

केवल सरकारी उपयोग हेतु  
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# जल गुणवत्ता वर्ष पुस्तिका

## WATER QUALITY YEAR BOOK

जून 2015 – मई 2016

June 2015 - May 2016

# घाघरा बेसिन

## GHAGHRA BASIN

जल विज्ञानीय प्रेक्षण परिमण्डल  
HYDROLOGICAL OBSERVATION CIRCLE

केन्द्रीय जल आयोग  
CENTRAL WATER COMMISSION

वाराणसी  
VARANASI

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# PREFACE

Water is a prime natural resource and basic human need. The National Water Policy lays stress on planning and development of water resources on a national perspective. The prime requisite of water resources planning is indeed an efficient information system on the quantity and quality of this time and space variable precious natural asset.

The Central Water Commission in its capacity as an apex technical organisation in the field of water resources development endeavours the gigantic task of collection and compilation of Water Quality data incorporating the quality and quantity of available waters in various basins of the country. The Water Quality Books of various river basins of the country are being published by Central Water Commission in order to make its effective and efficient use. A new chapter on water quality trends has been incorporated in water quality year book.

The present volume contains information and trend on various water quality parameters measured at **10 water quality stations on river Ghaghra** and its tributaries for the year 2015-2016.

The valuable guidance and inspiration of **Shri Narendra Kumar, Member, RM, CWC, New Delhi** and **Shri S.K.Sibal, Chief Engineer, Upper Ganga Basin Organisation, CWC, Lucknow** is gratefully acknowledged.

I would like to place on record the special contribution made by **officers and staff of Hydrological Observation Circle, Varanasi and Middle Ganga Division-I, Lucknow** in compilation of information and publication of the report in present form.

It is hoped that this publication will be found useful for the planners, managers and users in the field of water resources.

February, 2017

(Anupam Prasad)  
SUPERINTENDING ENGINEER  
CENTRAL WATER COMMISSION  
HYDROLOGICAL OBSERVATION CIRCLE  
VARANASI

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# 1. INTRODUCTION

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## 1.1. Scope

- 1.1.1. Rapidly increasing population, rising standard of living ,exponential growth of industrialized and urbanization have exposed the Water Resources in general and rivers in particular to various form of degradation. It is therefore necessary to keep vigilant watch of quality of available fresh waters whose major sources in our country are rivers.

## 1.2. Source of Information

Middle Ganga Division No. I, Lucknow under the Hydrological Observation Circle, Central Water Commission, Varanasi is conducting Water Quality observations at nine sites in Ghaghra sub-basin. The finalised data for the year 2015-2016 is presented in the book. The details of the site is given in Table 1 and same has been located in index map .

**T A B L E 1**

| Sl.No                              | Name of site            | Station Code |
|------------------------------------|-------------------------|--------------|
| <b>Middle Ganga Division No. I</b> |                         |              |
| 1.                                 | Ghat at Saryu           | GGU63E9      |
| 2.                                 | Paliakalan at Sarda     | GGU60I6      |
| 3.                                 | Elgin Bridge at Ghaghra | GGU00S2      |
| 4.                                 | Ayodhya at Ghaghra      | GGU00M9      |
| 5.                                 | Basti at Kwano          | GGU40J3      |
| 6.                                 | Balrampur at Rapti      | GGU30U4      |
| 7.                                 | Regauli at Rapti        | GGU30H1      |
| 8.                                 | Birdghat at Rapti       | GGU30F5      |
| 9.                                 | Turtipar at Ghaghra     | GGU00F1      |

### 1.3. Observation Technique

Water samples from all the Water Quality stations are collected on 1st working day of the month and transported to divisional laboratory where systematic analysis is conducted for the determination of constituents like pH, Specific Conductance, Potassium (as  $K^+$ ), Sodium (as  $Na^+$ ), Calcium (as  $Ca^{++}$ ), Magnesium (as  $Mg^{++}$ ), Iron (as  $Fe^{++}$ ), Nitrogen Ammoniacal (as  $NH_4-N$ ), Carbonate (as  $CO_3^{--}$ ), Bicarbonate (as  $HCO_3^-$ ), Chloride (as  $Cl^-$ ), Fluoride (as  $F^-$ ), Sulphate (as  $SO_4^{--}$ ), Nitrate (as  $NO_3^-$ ), Nitrite (as  $NO_2^-$ ), Phosphate (as  $PO_4^{--}$ ), Silica (as  $SiO_2$ ) and Boron (as B).

pH and Specific Conductance are determined by digital pH meter and conductivity meter.  $Cl^-$ ,  $CO_3^{--}$ ,  $HCO_3^-$ ,  $Ca^{++}$  and  $Mg^{++}$  are estimated by titration method.  $SO_4^{--}$  is estimated by turbidimetric method with the help of Nephelometer.  $Na^+$  and  $K^+$  estimation is done by the method of flame emission with the help of Flame photometer and rest by the method of colorimetric estimation with the help of U-V Spectrophotometer.

In addition to the above, Dissolved Oxygen is also estimated. Biochemical Oxygen Demand, Chemical Oxygen Demand and Microbiological Parameters such as Total Coliform & Fecal Coliform are determined at selected sites.

## 2. WATER QUALITY DATA

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### 2.1 Explanatory Notes

The explanatory notes, described hereunder, are designed to assist in the interpretation of various parameters contained in the data presented subsequently.

- i) The water samples are collected at a regular frequency of once in a month usually on the 1st working day from the main flowing portion of the stream.
- ii) Dissolved Oxygen is measured at the site laboratory/ Divisional Laboratory.

iii) The other water quality parameters are analysed at the divisional laboratory.

iv) Chemical Indices, namely, Hardness Number, Sodium Percentage, Sodium Adsorption Ratio and Residual Sodium Carbonate are calculated as follows :

a. Hardness Number (HAR) is calculated by adding the total  $\text{Ca}^{++}$  and  $\text{Mg}^{++}$  in the sample expressed as equivalent parts of  $\text{CaCO}_3$ .

b. Sodium Percentage (S.P.) is given by  
$$\text{S.P.} = (\text{Na}^+ \times 100) / (\text{Ca}^{++} + \text{Mg}^{++} + \text{Na}^+ + \text{K}^+)$$
  
Ionic concentrations being in meq/litre.

c. Sodium Adsorption Ratio (S.A.R.) is given by  
$$\text{S.A.R.} = \text{Na}^+ / \{(\text{Ca}^{++} + \text{Mg}^{++})/2\}^{1/2}$$
  
Where the ionic concentration being in meq/litre.

d. Residual Sodium Carbonate (R.S.C.) is given by  
$$\text{R.S.C.} = (\text{CO}_3^{--} + \text{HCO}_3^-) - (\text{Ca}^{++} + \text{Mg}^{++})$$
  
Where concentration of all the ions being in meq/litre.

v) Water year ranges from June 1st of one calendar year to May 31<sup>st</sup> of the next calendar year and covers one complete hydrological cycle.

vi) The gauging station code number is a unique seven column alpha-numeric reference number which facilitates storage and retrieval of water quality data in data banks. The first column is identifier of either an integral river basin or for convenience, a region having several contiguous river catchments. This is followed by a column which identifies an independent river system which either have 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.

## 2.2 Method of Presentation

In the succeeding pages, station-wise water quality data and its trend

is presented, comprising history sheet and water quality analysis tables.

History sheet gives concise description of the water quality observation station. The water quality analysis tables are given season-wise (flood, winter, summer) for the river water. The samples of water quality analysis are collected once a month as already mentioned in para 2.1 above.

### **3. WATER QUALITY TOLERANCE AND CLASSIFICATION**

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As per ISI-IS: 2296-1982, the tolerance limits of parameters are specified as per classified use of water (Table 1,2,3,4,5 Annexed ) depending on various uses of water. The following classifications have been adopted in India.

| Classification | Type of use                                                                  |
|----------------|------------------------------------------------------------------------------|
| Class A        | Drinking water source without conventional treatment but After disinfection. |
| Class B        | Outdoor bathing.                                                             |
| Class C        | Drinking water source with conventional treatment followed by disinfection.  |
| Class D        | Fish culture and wild life propagation .                                     |
| Class E        | Irrigation , Industrial cooling or controlled waste disposal.                |

**TABLE-1****TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS – A**

| <b>S. No.</b> | <b>Characteristic</b>                                               | <b>Tolerance</b> |
|---------------|---------------------------------------------------------------------|------------------|
| (i)           | pH value                                                            | 6.5 to 8.5       |
| (ii)          | Dissolved Oxygen, mg/l, ((Min))                                     | 6.0              |
| (iii)         | Bio-chemical Oxygen Demand ((Max))                                  | 2.0              |
| (iv)          | Total Coliform Organisms, MPN/100 ml,((Max))                        | 50               |
| (v)           | Colour, Hazen units, ((Max))                                        | 10               |
| (vi)          | Odour                                                               | unobjectionable  |
| (vii)         | Taste                                                               | Agreeable taste  |
| (viii)        | Total Dissolved Solids, mg/l, (Max)                                 | 500              |
| (ix)          | Total Hardness (as CaCO <sub>3</sub> ), mg/l ,(Max)                 | 300              |
| (x)           | Calcium Hardness (as CaCO <sub>3</sub> ), mg/l, (Max)               | 200              |
| (xi)          | Magnesium (as CaCO <sub>3</sub> ), mg/l,(Max)                       | 100              |
| (xii)         | Copper (as Cu), mg/l, (Max)                                         | 1.5              |
| (xiii)        | Iron (as Fe), mg/l,(Max)                                            | 0.3              |
| (xiv)         | Manganese (as Mn), mg/l,(Max)                                       | 0.5              |
| (xv)          | Chlorides (as Cl), mg/l,(Max)                                       | 250              |
| (xvi)         | Sulphate (as SO <sub>4</sub> ), mg/l ,(Max)                         | 400              |
| (xvii)        | Nitrates (as NO <sub>2</sub> ), mg/l,(Max)                          | 20               |
| (xviii)       | Fluorides (as F,) mg/l,(Max)                                        | 1.5              |
| (xix)         | Phenolic compounds(as C <sub>6</sub> H <sub>5</sub> OH), mg/l,(Max) | 0.002            |
| (xx)          | Mercury (as Hg), mg/l ,(Max)                                        | 0.001            |
| (xxi)         | Cadmium (as Cd), mg/l,(Max)                                         | 0.01             |
| (xxii)        | Selenium (as Se), mg/l ,(Max)                                       | 0.01             |
| (xxiii)       | Arsenic (as As), mg/l,(Max)                                         | 0.05             |
| (xxiv)        | Cyanides (as CN), mg/l, (Max)                                       | 0.05             |
| (xxv)         | Lead (as Pb), mg/l, (Max)                                           | 0.1              |
| (xxvi)        | Zinc (as Zn), mg/l, (Max)                                           | 15               |
| (xxvii)       | Chromium (asCr <sup>6+</sup> ), mg/l,(Max)                          | 0.05             |
| (xxviii)      | Anionic detergents, (as MBAS), mg/l ,(Max) .                        | 0.2              |
| (xxix)        | Poly-nuclear aromatic hydrocarbons (PAH),                           | 0.2              |
| (xxx)         | Barium (as Ba), mg/l ,(Max)                                         | 1.0              |
| (xxxi)        | Silver (as Ag), mg/l (Max)                                          | 0.05             |
| (xxxii)       | Pesticides                                                          | Absent           |
| (xxxiii)      | Alpha emitters, µc/ml, (Max)                                        | 10 <sup>-9</sup> |
| (xxxiv)       | Beta emitters, µc/ml, (Max)                                         | 10 <sup>-8</sup> |
|               |                                                                     |                  |

**TABLE- 2****TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS – B**

| <b>S. No.</b> | <b>Characteristic</b>                                                | <b>Tolerance</b> |
|---------------|----------------------------------------------------------------------|------------------|
| (i)           | pH Value                                                             | 6.5 to 8.5       |
| (ii)          | Dissolved Oxygen, mg/l,(Min)                                         | 5.0              |
| (iii)         | Biochemical Oxygen Demand (5 days at 20 °C), (Max)                   | 3.0              |
| (iv)          | Total Coliform Organisms, MPN/100 ml, (Max)                          | 500              |
| (v)           | Fluorides (as F)<mg/l, (Max)                                         | 1.5              |
| (vi)          | Colour, Hazen units, (Max)                                           | 300              |
| (vii)         | Cyanides (as CN), mg/l, (Max)                                        | 0.05             |
| (viii)        | Arsenic (as As), mg/l, (Max)                                         | 0.2              |
| (ix)          | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) mg/l, (Max) | 0.005            |
| (x)           | Chromium (as Cr <sup>6+</sup> ), mg/l, (Max)                         | 1.0              |
| (xi)          | Anionic detergents (as MBAS), mg/l, (Max)                            | 1.0              |
| (xii)         | Alpha emitters, µc/ml, (Max)                                         | 10 <sup>-8</sup> |

**TABLE- 3****TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS – C**

| <b>S. No.</b> | <b>Characteristic</b>                                                 | <b>Tolerance</b> |
|---------------|-----------------------------------------------------------------------|------------------|
| (i)           | pH Value                                                              | 6.5 to 8.5       |
| (ii)          | Dissolved Oxygen, mg/l (Min)imum                                      | 4.0              |
| (iii)         | Biochemical Oxygen Demand                                             | 3.0              |
| (iv)          | Total coliform organisms, MPN/100 ml, (Max)                           | 5000             |
| (v)           | Colour, Hazen units, (Max)                                            | 300              |
| (vi)          | Fluorides (as F), mg/l ,(Max)                                         | 1.5              |
| (vii)         | Cadmium (as Cd), mg/l, (Max)                                          | 0.01             |
| (viii)        | Chlorides (as Cl), mg/l, (Max)                                        | 600              |
| (ix)          | Chromium (as Cr <sup>6+</sup> ), mg/l, (Max)                          | 0.05             |
| (x)           | Cyanides (as CN), mg/l, (Max)                                         | 0.05             |
| (xi)          | Total Dissolved Solids, mg/l, (Max)                                   | 1500             |
| (xii)         | Selenium (as Se), mg/l, (Max)                                         | 0.05             |
| (xiii)        | Sulphates (as SO <sub>4</sub> ), mg/l, (Max)                          | 400              |
| (xiv)         | Lead (as Pb), mg/l, (Max)                                             | 0.1              |
| (xv)          | Copper (as Cu),mg/l,(Max)                                             | 1.5              |
| (xvi)         | Arsenic (as As), mg/l, (Max)                                          | 0.2              |
| (xvii)        | Iron (as Fe), mg/l, (Max)                                             | 50               |
| (xviii)       | Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH), mg/l, (Max) | 0.005            |
| (xix)         | Zinc (as Zn), mg/l, (Max)                                             | 15               |
| (xx)          | Insecticides, mg/l, (Max)                                             | Absent           |
| (xxi)         | Anionic detergents (as MBAS), mg/l, (Max)                             | 1.0              |
| (xxii)        | Oils and grease, mg/l, (Max)                                          | 0.1              |
| (xxiii)       | Nitrates (as NO <sub>3</sub> ), mg/l,(Max)                            | 50               |
| (xxiv)        | Alpha emititers, µc/mg, (Max)                                         | 10-9             |
| (xxv)         | Beta emitters, µc/ml, (Max)                                           | 10-8             |

**TABLE-4****TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS -D**

| <b>S. No.</b> | <b>Characteristic</b>                                 | <b>Tolerance</b> |
|---------------|-------------------------------------------------------|------------------|
| (i)           | pH value                                              | 6.5 to 8.5       |
| (ii)          | Dissolved Oxygen, mg/l, (Min).                        | 4.0              |
| (iii)         | Free Ammonia (as N), mg/l, (Max).                     | 1.2              |
| (iv)          | Electrical Conductance at 25 °C, $\mu$ S, (Max)       | 1000             |
| (v)           | Free Carbon Dioxide (as CO <sub>2</sub> ),mg/l, (Max) | 6.0              |
| (vi)          | Oils and Grease, mg/l, (Max)                          | 0.1              |
| (vii)         | Alpha emitters, $\mu$ c/ml, (Max)                     | $10^{-9}$        |
| (viii)        | Beta emitters, $\mu$ c/ml, (Max)                      | $10^{-8}$        |

**TABLE- 5****TOLERANCE LIMITS FOR INLAND SURFACE WATERS,CLASS -E**

| <b>S. No.</b> | <b>Characteristic</b>                            | <b>Tolerance</b> |
|---------------|--------------------------------------------------|------------------|
| (i)           | pH value                                         | 6.0 to 8.5       |
| (ii)          | Electrical Conductance at 25°C, $\mu$ S, (Max)   | 2250             |
| (iii)         | Sodium Adsorption Ratio, (Max)                   | 26               |
| (iv)          | Boron (as B), mg/l, (Max)                        | 2.0              |
| (v)           | Total Dissolved Solids, (inorganic), mg/l, (Max) | 2100             |
| (vi)          | Sulphates (as SO <sub>4</sub> ), mg/l, (Max)     | 1000             |
| (vii)         | Chlorides (as Cl), Mg/l, (Max)                   | 600              |
| (viii)        | Sodium Percentage, (Max)                         | 60               |
| (ix)          | Alpha emitters, $\mu$ c/ml, (Max)                | $10^{-9}$        |
| (x)           | Beta emitters, $\mu$ c/ml, (Max)                 | $10^{-8}$        |

#### **4.0 TREND ANALYSIS / SCENARIO IN GHAGHRA BASIN**

The river Ghaghra rises in the southern slopes of the Himalayas in Tibet, in the glaciers of Mapchachungo. The river flows south through Nepal as the Karnali River and flows through one of the most deserted and least explored area of Nepal. Seti River is a 202 km long stream feeding this river and drains the western part of the catchment, and joins the Karnali River in Doti north of Dunderas Hill. Another feeder stream is the Bheri river that is 264 km long and drains in the eastern part of the catchment and converges with the Karnali River near Kuineghat in Surkhet. Moving southwards across the Siwalik Hills, it splits into two branches, first Geruva on the left bank and Kauraliaon the right bank near downstream Chisapani to rejoin south of the Indian border and form the Ghaghra proper.

Middle Ganga Division-1, Lucknow, Central Water Commission, under Hydrological Observation Circle, Varanasi has established a network of three monitoring stations on river Ghaghra. Starting from up-stream, there are three Water Quality monitoring stations at the Ghaghra river named Elginbridge, Ayodhya and Turtipar. Ghaghra basin map showing various sites on Ghaghra and Rapti, other tributaries like Sharda, Kwano and Sarju is given below.

**Major Rivers** : River Ghaghra is the major river in Middle Ganga Division – I, Lucknow. Middle Ganga Division -I, Lucknow has established a network of 10 Water quality monitoring stations in Ghaghra Basin & Rapti Basin under its jurisdiction. This division is monitoring the water quality of Ghaghra at 3 site namely Elginbridge, Ayodhya and Turtipar and sites Balrampur, Bansi, Regauli

and Birdghat at Rapti, Paliakalan at Sharda, Basti at Kwano and Ghat at Sarju. The monitoring of surface waters is done on monthly basis. Water samples are analysed for physico-chemical and bacteriological parameters apart from the field observations.

**W.Q. Network** : Details of water quality station under jurisdiction of Middle Ganga Division – I, Lucknow are tabulated below.

| S.No. | Name of Site | River   | Classification |
|-------|--------------|---------|----------------|
| 1     | Elginbridge  | Ghaghra | Trend          |
| 2     | Ayodhya      | Ghaghra | Flux           |
| 3     | Turtipar     | Ghaghra | Flux           |
| 4     | Balrampur    | Rapti   | Trend          |
| 5     | Bansi *      | Rapti   | Trend          |
| 6     | Regauli      | Rapti   | Trend          |
| 7     | Birdghat     | Rapti   | Flux           |
| 8     | Paliakalan   | Sharda  | Trend          |
| 9     | Basti        | Kwano   | Flux           |
| 10    | Ghat         | Sarju   | Trend          |

\* Bansi Site opened on 01/07/2014.

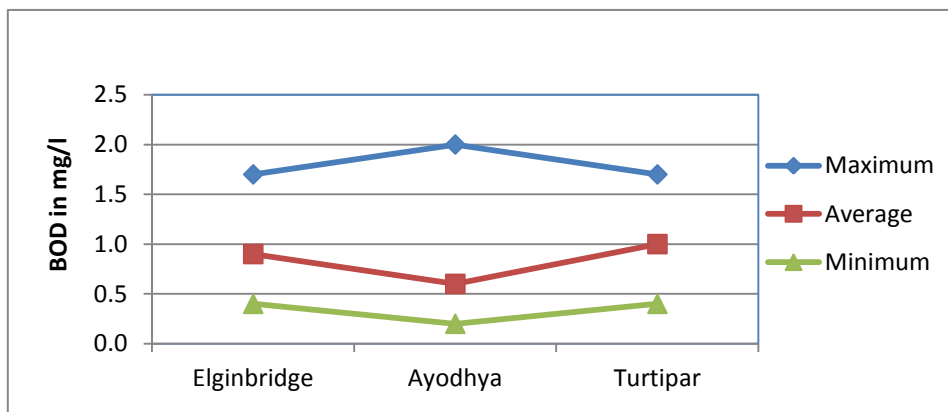
**Analysis** : To study the water quality / scenario in river Ghaghra, BOD, DO, fluoride and TDS parameters have been considered. Average value of these parameter for the period since inception(Inception to May 2016), last 10 years (Jun 2006 to May 2016) and last one year (Jun 2015 to May 2016) has been depicted in tables and figures below.

## 4.1 River : GHAGHRA (River 1) :

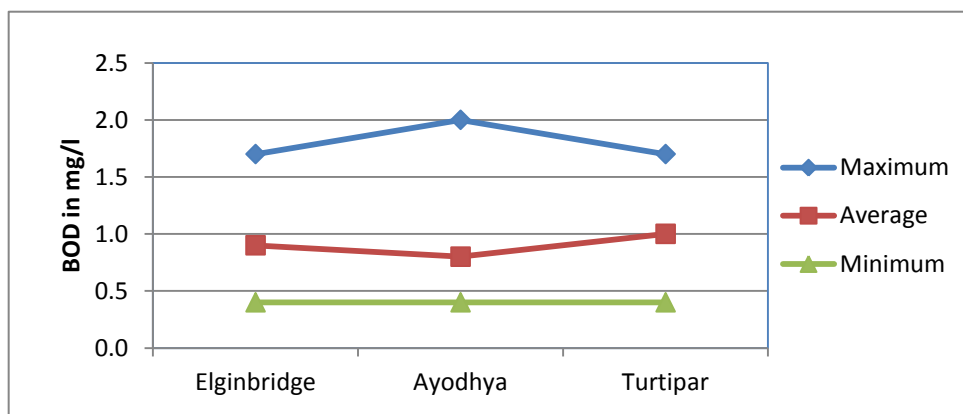
### 4.1.1 BOD in mg/l

| Site Name<br>(From U/S<br>to D/S) | Inception<br>Date | Avg. of Yearly Maximum |                    |                 | Avg. of Yearly Minimum |                    |                 | Annual Average     |                    |                 |
|-----------------------------------|-------------------|------------------------|--------------------|-----------------|------------------------|--------------------|-----------------|--------------------|--------------------|-----------------|
|                                   |                   | Since<br>inception     | Past<br>10<br>year | Current<br>year | Since<br>inception     | Past<br>10<br>year | Current<br>year | Since<br>inception | Past<br>10<br>year | Current<br>year |
| Site 1<br>Elginbridge             | 15.03.1969        | 1.7                    | 1.7                | 1.6             | 0.4                    | 0.4                | 0.6             | 0.9                | 0.9                | 1.2             |
| Site 2<br>Ayodhya                 | 01.07.1983        | 2.0                    | 2.0                | 1.6             | 0.2                    | 0.4                | 0.8             | 0.6                | 0.8                | 1.3             |
| Site 3<br>Turtipar                | 01.07.1983        | 1.7                    | 1.7                | 1.6             | 0.4                    | 0.4                | 0.8             | 1.0                | 1.0                | 1.3             |

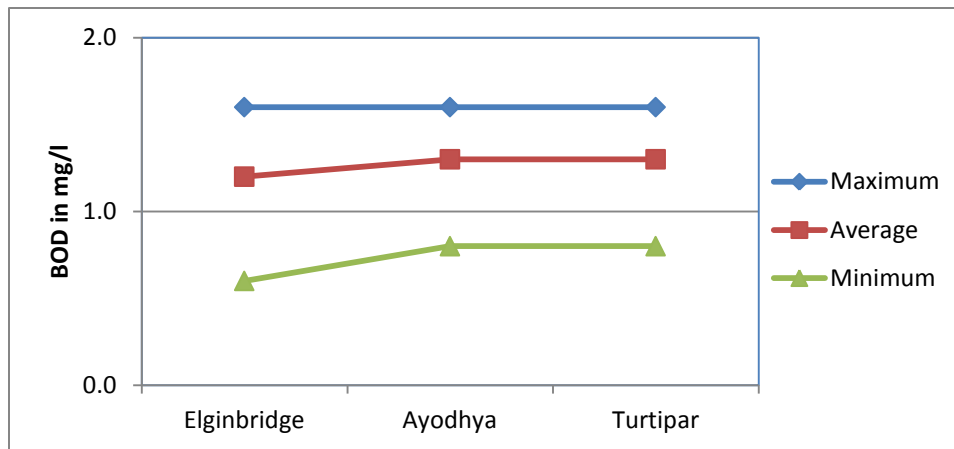
#### Parameter : BOD since inception



#### Parameter : BOD 10 year



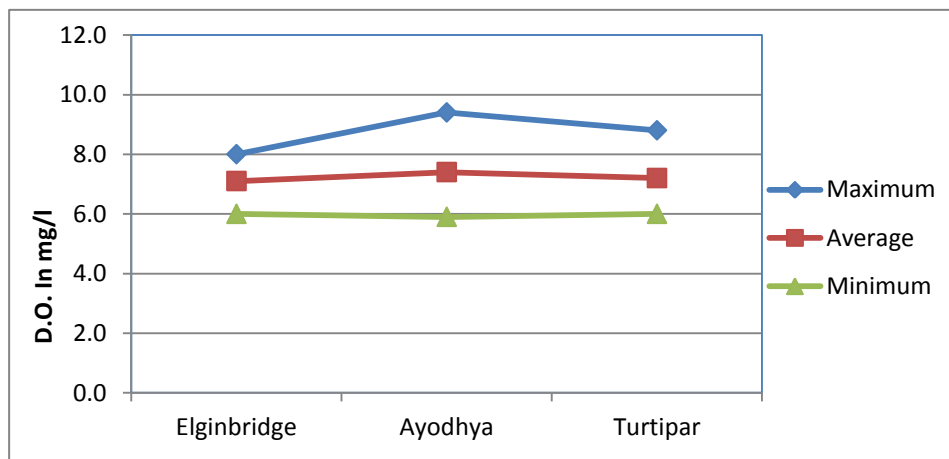
### Parameter : BOD One year



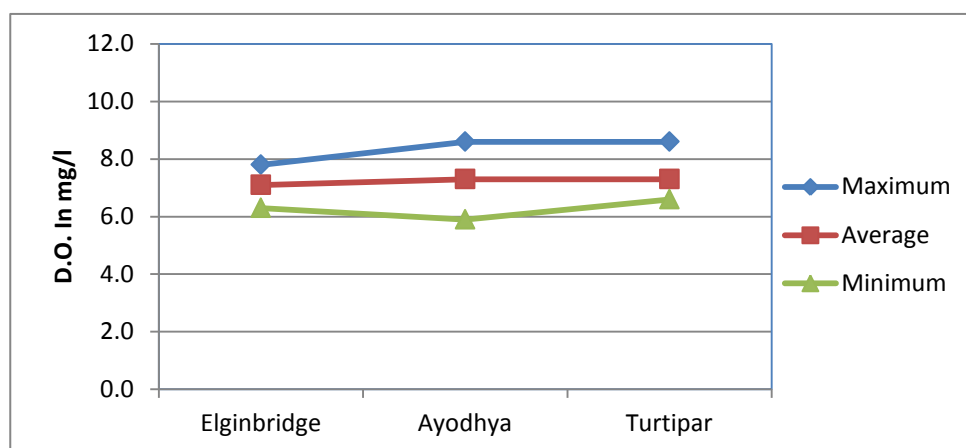
### 4.1.2 DO in mg/l

| Site Name<br>(From U/S<br>to D/S) | Inception<br>Date | Avg. of Yearly<br>Maximum |            |             | Avg. of Yearly<br>Minimum |            |             | Annual Average     |            |             |
|-----------------------------------|-------------------|---------------------------|------------|-------------|---------------------------|------------|-------------|--------------------|------------|-------------|
|                                   |                   | Since<br>inception        | 10<br>year | One<br>year | Since<br>inception        | 10<br>year | One<br>year | Since<br>inception | 10<br>year | One<br>year |
| <b>Site 1</b><br>Elginbridge      | 15.03.1969        | 8.0                       | 7.8        | 7.3         | 6.0                       | 6.3        | 6.5         | 7.1                | 7.1        | 6.9         |
| <b>Site 2</b><br>Ayodhya          | 01.07.1983        | 9.4                       | 8.6        | 7.3         | 5.9                       | 5.9        | 6.7         | 7.4                | 7.3        | 7.0         |
| <b>Site 3</b><br>Turtipar         | 01.07.1983        | 8.8                       | 8.6        | 7.3         | 6.0                       | 6.6        | 6.7         | 7.2                | 7.3        | 7.0         |

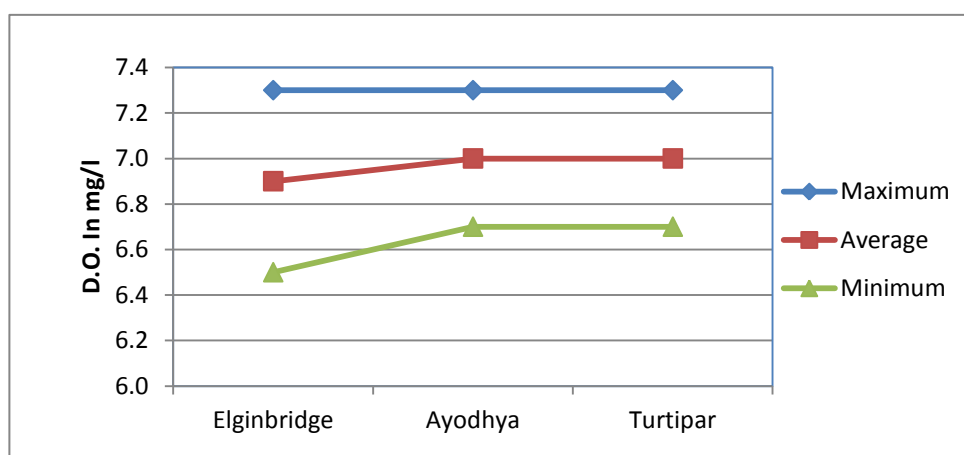
### Parameter : DO since inception



### Parameter : DO 10 Year



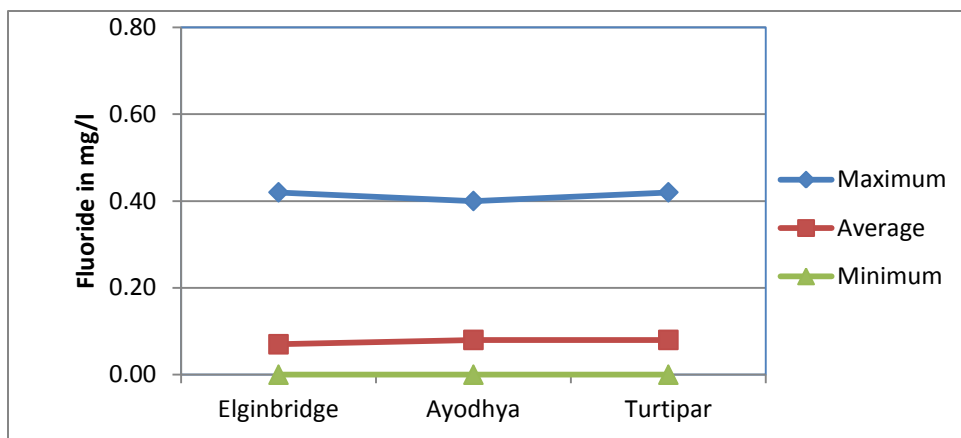
### Parameter : DO One Year



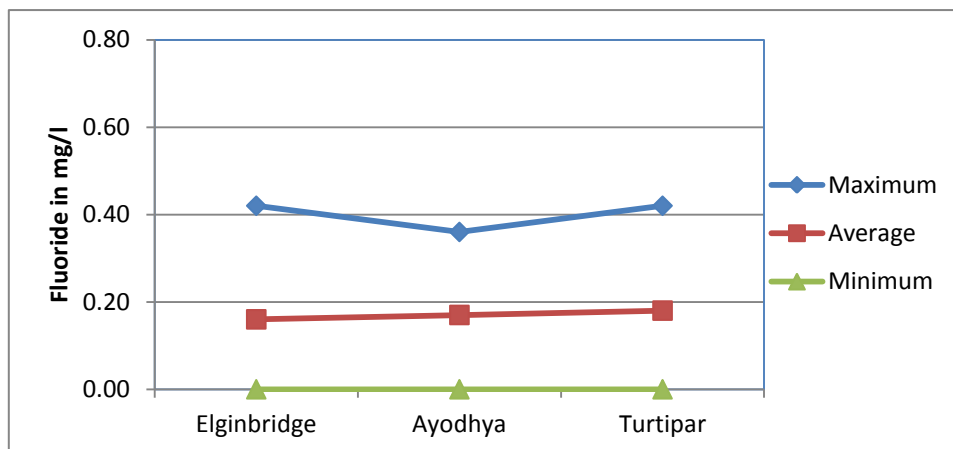
## 4.1.3 Fluoride in mg/l

| Site Name<br>(From U/S<br>to D/S) | Inception<br>Date | Avg. of Yearly<br>Maximum |            |             | Avg. of Yearly<br>Minimum |            |             | Annual Average     |            |             |
|-----------------------------------|-------------------|---------------------------|------------|-------------|---------------------------|------------|-------------|--------------------|------------|-------------|
|                                   |                   | Since<br>inception        | 10<br>year | One<br>year | Since<br>inception        | 10<br>year | One<br>year | Since<br>inception | 10<br>year | One<br>year |
| <b>Site 1</b><br>Elginbridge      | 15.03.1969        | 0.42                      | 0.42       | 0.32        | 0.00                      | 0.00       | 0.23        | 0.07               | 0.16       | 0.29        |
| <b>Site 2</b><br>Ayodhya          | 01.07.1983        | 0.40                      | 0.36       | 0.36        | 0.00                      | 0.00       | 0.25        | 0.08               | 0.17       | 0.30        |
| <b>Site 3</b><br>Turtipar         | 01.07.1983        | 0.42                      | 0.42       | 0.38        | 0.00                      | 0.00       | 0.25        | 0.08               | 0.18       | 0.30        |

