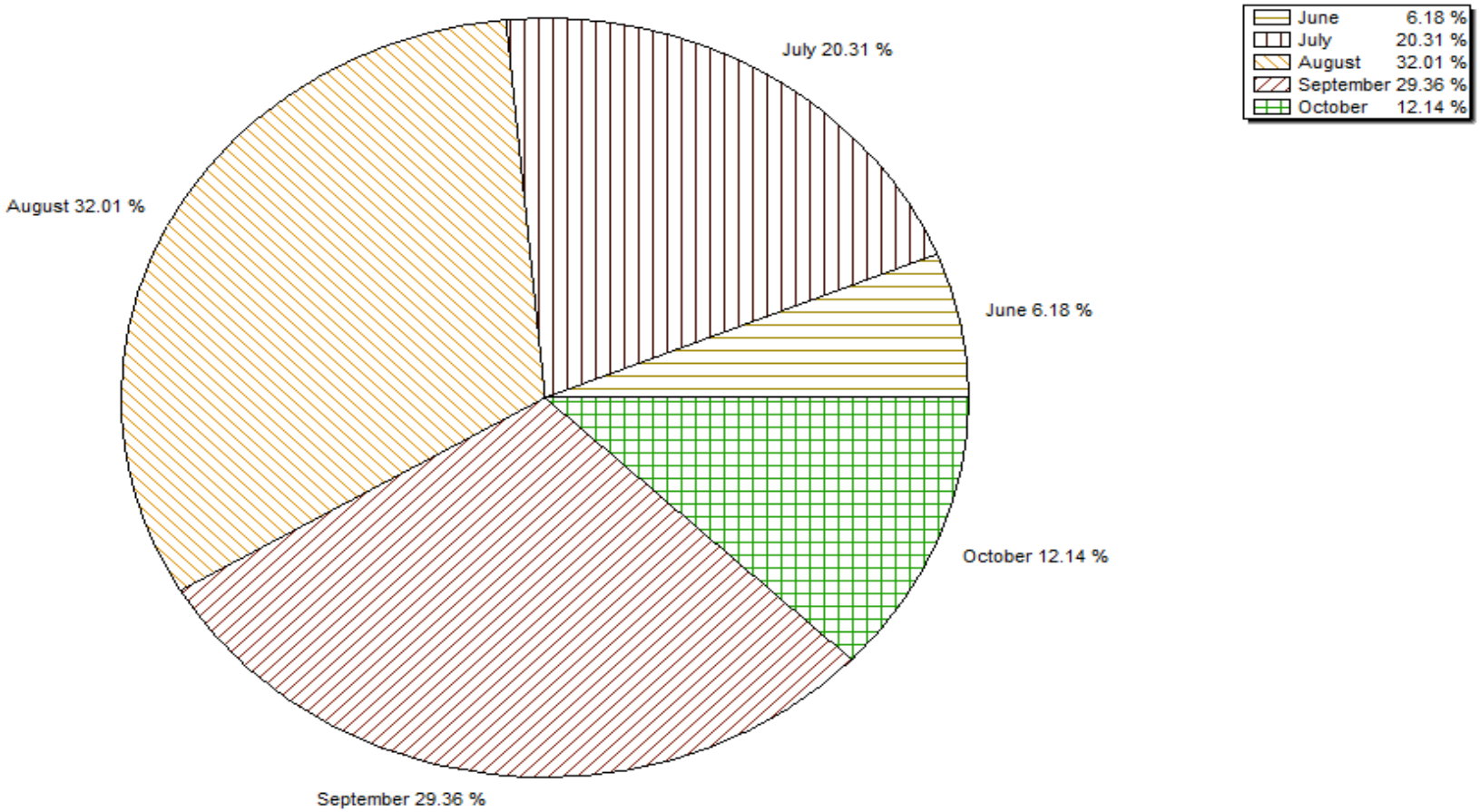


Note: Missing values have not been considered while arriving at Annual Runoff

Monthly Average Runoff based on period : 1990-2017

Station Name : FEKOGHAT (ESA00F3) **Division : E.E., Bhubaneswar**

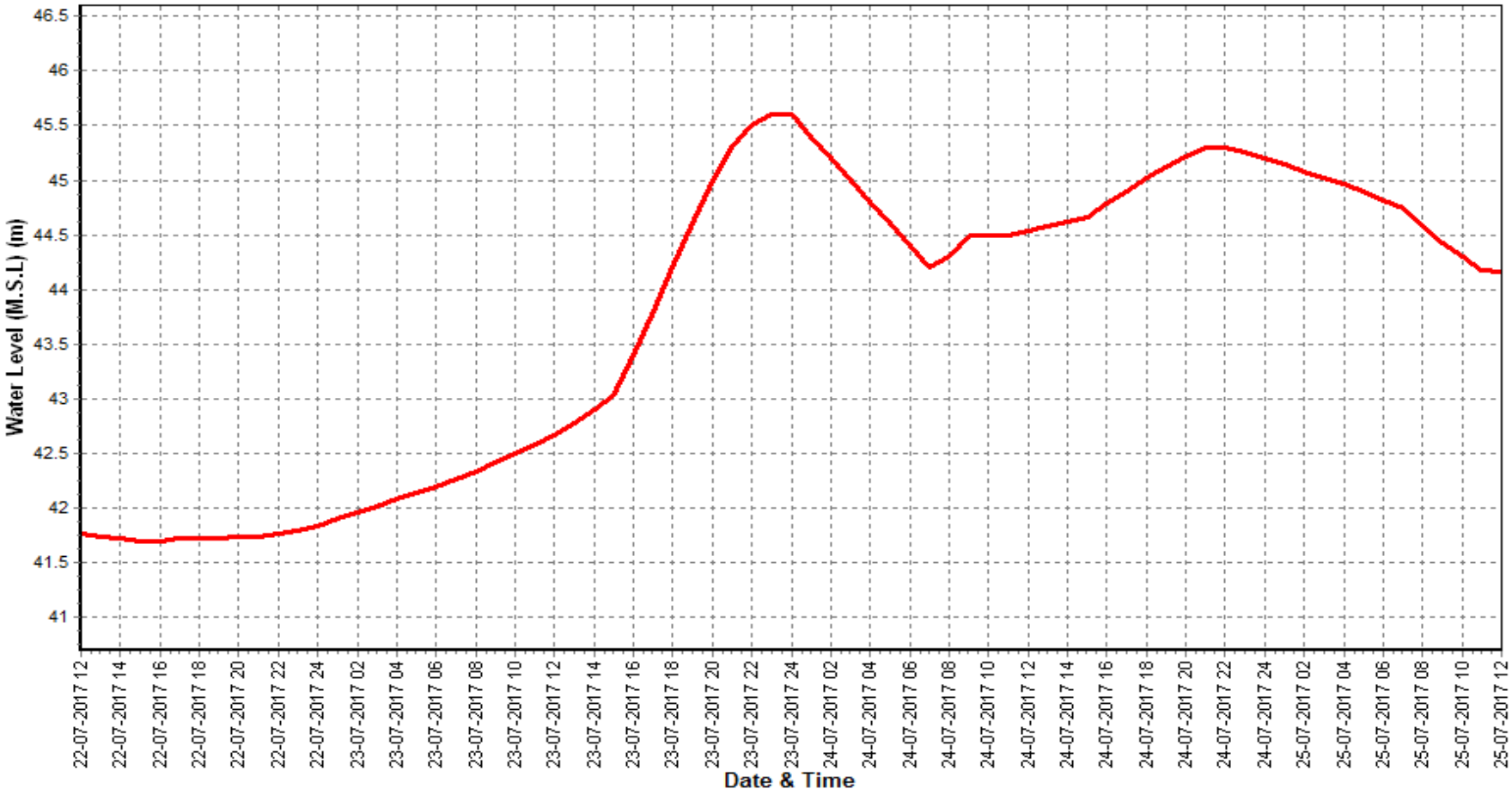
Local River : Dulang **Sub-Division : Balasore**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2017-2018

Station Name : FEKOGHAT (ESA00F3) **Division : E.E., Bhubaneswar**

Local River : Dulang **Sub-Division : Balasore**

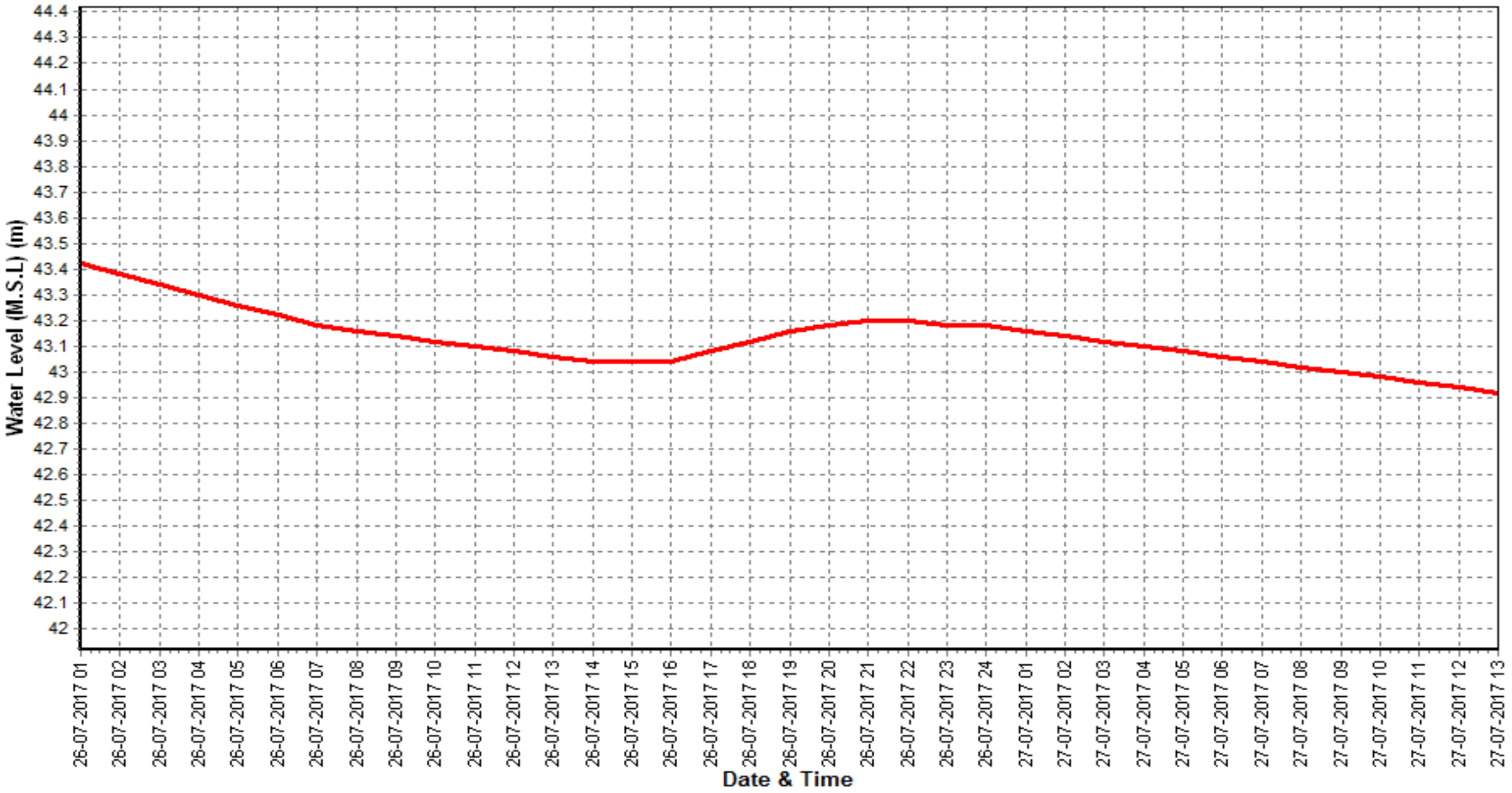


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2017-2018

Station Name : FEKOGHAT (ESA00F3) **Division : E.E., Bhubaneswar**

Local River : Dulang **Sub-Division : Balasore**

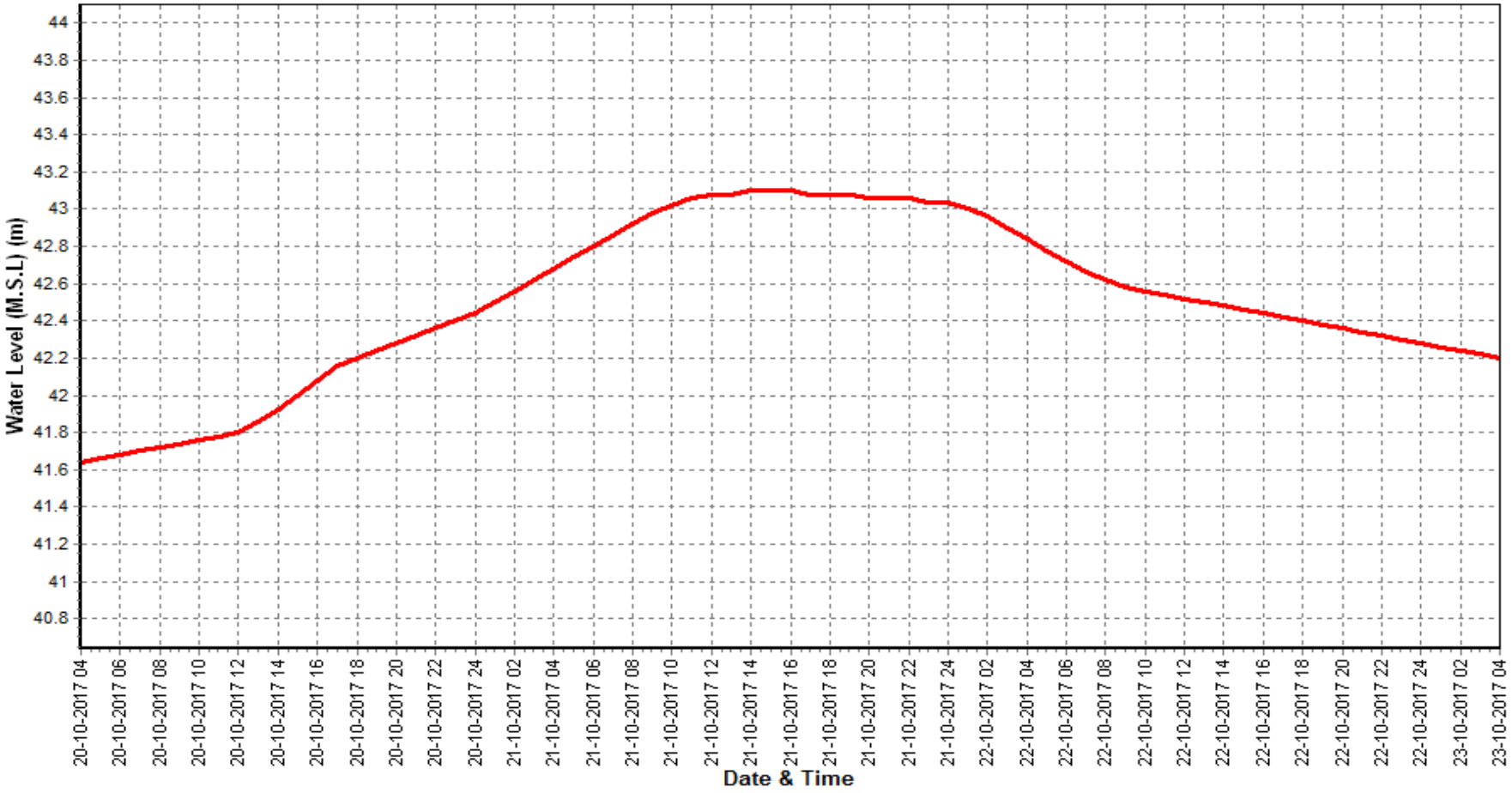


Time Span: 72 Hrs

Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2017-2018

Station Name : FEKOGHAT (ESA00F3) **Division : E.E., Bhubaneswar**

Local River : Dulang **Sub-Division : Balasore**



Time Span: 72 Hrs

HISTORY SHEET

Water Year : 2017-2018

Site	:	**RAJGHAT**	**Code**	:	**RAJGHAT**
State	:	Orissa	District		Balasore
Basin	:	Subarnarekha	Independent River	:	Subarnarekha
Tributary	:	-	Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	Subarnarekha
Division	:	E.E., Bhubaneswar	Sub-Division	:	Balasore
Drainage Area	:	18260 Sq. Km.	Bank	:	
Latitude	:	21°46'04"	Longitude	:	87°09'51"
Zero of Gauge (m)	:	5.79 (m.s.l) 3 (m.s.l)	6/1/1972 1/1/2013	-	6/1/2012
		Opening Date	Closing Date		
Gauge	:	6/1/1972			
Discharge	:	3/1/2013			
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**
2015-2016	4144	11.920	7/29/2015	7.984	7.460	5/3/2016
2016-2017	3432	14.420	9/7/2016	11.00	7.700	6/12/2016
2017-2018	2424	14.300	7/28/2017	10.83	6.860	5/19/2018

Stage-Discharge Data for the period 2017 - 2018

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

Local River : Subarnarekha **Sub-Division : Balasore**

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	7.370	35.87	7.550	51.63	10.370	1551	9.500	1319	8.570	1055 *	8.380	1044
2	7.400	37.58	7.560	50.00 *	10.480	1574	9.460	1300 *	8.800	1110 *	8.380	1040
3	7.480	43.56	7.610	56.24	10.470	1569	9.580	1320 *	8.700	1105	8.320	1037
4	7.510	44.50 *	7.710	70.83	10.180	1498	9.660	1341	8.420	1054	8.320	1037 *
5	7.530	47.24	7.760	75.96	10.150	1508	9.920	1373	8.800	1115	8.300	1030 *
6	7.550	48.17	7.730	70.97	10.360	1600 *	9.400	1269	9.250	1207	8.200	1011
7	7.570	49.94	7.890	80.19	12.960	2100	9.100	1207	9.420	1255	7.950	1010
8	7.560	50.85	7.960	87.34	12.140	1897	9.000	1183	9.480	1260 *	7.930	977.7
9	7.540	47.17	7.920	86.00 *	11.480	1778	8.890	1160	9.020	1169	7.850	912.4
10	7.470	43.91	7.780	70.19	10.760	1629	8.860	1120 *	8.950	1153	7.830	904.0
11	7.420	40.00 *	7.740	67.29	10.440	1566	8.710	1117	8.980	1155	7.820	900.0
12	7.360	37.60	7.760	68.85	9.860	1437	8.420	1056	9.090	1175	7.800	899.0 *
13	7.410	41.41	7.700	61.83	9.480	1350 *	8.400	1050	8.970	1152	7.780	899.6
14	7.480	43.49	7.740	66.15	9.260	1313	8.320	1032	8.620	1087	7.780	899.0
15	7.440	42.35	7.970	631.9	9.200	1300 *	8.440	1058	8.550	1060 *	7.760	887.7
16	7.410	40.66	8.150	680.0 *	9.850	1442	8.440	1058	8.570	1056	7.770	888.3
17	7.380	38.88	8.030	653.3	10.900	1616	8.400	1040 *	8.550	1077	7.750	882.3
18	7.360	36.00 *	8.000	651.4	11.250	1728	8.400	1048	8.450	1055	7.740	860.4
19	7.450	44.97	7.920	640.1	10.910	1658	8.640	1092	8.300	1019 *	7.760	870.0 *
20	7.460	44.90	7.970	647.1	10.900	1650 *	9.650	1316	8.310	1019	7.780	870.4
21	7.500	51.06	8.020	653.7	10.940	1661	9.250	1218	8.750	1107	7.740	860.2
22	7.530	52.41	8.270	793.7	10.460	1556	9.380	1256	9.780	1300 *	7.720	859.4
23	7.520	49.50	8.760	820.0 *	10.060	1460	9.350	1244	10.720	1608	7.730	876.4
24	7.530	51.49	8.970	1064	9.790	1399	9.080	1220 *	10.040	1461	7.730	876.1
25	7.480	48.00 *	13.390	2204	9.550	1355	8.920	1156	10.000	1459	7.720	873.0
26	7.510	49.00 *	13.920	2323	9.440	1332	8.610	1092	9.200	1176	7.720	873.0 *
27	7.580	55.10	14.070	2401	9.280	1300 *	8.510	1074	8.720	1106	7.700	869.4
28	7.560	54.68	14.300	2424	9.420	1295	8.530	1079	8.510	1060	7.700	869.3
29	7.540	51.06	12.450	1950	9.610	1337	8.500	1070 *	8.400	1041 *	7.700	868.7
30	7.570	53.76	10.950	1600 *	9.500	1316	8.600	1080 *	8.350	1041	7.920	909.8
31			10.520	1579	10.000	1427			8.420	1052		
Ten-Daily Mean												
I Ten-Daily	7.498	44.88	7.747	69.94	10.935	1671	9.337	1259	8.941	1148	8.146	1000
II Ten-Daily	7.417	41.03	7.898	416.8	10.205	1506	8.582	1087	8.639	1085	7.774	885.7
III Ten-Daily	7.532	51.61	11.238	1619	9.823	1404	8.873	1149	9.172	1219	7.738	873.5
Monthly												
Min.	7.360	35.87	7.550	50.00	9.200	1295	8.320	1032	8.300	1019	7.700	859.4
Max.	7.580	55.10	14.300	2424	12.960	2100	9.920	1373	10.720	1608	8.380	1044
Mean	7.482	45.84	9.035	731.6	10.305	1523	8.931	1165	8.925	1153	7.886	919.8

Annual Runoff in MCM = 16858 Annual Runoff in mm = 923

Peak Observed Discharge = 2424 cumecs on 28-Jul-17 Corres. Water Level :14.3 m

Lowest Observed Discharge = 10.83 cumecs on 19-May-18 Corres. Water Level :6.86 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 2017 - 2018

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

Local River : Subarnarekha **Sub-Division : Balasore**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	7.750	882.2	7.350	56.51	7.080	28.90	7.000	16.80	6.900	15.36 *	6.880	11.62
2	7.660	862.0 *	7.350	56.48	7.080	28.89	7.000	16.80 *	6.900	15.36	6.880	11.53
3	7.580	845.0 *	7.350	56.41	7.150	37.21	7.000	16.79	6.900	15.35	6.880	11.29
4	7.500	828.7	7.300	53.61	7.150	37.20 *	7.000	16.79 *	6.900	15.35	6.880	11.43
5	7.550	845.5	7.300	53.61	7.100	31.05	7.000	16.79	6.900	15.35	6.880	11.58
6	7.450	825.6	7.300	53.54	7.080	28.89	7.000	16.79	6.900	15.35	6.880	11.58 *
7	7.400	810.1	7.300	53.50 *	7.080	28.88	7.000	16.78	6.900	15.36	6.870	11.19
8	7.420	820.0	7.300	53.54	7.080	28.88	7.000	16.78	6.900	15.36 *	6.870	11.12
9	7.420	820.2	7.300	53.46	7.080	28.88	7.000	16.78	6.900	15.35	6.870	11.10
10	7.660	860.0 *	7.280	52.04	7.080	28.86	7.000	16.78	6.900	15.36	6.870	11.07
11	7.640	855.1	7.280	52.04	7.060	26.00 *	7.000	16.78 *	6.900	15.35	6.870	11.23
12	7.580	840.3	7.280	52.09	7.020	19.50	7.000	16.78	6.890	13.54	6.870	11.00
13	7.600	843.4	7.280	52.03	7.010	18.13	7.000	16.77	6.890	13.54	6.870	11.00 *
14	7.500	825.5	7.280	52.03 *	7.000	17.09	7.000	16.77	6.890	13.54 *	6.870	11.13
15	7.460	815.7	7.280	52.03	7.000	17.09	6.950	15.56	6.890	13.54 *	6.870	11.01
16	7.450	803.4	7.270	51.11	7.000	17.09	6.950	15.56	6.890	13.55	6.870	10.84
17	7.450	803.0 *	7.270	51.08	7.000	17.08	6.950	15.56	6.890	13.55	6.870	11.02
18	7.420	780.2	7.160	45.19	7.000	17.00 *	6.950	15.56 *	6.890	13.55	6.860	10.88
19	7.400	752.5	7.160	45.10	7.000	17.08	6.950	15.56	6.890	13.54	6.860	10.83
20	7.400	752.1	7.120	42.44	7.000	17.08	6.900	14.46	6.890	13.54	6.860	10.83 *
21	7.400	752.1	7.120	42.44 *	7.000	17.07	6.900	14.45	6.890	13.54	6.890	11.73
22	7.380	730.1	7.160	44.52	7.000	17.07	6.900	14.45	6.890	13.54 *	7.000	16.58
23	7.360	698.9	7.180	46.40	7.000	17.07	6.900	14.45	6.890	13.53	7.050	18.09
24	7.360	698.0 *	7.160	44.42	7.000	17.06	6.900	14.45	6.880	11.85	7.050	17.99
25	7.360	698.0 *	7.130	40.95	7.000	17.00 *	6.900	14.45 *	6.880	11.85	7.160	21.07
26	7.360	698.0	7.130	40.90 *	7.000	17.06	6.900	14.44	6.880	11.85	7.200	22.26
27	7.360	698.9	7.100	35.58	7.000	17.06	6.900	14.44	6.880	11.84	7.150	20.72 *
28	7.350	700.2	7.100	35.50 *	7.000	17.05	6.900	14.44	6.880	11.84	7.150	20.72
29			7.100	35.50			6.900	14.44 *	6.880	11.84 *	7.100	19.39
30			7.100	35.53			6.900	14.44 *	6.880	11.84 *	7.000	17.05
31			7.080	33.52			6.900	14.43			7.000	17.14
Ten-Daily Mean												
I Ten-Daily	7.539	839.9	7.313	54.27	7.096	30.76	7.000	16.79	6.900	15.36	6.876	11.35
II Ten-Daily	7.490	807.1	7.238	49.52	7.009	18.31	6.965	15.93	6.891	13.72	6.867	10.98
III Ten-Daily	7.366	709.3	7.124	39.57	7.000	17.05	6.900	14.44	6.883	12.35	7.068	18.43
Monthly												
Min.	7.350	698.0	7.080	33.52	7.000	17.00	6.900	14.43	6.880	11.84	6.860	10.83
Max.	7.750	882.2	7.350	56.51	7.150	37.21	7.000	16.80	6.900	15.36	7.200	22.26
Mean	7.472	790.9	7.222	47.52	7.037	22.4	6.953	15.68	6.891	13.81	6.941	13.74

Peak Computed Discharge = 1650 cumecs on 20-Aug-17 Corres. Water Level :10.9 m

Lowest Computed Discharge = 10.83 cumecs on 20-May-18 Corres. Water Level :6.86 m

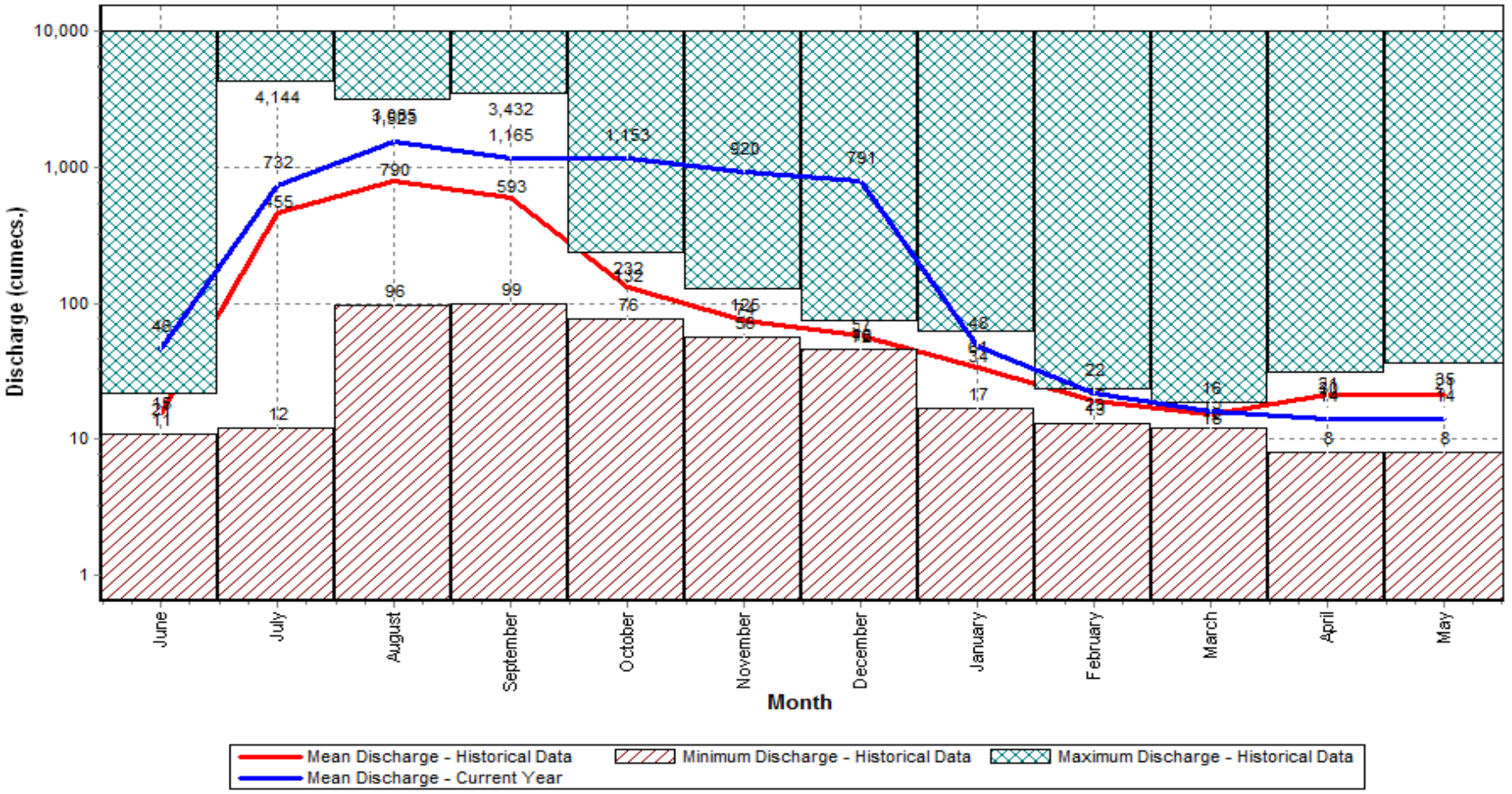
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2017-2018

Station Name : RAJGHAT (RAJGHAT) **Data considered : 2015-2018** **Division : E.E., Bhubaneswar**

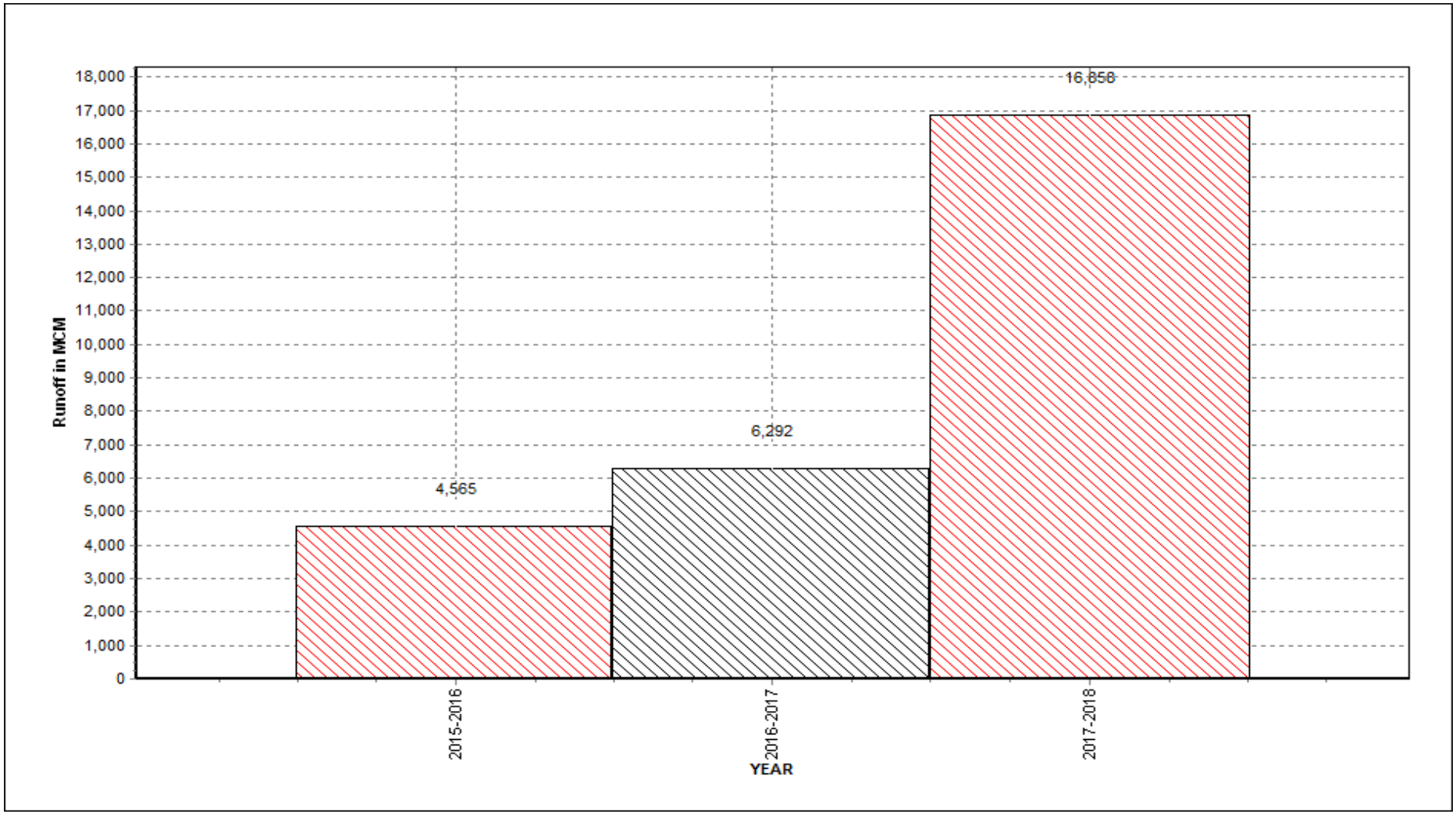
Local River : Subarnarekha **Sub-Division : Balasore**



Annual Runoff Values for the period: 2015 - 2018

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

Local River : Subarnarekha **Sub-Division : Balasore**

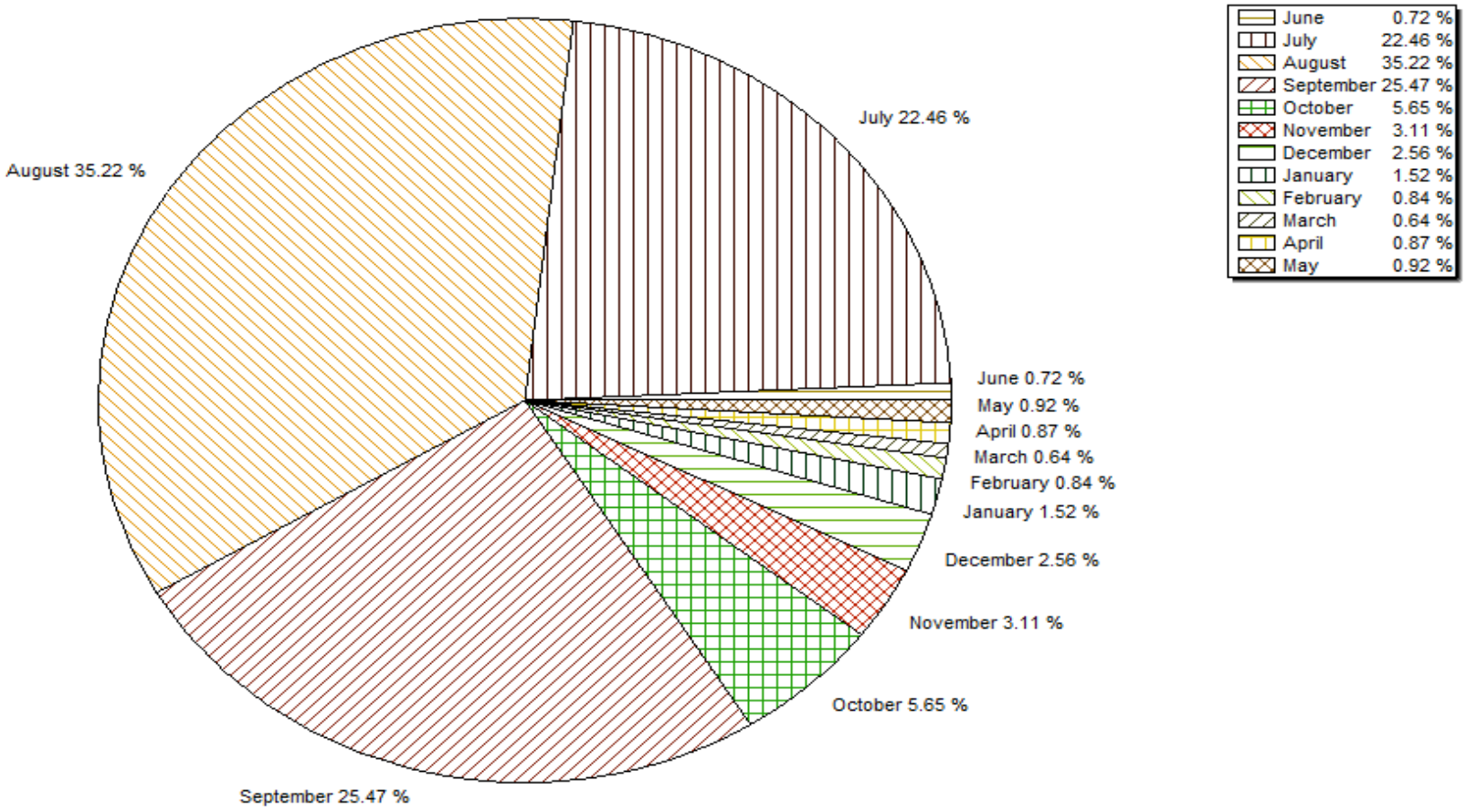


Note: Missing values have not been considered while arriving at Annual Runoff

Monthly Average Runoff based on period : 2015-2017

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

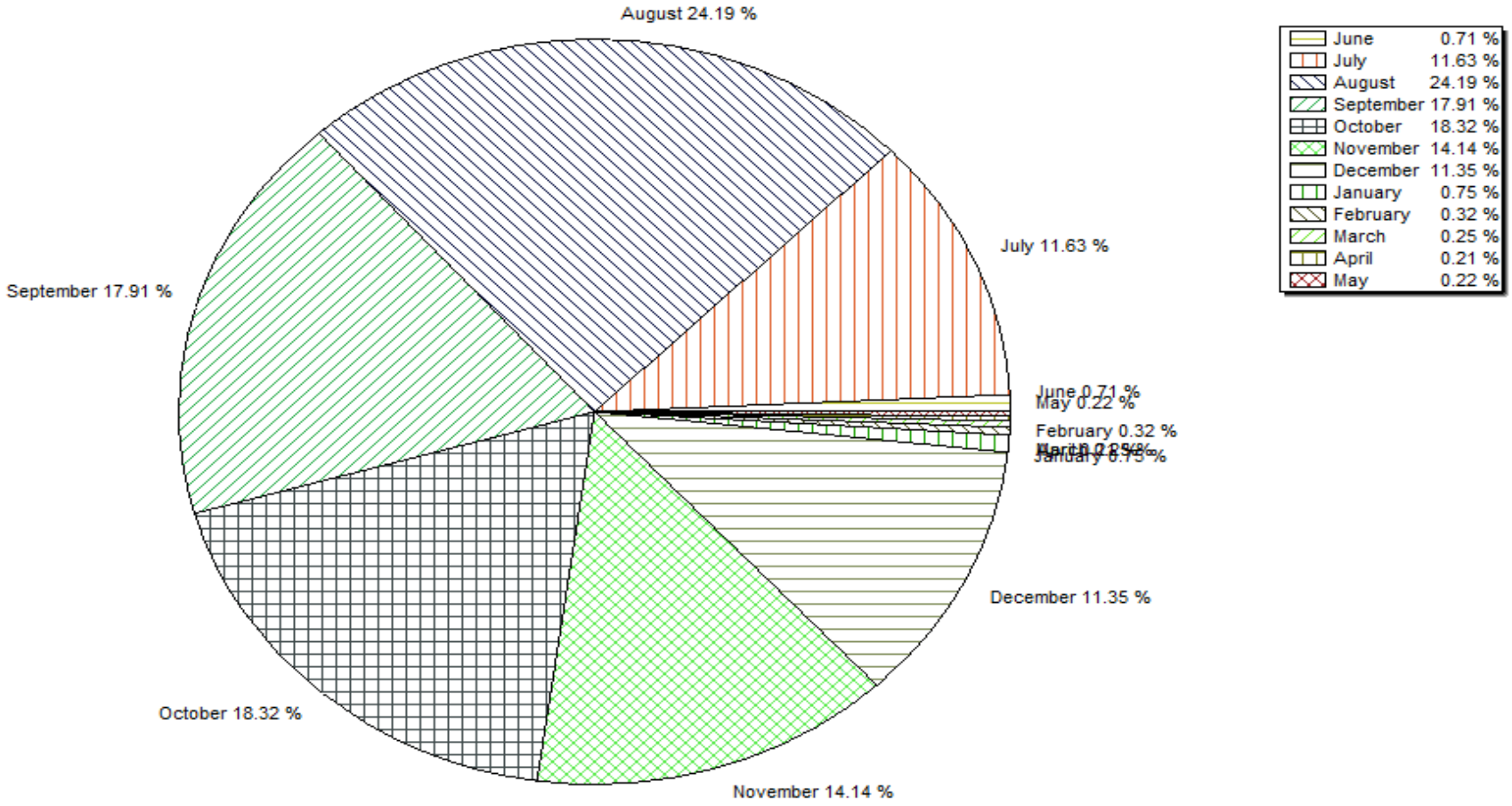
Local River : Subarnarekha **Sub-Division : Balasore**