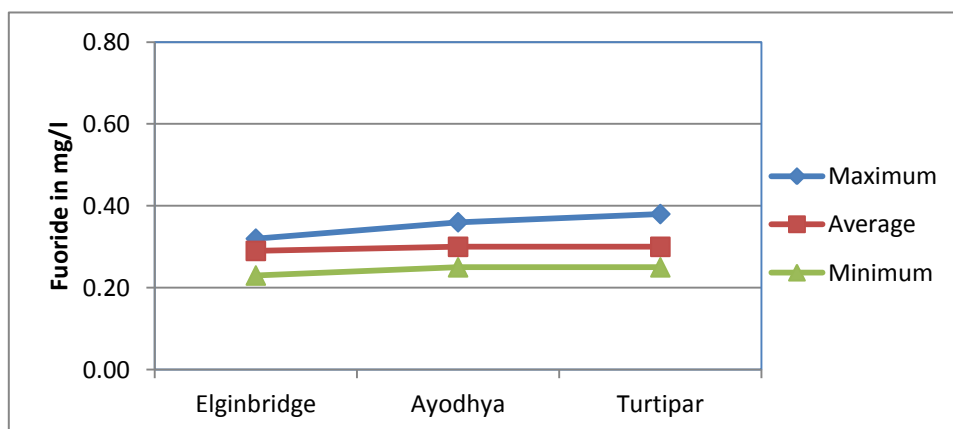
### Parameter : Fluoride since inception



### Parameter : Fluoride 10 Year



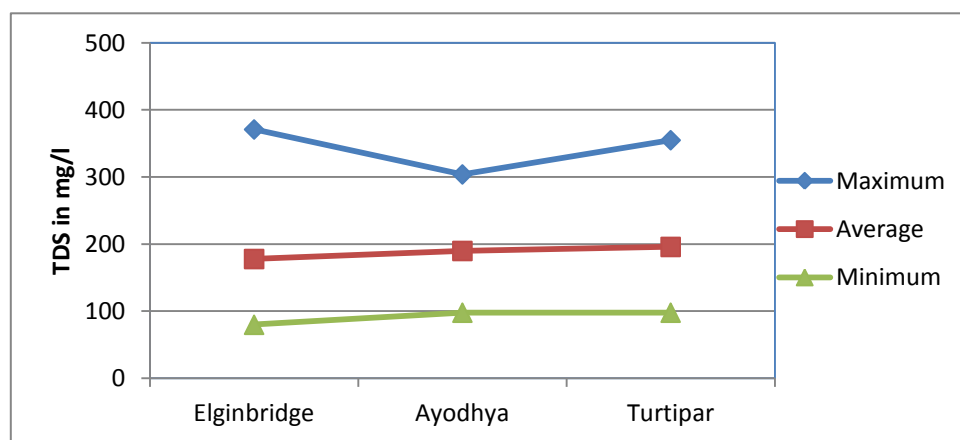
### Parameter : Fluoride One Year



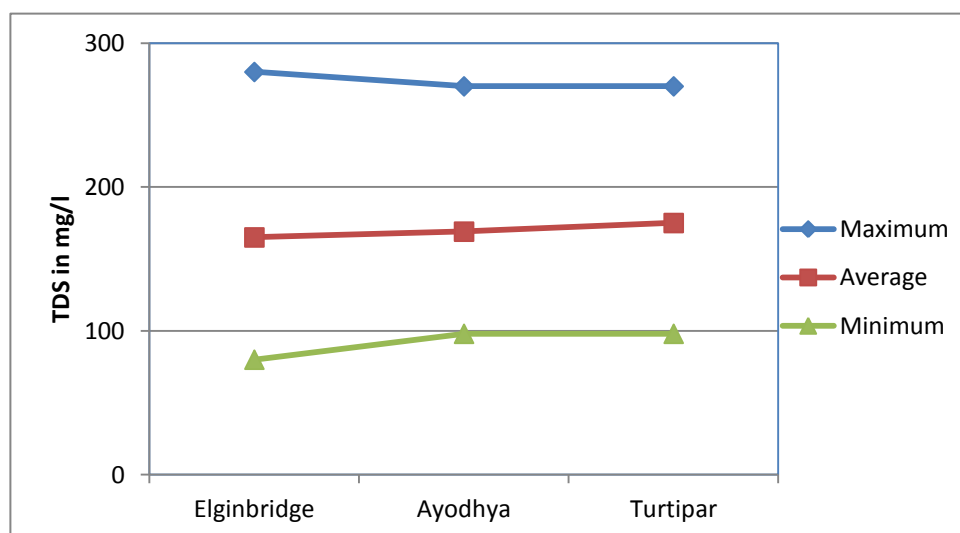
#### 4.1.4 TDS in mg/l

| Site Name<br>(From U/S<br>to D/S) | Inception<br>Date | Avg. of Yearly<br>Maximum |            |             | Avg. of Yearly<br>Minimum |            |             | Annual Average     |            |             |
|-----------------------------------|-------------------|---------------------------|------------|-------------|---------------------------|------------|-------------|--------------------|------------|-------------|
|                                   |                   | Since<br>inception        | 10<br>year | One<br>year | Since<br>inception        | 10<br>year | One<br>year | Since<br>inception | 10<br>year | One<br>year |
| <b>Site 1</b><br>Elginbridge      | 15.03.1969        | 371                       | 280        | 192         | 80                        | 80         | 103         | 178                | 165        | 165         |
| <b>Site 2</b><br>Ayodhya          | 01.07.1983        | 304                       | 270        | 201         | 98                        | 98         | 118         | 190                | 169        | 167         |
| <b>Site 3</b><br>Turtipar         | 01.07.1983        | 355                       | 270        | 200         | 98                        | 98         | 124         | 196                | 175        | 173         |

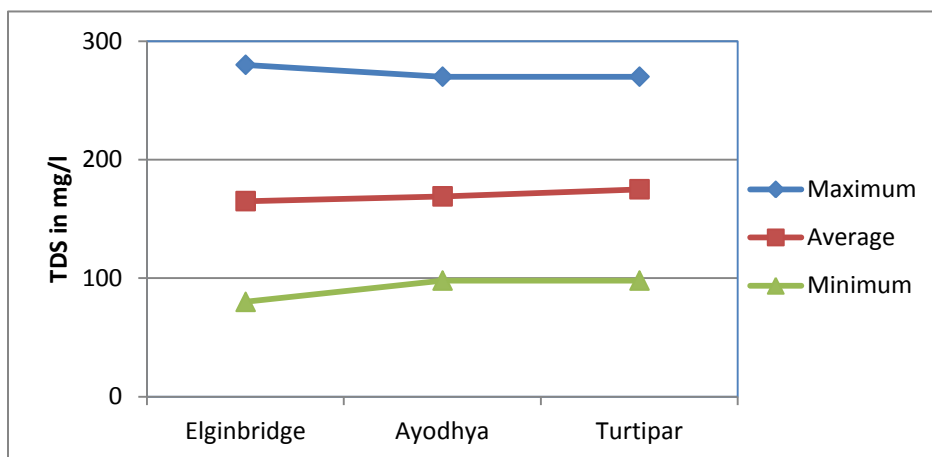
**Parameter : TDS since inception**



**Parameter : TDS 10 year**



### Parameter : TDS One year



**4.2 River : RAPTI (River 2) :** The Rapti's headwaters descent south from rugged highlands populated by Kham Magar. The western tributary Madi Khola rises in northwestern Rolpa and is joined by Lungri Khola draining northeastern Rolpa. The Mardi then crosses into Pyuthan. It is joined by east-flowing Arun Khola at Devithan where it enters a gorge through the Mahabharat Range. Jhimruk Khola east of the Mardi mainly drains Pyuthan. Below the upper highlands, an alluvial valley opens where Bahun and Chhetri rice farmers irrigate paddy fields. At Cherneta, Pyuthan the Jhimruk approaches within 1.5 km of the Mardi. Below Cherneta the Jhimruk loop east, becoming the border between Pyuthan and Arghakhanchi district. Its valley narrows and steepens as it enters the Mahabharat Range. Partway through it joins the Mardi and the combined flow is then named the Rapti.

**The Rapti flows to the north of Behraich district. After traversing about 130 km, it enters to the northern portion of the Gonda district. River Rapti is important left bank tributary of river Ghaghra.**

At present water quality is being monitored at four stations namely Balrampur, Bansi, Regauli and Birdghat on this river.

## W.Q. Network :

| S.No. | Name of Site | River | Class |
|-------|--------------|-------|-------|
| 1     | Balrampur    | Rapti | Trend |
| 2     | Bansi *      | Rapti | Trend |
| 3     | Regauli      | Rapti | Trend |
| 4.    | Birdghat     | Rapti | Flux  |

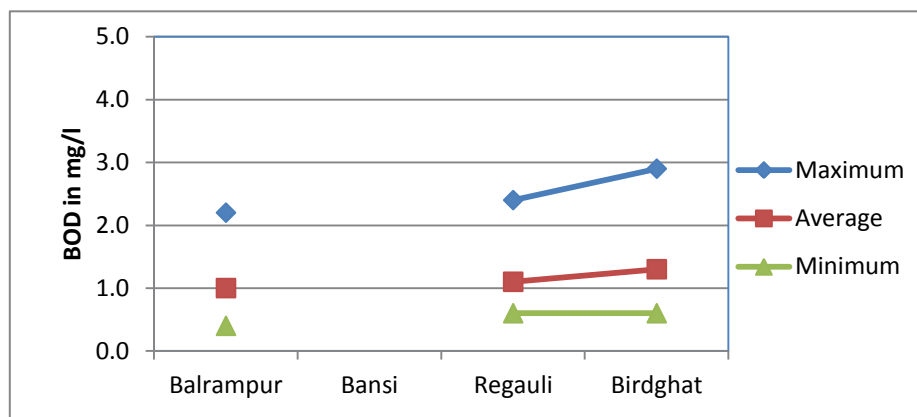
\*Bansi site opened on 01/07/2014.

### 4.2.1 BOD in mg/l

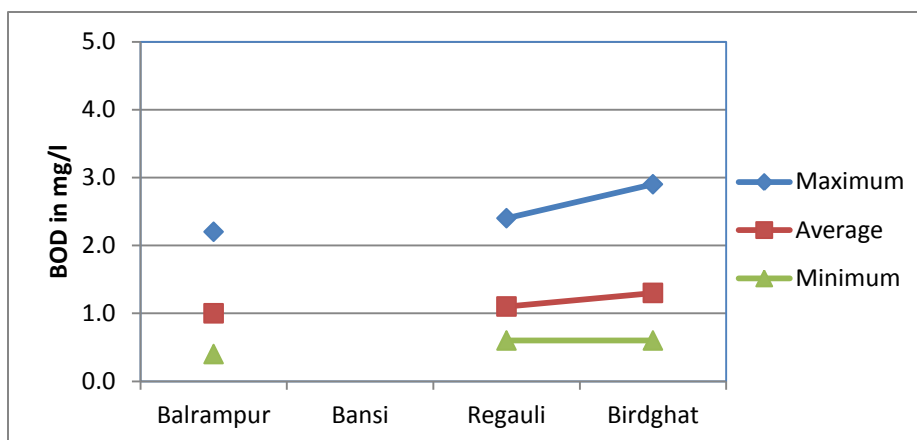
| Site Name<br>(From U/S<br>to D/S) | Inception<br>Date | Avg. of Yearly<br>Maximum |            |             | Avg. of Yearly<br>Minimum |            |             | Annual Average     |            |             |
|-----------------------------------|-------------------|---------------------------|------------|-------------|---------------------------|------------|-------------|--------------------|------------|-------------|
|                                   |                   | Since<br>inception        | 10<br>year | One<br>year | Since<br>inception        | 10<br>year | One<br>year | Since<br>inception | 10<br>year | One<br>year |
| <b>Site 1</b><br>Balrampur        | 01.11.1980        | 2.2                       | 2.2        | 1.6         | 0.4                       | 0.4        | 1.0         | 1.0                | 1.0        | 1.3         |
| <b>Site 2</b><br>Bansi*           | 01.07.2014        | -                         | -          | 1.8         | -                         | -          | 1.2         | -                  | -          | 1.4         |
| <b>Site 3</b><br>Regauli          | 01.11.1980        | 2.4                       | 2.4        | 2.4         | 0.6                       | 0.6        | 1.2         | 1.1                | 1.1        | 1.7         |
| <b>Site 4</b><br>Birdghat         | 01.11.1980        | 2.9                       | 2.9        | 2.9         | 0.6                       | 0.6        | 1.4         | 1.3                | 1.3        | 1.9         |

\*Bansi site opened on 01/07/2014.

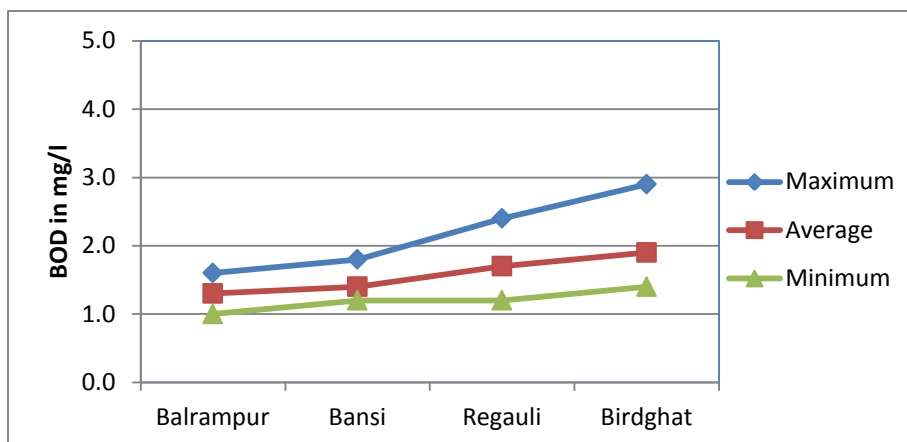
### Parameter : BOD since inception



### Parameter : BOD 10 year



### Parameter : BOD One year

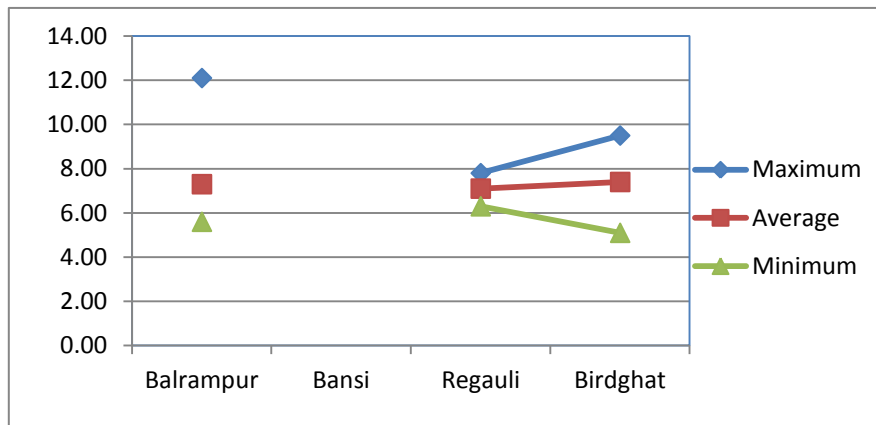


### 4.2.2 DO in mg/l

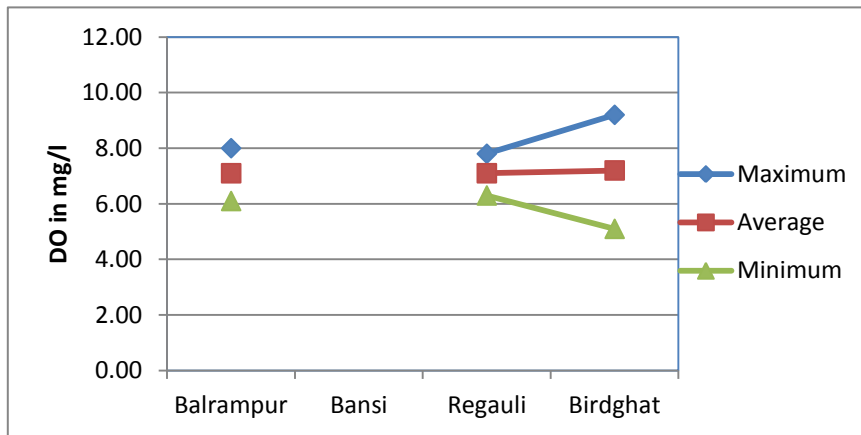
| Site Name<br>(From<br>U/S to<br>D/S) | Inception<br>Date | Avg. of Yearly<br>Maximum |            |             | Avg. of Yearly<br>Minimum |            |             | Annual Average     |            |             |
|--------------------------------------|-------------------|---------------------------|------------|-------------|---------------------------|------------|-------------|--------------------|------------|-------------|
|                                      |                   | Since<br>inception        | 10<br>year | One<br>year | Since<br>inception        | 10<br>year | One<br>year | Since<br>inception | 10<br>year | One<br>year |
| Site 1<br>Balrampur                  | 01.11.1980        | 12.1                      | 8.0        | 7.5         | 5.6                       | 6.1        | 6.7         | 7.3                | 7.1        | 7.0         |
| Site 2<br>Bansi*                     | 01.07.2014        | -                         | -          | 7.3         | -                         | -          | 6.5         | -                  | -          | 6.9         |
| Site 3<br>Regauli                    | 01.11.1980        | 7.8                       | 7.8        | 7.1         | 6.3                       | 6.3        | 6.5         | 7.1                | 7.1        | 6.7         |
| Site 4<br>Birdghat                   | 01.11.1980        | 9.5                       | 9.2        | 6.9         | 5.1                       | 5.1        | 6.1         | 7.4                | 7.2        | 6.6         |

\*Bansi site opened on 01/07/2014.

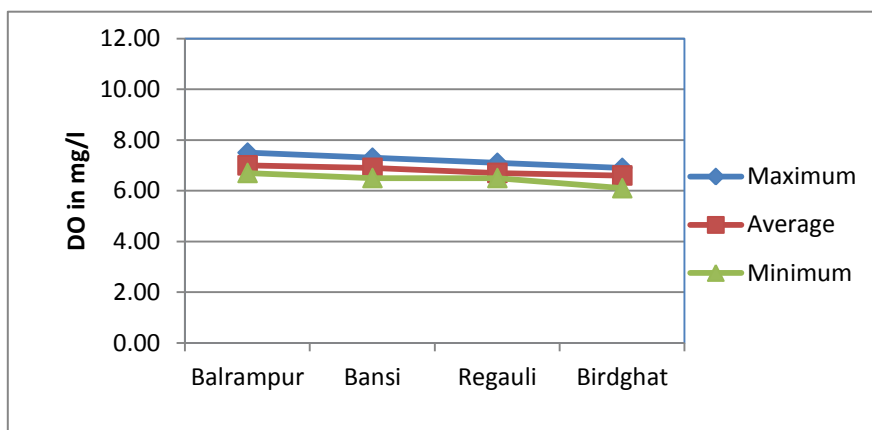
### Parameter : DO since inception



### Parameter : DO 10 Year



### Parameter : DO One Year

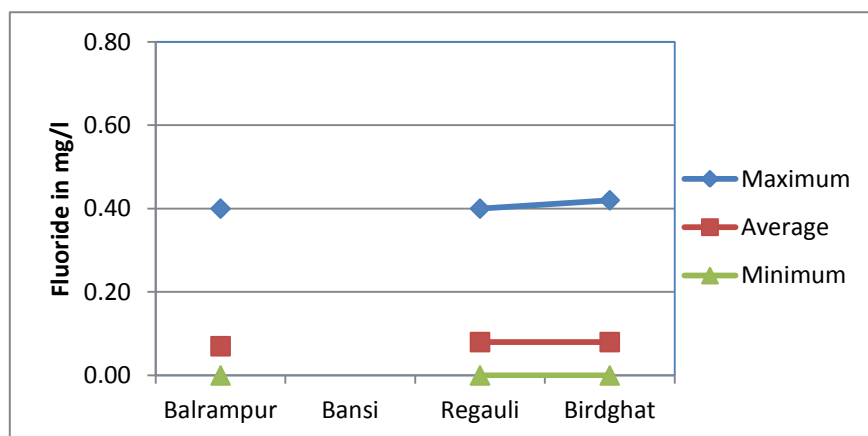


### 4.2.3 Fluoride in mg/l

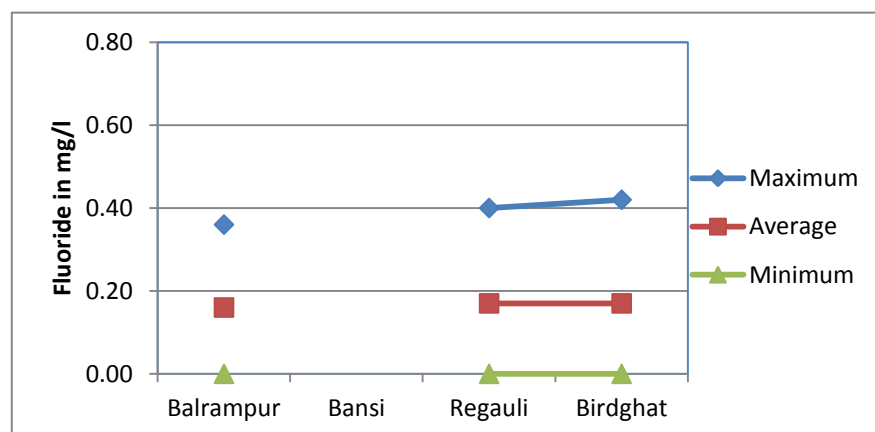
| Site Name<br>(From<br>U/S to<br>D/S) | Inception<br>Date | Avg. of Yearly<br>Maximum |            |             | Avg. of Yearly<br>Minimum |            |             | Annual Average     |            |             |
|--------------------------------------|-------------------|---------------------------|------------|-------------|---------------------------|------------|-------------|--------------------|------------|-------------|
|                                      |                   | Since<br>inception        | 10<br>year | One<br>year | Since<br>inception        | 10<br>year | One<br>year | Since<br>inception | 10<br>year | One<br>year |
| <b>Site 1</b><br>Balrampur           | 01.11.1980        | 0.40                      | 0.36       | 0.36        | 0.00                      | 0.00       | 0.27        | 0.07               | 0.16       | 0.30        |
| <b>Site 2</b><br>Bansi*              | 01.07.2014        | -                         | -          | 0.36        | -                         | -          | 0.27        | -                  | -          | 0.30        |
| <b>Site 3</b><br>Regauli             | 01.11.1980        | 0.40                      | 0.40       | 0.38        | 0.00                      | 0.00       | 0.27        | 0.08               | 0.17       | 0.31        |
| <b>Site 4</b><br>Birdghat            | 01.11.1980        | 0.42                      | 0.42       | 0.38        | 0.00                      | 0.00       | 0.27        | 0.08               | 0.17       | 0.31        |

\*Bansi site opened on 01/07/2014.

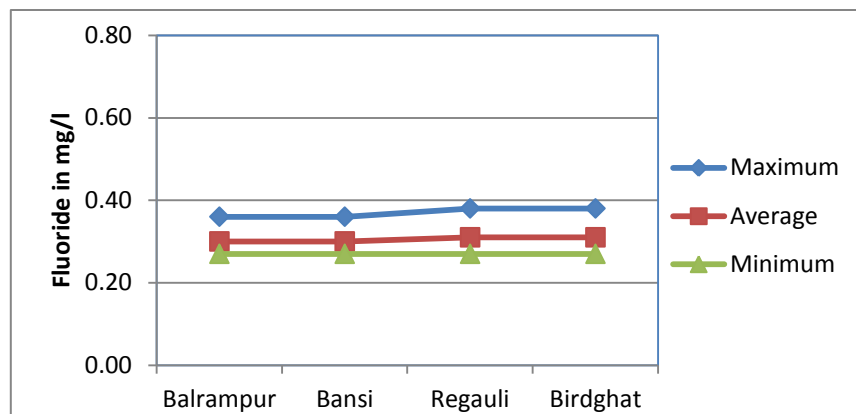
#### Parameter : Fluoride since inception



#### Parameter : Fluoride 10 Year



### Parameter : Fluoride One Year

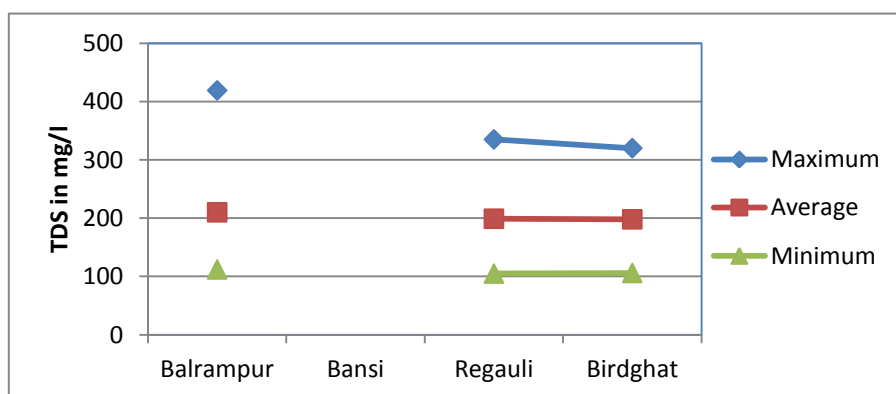


### 4.2.4 TDS in mg/l

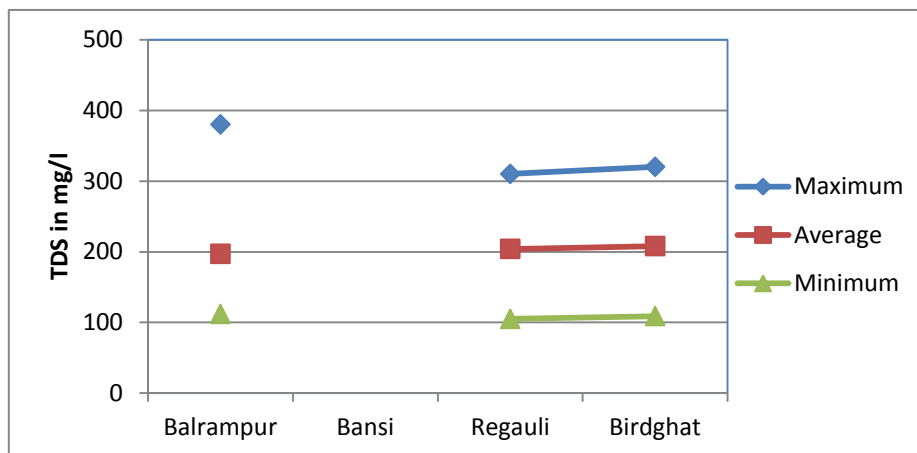
| Site Name<br>(From<br>U/S to<br>D/S) | Inception<br>Date | Avg. of Yearly<br>Maximum |            |             | Avg. of Yearly<br>Minimum |            |             | Annual Average     |            |             |
|--------------------------------------|-------------------|---------------------------|------------|-------------|---------------------------|------------|-------------|--------------------|------------|-------------|
|                                      |                   | Since<br>inception        | 10<br>year | One<br>year | Since<br>inception        | 10<br>year | One<br>year | Since<br>inception | 10<br>year | One<br>year |
| Site 1<br>Balrampur                  | 01.11.1980        | 419                       | 380        | 193         | 112                       | 112        | 156         | 210                | 197        | 176         |
| Site 2<br>Bansi*                     | 01.07.2014        | -                         | -          | 210         | -                         | -          | 132         | -                  | -          | 172         |
| Site 3<br>Regauli                    | 01.11.1980        | 335                       | 310        | 240         | 105                       | 105        | 141         | 199                | 204        | 193         |
| Site 4<br>Birdghat                   | 01.11.1980        | 320                       | 320        | 280         | 106                       | 109        | 145         | 198                | 208        | 206         |

\*Bansi site opened on 01/07/2014.

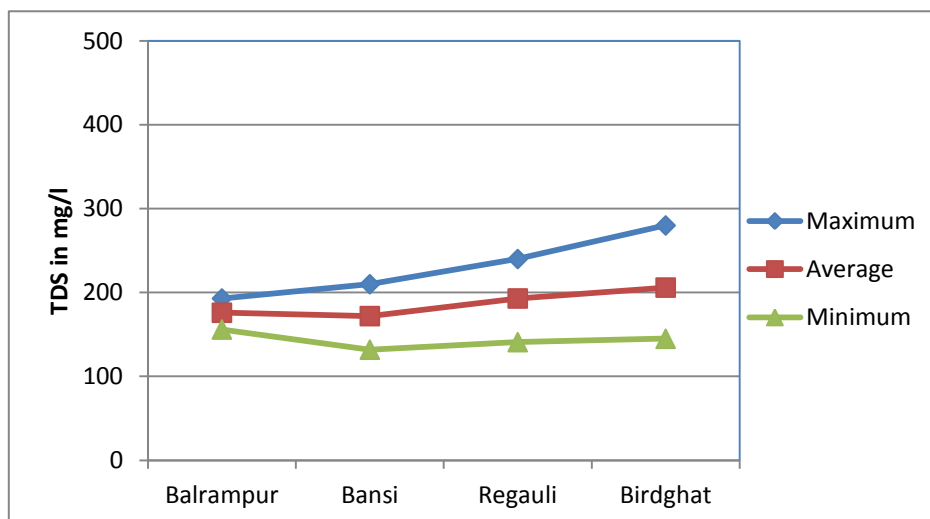
### Parameter : TDS since inception



### Parameter : TDS 10 year



### Parameter : TDS One year



**4.3 River : SHARDA (River 3) :** The river Sharda is known as river Maha Kali in origin. The traditional source of the Maha Kali is Lipmipiya Dhura in Pithoragarh district Uttarakhand. The geographic sources, however, are some five kms further north and some thousand meters higher streams emerging from glacier along the watershed. India's border with China's Tibet Autonomous Region follows this watershed. The Kali receives the right bank Dhauliganga. It passes a town Dharchula and receives the Gori Ganga at Jauljibi, exiting the high mountains that reach into alpine zone. The first important left bank tributary from Nepal, the Chameliya joins after flowing southwest from Nepal's Gurans Himal. A bazaar town Jhulaghat is on both sides of the river. Then the Kali receives the Sarju river.

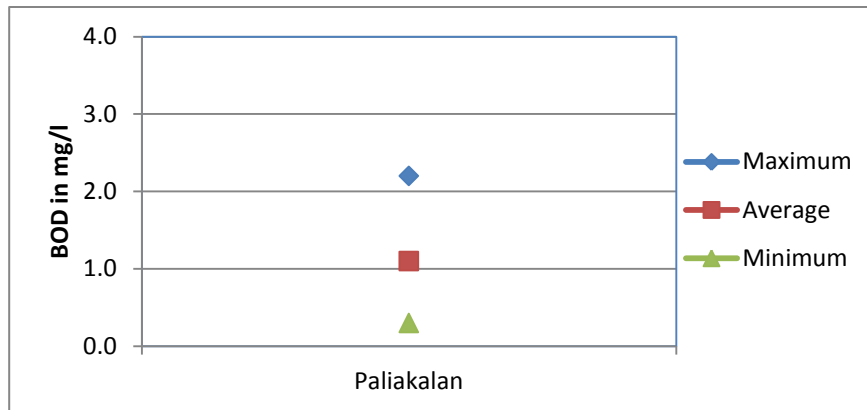
The Kali exits hill region at Jogbudha Valley and receives two tributaries Ladhiya and Ramgun, then it enters the lower Siwalik hills. Tanakpur town is just above dam of Sharda Reservoir where water is diverted into an irrigation canal. The river exit the last hills into the Terai plains, passing town Banbasa and Mahendranagar. The international boder then turns west of the river to follow a previous channel for some 10 km. here the river leaves Uttarakhand and crosses into Uttar Pradesh. Now the river's name changes to Sharda.

**W.Q. Network :**Water quality is being monitored on river Sharda at Paliakalan only.

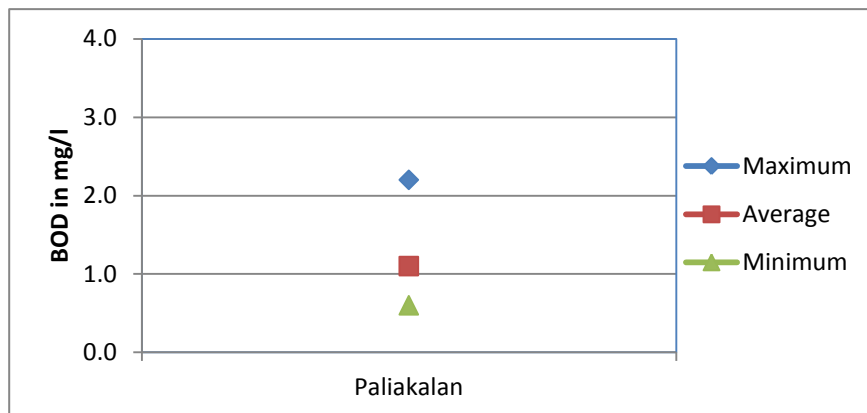
#### 4.3.1 BOD in mg/l

| Site Name<br>(From U/S<br>to D/S) | Inception<br>Date | Avg. of Yearly<br>Maximum |            |             | Avg. of Yearly<br>Minimum |            |             | Annual Average     |            |             |
|-----------------------------------|-------------------|---------------------------|------------|-------------|---------------------------|------------|-------------|--------------------|------------|-------------|
|                                   |                   | Since<br>inception        | 10<br>year | One<br>year | Since<br>inception        | 10<br>year | One<br>year | Since<br>inception | 10<br>year | One<br>year |
| Site 1<br>Paliakalan              | 01.01.1969        | 2.2                       | 2.2        | 1.8         | 0.3                       | 0.6        | 1.1         | 1.1                | 1.1        | 1.5         |

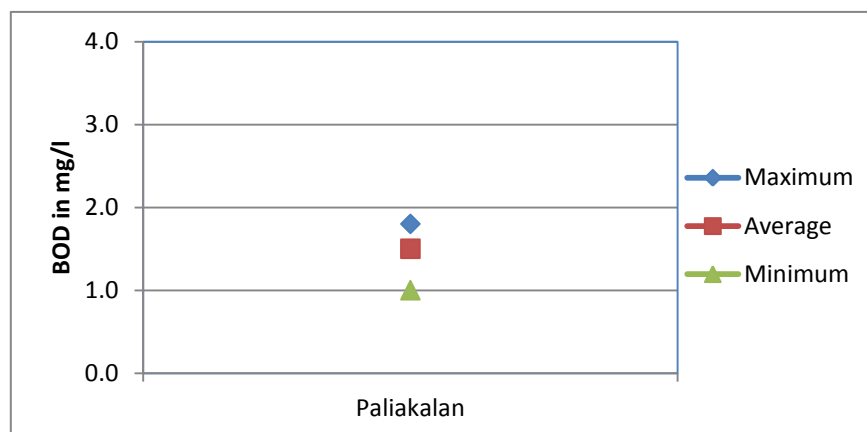
### Parameter : BOD since inception



### Parameter : BOD 10 year



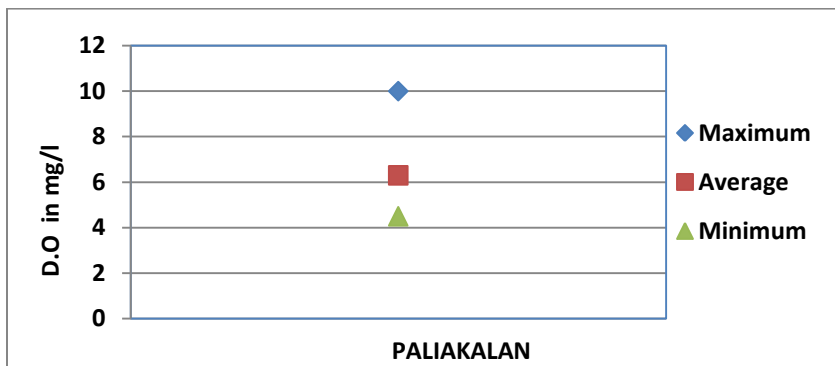
### Parameter : BOD One year



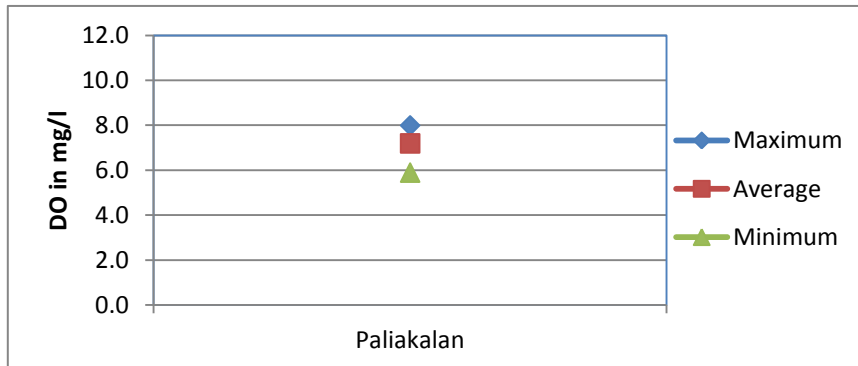
### 4.3.2 DO in mg/l

| Site Name<br>(From<br>U/S to<br>D/S) | Inception<br>Date | Avg. of Yearly<br>Maximum  |            |             | Avg. of Yearly<br>Minimum  |            |             | Annual Average             |            |             |
|--------------------------------------|-------------------|----------------------------|------------|-------------|----------------------------|------------|-------------|----------------------------|------------|-------------|
|                                      |                   | Since<br>inception<br>from | 10<br>year | One<br>year | Since<br>inception<br>from | 10<br>year | One<br>year | Since<br>inception<br>from | 10<br>year | One<br>year |
| Site 1<br>Paliakalan                 | 01.01.1969        | 10.0                       | 8.0        | 7.1         | 4.5                        | 5.9        | 6.3         | 7.3                        | 7.2        | 6.8         |

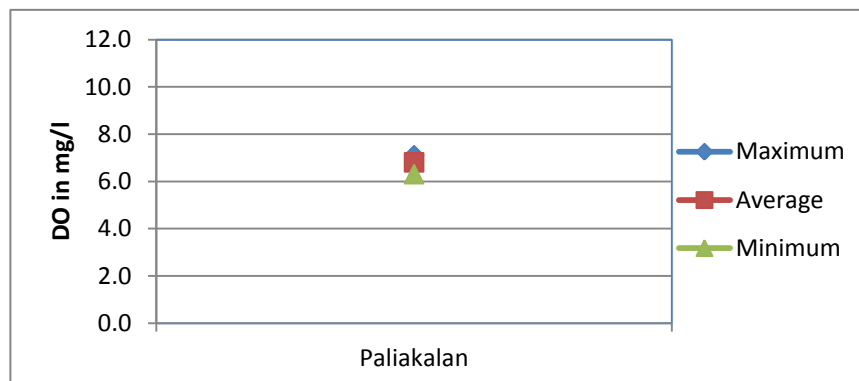
**Parameter : DO since inception**



**Parameter : DO 10 Year**



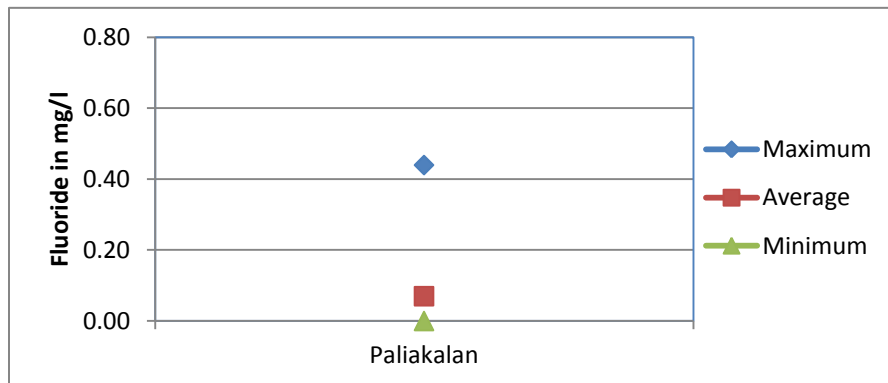
**Parameter : DO One Year**



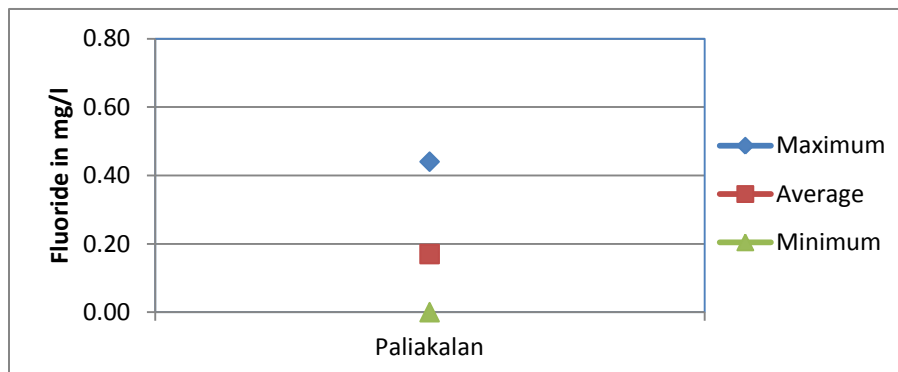
### 4.3.3 Fluoride in mg/l

| Site Name<br>(From U/S<br>to D/S) | Inception<br>Date | Avg. of Yearly<br>Maximum |            |             | Avg. of Yearly<br>Minimum |            |             | Annual Average     |            |             |
|-----------------------------------|-------------------|---------------------------|------------|-------------|---------------------------|------------|-------------|--------------------|------------|-------------|
|                                   |                   | Since<br>inception        | 10<br>year | One<br>year | Since<br>inception        | 10<br>year | One<br>year | Since<br>inception | 10<br>year | One<br>year |
| Site 1<br>Paliakalan              | 01.01.1969        | 0.44                      | 0.44       | 0.36        | 0.00                      | 0.00       | 0.25        | 0.07               | 0.17       | 0.30        |

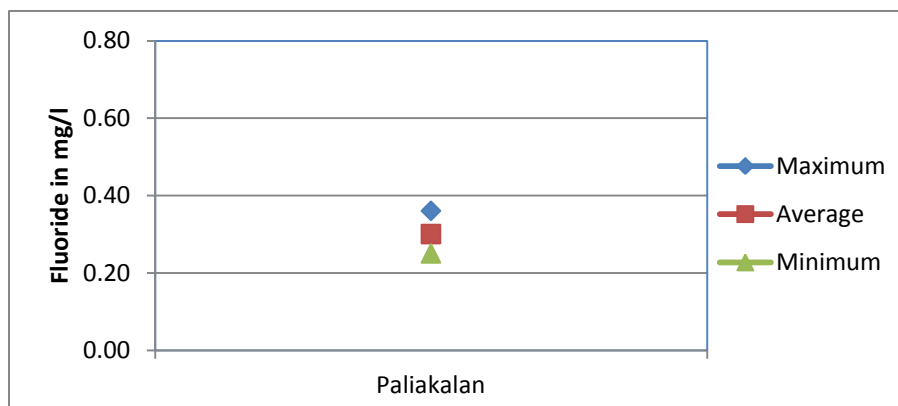
**Parameter : Fluoride since inception**



**Parameter : Fluoride 10 Year**



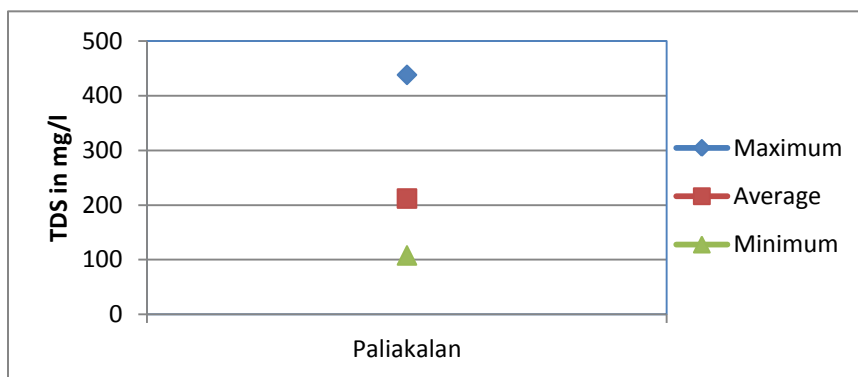
**Parameter : Fluoride One Year**



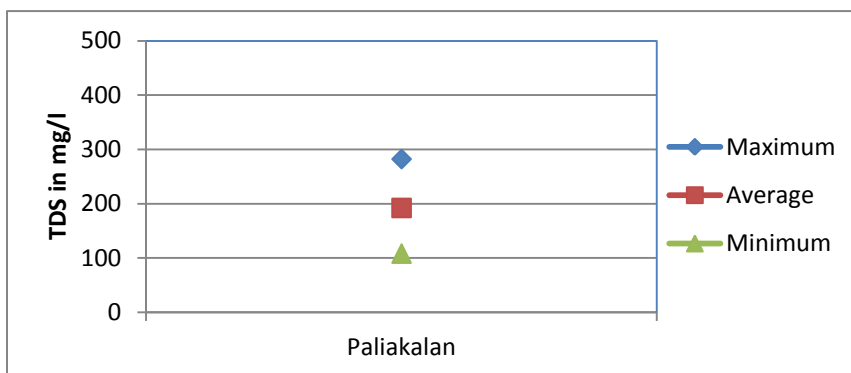
#### 4.3.4 TDS in mg/l

| Site Name<br>(From U/S<br>to D/S) | Inception<br>Date | Avg. of Yearly<br>Maximum |            |             | Avg. of Yearly<br>Minimum |            |             | Annual Average     |            |             |
|-----------------------------------|-------------------|---------------------------|------------|-------------|---------------------------|------------|-------------|--------------------|------------|-------------|
|                                   |                   | Since<br>inception        | 10<br>year | One<br>year | Since<br>inception        | 10<br>year | One<br>year | Since<br>inception | 10<br>year | One<br>year |
| Site 1<br>Paliakalan              | 01.01.1969        | 438                       | 282        | 270         | 108                       | 108        | 130         | 212                | 192        | 190         |

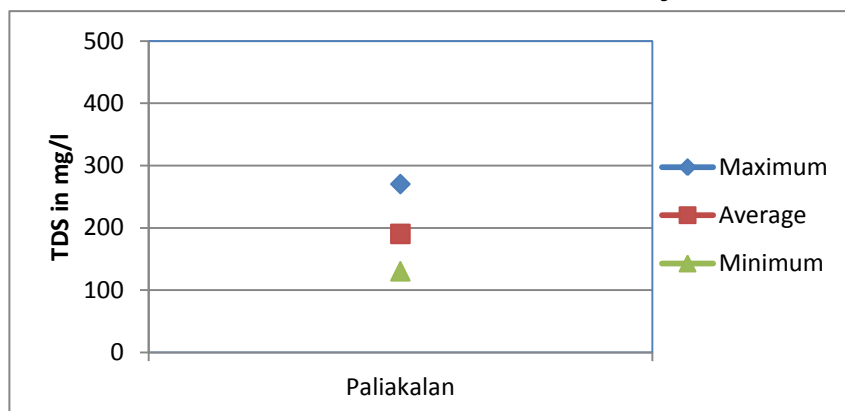
**Parameter : TDS since inception**



**Parameter : TDS 10 year**



**Parameter : TDS one year**



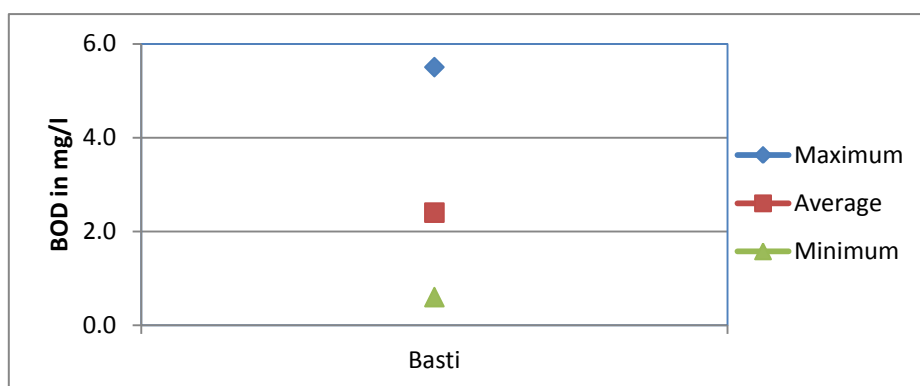
**4.4 River : Kwano (River 4)** : The river Kwano is a rain fed river and originates from Kwano hills in the district Bahraich of Uttar Pradesh. It passes through Gonda, Basti and Sant Kabir Nagar district. It joins Ghaghra near the place Raunapur in the midway of the boundary of districts Azamgarh and Sant Kabir Nagar.

**W.Q. Network** :Water quality is being monitored on river Kwano at Basti.

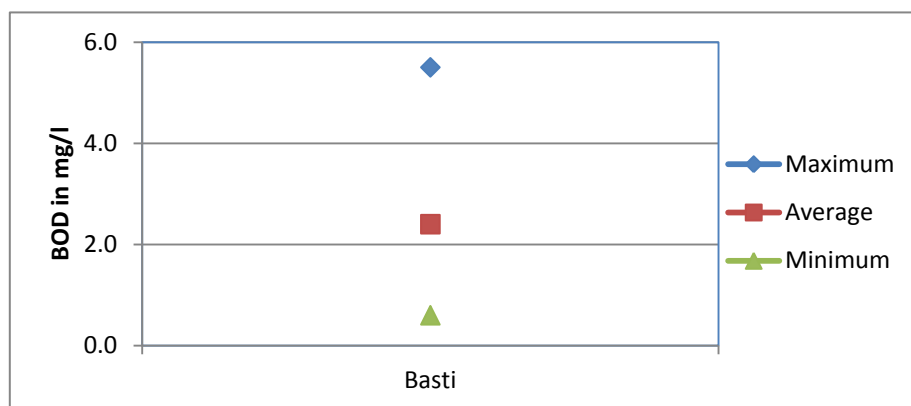
#### 4.4.1 BOD in mg/l

| Site Name<br>(From U/S to D/S) | Inception Date | Avg. of Yearly Maximum |         |          | Avg. of Yearly Minimum |         |          | Annual Average  |         |          |
|--------------------------------|----------------|------------------------|---------|----------|------------------------|---------|----------|-----------------|---------|----------|
|                                |                | Since inception        | 10 year | One year | Since inception        | 10 year | One year | Since inception | 10 year | One year |
| Site 1<br>Basti                | 01.11.1980     | 5.5                    | 5.5     | 5.5      | 0.6                    | 0.6     | 2.4      | 2.4             | 2.4     | 3.5      |

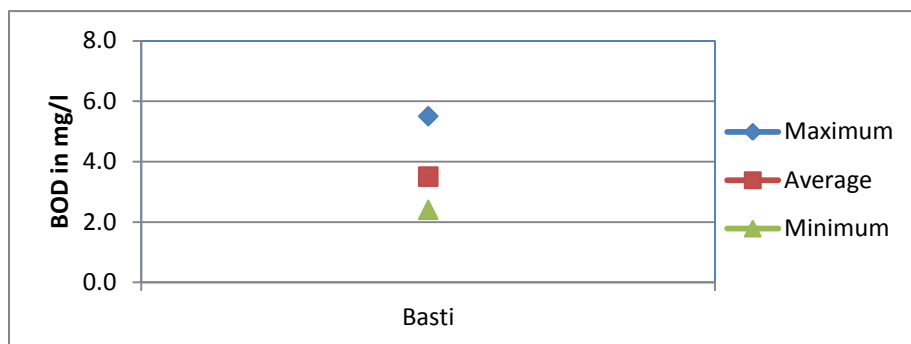
#### Parameter : BOD since inception



#### Parameter : BOD 10 year



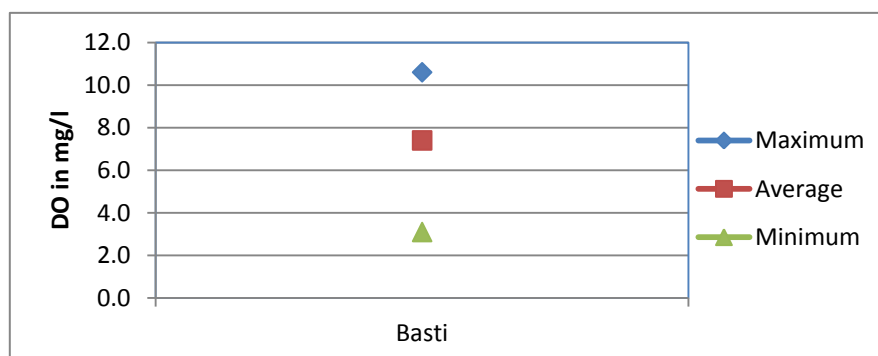
### Parameter : BOD One year



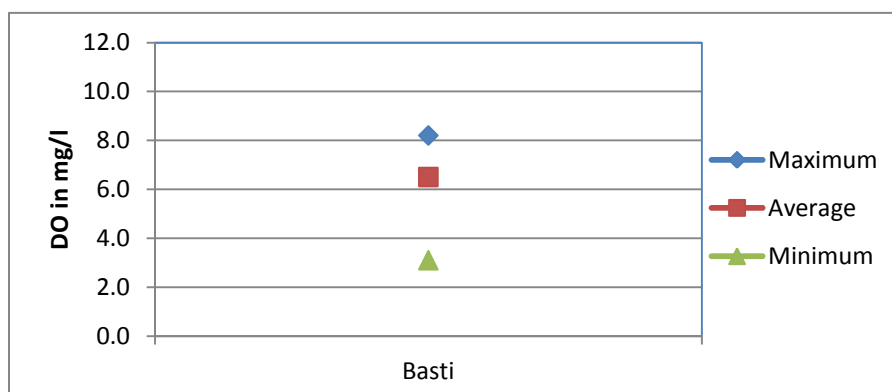
### 4.4.2 DO in mg/l

| Site Name<br>(From U/S to D/S) | Inception Date | Avg. of Yearly Maximum |         |          | Avg. of Yearly Minimum |         |          | Annual Average  |         |          |
|--------------------------------|----------------|------------------------|---------|----------|------------------------|---------|----------|-----------------|---------|----------|
|                                |                | Since inception        | 10 year | One year | Since inception        | 10 year | One year | Since inception | 10 year | One year |
| Site 1                         | 01.11.1980     | 10.6                   | 8.2     | 6.5      | 3.1                    | 3.1     | 3.9      | 7.4             | 6.5     | 5.4      |
| Basti                          |                |                        |         |          |                        |         |          |                 |         |          |

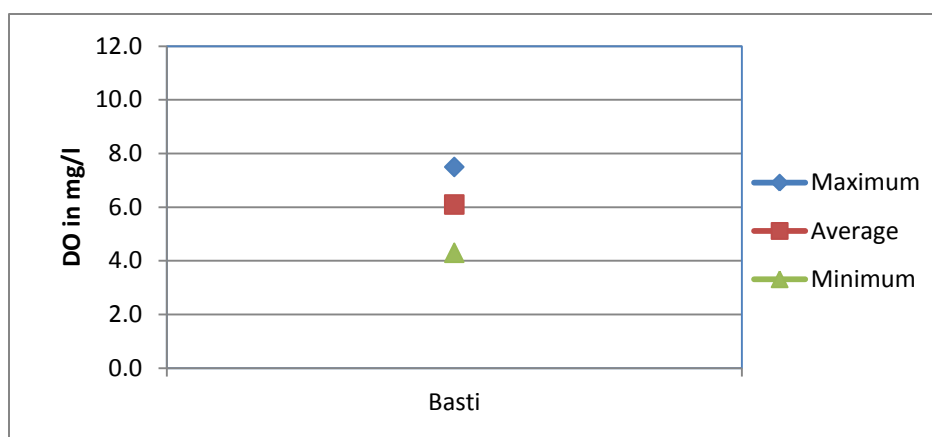
### Parameter : DO since inception



### Parameter : DO 10 Year



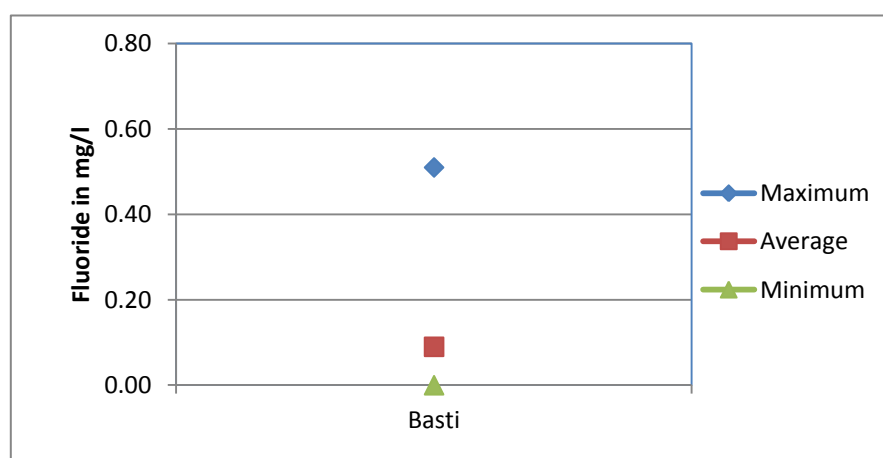
### Parameter : DO One Year



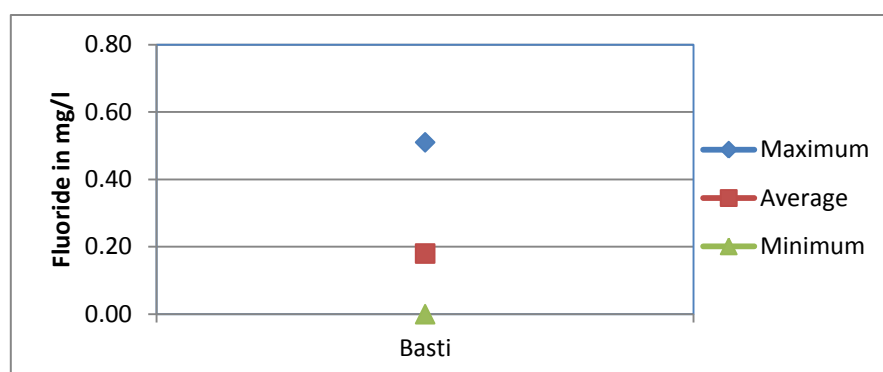
### 4.4.3 Fluoride in mg/l

| Site Name<br>(From U/S to D/S) | Inception Date | Avg. of Yearly Maximum |         |          | Avg. of Yearly Minimum |         |          | Annual Average  |         |          |
|--------------------------------|----------------|------------------------|---------|----------|------------------------|---------|----------|-----------------|---------|----------|
|                                |                | Since inception        | 10 year | One year | Since inception        | 10 year | One year | Since inception | 10 year | One year |
| Site 1<br>Basti                | 01.11.1980     | 0.51                   | 0.51    | 0.40     | 0.00                   | 0.00    | 0.29     | 0.09            | 0.18    | 0.33     |

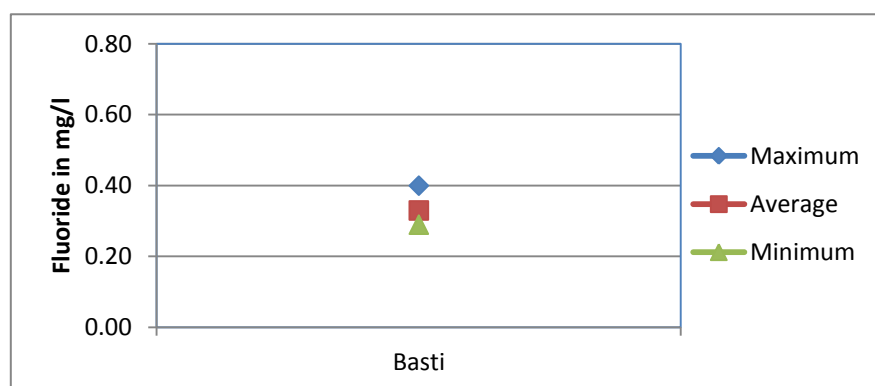
### Parameter : Fluoride since inception



### Parameter : Fluoride 10 Year



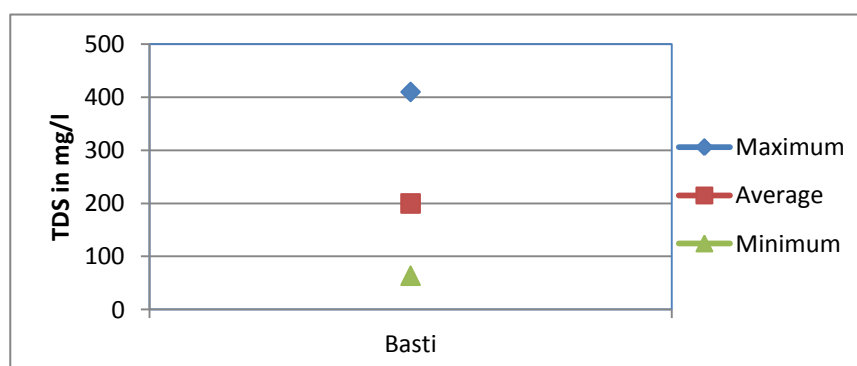
### Parameter : Fluoride One Year



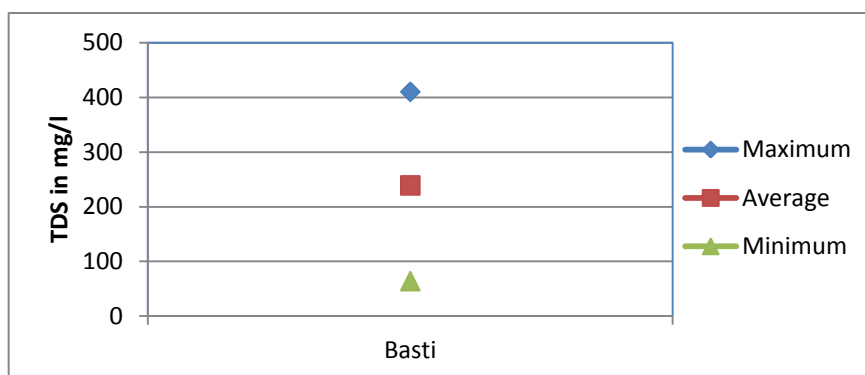
### 4.4.4 TDS in mg/l

| Site Name<br>(From U/S to D/S) | Inception Date | Avg. of Yearly Maximum |         |          | Avg. of Yearly Minimum |         |          | Annual Average  |         |          |
|--------------------------------|----------------|------------------------|---------|----------|------------------------|---------|----------|-----------------|---------|----------|
|                                |                | Since inception        | 10 year | One year | Since inception        | 10 year | One year | Since inception | 10 year | One year |
| Site 1<br>Basti                | 01.11.1980     | 410                    | 410     | 280      | 64                     | 152     | 164      | 200             | 229     | 231      |

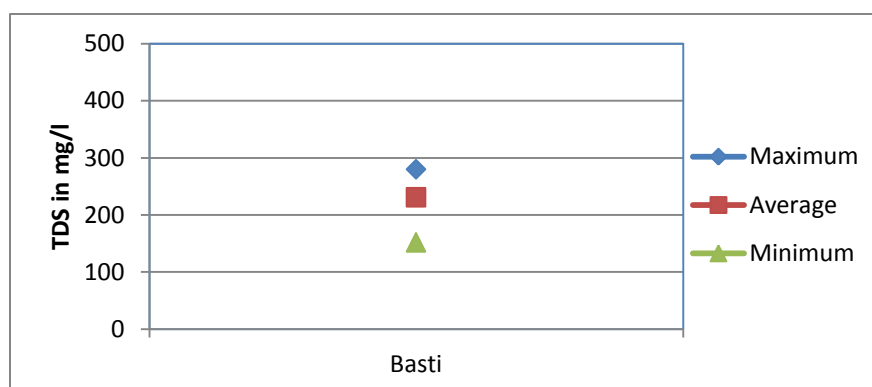
### Parameter : TDS since inception



### Parameter : TDS 10 year



### Parameter : TDS One year



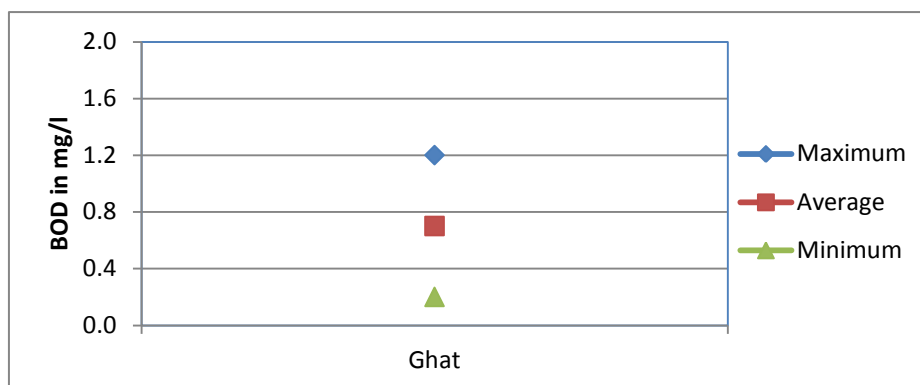
**4.5 River : Sarju (River 5) :** Originating from the extreme south of adjacent Almora district, the sarju makes south west boundary between Pithoragarh and Almora. Ramganga East river joins Sarju at Rameshwar near Ghat of Pithoragarh. Finally, at a point at Pancheswar, it joins Kali (Sharda) alongwith Panar river.