Monthly Runoff for the Year : 2017-2018

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

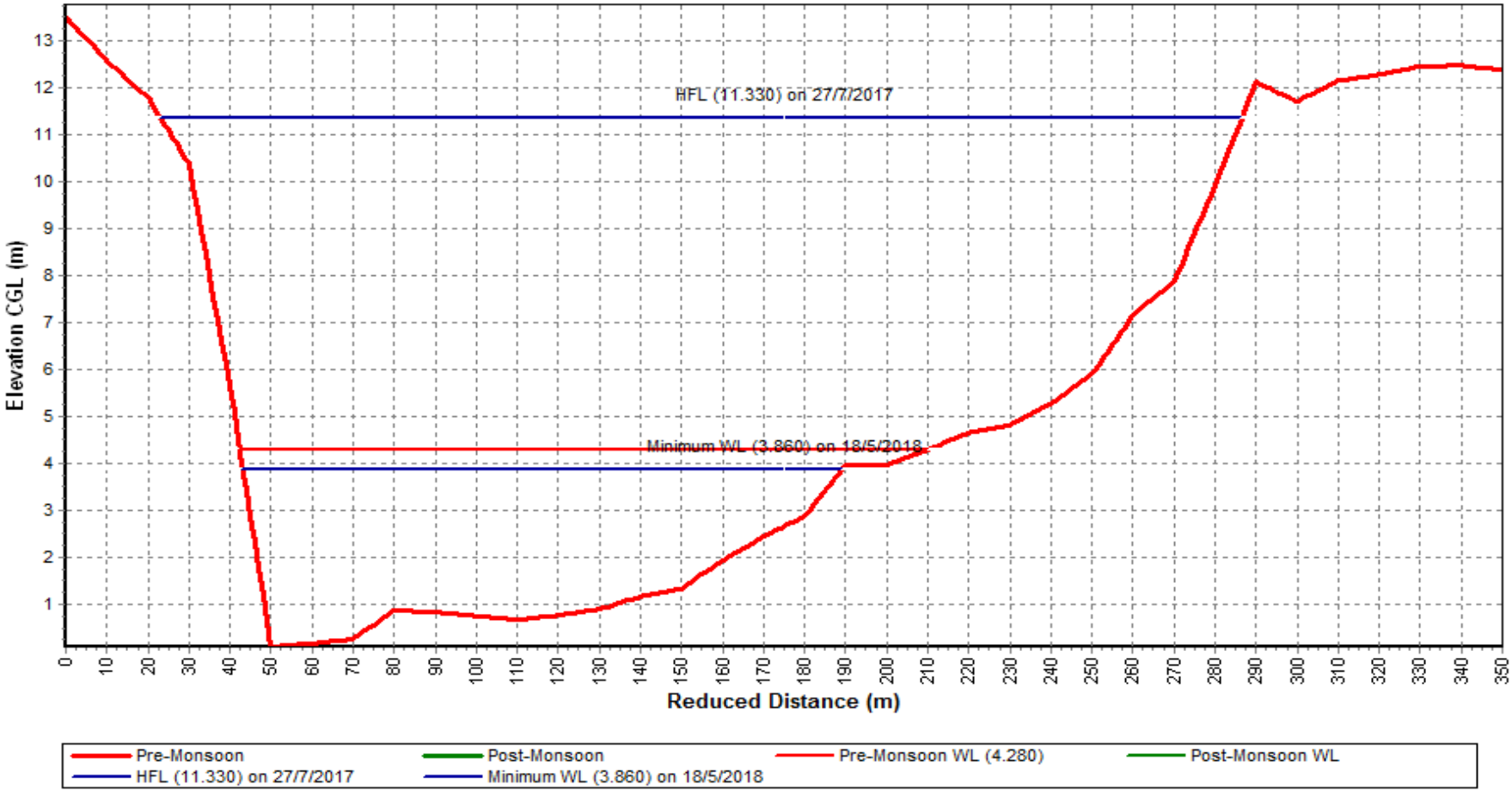
Local River : Subarnarekha **Sub-Division : Balasore**



Pre-Monsoon & Post-Monsoon X-Section for Water Year : 2017-2018

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

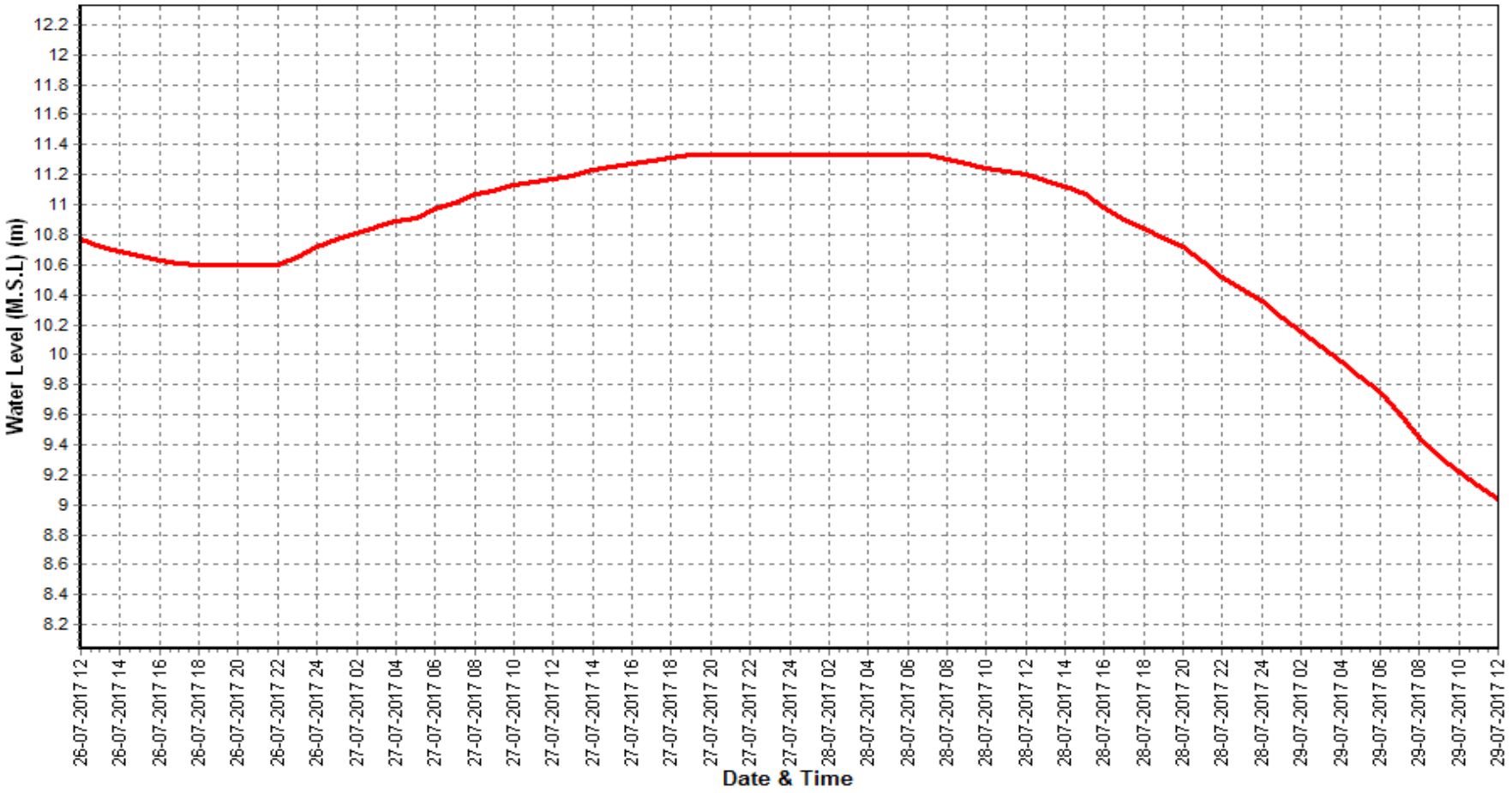
Local River : Subarnarekha **Sub-Division : Balasore**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2017-2018

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

Local River : Subarnarekha **Sub-Division : Balasore**

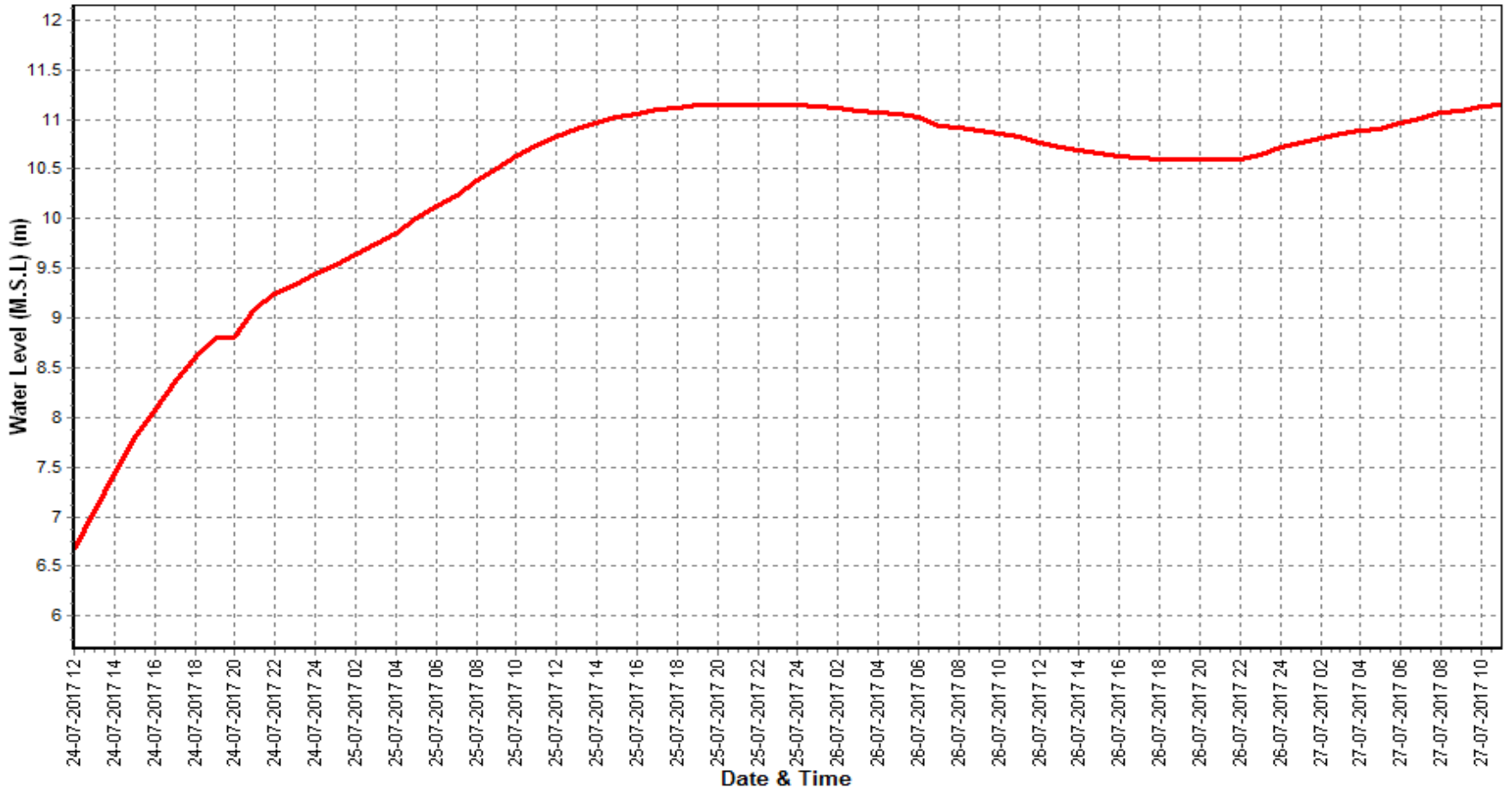


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2017-2018

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

Local River : Subarnarekha **Sub-Division : Balasore**

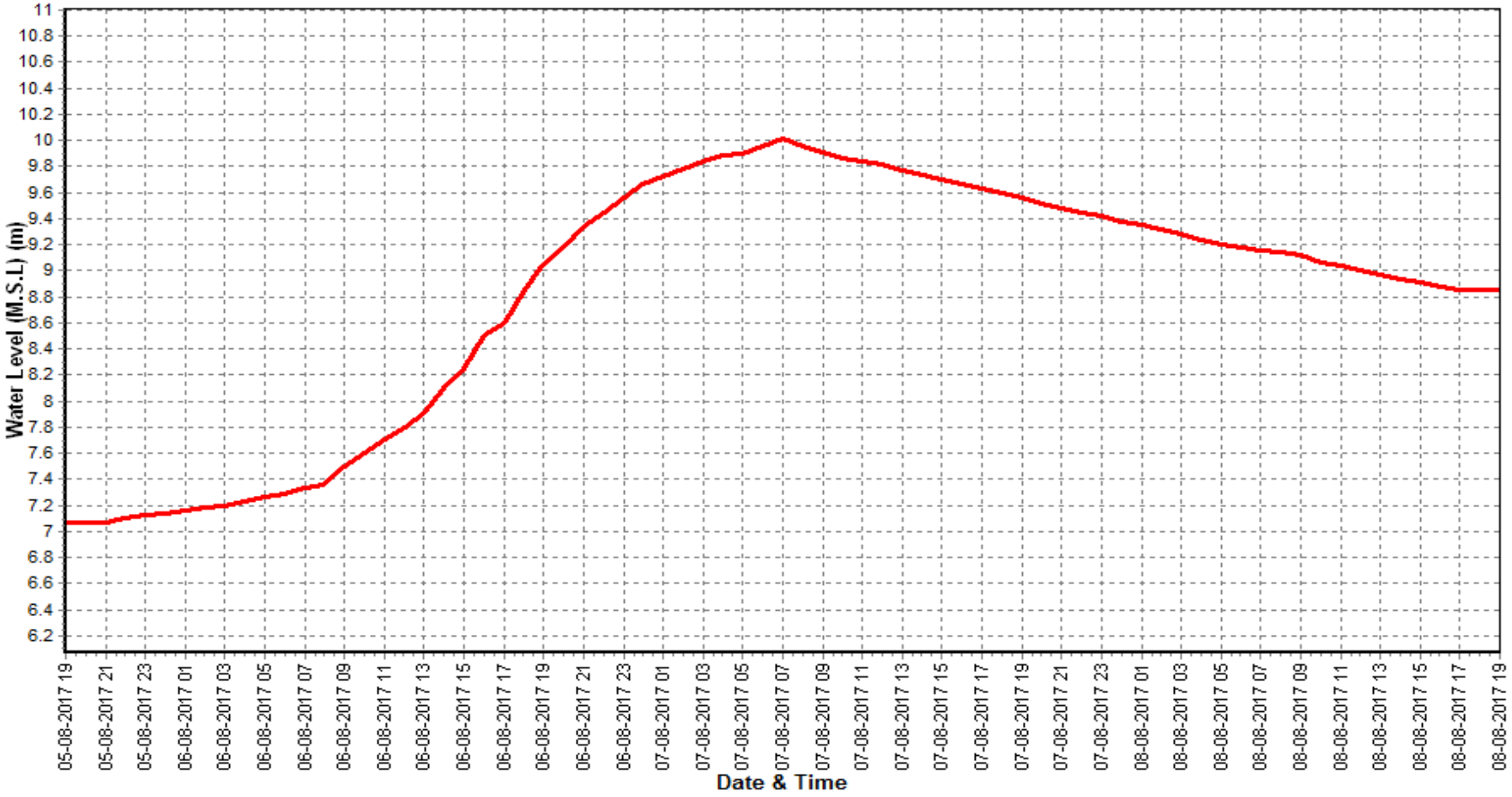


Time Span: 72 Hrs

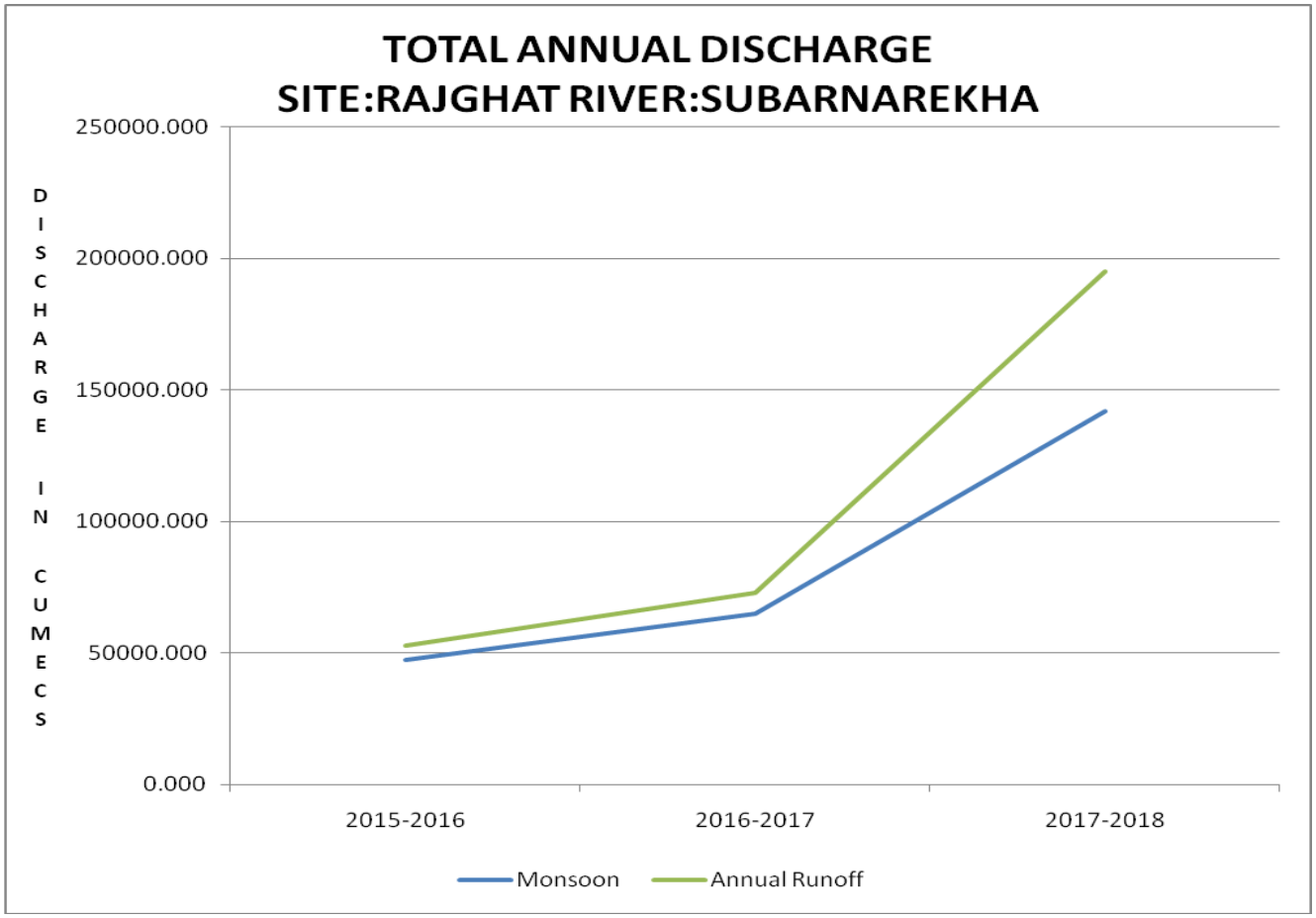
Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2017-2018

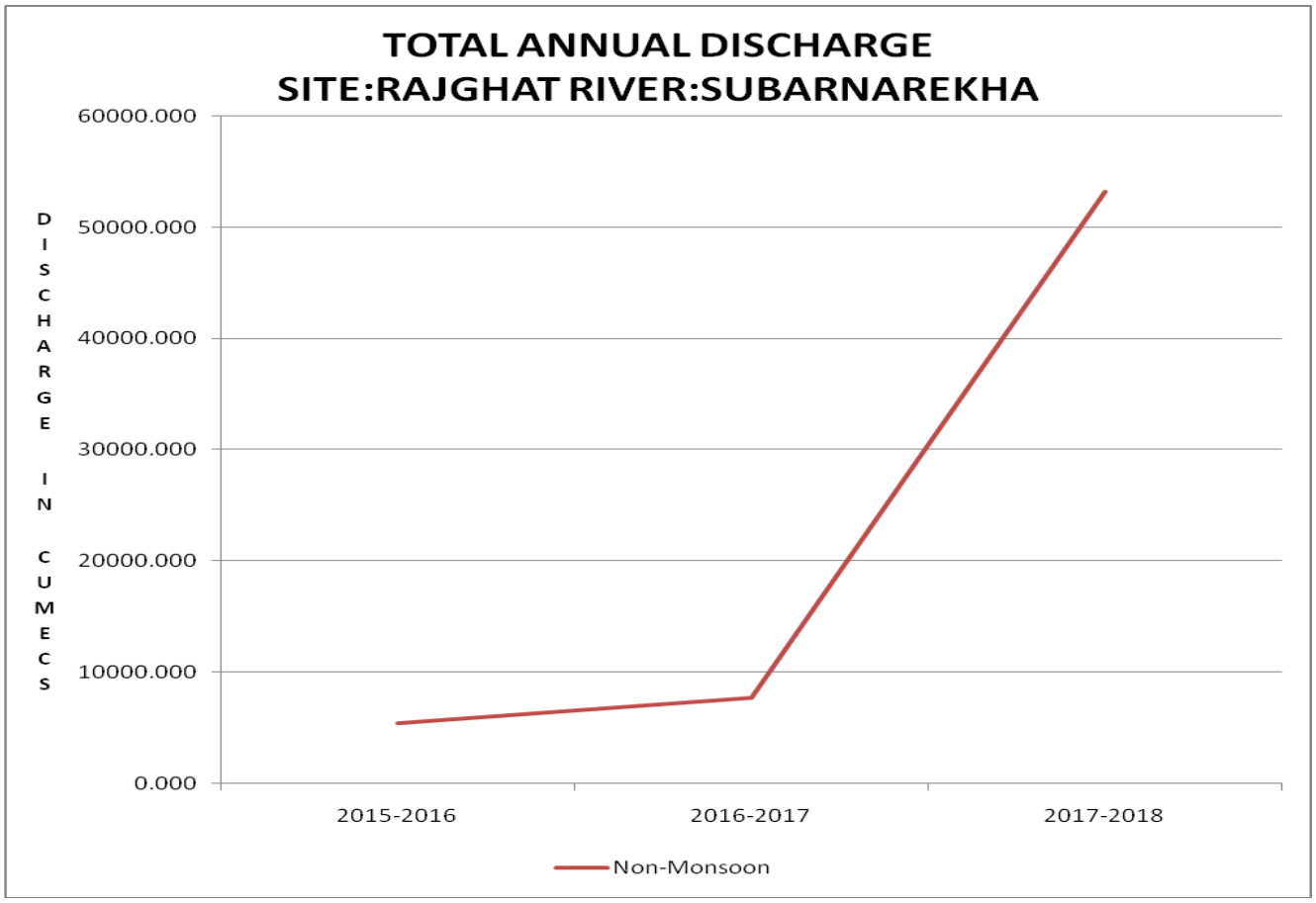
Station Name : RAJGHAT (RAJGHAT) **Division : E.E., Bhubaneswar**

Local River : Subarnarekha **Sub-Division : Balasore**



Time Span: 72 Hrs


TOTAL ANNUAL DISCHARGE
SITE:RAJGHAT RIVER:SUBARNAREKHA
DISCHARGE IN CUMECS
250000.000
200000.000
150000.000
100000.000
50000.000
0.000
2015-2016
2016-2017
2017-2018
Monsoon
Annual Runoff


TOTAL ANNUAL DISCHARGE
SITE:RAJGHAT RIVER:SUBARNAREKHA
DISCHARGE IN CUMECS
60000.000
50000.000
40000.000
30000.000
20000.000
10000.000
0.000
2015-2016
2016-2017
2017-2018
Non-Monsoon

HISTORY SHEET

			Water Year	:	**2017-2018**
Site	:	**GOPIBALLAVPUR**	**Code**	:	**GOPIBALAVPUR**
State	:	West Bengal	District		Mednipur
Basin	:	Subarnarekha	Independent River	:	Subarnarekha
Tributary	:		Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	
Division	:	E.E., Bhubaneswar	Sub-Division	:	Balasore
Drainage Area	:	Sq. Km.	Bank	:	
Latitude	:	°""	Longitude	:	°""
Zero of Gauge (m)	:	30.5 (m.s.l)	3/1/2014		
		Opening Date	Closing Date		
Gauge	:	8/7/2014			
Discharge	:	9/15/2014			
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**
2014-2015	1377.000	36.280	9/23/2014	10.100	32.560	3/24/2015
2015-2016	1164.707	38.500	7/29/2015	4.268	32.320	5/6/2015
2016-2017	1052	36.410	9/11/2016	1.855	63.240	12/3/2016
2017-2018	2092	68.400	7/27/2017	19.82	63.250	6/20/2017

Stage-Discharge Data for the period 2017 - 2018

Station Name : GOPIBALLAVPUR (GOPIBALAVPUR) **Division : E.E., Bhubaneswar**

Local River : **Sub-Division : Balasore**

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	63.430	29.01	63.350	27.01	65.870	821.2	64.610	397.5	64.380	286.0 *	64.020	275.0
2	63.440	29.57	63.360	27.00 *	65.870	824.9	64.750	416.0 *	64.240	260.0 *	64.000	268.7
3	63.420	29.14	63.395	30.20	65.750	825.7	64.680	416.2 *	64.110	239.0	63.920	189.8
4	63.420	29.14 *	63.370	28.99	65.335	708.2	65.300	570.5	64.385	286.1	63.750	140.0 *
5	63.350	25.95	64.210	180.4	65.380	715.9	64.765	416.0	64.825	370.0	63.700	114.0 *
6	63.320	25.26	63.680	111.7	67.340	1607 *	64.450	336.3	64.830	366.0	63.700	114.1
7	63.300	24.48	63.650	103.2	67.190	1607	64.410	324.6	64.925	357.9	63.650	95.71
8	63.290	23.92	63.680	94.82	66.730	1470	64.380	249.6	64.570	330.0 *	63.650	94.64
9	63.290	24.02	63.640	111.6 *	66.105	1101	64.350	242.7	64.430	309.7	63.580	65.95
10	63.270	22.79	63.600	85.68	65.720	934.5	64.280	240.0 *	64.480	310.8	63.580	58.00
11	63.310	25.00 *	63.570	82.32	65.110	690.9	63.990	158.3	64.495	349.6	63.550	57.23
12	63.320	25.46	63.550	71.02	64.780	593.2	63.920	159.3	64.500	328.2	63.550	57.00 *
13	63.280	23.91	63.560	77.30	64.680	560.0 *	63.910	152.4	64.130	278.2	63.550	55.54
14	63.260	22.25	63.900	134.7	64.485	263.4	63.975	158.5	64.100	249.3	63.540	54.87
15	63.240	21.21	63.710	103.4	64.860	263.6 *	63.970	156.5	64.080	240.0 *	63.540	54.10
16	63.270	21.85	63.750	103.6 *	65.650	775.1	63.950	150.6	64.110	246.3	63.540	53.24
17	63.260	21.10	63.680	95.57	66.390	1204	63.940	148.0 *	64.030	236.3	63.520	53.17
18	63.270	21.85 *	63.680	116.2	66.040	1088	63.990	153.0	63.970	230.9	63.520	52.58
19	63.250	20.37	63.750	132.3	65.995	1049	64.945	385.8	63.900	230.0 *	63.580	60.00 *
20	63.250	19.82	63.810	130.1	66.100	1088 *	64.590	313.5	63.980	239.1	63.560	57.03
21	63.280	21.15	64.170	171.4	65.750	815.2	64.835	461.2	64.545	544.2	63.540	53.26
22	63.270	20.94	64.110	164.1	65.395	549.4	64.700	433.7	65.390	803.0 *	63.520	52.36
23	63.270	20.48	64.630	171.5 *	65.065	546.4	64.540	358.8	65.390	803.7	63.500	50.35
24	63.270	20.06	66.870	999.5	64.920	415.0	64.470	362.0 *	65.420	814.2	63.660	88.10
25	63.310	25.00 *	68.200	1832	64.750	389.7	64.180	266.8	64.405	571.2	63.600	84.06
26	63.360	25.00 *	67.850	1722	64.710	383.1	64.110	267.7	64.210	517.5	63.600	84.00 *
27	63.390	25.96	68.400	2092	64.750	383.2 *	64.100	258.0	64.110	411.0	63.600	85.88
28	63.370	25.59	68.190	1784	64.895	421.8	64.100	250.4	64.050	365.2	63.670	127.5
29	63.380	25.86	66.500	969.3	64.710	402.5	64.110	267.0 *	64.040	326.0 *	63.730	178.3
30	63.370	25.37	65.900	780.0 *	65.195	562.2	64.090	264.0 *	64.040	326.4	63.580	150.2
31			65.730	793.0	64.900	513.4			64.030	311.3		
Ten-Daily Mean												
I Ten-Daily	63.353	26.33	63.593	80.05	66.129	1062	64.597	360.9	64.518	311.6	63.755	141.6
II Ten-Daily	63.271	22.28	63.696	104.7	65.409	757.5	64.118	193.6	64.130	262.8	63.545	55.48
III Ten-Daily	63.327	23.54	66.414	1044	65.004	489.3	64.324	318.9	64.512	526.7	63.600	95.40
Monthly												
Min.	63.240	19.82	63.350	27.00	64.485	263.4	63.910	148.0	63.900	230.0	63.500	50.35
Max.	63.440	29.57	68.400	2092	67.340	1607	65.300	570.5	65.420	814.2	64.020	275.0
Mean	63.317	24.05	64.627	429.9	65.497	760.4	64.346	291.2	64.390	372.2	63.633	97.49

Annual Runoff in MCM = 6072 Annual Runoff in mm =

Peak Observed Discharge = 2092 cumecs on 27-Jul-17 Corres. Water Level :68.4 m

Lowest Observed Discharge = 19.82 cumecs on 20-Jun-17 Corres. Water Level :63.25 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 2017 - 2018

Station Name : GOPIBALLAVPUR (GOPIBALAVPUR) **Division : E.E., Bhubaneswar**

Local River : **Sub-Division : Balasore**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	63.540	147.9	63.100	86.84	62.950	55.04	62.880	40.97	62.820	20.88 *	62.880	26.18
2	63.480	144.0 *	63.090	84.01	62.950	55.02	62.880	40.97 *	62.820	20.88	62.880	26.19
3	63.470	143.0 *	63.070	80.75	62.940	52.95	62.830	32.45	62.860	24.01	62.900	28.00
4	63.350	134.5	63.050	77.48	62.940	52.90 *	62.880	40.90 *	62.860	24.01	62.950	32.03
5	63.240	121.5	63.030	73.98	62.930	51.59	62.870	40.32	62.860	24.00	62.950	32.01
6	63.170	116.5	63.020	71.67	62.930	51.58	62.870	40.31	62.860	24.00	63.000	34.50 *
7	63.150	115.4	63.010	69.90 *	62.930	51.57	62.870	40.30	62.850	23.02	63.020	36.14
8	63.170	117.6	63.000	67.90	62.920	49.29	62.870	40.29	62.870	25.00 *	62.990	34.01
9	63.250	121.9	62.990	66.10	62.920	49.28	62.870	40.29	62.890	27.01	62.960	32.03
10	63.300	129.0 *	62.980	64.11	62.920	49.28	62.870	40.28	62.890	27.00	62.930	30.05
11	63.270	125.9	62.980	63.99	62.920	49.20 *	62.870	40.28 *	62.880	26.01	62.900	28.06
12	63.240	121.9	62.980	63.95	62.920	49.28	62.870	40.28	62.880	26.01	62.880	26.04
13	63.230	118.2	62.980	63.98	62.910	47.88	62.870	40.28	62.890	27.01	62.880	26.04 *
14	63.220	116.2	62.990	66.00 *	62.910	47.87	62.870	40.27	62.890	27.10 *	62.880	26.05
15	63.210	114.4	63.000	68.07	62.900	46.48	62.870	40.26	62.890	27.10 *	62.870	25.51
16	63.210	114.5	62.990	64.69	62.900	46.45	62.860	38.38	62.880	26.01	62.870	25.51
17	63.210	113.0 *	62.980	61.48	62.900	46.43	62.860	38.35	62.930	30.00	62.900	30.02
18	63.200	108.6	62.980	61.44	62.900	46.40 *	62.850	35.80 *	62.930	30.01	62.900	30.04
19	63.200	108.0	62.980	61.40	62.890	44.84	62.850	35.85	62.930	30.00	62.950	34.00
20	63.200	107.9	62.980	61.47	62.890	44.82	62.850	35.85	62.920	29.01	62.940	33.50 *
21	63.200	108.1	62.970	59.42 *	62.890	44.81	62.850	35.84	62.920	29.00	62.930	33.02
22	63.190	105.6	62.970	59.42	62.880	43.47	62.840	33.98	62.920	29.00 *	62.920	32.00
23	63.180	103.0	62.960	57.52	62.880	43.45	62.830	31.97	62.910	28.01	62.980	38.22
24	63.170	100.0 *	62.960	57.55	62.880	43.45	62.830	31.95	62.910	28.00	62.980	38.02
25	63.160	96.00 *	62.960	57.54	62.880	43.40 *	62.830	31.90 *	62.900	27.01	62.970	37.04
26	63.150	92.82	62.950	55.90 *	62.880	43.44	62.830	31.94	62.890	26.01	62.970	37.02
27	63.140	90.11	62.940	54.67	62.880	43.43	62.800	25.97	62.880	25.01	62.960	36.00 *
28	63.130	88.33	62.940	54.60 *	62.880	43.42	62.820	29.92	62.870	24.01	62.930	33.04
29			62.940	54.61			62.830	31.90 *	62.870	24.01 *	62.950	35.04
30			62.940	54.66			62.830	31.90 *	62.870	24.01 *	62.950	35.07
31			62.940	54.64			62.820	29.92			62.940	34.03
Ten-Daily Mean												
I Ten-Daily	63.312	129.1	63.034	74.27	62.933	51.85	62.869	39.71	62.858	23.98	62.946	31.11
II Ten-Daily	63.219	114.8	62.984	63.65	62.904	46.96	62.862	38.56	62.902	27.83	62.897	28.48
III Ten-Daily	63.165	97.98	62.952	56.41	62.881	43.61	62.828	31.56	62.894	26.41	62.953	35.32
Monthly												
Min.	63.130	88.33	62.940	54.60	62.880	43.40	62.800	25.97	62.820	20.88	62.870	25.51
Max.	63.540	147.9	63.100	86.84	62.950	55.04	62.880	40.97	62.930	30.01	63.020	38.22
Mean	63.237	115.1	62.989	64.51	62.908	47.75	62.852	36.45	62.885	26.07	62.933	31.76

Peak Computed Discharge = 1607 cumecs on 06-Aug-17 Corres. Water Level :67.34 m

Lowest Computed Discharge = 20.88 cumecs on 01-Apr-18 Corres. Water Level :62.82 m

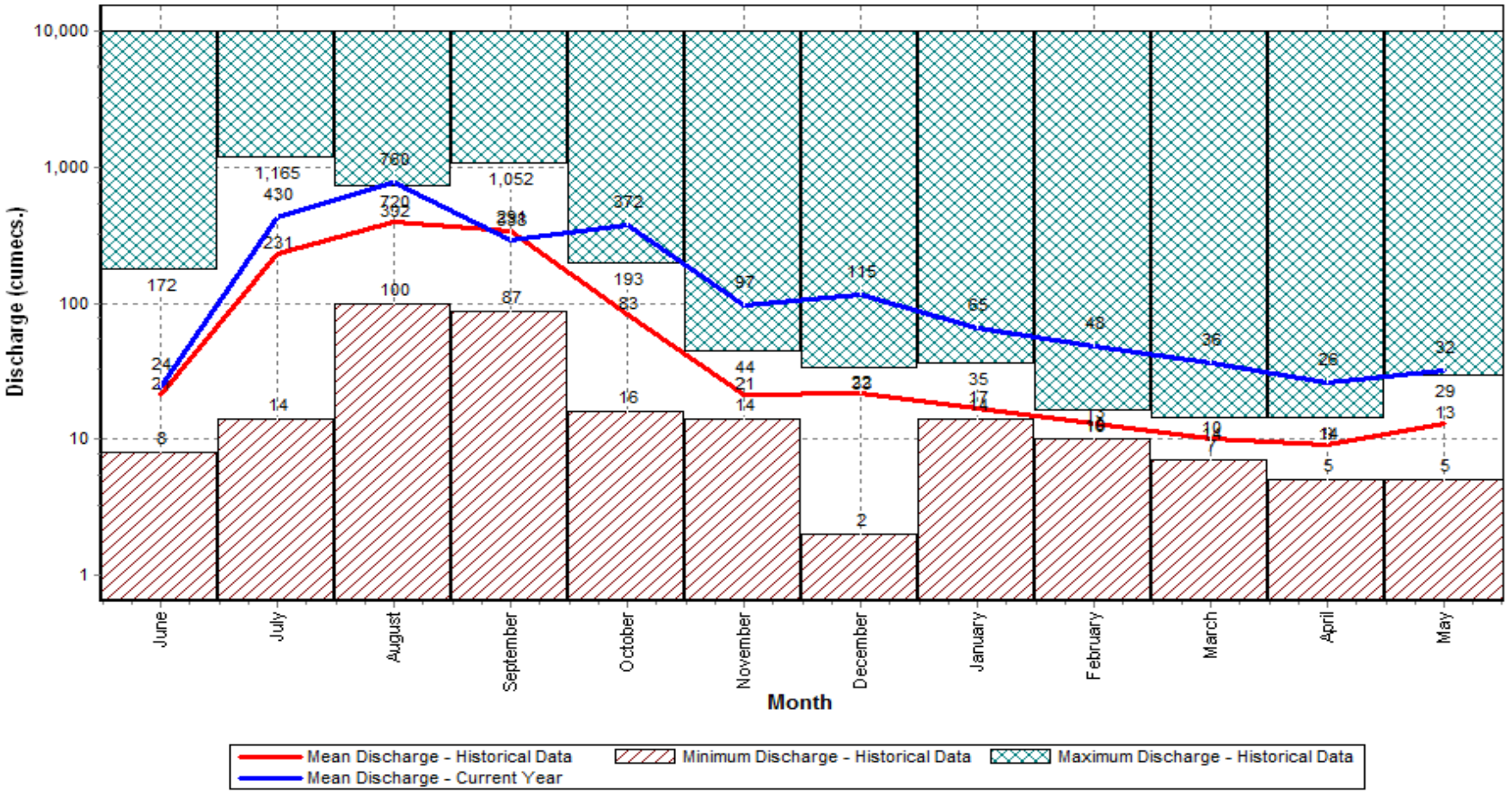
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2017-2018

Station Name : GOPIBALLAVPUR (GOPIBALAVPUR) **Data considered : 2016-2018** **Division : E.E., Bhubaneswar**

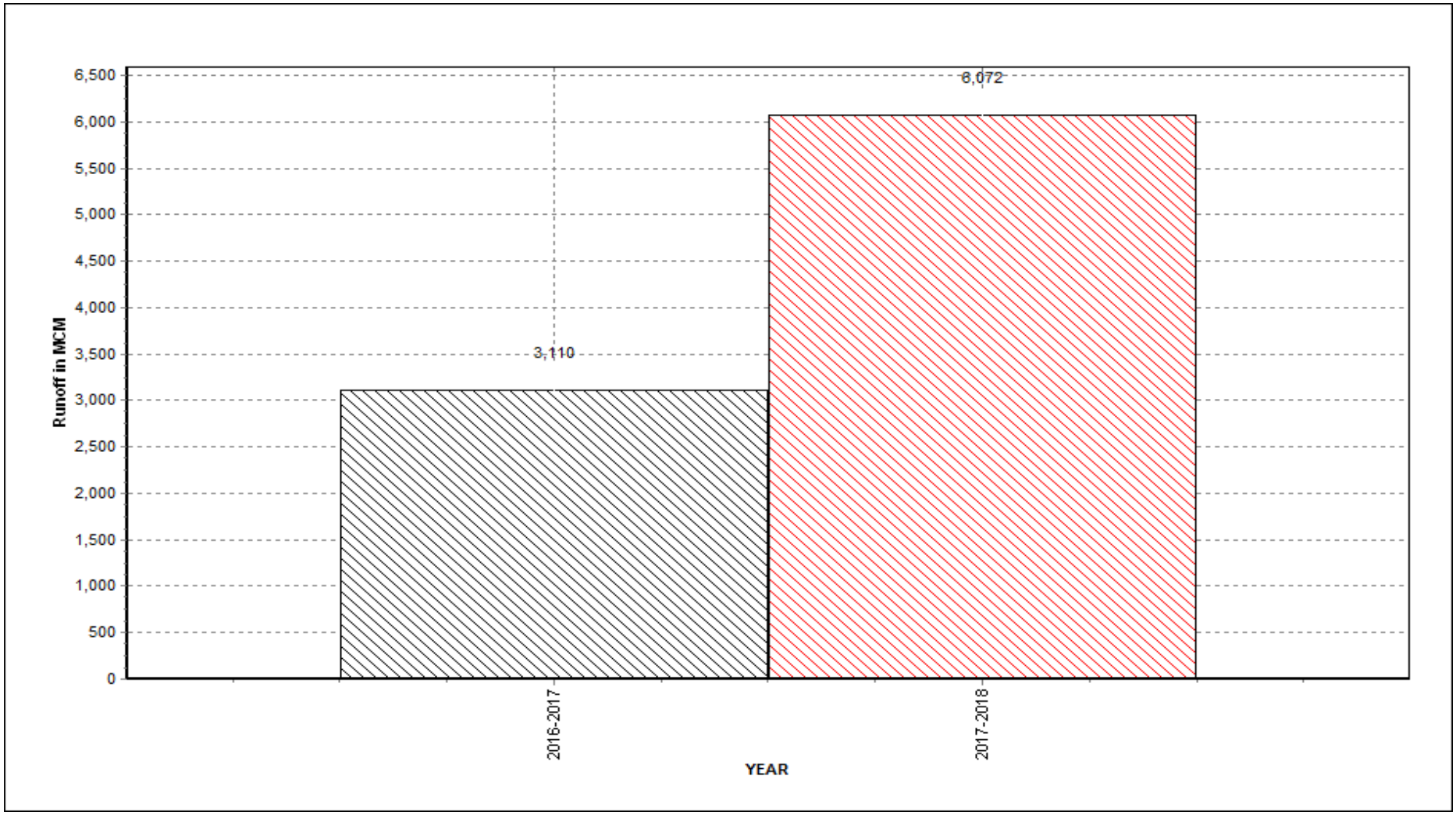
Local River : **Sub-Division : Balasore**