**W.Q. Network :** Water quality is being monitored on river Sarju at Ghat.

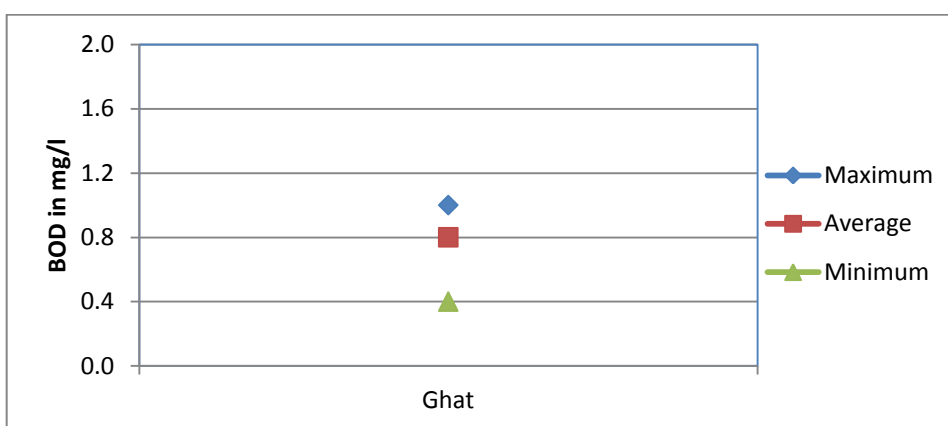
#### 4.5.1 BOD in mg/l

| Site Name<br>(From U/S to D/S) | Inception Date | Avg. of Yearly Maximum |         |          | Avg. of Yearly Minimum |         |          | Annual Average  |         |          |
|--------------------------------|----------------|------------------------|---------|----------|------------------------|---------|----------|-----------------|---------|----------|
|                                |                | Since inception        | 10 year | One year | Since inception        | 10 year | One year | Since inception | 10 year | One year |
| Site 1<br>Ghat                 | 01.06.2006     | -                      | 1.2     | 1.0      | -                      | 0.2     | 0.4      | -               | 0.7     | 0.8      |

### Parameter : BOD last 10 year



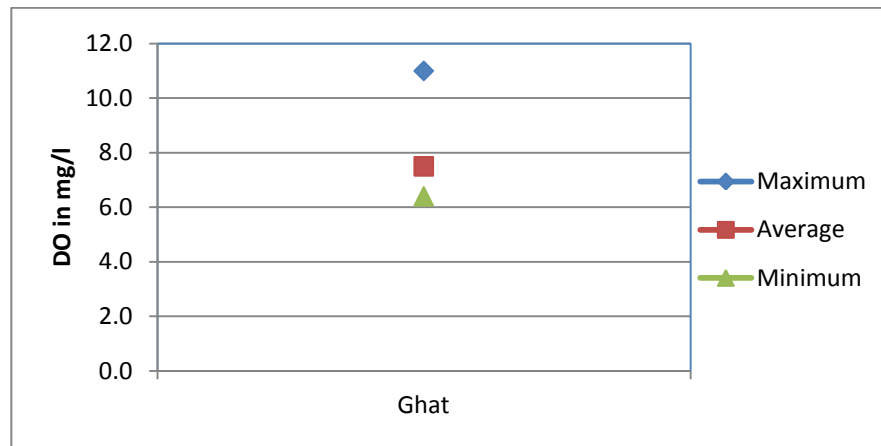
### Parameter : BOD One year



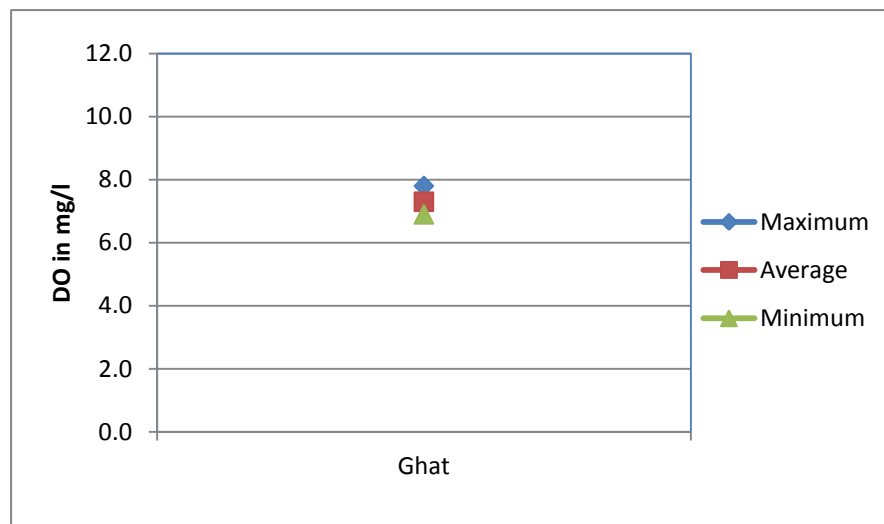
## 4.5.2 DO in mg/l

| Site Name<br>(From U/S to D/S) | Inception Date | Avg. of Yearly Maximum |         |          | Avg. of Yearly Minimum |         |          | Annual Average  |         |          |
|--------------------------------|----------------|------------------------|---------|----------|------------------------|---------|----------|-----------------|---------|----------|
|                                |                | Since inception        | 10 year | One year | Since inception        | 10 year | One year | Since inception | 10 year | One year |
| Site 1<br>Ghat                 | 01.06.2006     | -                      | 11.0    | 7.8      | -                      | 6.4     | 6.9      | -               | 7.5     | 7.3      |

### Parameter : DO 10 Year



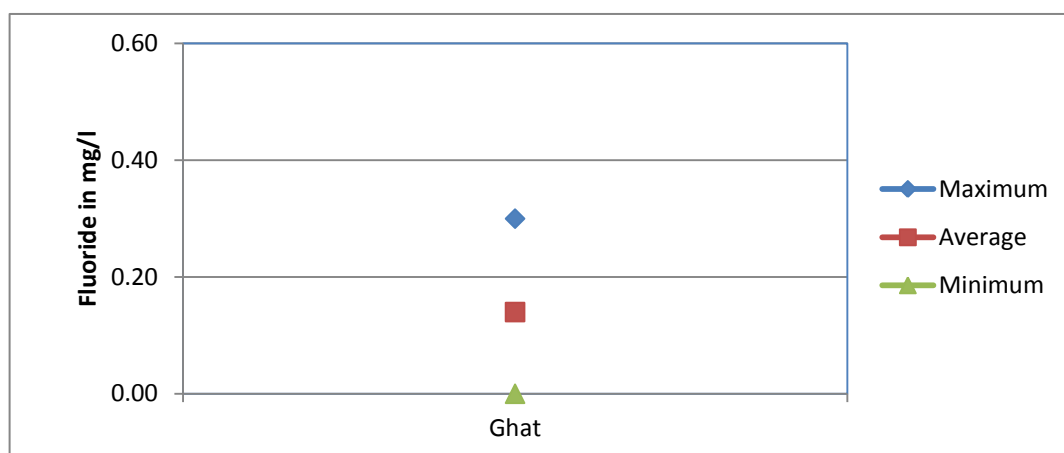
### Parameter : DO last one year



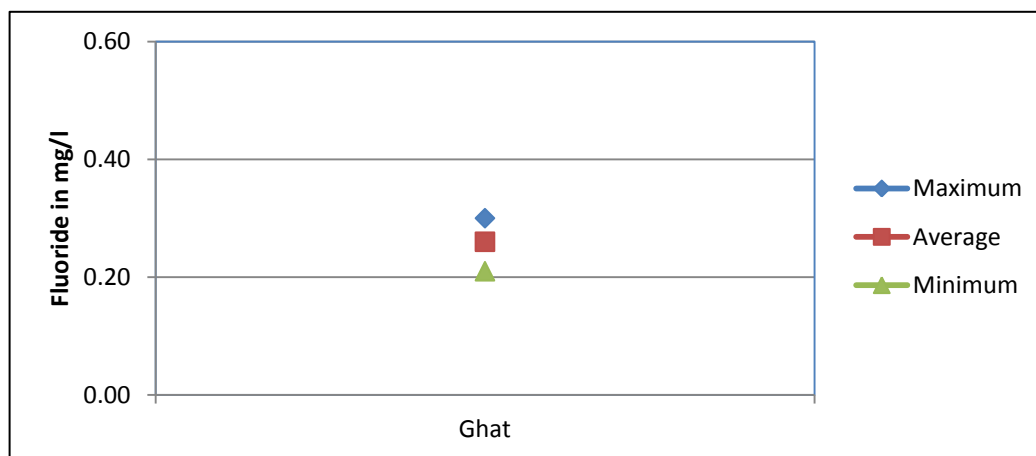
### 4.5.3 Fluoride in mg/l

| Site Name<br>(From U/S to D/S) | Inception Date | Avg. of Yearly Maximum |         |          | Avg. of Yearly Minimum |         |          | Annual Average  |         |          |
|--------------------------------|----------------|------------------------|---------|----------|------------------------|---------|----------|-----------------|---------|----------|
|                                |                | Since inception        | 10 year | One year | Since inception        | 10 year | One year | Since inception | 10 year | One year |
| Site 1<br>Ghat                 | 01.06.2006     | -                      | 0.30    | 0.30     | -                      | 0.00    | 0.21     | -               | 0.10    | 0.26     |

#### Parameter : Fluoride 10 year



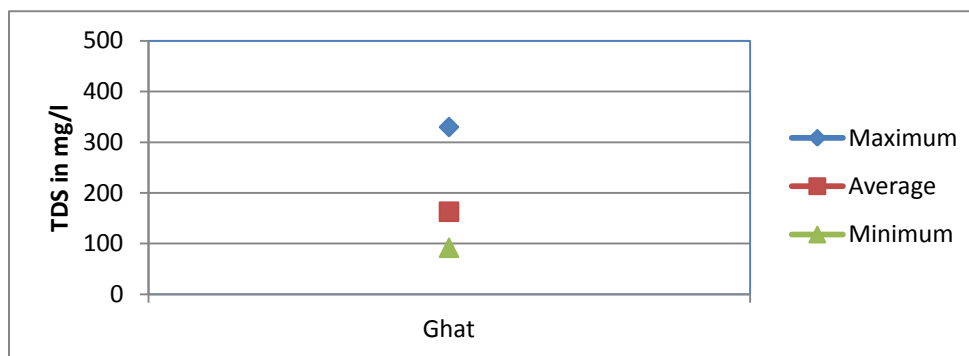
#### Parameter : Fluoride One year



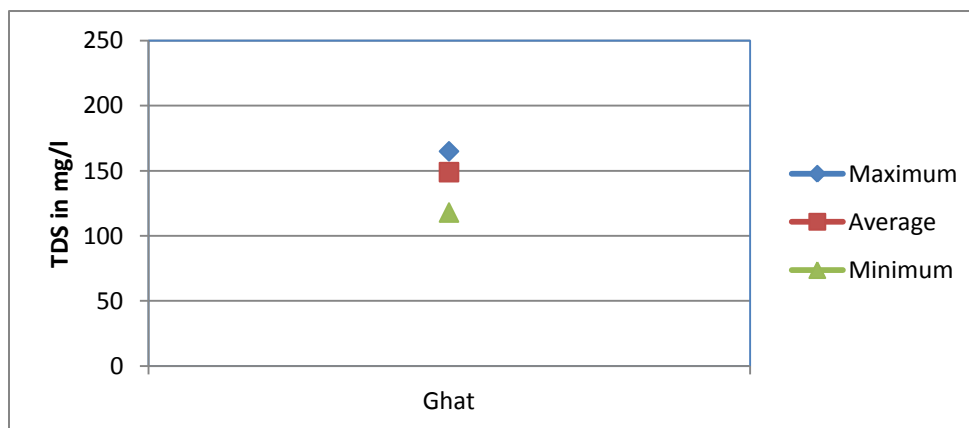
#### 4.5.4 TDS in mg/l

| Site Name<br>(From U/S to D/S) | Inception Date | Avg. of Yearly Maximum |         |          | Avg. of Yearly Minimum |         |          | Annual Average  |         |          |
|--------------------------------|----------------|------------------------|---------|----------|------------------------|---------|----------|-----------------|---------|----------|
|                                |                | Since inception        | 10 year | One year | Since inception        | 10 year | One year | Since inception | 10 year | One year |
| Site 1<br>Ghat                 | 01.06.2006     | -                      | 330     | 165      | -                      | 92      | 118      | -               | 163     | 149      |

**Parameter : TDS 10 year**



**Parameter : TDS One year**



## **5. General Remark / Conclusion about W.Q. trend –**

### **River 1 Ghaghra :**

Average BOD value ranges from 0.2 – 2.0 mg/l and DO value ranged between 5.9 to 9.4 mg/l which is within tolerance limit for Class A water.

Average fluoride value ranged 0 - 0.42 mg/l and is safe for human consumption with respect to fluoride.

Average TDS value ranged between 98 – 371 mg/l .Tolerance limit for Class A is 500 mg/l.

### **River 2 Rapti :**

Average BOD value ranges from 0.4 – 2.9 mg/l which is within tolerance limit for Class A water.

Average DO value ranged between 5.1 to 12.1 mg/l which is within tolerance limit for Class A water.

Average fluoride value ranged 0 – 0.42 mg/l and water is safe for human consumption with respect to fluoride.

Average TDS value ranged between 105 – 419 mg/l.Tolerance limit for Class A is 500 mg/l.

### **River 3 Sharda :**

Average BOD value ranges from 0.3 –2.2 mg/l which is within tolerance limit for Class A water.

Average DO value ranged between 4.5 to 10.6 mg/l. It can be used without conventional treatment.

Average fluoride value is 0 – 0.44 mg/l and water is safe for human consumption with respect to fluoride.

Average TDS value ranged between 108 – 438 mg/l.Tolerance limit for Class A is 500 mg/l.

### **River 4 Kwano :**

Average BOD value is 0.6 to 5.5 mg/l .BOD is slightly higher than the tolerance limit for Class A .

Average DO value is 3.1 to 10.6 mg/l. It can be used without conventional treatment .

Average fluoride value is 0 – 0.51 mg/l and water is safe for human consumption with respect to fluoride.

TDS value is 64 to 410 mg/l. Tolerance limit for Class A is 500 mg/l.

### **River 5 Sarju :**

Average BOD value is 0.2to 1.2 mg/l which is within tolerance limit for Class A water.

Average DO value is 6.4 – 11.0 mg/l which is within tolerance limit for Class A water.

Average fluoride value is 0 to 0.30 mg/l and water is safe for human consumption with respect to fluoride.

TDS value is 92 - 330 mg/l. Tolerance limit for Class A is 500 mg/l.

# History Sheet

&

# WQ Data

## 2015-16

## HISTORY SHEET

|                   |                            |                   |                         |
|-------------------|----------------------------|-------------------|-------------------------|
|                   |                            | Water Year        | : 2015-2016             |
| Site              | : GHAT                     | Code              | : GGU63E9               |
| State             | : Uttarakhand              | District          | Pithoragarh             |
| Basin             | : Ganga-Brahm-Meghna Basin | Independent River | : Ganga                 |
| Tributary         | : Ramganga                 | Sub Tributary     | : Ganga                 |
| Sub-Sub Tributary | : -                        | Local River       | : Saryu                 |
| Division          | : MGD-I, Lucknow           | Sub-Division      | : U Sharda SD, Haldwani |
| Drainage Area     | : 3900 Sq. Km.             | Bank              | : Right                 |
| Latitude          | : 29° 30' 30"              | Longitude         | : 80° 07' 07"           |
| Opening Date      |                            | Closing Date      |                         |
| Gauge             | : 17/11/1976               |                   |                         |
| Discharge         | : 17/11/1976               |                   |                         |
| Sediment          | : 01/06/2010               |                   |                         |
| Water Quality     | : 01/06/2006               |                   |                         |

# Water Quality Datasheet for the period : 2015-2016

Division :MGD-I, Lucknow

Station Name : GHAT ( GGU63E9)

Sub-Division :U Sarda SD, Haldwani

Local River : Saryu

## River Water Analysis

| S.No | Parameters                        | 01/06/2015 | 01/07/2015 | 01/08/2015 | 01/09/2015 | 01/10/2015 | 02/11/2015 | 01/12/2015 | 01/01/2016 | 01/02/2016 | 01/03/2016 | 01/04/2016  | 02/05/2016 |
|------|-----------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|------------|
|      |                                   | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A           | A          |
|      | <b>PHYSICAL</b>                   |            |            |            |            |            |            |            |            |            |            |             |            |
| 1    | Q (cumec)                         | 26.10      | 274.9      | 387.3      | 291.1      | 139.5      | 54.75      | 35.25      | 27.14      | 23.60      | 20.30      | 17.30       | 15.22      |
| 2    | Colour_Cod (-)                    | Clear      | Brown      | Brown      | Brown      | Clear      | Clear      | Clear      | Clear      | Clear      | Brown      | Light Brown | Clear      |
| 3    | EC_GEN (µmho/cm)                  | 240        | 280        | 200        | 210        | 230        | 240        | 210        | 240        | 250        | 240        | 250         | 260        |
| 4    | 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 |
| 5    | pH_GEN (pH units)                 | 9.1        | 8.2        | 8.3        | 8.1        | 7.9        | 8.5        | 8.6        | 8.6        | 8.5        | 8.4        | 8.4         | 8.6        |
| 6    | TDS (mg/L)                        | 140        | 162        | 118        | 132        | 142        | 150        | 138        | 153        | 156        | 160        | 158         | 165        |
| 7    | Temp (deg C)                      | 25.0       | 23.0       | 23.0       | 22.0       | 22.0       | 17.0       | 16.0       | 10.0       | 12.0       | 16.0       | 22.0        | 22.0       |
|      | <b>CHEMICAL</b>                   |            |            |            |            |            |            |            |            |            |            |             |            |
| 1    | Alk-Phen (mgCaCO3/L)              | 8.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 4.0        | 4.0        | 4.0        | 4.0         | 4.0        |
| 2    | ALK-TOT (mgCaCO3/L)               | 96         | 76         | 0          | 96         | 100        | 0          | 0          | 120        | 128        | 132        | 140         | 124        |
| 3    | B (mg/L)                          | 0.18       | 0.15       | 0.15       | 0.16       | 0.15       | 0.15       | 0.16       | 0.17       | 0.15       | 0.15       | 0.16        | 0.16       |
| 4    | Ca (mg/L)                         | 24         | 22         | 21         | 26         | 26         | 29         | 26         | 28         | 31         | 34         | 36          | 24         |
| 5    | Cl (mg/L)                         | 8.2        | 6.0        | 8.2        | 3.9        | 6.0        | 8.2        | 6.0        | 6.0        | 8.2        | 6.0        | 8.2         | 9.9        |
| 6    | CO3 (mg/L)                        | 9.6        | 0.0        | 0.0        | 0.0        | 0.0        | 4.8        | 9.6        | 4.8        | 4.8        | 4.8        | 4.8         | 4.8        |
| 7    | F (mg/L)                          | 0.23       | 0.25       | 0.21       | 0.25       | 0.25       | 0.23       | 0.27       | 0.25       | 0.27       | 0.29       | 0.25        | 0.30       |
| 8    | HCO3 (mg/L)                       | 98         | 93         | 83         | 117        | 122        | 132        | 107        | 137        | 146        | 151        | 161         | 142        |
| 9    | K (mg/L)                          | 2.7        | 2.0        | 2.3        | 3.1        | 2.3        | 2.7        | 2.3        | 2.7        | 3.1        | 2.7        | 3.1         | 5.1        |
| 10   | Mg (mg/L)                         | 12.4       | 11.3       | 9.2        | 12.4       | 13.4       | 16.5       | 13.4       | 15.4       | 16.5       | 15.4       | 17.5        | 16.5       |
| 11   | Na (mg/L)                         | 4.6        | 3.7        | 4.4        | 2.8        | 3.2        | 4.8        | 3.5        | 3.7        | 4.6        | 4.4        | 4.8         | 5.8        |
| 12   | NH3-N (mg N/L)                    | 0.42       | 0.24       | 0.22       | 0.27       | 0.27       | 0.27       | 0.29       | 0.29       | 0.29       | 0.29       | 0.29        | 0.29       |
| 13   | NO2+NO3 (mg N/L)                  | 0.43       | 0.39       | 0.41       | 0.42       | 0.43       | 0.45       | 0.43       | 0.43       | 0.41       | 0.39       | 0.43        | 0.41       |
| 14   | NO2-N (mgN/L)                     | 0.00       | 0.00       | 0.00       | 0.00       | 0.00       | 0.00       | 0.00       | 0.00       | 0.00       | 0.00       | 0.00        | 0.00       |
| 15   | NO3-N (mgN/L)                     | 0.43       | 0.39       | 0.41       | 0.42       | 0.43       | 0.45       | 0.43       | 0.43       | 0.41       | 0.39       | 0.43        | 0.41       |
| 16   | o-PO4-P (mg P/L)                  | 0.279      | 0.258      | 0.227      | 0.217      | 0.227      | 0.279      | 0.279      | 0.289      | 0.269      | 0.269      | 0.320       | 0.331      |
| 17   | SO4 (mg/L)                        | 10.1       | 16.8       | 16.3       | 16.8       | 15.8       | 17.8       | 16.8       | 16.8       | 16.8       | 15.4       | 15.8        | 15.8       |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |            |            |            |            |            |            |            |            |            |            |             |            |
| 1    | BOD3-27 (mg/L)                    | 0.6        | 0.4        | 0.8        | 1.0        | 0.8        | 1.0        | 0.8        | 0.6        | 0.8        | 0.8        | 0.8         | 1.0        |

# Water Quality Datasheet for the period : 2015-2016

Station Name : GHAT ( GGU63E9)

Division :MGD-I, Lucknow

Local River : Saryu

## River Water Analysis

Sub-Division :U Sarda SD, Haldwani

| S.No | Parameters               | 01/06/2015 | 01/07/2015 | 01/08/2015 | 01/09/2015 | 01/10/2015 | 02/11/2015 | 01/12/2015 | 01/01/2016 | 01/02/2016 | 01/03/2016 | 01/04/2016 | 02/05/2016 |
|------|--------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|      |                          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          |
| 2    | COD (mg/L)               | 5.0        | 2.0        | 4.0        | 4.0        | 4.0        | 5.0        | 4.0        | 5.0        | 5.0        | 4.0        | 5.0        | 6.0        |
| 3    | DO (mg/L)                | 7.3        | 7.3        | 7.1        | 6.9        | 7.1        | 7.3        | 7.8        | 7.6        | 7.7        | 7.1        | 7.3        | 7.3        |
| 4    | DO_SAT% (%)              | 88         | 85         | 82         | 78         | 81         | 75         | 79         | 68         | 71         | 72         | 83         | 83         |
|      | <b>TRACE &amp; TOXIC</b> |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | Total Arsenic (As) mg/L  |            |            |            |            |            |            |            |            |            |            | 0.0031     |            |
| 2    | Cadmium (Cd) mg/L        |            |            |            |            |            |            |            |            |            |            | 0.00009    |            |
| 3    | Total Chromium(Cr) mg/L  |            |            |            |            |            |            |            |            |            |            | 0.0131     |            |
| 4    | Copper (Cu) mg/L         |            |            |            |            |            |            |            |            |            |            | 0.00248    |            |
| 5    | Iron (Fe) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.029      |            |
| 6    | Lead (Pb) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.00183    |            |
| 7    | Mercury (Hg) mg/L        |            |            |            |            |            |            |            |            |            |            | --         |            |
| 8    | Nickel (Ni) mg/L         |            |            |            |            |            |            |            |            |            |            | 0.00318    |            |
| 9    | Zinc (Zn) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.0104     |            |
|      | <b>CHEMICAL INDICES</b>  |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | HAR_Ca (mgCaCO3/L)       | 60         | 56         | 52         | 65         | 65         | 73         | 65         | 69         | 78         | 86         | 91         | 60         |
| 2    | HAR_Total (mgCaCO3/L)    | 112        | 103        | 90         | 116        | 120        | 142        | 120        | 133        | 146        | 150        | 163        | 129        |
| 3    | Na% (%)                  | 8          | 7          | 9          | 5          | 5          | 7          | 6          | 6          | 6          | 6          | 6          | 9          |
| 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        | 0.2        | 0.2        | 0.1        | 0.1        | 0.2        | 0.1        | 0.1        | 0.2        | 0.2        | 0.2        | 0.2        |
|      | <b>PESTICIDES</b>        |            |            |            |            |            |            |            |            |            |            |            |            |

Station Name : GHAT ( GGU63E9)

Sub-Division :U Sarda SD, Haldwani

Local River : Saryu

## River Water Analysis

| S.No | Parameters                                | Number of Observations | Maximum | Minimum | Mean  |
|------|-------------------------------------------|------------------------|---------|---------|-------|
|      | <b>PHYSICAL</b>                           |                        |         |         |       |
| 1    | Q (cumec)                                 | 12                     | 387.3   | 15.22   | 109.4 |
| 2    | EC_GEN (μmho/cm)                          | 12                     | 280     | 200     | 238   |
| 3    | pH_GEN (pH units)                         | 12                     | 9.1     | 7.9     | 8.4   |
| 4    | TDS (mg/L)                                | 12                     | 165     | 118     | 148   |
| 5    | Temp (deg C)                              | 12                     | 25.0    | 10.0    | 19.2  |
|      | <b>CHEMICAL</b>                           |                        |         |         |       |
| 1    | Alk-Phen (mgCaCO <sub>3</sub> /L)         | 9                      | 8.0     | 0.0     | 3.1   |
| 2    | ALK-TOT (mgCaCO <sub>3</sub> /L)          | 9                      | 140     | 76      | 112   |
| 3    | B (mg/L)                                  | 12                     | 0.18    | 0.15    | 0.16  |
| 4    | Ca (mg/L)                                 | 12                     | 36      | 21      | 27    |
| 5    | Cl (mg/L)                                 | 12                     | 9.9     | 3.9     | 7.1   |
| 6    | CO <sub>3</sub> (mg/L)                    | 12                     | 9.6     | 0.0     | 4     |
| 7    | F (mg/L)                                  | 12                     | 0.30    | 0.21    | 0.25  |
| 8    | HCO <sub>3</sub> (mg/L)                   | 12                     | 161     | 83      | 124   |
| 9    | K (mg/L)                                  | 12                     | 5.1     | 2.0     | 2.9   |
| 10   | Mg (mg/L)                                 | 12                     | 17.5    | 9.2     | 14.2  |
| 11   | Na (mg/L)                                 | 12                     | 5.8     | 2.8     | 4.2   |
| 12   | NH <sub>3</sub> -N (mg N/L)               | 12                     | 0.42    | 0.22    | 0.29  |
| 13   | NO <sub>2</sub> +NO <sub>3</sub> (mg N/L) | 12                     | 0.45    | 0.39    | 0.42  |
| 14   | NO <sub>2</sub> -N (mgN/L)                | 12                     | 0.00    | 0.00    | 0     |
| 15   | NO <sub>3</sub> -N (mgN/L)                | 12                     | 0.45    | 0.39    | 0.42  |
| 16   | o-PO <sub>4</sub> -P (mg P/L)             | 12                     | 0.331   | 0.217   | 0.27  |
| 17   | SO <sub>4</sub> (mg/L)                    | 12                     | 17.8    | 10.1    | 15.9  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b>         |                        |         |         |       |
| 1    | BOD <sub>3-27</sub> (mg/L)                | 12                     | 1.0     | 0.4     | 0.8   |
| 2    | COD (mg/L)                                | 12                     | 6.0     | 2.0     | 4.4   |
| 3    | DO (mg/L)                                 | 12                     | 7.8     | 6.9     | 7.3   |
| 4    | DO_SAT% (%)                               | 12                     | 88      | 68      | 79    |
|      | <b>TRACE &amp; TOXIC</b>                  |                        |         |         |       |
|      | <b>CHEMICAL INDICES</b>                   |                        |         |         |       |
| 1    | HAR_Ca (mgCaCO <sub>3</sub> /L)           | 12                     | 91      | 52      | 68    |
| 2    | HAR_Total (mgCaCO <sub>3</sub> /L)        | 12                     | 163     | 90      | 127   |
| 3    | Na% (%)                                   | 12                     | 9       | 5       | 7     |
| 4    | RSC (-)                                   | 12                     | 0.0     | 0.0     | 0     |
| 5    | SAR (-)                                   | 12                     | 0.2     | 0.1     | 0.2   |
|      | <b>PESTICIDES</b>                         |                        |         |         |       |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name : GHAT ( GGU63E9)