Annual Runoff Values for the period: 2016 - 2018

Station Name : GOPIBALLAVPUR (GOPIBALAVPUR) **Division : E.E., Bhubaneswar**

Local River : **Sub-Division : Balasore**

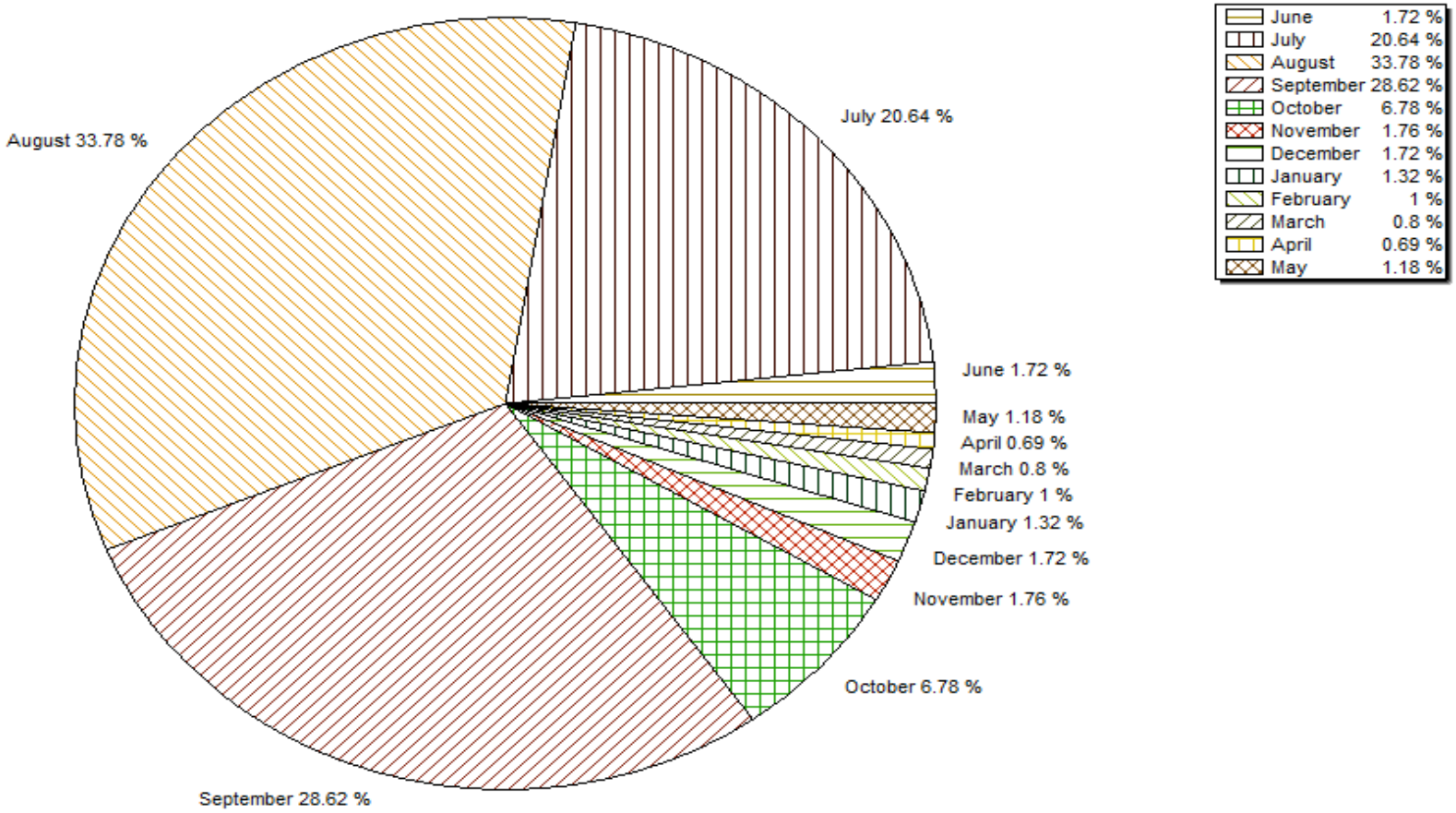


Note: Missing values have not been considered while arriving at Annual Runoff

Monthly Average Runoff based on period : 2016-2017

Station Name : GOPIBALLAVPUR (GOPIBALAVPUR) **Division : E.E., Bhubaneswar**

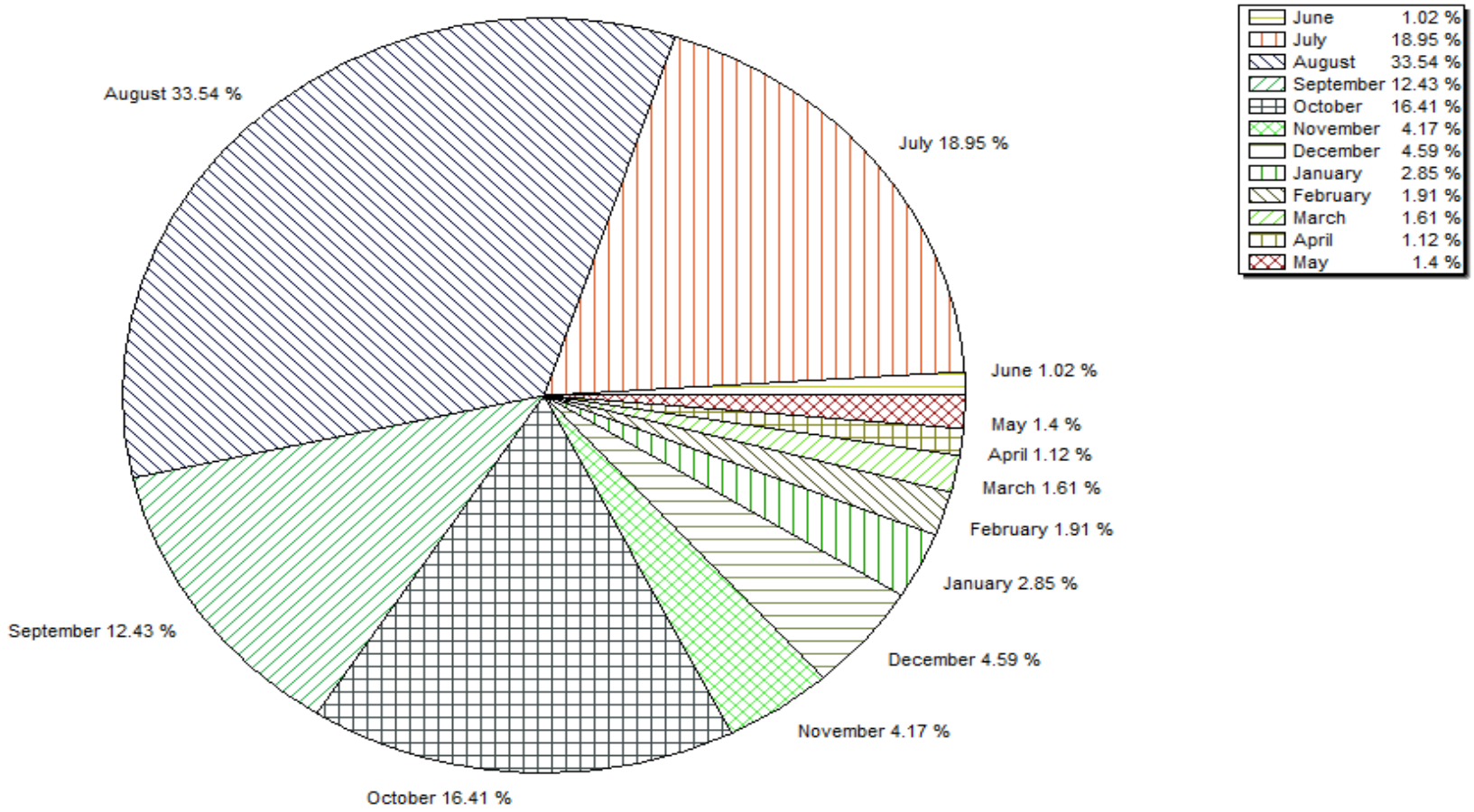
Local River : **Sub-Division : Balasore**



Monthly Runoff for the Year : 2017-2018

Station Name : GOPIBALLAVPUR (GOPIBALAVPUR) **Division : E.E., Bhubaneswar**

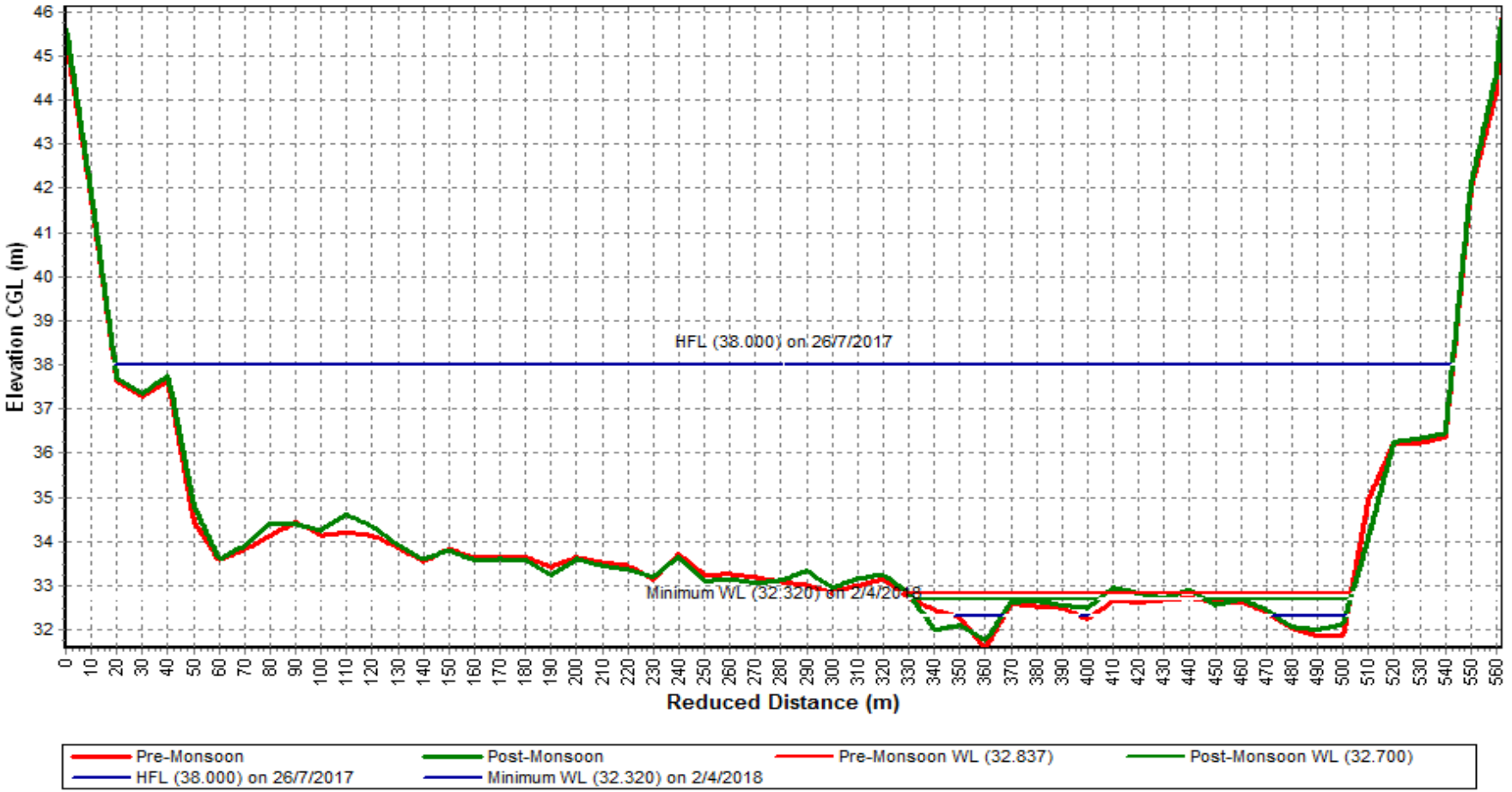
Local River : **Sub-Division : Balasore**



Pre-Monsoon & Post-Monsoon X-Section for Water Year : 2017-2018

Station Name : GOPIBALLAVPUR (GOPIBALAVPUR) **Division : E.E., Bhubaneswar**

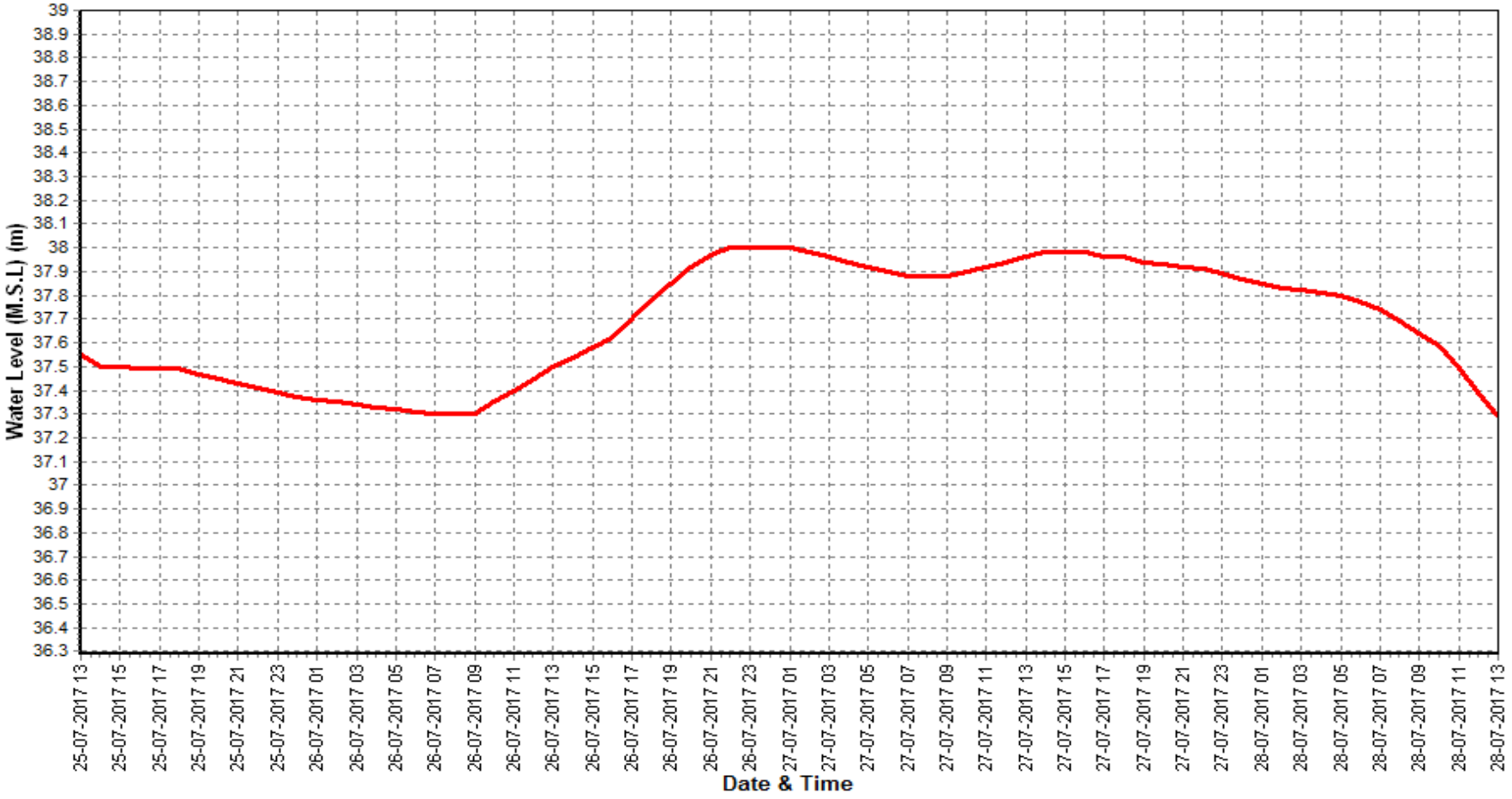
Local River : **Sub-Division : Balasore**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2017-2018

Station Name : GOPIBALLAVPUR (GOPIBALAVPUR) **Division : E.E., Bhubaneswar**

Local River : **Sub-Division : Balasore**

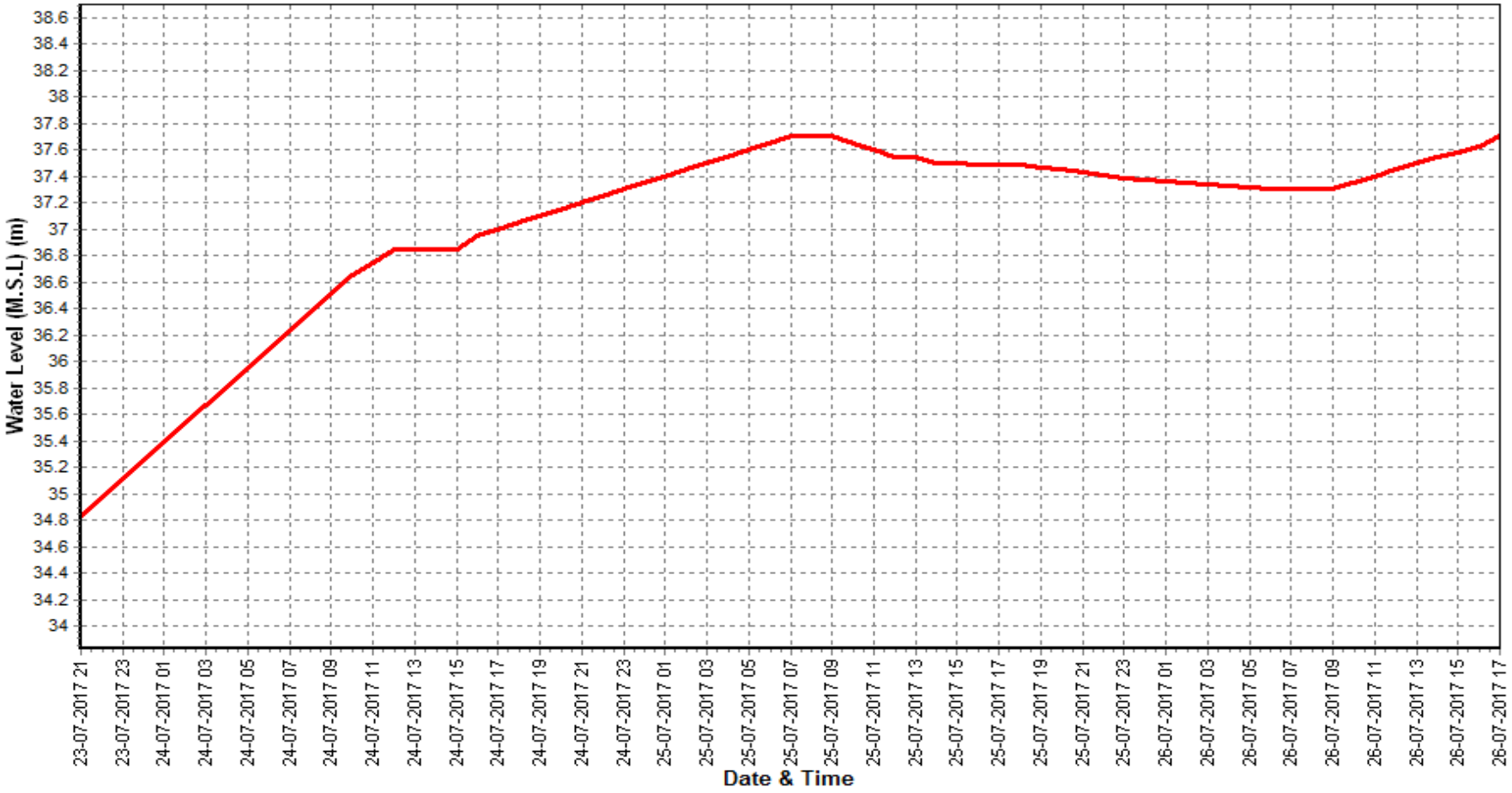


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2017-2018

Station Name : GOPIBALLAVPUR (GOPIBALAVPUR) **Division : E.E., Bhubaneswar**

Local River : **Sub-Division : Balasore**

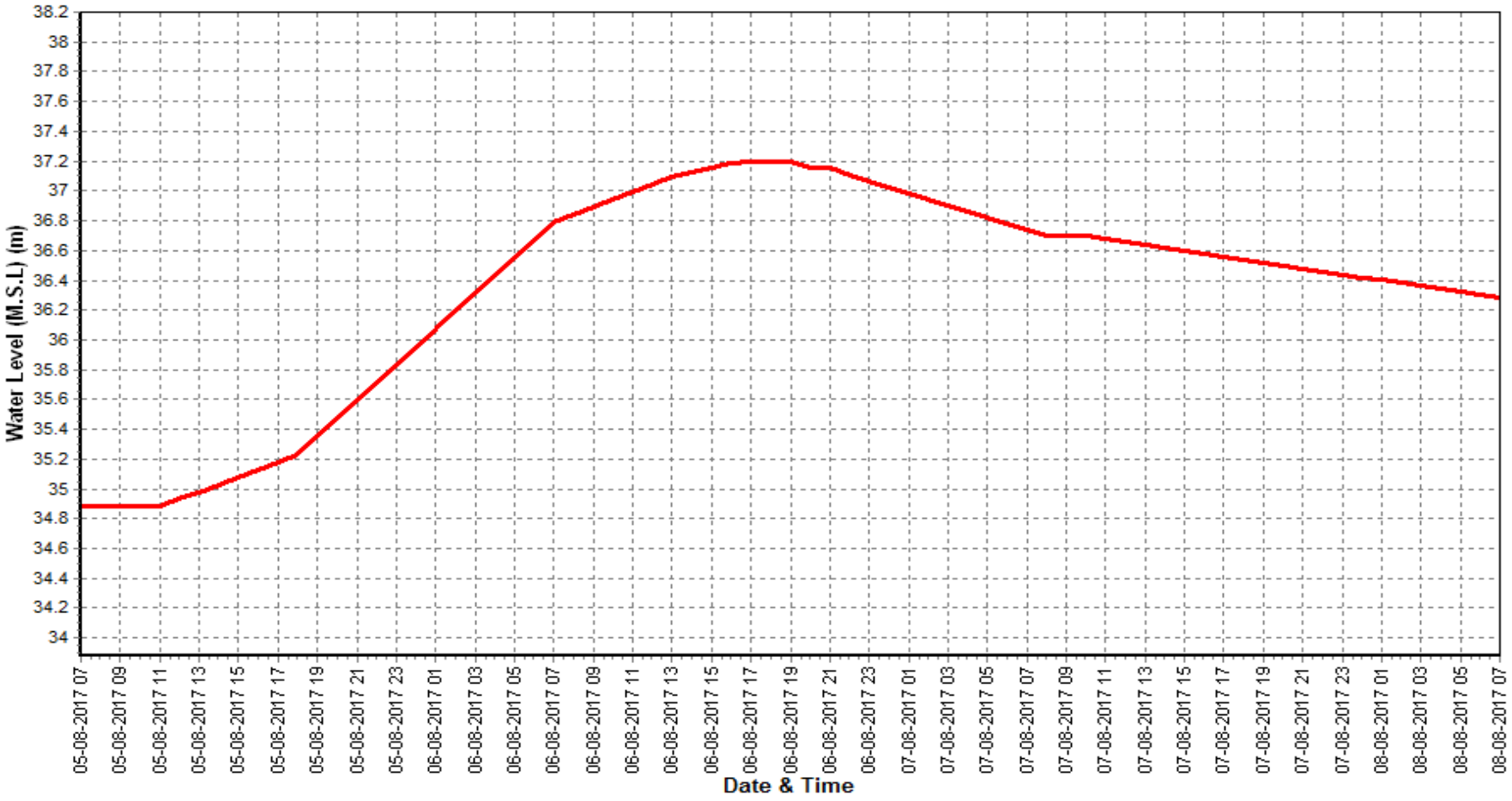


Time Span: 72 Hrs

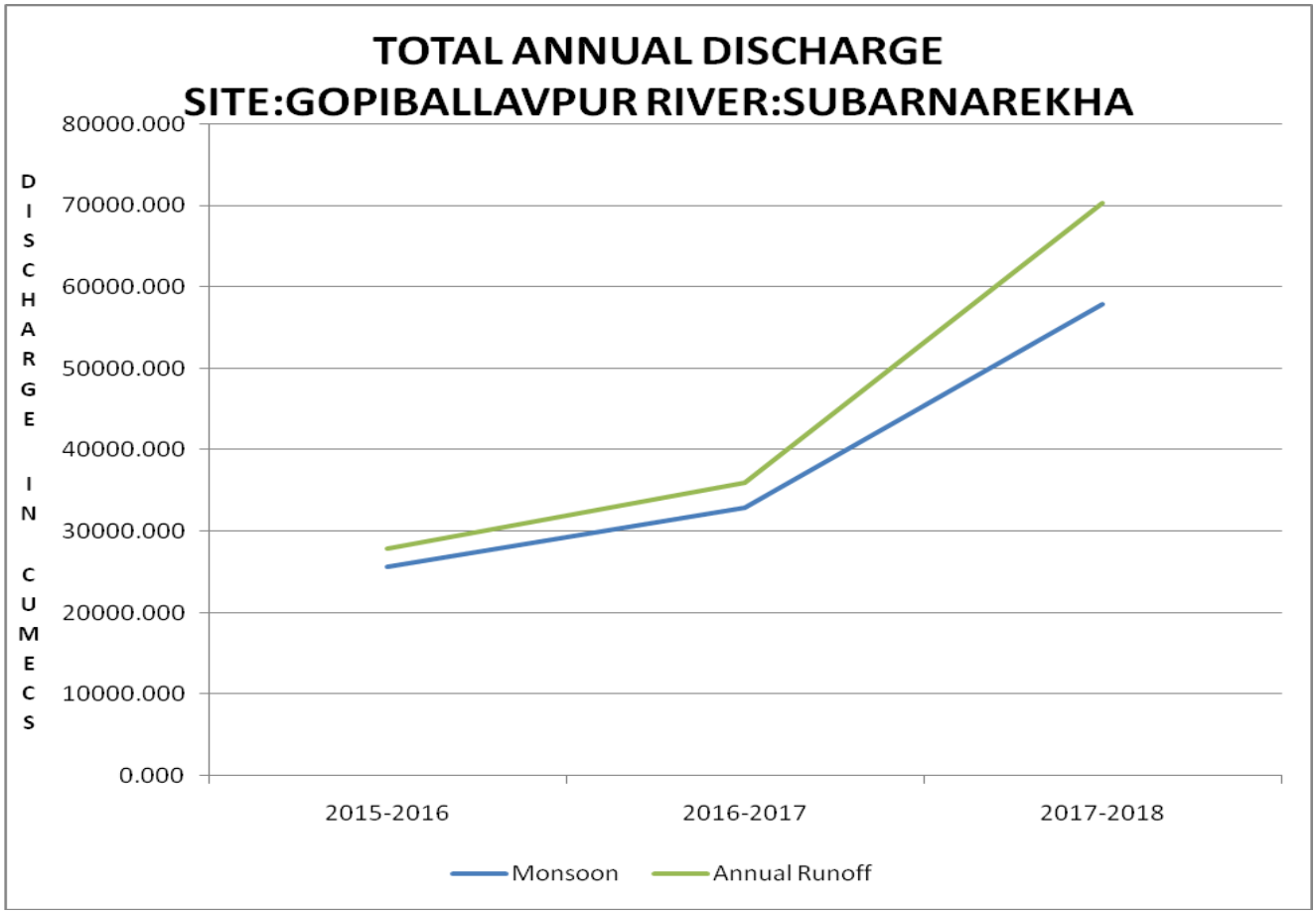
Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2017-2018

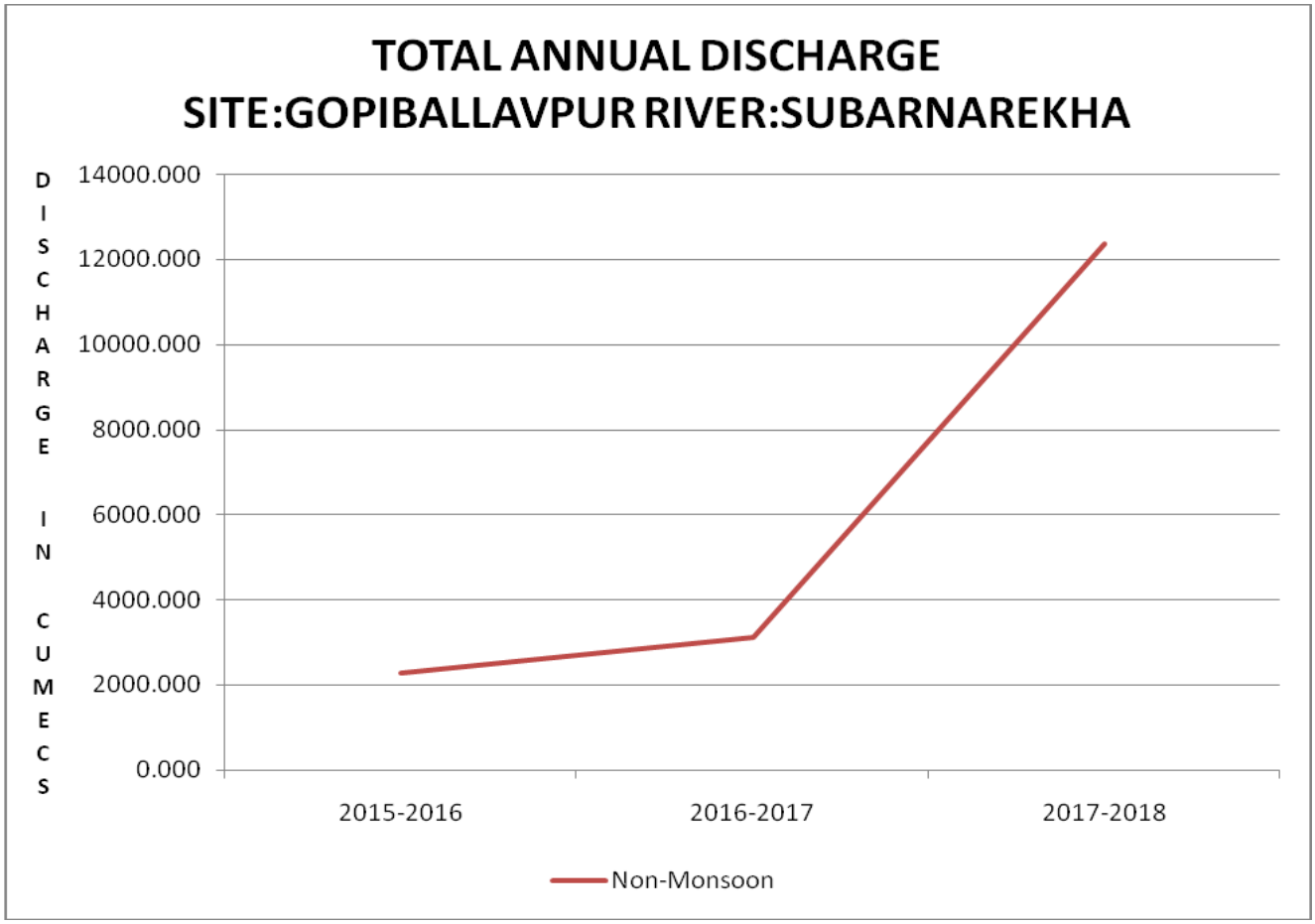
Station Name : GOPIBALLAVPUR (GOPIBALAVPUR) **Division : E.E., Bhubaneswar**

Local River : **Sub-Division : Balasore**



Time Span: 72 Hrs


TOTAL ANNUAL DISCHARGE
SITE:GOPIBALLAVPUR RIVER:SUBARNAREKHA
DISCHARGE IN CUMECS
80000.000
70000.000
60000.000
50000.000
40000.000
30000.000
20000.000
10000.000
0.000
2015-2016
2016-2017
2017-2018
Monsoon
Annual Runoff


TOTAL ANNUAL DISCHARGE
SITE:GOPIBALLAVPUR RIVER:SUBARNAREKHA
DISCHARGE IN CUMECS
14000.000
12000.000
10000.000
8000.000
6000.000
4000.000
2000.000
0.000
2015-2016
2016-2017
2017-2018
Non-Monsoon

HISTORY SHEET

			Water Year	**:**	**2017-2018**
Site	**:**	**GHATSILA ROAD BRIDGE**	**Code**	**:**	**GHAT RB**
State	:	Orissa	District		Angul
Basin	:	Subarnarekha	Independent River	:	Subarnarekha
Tributary	:		Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	
Division	:	E.E., Bhubaneswar	Sub-Division	:	Balasore
Drainage Area	:	Sq. Km.	Bank	:	
Latitude	:	°""	Longitude	:	°""
		Opening Date	Closing Date		
Gauge	:				
Discharge	:				
Sediment	:				
Water Quality	:	6/1/1990			

Water Quality Datasheet for the period : 2017-2018

Station Name : GHATSILA ROAD BRIDGE (GHAT RB) **Division : E.E., Bhubaneswar**

Local River : **River Water Analysis** **Sub-Division : Balasore**

S.No	Parameters	01/06/2017	01/07/2017	01/08/2017	01/09/2017	03/10/2017	01/11/2017	01/12/2017	01/01/2018	01/02/2018	01/03/2018	02/04/2018	01/05/2018
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Clear	Light Brown	Light Brown	Light Brown	Light Brown	Clear	Clear	Clear	Clear	Clear	Clear	Clear
3	EC_FLD (µmho/cm)	348	435	219	247	268	265	325	415	470	578	460	530
4	EC_GEN (µmho/cm)	335	430	214	251	263	262	318	405	465	574	456	533
5	Odour_Code (-)	odour free	odour free	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	7.9	7.2	7.4	7.7	7.2	7.6	7.6	8.0	7.9	7.4	7.8
7	pH_GEN (pH units)	7.7	7.8	7.3	7.5	7.6	7.3	7.5	7.7	7.9	7.8	7.3	8.0
8	Temp (deg C)	30.0	30.5	26.0	26.5	28.0	26.5	20.5	18.0	15.5	23.0	26.0	30.0
	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
2	ALK-TOT (mgCaCO3/L)	92	88	55	79		79	83	88	97	92	83	107
3	B (mg/L)	0.02	0.01	0.01	0.01	0.01	0.03	0.01	0.01	0.02	0.03	0.01	0.02
4	Ca (mg/L)	50	48	50	51	30	30	42	47	50	46	27	31
5	Cl (mg/L)	39.6	35.8	17.0	9.4	13.8	12.1	17.3	31.1	41.5	45.0	36.3	43.3
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
7	F (mg/L)	0.05	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)	0.5	0.6	0.4	0.4	0.5	0.4	0.5	0.5	0.4	0.3	0.4	0.4
9	HCO3 (mg/L)	113	107	68	96	101	96	101	107	118	113	101	131
10	K (mg/L)	6.0	4.2	1.8	1.9	2.0	2.6	2.9	3.0	2.2	2.8	3.1	4.7
11	Mg (mg/L)	19.4	20.4	20.4	22.4	11.1	11.1	15.9	16.7	19.1	14.3	15.1	14.3
12	Na (mg/L)	24.3	24.1	5.7	5.9	6.2	6.7	6.9	47.6	53.8	54.6	55.2	35.4
13	NO2+NO3 (mg N/L)	1.25	1.22	1.15	1.22	1.18	1.25	1.15	1.18	1.21	1.25	1.16	1.18
14	NO2-N (mgN/L)	0.00	0.01	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	NO3-N (mgN/L)	1.25	1.21	1.12	1.19	1.18	1.25	1.15	1.18	1.21	1.25	1.16	1.18
16	P-Tot (mgP/L)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
17	SiO2 (mg/L)	8.5	7.0	8.6	9.3	8.0	6.7	9.5	7.5	8.5	9.3	6.8	7.4
18	SO4 (mg/L)	44.1	45.8	46.5	17.1	5.7	26.2	26.4	26.6	23.8	35.4	35.4	33.4
	BIOLOGICAL/BACTERIOLOGICAL												
1	BOD3-27 (mg/L)	0.8	1.2	1.2	0.6	0.6	0.2	0.2	0.4	0.8	0.4	0.8	0.2
2	DO (mg/L)	6.4	5.8	5.8	6.6	6.0	5.2	6.8	5.4	7.4	3.8	5.8	4.6
3	DO_SAT% (%)	84	76	71	81	76	64	74	57	73	44	71	60
4	FCol-MPN (MPN/100mL)	40	90	90	60	90	40	70	80	110	90	80	60
5	Tcol-MPN (MPN/100mL)	110	140	170	210	220	170	210	220	270	210	260	170
	TRACE & TOXIC												
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	124	120	124	128	75	75	105	118	124	114	69	78
2	HAR_Total (mgCaCO3/L)	205	205	209	221	122	122	171	187	204	174	132	138
3	Na% (%)	20	20	6	5	10	11	8	35	36	40	47	35
4	RSC (-)	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	SAR (-)	0.7	0.7	0.2	0.2	0.2	0.3	0.2	1.5	1.6	1.8	2.1	1.3
	PESTICIDES												

Water Quality Summary for the period : 2017-2018

Station Name : GHATSILA ROAD BRIDGE (GHAT RB) **Division : E.E., Bhubaneswar**

Local River : **Sub-Division : Balasore**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	12	578	219	380
3	EC_GEN (µmho/cm)	12	574	214	376
4	pH_FLD (pH units)	12	8.0	7.2	7.6
5	pH_GEN (pH units)	12	8.0	7.3	7.6
6	Temp (deg C)	12	30.5	15.5	25
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	11	0.0	0.0	0
2	ALK-TOT (mgCaCO3/L)	11	107	55	86
3	B (mg/L)	12	0.03	0.01	0.02
4	Ca (mg/L)	12	51	27	42
5	Cl (mg/L)	12	45.0	9.4	28.5
6	CO3 (mg/L)	12	0.0	0.0	0
7	F (mg/L)	12	0.05	0.05	0.05
8	Fe (mg/L)	12	0.6	0.3	0.4
9	HCO3 (mg/L)	12	131	68	104
10	K (mg/L)	12	6.0	1.8	3.1
11	Mg (mg/L)	12	22.4	11.1	16.7
12	Na (mg/L)	12	55.2	5.7	27.2
13	NO2+NO3 (mg N/L)	12	1.25	1.15	1.2
14	NO2-N (mgN/L)	12	0.03	0.00	0.01
15	NO3-N (mgN/L)	12	1.25	1.12	1.19
16	P-Tot (mgP/L)	12	0.001	0.001	0.001
17	SiO2 (mg/L)	12	9.5	6.7	8.1
18	SO4 (mg/L)	12	46.5	5.7	30.5
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	1.2	0.2	0.6
2	DO (mg/L)	12	7.4	3.8	5.8
3	DO_SAT% (%)	12	84	44	69
4	FCol-MPN (MPN/100mL)	12	110	40	75
5	Tcol-MPN (MPN/100mL)	12	270	110	197
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	128	69	105
2	HAR_Total (mgCaCO3/L)	12	221	122	174
3	Na% (%)	12	47	5	23
4	RSC (-)	12	0.0	0.0	0
5	SAR (-)	12	2.1	0.2	0.9
	PESTICIDES				

Water Quality Seasonal Average for the period: 2003-2018

Station Name : GHATSILA ROAD BRIDGE (GHAT RB) **Division : E.E., Bhubaneswar**

Local River : **River Water** **Sub-Division : Balasore**

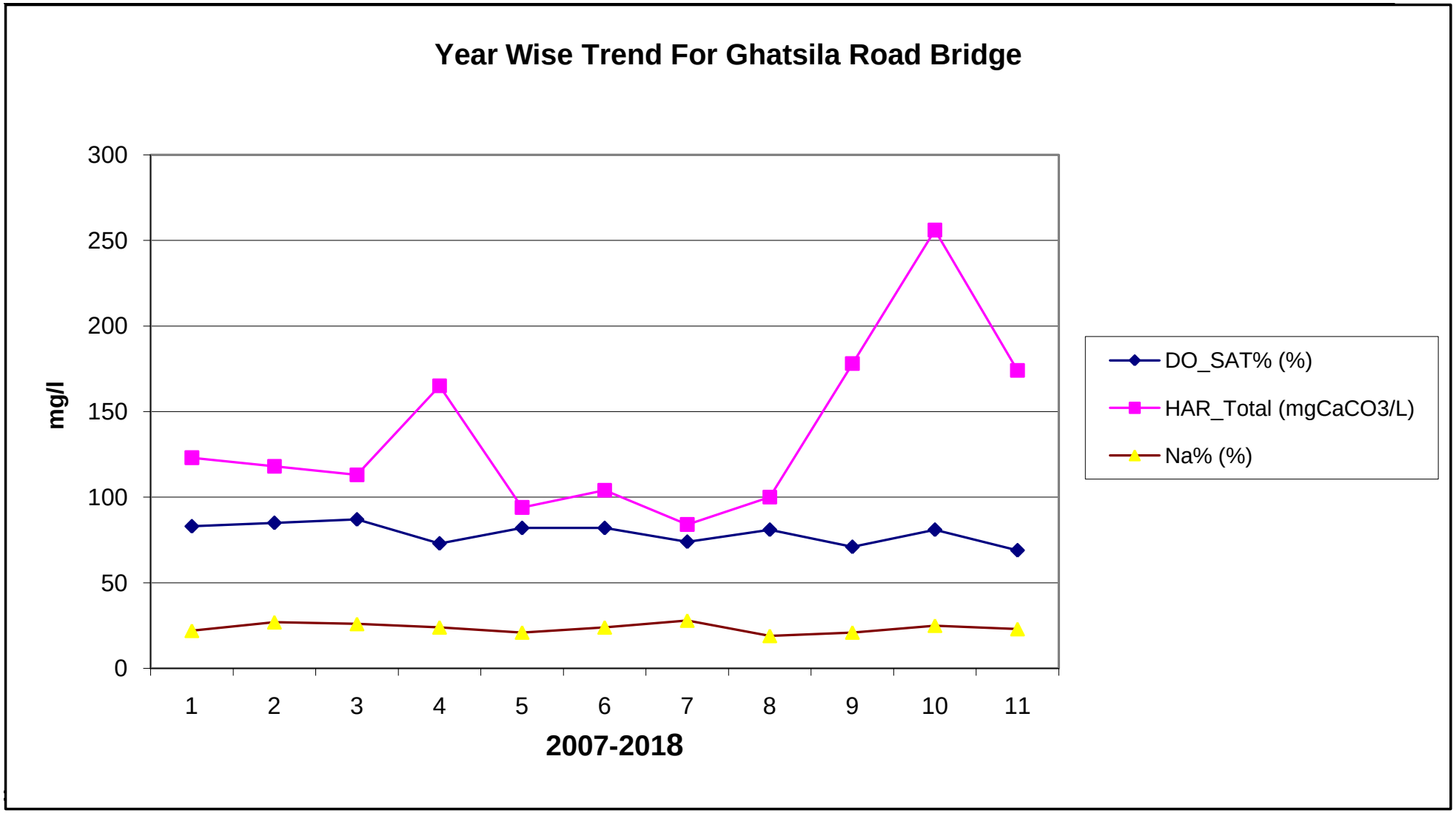
S.No	Parameters	Flood															Winter							
		Jun - Oct															Nov - Feb							
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
	PHYSICAL																							
1	Q (cumec)																							
2	EC_FLD (µmho/cm)	237	304	274	236	273		256	384	261	276	264	318	560	423	303	258	273	385	327	303		343	495
3	EC_GEN (µmho/cm)	239	304	269	233	267		256	384	261	276	264	318	564	426	299	250	273	381	325	299		343	495
4	pH_FLD (pH units)	7.7	7.8	7.6	7.8	7.9		7.8	8.1	8.2	7.5	7.3	7.6	7.4	8.0	7.6	7.9	7.8	7.8	7.9	8.2		7.8	7.5
5	pH_GEN (pH units)	7.6	7.6	7.7	7.8	7.9		7.8	8.1	8.2	7.5	7.3	7.6	7.3	8.1	7.6	7.8	7.8	7.8	7.9	8.2		7.8	7.5
6	Temp (deg C)	31.5	29.1	29.4	28.5	27.0		27.9	27.1	28.0	29.2	27.8	28.8	27.9	24.5	28.2	20.0	22.7	18.3	18.2	16.9		16.5	18.0
	CHEMICAL																							
1	Alk-Phen (mgCaCO3/L)					0.0		0.0	13.9	6.4			0.0	0.0	0.0	0.0					0.2		0.0	0.0
2	ALK-TOT (mgCaCO3/L)					82		64	110	79			66	87	94	79					93		63	107
3	B (mg/L)	0.00	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	0.00	0.00	0.00	0.00	0.00		0.00	0.00
4	Ca (mg/L)	26	29	29	25	28		23	30	20	24	20	22	37	59	46	28	27	37	34	31		29	37
5	Cl (mg/L)	15.9	21.6	17.5	21.6	18.1		18.3	26.8	22.3	20.7	22.3	24.3	18.1	35.8	23.1	15.5	26.5	28.6	20.5	22.9		29.6	41.5
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0		0.0	7.7	7.8	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.3		0.0	0.0
7	F (mg/L)	0.05	0.31	0.09	0.14	0.06		0.12	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.08	0.40	0.37	0.06	0.12		0.25	0.05
8	Fe (mg/L)	0.3	0.3	0.2	0.3	0.4		0.3	0.3	0.0	1.3	0.1	1.0	0.3	0.5	0.5	0.3	0.2	0.3	0.3	0.3		0.3	0.1
9	HCO3 (mg/L)	87	101	106	87	100		67	100	81	80	88	81	106	115	97	110	67	119	139	111		76	131
10	K (mg/L)	1.9	3.3	2.5	3.4	3.0		2.0	5.5	3.0	3.0	2.4	3.0	3.7	8.3	3.2	3.0	5.1	3.6	3.6	3.4		3.3	4.9
11	Mg (mg/L)	5.9	9.4	8.4	6.2	8.3		9.3	14.4	7.6	7.8	5.0	7.6	11.3	23.5	18.7	6.8	5.8	13.5	10.9	8.6		12.1	20.2
12	Na (mg/L)	10.9	14.0	11.7	14.4	12.4		12.5	17.8	10.5	10.7	13.1	10.5	13.9	43.1	13.2	10.3	17.8	19.4	14.0	15.4		19.0	29.1
13	NO2+NO3 (mg N/L)	2.74	1.96	2.26	2.26	2.04		1.98	1.74	0.42	0.80	0.92	1.26	0.95	1.06	1.20	1.80	6.07	7.89	2.36	2.18		3.02	1.95
14	NO2-N (mgN/L)	0.01	0.06	0.01	0.00	0.00		0.05	0.01	0.07	0.00	0.03	0.02	0.02	0.02	0.01	0.01	0.13	0.39	0.00	0.01		0.09	0.11
15	NO3-N (mgN/L)	2.73	1.89	2.26	2.26	2.04		1.93	1.73	0.36	0.80	0.89	1.23	0.92	1.05	1.19	1.79	5.93	7.50	2.36	2.17		2.93	1.85
16	o-PO4-P (mg P/L)		0.052	0.050	0.009	0.000		0.048											0.023	0.025	0.008		0.083	
17	P-Tot (mgP/L)	0.047	0.001	0.050	0.010	0.001		0.002	0.001	0.010	0.001	0.004	0.001	0.001	0.010	0.001	0.034	0.001	0.009	0.025	0.021		0.001	0.001
18	SiO2 (mg/L)	13.1	33.4	26.2	15.0	10.4		8.8	9.0	10.0	11.4	11.5	6.2	6.4	6.4	8.3	15.4	33.0	24.2	15.0	9.3		8.1	5.9
19	SO4 (mg/L)	8.0	25.2	13.4	14.1	15.7		30.1	35.9	21.7	33.2	29.1	15.5	25.0	40.8	31.8	6.9	30.9	26.9	14.2	15.1		44.2	62.5
	BIOLOGICAL/BACTERIOLOGICAL																							
1	BOD3-27 (mg/L)	0.9	1.4	1.4	1.4	1.3		1.6	5.7	1.7	0.8	0.7	0.7	0.8	1.0	0.9	1.8	1.3	1.3	1.4	1.4		2.6	1.8
2	DO (mg/L)	6.2	6.7	6.0	6.7	7.0		6.4	5.3	6.3	5.8	5.2	6.0	5.0	6.8	6.1	7.7	8.0	8.4	7.8	8.4		9.1	8.2
3	DO_SAT% (%)	84	86	79	86	87		81	67	80	75	66	77	64	81	78	84	92	88	82	85		92	86
4	FCol-MPN (MPN/100mL)															74								
5	Tcol-MPN (MPN/100mL)															170								
	TRACE & TOXIC																							
1	Al (mg/L)				6.66																			
	CHEMICAL INDICES																							
1	HAR_Ca (mgCaCO3/L)	65	72	74	62	70		57	76	50	59	49	56	91	148	114	70	69	92	84	77		72	93
2	HAR_Total (mgCaCO3/L)	90	117	109	88	104		96	136	81	92	70	88	138	246	193	98	79	148	129	112		123	177
3	Na% (%)	21	22	20	25	23		22	22	20	19	28	18	17	26	12	19	29	22	19	22		24	26
4	RSC (-)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0		0.0	0.0
5	SAR (-)	0.5	0.6	0.5	0.7	0.6		0.6	0.7	0.5	0.5	0.7	0.5	0.5	1.2	0.4	0.5	0.8	0.7	0.5	0.6		0.8	1.0
	PESTICIDES																							