Division :MGD-I, Lucknow

Local River : Saryu

River Water

Sub-Division :U Sarda SD, Haldwani

| S.No | Parameters                        | Flood     |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Jun - Oct |       |       |       |       |       |       |       |       |       |
|      |                                   | 2006      | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Q (cumec)                         |           |       |       |       | 384.1 |       |       |       |       | 223.8 |
| 2    | EC_FLD (µmho/cm)                  |           |       |       |       |       |       | 200   |       |       |       |
| 3    | EC_GEN (µmho/cm)                  | 261       | 238   | 301   | 223   | 248   | 206   | 188   | 246   | 238   | 232   |
| 4    | pH_FLD (pH units)                 |           |       |       |       | 7.7   | 7.4   | 7.5   |       |       |       |
| 5    | pH_GEN (pH units)                 | 8.0       | 8.2   | 8.2   | 8.1   | 8.1   | 7.7   | 8.3   | 8.3   | 8.6   | 8.3   |
| 6    | TDS (mg/L)                        |           |       | 203   | 161   | 150   | 122   | 115   | 159   | 149   | 139   |
| 7    | Temp (deg C)                      | 22.0      | 19.8  | 21.6  | 21.6  | 22.4  | 21.6  | 22.2  | 23.0  | 22.8  | 23.0  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 3.2       | 4.8   | 5.7   | 0.0   | 4.8   | 0.0   | 6.4   | 4.8   | 5.6   | 2.0   |
| 2    | ALK-TOT (mgCaCO3/L)               | 113       | 169   | 268   | 146   | 131   | 109   | 106   | 132   | 94    | 92    |
| 3    | B (mg/L)                          | 0.03      | 0.06  | 0.15  | 0.13  | 0.12  | 0.13  | 0.13  | 0.16  | 0.18  | 0.16  |
| 4    | Ca (mg/L)                         | 26        | 26    | 38    | 33    | 29    | 26    | 27    | 29    | 23    | 24    |
| 5    | Cl (mg/L)                         | 13.8      | 7.6   | 11.9  | 12.4  | 10.5  | 9.7   | 12.1  | 13.6  | 15.7  | 6.5   |
| 6    | CO3 (mg/L)                        | 3.8       | 5.8   | 6.9   | 0.0   | 5.8   | 0.0   | 7.7   | 5.8   | 6.7   | 1.9   |
| 7    | F (mg/L)                          | 0.08      | 0.13  | 0.12  | 0.13  | 0.12  | 0.10  | 0.12  | 0.16  | 0.17  | 0.24  |
| 8    | Fe (mg/L)                         | 0.1       | 0.1   |       |       |       | 0.1   |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 130       | 141   | 156   | 178   | 148   | 133   | 114   | 149   | 102   | 102   |
| 10   | K (mg/L)                          | 10.1      | 3.5   | 3.6   | 3.7   | 2.7   | 2.9   | 3.4   | 3.6   | 2.3   | 2.5   |
| 11   | Mg (mg/L)                         | 8.2       | 16.2  | 8.7   | 17.7  | 16.9  | 15.3  | 17.5  | 17.8  | 16.5  | 11.7  |
| 12   | Na (mg/L)                         | 18.2      | 7.5   | 7.7   | 8.6   | 3.9   | 3.8   | 4.5   | 9.0   | 3.0   | 3.7   |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.06  | 0.14  | 0.38  | 0.51  | 0.25  | 0.33  | 0.28  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.06  | 0.04  | 0.08  | 0.75  | 0.57  | 0.56  | 0.43  | 0.42  |
| 15   | NO2-N (mgN/L)                     | 0.02      | 0.04  | 0.05  | 0.03  | 0.03  | 0.12  | 0.14  | 0.21  | 0.10  | 0.00  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.01  | 0.02  | 0.04  | 0.63  | 0.43  | 0.35  | 0.33  | 0.42  |
| 17   | o-PO4-P (mg P/L)                  | 0.002     | 0.010 | 0.012 | 0.036 | 0.064 | 0.074 | 0.254 | 0.285 | 0.395 | 0.242 |
| 18   | P-Tot (mgP/L)                     |           |       |       | 0.077 |       |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 5.9       | 7.1   | 7.5   | 5.4   | 5.0   |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 24.2      | 14.2  | 14.8  | 14.8  | 15.4  | 9.8   | 14.9  | 16.2  | 14.1  | 15.2  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
| 1    | BOD3-27 (mg/L)                    |           |       |       | 0.8   | 0.6   | 0.5   | 0.7   | 0.6   | 0.8   | 0.7   |
| 2    | COD (mg/L)                        |           |       |       |       | 1.0   | 6.2   | 3.4   | 4.0   | 3.4   | 3.8   |
| 3    | DO (mg/L)                         |           |       |       | 7.2   | 8.7   | 7.6   | 7.0   | 7.0   | 7.0   | 7.1   |
| 4    | DO_SAT% (%)                       |           |       |       | 82    | 100   | 87    | 81    | 82    | 81    | 83    |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 66        | 66    | 94    | 83    | 72    | 65    | 68    | 71    | 57    | 59    |
| 2    | HAR_Total (mgCaCO3/L)             | 101       | 133   | 130   | 156   | 143   | 128   | 141   | 146   | 125   | 108   |
| 3    | Na% (%)                           | 27        | 11    | 11    | 10    | 6     | 6     | 6     | 11    | 5     | 7     |
| 4    | RSC (-)                           | 0.3       | 0.2   | 0.2   | 0.2   | 0.1   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 0.9       | 0.3   | 0.3   | 0.3   | 0.1   | 0.1   | 0.2   | 0.3   | 0.1   | 0.2   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name : GHAT ( GGU63E9)

Division :MGD-I, Lucknow

Local River : Saryu

River Water

Sub-Division :U Sarda SD, Haldwani

| S.No | Parameters                        | Winter    |           |           |           |           |           |           |           |           |           |
|------|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|      |                                   | Nov - Feb |           |           |           |           |           |           |           |           |           |
|      |                                   | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 |
|      | <b>PHYSICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Q (cumec)                         |           |           | 35.17     |           | 55.97     |           |           |           |           | 35.19     |
| 2    | EC_FLD (µmho/cm)                  |           |           |           |           |           |           |           |           |           |           |
| 3    | EC_GEN (µmho/cm)                  | 284       | 252       | 274       | 265       | 270       | 255       | 258       | 295       | 283       | 235       |
| 4    | pH_FLD (pH units)                 |           |           |           | 8.0       | 7.5       | 7.5       | 6.9       |           |           |           |
| 5    | pH_GEN (pH units)                 | 8.1       | 8.4       | 8.2       | 8.3       | 8.0       | 8.2       | 8.2       | 8.3       | 8.6       | 8.6       |
| 6    | TDS (mg/L)                        |           |           | 211       | 166       | 161       | 155       | 161       | 191       | 161       | 149       |
| 7    | Temp (deg C)                      | 12.0      | 11.3      | 13.3      | 12.3      | 12.1      | 13.3      | 11.5      | 12.6      | 13.0      | 13.8      |
|      | <b>CHEMICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Alk-Phen (mgCaCO3/L)              | 3.0       | 9.7       | 0.0       | 5.0       | 0.0       | 5.0       | 0.0       | 4.0       | 11.0      | 4.0       |
| 2    | ALK-TOT (mgCaCO3/L)               | 119       | 167       | 338       | 141       | 111       | 162       | 124       | 111       | 136       | 124       |
| 3    | B (mg/L)                          | 0.02      | 0.14      | 0.10      | 0.13      | 0.14      | 0.13      | 0.15      | 0.15      | 0.19      | 0.16      |
| 4    | Ca (mg/L)                         | 30        | 38        | 29        | 35        | 26        | 33        | 28        | 26        | 36        | 28        |
| 5    | Cl (mg/L)                         | 18.5      | 13.7      | 10.6      | 12.1      | 12.1      | 12.1      | 13.0      | 13.0      | 9.5       | 7.1       |
| 6    | CO3 (mg/L)                        | 3.6       | 11.7      | 0.0       | 6.0       | 0.0       | 6.0       | 0.0       | 4.8       | 13.2      | 6.0       |
| 7    | F (mg/L)                          | 0.13      | 0.11      | 0.14      | 0.14      | 0.13      | 0.14      | 0.15      | 0.15      | 0.21      | 0.25      |
| 8    | Fe (mg/L)                         | 0.1       | 0.2       |           |           |           |           |           |           |           |           |
| 9    | HCO3 (mg/L)                       | 138       | 180       | 238       | 160       | 135       | 185       | 151       | 126       | 139       | 131       |
| 10   | K (mg/L)                          | 5.5       | 3.9       | 1.6       | 2.1       | 3.5       | 3.4       | 4.4       | 2.7       | 1.5       | 2.7       |
| 11   | Mg (mg/L)                         | 10.6      | 15.6      | 9.6       | 17.5      | 15.7      | 21.7      | 17.3      | 17.0      | 19.6      | 15.5      |
| 12   | Na (mg/L)                         | 10.7      | 7.8       | 3.1       | 8.9       | 5.0       | 5.3       | 6.3       | 4.3       | 5.0       | 4.1       |
| 13   | NH3-N (mg N/L)                    |           |           |           | 0.06      | 0.15      | 0.62      | 0.46      | 0.32      | 0.31      | 0.29      |
| 14   | NO2+NO3 (mg N/L)                  |           |           | 0.06      | 0.07      | 0.07      | 0.50      | 0.43      | 0.52      | 0.35      | 0.43      |
| 15   | NO2-N (mgN/L)                     | 0.06      | 0.05      | 0.04      | 0.03      | 0.04      | 0.09      | 0.10      | 0.23      | 0.00      | 0.00      |
| 16   | NO3-N (mgN/L)                     |           |           | 0.01      | 0.04      | 0.04      | 0.41      | 0.33      | 0.28      | 0.35      | 0.43      |
| 17   | o-PO4-P (mg P/L)                  | 0.010     | 0.010     | 0.007     | 0.114     | 0.124     | 0.106     | 0.359     | 0.282     | 0.328     | 0.279     |
| 18   | P-Tot (mgP/L)                     |           |           | 0.007     | 0.135     |           |           |           |           |           |           |
| 19   | SiO2 (mg/L)                       | 7.4       | 7.9       | 6.8       | 5.5       | 5.3       |           |           |           |           |           |
| 20   | SO4 (mg/L)                        | 20.5      | 13.0      | 7.8       | 15.5      | 15.6      | 11.4      | 16.3      | 15.4      | 18.2      | 17.0      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |           |           |           |           |           |           |           |           |           |
| 1    | BOD3-27 (mg/L)                    |           |           |           | 0.4       | 0.7       | 0.4       | 1.0       | 0.6       | 0.8       | 0.8       |
| 2    | COD (mg/L)                        |           |           |           |           | 1.5       | 2.3       | 9.0       | 4.0       | 4.3       | 4.8       |
| 3    | DO (mg/L)                         |           |           |           | 8.0       | 9.0       | 7.5       | 7.1       | 7.4       | 7.7       | 7.6       |
| 4    | DO_SAT% (%)                       |           |           |           | 74        | 89        | 72        | 66        | 75        | 73        | 73        |
|      | <b>TRACE &amp; TOXIC</b>          |           |           |           |           |           |           |           |           |           |           |
|      | <b>CHEMICAL INDICES</b>           |           |           |           |           |           |           |           |           |           |           |
| 1    | HAR_Ca (mgCaCO3/L)                | 75        | 95        | 74        | 88        | 65        | 82        | 69        | 66        | 89        | 71        |
| 2    | HAR_Total (mgCaCO3/L)             | 119       | 160       | 114       | 161       | 130       | 172       | 141       | 137       | 171       | 135       |
| 3    | Na% (%)                           | 16        | 9         | 6         | 10        | 8         | 6         | 9         | 6         | 6         | 6         |
| 4    | RSC (-)                           | 0.0       | 0.2       | 1.6       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       |
| 5    | SAR (-)                           | 0.4       | 0.3       | 0.1       | 0.3       | 0.2       | 0.2       | 0.2       | 0.2       | 0.2       | 0.2       |
|      | <b>PESTICIDES</b>                 |           |           |           |           |           |           |           |           |           |           |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name : GHAT ( GGU63E9)

Division :MGD-I, Lucknow

Local River : Saryu

River Water

Sub-Division :U Sarda SD, Haldwani

| S.No | Parameters                        | Summer    |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Mar - May |       |       |       |       |       |       |       |       |       |
|      |                                   | 2007      | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Q (cumec)                         |           |       | 29.88 |       | 28.12 |       |       |       |       | 17.61 |
| 2    | EC_FLD (µmho/cm)                  |           |       |       |       |       |       |       |       |       |       |
| 3    | EC_GEN (µmho/cm)                  | 223       | 263   | 250   | 283   | 257   | 280   | 370   | 287   | 247   | 250   |
| 4    | pH_FLD (pH units)                 |           |       |       | 7.5   | 7.2   | 7.8   | 6.8   |       |       |       |
| 5    | pH_GEN (pH units)                 | 7.9       | 8.5   | 8.1   | 8.2   | 8.1   | 8.2   | 8.3   | 8.5   | 8.7   | 8.5   |
| 6    | TDS (mg/L)                        |           |       | 190   | 172   | 155   | 167   | 243   | 186   | 144   | 161   |
| 7    | Temp (deg C)                      | 17.7      | 17.3  | 17.0  | 19.0  | 17.0  | 17.0  | 17.3  | 16.0  | 21.0  | 20.0  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 2.7       | 9.7   | 8.3   | 4.0   | 2.7   | 4.0   | 9.3   | 10.6  | 2.0   | 4.0   |
| 2    | ALK-TOT (mgCaCO3/L)               | 243       | 188   | 198   | 141   | 113   | 156   | 175   | 131   | 134   | 132   |
| 3    | B (mg/L)                          | 0.01      | 0.20  | 0.05  | 0.12  | 0.15  | 0.15  | 0.18  | 0.18  | 0.17  | 0.16  |
| 4    | Ca (mg/L)                         | 29        | 39    | 25    | 30    | 26    | 33    | 32    | 30    | 30    | 32    |
| 5    | Cl (mg/L)                         | 15.4      | 21.5  | 10.1  | 14.7  | 14.7  | 17.3  | 20.0  | 13.4  | 8.6   | 8.0   |
| 6    | CO3 (mg/L)                        | 3.2       | 11.7  | 10.0  | 4.8   | 3.2   | 4.8   | 11.2  | 12.8  | 8.0   | 4.8   |
| 7    | F (mg/L)                          | 0.08      | 0.13  | 0.11  | 0.16  | 0.12  | 0.13  | 0.16  | 0.17  | 0.18  | 0.28  |
| 8    | Fe (mg/L)                         | 0.1       | 0.2   |       |       |       |       |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 145       | 205   | 221   | 162   | 132   | 181   | 190   | 133   | 140   | 151   |
| 10   | K (mg/L)                          | 4.3       | 4.6   | 1.7   | 3.9   | 3.5   | 5.5   | 5.7   | 2.3   | 1.8   | 3.6   |
| 11   | Mg (mg/L)                         | 13.7      | 13.6  | 10.7  | 20.3  | 16.5  | 21.3  | 20.5  | 19.9  | 18.3  | 16.5  |
| 12   | Na (mg/L)                         | 8.1       | 8.6   | 3.4   | 5.9   | 6.1   | 7.9   | 12.6  | 4.4   | 4.0   | 5.0   |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.10  | 0.15  | 0.58  | 0.40  | 0.34  | 0.33  | 0.29  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.05  | 0.07  | 0.23  | 0.61  | 0.63  | 0.52  | 0.42  | 0.41  |
| 15   | NO2-N (mgN/L)                     | 0.05      | 0.08  | 0.02  | 0.02  | 0.11  | 0.13  | 0.18  | 0.19  | 0.00  | 0.00  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.02  | 0.04  | 0.13  | 0.48  | 0.45  | 0.32  | 0.42  | 0.41  |
| 17   | o-PO4-P (mg P/L)                  | 0.010     | 0.014 |       | 0.176 | 0.145 | 0.214 | 0.372 | 0.227 | 0.255 | 0.307 |
| 18   | P-Tot (mgP/L)                     |           |       | 0.017 | 0.177 |       |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 7.5       | 8.4   | 4.7   | 5.7   | 5.9   |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 21.1      | 18.9  | 10.1  | 13.8  | 17.0  | 14.1  | 18.9  | 17.9  | 11.7  | 15.7  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
| 1    | BOD3-27 (mg/L)                    |           |       | 0.4   | 0.5   | 0.6   | 0.5   | 0.6   | 0.7   | 0.9   | 0.9   |
| 2    | COD (mg/L)                        |           |       |       |       | 4.3   | 5.0   | 5.0   | 3.7   | 4.7   | 5.0   |
| 3    | DO (mg/L)                         |           |       | 7.4   | 8.2   | 8.0   | 7.3   | 6.8   | 7.2   | 7.7   | 7.2   |
| 4    | DO_SAT% (%)                       |           |       | 80    | 89    | 83    | 76    | 71    | 73    | 86    | 79    |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 72        | 98    | 62    | 76    | 66    | 83    | 79    | 75    | 76    | 79    |
| 2    | HAR_Total (mgCaCO3/L)             | 129       | 155   | 106   | 160   | 135   | 172   | 164   | 158   | 152   | 148   |
| 3    | Na% (%)                           | 12        | 11    | 6     | 7     | 9     | 9     | 14    | 6     | 5     | 7     |
| 4    | RSC (-)                           | 0.0       | 0.7   | 1.9   | 0.0   | 0.0   | 0.0   | 0.4   | 0.0   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 0.3       | 0.3   | 0.1   | 0.2   | 0.2   | 0.3   | 0.4   | 0.2   | 0.1   | 0.2   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

## HISTORY SHEET

|                   |                            |                   |                        |
|-------------------|----------------------------|-------------------|------------------------|
|                   |                            | <b>Water Year</b> | <b>: 2015-2016</b>     |
| <b>Site</b>       | <b>: PALIAKALAN</b>        | <b>Code</b>       | <b>: GGU6016</b>       |
| State             | : Uttar Pradesh            | District          | Kheri                  |
| Basin             | : Ganga-Brahm-Meghna Basin | Independent River | : Ganga                |
| Tributary         | : Ghagra                   | Sub Tributary     | : Sarda                |
| Sub-Sub Tributary | : -                        | Local River       | : Sarda                |
| Division          | : M Ganga Div. I, Lucknow  | Sub-Division      | : U Sarda SD, Haldwani |
| Drainage Area     | : 17676 Sq. Km.            | Bank              | : Left                 |
| Latitude          | : 28°23'23"                | Longitude         | : 80°33'33"            |
|                   | Opening Date               | Closing Date      |                        |
| Gauge             | : 15/04/1959               |                   |                        |
| Discharge         | :                          |                   |                        |
| Sediment          | : 26/08/1961               |                   |                        |
| Water Quality     | : 08/01/1964               |                   |                        |

Station Name : PALIAKALAN ( GGU60I6)

Water Quality Datasheet for the period : 2015-2016

Division : M Ganga Div. I, Lucknow

Local River : Sarda

Sub-Division : U Sarda SD, Haldwani

## River Water Analysis

| S.No | Parameters                                | 01/06/2015 | 01/07/2015 | 01/08/2015 | 01/09/2015 | 01/10/2015 | 02/11/2015 | 01/12/2015 | 01/01/2016 | 01/02/2016 | 01/03/2016 | 01/04/2016 | 02/05/2016 |
|------|-------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|      |                                           | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          |
|      | <b>PHYSICAL</b>                           |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | Q (cumec)                                 | 237.7      | 745.5      | 1055       | 957.1      | 251.3      | 162.0      | 171.7      | 68.76      | 38.72      | 33.56      | 20.83      | 24.23      |
| 2    | Colour_Cod (-)                            | Clear      | Brown      | Brown      | Brown      | Clear      | Brown      | Clear      | Clear      | Clear      | Clear      | Clear      | Clear      |
| 3    | EC_GEN (μmho/cm)                          | 230        | 240        | 220        | 440        | 270        | 270        | 280        | 330        | 360        | 340        | 340        | 310        |
| 4    | 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 |
| 5    | pH_GEN (pH units)                         | 8.9        | 8.2        | 8.1        | 8.0        | 8.1        | 8.4        | 8.4        | 8.3        | 8.3        | 8.4        | 8.2        | 8.4        |
| 6    | TDS (mg/L)                                | 137        | 142        | 130        | 270        | 168        | 166        | 174        | 210        | 220        | 210        | 210        | 191        |
| 7    | Temp (deg C)                              | 29.0       | 24.0       | 25.5       | 28.0       | 29.0       | 24.0       | 20.0       | 16.0       | 16.5       | 21.0       | 24.5       | 27.0       |
|      | <b>CHEMICAL</b>                           |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | Alk-Phen (mgCaCO <sub>3</sub> /L)         | 15.9       | 0.0        | 0.0        | 0.0        | 0.0        | 4.0        | 15.9       | 4.0        | 0.0        | 4.0        | 0.0        | 4.0        |
| 2    | ALK-TOT (mgCaCO <sub>3</sub> /L)          | 128        | 84         | 96         | 144        | 152        | 164        | 184        | 192        | 192        | 184        | 176        | 156        |
| 3    | B (mg/L)                                  | 0.22       | 0.16       | 0.17       | 0.17       | 0.16       | 0.17       | 0.17       | 0.19       | 0.18       | 0.18       | 0.19       | 0.19       |
| 4    | Ca (mg/L)                                 | 34         | 31         | 33         | 34         | 36         | 38         | 41         | 52         | 48         | 46         | 43         | 33         |
| 5    | Cl (mg/L)                                 | 12.1       | 9.9        | 9.9        | 8.2        | 9.9        | 9.9        | 9.9        | 12.1       | 13.8       | 12.1       | 12.1       | 16.0       |
| 6    | CO <sub>3</sub> (mg/L)                    | 19.2       | 0.0        | 0.0        | 0.0        | 0.0        | 4.8        | 19.2       | 4.8        | 0.0        | 4.8        | 0.0        | 4.8        |
| 7    | F (mg/L)                                  | 0.30       | 0.29       | 0.25       | 0.29       | 0.29       | 0.29       | 0.30       | 0.30       | 0.32       | 0.32       | 0.34       | 0.36       |
| 8    | HCO <sub>3</sub> (mg/L)                   | 117        | 102        | 117        | 176        | 185        | 190        | 185        | 224        | 234        | 215        | 215        | 181        |
| 9    | K (mg/L)                                  | 5.5        | 3.5        | 3.1        | 3.1        | 3.9        | 4.7        | 5.5        | 5.5        | 5.1        | 5.1        | 5.1        | 7.0        |
| 10   | Mg (mg/L)                                 | 15.4       | 8.3        | 10.3       | 19.6       | 20.7       | 19.6       | 21.6       | 22.7       | 22.7       | 21.6       | 22.7       | 21.6       |
| 11   | Na (mg/L)                                 | 6.9        | 5.8        | 5.5        | 4.4        | 6.0        | 6.0        | 6.2        | 6.9        | 7.6        | 7.4        | 7.1        | 10.8       |
| 12   | NH <sub>3</sub> -N (mg N/L)               | 0.44       | 0.27       | 0.27       | 0.29       | 0.29       | 0.32       | 0.34       | 0.35       | 0.32       | 0.32       | 0.34       | 0.35       |
| 13   | NO <sub>2</sub> +NO <sub>3</sub> (mg N/L) | 0.57       | 0.45       | 0.49       | 0.46       | 0.45       | 0.50       | 0.49       | 0.48       | 0.50       | 0.48       | 0.52       | 0.45       |
| 14   | NO <sub>2</sub> -N (mgN/L)                | 0.07       | 0.03       | 0.04       | 0.01       | 0.00       | 0.03       | 0.06       | 0.00       | 0.06       | 0.04       | 0.08       | 0.00       |
| 15   | NO <sub>3</sub> -N (mgN/L)                | 0.50       | 0.42       | 0.45       | 0.45       | 0.45       | 0.48       | 0.43       | 0.48       | 0.45       | 0.43       | 0.43       | 0.45       |
| 16   | o-PO <sub>4</sub> -P (mg P/L)             | 0.300      | 0.269      | 0.258      | 0.269      | 0.279      | 0.289      | 0.300      | 0.341      | 0.372      | 0.351      | 0.372      | 0.393      |
| 17   | SO <sub>4</sub> (mg/L)                    | 19.2       | 19.2       | 17.3       | 18.2       | 18.2       | 19.2       | 18.2       | 19.2       | 19.2       | 17.8       | 16.8       | 17.8       |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b>         |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | BOD <sub>3-27</sub> (mg/L)                | 1.6        | 1.0        | 1.4        | 1.8        | 1.6        | 1.4        | 1.4        | 1.4        | 1.6        | 1.6        | 1.8        | 1.2        |

# Water Quality Datasheet for the period : 2015-2016

Station Name : PALIAKALAN ( GGU6016)

Division : M Ganga Div. I, Lucknow

Local River : Sarda

## River Water Analysis

Sub-Division : U Sarda SD, Haldwani

| S.No | Parameters               | 01/06/2015 | 01/07/2015 | 01/08/2015 | 01/09/2015 | 01/10/2015 | 02/11/2015 | 01/12/2015 | 01/01/2016 | 01/02/2016 | 01/03/2016 | 01/04/2016 | 02/05/2016 |
|------|--------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|      |                          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          |
| 2    | COD (mg/L)               | 9.0        | 9.0        | 8.0        | 9.0        | 8.0        | 8.0        | 9.0        | 9.0        | 9.0        | 9.0        | 10.0       | 8.0        |
| 3    | DO (mg/L)                | 6.9        | 6.9        | 6.7        | 6.3        | 6.7        | 6.9        | 6.9        | 7.1        | 6.9        | 6.7        | 6.9        | 7.1        |
| 4    | DO_SAT% (%)              | 89         | 81         | 81         | 80         | 87         | 81         | 75         | 72         | 70         | 75         | 82         | 89         |
|      | <b>TRACE &amp; TOXIC</b> |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | Total Arsenic (As) mg/L  |            |            |            |            |            |            |            |            |            |            | 0.00181    |            |
| 2    | Cadmium (Cd) mg/L        |            |            |            |            |            |            |            |            |            |            | 0.0001     |            |
| 3    | Total Chromium(Cr) mg/L  |            |            |            |            |            |            |            |            |            |            | 0.00355    |            |
| 4    | Copper (Cu) mg/L         |            |            |            |            |            |            |            |            |            |            | 0.00507    |            |
| 5    | Iron (Fe) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.023      |            |
| 6    | Lead (Pb) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.0012     |            |
| 7    | Mercury (Hg) mg/L        |            |            |            |            |            |            |            |            |            |            | --         |            |
| 8    | Nickel (Ni) mg/L         |            |            |            |            |            |            |            |            |            |            | 0.0041     |            |
| 9    | Zinc (Zn) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.0143     |            |
|      | <b>CHEMICAL INDICES</b>  |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | HAR_Ca (mgCaCO3/L)       | 86         | 78         | 82         | 86         | 91         | 95         | 103        | 129        | 121        | 116        | 108        | 82         |
| 2    | HAR_Total (mgCaCO3/L)    | 150        | 112        | 125        | 168        | 177        | 176        | 193        | 224        | 215        | 206        | 202        | 172        |
| 3    | Na% (%)                  | 9          | 10         | 9          | 5          | 7          | 7          | 6          | 6          | 7          | 7          | 7          | 12         |
| 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        | 0.2        | 0.2        | 0.1        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.4        |
|      | <b>PESTICIDES</b>        |            |            |            |            |            |            |            |            |            |            |            |            |

Station Name : PALIAKALAN ( GGU60I6)  
Local River : Sarda

Water Quality : 2015-2016

Division : M Ganga Div. I, Lucknow  
Sub-Division : U Sarda SD, Haldwani

Well Water Analysis

| S.No | Parameters                        | 02/11/2015 | 02/05/2016 |
|------|-----------------------------------|------------|------------|
|      |                                   | B          | B          |
|      | <b>PHYSICAL</b>                   |            |            |
| 1    | Colour_Cod (-)                    | Brown      | Green      |
| 2    | EC_GEN (µmho/cm)                  | 820        | 1040       |
| 3    | Odour_Code (-)                    | odour free | odour free |
| 4    | pH_GEN (pH units)                 | 7.9        | 7.8        |
| 5    | TDS (mg/L)                        | 510        | 660        |
| 6    | Temp (deg C)                      | 25.0       | 26.0       |
|      | <b>CHEMICAL</b>                   |            |            |
| 1    | Alk-Phen (mgCaCO3/L)              | 0.0        | 0.0        |
| 2    | ALK-TOT (mgCaCO3/L)               | 304        | 220        |
| 3    | B (mg/L)                          | 0.22       | 0.24       |
| 4    | Ca (mg/L)                         | 74         | 55         |
| 5    | Cl (mg/L)                         | 57.9       | 104.0      |
| 6    | CO3 (mg/L)                        | 0.0        | 0.0        |
| 7    | F (mg/L)                          | 0.63       | 0.36       |
| 8    | HCO3 (mg/L)                       | 371        | 268        |
| 9    | K (mg/L)                          | 63.7       | 71.2       |
| 10   | Mg (mg/L)                         | 21.6       | 29.9       |
| 11   | Na (mg/L)                         | 35.9       | 69.7       |
| 12   | NH3-N (mg N/L)                    | 1.43       | 1.02       |
| 13   | NO2+NO3 (mg N/L)                  | 2.19       | 1.73       |
| 14   | NO2-N (mgN/L)                     | 0.43       | 0.33       |
| 15   | NO3-N (mgN/L)                     | 1.77       | 1.40       |
| 16   | o-PO4-P (mg P/L)                  | 1.064      | 0.599      |
| 17   | SO4 (mg/L)                        | 26.4       | 155.0      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |            |            |
|      | <b>TRACE &amp; TOXIC</b>          |            |            |
|      | <b>CHEMICAL INDICES</b>           |            |            |
| 1    | HAR_Ca (mgCaCO3/L)                | 185        | 138        |
| 2    | HAR_Total (mgCaCO3/L)             | 275        | 262        |
| 3    | Na% (%)                           | 18         | 30         |
| 4    | RSC (-)                           | 0.6        | 0.0        |
| 5    | SAR (-)                           | 0.9        | 1.9        |
|      | <b>PESTICIDES</b>                 |            |            |

# Water Quality Summary for the period : 2015-2016

Station Name : PALIAKALAN ( GGU60I6)

Division : M Ganga Div. I, Lucknow

Local River : Sarda

Sub-Division : U Sarda SD, Haldwani

## River Water Summary

| S.No | Parameters                        | Number of Observations | Maximum | Minimum | Mean  |
|------|-----------------------------------|------------------------|---------|---------|-------|
|      | <b>PHYSICAL</b>                   |                        |         |         |       |
| 1    | Q (cumec)                         | 366                    | 2270    | 19.98   | 312.1 |
| 2    | EC_GEN (μmho/cm)                  | 12                     | 440     | 220     | 303   |
| 3    | pH_GEN (pH units)                 | 12                     | 8.9     | 8.0     | 8.3   |
| 4    | TDS (mg/L)                        | 12                     | 270     | 130     | 186   |
| 5    | Temp (deg C)                      | 12                     | 29.0    | 16.0    | 23.7  |
|      | <b>CHEMICAL</b>                   |                        |         |         |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 12                     | 15.9    | 0.0     | 4     |
| 2    | ALK-TOT (mgCaCO3/L)               | 12                     | 192     | 84      | 154   |
| 3    | B (mg/L)                          | 12                     | 0.22    | 0.16    | 0.18  |
| 4    | Ca (mg/L)                         | 12                     | 52      | 31      | 39    |
| 5    | Cl (mg/L)                         | 12                     | 16.0    | 8.2     | 11.3  |
| 6    | CO3 (mg/L)                        | 12                     | 19.2    | 0.0     | 4.8   |
| 7    | F (mg/L)                          | 12                     | 0.36    | 0.25    | 0.3   |
| 8    | HCO3 (mg/L)                       | 12                     | 234     | 102     | 179   |
| 9    | K (mg/L)                          | 12                     | 7.0     | 3.1     | 4.8   |
| 10   | Mg (mg/L)                         | 12                     | 22.7    | 8.3     | 18.9  |
| 11   | Na (mg/L)                         | 12                     | 10.8    | 4.4     | 6.7   |
| 12   | NH3-N (mg N/L)                    | 12                     | 0.44    | 0.27    | 0.33  |
| 13   | NO2+NO3 (mg N/L)                  | 12                     | 0.57    | 0.45    | 0.49  |
| 14   | NO2-N (mgN/L)                     | 12                     | 0.08    | 0.00    | 0.03  |
| 15   | NO3-N (mgN/L)                     | 12                     | 0.50    | 0.42    | 0.45  |
| 16   | o-PO4-P (mg P/L)                  | 12                     | 0.393   | 0.258   | 0.316 |
| 17   | SO4 (mg/L)                        | 12                     | 19.2    | 16.8    | 18.4  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                        |         |         |       |
| 1    | BOD3-27 (mg/L)                    | 12                     | 1.8     | 1.0     | 1.5   |
| 2    | COD (mg/L)                        | 12                     | 10.0    | 8.0     | 8.8   |
| 3    | DO (mg/L)                         | 12                     | 7.1     | 6.3     | 6.8   |
| 4    | DO_SAT% (%)                       | 12                     | 89      | 70      | 80    |
|      | <b>TRACE &amp; TOXIC</b>          |                        |         |         |       |
|      | <b>CHEMICAL INDICES</b>           |                        |         |         |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 12                     | 129     | 78      | 98    |
| 2    | HAR_Total (mgCaCO3/L)             | 12                     | 224     | 112     | 177   |
| 3    | Na% (%)                           | 12                     | 12      | 5       | 8     |
| 4    | RSC (-)                           | 12                     | 0.0     | 0.0     | 0     |
| 5    | SAR (-)                           | 12                     | 0.4     | 0.1     | 0.2   |
|      | <b>PESTICIDES</b>                 |                        |         |         |       |

# Water Quality Summary for the period : 2015-2016

Station Name : PALIAKALAN ( GGU60I6)

Division : M Ganga Div. I, Lucknow

Local River : Sarda

Sub-Division : U Sarda SD, Haldwani

## Well Water Summary

| S.No | Parameters                        | Number of Observations | Maximum | Minimum | Mean  |
|------|-----------------------------------|------------------------|---------|---------|-------|
|      | <b>PHYSICAL</b>                   |                        |         |         |       |
| 1    | EC_GEN (µmho/cm)                  | 2                      | 1040    | 820     | 930   |
| 2    | pH_GEN (pH units)                 | 2                      | 7.9     | 7.8     | 7.9   |
| 3    | TDS (mg/L)                        | 2                      | 660     | 510     | 585   |
| 4    | Temp (deg C)                      | 2                      | 26.0    | 25.0    | 25.5  |
|      | <b>CHEMICAL</b>                   |                        |         |         |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 2                      | 0.0     | 0.0     | 0.0   |
| 2    | ALK-TOT (mgCaCO3/L)               | 2                      | 304     | 220     | 262   |
| 3    | B (mg/L)                          | 2                      | 0.24    | 0.22    | 0.23  |
| 4    | Ca (mg/L)                         | 2                      | 74      | 55      | 65    |
| 5    | Cl (mg/L)                         | 2                      | 104.0   | 57.9    | 80.9  |
| 6    | CO3 (mg/L)                        | 2                      | 0.0     | 0.0     | 0.0   |
| 7    | F (mg/L)                          | 2                      | 0.63    | 0.36    | 0.49  |
| 8    | HCO3 (mg/L)                       | 2                      | 371     | 268     | 320   |
| 9    | K (mg/L)                          | 2                      | 71.2    | 63.7    | 67.4  |
| 10   | Mg (mg/L)                         | 2                      | 29.9    | 21.6    | 25.8  |
| 11   | Na (mg/L)                         | 2                      | 69.7    | 35.9    | 52.8  |
| 12   | NH3-N (mg N/L)                    | 2                      | 1.43    | 1.02    | 1.23  |
| 13   | NO2+NO3 (mg N/L)                  | 2                      | 2.19    | 1.73    | 1.96  |
| 14   | NO2-N (mgN/L)                     | 2                      | 0.43    | 0.33    | 0.38  |
| 15   | NO3-N (mgN/L)                     | 2                      | 1.77    | 1.40    | 1.58  |
| 16   | o-PO4-P (mg P/L)                  | 2                      | 1.064   | 0.599   | 0.832 |
| 17   | SO4 (mg/L)                        | 2                      | 155.0   | 26.4    | 90.7  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                        |         |         |       |
|      | <b>TRACE &amp; TOXIC</b>          |                        |         |         |       |
|      | <b>CHEMICAL INDICES</b>           |                        |         |         |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 2                      | 185     | 138     | 161   |
| 2    | HAR_Total (mgCaCO3/L)             | 2                      | 275     | 262     | 269   |
| 3    | Na% (%)                           | 2                      | 30      | 18      | 24    |
| 4    | RSC (-)                           | 2                      | 0.6     | 0.0     | 0.3   |
| 5    | SAR (-)                           | 2                      | 1.9     | 0.9     | 1.4   |
|      | <b>PESTICIDES</b>                 |                        |         |         |       |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name : PALIAKALAN ( GGU6016)

Local River : Sarda

River Water

Division : M Ganga Div. I, Lucknow

Sub-Division : U Sarda SD, Haldwani

| S.No | Parameters                        | Flood     |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Jun - Oct |       |       |       |       |       |       |       |       |       |
|      |                                   | 2006      | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Q (cumec)                         | 916.2     | 1300  | 1195  | 974.4 | 1102  | 910.4 | 511.5 | 1215  | 812.6 | 649.4 |
| 2    | EC_FLD (µmho/cm)                  | 356       |       |       |       |       |       | 199   |       |       |       |
| 3    | EC_GEN (µmho/cm)                  | 309       | 307   | 390   | 252   | 264   | 199   | 203   | 248   | 254   | 280   |
| 4    | pH_FLD (pH units)                 | 7.5       | 7.5   | 8.0   |       |       |       | 7.5   | 7.7   |       |       |
| 5    | pH_GEN (pH units)                 | 8.3       | 8.0   | 7.8   | 8.0   | 7.8   | 7.9   | 8.2   | 8.3   | 8.5   | 8.3   |
| 6    | TDS (mg/L)                        |           |       | 266   | 184   | 160   | 121   | 124   | 162   | 155   | 169   |
| 7    | Temp (deg C)                      | 28.0      | 24.6  | 22.8  | 21.1  | 20.8  | 18.1  | 25.0  | 26.4  | 28.7  | 27.1  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 4.0       | 3.8   | 5.7   | 1.0   | 4.0   | 1.3   | 3.2   | 3.2   | 4.8   | 3.2   |
| 2    | ALK-TOT (mgCaCO3/L)               | 126       | 175   | 153   | 151   | 126   | 116   | 119   | 142   | 102   | 121   |
| 3    | B (mg/L)                          | 0.03      | 0.08  | 0.16  | 0.13  | 0.12  | 0.14  | 0.14  | 0.18  | 0.21  | 0.18  |
| 4    | Ca (mg/L)                         | 28        | 31    | 35    | 38    | 30    | 26    | 31    | 31    | 24    | 34    |
| 5    | Cl (mg/L)                         | 9.4       | 10.2  | 10.9  | 14.3  | 13.6  | 9.7   | 13.6  | 13.6  | 16.0  | 10.0  |
| 6    | CO3 (mg/L)                        | 4.8       | 4.6   | 6.9   | 1.2   | 4.8   | 1.0   | 3.8   | 3.8   | 5.8   | 3.8   |
| 7    | F (mg/L)                          | 0.12      | 0.21  | 0.13  | 0.16  | 0.14  | 0.10  | 0.13  | 0.17  | 0.16  | 0.28  |
| 8    | Fe (mg/L)                         | 0.2       | 0.2   |       |       |       | 0.1   |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 143       | 149   | 173   | 182   | 143   | 134   | 138   | 165   | 113   | 140   |
| 10   | K (mg/L)                          | 7.9       | 3.5   | 3.8   | 4.5   | 4.2   | 4.1   | 4.6   | 4.4   | 4.0   | 3.8   |
| 11   | Mg (mg/L)                         | 12.8      | 13.7  | 8.7   | 18.4  | 17.9  | 14.8  | 20.0  | 18.6  | 15.3  | 14.8  |
| 12   | Na (mg/L)                         | 17.8      | 8.1   | 8.2   | 11.2  | 6.6   | 4.1   | 5.1   | 9.5   | 4.7   | 5.7   |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.07  | 0.15  | 0.71  | 0.54  | 0.26  | 0.38  | 0.31  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.28  | 0.09  | 0.09  | 0.75  | 0.63  | 0.57  | 0.43  | 0.48  |
| 15   | NO2-N (mgN/L)                     | 0.03      | 0.10  | 0.06  | 0.04  | 0.04  | 0.14  | 0.14  | 0.19  | 0.13  | 0.03  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.22  | 0.05  | 0.05  | 0.61  | 0.49  | 0.38  | 0.30  | 0.45  |
| 17   | o-PO4-P (mg P/L)                  | 0.014     | 0.058 | 0.045 | 0.041 | 0.072 | 0.097 | 0.262 | 0.291 | 0.428 | 0.275 |
| 18   | P-Tot (mgP/L)                     |           |       |       | 0.107 |       |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 10.4      | 8.8   | 8.7   | 6.9   | 5.6   |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 66.0      | 37.6  | 18.3  | 21.2  | 20.2  | 8.8   | 17.0  | 17.5  | 16.4  | 18.4  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
| 1    | BOD3-27 (mg/L)                    |           |       |       | 1.0   | 0.8   | 0.8   | 1.0   | 0.9   | 0.8   | 1.4   |
| 2    | COD (mg/L)                        |           |       |       |       | 2.0   | 16.4  | 7.3   | 4.2   | 4.4   | 8.6   |
| 3    | DO (mg/L)                         | 7.5       | 7.2   | 7.2   | 6.9   | 7.4   | 7.6   | 7.4   | 7.1   | 7.0   | 6.7   |
| 4    | DO_SAT% (%)                       | 95        | 86    | 83    | 78    | 83    | 81    | 89    | 88    | 90    | 84    |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 69        | 78    | 88    | 96    | 75    | 64    | 77    | 77    | 59    | 84    |
| 2    | HAR_Total (mgCaCO3/L)             | 122       | 135   | 124   | 172   | 149   | 126   | 160   | 154   | 123   | 146   |
| 3    | Na% (%)                           | 23        | 12    | 13    | 12    | 8     | 6     | 6     | 11    | 8     | 8     |
| 4    | RSC (-)                           | 0.2       | 0.1   | 0.6   | 0.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 0.7       | 0.3   | 0.3   | 0.4   | 0.2   | 0.2   | 0.2   | 0.3   | 0.2   | 0.2   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name : PALIAKALAN ( GGU6016)

Local River : Sarda

Division : M Ganga Div. I, Lucknow

Sub-Division : U Sarda SD, Haldwani

## River Water

| S.No | Parameters                        | Winter    |           |           |           |           |           |           |           |           |           |
|------|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|      |                                   | Nov - Feb |           |           |           |           |           |           |           |           |           |
|      |                                   | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 |
|      | <b>PHYSICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Q (cumec)                         | 195.2     | 277.8     | 299.7     | 471.2     | 719.0     | 254.4     | 80.15     | 127.4     | 230.5     | 110.3     |
| 2    | EC_FLD (µmho/cm)                  |           |           |           |           |           |           |           |           |           |           |
| 3    | EC_GEN (µmho/cm)                  | 359       | 258       | 384       | 365       | 315       | 298       | 320       | 360       | 342       | 310       |
| 4    | pH_FLD (pH units)                 |           |           | 8.1       |           |           | 8.0       | 7.1       |           |           |           |
| 5    | pH_GEN (pH units)                 | 8.4       | 8.1       | 7.9       | 8.3       | 8.0       | 7.9       | 8.0       | 8.4       | 8.5       | 8.3       |
| 6    | TDS (mg/L)                        |           |           | 257       | 221       | 190       | 177       | 201       | 233       | 186       | 193       |
| 7    | Temp (deg C)                      | 19.8      | 15.3      | 14.0      | 10.8      | 14.1      | 14.6      | 19.1      | 18.9      | 17.3      | 19.1      |
|      | <b>CHEMICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Alk-Phen (mgCaCO3/L)              | 2.0       | 9.7       | 6.2       | 6.7       | 0.0       | 0.0       | 0.0       | 8.0       | 14.9      | 6.0       |
| 2    | ALK-TOT (mgCaCO3/L)               | 117       | 180       | 185       | 150       | 115       | 155       | 134       | 132       | 141       | 183       |
| 3    | B (mg/L)                          | 0.02      | 0.15      | 0.14      | 0.15      | 0.14      | 0.15      | 0.16      | 0.16      | 0.21      | 0.18      |
| 4    | Ca (mg/L)                         | 33        | 42        | 39        | 37        | 27        | 36        | 29        | 33        | 42        | 45        |
| 5    | Cl (mg/L)                         | 18.5      | 18.6      | 17.9      | 15.5      | 14.0      | 15.0      | 13.0      | 12.1      | 13.9      | 11.4      |
| 6    | CO3 (mg/L)                        | 2.4       | 11.7      | 7.5       | 8.1       | 0.0       | 0.0       | 0.0       | 9.6       | 18.0      | 7.2       |
| 7    | F (mg/L)                          | 0.14      | 0.18      | 0.15      | 0.16      | 0.14      | 0.15      | 0.16      | 0.18      | 0.33      | 0.30      |
| 8    | Fe (mg/L)                         | 0.2       | 0.3       |           |           |           |           |           |           |           |           |
| 9    | HCO3 (mg/L)                       | 138       | 195       | 210       | 166       | 140       | 189       | 163       | 142       | 135       | 209       |
| 10   | K (mg/L)                          | 5.3       | 3.9       | 5.3       | 5.0       | 4.8       | 3.9       | 4.7       | 4.2       | 3.9       | 5.2       |
| 11   | Mg (mg/L)                         | 13.9      | 11.4      | 17.4      | 16.3      | 17.3      | 19.8      | 19.1      | 19.1      | 16.0      | 21.7      |
| 12   | Na (mg/L)                         | 11.9      | 8.2       | 7.2       | 10.8      | 6.9       | 5.5       | 7.0       | 6.1       | 8.1       | 6.7       |
| 13   | NH3-N (mg N/L)                    |           |           |           | 0.13      | 0.17      | 0.64      | 0.44      | 0.37      | 0.33      | 0.33      |
| 14   | NO2+NO3 (mg N/L)                  |           |           | 0.27      | 0.08      | 0.08      | 0.86      | 0.43      | 0.56      | 0.43      | 0.49      |
| 15   | NO2-N (mgN/L)                     | 0.13      | 0.12      | 0.07      | 0.03      | 0.04      | 0.46      | 0.10      | 0.25      | 0.05      | 0.03      |
| 16   | NO3-N (mgN/L)                     |           |           | 0.21      | 0.05      | 0.04      | 0.41      | 0.33      | 0.30      | 0.38      | 0.46      |
| 17   | o-PO4-P (mg P/L)                  | 0.080     | 0.059     | 0.072     | 0.132     | 0.127     | 0.114     | 0.393     | 0.274     | 0.351     | 0.326     |
| 18   | P-Tot (mgP/L)                     |           |           | 0.272     | 0.155     |           |           |           |           |           |           |
| 19   | SiO2 (mg/L)                       | 11.6      | 9.7       | 7.6       | 6.8       | 5.9       |           |           |           |           |           |
| 20   | SO4 (mg/L)                        | 80.2      | 23.3      | 23.9      | 16.6      | 18.1      | 12.5      | 18.8      | 16.9      | 31.3      | 19.0      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |           |           |           |           |           |           |           |           |           |
| 1    | BOD3-27 (mg/L)                    |           |           |           | 1.6       | 1.1       | 0.8       | 1.0       | 0.9       | 1.0       | 1.4       |
| 2    | COD (mg/L)                        |           |           |           |           | 1.0       | 10.8      | 6.3       | 4.3       | 5.3       | 8.8       |
| 3    | DO (mg/L)                         | 7.5       | 7.3       | 7.2       | 7.0       | 7.7       | 7.7       | 7.2       | 7.0       | 7.1       | 6.9       |
| 4    | DO_SAT% (%)                       | 82        | 73        | 70        | 66        | 75        | 76        | 77        | 75        | 73        | 75        |
|      | <b>TRACE &amp; TOXIC</b>          |           |           |           |           |           |           |           |           |           |           |
|      | <b>CHEMICAL INDICES</b>           |           |           |           |           |           |           |           |           |           |           |
| 1    | HAR_Ca (mgCaCO3/L)                | 82        | 105       | 98        | 92        | 67        | 89        | 73        | 82        | 105       | 112       |
| 2    | HAR_Total (mgCaCO3/L)             | 140       | 153       | 170       | 160       | 139       | 172       | 153       | 161       | 172       | 202       |
| 3    | Na% (%)                           | 15        | 10        | 9         | 12        | 9         | 6         | 9         | 7         | 9         | 7         |
| 4    | RSC (-)                           | 0.0       | 0.6       | 0.7       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       |
| 5    | SAR (-)                           | 0.4       | 0.3       | 0.2       | 0.4       | 0.3       | 0.2       | 0.2       | 0.2       | 0.3       | 0.2       |
|      | <b>PESTICIDES</b>                 |           |           |           |           |           |           |           |           |           |           |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name : PALIAKALAN ( GGU6016)

Local River : Sarda

River Water

Division : M Ganga Div. I, Lucknow

Sub-Division : U Sarda SD, Haldwani

| S.No | Parameters                        | Summer    |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Mar - May |       |       |       |       |       |       |       |       |       |
|      |                                   | 2007      | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Q (cumec)                         | 100.1     | 65.03 | 42.20 | 85.20 | 147.3 | 84.10 | 58.09 | 100.9 | 239.4 | 26.21 |
| 2    | EC_FLD (µmho/cm)                  |           |       |       |       |       |       |       |       |       |       |
| 3    | EC_GEN (µmho/cm)                  | 393       | 269   | 324   | 383   | 317   | 360   | 323   | 360   | 307   | 330   |
| 4    | pH_FLD (pH units)                 |           |       | 8.1   |       | 7.9   | 7.8   | 7.4   |       |       |       |
| 5    | pH_GEN (pH units)                 | 7.9       | 8.2   | 8.3   | 8.2   | 8.2   | 8.2   | 8.2   | 8.4   | 8.8   | 8.3   |
| 6    | TDS (mg/L)                        |           |       | 245   | 233   | 185   | 209   | 222   | 223   | 171   | 204   |
| 7    | Temp (deg C)                      | 23.3      | 22.3  | 23.2  | 21.3  | 18.0  | 20.3  | 24.8  | 23.5  | 25.3  | 24.2  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 4.0       | 9.7   | 10.0  | 2.7   | 5.3   | 2.7   | 5.3   | 8.0   | 17.3  | 2.7   |
| 2    | ALK-TOT (mgCaCO3/L)               | 121       | 217   | 179   | 161   | 133   | 174   | 159   | 156   | 144   | 172   |
| 3    | B (mg/L)                          | 0.02      | 0.20  | 0.13  | 0.15  | 0.17  | 0.15  | 0.17  | 0.18  | 0.21  | 0.19  |
| 4    | Ca (mg/L)                         | 33        | 43    | 32    | 38    | 32    | 35    | 33    | 35    | 39    | 41    |
| 5    | Cl (mg/L)                         | 17.4      | 20.2  | 15.3  | 18.6  | 17.3  | 14.7  | 18.6  | 17.3  | 12.0  | 13.4  |
| 6    | CO3 (mg/L)                        | 4.8       | 11.7  | 12.0  | 3.2   | 6.4   | 3.2   | 6.4   | 9.6   | 20.8  | 3.2   |
| 7    | F (mg/L)                          | 0.18      | 0.17  | 0.14  | 0.15  | 0.14  | 0.14  | 0.18  | 0.22  | 0.30  | 0.34  |
| 8    | Fe (mg/L)                         | 0.2       | 0.3   |       |       |       |       |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 138       | 241   | 194   | 190   | 150   | 206   | 181   | 171   | 133   | 203   |
| 10   | K (mg/L)                          | 4.2       | 4.8   | 6.1   | 6.1   | 5.6   | 6.5   | 5.6   | 5.3   | 5.0   | 5.7   |
| 11   | Mg (mg/L)                         | 15.5      | 14.5  | 14.8  | 20.0  | 17.2  | 27.0  | 22.0  | 20.6  | 17.2  | 22.0  |
| 12   | Na (mg/L)                         | 8.9       | 9.0   | 9.6   | 11.9  | 9.6   | 10.7  | 10.6  | 9.0   | 6.6   | 8.4   |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.29  | 0.16  | 0.66  | 0.38  | 0.38  | 0.35  | 0.34  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.19  | 0.10  | 0.27  | 0.78  | 0.60  | 0.55  | 0.51  | 0.48  |
| 15   | NO2-N (mgN/L)                     | 0.13      | 0.14  | 0.08  | 0.05  | 0.13  | 0.14  | 0.20  | 0.18  | 0.05  | 0.04  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.11  | 0.05  | 0.14  | 0.64  | 0.40  | 0.37  | 0.46  | 0.44  |
| 17   | o-PO4-P (mg P/L)                  | 0.079     | 0.062 |       | 0.245 | 0.134 | 0.200 | 0.382 | 0.251 | 0.248 | 0.372 |
| 18   | P-Tot (mgP/L)                     |           |       | 0.158 | 0.240 |       |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 11.4      | 10.2  | 7.4   | 6.6   | 6.5   |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 76.5      | 28.6  | 23.8  | 18.1  | 19.5  | 12.2  | 20.3  | 18.6  | 19.2  | 17.4  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
| 1    | BOD3-27 (mg/L)                    |           |       | 0.6   | 1.1   | 0.8   | 0.8   | 1.0   | 0.9   | 1.4   | 1.5   |
| 2    | COD (mg/L)                        |           |       |       |       | 9.3   | 8.0   | 24.7  | 6.0   | 7.3   | 9.0   |
| 3    | DO (mg/L)                         | 7.7       | 7.3   | 7.0   | 7.1   | 7.9   | 7.3   | 7.7   | 6.7   | 7.1   | 6.9   |
| 4    | DO_SAT% (%)                       | 89        | 84    | 82    | 80    | 83    | 80    | 93    | 79    | 86    | 82    |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 83        | 107   | 79    | 95    | 79    | 87    | 82    | 88    | 98    | 102   |
| 2    | HAR_Total (mgCaCO3/L)             | 147       | 167   | 141   | 178   | 151   | 200   | 173   | 173   | 169   | 193   |
| 3    | Na% (%)                           | 11        | 10    | 12    | 12    | 12    | 10    | 11    | 10    | 8     | 9     |
| 4    | RSC (-)                           | 0.0       | 1.0   | 0.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 0.3       | 0.3   | 0.4   | 0.4   | 0.3   | 0.3   | 0.4   | 0.3   | 0.2   | 0.3   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

**Water Quality Seasonal Average for the period: 2006-2016**

Division : M Ganga Div. I, Lucknow

Sub-Division : U Sarda SD, Haldwani

Station Name : PALIAKALAN ( GGU60I6)

Local River : Sarda

**Well Water**

| S.No | Parameters                        | Flood     |       |       |      |      |      |      |      |      |      |
|------|-----------------------------------|-----------|-------|-------|------|------|------|------|------|------|------|
|      |                                   | Jun - Oct |       |       |      |      |      |      |      |      |      |
|      |                                   | 2006      | 2007  | 2008  | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|      | <b>PHYSICAL</b>                   |           |       |       |      |      |      |      |      |      |      |
| 1    | EC_GEN (µmho/cm)                  | 1179      | 1169  | 1505  |      |      |      |      |      |      |      |
| 2    | pH_FLD (pH units)                 |           |       |       |      |      |      |      |      |      |      |
| 3    | pH_GEN (pH units)                 | 8.1       | 7.6   | 8.6   |      |      |      |      |      |      |      |
| 4    | TDS (mg/L)                        |           |       | 601   |      |      |      |      |      |      |      |
| 5    | Temp (deg C)                      | 24.7      | 24.2  | 24.5  |      |      |      |      |      |      |      |
|      | <b>CHEMICAL</b>                   |           |       |       |      |      |      |      |      |      |      |
| 1    | Alk-Phen (mgCaCO3/L)              | 4.8       | 12.0  | 56.8  |      |      |      |      |      |      |      |
| 2    | ALK-TOT (mgCaCO3/L)               | 783       | 663   | 843   |      |      |      |      |      |      |      |
| 3    | B (mg/L)                          | 0.15      | 0.11  |       |      |      |      |      |      |      |      |
| 4    | Ca (mg/L)                         | 69        | 84    | 108   |      |      |      |      |      |      |      |
| 5    | Cl (mg/L)                         | 74.0      | 72.2  | 129.9 |      |      |      |      |      |      |      |
| 6    | CO3 (mg/L)                        | 5.8       | 14.5  | 68.4  |      |      |      |      |      |      |      |
| 7    | F (mg/L)                          |           | 0.04  | 0.24  |      |      |      |      |      |      |      |
| 8    | Fe (mg/L)                         | 0.4       | 0.4   |       |      |      |      |      |      |      |      |
| 9    | HCO3 (mg/L)                       | 471       | 390   | 444   |      |      |      |      |      |      |      |
| 10   | K (mg/L)                          | 86.3      | 118.7 | 132.4 |      |      |      |      |      |      |      |
| 11   | Mg (mg/L)                         | 30.1      | 22.7  | 24.1  |      |      |      |      |      |      |      |
| 12   | Na (mg/L)                         | 47.2      | 59.6  | 93.5  |      |      |      |      |      |      |      |
| 13   | NH3-N (mg N/L)                    |           |       |       |      |      |      |      |      |      |      |
| 14   | NO2+NO3 (mg N/L)                  |           |       |       |      |      |      |      |      |      |      |
| 15   | NO2-N (mgN/L)                     | 0.49      | 0.68  | 0.79  |      |      |      |      |      |      |      |
| 16   | NO3-N (mgN/L)                     |           |       |       |      |      |      |      |      |      |      |
| 17   | o-PO4-P (mg P/L)                  | 0.461     | 0.517 | 0.465 |      |      |      |      |      |      |      |
| 18   | P-Tot (mgP/L)                     |           |       |       |      |      |      |      |      |      |      |
| 19   | SiO2 (mg/L)                       | 31.6      | 34.8  | 46.0  |      |      |      |      |      |      |      |
| 20   | SO4 (mg/L)                        | 23.9      | 35.8  | 58.1  |      |      |      |      |      |      |      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |      |      |      |      |      |      |      |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |      |      |      |      |      |      |      |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |      |      |      |      |      |      |      |
| 1    | HAR_Ca (mgCaCO3/L)                | 173       | 210   | 270   |      |      |      |      |      |      |      |
| 2    | HAR_Total (mgCaCO3/L)             | 298       | 305   | 370   |      |      |      |      |      |      |      |
| 3    | Na% (%)                           | 20        | 22    | 27    |      |      |      |      |      |      |      |
| 4    | RSC (-)                           | 2.0       | 0.8   | 2.2   |      |      |      |      |      |      |      |
| 5    | SAR (-)                           | 1.2       | 1.5   | 2.1   |      |      |      |      |      |      |      |
|      | <b>PESTICIDES</b>                 |           |       |       |      |      |      |      |      |      |      |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name : PALIAKALAN ( GGU60I6)

Local River : Sarda

Well Water

Division : M Ganga Div. I, Lucknow

Sub-Division : U Sarda SD, Haldwani

| S.No | Parameters                        | Winter    |           |           |           |           |           |           |           |           |           |
|------|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|      |                                   | Nov - Feb |           |           |           |           |           |           |           |           |           |
|      |                                   | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 |
|      | <b>PHYSICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | EC_GEN (µmho/cm)                  | 1356      | 1037      | 1080      |           | 1000      | 760       | 710       | 950       | 900       | 820       |
| 2    | pH_FLD (pH units)                 |           |           |           |           |           |           |           |           |           |           |
| 3    | pH_GEN (pH units)                 | 7.8       | 7.6       | 8.6       |           | 7.8       | 7.4       | 7.5       | 7.8       | 8.4       | 7.9       |
| 4    | TDS (mg/L)                        |           |           | 588       |           | 610       | 460       | 420       | 600       | 500       | 510       |
| 5    | Temp (deg C)                      | 21.6      | 16.5      | 19.0      |           | 18.5      | 17.0      | 24.0      | 21.0      | 24.0      | 25.0      |
|      | <b>CHEMICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Alk-Phen (mgCaCO3/L)              | 10.0      | 13.3      | 13.9      |           | 0.0       | 0.0       | 27.9      | 0.0       | 12.0      | 0.0       |
| 2    | ALK-TOT (mgCaCO3/L)               | 778       | 706       | 300       |           | 295       | 224       | 324       | 256       | 396       | 304       |
| 3    | B (mg/L)                          | 0.06      | 0.17      |           |           | 0.20      | 0.18      | 0.19      | 0.28      | 0.31      | 0.22      |
| 4    | Ca (mg/L)                         | 77        | 102       | 49        |           | 62        | 84        | 50        | 65        | 112       | 74        |
| 5    | Cl (mg/L)                         | 81.0      | 76.2      | 123.9     |           | 132.1     | 128.2     | 70.0      | 56.1      | 60.0      | 57.9      |
| 6    | CO3 (mg/L)                        | 12.0      | 16.0      | 16.8      |           | 0.0       | 0.0       | 33.6      | 0.0       | 14.4      | 0.0       |
| 7    | F (mg/L)                          |           |           | 0.22      |           | 0.23      | 0.11      | 0.21      | 0.21      | 0.65      | 0.63      |
| 8    | Fe (mg/L)                         | 0.5       | 0.4       |           |           |           |           |           |           |           |           |
| 9    | HCO3 (mg/L)                       | 462       | 414       | 166       |           | 360       | 273       | 327       | 312       | 454       | 371       |
| 10   | K (mg/L)                          | 101.0     | 129.4     | 56.3      |           | 92.3      | 43.4      | 32.3      | 42.2      | 70.5      | 63.7      |
| 11   | Mg (mg/L)                         | 35.1      | 15.6      | 24.1      |           | 29.9      | 35.1      | 39.2      | 48.5      | 13.4      | 21.6      |
| 12   | Na (mg/L)                         | 50.1      | 67.0      | 310.0     |           | 95.9      | 28.1      | 23.2      | 30.6      | 39.1      | 35.9      |
| 13   | NH3-N (mg N/L)                    |           |           |           |           | 0.18      | 0.62      | 1.08      | 1.21      | 1.43      | 1.43      |
| 14   | NO2+NO3 (mg N/L)                  |           |           |           |           | 0.18      | 0.61      | 0.57      | 2.81      | 2.37      | 2.19      |
| 15   | NO2-N (mgN/L)                     | 0.70      | 0.69      | 0.72      |           | 0.12      | 0.28      | 0.28      | 0.29      | 0.00      | 0.43      |
| 16   | NO3-N (mgN/L)                     |           |           |           |           | 0.06      | 0.34      | 0.29      | 2.52      | 2.37      | 1.77      |
| 17   | o-PO4-P (mg P/L)                  | 0.584     | 0.491     | 0.351     |           | 0.382     | 0.176     | 0.500     | 0.527     | 1.064     | 1.064     |
| 18   | P-Tot (mgP/L)                     |           |           |           |           |           |           |           |           |           |           |
| 19   | SiO2 (mg/L)                       | 39.0      | 36.5      | 42.0      |           | 28.0      |           |           |           |           |           |
| 20   | SO4 (mg/L)                        | 36.0      | 42.0      | 49.9      |           | 117.1     | 61.4      | 49.2      | 142.1     | 2.0       | 26.4      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |           |           |           |           |           |           |           |           |           |
|      | <b>TRACE &amp; TOXIC</b>          |           |           |           |           |           |           |           |           |           |           |
|      | <b>CHEMICAL INDICES</b>           |           |           |           |           |           |           |           |           |           |           |
| 1    | HAR_Ca (mgCaCO3/L)                | 194       | 255       | 123       |           | 155       | 211       | 125       | 164       | 280       | 185       |
| 2    | HAR_Total (mgCaCO3/L)             | 340       | 320       | 223       |           | 280       | 357       | 288       | 365       | 335       | 275       |
| 3    | Na% (%)                           | 19        | 23        | 70        |           | 35        | 13        | 13        | 14        | 17        | 18        |
| 4    | RSC (-)                           | 1.2       | 0.9       | 0.0       |           | 0.3       | 0.0       | 0.8       | 0.0       | 1.2       | 0.6       |
| 5    | SAR (-)                           | 1.2       | 1.6       | 9.1       |           | 2.5       | 0.6       | 0.6       | 0.7       | 0.9       | 0.9       |
|      | <b>PESTICIDES</b>                 |           |           |           |           |           |           |           |           |           |           |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name : PALIAKALAN ( GGU60I6)