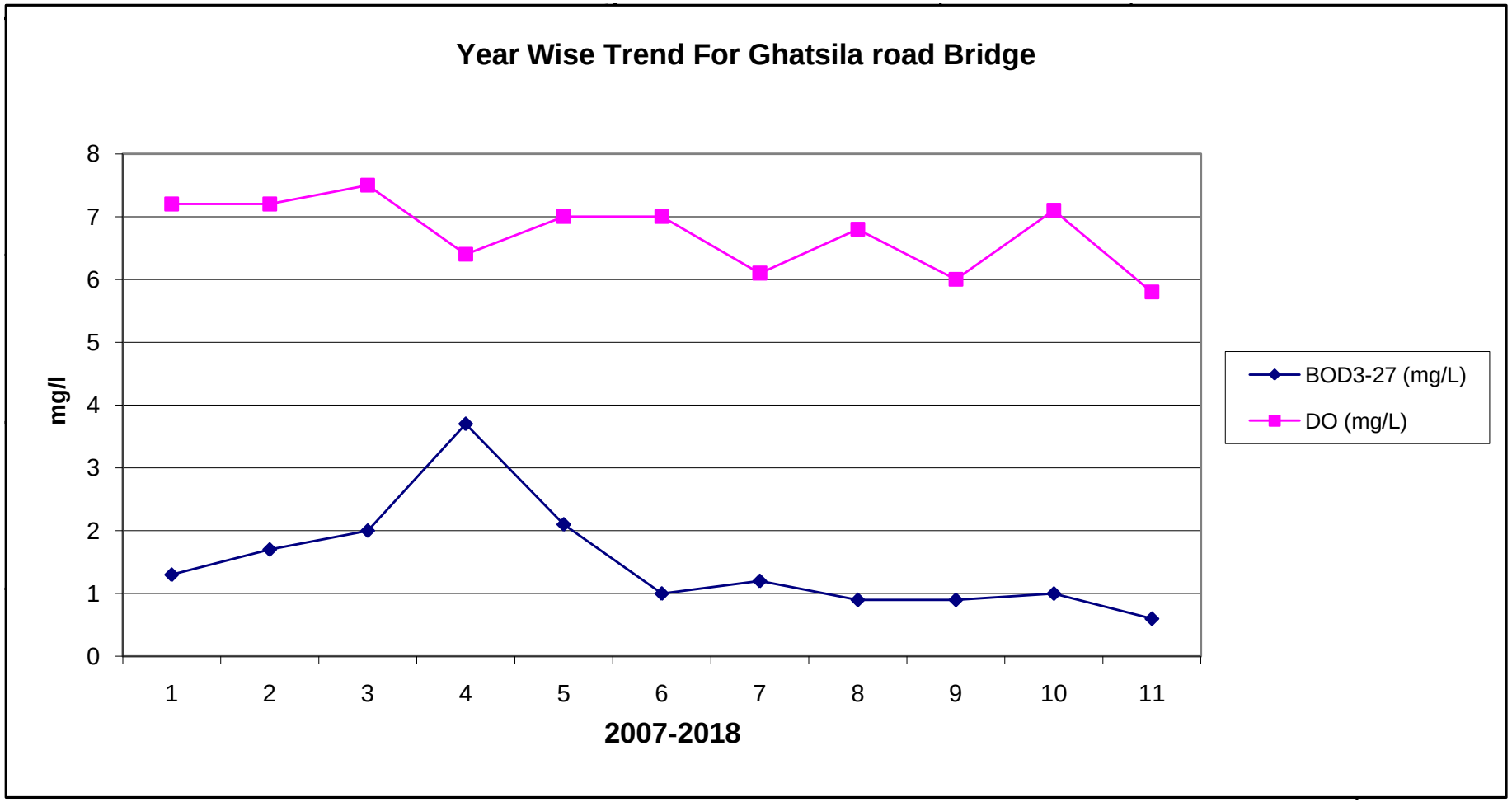
Water Quality Seasonal Average for the period: 2003-2018

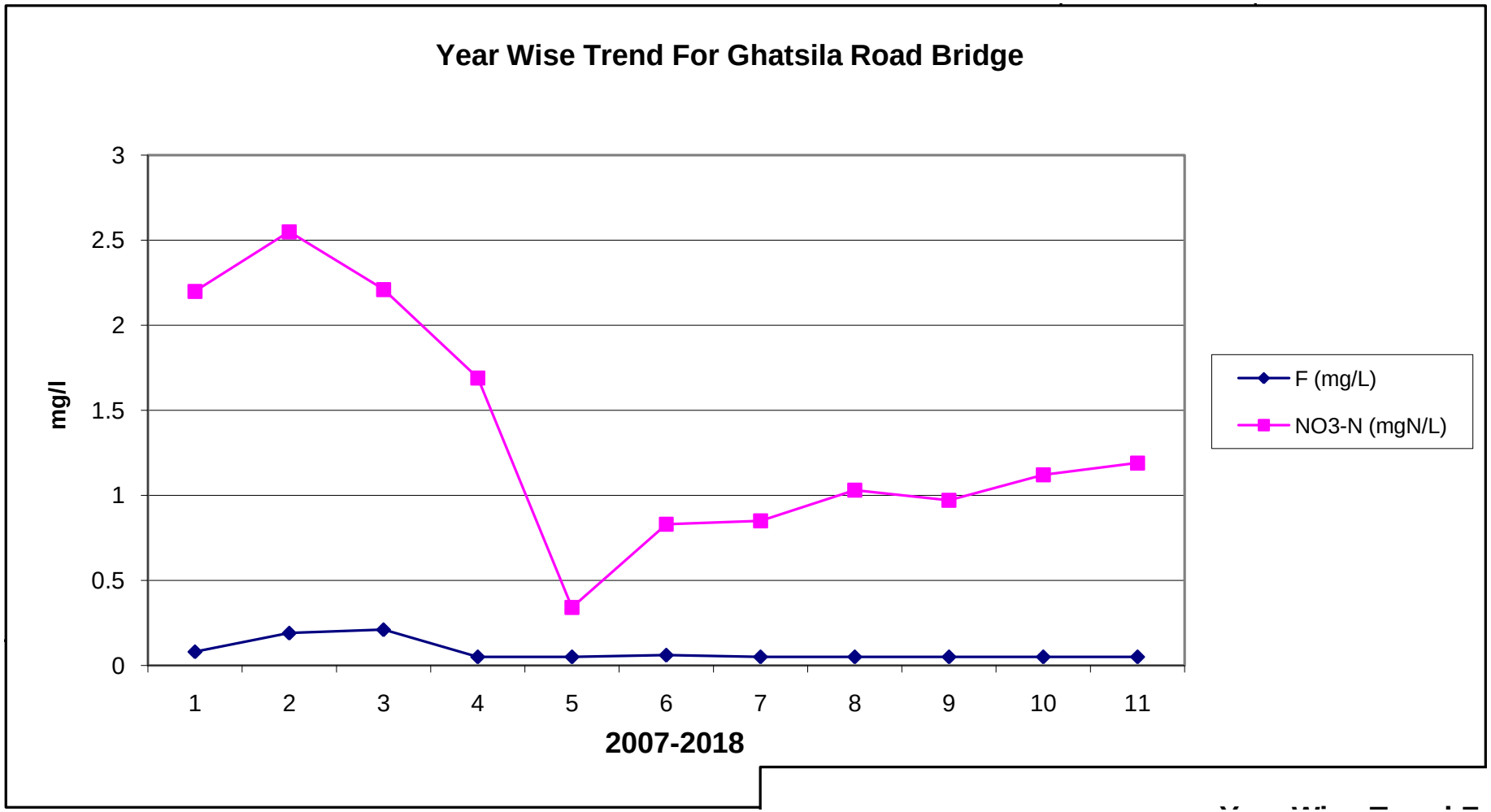
Station Name : GHATSILA ROAD BRIDGE (GHAT RB) **Division : E.E., Bhubaneswar**

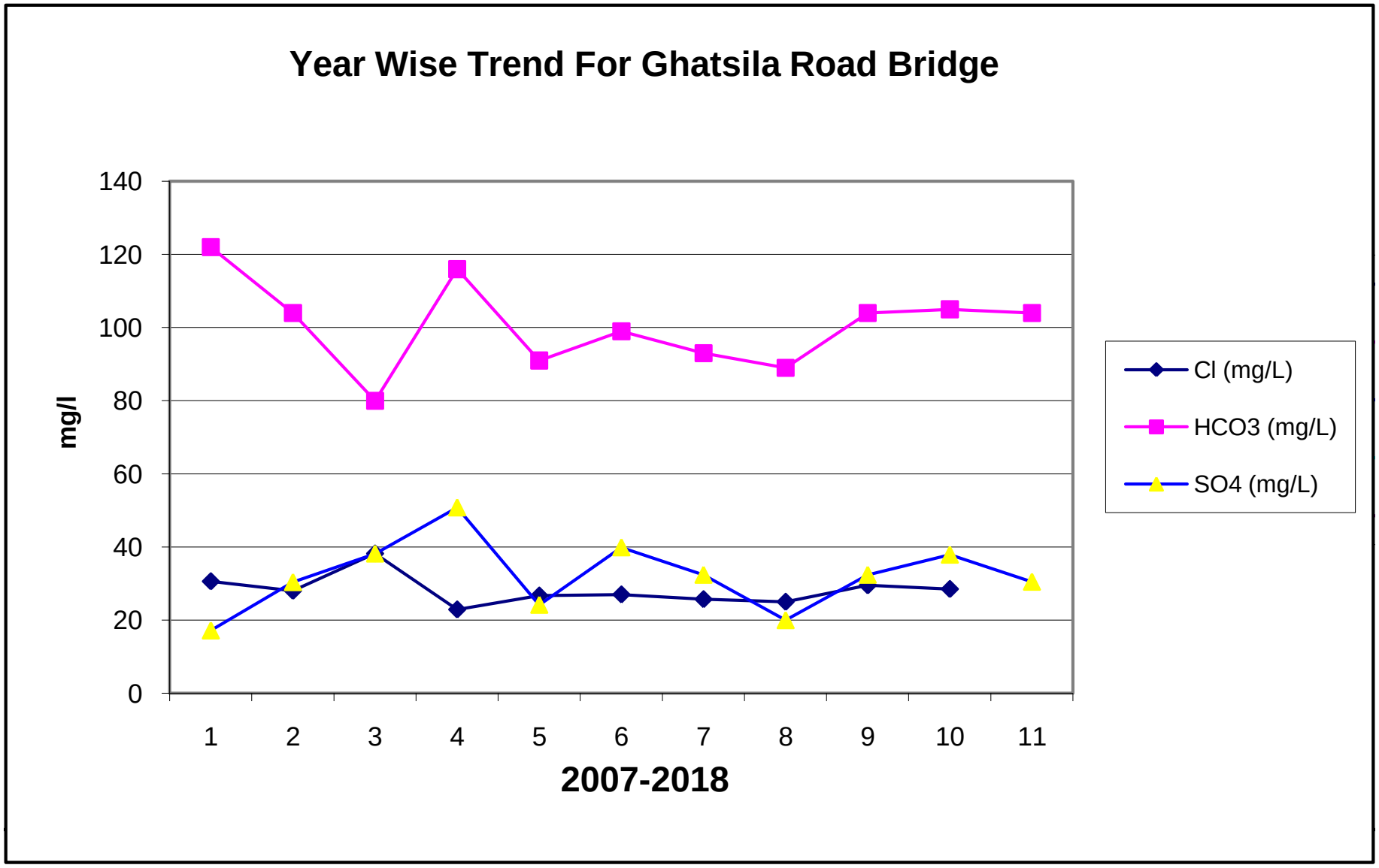
Local River : **River Water** **Sub-Division : Balasore**

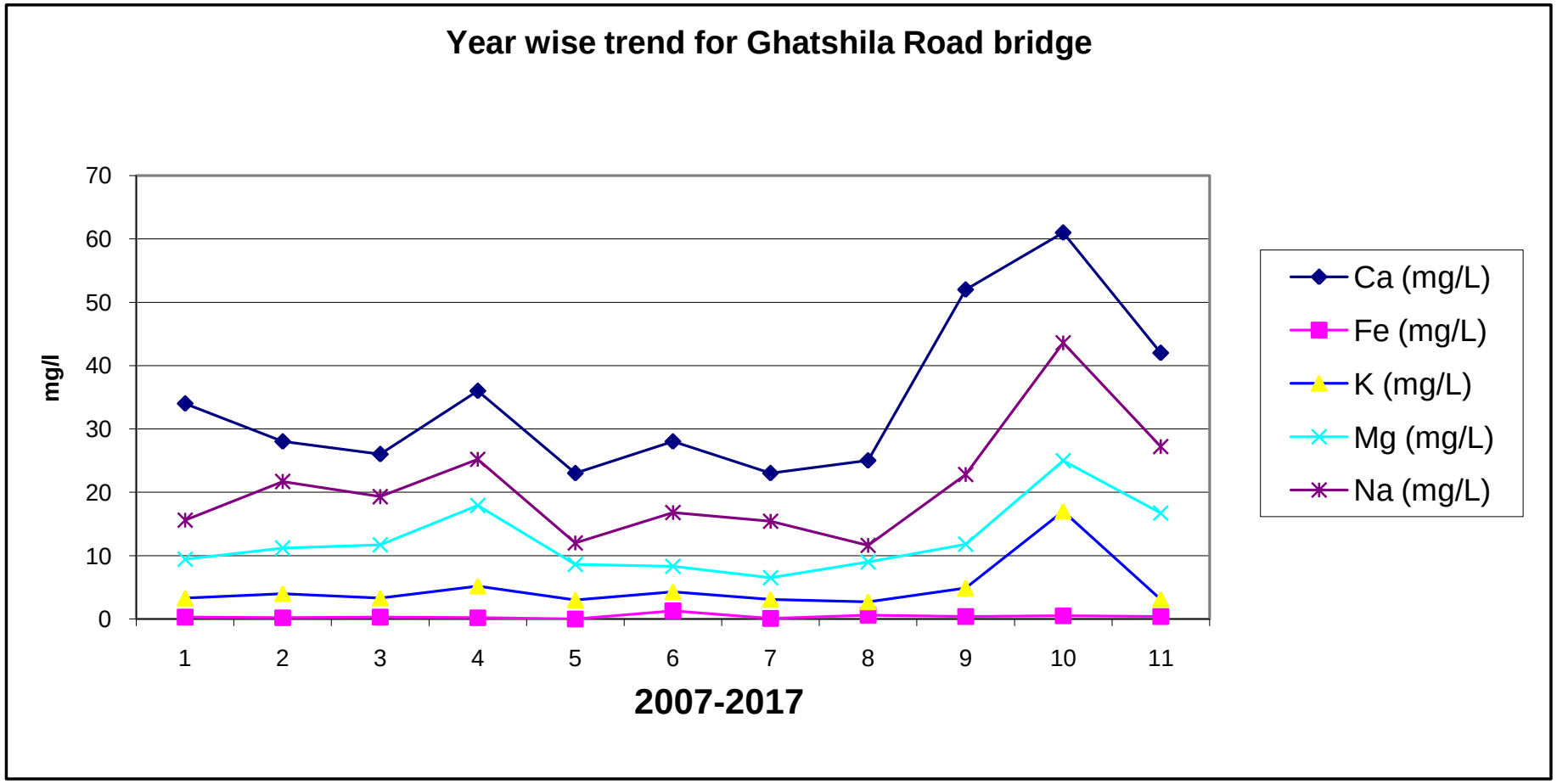
S.No	Parameters								Summer															
									Mar - May															
		2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	PHYSICAL																						
1	Q (cumec)																						
2	EC_FLD (µmho/cm)	283	370	249	470	915	570	369	630	368	490	456	480		407	557	303	360	413	560	731	455	523
3	EC_GEN (µmho/cm)	283	370	249	470	918	573	363	633	367	488	454	472		407	557	303	360	413	560	729	459	521
4	pH_FLD (pH units)	7.6	7.8	7.7	7.6	7.7	8.1	7.6	8.0	7.6	7.4	7.9	7.9		8.1	8.0	7.8	7.9	7.4	7.5	7.9	8.0	7.7
5	pH_GEN (pH units)	7.6	7.8	7.7	7.6	7.6	8.1	7.6	7.8	7.6	7.5	7.9	7.9		8.1	8.0	7.8	7.9	7.4	7.5	7.9	8.1	7.7
6	Temp (deg C)	18.5	17.0	21.4	20.0	19.9	18.4	20.1	28.5	25.8	25.8	25.4	25.5		26.0	23.0	25.2	27.7	27.0	26.7	26.0	24.7	26.3
	CHEMICAL																						
1	Alk-Phen (mgCaCO3/L)	0.0			0.0	5.8	0.0	0.0				0.0			4.0	15.6	1.5			0.0	9.2	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	76			77	88	75	87				256			84	131	89			77	112	88	94
3	B (mg/L)	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.00	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
4	Ca (mg/L)	26	32	24	26	68	63	42	59	38	46	51	50		26	44	25	29	27	28	55	60	35
5	Cl (mg/L)	20.3	31.6	28.4	21.6	16.0	17.4	25.5	33.1	37.1	40.5	23.3	31.5		42.1	52.8	27.7	30.2	32.9	33.5	48.4	35.2	41.5
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	6.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0		3.2	18.8	1.8	0.0	4.2	0.0	11.1	0.0	0.0
7	F (mg/L)	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.23	0.46	0.25	0.24	0.05		0.29	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.05
8	Fe (mg/L)	0.0	1.2	0.1	0.3	0.4	0.5	0.4	0.2	0.4	0.2	0.3	0.3		0.2	0.2	0.0	1.3	0.1	0.3	0.4	0.6	0.3
9	HCO3 (mg/L)	93	123	90	89	93	92	106	236	94	173	172	184		105	122	105	97	104	101	115	107	115
10	K (mg/L)	2.7	5.4	2.8	2.6	6.1	18.8	2.7	5.9	3.6	5.7	4.4	3.8		5.6	5.3	3.4	5.2	4.9	2.4	5.4	29.3	3.5
11	Mg (mg/L)	12.3	10.0	6.0	10.6	9.0	26.2	15.7	23.3	8.3	15.1	15.4	12.8		14.9	20.7	5.5	6.9	9.7	9.4	16.5	25.9	14.6
12	Na (mg/L)	11.6	21.4	15.7	11.8	26.3	41.0	28.7	26.0	23.5	26.8	16.1	22.6		30.9	32.2	15.1	20.9	18.8	13.1	33.0	47.8	48.4
13	NO2+NO3 (mg N/L)	0.40	0.86	0.90	0.87	1.07	1.15	1.19	3.99	10.43	2.79	8.92	2.58		1.79	1.42	0.41	0.84	0.80	0.91	0.93	1.27	1.20
14	NO2-N (mgN/L)	0.07	0.00	0.03	0.02	0.01	0.02	0.00	0.00	0.06	0.00	0.00	0.00		0.08	0.00	0.07	0.00	0.03	0.00	0.01	0.02	0.00
15	NO3-N (mgN/L)	0.33	0.86	0.88	0.85	1.06	1.12	1.19	3.99	10.36	2.79	8.92	2.58		1.71	1.42	0.34	0.84	0.78	0.91	0.92	1.26	1.20
16	o-PO4-P (mg P/L)									0.026	0.048	0.019			0.037								
17	P-Tot (mgP/L)	0.010	0.001	0.005	0.001	0.010	0.010	0.001	0.001	0.001	0.050	0.019	0.050		0.004	0.001	0.010	0.001	0.005	0.001	0.010	0.010	0.001
18	SiO2 (mg/L)	12.0	11.8	10.9	5.8	5.8	6.5	8.0	15.2	31.6	18.2	20.3	9.7		7.3	7.9	9.7	12.7	11.8	4.5	5.3	8.8	7.8
19	SO4 (mg/L)	30.8	46.1	32.2	26.1	38.0	28.5	25.8	58.2	19.9	36.4	22.1	23.4		43.8	60.1	19.6	42.7	38.4	19.2	37.4	45.9	34.7
	BIOLOGICAL/BACTERIOLOGICAL																						
1	BOD3-27 (mg/L)	2.7	0.9	1.1	1.0	1.0	0.9	0.4	1.4	1.3	1.2	1.4	1.4		1.6	2.2	2.0	1.3	2.0	1.1	0.8	1.3	0.5
2	DO (mg/L)	7.7	8.7	7.3	9.0	7.8	8.7	6.2	6.8	5.9	7.7	6.4	5.8		7.2	5.8	7.2	6.6	6.2	5.3	5.1	5.6	4.7
3	DO_SAT% (%)	82	90	82	98	85	91	67	88	73	94	77	71		89	67	87	82	77	66	63	66	58
4	FCol-MPN (MPN/100mL)						128	75														67	77
5	Tcol-MPN (MPN/100mL)						203	218														140	213
	TRACE & TOXIC																						
1	Al (mg/L)									0.02													
	CHEMICAL INDICES																						
1	HAR_Ca (mgCaCO3/L)	66	80	60	64	170	156	105	148	94	114	127	126		65	110	61	73	67	70	138	150	87
2	HAR_Total (mgCaCO3/L)	117	122	84	108	207	266	171	245	132	177	191	179		128	196	84	101	107	109	206	258	148
3	Na% (%)	17	27	28	19	23	24	23	18	26	25	16	22		34	26	27	30	27	21	26	26	41
4	RSC (-)	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	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.5	0.9	0.7	0.5	0.8	1.1	0.9	0.7	0.9	0.9	0.5	0.7		1.2	1.0	0.7	0.9	0.8	0.6	1.0	1.3	1.7
	PESTICIDES																						


Year Wise Trend For Ghatsila Road Bridge
300
250
200
150
100
50
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
DO_SAT% (%)
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For Ghatsila road Bridge
mg/l
0
1
2
3
4
5
6
7
8
1
2
3
4
5
6
7
8
9
10
11
2007-2018
BOD3-27 (mg/L)
DO (mg/L)


Year Wise Trend For Ghatsila Road Bridge
mg/l
3
2.5
2
1.5
1
0.5
0
1
2
3
4
5
6
7
8
9
10
11
2007-2018
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend For Ghatsila Road Bridge
140
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year wise trend for Ghatshila Road bridge
mg/l
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
10
11
2007-2017
Ca (mg/L)
Fe (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

HISTORY SHEET

			Water Year	**:**	**2017-2018**
Site	**:**	**BARIDHI NALA**	**Code**	**:**	**BARIDHI**
State	:	Jharkhand	District		Paschim Singbhum
Basin	:	Subarnarekha	Independent River	:	Subarnarekha
Tributary	:	Baridhinala	Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	Baridhinala
Division	:	E.E., Bhubaneswar	Sub-Division	:	Balasore
Drainage Area	:	Sq. Km.	Bank	:	Left
Latitude	:	°""	Longitude	:	°""
		Opening Date	Closing Date		
Gauge	:				
Discharge	:				
Sediment	:				
Water Quality	:	4/1/1991			

Water Quality Datasheet for the period : 2017-2018

Station Name : BARIDHI NALA (BARIDHI) **Division : E.E., Bhubaneswar**

Local River : Baridhinala **River Water Analysis** **Sub-Division : Balasore**

S.No	Parameters	01/06/2017	01/07/2017	01/08/2017	01/09/2017	03/10/2017	01/11/2017	01/12/2017	01/01/2018	01/02/2018	01/03/2018	02/04/2018	01/05/2018
		A	A	A	A	A	A	B	A	A	A	B	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Clear	Light Brown	Light Brown	Light Brown	Light Brown	Clear	Clear	Clear	Clear	Clear	Clear	Clear
3	EC_FLD (µmho/cm)	350	358	248	289	306	260	835	448	418	950	990	840
4	EC_GEN (µmho/cm)	345	350	241	282	308	257	937	442	410	1009	995	838
5	Odour_Code (-)	odour free	odour free	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	7.5	8.7	7.7	7.5	7.8	7.1	7.1	7.6	7.2	7.0	7.4
7	pH_GEN (pH units)	7.3	7.4	8.6	7.6	7.6	7.7	7.0	7.2	7.5	7.1	7.1	7.4
8	Temp (deg C)	26.0	28.0	26.0	28.0	24.5	22.5	21.0	18.0	20.5	24.5	28.0	21.0
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	18.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	92	88	107	79	102	83	222	194	134	203	32	111
3	B (mg/L)	0.03	0.01	0.02	0.01	0.03	0.03	0.03	0.01	0.03	0.01	0.02	0.01
4	Ca (mg/L)	61	61	61	63	35	29	73	46	44	50	56	46
5	Cl (mg/L)	24.5	24.5	13.2	15.1	15.6	12.1	79.6	34.6	31.1	32.9	46.7	50.2
6	CO3 (mg/L)	0.0	0.0	22.4	0.0	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	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
8	Fe (mg/L)	0.3	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.4	0.5	0.3
9	HCO3 (mg/L)	113	107	85	96	124	101	271	237	163	248	39	135
10	K (mg/L)	3.6	3.4	2.5	2.6	2.9	3.0	3.2	3.5	2.4	2.9	2.7	17.1
11	Mg (mg/L)	21.4	22.4	25.3	26.2	12.7	11.1	24.6	15.1	19.9	22.2	15.1	17.5
12	Na (mg/L)	15.6	16.8	6.1	6.6	6.9	7.2	7.6	47.9	51.9	52.8	53.2	82.7
13	NO2+NO3 (mg N/L)	1.12	1.23	1.22	1.18	1.11	1.19	1.22	1.16	1.22	1.19	1.12	1.19
14	NO2-N (mgN/L)	0.00	0.03	0.03	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	NO3-N (mgN/L)	1.12	1.21	1.19	1.13	1.09	1.19	1.22	1.16	1.22	1.19	1.12	1.19
16	P-Tot (mgP/L)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
17	SiO2 (mg/L)	9.5	9.0	8.7	9.3	7.0	8.5	9.1	6.3	7.9	9.5	8.7	7.5
18	SO4 (mg/L)	72.0	24.6	25.1	15.7	23.5	23.7	23.8	23.9	9.8	35.2	26.4	34.1
	BIOLOGICAL/BACTERIOLOGICAL												
1	BOD3-27 (mg/L)	3.8	159.0	20.0	2.0	0.6	2.2	4.0	1.6	0.8	2.4	1.6	1.4
2	DO (mg/L)	5.6	5.4	5.4	4.2	4.0	6.2	0.8	4.6	3.6	4.2	9.1	6.2
3	DO_SAT% (%)	69	68	66	53	47	71	9	48	39	50	117	69
4	FCol-MPN (MPN/100mL)	80	80	40	80	110	90	110	120	120	110	130	170
5	Tcol-MPN (MPN/100mL)	170	170	120	260	330	260	300	300	400	330	340	500
	TRACE & TOXIC												
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	152	152	152	156	88	72	183	114	111	124	141	114
2	HAR_Total (mgCaCO3/L)	241	245	258	266	141	118	286	177	194	217	203	187
3	Na% (%)	12	13	5	5	9	11	5	37	37	34	36	46
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
5	SAR (-)	0.4	0.5	0.2	0.2	0.3	0.3	0.2	1.6	1.6	1.6	1.6	2.6
	PESTICIDES												

Water Quality Summary for the period : 2017-2018

Station Name : BARIDHI NALA (BARIDHI) **Division : E.E., Bhubaneswar**

Local River : Baridhinala **Sub-Division : Balasore**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	12	990	248	524
3	EC_GEN (µmho/cm)	12	1009	241	535
4	pH_FLD (pH units)	12	8.7	7.0	7.5
5	pH_GEN (pH units)	12	8.6	7.0	7.4
6	Temp (deg C)	12	28.0	18.0	24
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	18.6	0.0	1.5
2	ALK-TOT (mgCaCO3/L)	12	222	32	121
3	B (mg/L)	12	0.03	0.01	0.02
4	Ca (mg/L)	12	73	29	52
5	Cl (mg/L)	12	79.6	12.1	31.7
6	CO3 (mg/L)	12	22.4	0.0	1.9
7	F (mg/L)	12	0.05	0.05	0.05
8	Fe (mg/L)	12	0.5	0.3	0.4
9	HCO3 (mg/L)	12	271	39	143
10	K (mg/L)	12	17.1	2.4	4.2
11	Mg (mg/L)	12	26.2	11.1	19.5
12	Na (mg/L)	12	82.7	6.1	29.6
13	NO2+NO3 (mg N/L)	12	1.23	1.11	1.18
14	NO2-N (mgN/L)	12	0.04	0.00	0.01
15	NO3-N (mgN/L)	12	1.22	1.09	1.17
16	P-Tot (mgP/L)	12	0.001	0.001	0.001
17	SiO2 (mg/L)	12	9.5	6.3	8.4
18	SO4 (mg/L)	12	72.0	9.8	28.2
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	159.0	0.6	16.6
2	DO (mg/L)	12	9.1	0.8	4.9
3	DO_SAT% (%)	12	117	9	59
4	FCol-MPN (MPN/100mL)	12	170	40	103
5	Tcol-MPN (MPN/100mL)	12	500	120	290
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	183	72	130
2	HAR_Total (mgCaCO3/L)	12	286	118	211
3	Na% (%)	12	46	5	21
4	RSC (-)	12	0.4	0.0	0
5	SAR (-)	12	2.6	0.2	0.9
	PESTICIDES				

Water Quality Seasonal Average for the period: 2003-2018

Station Name : BARIDHI NALA (BARIDHI) **Division : E.E., Bhubaneswar**

Local River : Baridhinala **River Water** **Sub-Division : Balasore**

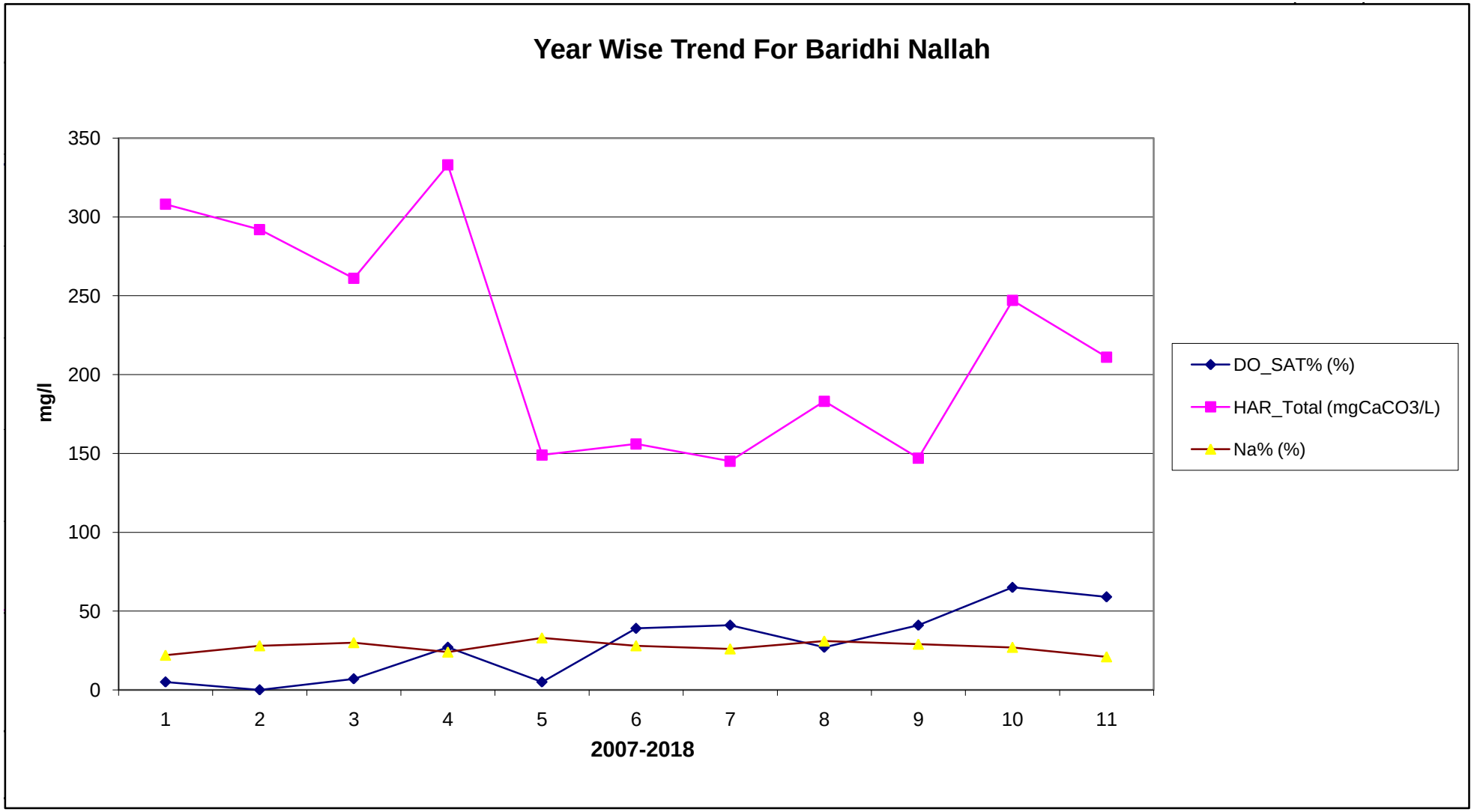
S.No	Parameters	Flood															Winter							
		Jun - Oct															Nov - Feb							
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
	PHYSICAL																							
1	Q (cumec)																							
2	EC_FLD (µmho/cm)	656	910	847	910	872		988	1070	1008	656	470	580	717	243	310	777	584	1673	738	730		763	830
3	EC_GEN (µmho/cm)	662	908	845	906	862		988	1066	1008	656	470	580	720	246	305	783	583	669	736	725		763	830
4	pH_FLD (pH units)	7.8	7.7	7.3	7.6	7.6		7.9	7.8	8.3	7.4	7.7	7.7	7.3	7.5	7.7	7.8	7.6	7.5	7.7	7.6		7.5	7.2
5	pH_GEN (pH units)	7.7	7.8	7.4	7.6	7.7		8.0	7.9	8.3	7.4	7.7	7.7	7.3	7.6	7.7	7.6	7.7	7.5	7.7	7.7		7.5	7.2
6	Temp (deg C)	31.3	31.3	29.7	29.7	30.1		30.5	30.1	31.3	32.4	28.8	29.5	28.5	27.5	26.5	24.9	24.0	20.4	20.2	21.4		21.5	22.1
	CHEMICAL																							
1	Alk-Phen (mgCaCO3/L)					0.0		2.0	2.0	16.6	0.0		0.0	0.0	0.0	3.7					0.0		0.0	0.0
2	ALK-TOT (mgCaCO3/L)					250		160	214	176	69		164	112	107	93					170		92	210
3	B (mg/L)	0.48	0.02	0.52	0.00	0.49		0.14	0.23	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.43	0.18	0.49	0.00	0.24		0.11	0.17
4	Ca (mg/L)	68	86	73	94	73		88	94	57	45	33	58	40	61	56	74	57	74	76	75		62	79
5	Cl (mg/L)	50.9	63.0	61.5	53.6	67.2		77.7	83.6	64.5	50.1	42.2	64.3	35.8	52.8	18.6	56.6	49.2	49.7	46.0	53.7		69.0	66.0
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0		1.9	9.6	20.0	0.0	0.0	0.0	0.0	0.0	4.5	0.0	0.0	0.0	0.0	0.0		0.0	0.0
7	F (mg/L)	1.42	1.62	3.30	4.38	1.82		1.67	2.31	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.94	1.80	2.02	1.21	2.47		0.87	0.72
8	Fe (mg/L)	0.2	0.3	0.6	0.2	0.8		0.3	0.2	0.0	1.9	0.1	0.2	0.4	0.4	0.5	0.2	0.2	0.3	0.3	0.2		0.2	0.1
9	HCO3 (mg/L)	175	240	259	336	317		162	276	175	134	164	169	136	131	105	253	107	139	272	208		113	256
10	K (mg/L)	7.5	6.8	17.7	11.8	15.2		21.6	28.4	25.5	21.9	9.0	25.5	21.5	9.5	3.0	16.3	11.3	7.3	10.0	17.2		17.1	17.9
11	Mg (mg/L)	16.8	21.6	26.8	29.2	30.5		20.2	26.4	14.6	11.2	10.9	14.6	8.4	24.3	21.6	21.1	13.5	21.4	22.5	18.8		18.5	20.4
12	Na (mg/L)	34.8	42.5	40.3	36.8	46.6		51.0	55.1	45.5	34.3	26.2	45.5	35.7	36.8	10.4	41.6	34.4	35.1	30.0	37.5		49.8	46.2
13	NH3-N (mg N/L)																							
14	NO2+NO3 (mg N/L)	13.13	12.53	10.68	12.11	8.44		13.86	12.32	0.39	0.81	1.26	1.95	1.00	1.10	1.17	14.86	13.38	14.63	9.86	13.70		10.74	7.72
15	NO2-N (mgN/L)	0.08	0.05	0.00	0.00	0.00		0.27	0.00	0.07	0.00	0.04	0.05	0.01	0.01	0.02	0.00	0.04	0.42	0.02	0.03		0.26	0.00
16	NO3-N (mgN/L)	13.05	12.48	10.68	12.11	8.44		13.59	12.32	0.33	0.81	1.22	1.90	0.99	1.08	1.15	14.86	13.34	14.21	9.83	13.68		10.48	7.72
17	o-PO4-P (mg P/L)		0.305	0.507	0.238	0.122		0.330										0.214	0.110	0.083	0.443		0.275	
18	P-Tot (mgP/L)	0.157	0.001	0.034	0.236	0.975		0.002	0.284	0.010	0.001	0.007	0.001	0.001	0.010	0.001	0.277	0.001	0.062	0.084	0.196		0.002	0.305
19	SiO2 (mg/L)	15.6	24.6	26.9	19.8	8.4		10.0	8.3	11.6	15.1	12.4	5.6	5.8	6.8	8.7	18.7	24.7	25.2	20.0	8.2		8.9	5.4
20	SO4 (mg/L)	56.2	59.2	70.7	51.1	48.0		146.8	107.6	122.1	56.7	61.4	121.9	39.0	87.5	32.2	58.6	65.3	110.4	38.3	69.5		117.0	58.8
	BIOLOGICAL/BACTERIOLOGICAL																							
1	BOD3-27 (mg/L)	39.0	73.0	55.1	68.8	49.5		33.0	68.2	39.2	36.1	0.8	32.1	13.4	0.8	37.1	74.3	67.3	53.3	51.5	47.8		60.0	11.6
2	DO (mg/L)	1.0	0.5	0.3	1.0	1.0		0.6	1.4	0.9	2.5	4.1	1.8	2.7	7.0	4.9	2.1	1.2	1.6	1.9	0.0		0.8	3.7
3	DO_SAT% (%)	14	6	4	13	13		8	19	12	34	53	24	34	89	61	26	15	17	21	0		10	43
4	FCol-MPN (MPN/100mL)															78								
5	Tcol-MPN (MPN/100mL)															210								
	TRACE & TOXIC																							
	CHEMICAL INDICES																							
1	HAR_Ca (mgCaCO3/L)	170	214	181	236	184		220	235	143	113	82	146	100	153	140	185	143	185	190	188		155	197
2	HAR_Total (mgCaCO3/L)	240	304	301	357	311		305	345	204	160	127	207	135	254	230	273	220	274	284	266		232	282
3	Na% (%)	24	23	22	18	24		26	25	30	28	29	29	31	23	9	23	27	21	18	22		31	24
4	RSC (-)	0.0	0.0	0.1	0.1	0.1		0.0	0.0	0.7	0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0		0.0	0.0
5	SAR (-)	1.0	1.1	1.0	0.9	1.1		1.3	1.4	1.4	1.2	1.0	1.4	1.3	1.0	0.3	1.1	1.1	0.9	0.8	1.0		1.5	1.2
	PESTICIDES																							

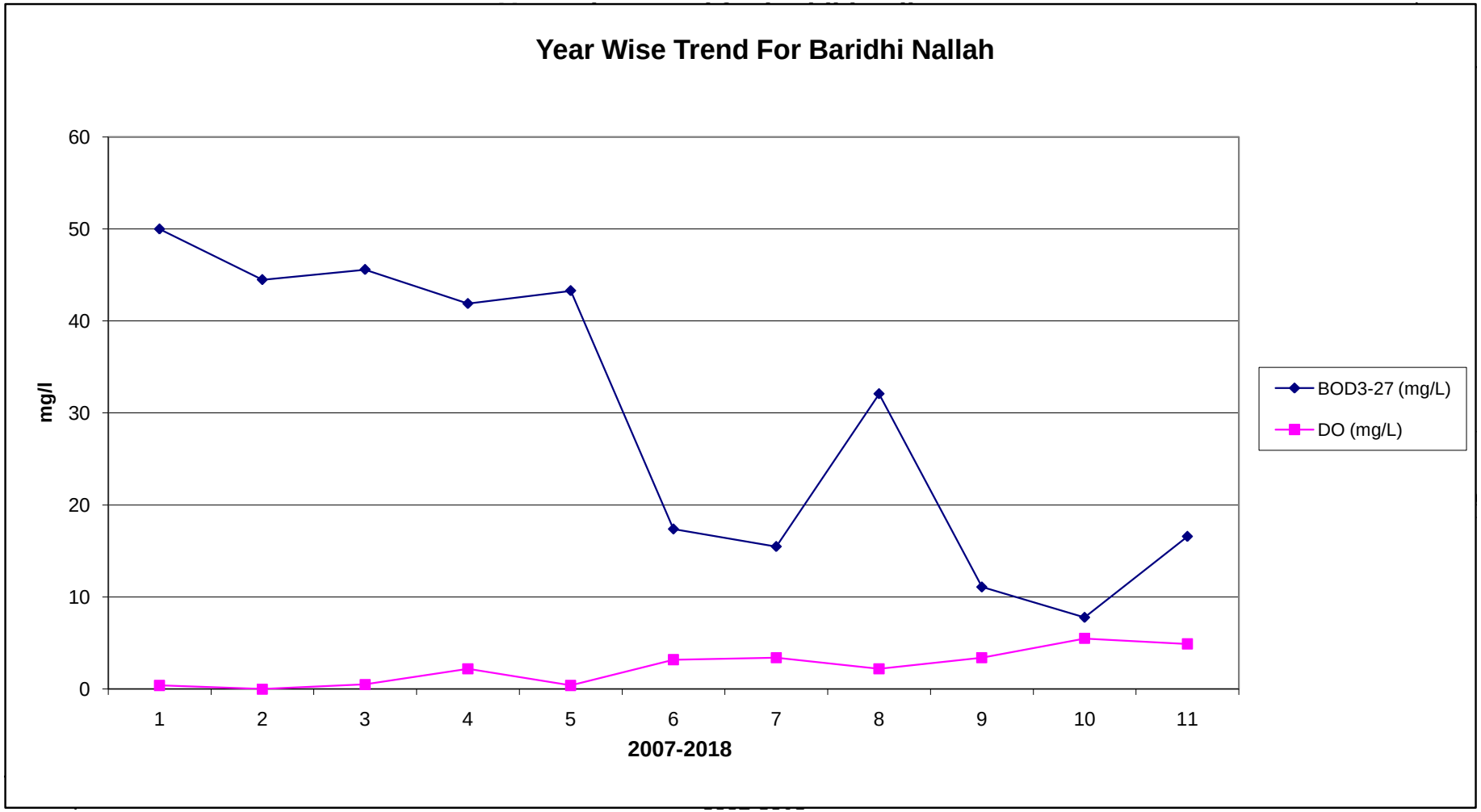
Water Quality Seasonal Average for the period: 2003-2018

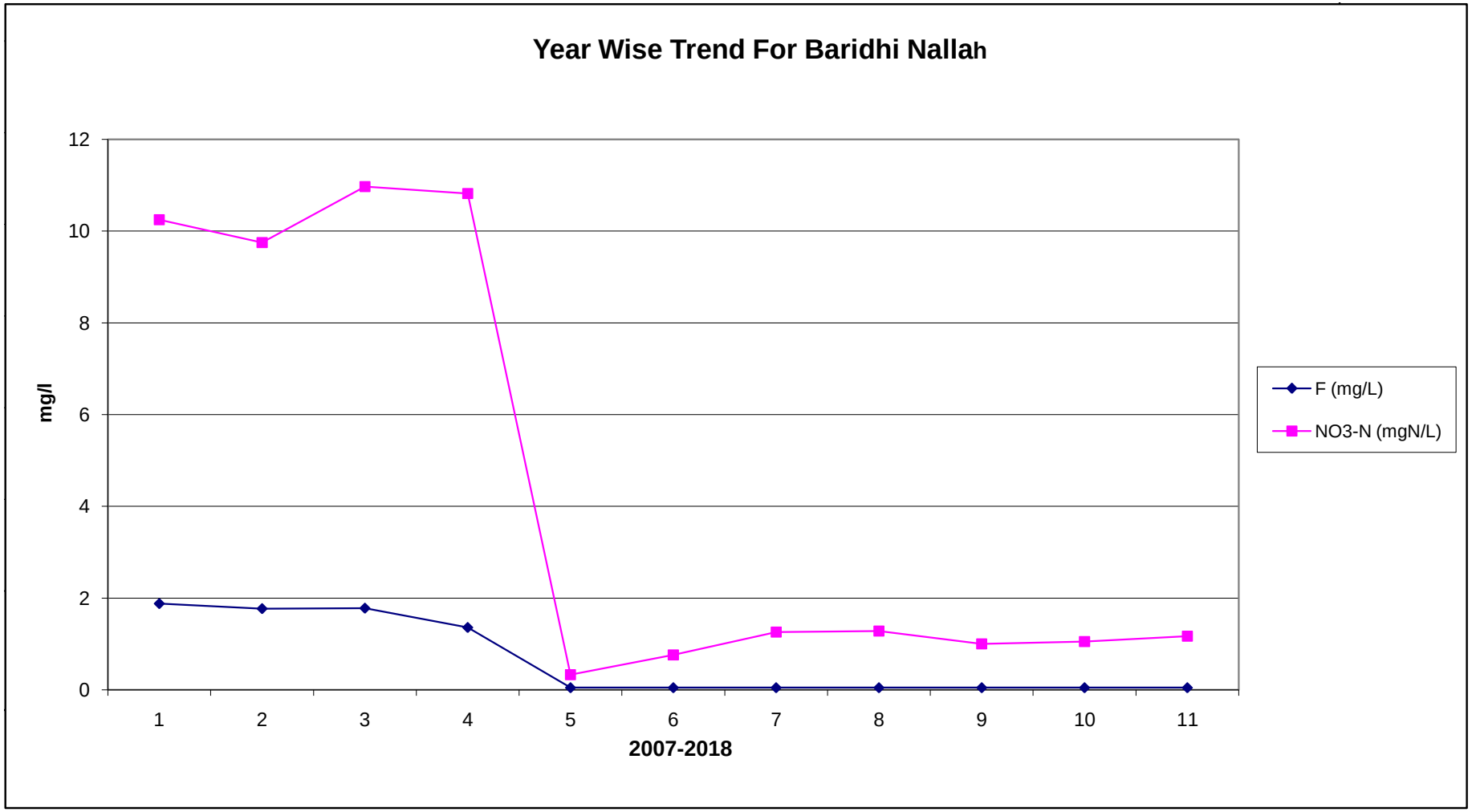
Station Name : BARIDHI NALA (BARIDHI) **Division : E.E., Bhubaneswar**

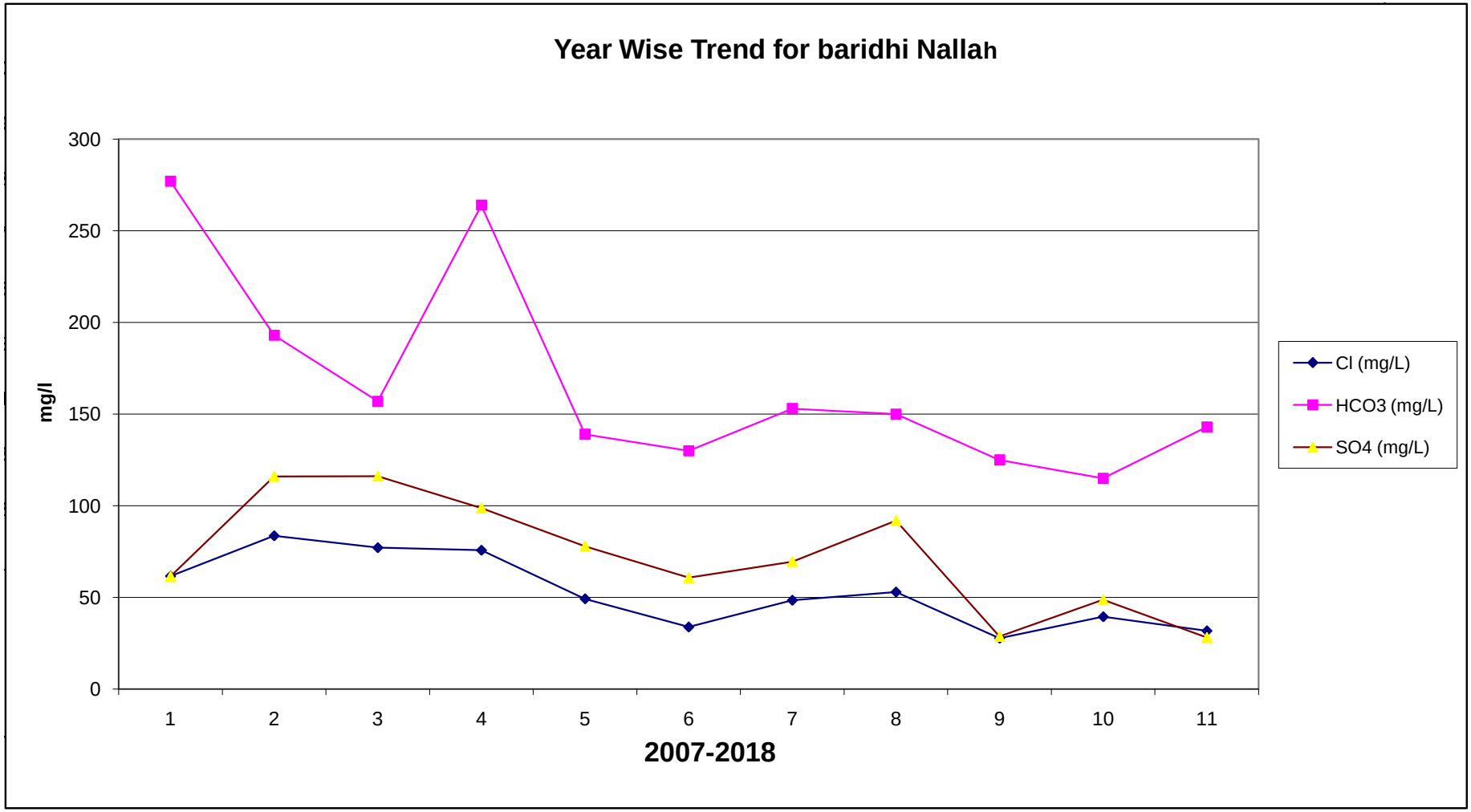
Local River : Baridhinala **River Water** **Sub-Division : Balasore**

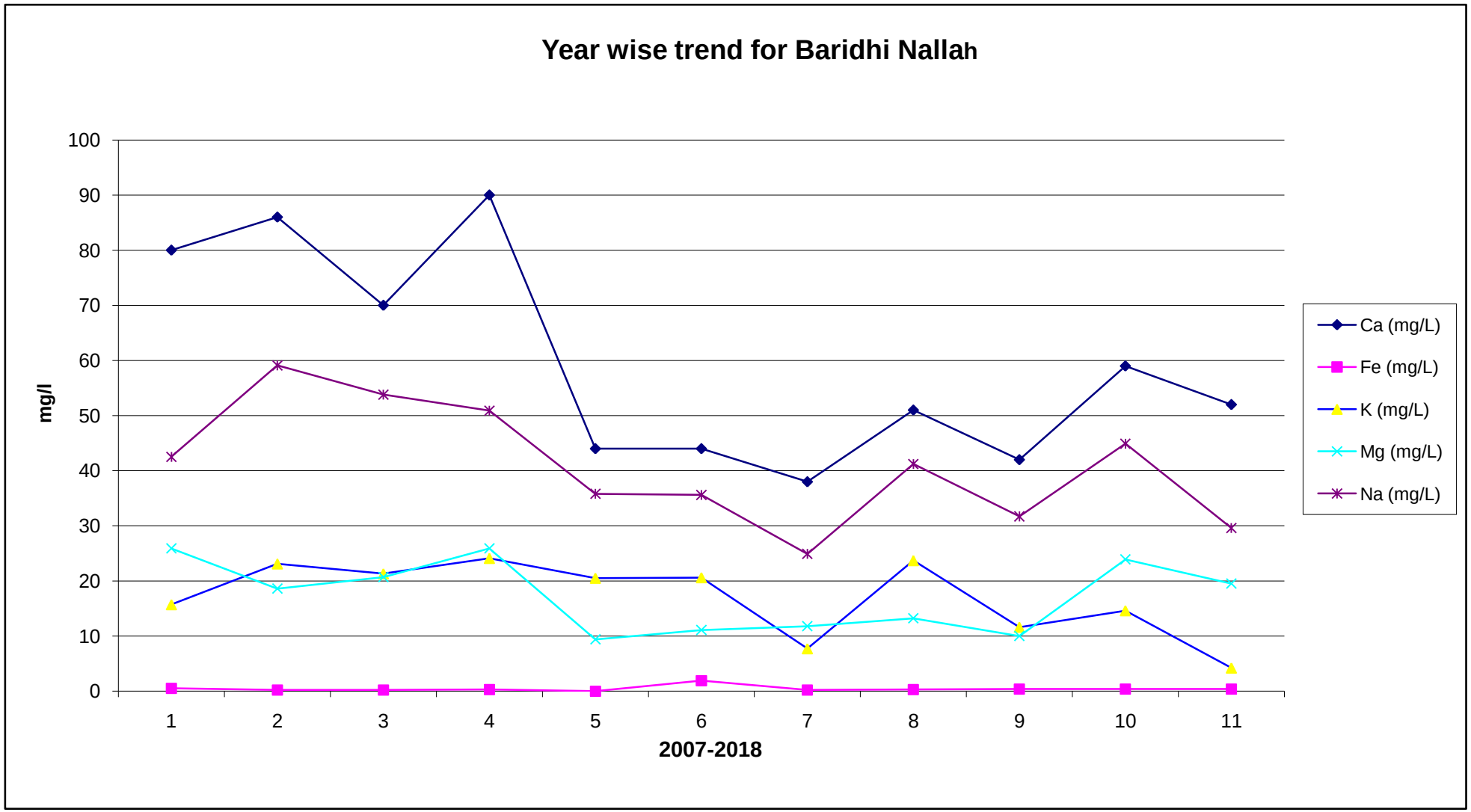
S.No	Parameters								Summer														
									Mar - May														
		2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	PHYSICAL																						
1	Q (cumec)																						
2	EC_FLD (µmho/cm)	663	420	508	665	744	461	490	617	738	870	887	965		817	1090	607	743	687	952	577	397	927
3	EC_GEN (µmho/cm)	663	420	508	665	749	465	512	622	730	865	888	962		817	1090	607	743	687	952	579	400	947
4	pH_FLD (pH units)	7.6	7.1	7.7	7.5	7.5	7.7	7.4	7.8	7.8	7.3	7.7	7.7		7.4	8.1	7.3	7.4	7.3	7.3	7.3	7.6	7.2
5	pH_GEN (pH units)	7.6	7.1	7.7	7.5	7.4	7.7	7.3	7.6	7.8	7.3	7.7	7.7		7.4	8.1	7.3	7.4	7.3	7.3	7.3	7.7	7.2
6	Temp (deg C)	22.9	21.1	19.6	21.5	22.0	19.8	20.5	28.7	26.5	29.6	28.2	28.6		27.9	25.9	26.0	26.2	26.7	27.5	29.8	26.0	24.5
	CHEMICAL																						
1	Alk-Phen (mgCaCO3/L)	0.0			0.0	0.0	0.0	0.0				0.0	0.0		0.0	15.6	0.0			0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	85			139	98	80	158				563	248		169	241	102			137	92	91	116
3	B (mg/L)	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.60	0.00	0.34	0.00	0.07		0.17	0.27	0.01	0.00	0.00	0.00	0.01	0.01	0.01
4	Ca (mg/L)	47	41	41	60	38	54	48	76	75	76	93	96		49	97	17	45	45	41	50	61	51
5	Cl (mg/L)	37.2	27.7	49.7	50.0	17.9	15.1	39.4	56.4	47.4	66.3	57.7	62.7		87.0	75.4	39.6	14.8	56.8	37.8	27.0	49.5	43.2
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	18.8	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	0.05	0.05	0.05	3.35	2.21	0.98	1.03	1.18		3.16	0.64	0.05	0.05	0.05	0.05	0.05	0.05	0.05
8	Fe (mg/L)	0.0	1.9	0.1	0.2	0.3	0.4	0.5	0.2	0.2	0.6	0.3	0.3		0.2	0.7	0.0	1.9	0.2	0.6	0.4	0.6	0.4
9	HCO3 (mg/L)	104	136	139	155	120	97	193	166	205	296	302	303		207	256	124	114	153	109	113	111	141
10	K (mg/L)	21.2	16.3	7.5	25.8	4.1	15.7	3.0	14.0	11.0	15.2	11.9	14.4		26.5	25.4	11.0	24.0	5.5	17.9	5.3	21.4	7.6
11	Mg (mg/L)	6.1	11.4	13.3	9.0	7.8	23.1	17.7	18.1	22.8	28.2	20.9	27.6		24.6	32.4	5.0	10.3	11.2	16.5	15.9	24.3	18.3
12	Na (mg/L)	30.6	31.3	26.1	38.6	20.3	50.4	28.7	36.0	29.7	42.9	38.3	42.4		63.7	50.3	26.7	43.5	21.3	37.6	40.0	51.2	62.9
13	NH3-N (mg N/L)												0.05										
14	NO2+NO3 (mg N/L)	0.41	0.72	1.37	1.10	1.03	1.08	1.20	7.12	13.44	9.35	9.41	8.83		7.37	12.43	0.40	0.73	1.27	0.50	0.99	1.17	1.17
15	NO2-N (mgN/L)	0.07	0.00	0.06	0.01	0.01	0.02	0.00	0.02	0.06	0.00	0.00	0.11		0.12	0.00	0.07	0.00	0.00	0.02	0.00	0.03	0.00
16	NO3-N (mgN/L)	0.34	0.72	1.32	1.09	1.02	1.05	1.20	7.10	13.38	9.35	9.41	8.72		7.24	12.43	0.33	0.73	1.26	0.48	0.98	1.14	1.17
17	o-PO4-P (mg P/L)									0.346	0.140	0.186	0.111		0.180								
18	P-Tot (mgP/L)	0.010	0.001	0.005	0.001	0.010	0.010	0.001	0.107	0.001	0.104	0.198	0.141		0.001	0.293	0.010	0.001	0.007	0.001	0.010	0.010	0.001
19	SiO2 (mg/L)	11.5	23.3	14.1	7.0	5.5	7.3	8.0	21.3	22.5	25.1	25.2	8.8		7.8	7.2	10.7	24.7	13.7	4.8	5.7	8.1	8.6
20	SO4 (mg/L)	62.2	68.6	81.6	77.9	24.0	18.8	20.3	109.7	65.9	49.8	46.5	73.7		64.0	137.4	25.7	57.4	67.4	61.1	18.2	24.2	31.9
	BIOLOGICAL/BACTERIOLOGICAL																						
1	BOD3-27 (mg/L)	68.5	1.7	15.4	11.4	1.1	16.9	2.1	90.3	124.5	60.2	133.0	53.7		47.3	38.3	16.7	6.9	40.1	59.7	20.5	7.3	1.8
2	DO (mg/L)	0.0	6.3	3.9	3.8	4.8	6.5	3.8	0.0	0.0	1.3	0.0	0.0		0.0	1.6	0.0	0.4	1.7	0.8	2.8	1.5	6.5
3	DO_SAT% (%)	0	70	42	42	53	70	42	0	0	18	0	0		0	19	0	5	20	10	37	18	78
4	FCol-MPN (MPN/100mL)						168	110														77	137
5	Tcol-MPN (MPN/100mL)						176	315														123	390
	TRACE & TOXIC																						
	CHEMICAL INDICES																						
1	HAR_Ca (mgCaCO3/L)	117	103	102	149	95	135	120	189	189	189	232	240		123	243	43	113	113	102	126	152	126
2	HAR_Total (mgCaCO3/L)	143	150	157	187	128	231	194	265	273	307	319	355		226	378	64	156	160	171	192	254	202
3	Na% (%)	27	27	25	28	24	31	23	22	20	23	20	20		35	22	46	29	22	34	31	29	39
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0		0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	1.1	1.1	0.9	1.2	0.8	1.5	0.9	1.0	0.8	1.1	0.9	1.0		1.9	1.2	1.8	1.5	0.7	1.5	1.3	1.4	1.9
	PESTICIDES																						


Year Wise Trend For Baridhi Nallah
350
300
250
200
150
100
50
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
DO_SAT% (%)
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For Baridhi Nallah
60
50
40
30
20
10
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
BOD3-27 (mg/L)
DO (mg/L)


Year Wise Trend For Baridhi Nallah
12
10
8
6
4
2
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend for baridhi Nallah
300
250
200
150
100
50
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year wise trend for Baridhi Nallah
100
90
80
70
60
50
40
30
20
10
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Ca (mg/L)
Fe (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

HISTORY SHEET

			Water Year	:	**2017-2018**
Site	:	**KULPATANGA**	**Code**	:	**KULPATANGA**
State	:	Jharkhand	District		Dumka
Basin	:	Subarnarekha	Independent River	:	Subarnarekha
Tributary	:	Kharkhai	Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	Kharkhai
Division	:	E.E., Bhubaneswar	Sub-Division	:	Balasore
Drainage Area	:	Sq. Km.	Bank	:	Left
Latitude	:	°""	Longitude	:	°""
		Opening Date	Closing Date		
Gauge	:				
Discharge	:				
Sediment	:				
Water Quality	:	4/1/1991			

Water Quality Datasheet for the period : 2017-2018

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

Local River : Kharkhai **River Water Analysis** **Sub-Division : Balasore**

S.No	Parameters	01/06/2017	01/07/2017	01/08/2017	01/09/2017	03/10/2017	01/11/2017	01/12/2017	01/01/2018	01/02/2018	01/03/2018	02/04/2018	01/05/2018
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Clear	Light Brown	Light Brown	Light Brown	Light Brown	Clear	Clear	Clear	Clear	Clear	Clear	Clear
3	EC_FLD (µmho/cm)	315	328	180	250	258	275	298	318	295	378	410	350
4	EC_GEN (µmho/cm)	306	322	175	242	252	269	291	313	288	370	402	355
5	Odour_Code (-)	odour free	odour free	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)	8.0	8.3	7.6	7.5	7.9	7.7	7.8	7.9	8.2	8.0	8.2	8.0
7	pH_GEN (pH units)	8.0	8.2	7.5	7.5	7.8	7.8	7.9	7.8	8.3	8.0	8.1	8.1
8	Temp (deg C)	31.5	32.5	31.0	30.0	31.0	27.0	21.5	18.5	20.0	25.0	26.0	27.5
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	0.0	13.9	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	106	125	55	83		102	115	120	92	115	120	102
3	B (mg/L)	0.01	0.02	0.02	0.02	0.01	0.01	0.02	0.03	0.02	0.01	0.02	0.03
4	Ca (mg/L)	38	40	42	43	31	34	52	44	43	48	42	22
5	Cl (mg/L)	17.0	20.8	13.2	13.2	13.8	10.4	15.6	19.0	17.3	19.0	19.0	17.3
6	CO3 (mg/L)	0.0	16.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.05	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)	0.4	0.5	0.4	0.5	0.5	0.6	0.4	0.4	0.5	0.4	0.5	0.5
9	HCO3 (mg/L)	130	118	68	101	113	124	141	147	113	141	147	124
10	K (mg/L)	1.6	2.5	1.4	1.8	2.0	2.7	2.9	3.0	0.4	1.0	1.3	2.8
11	Mg (mg/L)	11.7	12.6	12.6	13.6	13.5	12.7	17.5	19.9	19.1	14.3	12.7	7.9
12	Na (mg/L)	21.7	15.2	4.2	4.8	4.9	5.3	6.1	16.8	20.0	21.0	22.1	15.4
13	NO2+NO3 (mg N/L)	1.11	1.26	1.12	1.20	1.22	1.18	1.25	1.16	1.12	1.22	1.18	1.21
14	NO2-N (mgN/L)	0.01	0.01	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	NO3-N (mgN/L)	1.09	1.25	1.12	1.18	1.22	1.18	1.25	1.16	1.12	1.22	1.18	1.21
16	P-Tot (mgP/L)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
17	SiO2 (mg/L)	7.5	7.5	8.0	9.0	7.0	6.2	9.0	8.3	7.4	6.8	9.5	8.7
18	SO4 (mg/L)	56.0	15.0	15.3	2.0	4.1	4.4	4.8	5.2	14.8	36.0	16.3	17.4
	BIOLOGICAL/BACTERIOLOGICAL												
1	BOD3-27 (mg/L)	2.8	1.0	0.6	0.4	1.2	0.4	0.2	2.0	1.2	0.4	1.0	1.4
2	DO (mg/L)	5.2	7.2	7.2	5.6	6.2	5.6	7.2	6.2	7.7	3.4	6.0	4.4
3	DO_SAT% (%)	70	98	96	74	83	70	80	65	85	41	73	55
4	FCol-MPN (MPN/100mL)	40	40	20	40	60	40	90	80	90	60	90	80
5	Tcol-MPN (MPN/100mL)	90	120	60	120	170	170	210	230	220	170	210	260
	TRACE & TOXIC												
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	96	100	104	108	78	85	131	111	108	121	105	56
2	HAR_Total (mgCaCO3/L)	145	153	157	165	135	138	204	194	187	180	157	89
3	Na% (%)	24	18	5	6	7	8	6	16	19	20	23	27
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
5	SAR (-)	0.8	0.5	0.1	0.2	0.2	0.2	0.2	0.5	0.6	0.7	0.8	0.7
	PESTICIDES												

Water Quality Summary for the period : 2017-2018

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

Local River : Kharkhai **Sub-Division : Balasore**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	12	410	180	305
3	EC_GEN (µmho/cm)	12	402	175	299
4	pH_FLD (pH units)	12	8.3	7.5	7.9
5	pH_GEN (pH units)	12	8.3	7.5	7.9
6	Temp (deg C)	12	32.5	18.5	26.8
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	11	13.9	0.0	1.3
2	ALK-TOT (mgCaCO3/L)	11	125	55	103
3	B (mg/L)	12	0.03	0.01	0.02
4	Ca (mg/L)	12	52	22	40
5	Cl (mg/L)	12	20.8	10.4	16.3
6	CO3 (mg/L)	12	16.8	0.0	1.4
7	F (mg/L)	12	0.05	0.05	0.05
8	Fe (mg/L)	12	0.6	0.4	0.5
9	HCO3 (mg/L)	12	147	68	122
10	K (mg/L)	12	3.0	0.4	2
11	Mg (mg/L)	12	19.9	7.9	14
12	Na (mg/L)	12	22.1	4.2	13.1
13	NO2+NO3 (mg N/L)	12	1.26	1.11	1.19
14	NO2-N (mgN/L)	12	0.03	0.00	0
15	NO3-N (mgN/L)	12	1.25	1.09	1.18
16	P-Tot (mgP/L)	12	0.001	0.001	0.001
17	SiO2 (mg/L)	12	9.5	6.2	7.9
18	SO4 (mg/L)	12	56.0	2.0	15.9
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	2.8	0.2	1
2	DO (mg/L)	12	7.7	3.4	6
3	DO_SAT% (%)	12	98	41	74
4	FCol-MPN (MPN/100mL)	12	90	20	61
5	Tcol-MPN (MPN/100mL)	12	260	60	169
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	131	56	100
2	HAR_Total (mgCaCO3/L)	12	204	89	159
3	Na% (%)	12	27	5	15
4	RSC (-)	12	0.3	0.0	0
5	SAR (-)	12	0.8	0.1	0.5
	PESTICIDES				

Water Quality Seasonal Average for the period: 2003-2018

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

Local River : Kharkhai **River Water** **Sub-Division : Balasore**

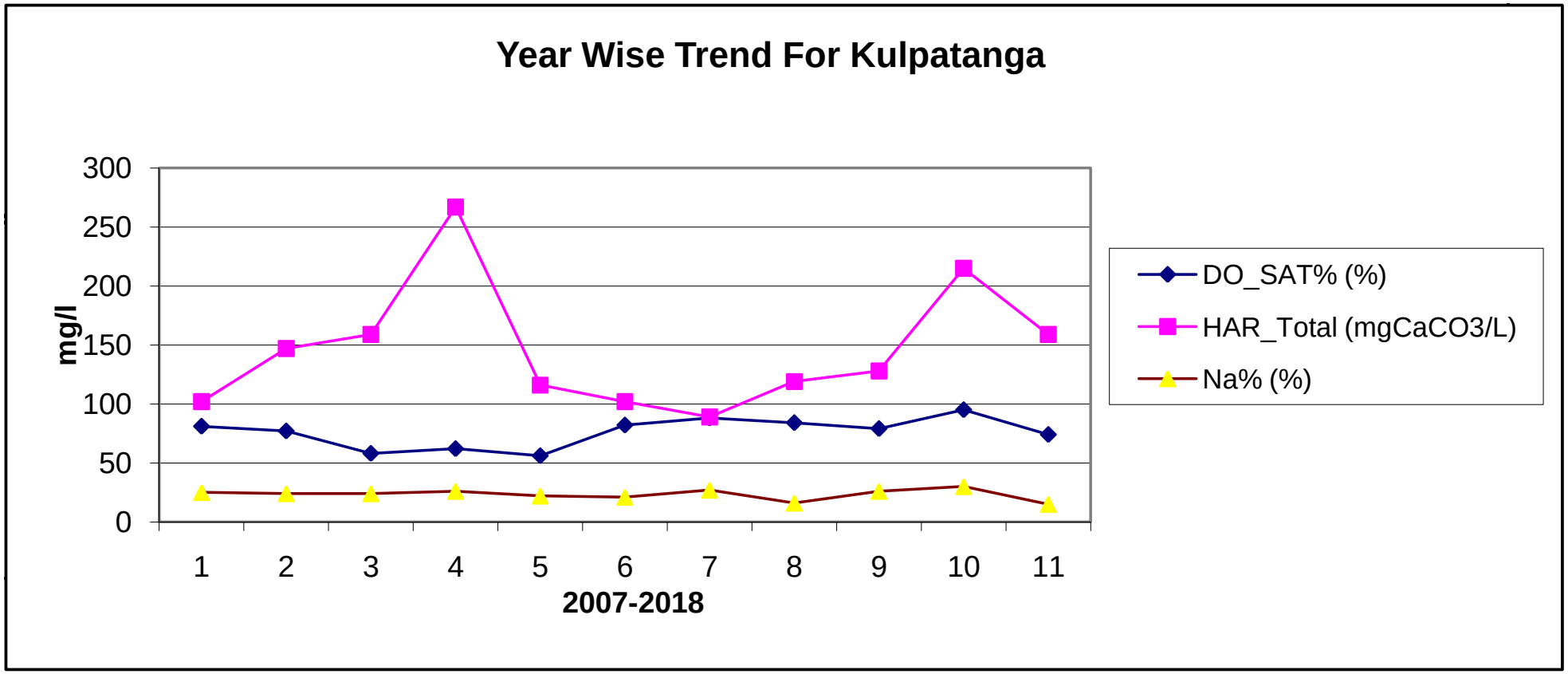
S.No	Parameters	Flood															Winter							
		Jun - Oct															Nov - Feb							
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
	PHYSICAL																							
1	Q (cumec)																							
2	EC_FLD (µmho/cm)	270	267	240	217	222		242	466	266	235	150	248	375	248	266	247	253	285	298	277		348	630
3	EC_GEN (µmho/cm)	272	267	238	213	219		242	466	266	235	150	248	378	251	259	237	253	280	296	275		348	630
4	pH_FLD (pH units)	7.8	7.9	7.8	8.0	7.9		7.9	7.8	8.3	7.9	7.6	8.1	7.6	8.0	7.8	7.6	8.2	8.1	8.2	8.1		7.9	7.6
5	pH_GEN (pH units)	7.7	7.9	7.9	8.0	8.0		7.9	7.8	8.3	7.9	7.6	8.1	7.6	8.1	7.8	7.4	8.2	8.2	8.1	8.2		7.9	7.6
6	Temp (deg C)	30.3	30.7	28.9	29.0	28.6		28.2	29.9	28.6	31.0	28.2	30.5	30.4	31.1	31.2	21.3	18.9	19.0	18.8	16.3		19.9	20.8
	CHEMICAL																							
1	Alk-Phen (mgCaCO3/L)					0.0		3.2	0.8	10.1		3.4	0.0	0.0	0.0	3.5							0.0	0.0
2	ALK-TOT (mgCaCO3/L)					54		58	90	90		75	113	83	97	92							95	119
3	B (mg/L)	0.00	0.01	0.00	0.00	0.00		0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.00	0.01	0.00	0.00	0.00		0.00	0.00
4	Ca (mg/L)	27	18	25	22	22		20	43	20	24	23	22	28	53	39	26	20	28	33	30		36	48
5	Cl (mg/L)	15.7	21.5	20.7	18.0	18.2		17.5	33.5	24.5	15.1	21.5	24.5	14.3	23.0	15.6	19.4	26.2	25.6	23.1	22.1		24.3	54.2
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0		3.8	1.0	12.2	0.0	1.6	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.4		0.0	0.0
7	F (mg/L)	0.33	0.75	0.24	0.32	0.23		0.57	0.21	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.13	0.73	0.29	0.33	0.25		0.33	0.24
8	Fe (mg/L)	0.3	0.2	0.3	0.4	0.2		0.4	0.1	0.0	3.7	0.2	0.3	0.5	0.4	0.5	0.2	0.2	0.2	0.2	0.2		0.3	0.1
9	HCO3 (mg/L)	84	60	86	86	80		63	108	85	97	81	137	101	118	106	100	68	101	108	103		107	145
10	K (mg/L)	2.0	3.3	3.1	3.0	2.5		1.6	3.8	1.6	1.4	2.4	1.5	1.7	5.0	1.9	2.5	4.1	2.9	2.6	2.8		1.6	3.8
11	Mg (mg/L)	7.3	4.0	5.2	5.7	6.2		9.7	13.4	8.6	5.2	6.9	8.6	12.1	20.2	12.8	5.2	5.0	7.9	8.7	7.4		11.4	22.1
12	Na (mg/L)	10.9	14.6	13.9	11.7	12.2		12.3	21.4	12.2	8.3	13.5	6.3	11.3	30.0	10.2	14.2	17.7	17.0	14.9	15.4		15.3	39.6
13	NH3-N (mg N/L)																							
14	NO2+NO3 (mg N/L)	3.92		1.58	1.76	1.74		3.78	1.82	0.41	0.80	0.73	1.04	0.97	1.07	1.18	1.16		2.49	3.97	2.45		1.89	3.23
15	NO2-N (mgN/L)	0.03		0.01	0.01	0.02		0.03	0.00	0.07	0.00	0.02	0.06	0.03	0.01	0.01	0.03		0.00	0.02	0.00		0.06	0.00
16	NO3-N (mgN/L)	3.90		1.58	1.74	1.72		3.75	1.82	0.34	0.80	0.70	0.98	0.94	1.06	1.17	1.13		2.48	3.94	2.45		1.83	3.23
17	o-PO4-P (mg P/L)			0.073	0.116	0.116		0.078	0.124										0.070	0.056	0.169		0.088	
18	P-Tot (mgP/L)	0.083	0.001	0.064	0.116	0.346		0.002	0.168	0.010	0.001	0.002	0.001	0.001	0.010	0.001	0.074	0.001	0.070	0.056	0.001		0.001	0.046
19	SiO2 (mg/L)	12.5	32.3	26.8	11.4	9.7		7.8	8.5	10.8	11.4	10.0	8.4	5.8	6.2	7.8	17.4	33.0	20.6	17.9	9.3		8.3	5.6
20	SO4 (mg/L)	14.1	20.6	10.5	8.1	9.0		17.2	59.3	10.7	48.9	28.7	32.4	6.0	14.8	18.5	5.6	22.6	12.5	12.8	9.5		35.0	84.3
	BIOLOGICAL/BACTERIOLOGICAL																							
1	BOD3-27 (mg/L)	1.0	47.7	1.1	1.5	1.3		2.0	10.0	5.8	1.0	0.7	0.3	0.7	1.0	1.2	0.8	1.5	1.5	1.3	2.3		2.2	2.5
2	DO (mg/L)	5.5	5.3	6.4	6.8	6.5		6.1	5.2	5.9	6.2	6.9	6.3	6.7	8.1	6.2	7.6	8.4	7.9	8.2	8.1		7.1	7.2
3	DO_SAT% (%)	73	72	83	88	84		78	69	75	83	88	83	89	108	84	86	90	84	87	81		78	79
4	FCol-MPN (MPN/100mL)															40								
5	Tcol-MPN (MPN/100mL)															112								
	TRACE & TOXIC																							
	CHEMICAL INDICES																							
1	HAR_Ca (mgCaCO3/L)	68	46	61	56	56		49	108	50	61	57	56	71	133	97	65	50	71	82	75		89	120
2	HAR_Total (mgCaCO3/L)	98	68	83	80	82		89	164	85	83	86	92	121	217	151	87	71	104	118	105		137	212
3	Na% (%)	22	32	26	25	26		24	22	21	17	25	13	16	23	12	25	34	25	22	24		19	27
4	RSC (-)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.3	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
5	SAR (-)	0.5	0.8	0.7	0.6	0.6		0.6	0.7	0.6	0.4	0.6	0.3	0.5	0.9	0.4	0.7	0.9	0.7	0.6	0.7		0.6	1.1
	PESTICIDES																							

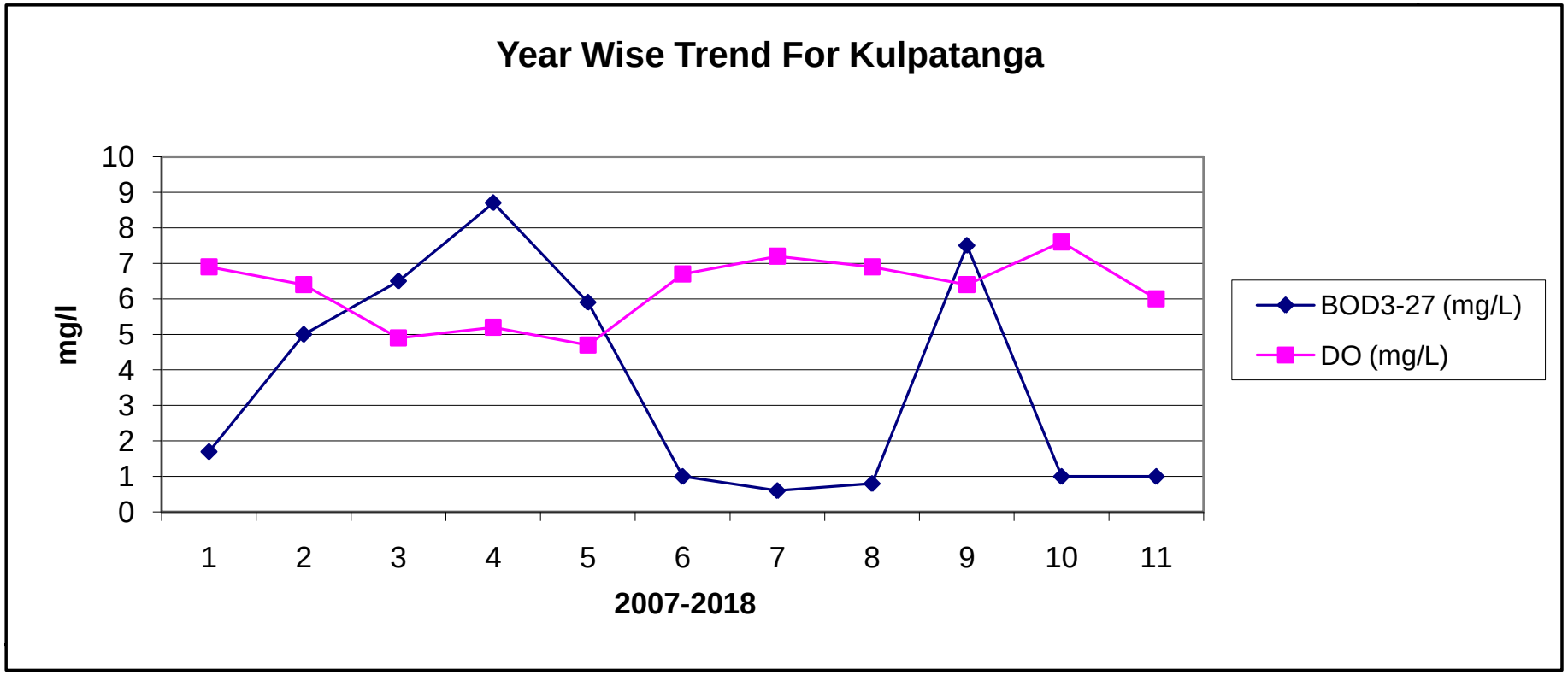
Water Quality Seasonal Average for the period: 2003-2018