Local River : Sarda

Well Water

Division : M Ganga Div. I, Lucknow

Sub-Division : U Sarda SD, Haldwani

| S.No | Parameters                        | Summer    |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Mar - May |       |       |       |       |       |       |       |       |       |
|      |                                   | 2007      | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | EC_GEN (µmho/cm)                  | 1340      | 1060  | 1470  | 1220  | 1130  | 1090  | 1070  | 1420  | 940   | 1040  |
| 2    | pH_FLD (pH units)                 |           |       |       |       |       | 8.0   |       |       |       |       |
| 3    | pH_GEN (pH units)                 | 7.7       | 7.7   | 8.1   | 7.9   | 7.5   | 7.8   | 7.9   | 8.2   | 9.1   | 7.8   |
| 4    | TDS (mg/L)                        |           |       | 472   | 750   | 680   | 620   | 660   | 880   | 540   | 660   |
| 5    | Temp (deg C)                      | 23.7      | 24.0  | 28.5  | 24.5  | 27.0  | 23.0  | 29.0  | 26.0  | 22.5  | 26.0  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 22.6      | 29.0  | 0.0   | 0.0   | 0.0   | 35.9  | 19.9  | 0.0   | 27.9  | 0.0   |
| 2    | ALK-TOT (mgCaCO3/L)               | 795       | 809   | 576   | 348   | 212   | 572   | 408   | 232   | 260   | 220   |
| 3    | B (mg/L)                          | 0.07      | 0.24  | 0.20  | 0.21  | 0.18  | 0.13  | 0.27  | 0.28  | 0.28  | 0.24  |
| 4    | Ca (mg/L)                         | 81        | 111   | 74    | 79    | 81    | 79    | 52    | 53    | 36    | 55    |
| 5    | Cl (mg/L)                         | 86.7      | 110.1 | 73.8  | 176.1 | 172.2 | 423.9 | 136.0 | 160.1 | 76.0  | 104.0 |
| 6    | CO3 (mg/L)                        | 27.2      | 34.9  | 0.0   | 0.0   | 0.0   | 43.2  | 24.0  | 0.0   | 33.6  | 0.0   |
| 7    | F (mg/L)                          | 0.04      |       | 0.15  | 0.23  | 0.32  | 0.11  | 0.21  | 0.28  | 0.27  | 0.36  |
| 8    | Fe (mg/L)                         | 0.5       | 0.5   |       |       |       |       |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 457       | 458   | 703   | 425   | 259   | 610   | 449   | 283   | 249   | 268   |
| 10   | K (mg/L)                          | 109.6     | 138.4 | 60.6  | 95.4  | 117.3 | 140.8 | 86.8  | 103.2 | 71.2  | 71.2  |
| 11   | Mg (mg/L)                         | 35.1      | 21.6  | 36.1  | 54.7  | 40.2  | 51.6  | 52.6  | 32.0  | 58.8  | 29.9  |
| 12   | Na (mg/L)                         | 55.4      | 76.0  | 90.4  | 71.1  | 233.9 | 72.4  | 94.3  | 101.0 | 47.4  | 69.7  |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.21  | 0.21  | 1.24  | 1.25  | 1.47  | 0.52  | 1.02  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.19  | 0.21  | 0.81  | 2.77  | 3.04  | 3.63  | 1.35  | 1.73  |
| 15   | NO2-N (mgN/L)                     | 0.75      | 0.75  | 0.11  | 0.11  | 0.46  | 0.26  | 0.33  | 0.87  | 0.00  | 0.33  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.08  | 0.10  | 0.35  | 2.51  | 2.70  | 2.76  | 1.35  | 1.40  |
| 17   | o-PO4-P (mg P/L)                  | 0.613     | 0.537 |       | 0.517 | 0.341 | 0.444 | 0.465 | 0.672 | 0.579 | 0.599 |
| 18   | P-Tot (mgP/L)                     |           |       | 0.810 | 0.520 |       |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 42.0      | 42.0  | 36.0  | 21.0  | 24.7  |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 40.6      | 53.4  | 11.0  | 68.2  | 550.1 | 37.4  | 60.0  | 156.0 | 132.5 | 155.0 |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 202       | 277   | 185   | 198   | 202   | 198   | 129   | 134   | 91    | 138   |
| 2    | HAR_Total (mgCaCO3/L)             | 348       | 367   | 335   | 426   | 370   | 413   | 348   | 267   | 336   | 262   |
| 3    | Na% (%)                           | 20        | 23    | 32    | 22    | 50    | 21    | 31    | 36    | 20    | 30    |
| 4    | RSC (-)                           | 1.5       | 1.4   | 4.9   | 0.0   | 0.0   | 3.2   | 1.3   | 0.0   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 1.3       | 1.7   | 2.2   | 1.5   | 5.3   | 1.6   | 2.2   | 2.7   | 1.1   | 1.9   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

## HISTORY SHEET

|                   |                            |                   |                     |
|-------------------|----------------------------|-------------------|---------------------|
|                   |                            | <b>Water Year</b> | <b>: 2015-2016</b>  |
| <b>Site</b>       | <b>: ELGINBRIDGE</b>       | <b>Code</b>       | <b>: GGU00S2</b>    |
| State             | : Uttar Pradesh            | District          | Bara Banki          |
| Basin             | : Ganga-Brahm-Meghna Basin | Independent River | : Ganga             |
| Tributary         | : Ghagra                   | Sub Tributary     | :                   |
| Sub-Sub Tributary | :                          | Local River       | : Ghagra            |
| Division          | : M Ganga Div. I, Lucknow  | Sub-Division      | : U Rapti SD, Gonda |
| Drainage Area     | : 74713 Sq. Km.            | Bank              | : Right             |
| Latitude          | : 27°05'05"                | Longitude         | : 81°29'29"         |
|                   | Opening Date               | Closing Date      |                     |
| Gauge             | : 01/05/1959               |                   |                     |
| Discharge         | :                          |                   |                     |
| Sediment          | : 29/08/1961               |                   |                     |
| Water Quality     | : 13/01/1964               |                   |                     |

# Water Quality Datasheet for the period : 2015-2016

Station Name : ELGINBRIDGE ( GGU00S2)

Local River : Ghagra

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

## River Water Analysis

| S.No | Parameters                        | 01/06/2015  | 01/07/2015 | 01/08/2015 | 01/09/2015  | 01/10/2015  | 02/11/2015 | 01/12/2015 | 01/01/2016 | 01/02/2016  | 01/03/2016 | 01/04/2016  | 02/05/2016  |
|------|-----------------------------------|-------------|------------|------------|-------------|-------------|------------|------------|------------|-------------|------------|-------------|-------------|
|      |                                   | A           | A          | A          | A           | A           | A          | A          | A          | A           | A          | A           | A           |
|      | <b>PHYSICAL</b>                   |             |            |            |             |             |            |            |            |             |            |             |             |
| 1    | Q (cumec)                         | 1224        | 3084       | 3892       | 4414        | 2594        | 1576       | 1441       | 533.7      | 375.9       | 144.8      | 181.3       | 172.2       |
| 2    | Colour_Cod (-)                    | Light Brown | Brown      | Brown      | Light Brown | Light Brown | Clear      | Clear      | Clear      | Light Brown | Clear      | Light Brown | Light Brown |
| 3    | EC_GEN (μmho/cm)                  | 210         | 177        | 200        | 330         | 310         | 250        | 270        | 300        | 310         | 290        | 260         | 270         |
| 4    | 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  |
| 5    | pH_GEN (pH units)                 | 8.9         | 8.1        | 8.2        | 8.2         | 8.0         | 8.4        | 8.3        | 8.4        | 8.3         | 8.3        | 8.3         | 8.3         |
| 6    | TDS (mg/L)                        | 125         | 103        | 118        | 192         | 190         | 156        | 170        | 188        | 186         | 172        | 168         | 170         |
| 7    | Temp (deg C)                      | 31.0        | 27.5       | 29.5       | 27.5        | 30.0        | 25.5       | 23.0       | 17.0       | 18.0        | 23.0       | 24.5        | 30.0        |
|      | <b>CHEMICAL</b>                   |             |            |            |             |             |            |            |            |             |            |             |             |
| 1    | Alk-Phen (mgCaCO3/L)              | 8.0         | 0.0        | 0.0        | 0.0         | 0.0         | 4.0        | 8.0        | 4.0        | 4.0         | 0.0        | 4.0         | 0.0         |
| 2    | ALK-TOT (mgCaCO3/L)               | 108         | 76         | 76         | 108         | 140         | 152        | 176        | 168        | 172         | 152        | 164         | 148         |
| 3    | B (mg/L)                          | 0.20        | 0.16       | 0.16       | 0.16        | 0.16        | 0.16       | 0.18       | 0.18       | 0.17        | 0.16       | 0.17        | 0.17        |
| 4    | Ca (mg/L)                         | 38          | 26         | 28         | 29          | 36          | 33         | 40         | 43         | 45          | 40         | 38          | 46          |
| 5    | Cl (mg/L)                         | 9.9         | 8.2        | 8.2        | 6.0         | 9.9         | 8.2        | 9.9        | 9.9        | 12.1        | 9.9        | 9.9         | 13.8        |
| 6    | CO3 (mg/L)                        | 9.6         | 0.0        | 0.0        | 0.0         | 0.0         | 4.8        | 9.6        | 4.8        | 4.8         | 0.0        | 4.8         | 0.0         |
| 7    | F (mg/L)                          | 0.30        | 0.27       | 0.23       | 0.25        | 0.30        | 0.29       | 0.29       | 0.29       | 0.30        | 0.30       | 0.30        | 0.32        |
| 8    | HCO3 (mg/L)                       | 112         | 93         | 93         | 132         | 171         | 176        | 195        | 195        | 200         | 185        | 190         | 181         |
| 9    | K (mg/L)                          | 3.1         | 3.5        | 3.1        | 2.9         | 3.1         | 3.9        | 4.7        | 5.1        | 4.7         | 4.3        | 3.9         | 6.6         |
| 10   | Mg (mg/L)                         | 9.2         | 5.1        | 7.2        | 13.4        | 17.5        | 18.6       | 20.7       | 19.6       | 19.6        | 18.6       | 18.6        | 14.5        |
| 11   | Na (mg/L)                         | 5.5         | 4.8        | 4.6        | 4.1         | 5.3         | 5.3        | 5.8        | 6.2        | 6.9         | 6.2        | 6.4         | 8.5         |
| 12   | NH3-N (mg N/L)                    | 0.44        | 0.24       | 0.24       | 0.27        | 0.31        | 0.29       | 0.34       | 0.32       | 0.31        | 0.29       | 0.31        | 0.34        |
| 13   | NO2+NO3 (mg N/L)                  | 0.56        | 0.41       | 0.45       | 0.45        | 0.45        | 0.49       | 0.45       | 0.46       | 0.42        | 0.42       | 0.42        | 0.54        |
| 14   | NO2-N (mgN/L)                     | 0.06        | 0.00       | 0.03       | 0.01        | 0.00        | 0.03       | 0.00       | 0.00       | 0.00        | 0.01       | 0.00        | 0.12        |
| 15   | NO3-N (mgN/L)                     | 0.50        | 0.41       | 0.42       | 0.43        | 0.45        | 0.46       | 0.45       | 0.46       | 0.42        | 0.41       | 0.42        | 0.42        |
| 16   | o-PO4-P (mg P/L)                  | 0.320       | 0.248      | 0.238      | 0.248       | 0.279       | 0.289      | 0.320      | 0.331      | 0.341       | 0.320      | 0.320       | 0.351       |
| 17   | SO4 (mg/L)                        | 18.7        | 17.3       | 16.3       | 17.8        | 18.2        | 18.7       | 18.2       | 18.7       | 18.7        | 16.8       | 16.3        | 16.3        |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |             |            |            |             |             |            |            |            |             |            |             |             |
| 1    | BOD3-27 (mg/L)                    | 1.0         | 0.6        | 1.0        | 1.4         | 1.6         | 1.6        | 1.4        | 1.0        | 1.4         | 1.0        | 1.0         | 1.6         |
| 2    | COD (mg/L)                        | 4.0         | 5.0        | 6.0        | 7.0         | 8.0         | 9.0        | 8.0        | 6.0        | 7.0         | 6.0        | 6.0         | 10.0        |

# Water Quality Datasheet for the period : 2015-2016

Station Name : ELGINBRIDGE ( GGU00S2)

Division : M Ganga Div. I, Lucknow

Local River : Ghagra

## River Water Analysis

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters               | 01/06/2015 | 01/07/2015 | 01/08/2015 | 01/09/2015 | 01/10/2015 | 02/11/2015 | 01/12/2015 | 01/01/2016 | 01/02/2016 | 01/03/2016 | 01/04/2016 | 02/05/2016 |
|------|--------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|      |                          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          |
| 3    | DO (mg/L)                | 6.9        | 7.1        | 6.9        | 6.5        | 6.7        | 6.9        | 7.1        | 7.3        | 7.1        | 6.9        | 7.1        | 6.7        |
| 4    | DO_SAT% (%)              | 92         | 89         | 89         | 81         | 88         | 83         | 82         | 75         | 75         | 80         | 84         | 88         |
|      | <b>TRACE &amp; TOXIC</b> |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | Total Arsenic (As) mg/L  |            |            |            |            |            |            |            |            |            |            | 0.00314    |            |
| 2    | Cadmium (Cd) mg/L        |            |            |            |            |            |            |            |            |            |            | 0.00008    |            |
| 3    | Total Chromium(Cr) mg/L  |            |            |            |            |            |            |            |            |            |            | 0.04529    |            |
| 4    | Copper (Cu) mg/L         |            |            |            |            |            |            |            |            |            |            | 0.00388    |            |
| 5    | Iron (Fe) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.77       |            |
| 6    | Lead (Pb) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.0016     |            |
| 7    | Mercury (Hg) mg/L        |            |            |            |            |            |            |            |            |            |            | --         |            |
| 8    | Nickel (Ni) mg/L         |            |            |            |            |            |            |            |            |            |            | 0.00423    |            |
| 9    | Zinc (Zn) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.166      |            |
|      | <b>CHEMICAL INDICES</b>  |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | HAR_Ca (mgCaCO3/L)       | 95         | 65         | 69         | 73         | 91         | 82         | 99         | 108        | 112        | 99         | 95         | 116        |
| 2    | HAR_Total (mgCaCO3/L)    | 133        | 86         | 99         | 129        | 163        | 159        | 185        | 189        | 194        | 176        | 172        | 176        |
| 3    | Na% (%)                  | 8          | 10         | 9          | 6          | 6          | 7          | 6          | 6          | 7          | 7          | 7          | 9          |
| 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        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.3        |
|      | <b>PESTICIDES</b>        |            |            |            |            |            |            |            |            |            |            |            |            |

# Water Quality Datasheet for the period : 2015-2016

Station Name : ELGINBRIDGE ( GGU00S2)

Local River : Ghagra

Well Water Analysis

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters                        | 02/11/2015 | 02/05/2016  |
|------|-----------------------------------|------------|-------------|
|      |                                   | B          | B           |
|      | <b>PHYSICAL</b>                   |            |             |
| 1    | Colour_Cod (-)                    | Clear      | Light Brown |
| 2    | EC_GEN (µmho/cm)                  | 750        | 880         |
| 3    | Odour_Code (-)                    | odour free | odour free  |
| 4    | pH_GEN (pH units)                 | 7.9        | 7.8         |
| 5    | TDS (mg/L)                        | 470        | 560         |
| 6    | Temp (deg C)                      | 29.0       | 26.5        |
|      | <b>CHEMICAL</b>                   |            |             |
| 1    | Alk-Phen (mgCaCO3/L)              | 0.0        | 0.0         |
| 2    | ALK-TOT (mgCaCO3/L)               | 308        | 164         |
| 3    | B (mg/L)                          | 0.25       | 0.24        |
| 4    | Ca (mg/L)                         | 64         | 67          |
| 5    | Cl (mg/L)                         | 60.0       | 94.1        |
| 6    | CO3 (mg/L)                        | 0.0        | 0.0         |
| 7    | F (mg/L)                          | 0.48       | 0.40        |
| 8    | HCO3 (mg/L)                       | 376        | 200         |
| 9    | K (mg/L)                          | 45.0       | 24.6        |
| 10   | Mg (mg/L)                         | 29.9       | 44.3        |
| 11   | Na (mg/L)                         | 41.4       | 63.5        |
| 12   | NH3-N (mg N/L)                    | 0.94       | 1.07        |
| 13   | NO2+NO3 (mg N/L)                  | 1.90       | 2.28        |
| 14   | NO2-N (mgN/L)                     | 0.51       | 0.47        |
| 15   | NO3-N (mgN/L)                     | 1.39       | 1.81        |
| 16   | o-PO4-P (mg P/L)                  | 0.827      | 0.506       |
| 17   | SO4 (mg/L)                        | 24.0       | 225.6       |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |            |             |
|      | <b>TRACE &amp; TOXIC</b>          |            |             |
|      | <b>CHEMICAL INDICES</b>           |            |             |
| 1    | HAR_Ca (mgCaCO3/L)                | 159        | 168         |
| 2    | HAR_Total (mgCaCO3/L)             | 284        | 352         |
| 3    | Na% (%)                           | 21         | 27          |
| 4    | RSC (-)                           | 0.5        | 0.0         |
| 5    | SAR (-)                           | 1.1        | 1.5         |
|      | <b>PESTICIDES</b>                 |            |             |

# Water Quality Summary for the period : 2015-2016

Station Name : ELGINBRIDGE ( GGU00S2)

Division : M Ganga Div. I, Lucknow

Local River : Ghagra

Sub-Division : U Rapti SD, Gonda

## River Water Summary

| S.No | Parameters                        | Number of Observations | Maximum | Minimum | Mean  |
|------|-----------------------------------|------------------------|---------|---------|-------|
|      | <b>PHYSICAL</b>                   |                        |         |         |       |
| 1    | Q (cumec)                         | 366                    | 6746    | 120.4   | 1728  |
| 2    | EC_GEN (µmho/cm)                  | 12                     | 330     | 177     | 265   |
| 3    | pH_GEN (pH units)                 | 12                     | 8.9     | 8.0     | 8.3   |
| 4    | TDS (mg/L)                        | 12                     | 192     | 103     | 162   |
| 5    | Temp (deg C)                      | 12                     | 31.0    | 17.0    | 25.5  |
|      | <b>CHEMICAL</b>                   |                        |         |         |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 12                     | 8.0     | 0.0     | 2.7   |
| 2    | ALK-TOT (mgCaCO3/L)               | 12                     | 176     | 76      | 137   |
| 3    | B (mg/L)                          | 12                     | 0.20    | 0.16    | 0.17  |
| 4    | Ca (mg/L)                         | 12                     | 46      | 26      | 37    |
| 5    | Cl (mg/L)                         | 12                     | 13.8    | 6.0     | 9.7   |
| 6    | CO3 (mg/L)                        | 12                     | 9.6     | 0.0     | 3.2   |
| 7    | F (mg/L)                          | 12                     | 0.32    | 0.23    | 0.29  |
| 8    | HCO3 (mg/L)                       | 12                     | 200     | 93      | 160   |
| 9    | K (mg/L)                          | 12                     | 6.6     | 2.9     | 4.1   |
| 10   | Mg (mg/L)                         | 12                     | 20.7    | 5.1     | 15.2  |
| 11   | Na (mg/L)                         | 12                     | 8.5     | 4.1     | 5.8   |
| 12   | NH3-N (mg N/L)                    | 12                     | 0.44    | 0.24    | 0.31  |
| 13   | NO2+NO3 (mg N/L)                  | 12                     | 0.56    | 0.41    | 0.46  |
| 14   | NO2-N (mgN/L)                     | 12                     | 0.12    | 0.00    | 0.02  |
| 15   | NO3-N (mgN/L)                     | 12                     | 0.50    | 0.41    | 0.44  |
| 16   | o-PO4-P (mg P/L)                  | 12                     | 0.351   | 0.238   | 0.301 |
| 17   | SO4 (mg/L)                        | 12                     | 18.7    | 16.3    | 17.7  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                        |         |         |       |
| 1    | BOD3-27 (mg/L)                    | 12                     | 1.6     | 0.6     | 1.2   |
| 2    | COD (mg/L)                        | 12                     | 10.0    | 4.0     | 6.8   |
| 3    | DO (mg/L)                         | 12                     | 7.3     | 6.5     | 6.9   |
| 4    | DO_SAT% (%)                       | 12                     | 92      | 75      | 84    |
|      | <b>TRACE &amp; TOXIC</b>          |                        |         |         |       |
|      | <b>CHEMICAL INDICES</b>           |                        |         |         |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 12                     | 116     | 65      | 92    |
| 2    | HAR_Total (mgCaCO3/L)             | 12                     | 194     | 86      | 155   |
| 3    | Na% (%)                           | 12                     | 10      | 6       | 8     |
| 4    | RSC (-)                           | 12                     | 0.0     | 0.0     | 0     |
| 5    | SAR (-)                           | 12                     | 0.3     | 0.2     | 0.2   |
|      | <b>PESTICIDES</b>                 |                        |         |         |       |

# Water Quality Summary for the period : 2015-2016

Station Name : ELGINBRIDGE ( GGU00S2)

Division : M Ganga Div. I, Lucknow

Local River : Ghagra

Sub-Division : U Rapti SD, Gonda

## Well Water Summary

| S.No | Parameters                        | Number of Observations | Maximum | Minimum | Mean  |
|------|-----------------------------------|------------------------|---------|---------|-------|
|      | <b>PHYSICAL</b>                   |                        |         |         |       |
| 1    | EC_GEN (μmho/cm)                  | 2                      | 880     | 750     | 815   |
| 2    | pH_GEN (pH units)                 | 2                      | 7.9     | 7.8     | 7.8   |
| 3    | TDS (mg/L)                        | 2                      | 560     | 470     | 515   |
| 4    | Temp (deg C)                      | 2                      | 29.0    | 26.5    | 27.8  |
|      | <b>CHEMICAL</b>                   |                        |         |         |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 2                      | 0.0     | 0.0     | 0.0   |
| 2    | ALK-TOT (mgCaCO3/L)               | 2                      | 308     | 164     | 236   |
| 3    | B (mg/L)                          | 2                      | 0.25    | 0.24    | 0.24  |
| 4    | Ca (mg/L)                         | 2                      | 67      | 64      | 65    |
| 5    | Cl (mg/L)                         | 2                      | 94.1    | 60.0    | 77.0  |
| 6    | CO3 (mg/L)                        | 2                      | 0.0     | 0.0     | 0.0   |
| 7    | F (mg/L)                          | 2                      | 0.48    | 0.40    | 0.44  |
| 8    | HCO3 (mg/L)                       | 2                      | 376     | 200     | 288   |
| 9    | K (mg/L)                          | 2                      | 45.0    | 24.6    | 34.8  |
| 10   | Mg (mg/L)                         | 2                      | 44.3    | 29.9    | 37.1  |
| 11   | Na (mg/L)                         | 2                      | 63.5    | 41.4    | 52.4  |
| 12   | NH3-N (mg N/L)                    | 2                      | 1.07    | 0.94    | 1.00  |
| 13   | NO2+NO3 (mg N/L)                  | 2                      | 2.28    | 1.90    | 2.09  |
| 14   | NO2-N (mgN/L)                     | 2                      | 0.51    | 0.47    | 0.49  |
| 15   | NO3-N (mgN/L)                     | 2                      | 1.81    | 1.39    | 1.60  |
| 16   | o-PO4-P (mg P/L)                  | 2                      | 0.827   | 0.506   | 0.667 |
| 17   | SO4 (mg/L)                        | 2                      | 225.6   | 24.0    | 124.8 |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                        |         |         |       |
|      | <b>TRACE &amp; TOXIC</b>          |                        |         |         |       |
|      | <b>CHEMICAL INDICES</b>           |                        |         |         |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 2                      | 168     | 159     | 163   |
| 2    | HAR_Total (mgCaCO3/L)             | 2                      | 352     | 284     | 318   |
| 3    | Na% (%)                           | 2                      | 27      | 21      | 24    |
| 4    | RSC (-)                           | 2                      | 0.5     | 0.0     | 0.3   |
| 5    | SAR (-)                           | 2                      | 1.5     | 1.1     | 1.3   |
|      | <b>PESTICIDES</b>                 |                        |         |         |       |

Water Quality Seasonal Average for the period: 2006-2016

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

Station Name : ELGINBRIDGE ( GGU00S2)

Local River : Ghagra

River Water

| S.No | Parameters                        | Flood     |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Jun - Oct |       |       |       |       |       |       |       |       |       |
|      |                                   | 2006      | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Q (cumec)                         | 4398      | 8364  | 5927  | 2899  | 5127  | 5491  | 6945  | 9127  | 3021  | 3042  |
| 2    | EC_FLD (µmho/cm)                  |           |       |       |       |       |       | 163   |       |       |       |
| 3    | EC_GEN (µmho/cm)                  | 292       | 279   | 289   | 224   | 221   | 180   | 173   | 220   | 234   | 245   |
| 4    | pH_FLD (pH units)                 | 7.0       | 7.0   | 7.0   | 7.0   | 8.0   | 8.2   | 8.2   | 8.2   |       |       |
| 5    | pH_GEN (pH units)                 | 8.2       | 8.2   | 8.1   | 7.9   | 7.9   | 7.9   | 8.2   | 8.4   | 8.4   | 8.3   |
| 6    | TDS (mg/L)                        |           |       | 190   | 167   | 132   | 109   | 104   | 145   | 144   | 146   |
| 7    | Temp (deg C)                      | 29.1      | 28.6  | 27.3  | 28.3  | 28.4  | 28.4  | 29.1  | 26.5  | 29.5  | 29.1  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 0.8       | 6.0   | 4.7   | 1.0   | 3.2   | 0.0   | 1.6   | 5.6   | 4.0   | 1.6   |
| 2    | ALK-TOT (mgCaCO3/L)               | 128       | 162   | 148   | 120   | 117   | 113   | 118   | 128   | 107   | 102   |
| 3    | B (mg/L)                          | 0.02      | 0.06  | 0.15  | 0.13  | 0.12  | 0.16  | 0.14  | 0.17  | 0.21  | 0.17  |
| 4    | Ca (mg/L)                         | 22        | 32    | 32    | 37    | 30    | 27    | 29    | 28    | 27    | 31    |
| 5    | Cl (mg/L)                         | 6.5       | 8.4   | 10.9  | 13.5  | 13.6  | 8.9   | 12.9  | 13.6  | 16.4  | 8.4   |
| 6    | CO3 (mg/L)                        | 1.0       | 5.8   | 5.7   | 1.2   | 3.8   | 0.0   | 1.9   | 6.7   | 4.8   | 1.9   |
| 7    | F (mg/L)                          | 0.04      | 0.13  | 0.10  | 0.15  | 0.13  | 0.12  | 0.14  | 0.15  | 0.19  | 0.27  |
| 8    | Fe (mg/L)                         | 0.2       | 0.2   |       |       |       | 0.1   |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 127       | 147   | 169   | 144   | 135   | 138   | 141   | 142   | 121   | 120   |
| 10   | K (mg/L)                          | 7.5       | 3.8   | 3.5   | 4.1   | 4.2   | 3.6   | 4.1   | 4.0   | 3.9   | 3.2   |
| 11   | Mg (mg/L)                         | 8.2       | 7.2   | 5.8   | 18.4  | 16.5  | 15.3  | 19.6  | 16.3  | 15.3  | 10.5  |
| 12   | Na (mg/L)                         | 16.1      | 9.1   | 8.4   | 9.4   | 8.9   | 4.2   | 5.2   | 9.4   | 5.7   | 4.9   |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.21  | 0.15  | 0.48  | 0.55  | 0.28  | 0.36  | 0.30  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.11  | 0.08  | 0.08  | 0.87  | 0.59  | 0.57  | 0.58  | 0.46  |
| 15   | NO2-N (mgN/L)                     | 0.02      | 0.04  | 0.06  | 0.04  | 0.04  | 0.15  | 0.14  | 0.22  | 0.19  | 0.02  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.04  | 0.04  | 0.04  | 0.73  | 0.45  | 0.35  | 0.39  | 0.44  |
| 17   | o-PO4-P (mg P/L)                  | 0.033     | 0.019 | 0.054 | 0.052 | 0.083 | 0.091 | 0.316 | 0.285 | 0.430 | 0.267 |
| 18   | P-Tot (mgP/L)                     |           |       |       | 0.127 |       |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 10.6      | 9.4   | 8.7   | 6.4   | 5.5   |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 48.9      | 36.0  | 21.2  | 18.9  | 21.2  | 12.0  | 17.6  | 15.6  | 15.4  | 17.7  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
| 1    | BOD3-27 (mg/L)                    |           |       |       | 0.7   | 0.8   | 0.6   | 0.9   | 0.9   | 0.9   | 1.1   |
| 2    | COD (mg/L)                        |           |       |       |       | 7.0   | 3.4   | 4.4   | 5.0   | 4.0   | 6.0   |
| 3    | DO (mg/L)                         | 7.1       | 7.3   | 7.1   | 7.3   | 7.1   | 7.3   | 7.3   | 7.1   | 6.9   | 6.8   |
| 4    | DO_SAT% (%)                       | 92        | 93    | 90    | 93    | 91    | 94    | 95    | 88    | 91    | 88    |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 54        | 81    | 81    | 94    | 75    | 68    | 73    | 70    | 69    | 78    |
| 2    | HAR_Total (mgCaCO3/L)             | 88        | 111   | 105   | 170   | 144   | 132   | 155   | 138   | 132   | 122   |
| 3    | Na% (%)                           | 25        | 15    | 15    | 10    | 11    | 6     | 6     | 12    | 8     | 8     |
| 4    | RSC (-)                           | 0.4       | 0.4   | 0.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 0.8       | 0.4   | 0.4   | 0.3   | 0.3   | 0.2   | 0.2   | 0.3   | 0.2   | 0.2   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

**Water Quality Seasonal Average for the period: 2006-2016**

Station Name : ELGINBRIDGE ( GGU00S2)