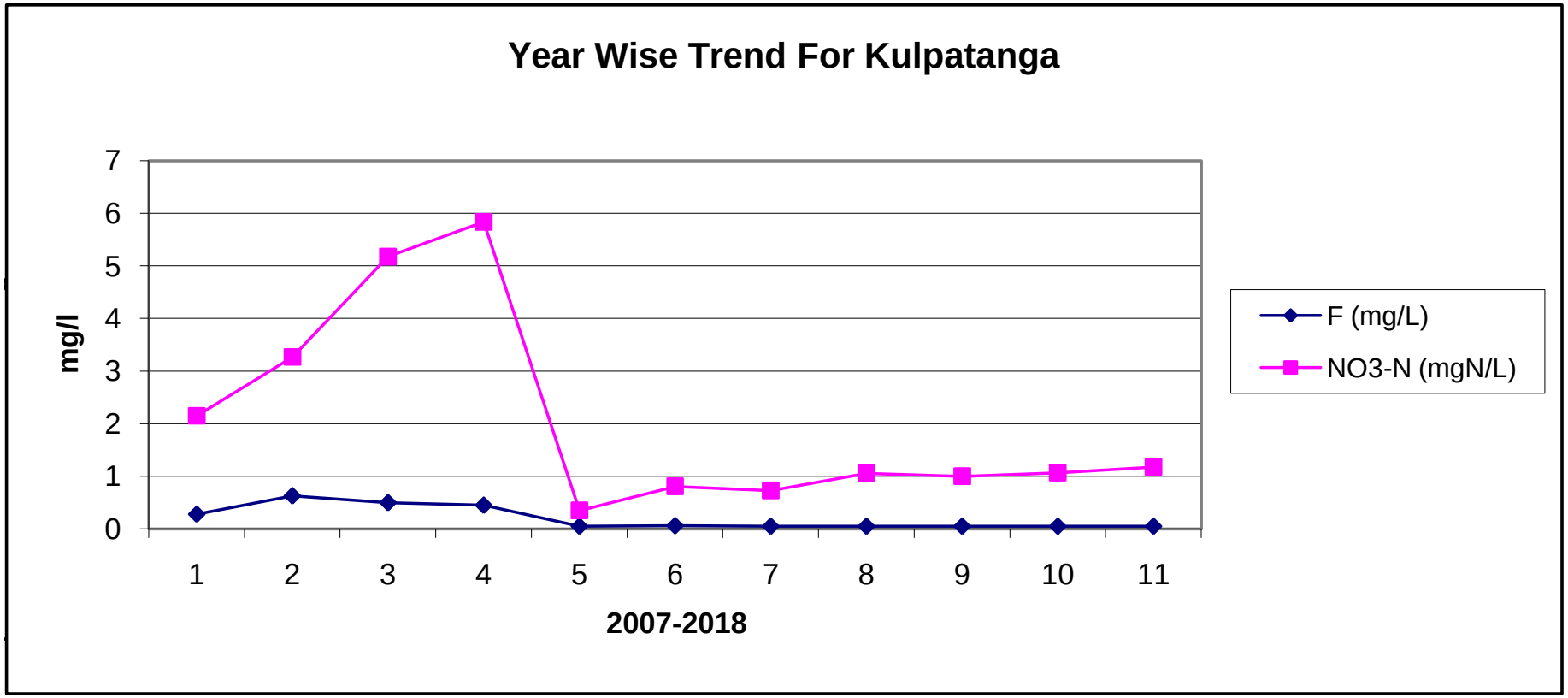
Station Name : KULPATANGA (KULPATANGA) **Division : E.E., Bhubaneswar**

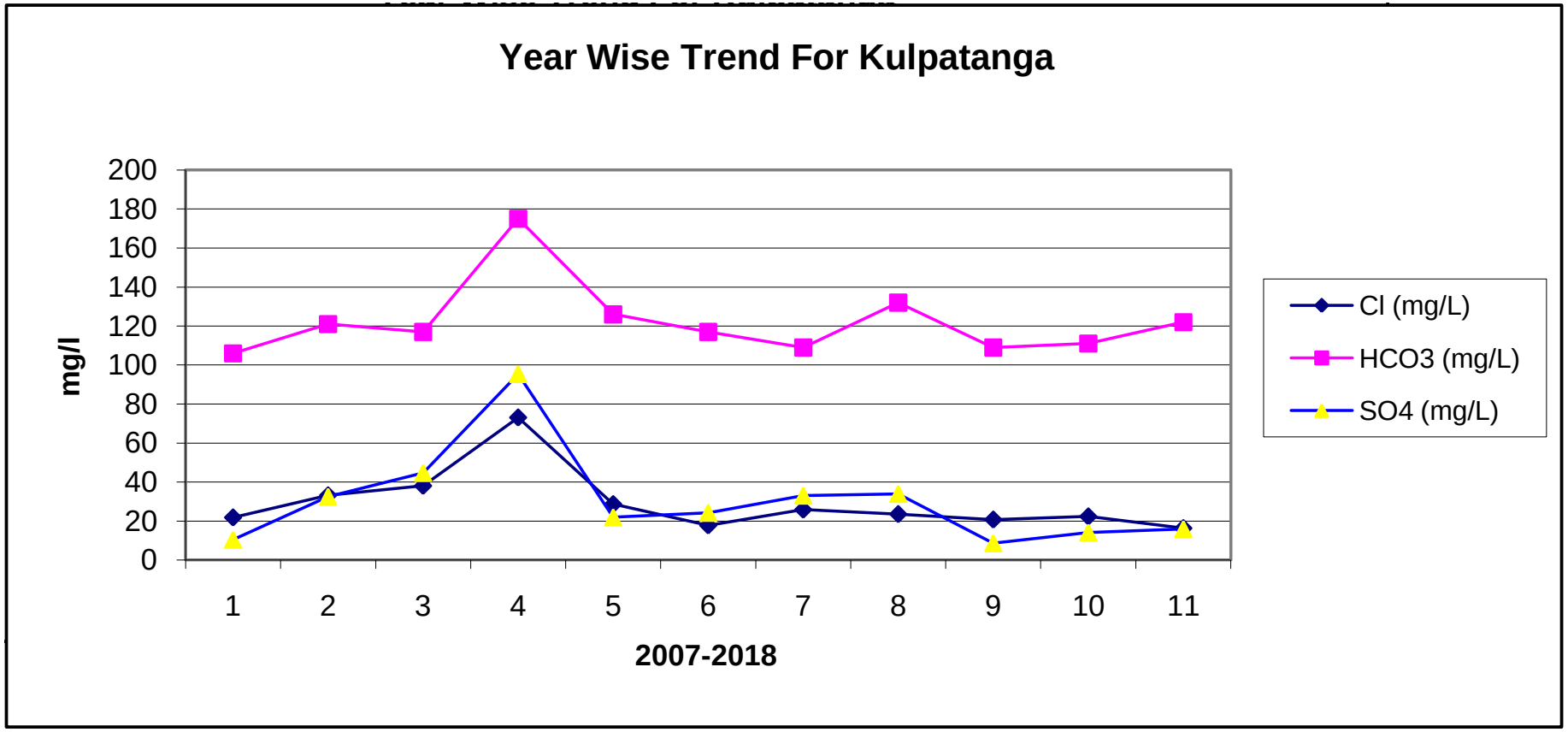
Local River : Kharkhai **River Water** **Sub-Division : Balasore**

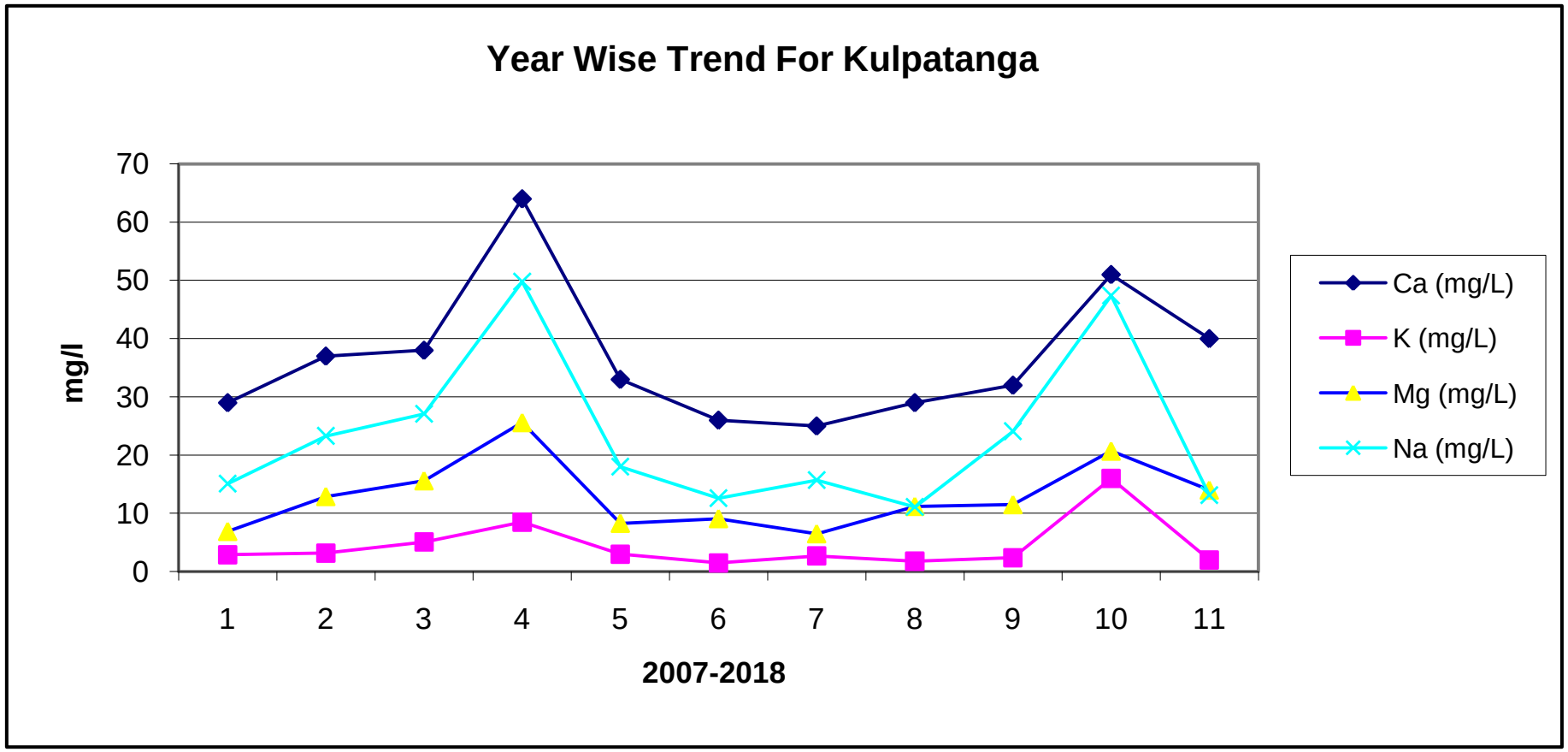
S.No	Parameters								Summer														
									Mar - May														
		2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	PHYSICAL																						
1	Q (cumec)																						
2	EC_FLD (µmho/cm)	335	265	234	333	651	563	297	360	413	408	348	359		943	1717	617	340	270	499	1224	461	379
3	EC_GEN (µmho/cm)	335	265	234	333	650	566	290	368	413	403	344	368		943	1717	617	340	270	499	1221	457	376
4	pH_FLD (pH units)	7.9	7.6	8.2	8.1	7.9	8.0	7.9	7.8	7.8	7.5	8.1	8.2		7.7	8.4	7.5	7.9	8.0	7.9	8.0	8.1	8.1
5	pH_GEN (pH units)	7.9	7.6	8.2	8.1	8.0	8.1	7.9	7.6	7.8	7.5	8.1	8.2		7.7	8.4	7.5	7.9	8.0	7.9	8.0	8.1	8.0
6	Temp (deg C)	19.8	19.4	21.9	20.5	22.1	22.0	21.8	26.0	28.3	27.1	26.2	27.0		29.2	25.3	27.5	28.2	27.2	26.7	28.3	28.5	26.2
	CHEMICAL																						
1	Alk-Phen (mgCaCO3/L)	0.0		9.3	0.0	5.8	0.0	0.0				0.0			2.7	37.1	0.0		0.0	0.0	6.1	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	94		138	108	94	88	107				223			185	341	172		133	119	122	86	112
3	B (mg/L)	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.00	0.01	0.00	0.00	0.00		0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.02	0.02
4	Ca (mg/L)	36	27	24	32	27	52	43	34	39	38	34	41		71	120	49	26	29	35	45	48	37
5	Cl (mg/L)	21.7	17.9	25.7	18.9	17.4	13.7	15.6	29.9	24.6	42.3	20.7	27.5		90.4	164.1	44.6	21.9	33.3	27.9	35.8	32.7	18.5
6	CO3 (mg/L)	0.0	0.0	8.4	0.0	6.9	0.0	0.0	0.0	0.0	0.0	0.0	0.5		3.2	44.7	0.0	0.0	0.0	0.0	7.4	0.0	0.0
7	F (mg/L)	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.29	0.64	0.24	0.25	0.43		0.59	1.15	0.05	0.06	0.05	0.05	0.05	0.05	0.05
8	Fe (mg/L)	0.0	1.2	0.1	0.2	0.3	0.4	0.5	0.1	0.2	0.2	0.3	0.2		0.3	0.2	0.0	1.1	0.1	0.1	0.3	0.4	0.4
9	HCO3 (mg/L)	115	131	127	135	100	107	131	115	173	123	146	152		219	325	210	132	133	119	133	105	137
10	K (mg/L)	2.0	1.3	2.9	1.7	3.2	18.3	2.3	4.2	8.5	6.3	4.0	3.7		15.4	22.7	6.4	1.7	3.1	2.6	2.4	31.2	1.7
11	Mg (mg/L)	8.0	11.2	5.7	11.7	8.5	21.9	17.3	9.4	11.3	11.2	12.6	7.5		30.8	50.5	8.1	12.8	6.8	15.1	14.6	19.8	11.6
12	Na (mg/L)	16.0	14.4	16.5	13.8	23.9	54.3	12.0	20.4	15.3	28.3	13.5	19.7		67.4	110.8	30.2	17.4	18.5	15.5	45.7	67.3	19.5
13	NH3-N (mg N/L)												0.05										
14	NO2+NO3 (mg N/L)	0.43	0.80	0.82	1.15	0.99	1.07	1.18	6.75		4.52	3.35	2.46		12.11	16.22	0.41	0.81	0.71	1.09	1.13	1.13	1.20
15	NO2-N (mgN/L)	0.07	0.00	0.03	0.01	0.01	0.02	0.00	0.00		0.00	0.00	0.00		0.08	0.22	0.07	0.00	0.00	0.00	0.00	0.01	0.00
16	NO3-N (mgN/L)	0.36	0.80	0.79	1.14	0.98	1.05	1.18	6.75		4.52	3.35	2.46		12.03	16.00	0.34	0.81	0.71	1.09	1.13	1.12	1.20
17	o-PO4-P (mg P/L)										0.088	0.031	0.098		0.247								
18	P-Tot (mgP/L)	0.010	0.001	0.001	0.001	0.010	0.010	0.001	0.114	0.001	0.081	0.032	0.050		0.001	0.074	0.010	0.001	0.004	0.001	0.010	0.010	0.001
19	SiO2 (mg/L)	12.5	12.0	11.9	7.9	5.5	6.5	7.7	11.2	32.6	17.4	18.5	11.0		9.8	9.0	10.3	11.3	12.3	7.2	5.3	8.4	8.3
20	SO4 (mg/L)	15.9	5.5	32.2	35.9	5.7	6.8	7.3	15.8	20.9	33.2	6.9	14.0		103.2	169.9	48.5	7.8	41.4	33.9	16.7	22.8	23.2
	BIOLOGICAL/BACTERIOLOGICAL																						
1	BOD3-27 (mg/L)	2.5	0.8	0.5	1.0	1.0	1.0	0.9	1.8	1.4	5.3	17.3	1.8		20.0	14.7	10.8	1.1	0.5	1.3	27.3	1.0	0.9
2	DO (mg/L)	6.0	7.6	8.0	9.1	8.1	8.2	6.7	6.8	5.7	4.0	5.9	6.1		0.0	2.6	1.1	6.4	6.8	5.2	3.6	6.0	4.6
3	DO_SAT% (%)	65	82	91	99	93	93	75	84	73	51	72	77		0	30	12	80	85	64	46	76	56
4	FCol-MPN (MPN/100mL)						68	75														77	77
5	Tcol-MPN (MPN/100mL)						178	208														147	213
	TRACE & TOXIC																						
	CHEMICAL INDICES																						
1	HAR_Ca (mgCaCO3/L)	90	67	60	80	67	130	109	86	97	94	84	102		177	299	123	65	72	88	112	119	94
2	HAR_Total (mgCaCO3/L)	124	113	84	128	103	221	181	125	145	141	137	133		305	510	157	118	100	150	173	201	142
3	Na% (%)	22	22	29	18	30	32	12	24	18	29	17	25		31	31	24	24	28	18	36	38	23
4	RSC (-)	0.0	0.0	0.8	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.7	0.1	0.4	0.5	0.0	0.0	0.1
5	SAR (-)	0.6	0.6	0.8	0.5	1.0	1.6	0.4	0.8	0.6	1.1	0.5	0.8		1.7	2.2	1.0	0.7	0.8	0.6	1.5	2.1	0.7
	PESTICIDES																						


Year Wise Trend For Kulpatanga
300
250
200
150
100
50
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
DO_SAT% (%)
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For Kulpatanga
mg/l
10
9
8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
9
10
11
2007-2018
BOD3-27 (mg/L)
DO (mg/L)


Year Wise Trend For Kulpatanga
mg/l
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
9
10
11
2007-2018
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend For Kulpatanga
mg/l
200
180
160
140
120
100
80
60
40
20
0
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year Wise Trend For Kulpatanga
mg/l
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Ca (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

BURHABALANGA BASIN

BURHABALANG BASIN

1 GENERAL

1.1 Introduction

Burhabalang is one of the east flowing rivers situated in the northern part of Orissa State. It is bounded by the geographical co-ordinates of north latitudes between 21°22′ to 22°20′ and east longitudes 86°20′ to 87°05′. It drains parts of the areas in Mayurbhanj and Balasore districts of Orissa with a total catchment area of 4800 sq.km. This is a flashy river originating near Bishaldanga in Mayurbhanj District of Orissa State at an elevation of 800 m, and out-falls into Bay of Bengal after traversing a total distance of 125 km.

Basin Map of Burhabalang river system showing the various hydrological and hydro meteorological observation stations maintained by CWC, State Government and India Meteorological Department are given at Page No. 184 herewith.

1.2 River System

Burhabalang river during its traverse receives contribution from various tributaries on both the banks The principal tributaries of this river are: Katranala, Gangahar and Sone.

The catchment area details are furnished below:

Name of River	River/Tributary	Length (km)	Catchment area (sq.km)	Percentage of total catchment area
Burhabalang	Main stream	125	2,363	49.3
Katranala	Left Tributary		325	6.7
Gangahar	Right Tributary		656	13.7
Sone	Right Tributary		1,456	30.3
		Total	4,800	100.0

1.3 Climatic Characteristics

The basin is greatly influenced by the south-west monsoon, which sets in June and withdraws in middle of October. The average annual rainfall in this basin is about 1800 mm. The maximum temperature in the plains of the basin rises between 42 to 49 ^{0}C during May and goes down to 8 to 14 ^{0}C during December-January.

1.4 Geology

Geologically, the basin belongs mostly to the Archean terrains. The rocks in the basin include Gneisses, Schist, Quartzite and Amphibolites. Igneous rocks are also seen in the river bed at some places. Iron ore, China clay, Quartz and Soap stone are found in limited areas in the Mayurbhanj portion of the basin. Lime stone is found in the Similipal hill ranges.

1.5 Site Details

Sl. No.	Name of Project	River	Status
1.	Beldiha	Palpada	Existing
2.	Kalo	Kalo	Existing
3.	Sunei Reservoir	Sunei	Existing

2. STREAM FLOW DATA

2.1 Methodology

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 CWC sites as listed above.

The observed stage and discharge figures for each season (monsoon and non-monsoon) are plotted and a mean Stage V/s. 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 V/s. Discharge curves. Accordingly, the trend of the current curve is finalised. Finally, the discharges of the non observed days are computed from these Stage V/s. Discharge Curves.

2.2 Data Availability

Code No.	Station Name	Type	Data Available	
			From	To
ED000E4	NH-5 Road Bridge Govindpur	GDSQ	G-24.04.91 D-07.03.92 S-21.03.03 Q-01.05.03	Continuing -do- -do- -do-
BALIMUNDULI	Balimunduli	G	G-14.07.87	Continuing
BARIPADA	Baripada	G	G-01.07.72	Continuing
CHANDANPUR	Chandanpur	G	G-01.07.87	Continuing
JAIPUR	Jaipur	G	G-20.06.78	Continuing

2.3 Explanatory Notes on 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 interpretation of data presented in this volume.

i) Water Year ranges from June 1st of one calendar year to May 31st 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.

1. 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-Chart 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 (In case of 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.

3. WATER QUALITY DATA (In case of 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 station(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 (in side 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) and to Raipur laboratory (under Mahanadi Division, Burla), 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**.**

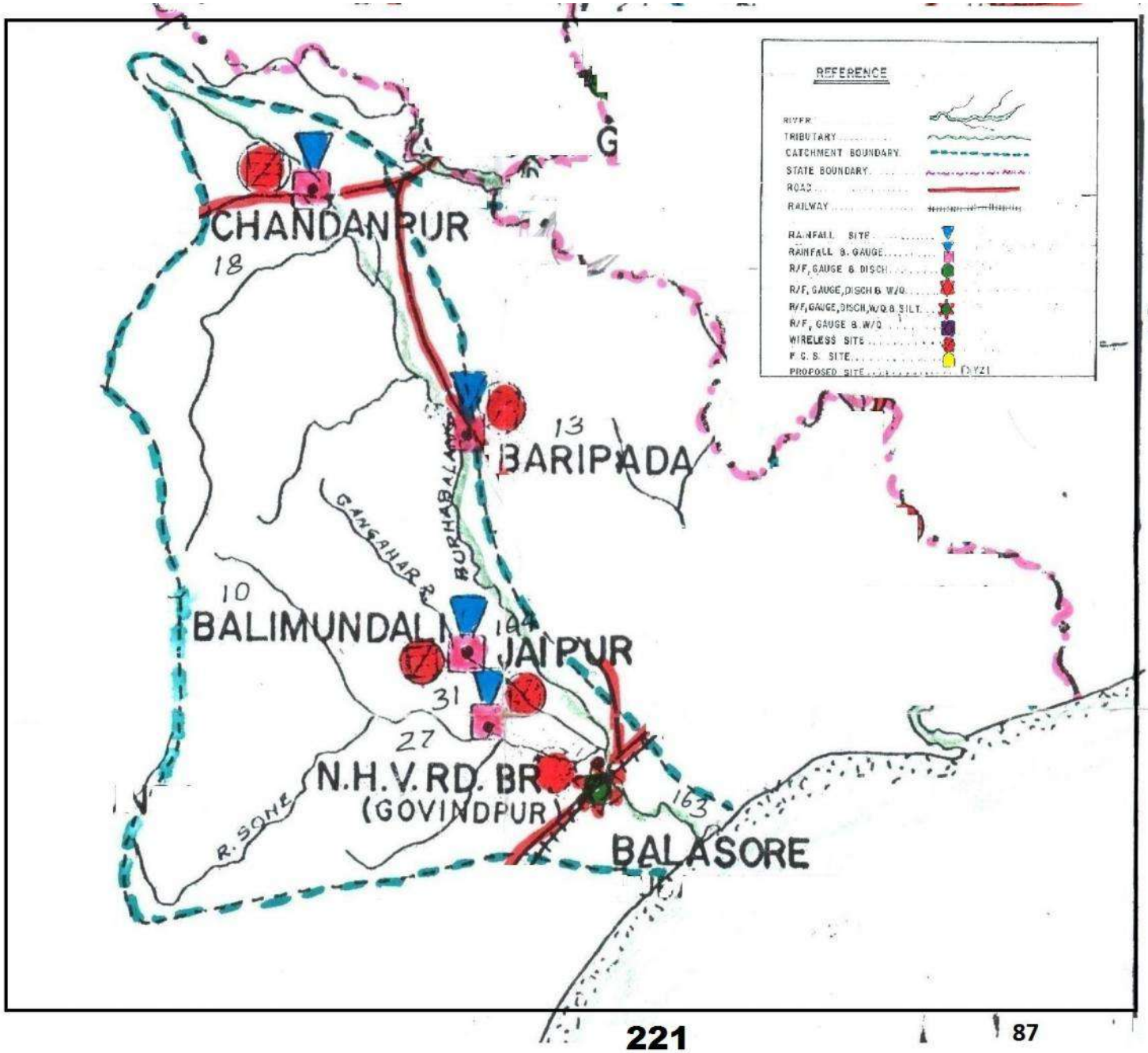
Analysis of parameters, namely pH, Electrical conductivity, Sodium, Potassium, Iron, Aluminum, Ammonia, Fluoride, Nitrate, Nitrite, Phosphate, Silicate, Boron, Sulphate, Calcium, Magnesium, Carbonate, Bi-carbonate, Chloride, Dissolved Oxygen, BOD and COD, are carried out at the Level II laboratory by 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.

The following parameters are analyzed and recorded:

- Monthly Values: Physical; Chemical (mg/l); Biological (mg/l); Traces & Toxic (mg/l) and Chemical Indices.
- Average Values for the Year: 10 Years data to be given season wise averages:-
  - Average for Summer (March to June).
  - Average for Floods (July to October).
  - Average for Winter (November to February)

NAME OF THE SITES IN OPERATION UNDER BURHABALANG BASIN

Sl. No.	Station Name	River/ Tributary	Type	Latitude	Longitude	Max. Water Level & Discharge upto May,2018			
						WL	Date	Q.	Date
1.	Balimunduli	Gangahar	G	21° 43' 58"	86° 38' 08"	43.10	13/01/13	---	---
2.	Baripada	Burhabalang	G	21° 55' 52"	86° 43' 11"	34.82	13/10/13	---	---
3.	Chandanpur	Katranalla	G	22° 09' 59"	86° 34' 24"	88.40	13/10/13	---	---
4.	Govindpur	Burhabalang	GDSQ	21° 32' 52"	86° 55' 14"	9.50	12/10/73	2886.0	18/06/18
5.	Jaipur	Sone	G	21° 37' 08"	86° 10' 41"	27.40	31/10/99	---	---


REFERENCE
RIVER
TRIBUTARY
CATCHMENT BOUNDARY
STATE BOUNDARY
ROAD
RAILWAY
RAINFALL SITE
RAINFALL & GAUGE
R/F, GAUGE & DISCH
R/F, GAUGE, DISCH & W/Q
R/F, GAUGE, DISCH, W/Q & SILT
R/F, GAUGE & W/Q
WIRELESS SITE
F. C. S. SITE
PROPOSED SITE
CHANDANPUR
18
BARIPADA
13
BURHABALANG
GANGAHAR R.
10
BALIMUNDALI
104
JAIPUR
31
27
N.H.V.RD. BR.
(GOVINDPUR)
R. SONE
163
BALASORE
22

HISTORY SHEET

Water Year : 2017-2018

Site	**: GOVINDPUR**		**Code**	**: ED000E4**	
State	: Orissa		District	Balasore	
Basin	: Subarnarekha		Independent River	: Burhabalang	
Tributary	: -		Sub Tributary	:	
Sub-Sub Tributary	:		Local River	: Burhabalang	
Division	: E.E., Bhubaneswar		Sub-Division	: Balasore	
Drainage Area	: 4495 Sq. Km.		Bank	: Left	
Latitude	: 21°32'52"		Longitude	: 86°55'14"	
Zero of Gauge (m)	: 0 (m.s.l) 0 (m.s.l)		3/1/1990 3/1/1992	- 2/1/2090 - 3/1/2023	
	Opening Date		Closing Date		
Gauge	: 6/22/1978				
Discharge	: 3/7/1992				
Sediment	: 3/21/2003				
Water Quality	: 5/1/2003				

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

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1992-1993	696.4	6.900	7/28/1992	1.230	2.600	3/27/1993
1993-1994	650.6	6.700	9/14/1993	3.147	2.600	3/29/1994
1994-1995	1263	7.740	7/19/1994	0.700	2.610	5/1/1995
1995-1996	1321	8.110	11/11/1995	2.610	2.420	5/30/1996
1996-1997	1043	7.260	8/7/1996	0.063	2.500	1/31/1997
1997-1998	1451	8.290	8/22/1997	3.632	2.580	6/17/1997
1998-1999	1418	7.860	9/14/1998	0.826	2.070	4/19/1999
1999-2000	1725	8.900	10/31/1999	3.180	2.360	4/14/2000
2000-2001	1649	7.840	9/15/2000	2.920	2.280	3/21/2001
2001-2002	1305	7.700	10/2/2001	4.612	2.280	5/29/2002
2002-2003	1184	7.520	9/24/2002	4.149	1.780	3/27/2003
2003-2004	1511	8.630	10/8/2003	1.755	1.300	3/9/2004
2004-2005	1110	7.610	10/7/2004	0.916	1.700	2/14/2005
2005-2006	1317	7.770	9/15/2005	1.369	1.440	6/3/2005
2006-2007	1422	7.930	8/23/2006	4.060	1.160	4/8/2007
2007-2008	2559	8.840	9/24/2007	3.417	1.320	5/7/2008
2008-2009	2886	7.910	6/18/2008	0.700	0.920	5/3/2009
2009-2010	2625	8.000	10/3/2009	0.540	0.600	4/29/2010
2010-2011	1270	7.080	9/19/2010	2.956	0.680	3/28/2011
2011-2012	2686	8.010	9/23/2011	2.011	0.880	3/31/2012
2012-2013	878.1	5.770	9/10/2012	2.000	0.960	3/24/2013
2013-2014	2200	7.920	10/27/2013	8.160	1.080	6/9/2013
2014-2015	1443	8.360	8/5/2014	58.36	1.020	3/2/2015
2015-2016	1047	7.460	7/29/2015	4.004	0.560	5/23/2016
2016-2017	320.0	2.920	10/9/2016	3.689	0.320	3/28/2017
2017-2018	1049	7.940	10/21/2017	7.851	0.350	5/4/2018

Stage-Discharge Data for the period 2017 - 2018

Station Name : GOVINDPUR (ED000E4) **Division : E.E., Bhubaneswar**

Local River : Burhabalang **Sub-Division : Balasore**

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	0.640	26.38	0.700	22.36	1.680	421.1	3.180	609.6	1.360	422.0 *	2.000	442.6
2	0.700	29.17	0.960	24.00 *	1.860	425.3	3.240	620.0 *	1.600	430.0 *	1.800	422.9
3	0.660	25.87	0.680	22.93	1.640	447.8	4.000	680.0 *	2.040	464.1	1.700	413.5
4	0.400	22.00 *	1.000	24.94	1.820	440.3	3.000	535.8	1.880	429.5	1.660	405.0 *
5	0.500	25.30	0.590	22.36	2.620	521.3	2.540	526.5	1.900	432.3	1.760	414.0 *
6	0.620	26.45	0.660	22.79	3.100	620.0 *	2.020	471.0	1.480	423.2	1.620	390.5
7	0.660	25.66	0.650	23.57	2.880	427.3	1.820	459.0	1.790	426.8	1.560	380.3
8	0.660	25.70	0.890	23.36	2.200	429.8	1.780	372.3	1.760	426.0 *	1.500	371.9
9	0.580	25.44	0.620	18.00 *	1.800	424.8	1.880	433.8	1.790	429.7	1.450	365.9
10	0.580	26.16	0.700	23.57	2.120	426.2	2.000	460.0 *	1.930	435.2	1.450	362.8
11	0.700	26.00 *	0.670	23.43	3.440	617.8	1.790	432.8	1.790	432.3	1.380	359.6
12	0.660	25.23	1.180	220.4	2.380	519.7	2.140	443.3	1.640	438.0	1.350	355.0 *
13	0.740	25.73	1.700	258.5	2.020	220.0 *	2.070	435.5	1.660	424.0	1.300	351.9
14	0.720	25.87	1.830	353.2	1.820	425.7	2.580	481.7	1.600	429.4	1.260	347.1
15	0.760	24.37	1.850	313.5	2.400	420.0 *	2.140	446.1	1.840	440.0 *	1.200	340.8
16	0.780	25.01	1.840	310.0 *	2.380	498.2	1.990	440.6	1.700	428.0	1.150	336.0
17	0.740	24.30	2.010	440.3	2.460	482.7	2.000	460.0 *	1.560	425.5	1.110	331.5
18	0.600	24.00 *	2.010	455.5	2.430	480.4	2.100	427.8	1.840	415.8	1.060	325.8
19	0.740	23.94	2.460	516.0	2.650	523.9	4.040	694.1	1.600	400.0 *	1.200	346.0 *
20	0.640	23.08	3.000	592.3	2.960	620.0 *	6.330	993.5	3.560	601.4	1.220	350.1
21	0.560	22.51	3.050	552.6	3.730	638.1	4.370	781.9	7.940	1049	1.200	349.9
22	0.620	23.08	2.990	542.0	3.410	588.6	3.320	496.9	7.460	1030 *	1.100	340.8
23	0.580	22.65	3.120	480.0 *	2.750	502.4	2.560	481.6	6.360	995.6	1.100	340.8
24	0.540	22.08	4.270	653.5	2.830	533.5	2.260	460.0 *	4.760	788.8	1.000	336.5
25	0.700	22.00 *	4.460	772.7	2.320	519.4	1.900	463.8	3.460	596.4	1.080	339.6
26	0.740	23.00 *	4.300	692.2	2.390	482.5	1.690	396.4	2.840	524.7	1.060	336.0 *
27	0.740	23.37	3.340	620.8	2.460	480.0 *	1.700	431.0	2.370	505.5	1.050	335.8
28	0.700	22.58	2.500	517.9	2.460	480.2	1.640	430.5	2.150	446.6	1.060	336.5
29	0.640	22.15	1.940	462.2	4.760	479.4	1.780	450.0 *	1.920	440.0 *	1.000	330.9
30	0.640	22.86	1.860	420.0 *	5.100	874.3	1.380	420.0 *	1.680	430.9	1.030	333.8
31			1.770	430.8	3.750	709.7			2.020	429.7		
Ten-Daily Mean												
I Ten-Daily	0.600	25.81	0.745	22.79	2.172	458.4	2.546	516.8	1.753	431.9	1.650	396.9
II Ten-Daily	0.708	24.75	1.855	348.3	2.494	480.8	2.718	525.5	1.879	443.4	1.223	344.4
III Ten-Daily	0.646	22.63	3.055	558.6	3.269	571.6	2.260	481.2	3.905	658.0	1.068	338.1
Monthly												
Min.	0.400	22.00	0.590	18.00	1.640	220.0	1.380	372.3	1.360	400.0	1.000	325.8
Max.	0.780	29.17	4.460	772.7	5.100	874.3	6.330	993.5	7.940	1049	2.000	442.6
Mean	0.651	24.4	1.923	317.9	2.665	505.8	2.508	507.8	2.557	515.8	1.314	359.8

Annual Runoff in MCM = 6874 Annual Runoff in mm = 1529

Peak Observed Discharge = 1049 cumecs on 21-Oct-17 Corres. Water Level :7.94 m

Lowest Observed Discharge = 7.851 cumecs on 04-May-18 Corres. Water Level :0.35 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 2017 - 2018

Station Name : GOVINDPUR (ED000E4) **Division : E.E., Bhubaneswar**

Local River : Burhabalang **Sub-Division : Balasore**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	1.240	350.0	1.090	46.25	0.640	17.99	0.480	15.13	0.520	10.80 *	0.460	10.05
2	1.180	333.0 *	1.060	45.47	0.610	16.90	0.540	15.50 *	0.390	9.969	0.410	9.013
3	1.320	390.0 *	1.010	44.18	0.630	17.66	0.450	14.23	0.370	9.564	0.380	8.429
4	1.150	336.1	1.090	45.92	0.580	16.70 *	0.520	15.40 *	0.360	9.217	0.350	7.851
5	1.030	245.8	1.030	44.55	0.450	15.27	0.470	14.64	0.350	8.985	0.400	8.841
6	1.050	260.2	1.010	44.37	0.520	16.88	0.440	13.65	0.380	9.831	0.390	8.700 *
7	1.080	273.9	1.040	45.10 *	0.570	18.19	0.460	14.02	0.350	8.996	0.360	8.136
8	1.100	286.6	1.050	45.41	0.540	17.34	0.420	12.76	0.400	9.950 *	0.380	8.663
9	1.160	311.0	1.080	46.40	0.510	16.37	0.450	13.40	0.370	9.554	0.350	8.144
10	1.200	325.0 *	0.700	15.75	0.550	17.57	0.400	12.15	0.390	9.971	0.370	8.509
11	1.040	301.1	0.720	16.57	0.530	17.00 *	0.400	12.15 *	0.360	9.217	0.350	8.104
12	1.100	311.7	0.750	17.28	0.590	19.17	0.430	12.71	0.380	9.831	0.390	8.793
13	1.250	333.5	0.780	18.05	0.570	18.54	0.380	11.33	0.400	10.51	0.450	9.800 *
14	1.550	376.0	0.700	16.90 *	0.540	17.38	0.360	10.47	0.360	9.620 *	0.420	9.305
15	1.360	343.9	0.680	16.52	0.630	19.98	0.400	11.26	0.320	8.800 *	0.460	9.986
16	1.140	320.4	0.730	20.10	0.580	18.76	0.450	12.29	0.370	9.559	0.410	8.963
17	1.080	310.0 *	0.710	18.36	0.540	17.69	0.510	13.44	0.350	9.019	0.370	8.259
18	1.240	342.6	0.680	17.51	0.480	16.00 *	0.740	17.00 *	0.380	9.836	0.350	7.954
19	1.090	327.6	0.640	16.61	0.510	16.91	0.450	12.23	0.360	9.215	0.420	9.358
20	1.040	319.7	0.660	19.58	0.490	16.05	0.400	11.05	0.340	8.833	0.450	9.800 *
21	1.100	330.0	0.550	17.50 *	0.530	17.13	0.370	10.24	0.370	9.575	0.480	10.19
22	1.060	325.6	0.500	17.02	0.560	18.01	0.350	9.368	0.390	9.850 *	0.540	11.21
23	1.020	320.4	0.450	16.22	0.520	17.11	0.360	9.666	0.350	9.008	0.600	12.40
24	1.060	325.0 *	0.480	17.06	0.480	16.10	0.340	8.954	0.380	9.834	0.660	13.53
25	1.040	321.0 *	0.600	19.39	0.500	16.60 *	0.360	9.100 *	0.360	9.216	0.700	14.37
26	1.070	325.5	0.720	20.90 *	0.530	17.37	0.370	9.096	0.400	10.51	0.650	13.35
27	1.100	328.1	0.780	21.94	0.490	16.18	0.350	8.758	0.370	9.557	0.620	12.32 *
28	1.150	331.3	0.760	21.20 *	0.510	16.88	0.330	8.234	0.350	9.009	0.620	12.32
29			0.690	19.91			0.360	8.800 *	0.460	10.40 *	0.600	11.77
30			0.650	18.80			0.400	9.500 *	0.640	11.80 *	0.640	12.49
31			0.720	20.74			0.440	10.28			0.680	13.32
Ten-Daily Mean												
I Ten-Daily	1.151	311.1	1.016	42.34	0.560	17.09	0.463	14.09	0.388	9.684	0.385	8.634
II Ten-Daily	1.189	328.6	0.705	17.75	0.546	17.75	0.452	12.39	0.362	9.445	0.407	9.032
III Ten-Daily	1.075	325.9	0.627	19.15	0.515	16.92	0.366	9.272	0.407	9.876	0.617	12.48
Monthly												
Min.	1.020	245.8	0.450	15.75	0.450	15.27	0.330	8.234	0.320	8.800	0.350	7.851
Max.	1.550	390.0	1.090	46.40	0.640	19.98	0.740	17.00	0.640	11.80	0.700	14.37
Mean	1.143	321.6	0.778	26.18	0.542	17.28	0.425	11.83	0.386	9.668	0.475	10.13

Peak Computed Discharge = 1030 cumecs on 22-Oct-17 Corres. Water Level :7.46 m

Lowest Computed Discharge = 8.700 cumecs on 06-May-18 Corres. Water Level :0.39 m

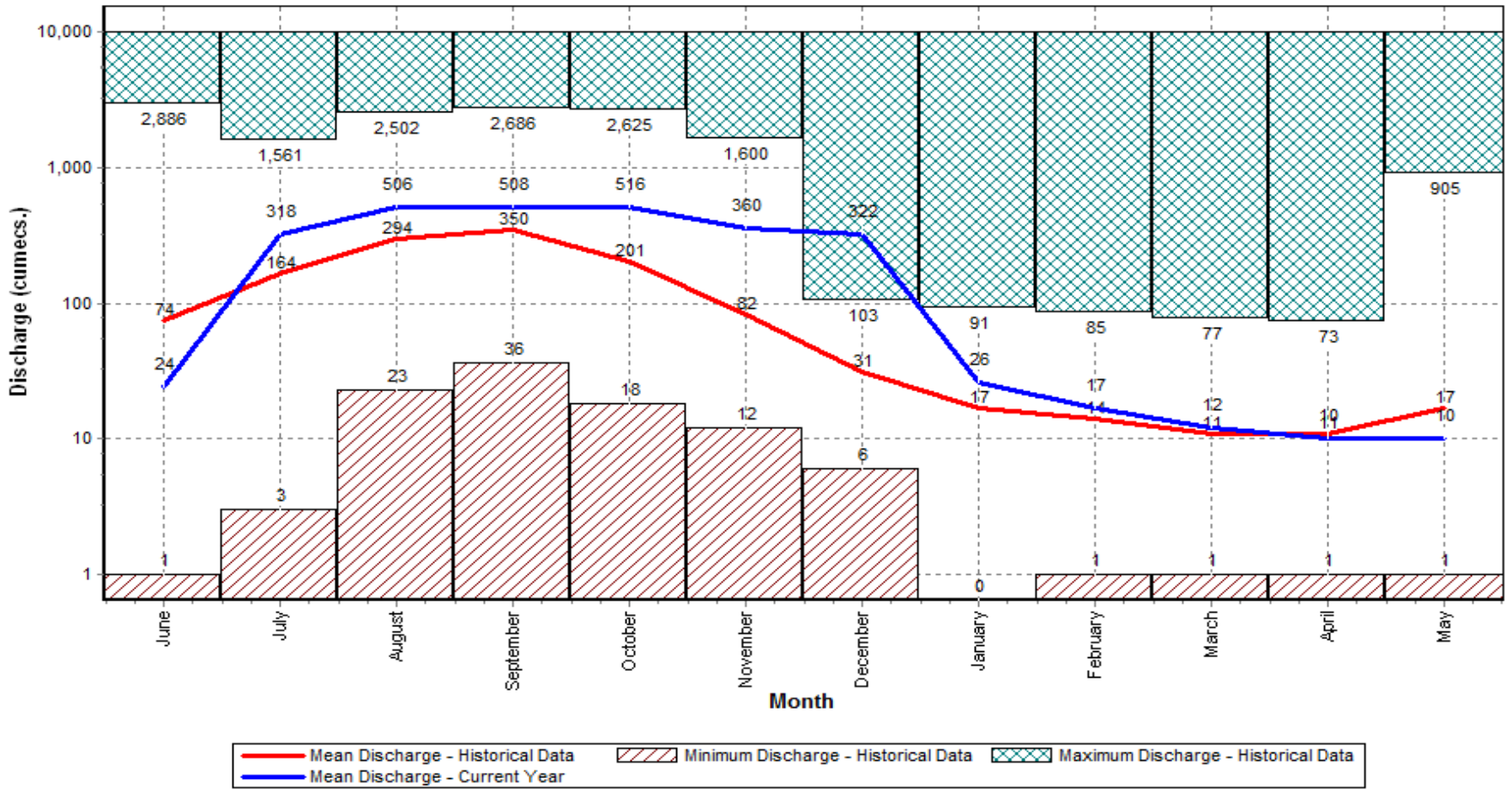
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2017-2018

Station Name : GOVINDPUR (ED000E4) | **Data considered : 1992-2018** | **Division : E.E., Bhubaneswar**

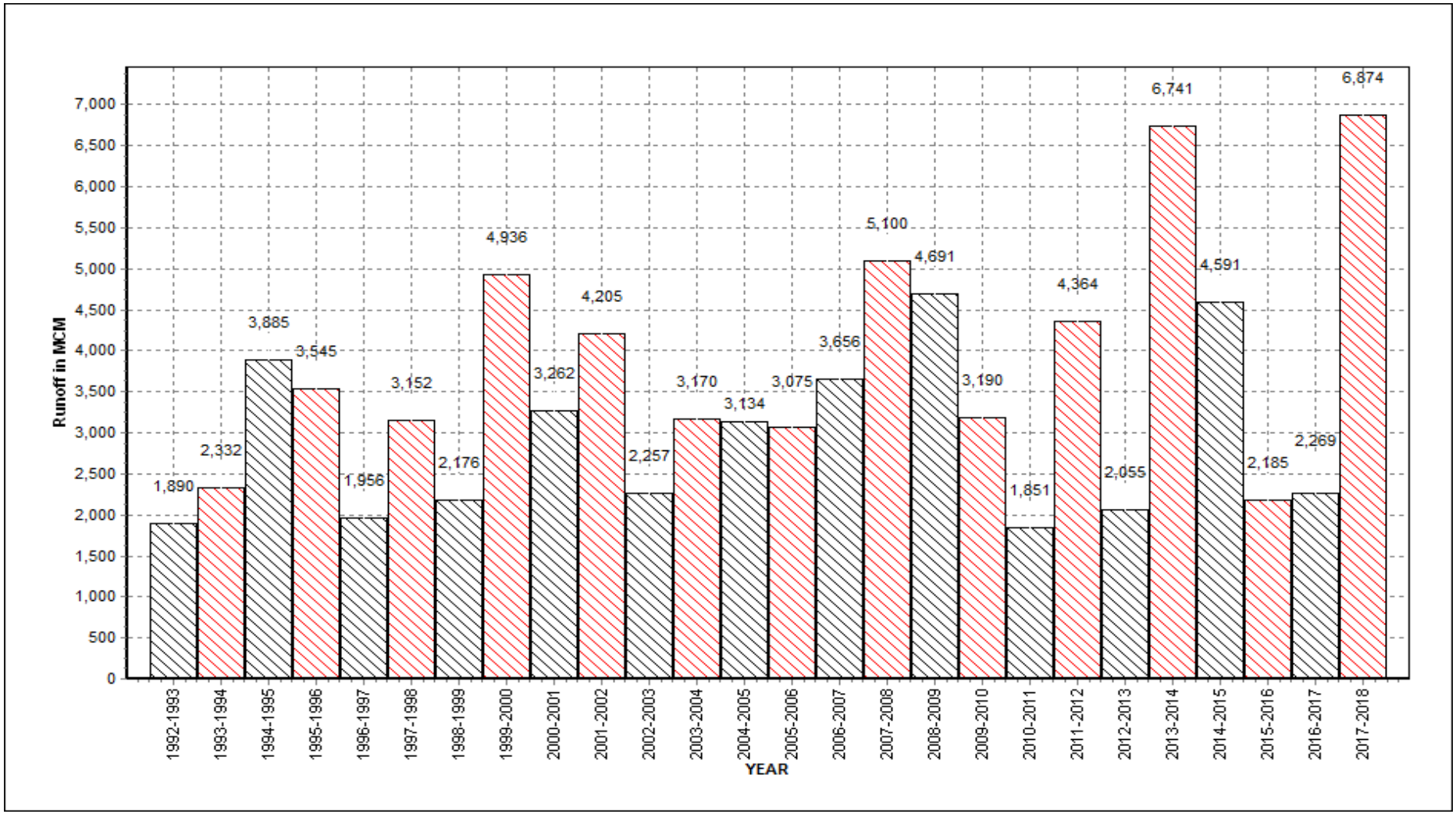
Local River : Burhabalang | **Sub-Division : Balasore**



Annual Runoff Values for the period: 1992 - 2018

Station Name : GOVINDPUR (ED000E4) **Division : E.E., Bhubaneswar**

Local River : Burhabalang **Sub-Division : Balasore**

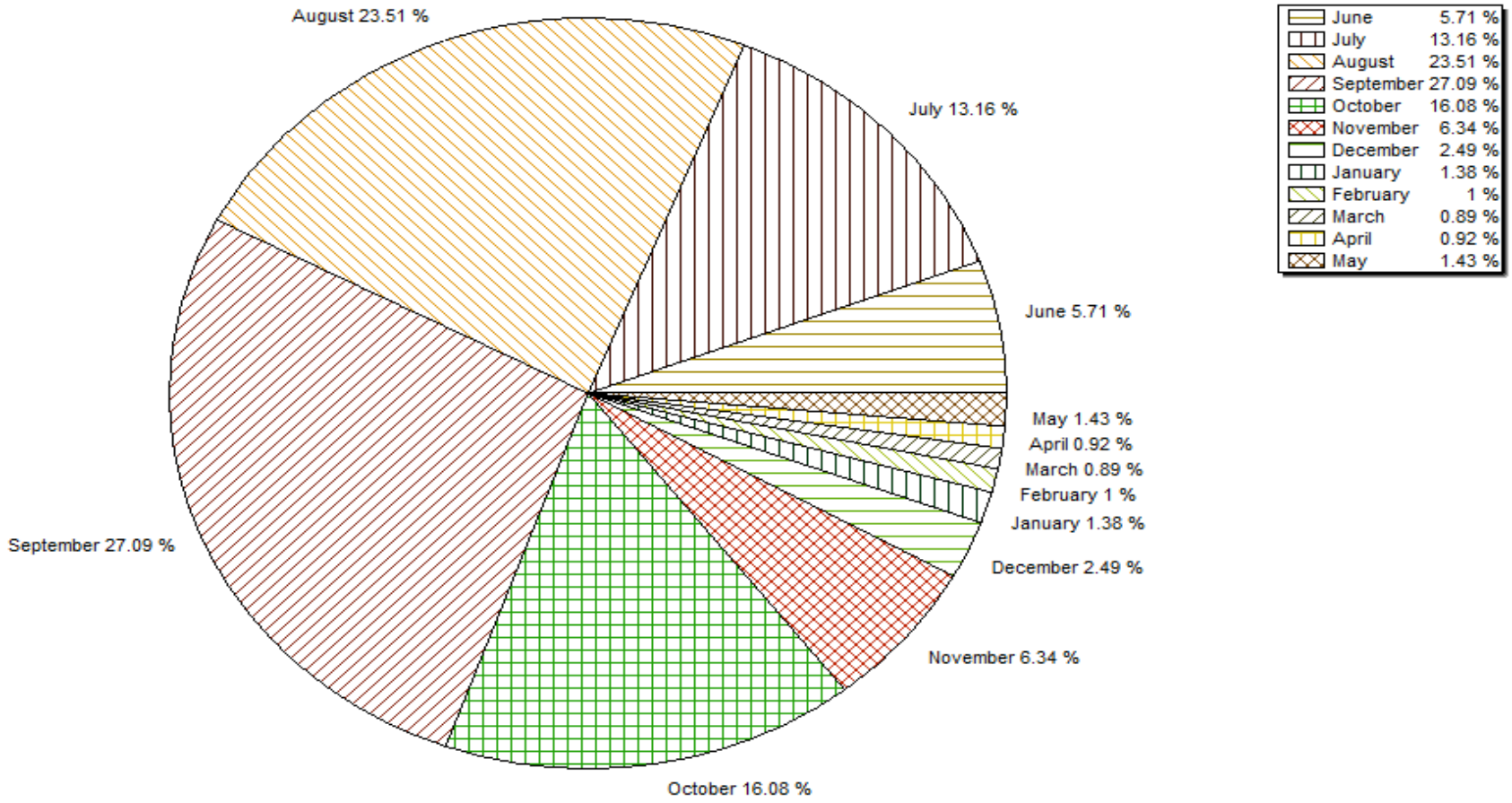


Note: Missing values have not been considered while arriving at Annual Runoff

Monthly Average Runoff based on period : 1992-2017

Station Name : GOVINDPUR (ED000E4) **Division : E.E., Bhubaneswar**

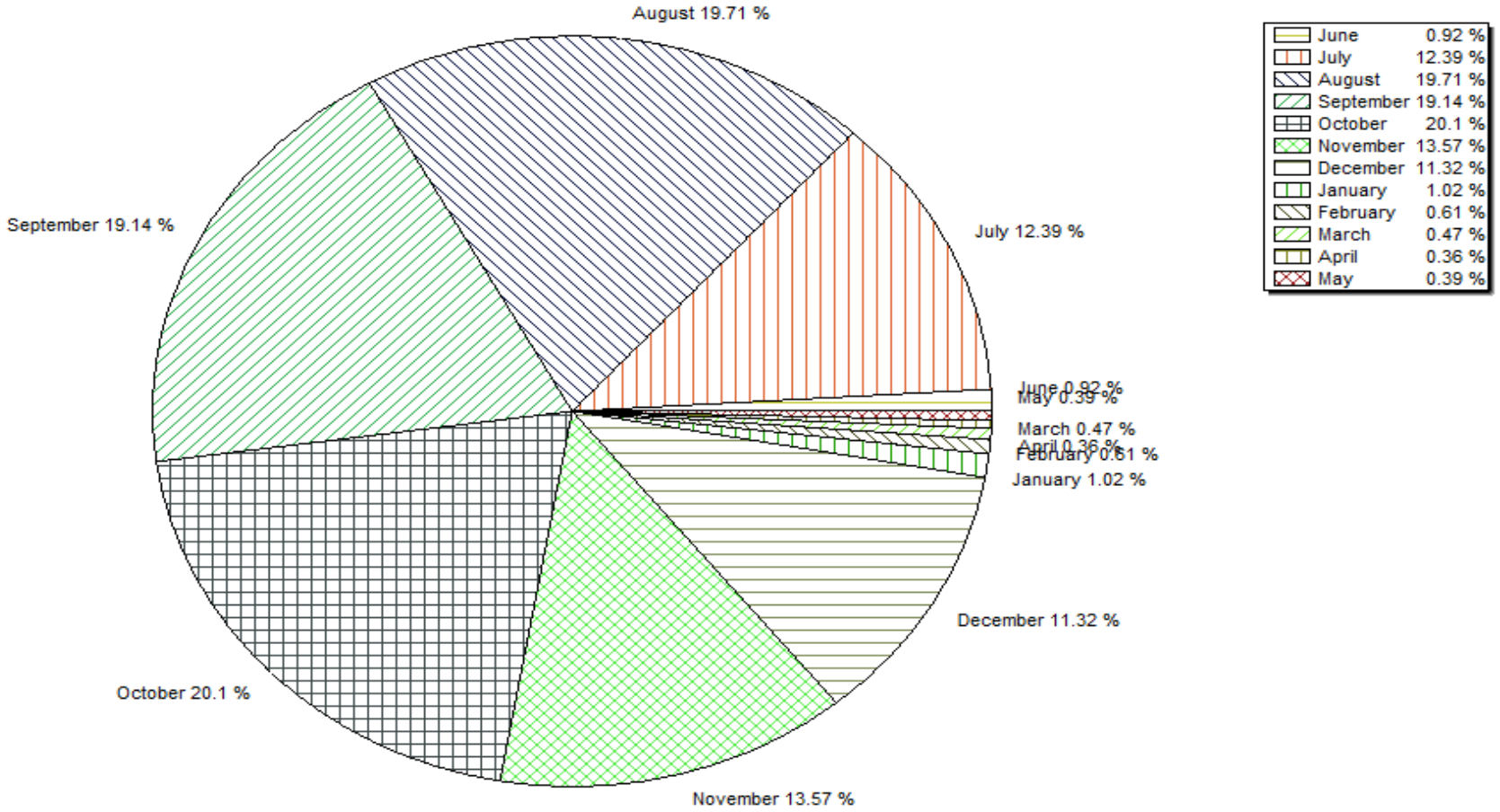
Local River : Burhabalang **Sub-Division : Balasore**



Monthly Runoff for the Year : 2017-2018

Station Name : GOVINDPUR (ED000E4) **Division : E.E., Bhubaneswar**

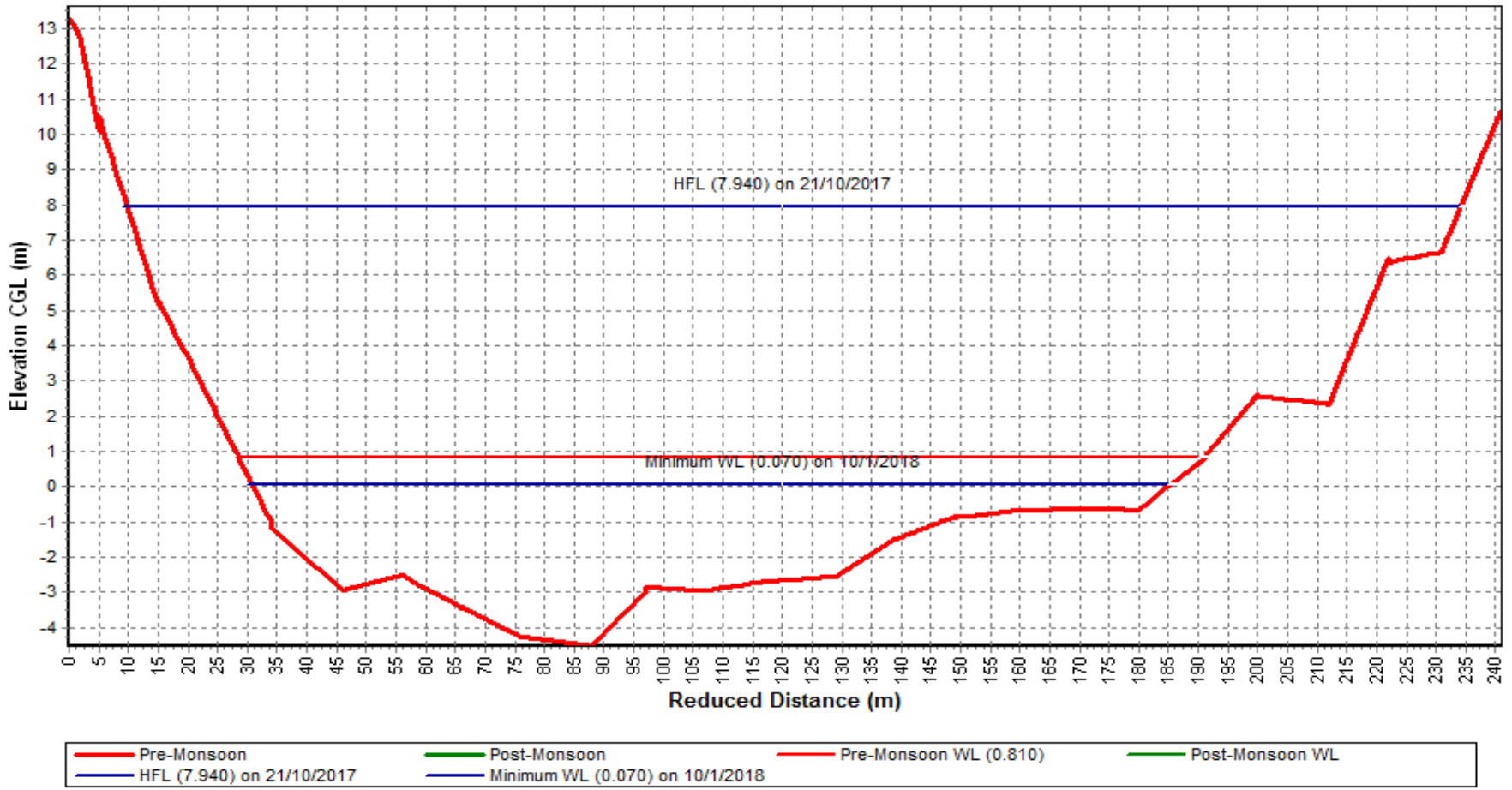
Local River : Burhabalang **Sub-Division : Balasore**



Pre-Monsoon & Post-Monsoon X-Section for Water Year : 2017-2018

Station Name : GOVINDPUR (ED000E4) **Division : E.E., Bhubaneswar**

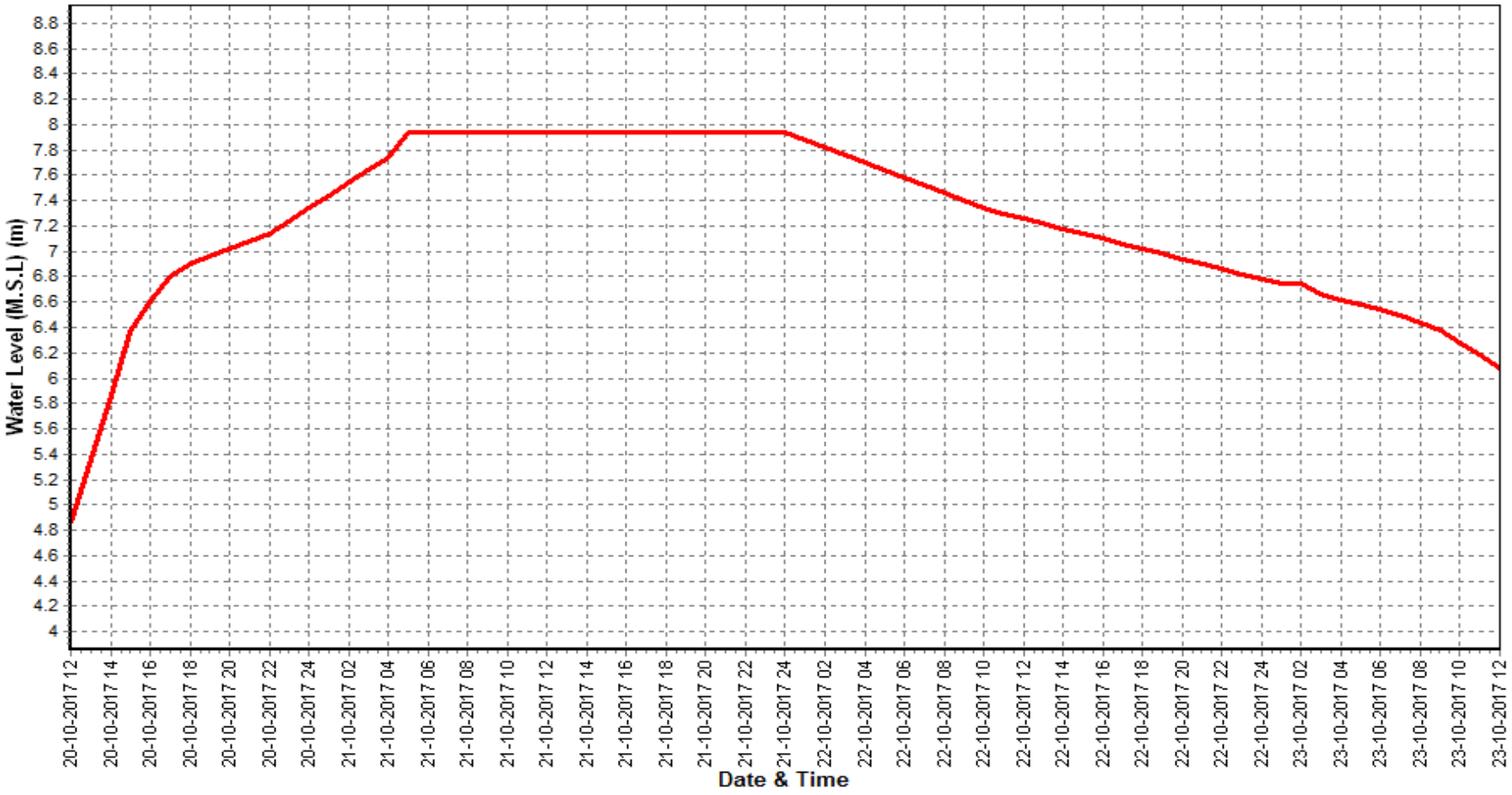
Local River : Burhabalang **Sub-Division : Balasore**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2017-2018

Station Name : GOVINDPUR (ED000E4) **Division : E.E., Bhubaneswar**

Local River : Burhabalang **Sub-Division : Balasore**

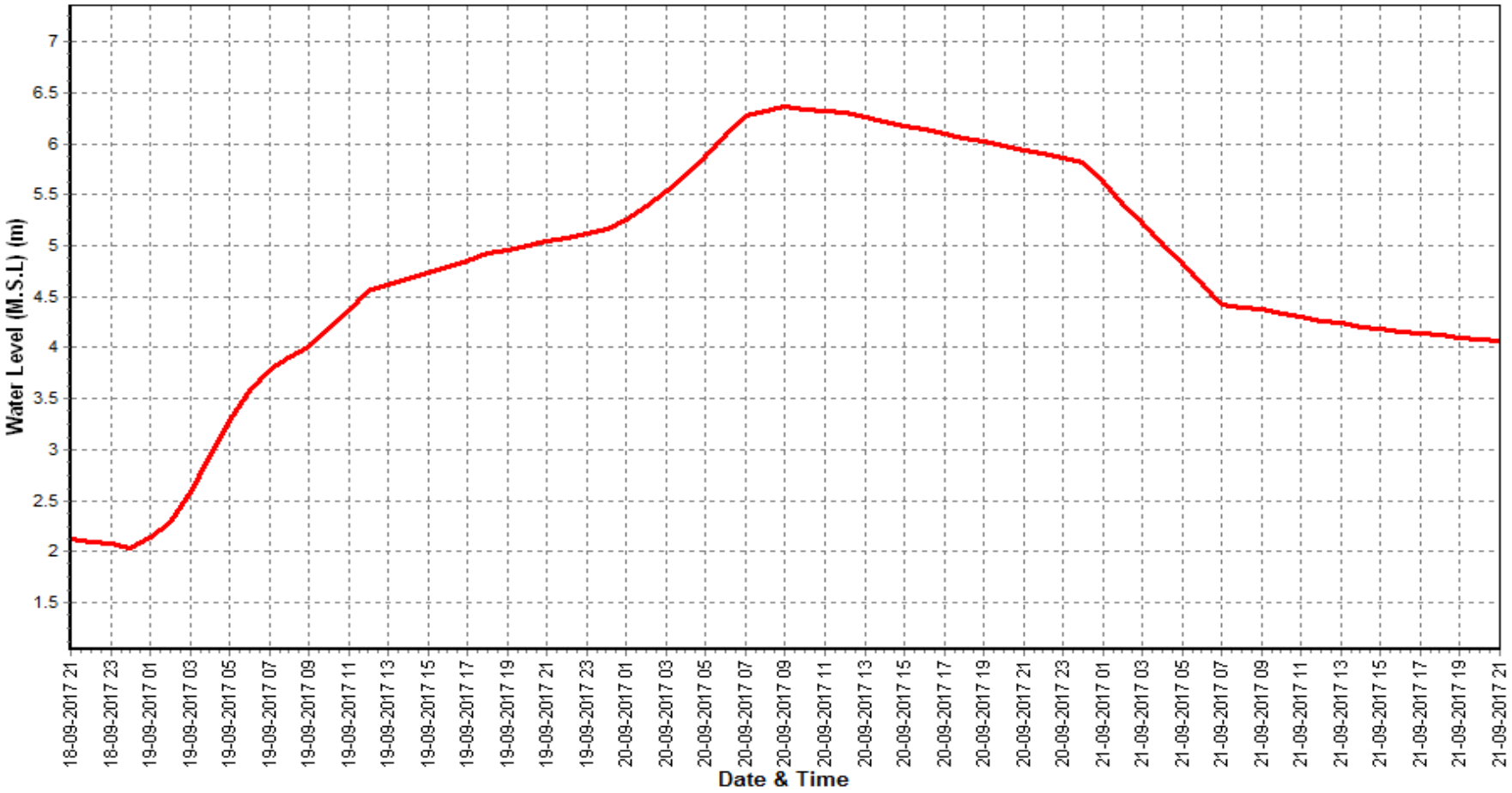


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2017-2018

Station Name : GOVINDPUR (ED000E4) **Division : E.E., Bhubaneswar**

Local River : Burhabalang **Sub-Division : Balasore**

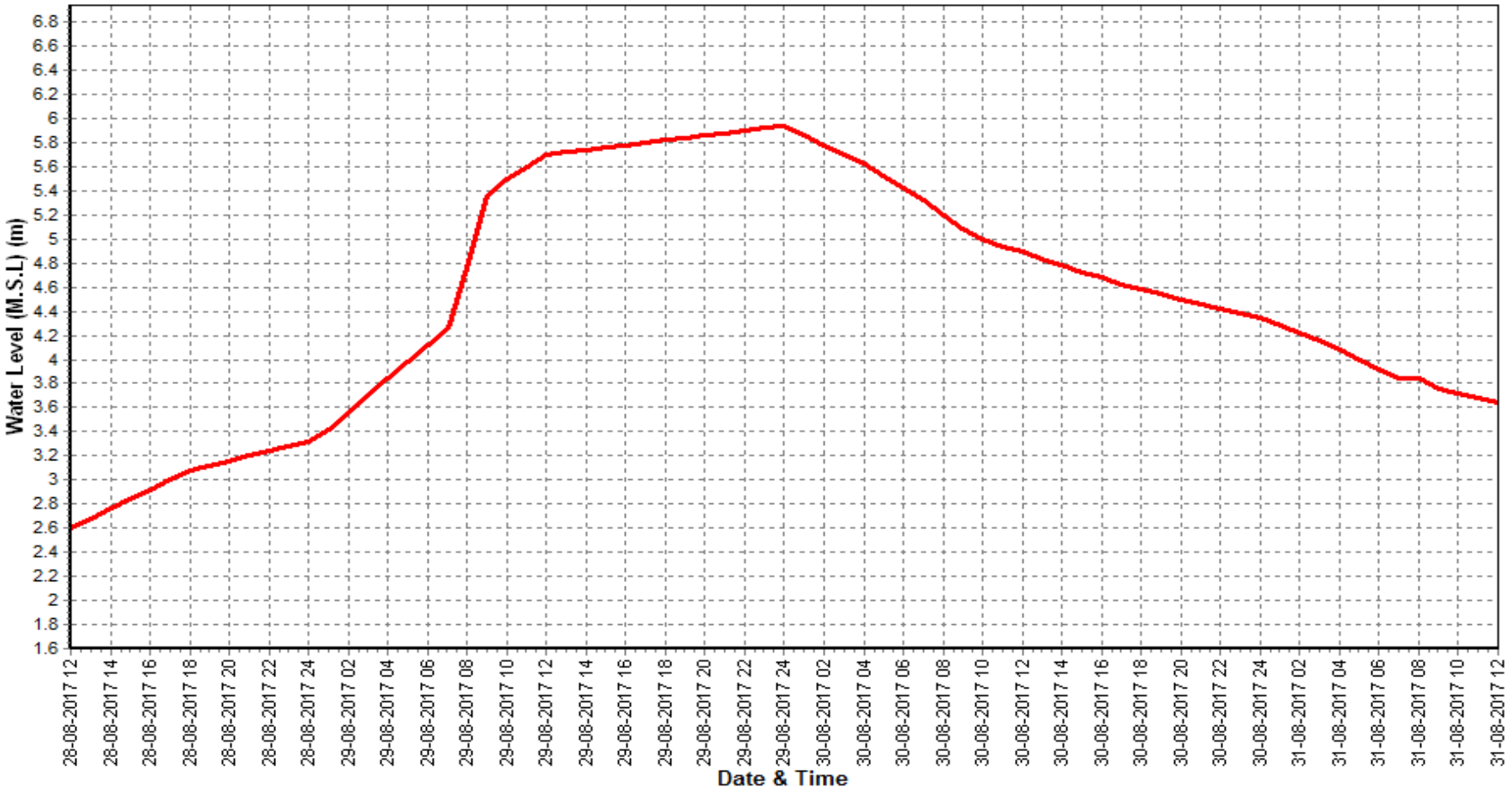


Time Span: 72 Hrs

Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2017-2018

Station Name : GOVINDPUR (ED000E4) **Division : E.E., Bhubaneswar**

Local River : Burhabalang **Sub-Division : Balasore**



Time Span: 72 Hrs

Annual Sediment Load for period : 2003-2018

Station Name : GOVINDPUR (ED000E4) **Division : E.E., Bhubaneswar**

Local River : Burhabalang **Sub-Division : Balasore**

Year	Monsoon (M.T.)	Non-Monsoon (M.T.)	Annual Load (M.T.)	Annual Run Off (MCM)
2003-2004	911645	24562	936207	3170
2004-2005	1204010	16705	1220715	3134
2005-2006	1373050	15439	1388489	3075
2006-2007	1936696	7309	1944005	3656
2007-2008	2174291	20120	2194411	5100
2008-2009	1710229	4818	1715047	4691
2009-2010	1393627	6328	1399954	3190
2010-2011	425907	205	426112	1851
2011-2012	16087	1702	17789	4364
2012-2013	253388	666	254055	2055
2013-2014	883614	18171	901785	6741
2014-2015	393494	8347	401840	4591
2015-2016	14240	2622	16862	2185
2016-2017	43753	869	44623	2269
2017-2018	0	0	0	6874

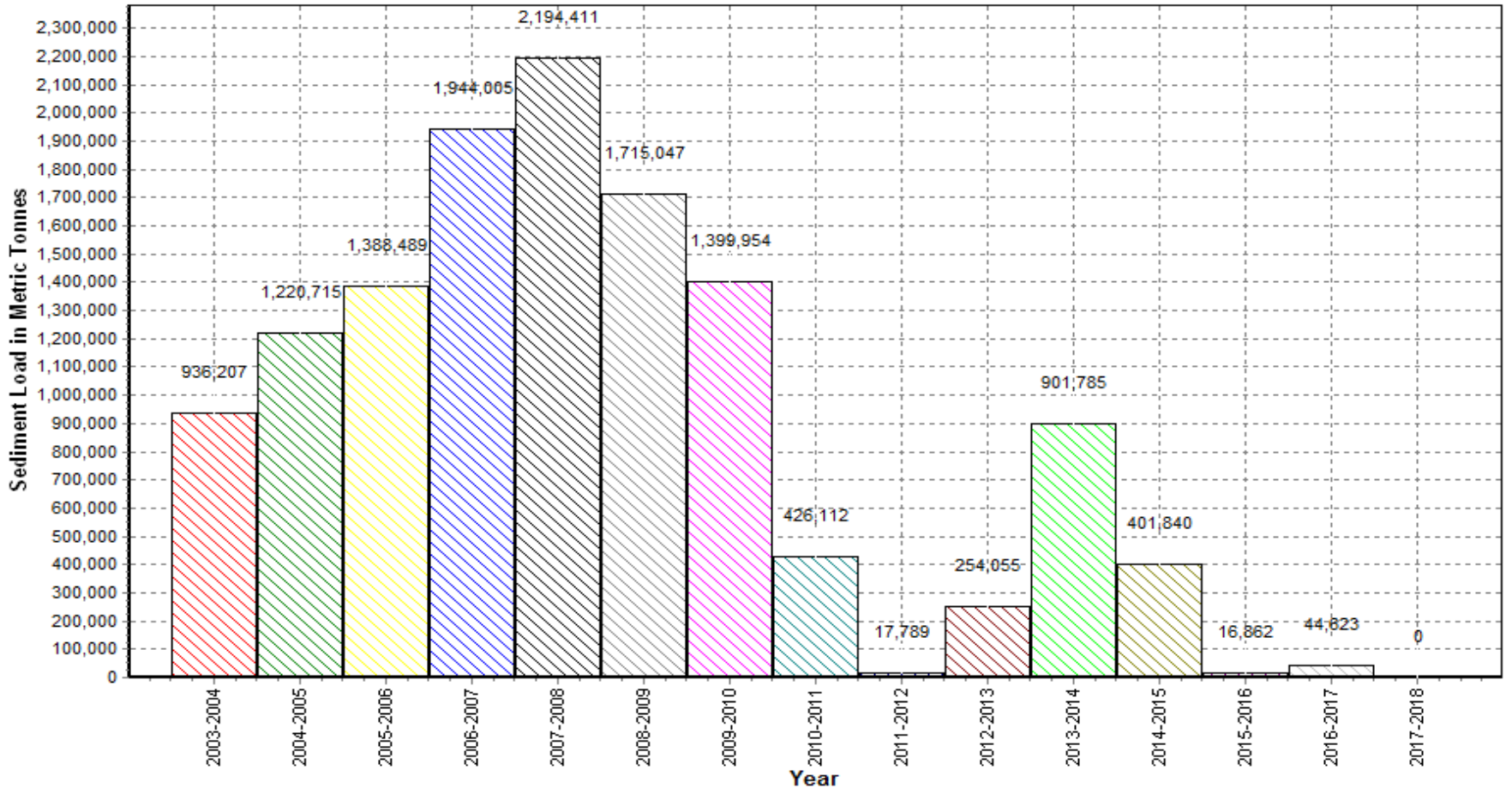
Annual Sediment Load for the period: 2003-2018

Station Name : GOVINDPUR (ED000E4)

Local River : Burhabalang

Division : E.E., Bhubaneswar

Sub-Division : Balasore



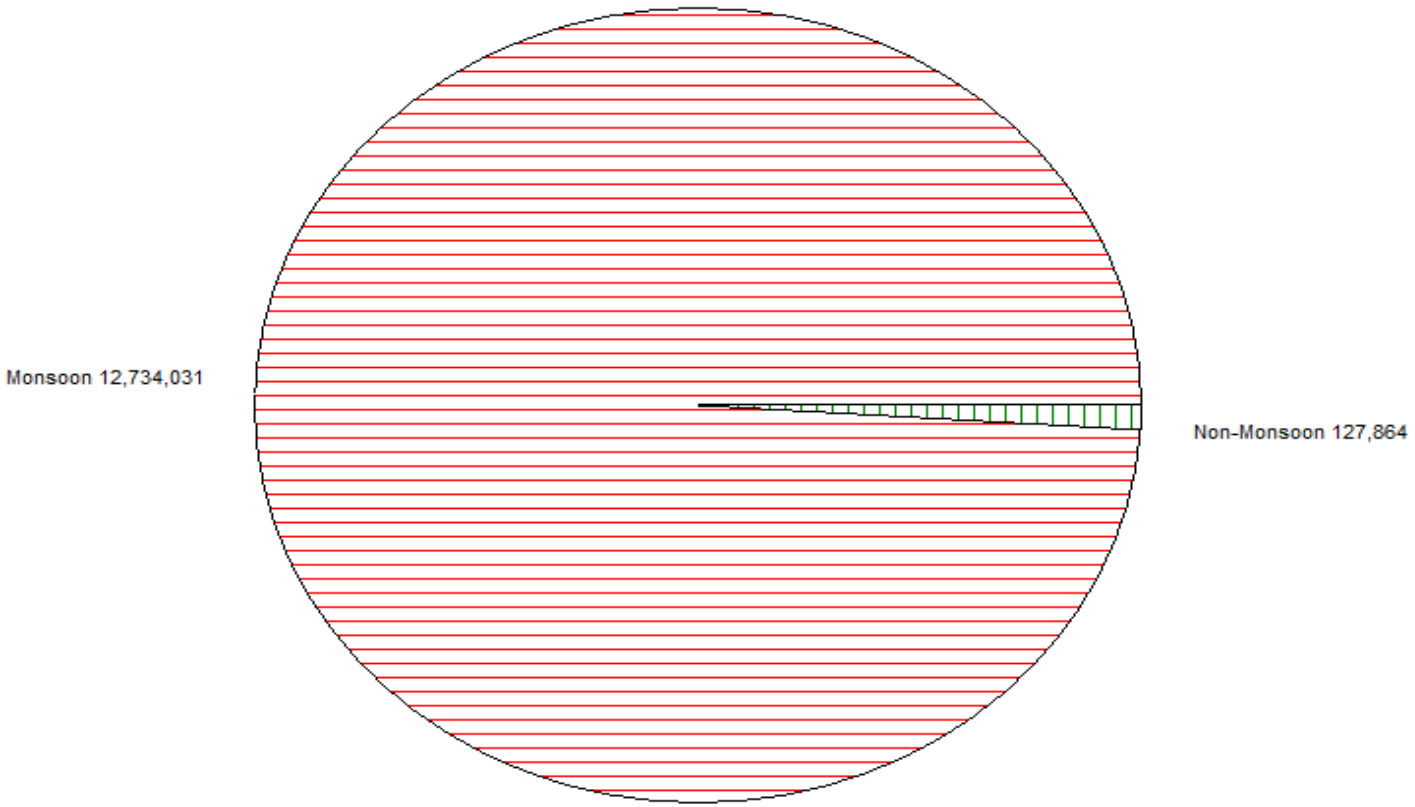
Seasonal Sediment Load for the period : 2003-2017

Station Name : GOVINDPUR (ED000E4)

Local River : Burhabalang

Division : E.E., Bhubaneswar

Sub-Division : Balasore



Water Quality Datasheet for the period : 2017-2018

Station Name : GOVINDPUR (ED000E4) **Division : E.E., Bhubaneswar**

Local River : Burhabalang **River Water Analysis** **Sub-Division : Balasore**

S.No	Parameters	01/06/2017	01/07/2017	01/08/2017	01/09/2017	03/10/2017	01/11/2017	01/12/2017	01/01/2018	01/02/2018	01/03/2018	02/04/2018	01/05/2018
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Clear	Light Brown	Light Brown	Light Brown	Light Brown	Clear	Clear	Clear	Clear	Clear	Clear	Clear
3	EC_FLD (µmho/cm)	345	215	90	280	185	212	248	258	370	338	319	260
4	EC_GEN (µmho/cm)	338	204	86	277	191	206	240	253	365	343	330	268
5	Odour_Code (-)	odour free	odour free	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	7.4	7.4	7.5	7.4	7.0	7.2	7.4	7.7	7.4	7.2	7.4
7	pH_GEN (pH units)	7.7	7.3	7.3	7.6	7.4	6.8	7.3	7.3	7.6	7.5	7.1	7.5
8	Temp (deg C)	28.5	30.1	30.0	31.0	29.8	27.0	20.2	20.6	22.5	23.5	26.0	24.4
	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
2	ALK-TOT (mgCaCO3/L)	106	83	55	69	65	86	79	83	92	106	92	79
3	B (mg/L)	0.02	0.01	0.02	0.02	0.01	0.01	0.02	0.03	0.02	0.03	0.02	0.01
4	Ca (mg/L)	35	37	38	40	22	33	38	37	41	33	27	22
5	Cl (mg/L)	24.5	18.9	13.2	11.3	12.1	13.8	50.7	19.0	20.8	22.5	19.0	22.5
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
7	F (mg/L)	0.05	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)	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.4	0.5
9	HCO3 (mg/L)	130	101	68	85	79	104	96	101	113	130	113	96
10	K (mg/L)	1.6	1.1	1.4	1.8	2.0	2.5	2.9	3.0	0.4	0.8	1.6	1.4
11	Mg (mg/L)	13.6	14.6	13.6	12.6	8.7	9.5	15.1	8.7	11.9	12.7	10.3	8.7
12	Na (mg/L)	20.6	8.7	4.5	5.6	5.8	6.2	6.8	16.9	19.6	20.5	21.6	12.2
13	NO2+NO3 (mg N/L)	1.25	1.22	1.18	1.23	1.13	1.15	1.23	1.19	1.21	1.23	1.15	1.18
14	NO2-N (mgN/L)	0.01	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	NO3-N (mgN/L)	1.23	1.19	1.18	1.21	1.13	1.15	1.23	1.19	1.21	1.23	1.15	1.18
16	P-Tot (mgP/L)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
17	SiO2 (mg/L)	8.0	9.4	8.1	8.8	6.8	7.8	9.1	8.8	7.1	6.5	9.4	7.5
18	SO4 (mg/L)	26.8	10.6	10.8	3.3	1.9	2.1	2.4	2.5	2.8	3.0	3.3	4.9
	BIOLOGICAL/BACTERIOLOGICAL												
	TRACE & TOXIC												
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	88	92	96	100	56	82	95	92	101	83	69	56
2	HAR_Total (mgCaCO3/L)	145	153	153	153	92	121	158	128	151	136	112	92
3	Na% (%)	23	11	6	7	12	10	8	22	22	25	29	22
4	RSC (-)	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	SAR (-)	0.7	0.3	0.2	0.2	0.3	0.2	0.2	0.7	0.7	0.8	0.9	0.6
	PESTICIDES												

Water Quality Summary for the period : 2017-2018

Station Name : GOVINDPUR (ED000E4) **Division : E.E., Bhubaneswar**

Local River : Burhabalang **Sub-Division : Balasore**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	12	370	90	260
3	EC_GEN (µmho/cm)	12	365	86	258
4	pH_FLD (pH units)	12	7.8	7.0	7.4
5	pH_GEN (pH units)	12	7.7	6.8	7.4
6	Temp (deg C)	12	31.0	20.2	26.1
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	0.0	0.0	0
2	ALK-TOT (mgCaCO3/L)	12	106	55	83
3	B (mg/L)	12	0.03	0.01	0.02
4	Ca (mg/L)	12	41	22	34
5	Cl (mg/L)	12	50.7	11.3	20.7
6	CO3 (mg/L)	12	0.0	0.0	0
7	F (mg/L)	12	0.05	0.05	0.05
8	Fe (mg/L)	12	0.5	0.4	0.5
9	HCO3 (mg/L)	12	130	68	101
10	K (mg/L)	12	3.0	0.4	1.7
11	Mg (mg/L)	12	15.1	8.7	11.7
12	Na (mg/L)	12	21.6	4.5	12.4
13	NO2+NO3 (mg N/L)	12	1.25	1.13	1.2
14	NO2-N (mgN/L)	12	0.03	0.00	0.01
15	NO3-N (mgN/L)	12	1.23	1.13	1.19
16	P-Tot (mgP/L)	12	0.001	0.001	0.001
17	SiO2 (mg/L)	12	9.4	6.5	8.1
18	SO4 (mg/L)	12	26.8	1.9	6.2
	BIOLOGICAL/BACTERIOLOGICAL				
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	101	56	84
2	HAR_Total (mgCaCO3/L)	12	158	92	133
3	Na% (%)	12	29	6	16
4	RSC (-)	12	0.0	0.0	0
5	SAR (-)	12	0.9	0.2	0.5
	PESTICIDES				

Water Quality Seasonal Average for the period: 2003-2018

Station Name : GOVINDPUR (ED000E4) **Division : E.E., Bhubaneswar**

Local River : Burhabalang **River Water** **Sub-Division : Balasore**

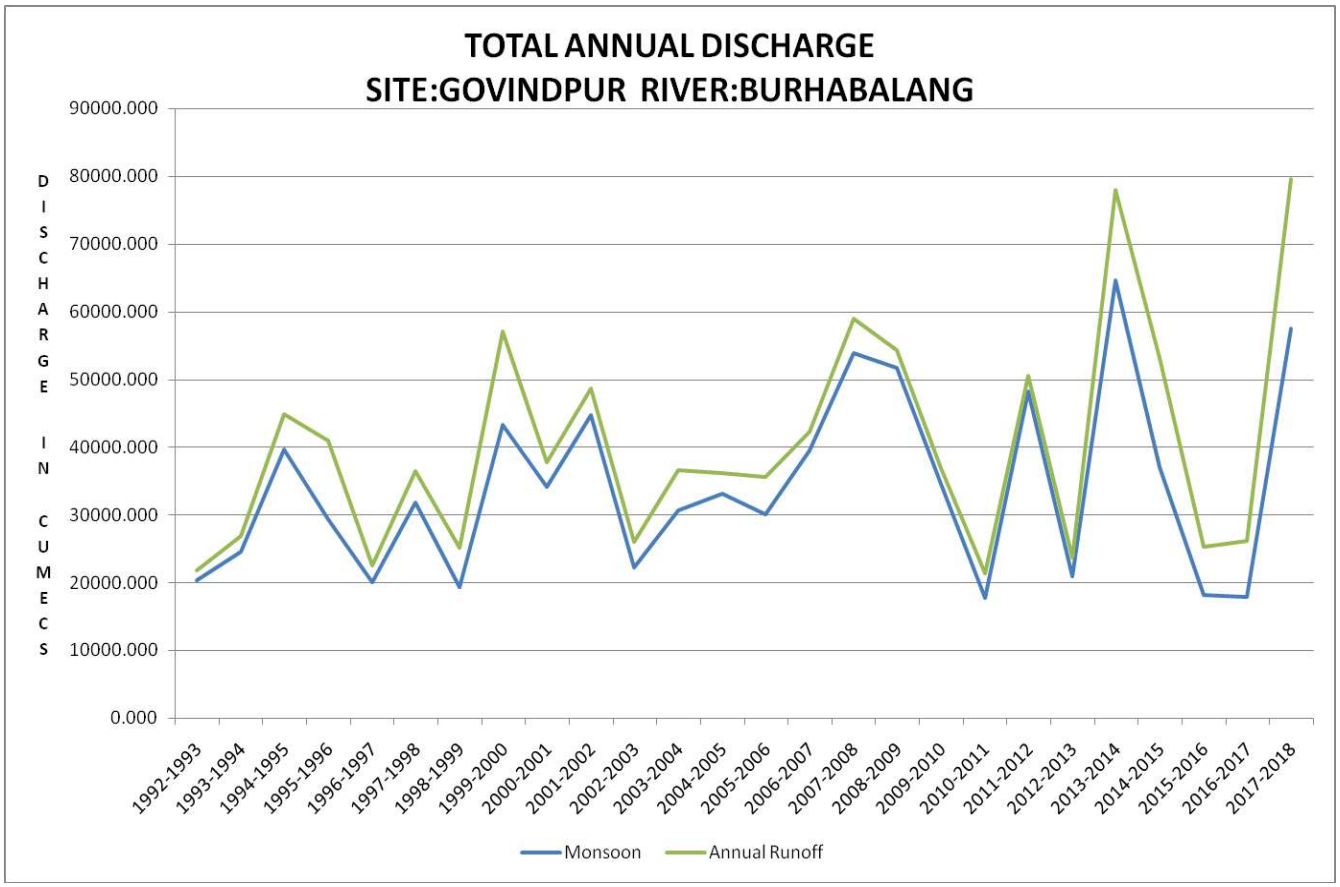
S.No	Parameters	Flood																					
		Jun - Oct																					
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
	PHYSICAL																						
1	Q (cumec)																						
2	EC_FLD (µmho/cm)	165	131			157		140	187	185	170	181	240	327	184	223	178	173			185		221
3	EC_GEN (µmho/cm)	165	131			151		140	187	185	170	181	240	332	188	219	178	173			176		221
4	pH_FLD (pH units)	7.6	7.8			7.6		7.8	7.6	8.0	7.4	7.6	7.8	7.0	7.5	7.5	7.5	8.0			8.0		7.7
5	pH_GEN (pH units)	7.6	7.8			7.6		7.8	7.6	8.0	7.4	7.6	7.8	7.1	7.5	7.5	7.4	7.8			8.1		7.7
6	Temp (deg C)	28.5	28.4			22.8		25.7	21.7	29.1	26.5	29.4	27.8	24.7	26.7	29.9	20.0	23.5			18.8		18.0
	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)					45		44	56	82				60	82	76					56		56
3	B (mg/L)	0.00	0.00			0.00		0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.00	0.00			0.00		0.00
4	Ca (mg/L)	15	12			14		11	16	19	18	19	24	26	31	35	18	15			17		17
5	Cl (mg/L)	14.0	10.1			13.0		9.7	14.9	13.2	18.1	22.5	13.2	14.5	12.6	16.0	13.6	11.7			15.1		22.3
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
7	F (mg/L)	0.05	0.39			0.00		0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.41			0.00		0.00
8	Fe (mg/L)		0.1			0.1		0.1	0.1	0.0	1.3	0.0	0.6	0.4	0.5	0.5	0.0	0.0			0.1		0.1
9	HCO3 (mg/L)	62	57			55		54	70	100	109	70	81	73	100	92	77	82			68		68
10	K (mg/L)	2.1	2.4			3.0		1.0	2.4	0.9	3.3	1.4	1.4	2.2	3.1	1.6	2.3	1.1			2.5		1.1
11	Mg (mg/L)	3.8	3.3			4.8		7.1	7.5	7.1	7.8	4.9	11.0	10.7	13.6	12.6	4.3	7.3			5.0		9.2
12	Na (mg/L)	10.0	7.6			9.6		5.6	8.6	7.3	9.9	10.9	10.1	9.8	21.2	9.0	10.3	7.7			10.8		12.6
13	NO2+NO3 (mg N/L)	0.25	0.30			0.54		0.32	0.36	0.38	0.95	0.41	1.03	0.92	1.06	1.20	0.35	0.19			0.38		0.30
14	NO2-N (mgN/L)	0.00	0.00			0.00		0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00			0.00		0.00
15	NO3-N (mgN/L)	0.25	0.30			0.54		0.32	0.36	0.31	0.95	0.41	1.03	0.92	1.06	1.19	0.35	0.19			0.38		0.30
16	o-PO4-P (mg P/L)					0.000		0.067									0.000				0.000		0.045
17	P-Tot (mgP/L)		0.001			0.001		0.010	0.001	0.010	0.004	0.001	0.001	0.004	0.010	0.001		0.001			0.001		0.010
18	SiO2 (mg/L)	11.6	34.5			8.9		6.3	6.5	11.0	21.8	9.0	7.3	6.3	6.3	8.2	22.0	35.2			9.0		7.7
19	SO4 (mg/L)	2.0	3.8			13.9		7.6	10.0	9.3	7.5	19.2	13.2	13.2	18.2	10.7	1.6	2.7			11.0		10.9
	BIOLOGICAL/BACTERIOLOGICAL																						
1	BOD3-27 (mg/L)	1.0	0.7														0.7	0.8					
2	DO (mg/L)	6.1	6.5														8.4	7.6					
3	DO_SAT% (%)	78	84														91	89					
	TRACE & TOXIC																						
	CHEMICAL INDICES																						
1	HAR_Ca (mgCaCO3/L)	38	30			34		28	40	47	45	48	59	64	77	86	45	38			43		42
2	HAR_Total (mgCaCO3/L)	53	47			54		58	71	76	78	68	105	109	134	139	62	62			64		81
3	Na% (%)	30	26			27		17	20	17	19	26	15	14	25	12	27	20			26		25
4	RSC (-)	0.0	0.1			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		0.0
5	SAR (-)	0.6	0.5			0.6		0.3	0.4	0.4	0.5	0.6	0.4	0.4	0.8	0.3	0.6	0.4			0.6		0.6
	PESTICIDES																						

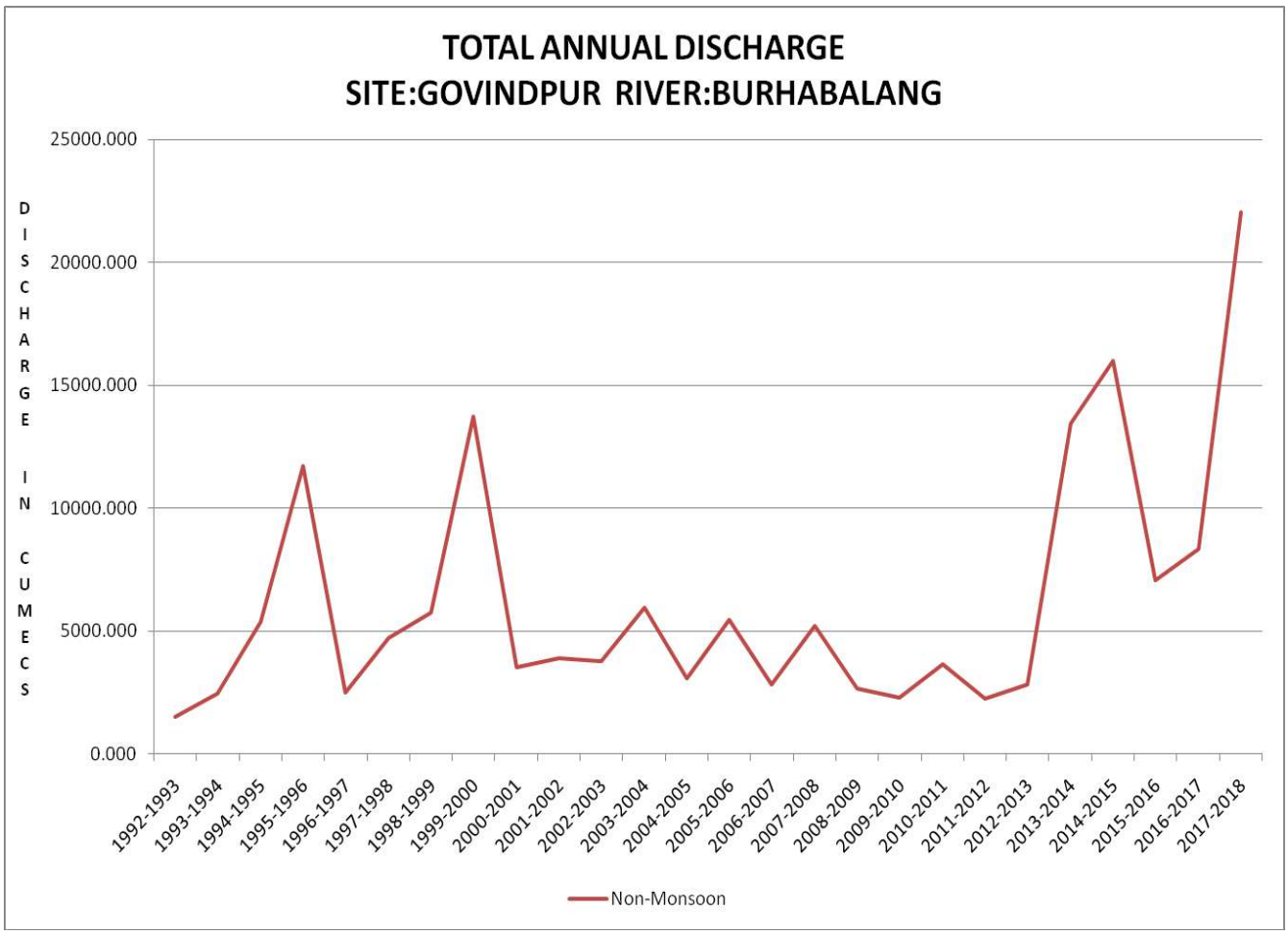
Water Quality Seasonal Average for the period: 2003-2018

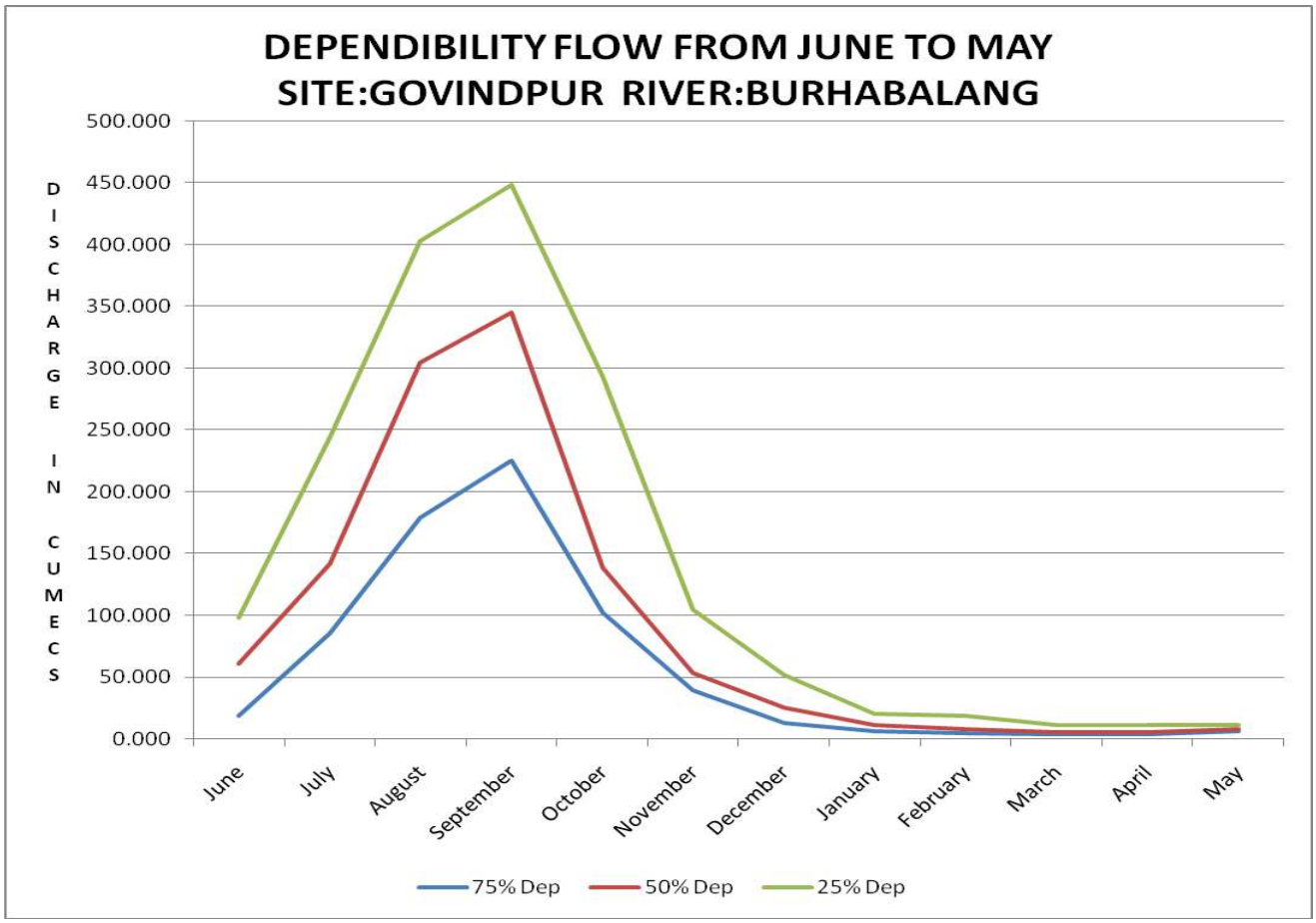
Station Name : GOVINDPUR (ED000E4) **Division : E.E., Bhubaneswar**

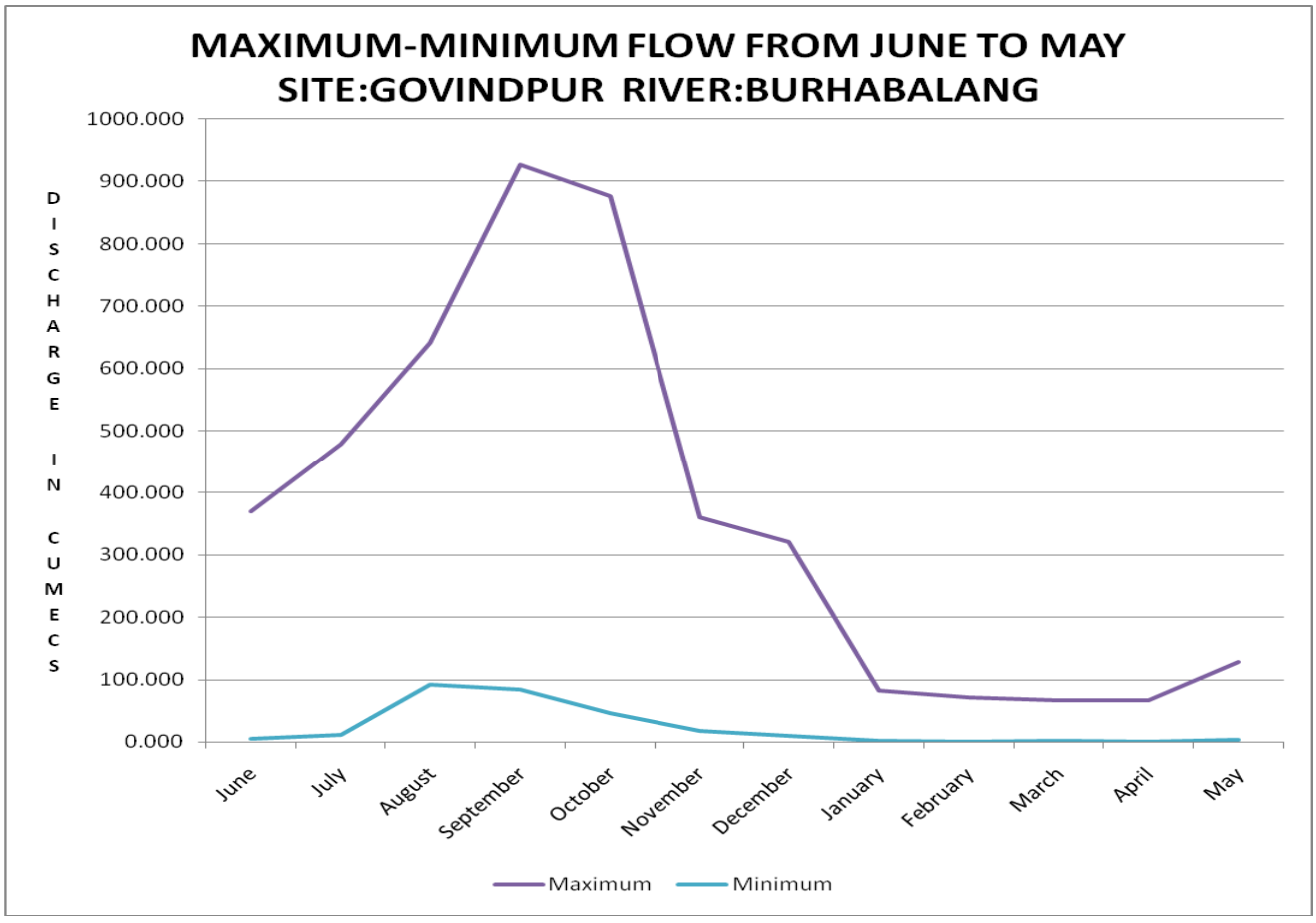
Local River : Burhabalang **River Water** **Sub-Division : Balasore**

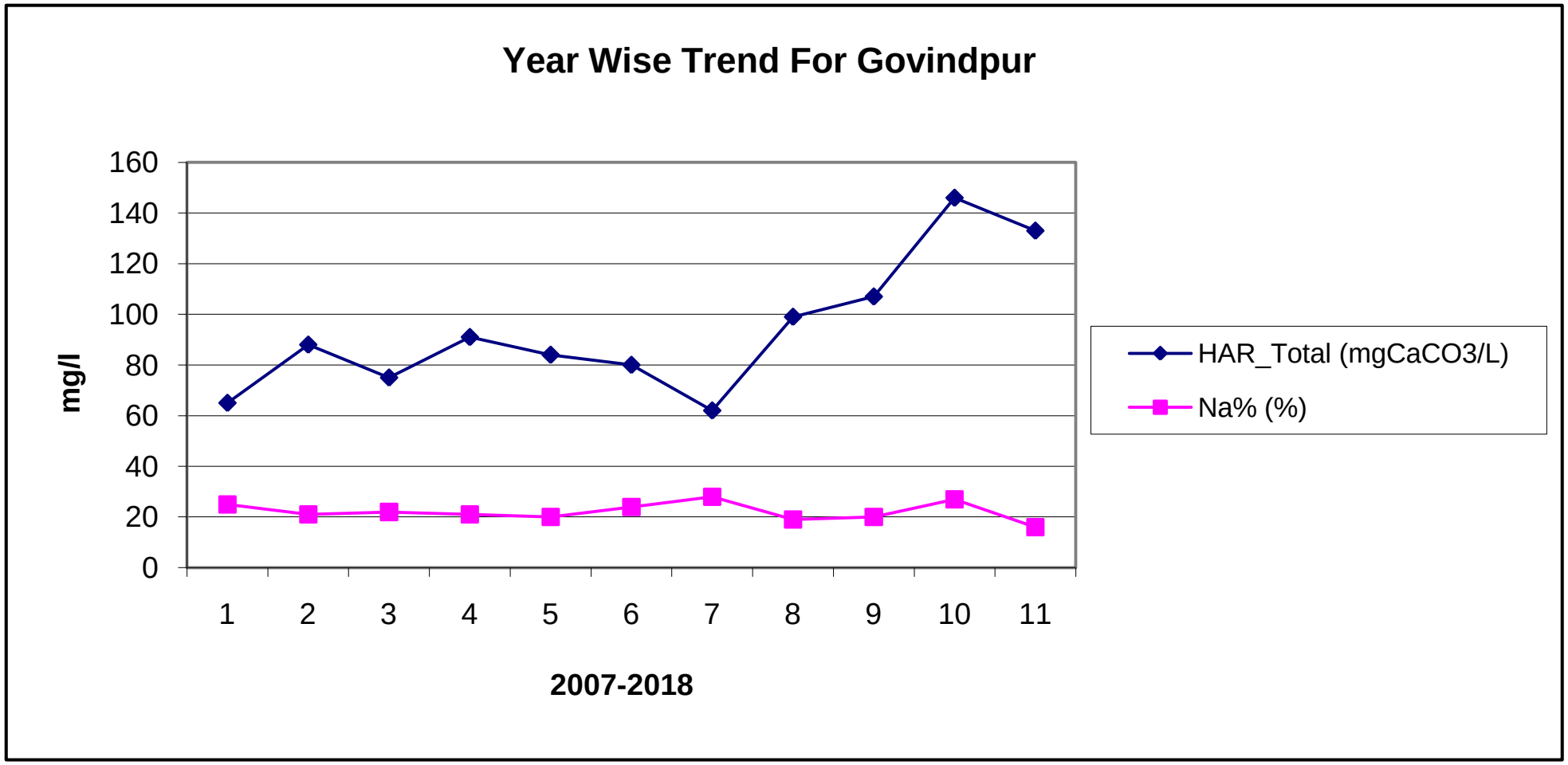
S.No	Parameters	Winter								Summer														
		Nov - Feb								Mar - May														
		2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2004	2005	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	PHYSICAL																						
1	Q (cumec)																						
2	EC_FLD (µmho/cm)	255	215	208	169	345	397	266	272	240			210		340	370	260	230	186	530	653	377	306
3	EC_GEN (µmho/cm)	255	215	208	169	345	392	265	266	240			220		340	370	260	230	186	530	662	380	314
4	pH_FLD (pH units)	7.7	7.8	7.3	7.6	7.3	7.5	7.4	7.3	7.9			8.2		8.4	8.1	7.6	7.3	8.1	7.1	7.4	7.4	7.3
5	pH_GEN (pH units)	7.7	7.8	7.3	7.5	7.3	7.7	7.4	7.2	7.9			8.3		8.4	8.1	7.6	7.3	8.1	7.1	7.2	7.5	7.4
6	Temp (deg C)	17.5	24.3	20.3	22.9	23.0	28.5	24.3	22.6	27.0			23.0		24.0	25.5		28.0	27.0	32.5	25.0	28.0	24.6
	CHEMICAL																						
1	Alk-Phen (mgCaCO3/L)	0.0	0.0				0.0	0.0	0.0				0.0		5.8	0.0	0.0				0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	100	53				67	60	85				73		99	112	106				69	65	92
3	B (mg/L)	0.00	0.01	0.00	0.00	0.00	0.01	0.02	0.02	0.00			0.00		0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.02	0.02
4	Ca (mg/L)	20	20	22	16	23	23	38	37	24			25		18	27	30	15	15	31	32	38	28
5	Cl (mg/L)	17.0	18.9	22.3	19.4	17.0	15.1	14.1	26.1	17.3			15.2		31.6	28.3	34.0	22.1	25.3	35.0	18.9	24.5	21.3
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0		7.0	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	0.05	0.05	0.05	0.05	0.00			0.05		0.08	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
8	Fe (mg/L)	0.1	0.0	3.8	0.1	0.5	0.3	0.4	0.5						0.1	0.1	0.0	2.6	0.0	0.4	0.2	0.6	0.5
9	HCO3 (mg/L)	111	65	151	98	107	82	73	104	115			89		107	136	130	122	93	131	85	79	113
10	K (mg/L)	1.0	0.9	2.6	1.3	1.1	3.1	4.0	2.2	2.3			0.8		1.5	1.2	1.1	6.3	2.6	1.2	13.0	5.1	1.3
11	Mg (mg/L)	12.2	8.7	8.5	4.5	7.8	8.3	14.6	11.3	7.5			5.8		17.5	15.6	5.8	6.3	3.1	5.9	12.6	16.5	10.6
12	Na (mg/L)	10.8	9.1	17.2	11.2	10.4	16.5	25.1	12.4	11.8			10.3		22.7	22.0	18.2	12.4	12.3	18.6	20.9	39.9	18.1
13	NO2+NO3 (mg N/L)	0.39	0.36	1.04	0.90	1.25	0.83	0.95	1.19	0.24			0.48		0.57	0.55	0.42	1.16	0.73	1.20	0.88	1.22	1.19
14	NO2-N (mgN/L)	0.00	0.07	0.00	0.00	0.00	0.01	0.01	0.00	0.00			0.00		0.00	0.00	0.07	0.00	0.00	0.01	0.00	0.00	0.00
15	NO3-N (mgN/L)	0.39	0.29	1.04	0.90	1.25	0.81	0.93	1.19	0.24			0.48		0.57	0.55	0.35	1.16	0.73	1.19	0.88	1.22	1.19
16	o-PO4-P (mg P/L)														0.080								
17	P-Tot (mgP/L)	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001				0.050		0.010	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001
18	SiO2 (mg/L)	5.8	9.0	20.5	9.5	5.5	5.0	7.0	8.2	20.7			9.4		8.1	9.5	9.0	18.6	9.8	8.0	5.0	8.5	7.8
19	SO4 (mg/L)	5.2	3.7	13.6	21.6	4.7	55.2	9.8	2.4	1.5			10.8		20.1	22.9	21.8	6.2	21.2	21.7	57.8	1.5	3.7
	BIOLOGICAL/BACTERIOLOGICAL																						
1	BOD3-27 (mg/L)									0.9													
2	DO (mg/L)									7.5													
3	DO_SAT% (%)									94													
	TRACE & TOXIC																						
	CHEMICAL INDICES																						
1	HAR_Ca (mgCaCO3/L)	50	50	55	41	57	58	94	92	60			63		44	68	76	37	38	79	80	96	69
2	HAR_Total (mgCaCO3/L)	101	87	91	59	90	93	155	139	91			87		117	133	100	63	51	103	133	165	113
3	Na% (%)	19	20	28	29	20	27	25	16	21			20		30	26	28	28	33	28	23	34	25
4	RSC (-)	0.0	0.0	0.7	0.4	0.1	0.0	0.0	0.0	0.1			0.0		0.0	0.0	0.1	0.8	0.5	0.1	0.0	0.0	0.0
5	SAR (-)	0.5	0.4	0.8	0.6	0.5	0.7	0.9	0.5	0.5			0.5		0.9	0.8	0.8	0.7	0.8	0.8	0.8	1.4	0.7
	PESTICIDES																						

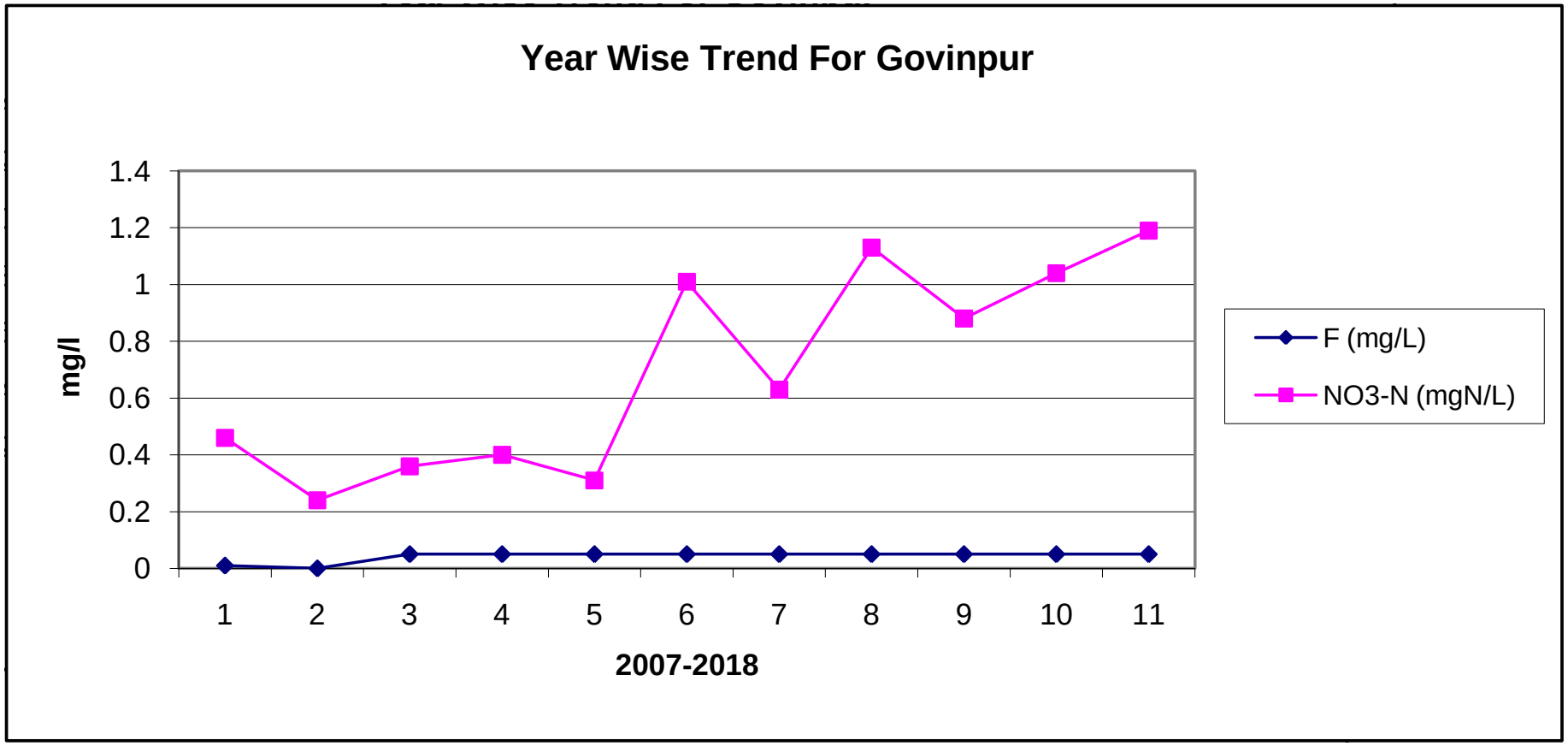

TOTAL ANNUAL DISCHARGE
SITE:GOVINDPUR RIVER:BURHABALANG
DISCHARGE IN CUMECS
90000.000
80000.000
70000.000
60000.000
50000.000
40000.000
30000.000
20000.000
10000.000
0.000
1992-1993
1993-1994
1994-1995
1995-1996
1996-1997
1997-1998
1998-1999
1999-2000
2000-2001
2001-2002
2002-2003
2003-2004
2004-2005
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
Monsoon
Annual Runoff

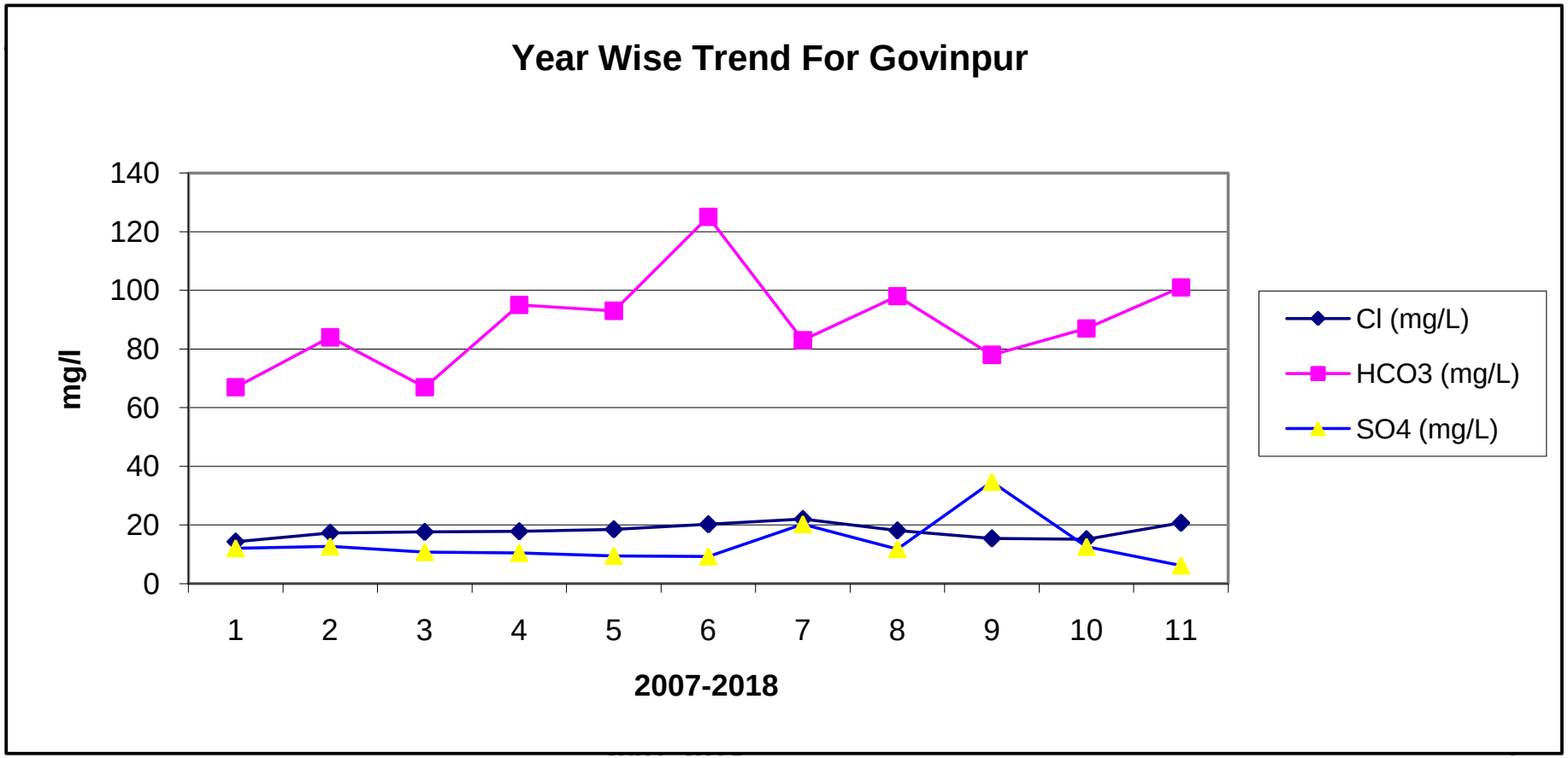

TOTAL ANNUAL DISCHARGE
SITE:GOVINDPUR RIVER:BURHABALANG
DISCHARGE IN CUMECS
25000.000
20000.000
15000.000
10000.000
5000.000
0.000
1992-1993
1993-1994
1994-1995
1995-1996
1996-1997
1997-1998
1998-1999
1999-2000
2000-2001
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
Non-Monsoon

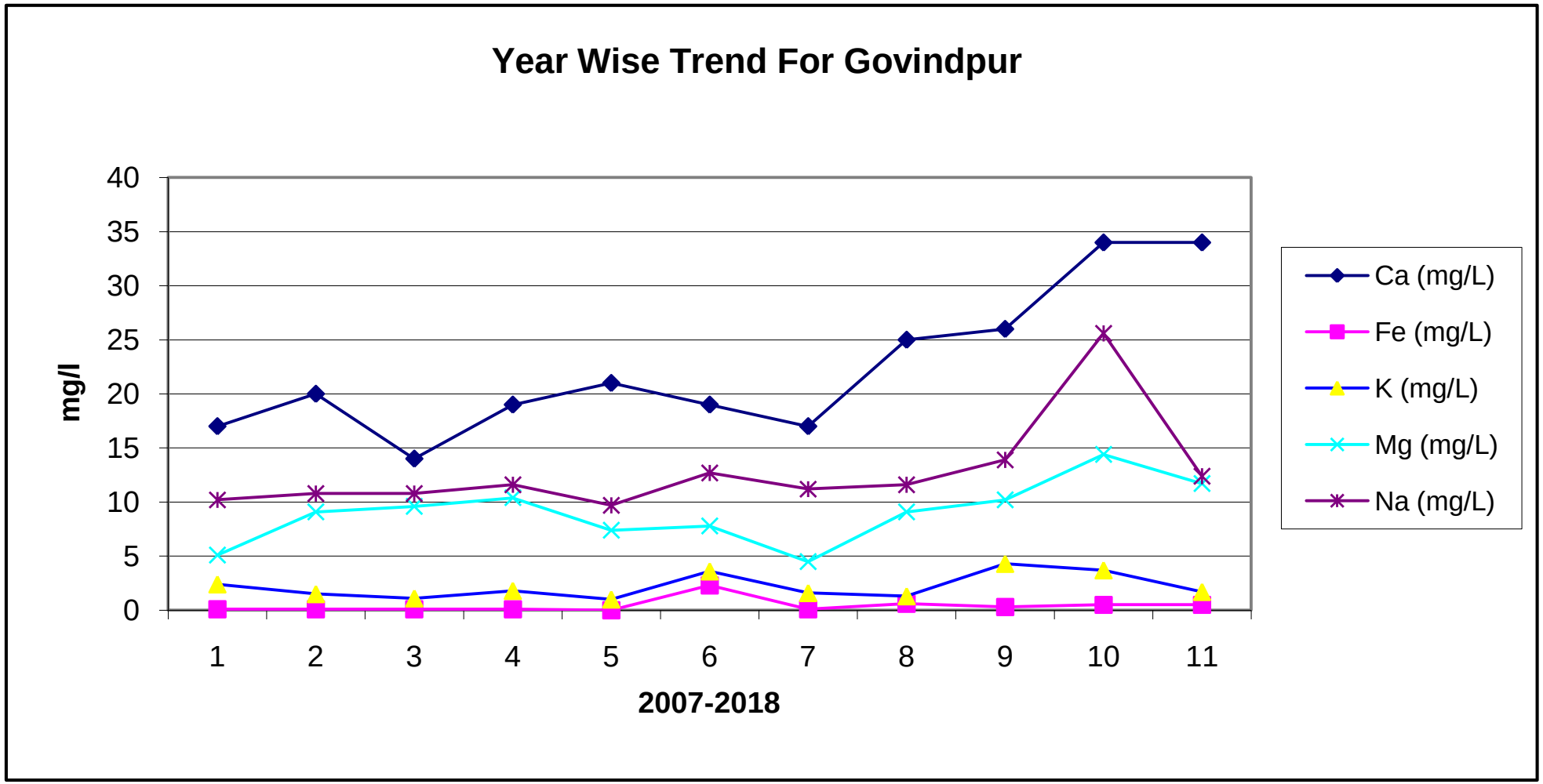

DEPENDIBILITY FLOW FROM JUNE TO MAY
SITE:GOVINDPUR RIVER:BURHABALANG
DISCHARGE IN CUMECS
500.000
450.000
400.000
350.000
300.000
250.000
200.000
150.000
100.000
50.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
75% Dep
50% Dep
25% Dep


MAXIMUM-MINIMUM FLOW FROM JUNE TO MAY
SITE:GOVINDPUR RIVER:BURHABALANG
DISCHARGE IN CUMECS
1000.000
900.000
800.000
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
Maximum
Minimum


Year Wise Trend For Govindpur
160
140
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For Govinpur
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
2007-2018
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend For Govinpur
140
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year Wise Trend For Govindpur
mg/l
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Ca (mg/L)
Fe (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

LIST OF PERSONS INVOLVED IN THE PREPARATION OF WATER YEAR BOOK

1. Sri. N.C. NANDA, Executive Engineer, ERD, CWC, Bhubaneswar
2. Sri. R. Rajsekhar, AEE(HQS), ERD, CWC, Bhubaneswar
3. Sri. R. Rajsekhar, AEE, Baitarani Sub-Division, Bhubaneswar
4. Sri. N.K. Bhuyan, ARO, ERD, CWC, Bhubaneswar
5. Sri. P. Samantara, SA, ERD, CWC, Bhubaneswar
6. Sri. S.S. Mohanty, Sr. Computer, ERD, CWC, Bhubaneswar
7. Sri. Ashok Mishra, SWA,ERD, Bhubaneswar
8. Sri. D.P. Moharana, MTS,ERD, Bhubaneswar
9. Sri. N. Sahoo, SWA,ERD, Bhubaneswar