Local River : Ghagra

River Water

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters                        | Winter    |           |           |           |           |           |           |           |           |           |
|------|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|      |                                   | Nov - Feb |           |           |           |           |           |           |           |           |           |
|      |                                   | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 |
|      | <b>PHYSICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Q (cumec)                         | 480.6     | 626.0     | 930.5     | 997.4     | 1036      | 884.8     | 1181      | 2838      | 1173      | 981.6     |
| 2    | EC_FLD (µmho/cm)                  |           |           |           |           |           |           |           |           |           |           |
| 3    | EC_GEN (µmho/cm)                  | 463       | 262       | 300       | 303       | 280       | 243       | 298       | 305       | 308       | 283       |
| 4    | pH_FLD (pH units)                 |           | 7.0       | 7.0       | 8.3       | 8.0       | 8.2       | 8.2       | 8.4       |           |           |
| 5    | pH_GEN (pH units)                 | 8.3       | 8.4       | 8.1       | 8.4       | 8.0       | 8.0       | 8.0       | 8.3       | 8.5       | 8.3       |
| 6    | TDS (mg/L)                        |           |           | 198       | 178       | 171       | 149       | 189       | 199       | 170       | 175       |
| 7    | Temp (deg C)                      | 20.5      | 20.4      | 22.1      | 20.0      | 20.5      | 19.6      | 20.4      | 21.3      | 20.0      | 20.9      |
|      | <b>CHEMICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Alk-Phen (mgCaCO3/L)              | 3.0       | 7.2       | 7.5       | 1.0       | 0.0       | 2.0       | 0.0       | 6.0       | 12.0      | 5.0       |
| 2    | ALK-TOT (mgCaCO3/L)               | 126       | 162       | 158       | 139       | 116       | 166       | 128       | 123       | 145       | 167       |
| 3    | B (mg/L)                          | 0.01      | 0.13      | 0.14      | 0.14      | 0.15      | 0.15      | 0.16      | 0.17      | 0.21      | 0.17      |
| 4    | Ca (mg/L)                         | 28        | 40        | 30        | 36        | 31        | 35        | 28        | 30        | 48        | 40        |
| 5    | Cl (mg/L)                         | 11.0      | 11.2      | 11.8      | 12.1      | 13.1      | 14.0      | 14.0      | 13.0      | 11.5      | 10.0      |
| 6    | CO3 (mg/L)                        | 3.6       | 8.7       | 9.0       | 1.2       | 0.0       | 2.4       | 0.0       | 7.2       | 14.4      | 6.0       |
| 7    | F (mg/L)                          | 0.08      | 0.12      | 0.11      | 0.17      | 0.14      | 0.15      | 0.16      | 0.16      | 0.30      | 0.29      |
| 8    | Fe (mg/L)                         | 0.2       | 0.2       |           |           |           |           |           |           |           |           |
| 9    | HCO3 (mg/L)                       | 146       | 180       | 174       | 167       | 140       | 198       | 156       | 135       | 148       | 192       |
| 10   | K (mg/L)                          | 5.3       | 4.1       | 3.2       | 5.7       | 5.0       | 4.1       | 4.5       | 3.2       | 2.5       | 4.6       |
| 11   | Mg (mg/L)                         | 11.8      | 7.2       | 9.0       | 18.3      | 16.5      | 21.9      | 18.8      | 18.3      | 17.0      | 19.6      |
| 12   | Na (mg/L)                         | 13.1      | 9.3       | 7.0       | 8.9       | 6.7       | 6.0       | 6.8       | 6.2       | 6.6       | 6.0       |
| 13   | NH3-N (mg N/L)                    |           |           |           | 0.20      | 0.16      | 0.63      | 0.44      | 0.35      | 0.32      | 0.32      |
| 14   | NO2+NO3 (mg N/L)                  |           |           | 0.10      | 0.09      | 0.06      | 0.58      | 0.45      | 0.53      | 0.55      | 0.46      |
| 15   | NO2-N (mgN/L)                     | 0.06      | 0.06      | 0.06      | 0.04      | 0.03      | 0.13      | 0.10      | 0.23      | 0.13      | 0.01      |
| 16   | NO3-N (mgN/L)                     |           |           | 0.05      | 0.05      | 0.03      | 0.44      | 0.36      | 0.29      | 0.42      | 0.45      |
| 17   | o-PO4-P (mg P/L)                  | 0.041     | 0.021     | 0.070     | 0.235     | 0.145     | 0.119     | 0.403     | 0.284     | 0.354     | 0.320     |
| 18   | P-Tot (mgP/L)                     |           |           |           | 0.197     | 0.114     |           |           |           |           |           |
| 19   | SiO2 (mg/L)                       | 9.9       | 9.9       | 8.3       | 6.0       | 6.0       |           |           |           |           |           |
| 20   | SO4 (mg/L)                        | 61.7      | 24.7      | 20.8      | 21.0      | 18.7      | 11.5      | 18.5      | 16.3      | 36.8      | 18.6      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |           |           |           |           |           |           |           |           |           |
| 1    | BOD3-27 (mg/L)                    |           |           |           | 1.1       | 0.5       |           | 0.9       | 1.2       | 0.8       | 1.3       |
| 2    | COD (mg/L)                        |           |           |           |           | 2.0       | 0.7       | 4.3       | 4.5       | 3.8       | 7.5       |
| 3    | DO (mg/L)                         | 6.8       | 7.1       | 7.2       | 7.2       | 7.4       | 7.4       | 7.3       | 7.0       | 7.2       | 7.1       |
| 4    | DO_SAT% (%)                       | 75        | 78        | 82        | 79        | 81        | 81        | 80        | 79        | 79        | 79        |
|      | <b>TRACE &amp; TOXIC</b>          |           |           |           |           |           |           |           |           |           |           |
|      | <b>CHEMICAL INDICES</b>           |           |           |           |           |           |           |           |           |           |           |
| 1    | HAR_Ca (mgCaCO3/L)                | 70        | 100       | 76        | 89        | 77        | 88        | 71        | 75        | 120       | 100       |
| 2    | HAR_Total (mgCaCO3/L)             | 119       | 130       | 113       | 165       | 145       | 180       | 149       | 151       | 191       | 182       |
| 3    | Na% (%)                           | 19        | 13        | 12        | 10        | 9         | 7         | 9         | 8         | 7         | 7         |
| 4    | RSC (-)                           | 0.2       | 0.7       | 0.9       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       |
| 5    | SAR (-)                           | 0.5       | 0.4       | 0.3       | 0.3       | 0.2       | 0.2       | 0.2       | 0.2       | 0.2       | 0.2       |
|      | <b>PESTICIDES</b>                 |           |           |           |           |           |           |           |           |           |           |

**Water Quality Seasonal Average for the period: 2006-2016**

Station Name : ELGINBRIDGE ( GGU00S2)

Local River : Ghagra

River Water

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters                        | Summer    |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Mar - May |       |       |       |       |       |       |       |       |       |
|      |                                   | 2007      | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Q (cumec)                         | 372.1     | 249.8 | 211.2 | 385.5 | 279.3 | 235.9 | 1100  | 547.8 | 782.1 | 166.1 |
| 2    | EC_FLD (µmho/cm)                  |           |       |       |       |       |       | 8     |       |       |       |
| 3    | EC_GEN (µmho/cm)                  | 338       | 275   | 312   | 290   | 273   | 297   | 290   | 330   | 283   | 273   |
| 4    | pH_FLD (pH units)                 |           |       | 7.0   | 8.4   | 8.5   | 7.8   | 8.2   | 8.1   |       |       |
| 5    | pH_GEN (pH units)                 | 7.9       | 8.5   | 8.2   | 8.4   | 8.2   | 8.0   | 8.2   | 8.2   | 8.8   | 8.3   |
| 6    | TDS (mg/L)                        |           |       | 237   | 176   | 164   | 176   | 188   | 197   | 157   | 170   |
| 7    | Temp (deg C)                      | 23.3      | 24.8  | 24.8  | 25.8  | 24.3  | 24.7  | 23.7  | 26.3  | 25.7  | 25.8  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 2.7       | 8.1   | 14.9  | 6.6   | 2.7   | 5.3   | 5.3   | 8.0   | 13.3  | 1.3   |
| 2    | ALK-TOT (mgCaCO3/L)               | 136       | 181   | 169   | 145   | 129   | 171   | 143   | 156   | 137   | 155   |
| 3    | B (mg/L)                          | 0.01      | 0.19  | 0.11  | 0.15  | 0.16  | 0.17  | 0.19  | 0.20  | 0.20  | 0.17  |
| 4    | Ca (mg/L)                         | 31        | 43    | 30    | 36    | 30    | 35    | 32    | 33    | 38    | 41    |
| 5    | Cl (mg/L)                         | 9.3       | 14.9  | 12.7  | 17.3  | 16.0  | 16.0  | 18.6  | 16.0  | 10.6  | 11.2  |
| 6    | CO3 (mg/L)                        | 3.2       | 9.7   | 18.0  | 8.0   | 3.2   | 6.4   | 6.4   | 9.6   | 16.0  | 1.6   |
| 7    | F (mg/L)                          | 0.22      | 0.11  | 0.15  | 0.17  | 0.13  | 0.16  | 0.18  | 0.23  | 0.28  | 0.31  |
| 8    | Fe (mg/L)                         | 0.2       | 0.3   |       |       |       |       |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 159       | 201   | 169   | 161   | 151   | 195   | 161   | 171   | 135   | 185   |
| 10   | K (mg/L)                          | 4.0       | 4.7   | 3.4   | 5.2   | 5.6   | 5.3   | 5.6   | 3.9   | 2.6   | 5.0   |
| 11   | Mg (mg/L)                         | 14.4      | 9.6   | 13.4  | 18.6  | 17.2  | 22.0  | 18.6  | 21.7  | 14.4  | 17.2  |
| 12   | Na (mg/L)                         | 10.3      | 10.0  | 7.7   | 10.6  | 8.4   | 10.1  | 9.6   | 8.8   | 6.5   | 7.1   |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.24  | 0.16  | 0.64  | 0.39  | 0.41  | 0.34  | 0.31  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.10  | 0.09  | 0.24  | 0.71  | 0.62  | 0.54  | 0.52  | 0.46  |
| 15   | NO2-N (mgN/L)                     | 0.06      | 0.08  | 0.05  | 0.04  | 0.11  | 0.15  | 0.22  | 0.22  | 0.03  | 0.05  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.05  | 0.05  | 0.13  | 0.56  | 0.41  | 0.32  | 0.49  | 0.42  |
| 17   | o-PO4-P (mg P/L)                  | 0.021     | 0.021 | 0.034 | 0.171 | 0.155 | 0.251 | 0.389 | 0.265 | 0.265 | 0.331 |
| 18   | P-Tot (mgP/L)                     |           |       |       | 0.235 | 0.176 |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 10.2      | 10.5  | 7.1   | 6.3   | 6.4   |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 60.5      | 28.6  | 23.8  | 15.1  | 19.8  | 13.6  | 19.5  | 18.1  | 17.9  | 16.5  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
| 1    | BOD3-27 (mg/L)                    |           |       | 0.8   | 1.1   | 0.7   | 0.9   | 0.9   | 1.0   | 0.9   | 1.2   |
| 2    | COD (mg/L)                        |           |       |       |       | 6.3   | 13.7  | 11.0  | 6.0   | 4.7   | 7.3   |
| 3    | DO (mg/L)                         | 6.5       | 6.3   | 7.1   | 7.1   | 7.4   | 7.3   | 7.4   | 6.7   | 7.2   | 6.9   |
| 4    | DO_SAT% (%)                       | 77        | 76    | 85    | 87    | 89    | 88    | 87    | 83    | 88    | 84    |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 78        | 107   | 75    | 89    | 76    | 87    | 79    | 83    | 96    | 103   |
| 2    | HAR_Total (mgCaCO3/L)             | 138       | 147   | 130   | 166   | 147   | 179   | 156   | 173   | 156   | 175   |
| 3    | Na% (%)                           | 14        | 12    | 11    | 12    | 11    | 11    | 11    | 10    | 8     | 8     |
| 4    | RSC (-)                           | 0.0       | 0.7   | 0.8   | 0.0   | 0.0   | 0.1   | 0.0   | 0.0   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 0.4       | 0.4   | 0.3   | 0.4   | 0.3   | 0.3   | 0.3   | 0.3   | 0.2   | 0.2   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

**Water Quality Seasonal Average for the period: 2006-2016**

Division : M Ganga Div. I, Lucknow

Station Name : ELGINBRIDGE ( GGU00S2)

Sub-Division : U Rapti SD, Gonda

Local River : Ghagra

**Well Water**

| S.No | Parameters                        | Flood<br>Jun - Oct |       |       |      |      |      |      |      |      |      |
|------|-----------------------------------|--------------------|-------|-------|------|------|------|------|------|------|------|
|      |                                   | 2006               | 2007  | 2008  | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|      | <b>PHYSICAL</b>                   |                    |       |       |      |      |      |      |      |      |      |
| 1    | EC_GEN (μmho/cm)                  | 1192               | 953   | 965   |      |      |      |      |      |      |      |
| 2    | pH_FLD (pH units)                 |                    |       | 7.0   |      |      |      |      |      |      |      |
| 3    | pH_GEN (pH units)                 | 8.2                | 7.9   | 7.3   |      |      |      |      |      |      |      |
| 4    | TDS (mg/L)                        |                    |       | 520   |      |      |      |      |      |      |      |
| 5    | Temp (deg C)                      | 26.8               | 26.6  | 27.0  |      |      |      |      |      |      |      |
|      | <b>CHEMICAL</b>                   |                    |       |       |      |      |      |      |      |      |      |
| 1    | Alk-Phen (mgCaCO3/L)              | 20.7               | 14.1  | 42.0  |      |      |      |      |      |      |      |
| 2    | ALK-TOT (mgCaCO3/L)               | 951                | 717   | 844   |      |      |      |      |      |      |      |
| 3    | B (mg/L)                          | 0.12               | 0.10  | 0.23  |      |      |      |      |      |      |      |
| 4    | Ca (mg/L)                         | 105                | 103   | 152   |      |      |      |      |      |      |      |
| 5    | Cl (mg/L)                         | 30.5               | 40.3  | 69.9  |      |      |      |      |      |      |      |
| 6    | CO3 (mg/L)                        | 25.0               | 17.0  | 50.6  |      |      |      |      |      |      |      |
| 7    | F (mg/L)                          | 0.04               | 0.04  | 0.00  |      |      |      |      |      |      |      |
| 8    | Fe (mg/L)                         | 0.2                | 0.2   |       |      |      |      |      |      |      |      |
| 9    | HCO3 (mg/L)                       | 554                | 420   | 463   |      |      |      |      |      |      |      |
| 10   | K (mg/L)                          | 9.8                | 65.1  | 37.9  |      |      |      |      |      |      |      |
| 11   | Mg (mg/L)                         | 32.4               | 23.9  | 24.1  |      |      |      |      |      |      |      |
| 12   | Na (mg/L)                         | 6.3                | 32.5  | 60.4  |      |      |      |      |      |      |      |
| 13   | NH3-N (mg N/L)                    |                    | 0.00  |       |      |      |      |      |      |      |      |
| 14   | NO2+NO3 (mg N/L)                  |                    |       | 0.08  |      |      |      |      |      |      |      |
| 15   | NO2-N (mgN/L)                     | 0.03               | 0.03  | 0.08  |      |      |      |      |      |      |      |
| 16   | NO3-N (mgN/L)                     |                    |       | 0.00  |      |      |      |      |      |      |      |
| 17   | o-PO4-P (mg P/L)                  | 0.153              | 0.211 | 0.217 |      |      |      |      |      |      |      |
| 18   | P-Tot (mgP/L)                     |                    |       |       |      |      |      |      |      |      |      |
| 19   | SiO2 (mg/L)                       | 27.8               | 31.2  | 22.3  |      |      |      |      |      |      |      |
| 20   | SO4 (mg/L)                        | 50.2               | 91.1  | 25.9  |      |      |      |      |      |      |      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                    |       |       |      |      |      |      |      |      |      |
| 1    | BOD3-27 (mg/L)                    |                    |       |       |      |      |      |      |      |      |      |
|      | <b>TRACE &amp; TOXIC</b>          |                    |       |       |      |      |      |      |      |      |      |
|      | <b>CHEMICAL INDICES</b>           |                    |       |       |      |      |      |      |      |      |      |
| 1    | HAR_Ca (mgCaCO3/L)                | 263                | 258   | 380   |      |      |      |      |      |      |      |
| 2    | HAR_Total (mgCaCO3/L)             | 398                | 357   | 480   |      |      |      |      |      |      |      |
| 3    | Na% (%)                           | 3                  | 11    | 20    |      |      |      |      |      |      |      |
| 4    | RSC (-)                           | 2.0                | 1.5   | 0.4   |      |      |      |      |      |      |      |
| 5    | SAR (-)                           | 0.1                | 1.0   | 1.2   |      |      |      |      |      |      |      |
|      | <b>PESTICIDES</b>                 |                    |       |       |      |      |      |      |      |      |      |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name : ELGINBRIDGE ( GGU00S2)

Local River : Ghagra

Well Water

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters                        | Winter    |           |           |           |           |           |           |           |           |           |
|------|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|      |                                   | Nov - Feb |           |           |           |           |           |           |           |           |           |
|      |                                   | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 |
|      | <b>PHYSICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | EC_GEN (μmho/cm)                  | 1114      | 905       | 980       | 1030      | 930       | 960       | 920       | 1200      | 1270      | 750       |
| 2    | pH_FLD (pH units)                 |           |           |           |           |           |           |           |           |           |           |
| 3    | pH_GEN (pH units)                 | 7.9       | 8.5       | 7.3       | 7.9       | 7.7       | 9.3       | 8.1       | 7.5       | 8.7       | 7.8       |
| 4    | TDS (mg/L)                        |           |           | 530       | 630       | 570       | 570       | 550       | 780       | 710       | 470       |
| 5    | Temp (deg C)                      | 22.0      | 21.9      | 26.0      | 24.0      | 25.0      | 24.5      | 25.0      | 26.0      | 25.5      | 29.0      |
|      | <b>CHEMICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Alk-Phen (mgCaCO3/L)              | 23.9      | 12.1      |           | 0.0       | 0.0       | 0.0       | 55.8      | 0.0       | 35.9      | 0.0       |
| 2    | ALK-TOT (mgCaCO3/L)               | 1119      | 641       |           | 344       | 263       | 440       | 348       | 432       | 524       | 308       |
| 3    | B (mg/L)                          | 0.07      | 0.15      | 0.22      | 0.19      | 0.13      | 0.20      | 0.18      | 0.24      | 0.29      | 0.25      |
| 4    | Ca (mg/L)                         | 121       | 134       | 70        | 108       | 88        | 131       | 53        | 76        | 139       | 64        |
| 5    | Cl (mg/L)                         | 30.9      | 36.3      | 63.9      | 144.1     | 104.0     | 100.1     | 62.0      | 63.9      | 82.0      | 60.0      |
| 6    | CO3 (mg/L)                        | 28.8      | 14.5      | 16.8      | 0.0       | 0.0       | 0.0       | 67.2      | 0.0       | 43.2      | 0.0       |
| 7    | F (mg/L)                          |           |           |           | 0.13      | 0.19      | 0.15      | 0.19      | 0.23      | 0.55      | 0.47      |
| 8    | Fe (mg/L)                         | 0.3       | 0.2       |           |           |           |           |           |           |           |           |
| 9    | HCO3 (mg/L)                       | 653       | 376       | 132       | 420       | 321       | 537       | 288       | 527       | 551       | 376       |
| 10   | K (mg/L)                          | 13.4      | 31.1      | 39.5      | 28.9      | 24.2      | 28.9      | 30.2      | 40.3      | 70.4      | 45.0      |
| 11   | Mg (mg/L)                         | 35.1      | 24.0      | 28.8      | 38.2      | 58.8      | 55.8      | 38.2      | 94.9      | 31.0      | 29.9      |
| 12   | Na (mg/L)                         | 8.0       | 17.3      | 62.3      | 36.3      | 35.9      | 39.6      | 32.4      | 43.5      | 59.3      | 41.4      |
| 13   | NH3-N (mg N/L)                    |           |           |           | 0.26      | 0.24      | 0.62      | 0.93      | 0.93      | 0.93      | 0.94      |
| 14   | NO2+NO3 (mg N/L)                  |           |           |           | 0.14      |           | 0.63      | 0.51      | 2.11      | 1.98      | 1.90      |
| 15   | NO2-N (mgN/L)                     | 0.04      | 0.04      | 0.07      | 0.07      |           | 0.28      | 0.20      | 0.34      | 0.63      | 0.51      |
| 16   | NO3-N (mgN/L)                     |           |           |           | 0.07      |           | 0.35      | 0.31      | 1.77      | 1.35      | 1.39      |
| 17   | o-PO4-P (mg P/L)                  | 0.217     | 0.209     | 0.217     | 0.320     |           | 0.165     | 0.470     | 0.465     | 0.775     | 0.827     |
| 18   | P-Tot (mgP/L)                     |           |           |           | 0.320     | 0.279     |           |           |           |           |           |
| 19   | SiO2 (mg/L)                       | 35.5      | 34.5      | 40.0      | 31.0      | 23.0      |           |           |           |           |           |
| 20   | SO4 (mg/L)                        | 63.0      | 13.0      | 20.2      | 27.4      | 149.8     | 94.1      | 41.5      | 194.9     | 20.2      | 24.0      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |           |           |           |           |           |           |           |           |           |
| 1    | BOD3-27 (mg/L)                    |           |           |           |           |           |           |           |           |           |           |
|      | <b>TRACE &amp; TOXIC</b>          |           |           |           |           |           |           |           |           |           |           |
|      | <b>CHEMICAL INDICES</b>           |           |           |           |           |           |           |           |           |           |           |
| 1    | HAR_Ca (mgCaCO3/L)                | 302       | 335       | 174       | 271       | 220       | 327       | 133       | 189       | 349       | 159       |
| 2    | HAR_Total (mgCaCO3/L)             | 448       | 435       | 294       | 430       | 465       | 559       | 292       | 584       | 478       | 284       |
| 3    | Na% (%)                           | 4         | 7         | 28        | 15        | 14        | 13        | 18        | 13        | 19        | 21        |
| 4    | RSC (-)                           | 2.7       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 1.2       | 0.0       | 1.0       | 0.5       |
| 5    | SAR (-)                           | 0.2       | 0.4       | 1.6       | 0.8       | 0.7       | 0.7       | 0.8       | 0.8       | 1.2       | 1.1       |
|      | <b>PESTICIDES</b>                 |           |           |           |           |           |           |           |           |           |           |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name : ELGINBRIDGE ( GGU00S2)

Local River : Ghagra

Well Water

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters                        | Summer    |       |      |        |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|------|--------|-------|-------|-------|-------|-------|-------|
|      |                                   | Mar - May |       |      |        |       |       |       |       |       |       |
|      |                                   | 2007      | 2008  | 2009 | 2010   | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|      | <b>PHYSICAL</b>                   |           |       |      |        |       |       |       |       |       |       |
| 1    | EC_GEN (µmho/cm)                  | 1130      | 933   | 1050 | 2900   | 2900  | 890   | 1570  | 970   | 2200  | 880   |
| 2    | pH_FLD (pH units)                 |           |       | 9.0  |        |       | 8.0   |       |       |       |       |
| 3    | pH_GEN (pH units)                 | 7.9       | 8.6   | 8.1  | 7.8    | 7.2   | 7.9   | 7.8   | 8.2   | 8.6   | 7.8   |
| 4    | TDS (mg/L)                        |           |       | 512  | 1800   | 1700  | 540   | 980   | 620   | 1300  | 560   |
| 5    | Temp (deg C)                      | 23.7      | 25.2  | 25.5 | 28.0   | 28.5  | 27.0  | 29.0  | 29.0  | 27.5  | 26.5  |
|      | <b>CHEMICAL</b>                   |           |       |      |        |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 19.9      | 21.0  | 4.0  | 0.0    | 0.0   | 27.9  | 0.0   | 0.0   | 8.0   | 0.0   |
| 2    | ALK-TOT (mgCaCO3/L)               | 1187      | 748   | 312  | 408    | 172   | 360   | 640   | 192   | 388   | 164   |
| 3    | B (mg/L)                          | 0.06      | 0.22  | 0.17 | 0.23   | 0.15  | 0.12  | 0.21  | 0.31  | 0.34  | 0.24  |
| 4    | Ca (mg/L)                         | 118       | 148   | 53   | 165    | 117   | 60    | 105   | 60    | 127   | 67    |
| 5    | Cl (mg/L)                         | 35.3      | 60.0  | 54.0 | 208.0  | 363.9 | 167.9 | 123.9 | 79.9  | 133.8 | 94.1  |
| 6    | CO3 (mg/L)                        | 24.0      | 25.3  | 4.8  | 0.0    | 0.0   | 33.6  | 0.0   | 0.0   | 9.6   | 0.0   |
| 7    | F (mg/L)                          | 0.04      |       | 0.08 | 0.25   | 0.18  | 0.13  | 0.23  | 0.30  | 0.34  | 0.40  |
| 8    | Fe (mg/L)                         | 0.2       | 0.3   |      |        |       |       |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 698       | 430   | 371  | 498    | 210   | 371   | 781   | 234   | 454   | 200   |
| 10   | K (mg/L)                          | 17.7      | 38.7  | 45.0 | 97.4   | 85.2  | 98.5  | 108.3 | 61.8  | 177.5 | 24.6  |
| 11   | Mg (mg/L)                         | 34.4      | 24.1  | 25.8 | 64.0   | 43.4  | 40.2  | 94.9  | 36.1  | 26.9  | 44.3  |
| 12   | Na (mg/L)                         | 8.1       | 22.7  | 63.9 | 63.0   | 75.0  | 98.0  | 66.2  | 52.2  | 74.3  | 63.5  |
| 13   | NH3-N (mg N/L)                    |           |       |      | 0.25   | 0.28  | 1.01  | 1.24  | 0.87  | 1.04  | 1.07  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.14 |        |       | 2.39  | 2.31  | 2.12  | 1.94  | 2.28  |
| 15   | NO2-N (mgN/L)                     | 0.04      | 0.07  | 0.04 |        |       | 0.25  | 0.36  | 0.70  | 0.28  | 0.47  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.10 |        |       | 2.14  | 1.95  | 1.42  | 1.67  | 1.81  |
| 17   | o-PO4-P (mg P/L)                  | 0.251     | 0.241 |      |        |       | 0.424 | 0.424 | 0.548 | 0.703 | 0.506 |
| 18   | P-Tot (mgP/L)                     |           |       |      | 42.000 | 0.310 |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 38.0      | 40.0  | 33.0 | 27.0   | 27.0  |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 67.4      | 20.2  | 54.2 | 155.0  | 53.3  | 51.8  | 121.4 | 177.1 | 260.2 | 225.6 |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |      |        |       |       |       |       |       |       |
| 1    | BOD3-27 (mg/L)                    |           |       |      |        | 0.5   |       |       |       |       |       |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |      |        |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |      |        |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 295       | 370   | 134  | 413    | 293   | 151   | 263   | 151   | 318   | 168   |
| 2    | HAR_Total (mgCaCO3/L)             | 439       | 470   | 241  | 679    | 473   | 318   | 658   | 301   | 430   | 352   |
| 3    | Na% (%)                           | 4         | 9     | 32   | 15     | 22    | 33    | 15    | 23    | 20    | 27    |
| 4    | RSC (-)                           | 3.5       | 0.0   | 1.5  | 0.0    | 0.0   | 0.9   | 0.0   | 0.0   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 0.2       | 0.5   | 1.8  | 1.1    | 1.5   | 2.4   | 1.1   | 1.3   | 1.6   | 1.5   |
|      | <b>PESTICIDES</b>                 |           |       |      |        |       |       |       |       |       |       |

## HISTORY SHEET

|                   |                            |                   |                     |
|-------------------|----------------------------|-------------------|---------------------|
|                   |                            | <b>Water Year</b> | <b>: 2015-2016</b>  |
| <b>Site</b>       | <b>: AYODHYA</b>           | <b>Code</b>       | <b>: GGU00M9</b>    |
| State             | : Uttar Pradesh            | District          | Faizabad            |
| Basin             | : Ganga-Brahm-Meghna Basin | Independent River | : Ganga             |
| Tributary         | : Ghagra                   | Sub Tributary     | : -                 |
| Sub-Sub Tributary | : -                        | Local River       | : Ghagra            |
| Division          | : M Ganga Div. I, Lucknow  | Sub-Division      | : U Rapti SD, Gonda |
| Drainage Area     | : 80889 Sq. Km.            | Bank              | : Right             |
| Latitude          | : 26°47'47"                | Longitude         | : 82°12'12"         |
|                   | Opening Date               | Closing Date      |                     |
| Gauge             | : 07/07/1970               |                   |                     |
| Discharge         | :                          |                   |                     |
| Sediment          | : 01/03/1977               |                   |                     |
| Water Quality     | : 01/12/1977               |                   |                     |

# Water Quality Datasheet for the period : 2015-2016

Station Name : AYODHYA ( GGU00M9)

Local River : Ghagra

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

## River Water Analysis

| S.No | Parameters                        | 01/06/2015 | 01/07/2015 | 01/08/2015 | 01/09/2015 | 01/10/2015 | 02/11/2015 | 01/12/2015 | 01/01/2016 | 01/02/2016 | 01/03/2016 | 01/04/2016  | 02/05/2016  |
|------|-----------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|
|      |                                   | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A           | A           |
|      | <b>PHYSICAL</b>                   |            |            |            |            |            |            |            |            |            |            |             |             |
| 1    | Q (cumec)                         | 625.6      | 5890       | 4121       | 5019       | 1093       | 367.5      | 576.2      | 170.1      | 124.0      | 92.48      | 132.1       | 100.6       |
| 2    | Colour_Cod (-)                    | Brown      | Brown      | Brown      | Brown      | Brown      | Brown      | Brown      | Brown      | Brown      | Green      | Light Brown | Light Brown |
| 3    | EC_GEN (μmho/cm)                  | 210        | 200        | 200        | 350        | 230        | 260        | 260        | 300        | 320        | 330        | 290         | 280         |
| 4    | 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  |
| 5    | pH_GEN (pH units)                 | 8.9        | 8.2        | 8.2        | 8.3        | 8.1        | 8.3        | 8.4        | 8.3        | 8.3        | 8.3        | 8.3         | 8.4         |
| 6    | TDS (mg/L)                        | 125        | 118        | 120        | 201        | 143        | 159        | 161        | 186        | 190        | 200        | 183         | 178         |
| 7    | Temp (deg C)                      | 29.0       | 23.5       | 19.0       | 26.5       | 24.0       | 21.5       | 19.0       | 12.0       | 13.0       | 19.5       | 21.0        | 25.0        |
|      | <b>CHEMICAL</b>                   |            |            |            |            |            |            |            |            |            |            |             |             |
| 1    | Alk-Phen (mgCaCO3/L)              | 12.0       | 0.0        | 0.0        | 8.0        | 0.0        | 0.0        | 8.0        | 4.0        | 0.0        | 4.0        | 4.0         | 4.0         |
| 2    | ALK-TOT (mgCaCO3/L)               | 104        | 84         | 76         | 112        | 128        | 152        | 164        | 176        | 172        | 172        | 168         | 144         |
| 3    | B (mg/L)                          | 0.21       | 0.17       | 0.16       | 0.17       | 0.15       | 0.17       | 0.17       | 0.18       | 0.18       | 0.17       | 0.18        | 0.18        |
| 4    | Ca (mg/L)                         | 36         | 26         | 26         | 31         | 31         | 34         | 36         | 45         | 43         | 43         | 40          | 36          |
| 5    | Cl (mg/L)                         | 9.9        | 8.2        | 8.2        | 8.2        | 8.2        | 9.9        | 8.2        | 9.9        | 12.1       | 12.1       | 9.9         | 12.1        |
| 6    | CO3 (mg/L)                        | 14.4       | 0.0        | 0.0        | 9.6        | 0.0        | 0.0        | 9.6        | 4.8        | 0.0        | 4.8        | 4.8         | 4.8         |
| 7    | F (mg/L)                          | 0.29       | 0.27       | 0.25       | 0.27       | 0.27       | 0.29       | 0.29       | 0.29       | 0.32       | 0.32       | 0.32        | 0.36        |
| 8    | HCO3 (mg/L)                       | 98         | 102        | 93         | 117        | 156        | 185        | 181        | 205        | 210        | 200        | 195         | 166         |
| 9    | K (mg/L)                          | 3.1        | 2.7        | 3.1        | 3.2        | 3.1        | 4.3        | 4.7        | 5.1        | 5.1        | 4.7        | 4.3         | 6.6         |
| 10   | Mg (mg/L)                         | 10.3       | 9.2        | 8.3        | 15.4       | 16.5       | 18.6       | 19.6       | 20.7       | 21.6       | 21.6       | 18.6        | 17.5        |
| 11   | Na (mg/L)                         | 5.8        | 4.8        | 4.8        | 4.4        | 4.8        | 5.8        | 5.5        | 6.0        | 7.1        | 6.9        | 6.4         | 8.3         |
| 12   | NH3-N (mg N/L)                    | 0.44       | 0.27       | 0.24       | 0.27       | 0.29       | 0.29       | 0.34       | 0.34       | 0.32       | 0.31       | 0.32        | 0.34        |
| 13   | NO2+NO3 (mg N/L)                  | 0.56       | 0.45       | 0.45       | 0.45       | 0.45       | 0.49       | 0.43       | 0.46       | 0.43       | 0.45       | 0.43        | 0.43        |
| 14   | NO2-N (mgN/L)                     | 0.06       | 0.03       | 0.03       | 0.01       | 0.00       | 0.01       | 0.00       | 0.00       | 0.00       | 0.01       | 0.00        | 0.00        |
| 15   | NO3-N (mgN/L)                     | 0.50       | 0.42       | 0.42       | 0.43       | 0.45       | 0.48       | 0.43       | 0.46       | 0.43       | 0.43       | 0.43        | 0.43        |
| 16   | o-PO4-P (mg P/L)                  | 0.310      | 0.258      | 0.238      | 0.258      | 0.269      | 0.289      | 0.300      | 0.320      | 0.341      | 0.351      | 0.341       | 0.382       |
| 17   | SO4 (mg/L)                        | 18.2       | 18.2       | 16.8       | 18.2       | 18.2       | 18.7       | 17.8       | 18.7       | 18.7       | 16.8       | 16.3        | 16.8        |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |            |            |            |            |            |            |            |            |            |            |             |             |
| 1    | BOD3-27 (mg/L)                    | 0.8        | 0.8        | 1.2        | 1.2        | 1.2        | 1.6        | 1.4        | 1.2        | 1.4        | 1.4        | 1.4         | 1.2         |
| 2    | COD (mg/L)                        | 5.0        | 4.0        | 6.0        | 6.0        | 5.0        | 8.0        | 8.0        | 7.0        | 8.0        | 8.0        | 7.0         | 7.0         |

# Water Quality Datasheet for the period : 2015-2016

Station Name : AYODHYA( GGU00M9)

Division : M Ganga Div. I, Lucknow

Local River : Ghagra

## River Water Analysis

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters               | 01/06/2015 | 01/07/2015 | 01/08/2015 | 01/09/2015 | 01/10/2015 | 02/11/2015 | 01/12/2015 | 01/01/2016 | 01/02/2016 | 01/03/2016 | 01/04/2016 | 02/05/2016 |
|------|--------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|      |                          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          |
| 3    | DO (mg/L)                | 6.7        | 6.9        | 6.7        | 6.7        | 7.1        | 6.9        | 7.1        | 7.3        | 7.1        | 6.7        | 7.1        | 7.1        |
| 4    | DO_SAT% (%)              | 87         | 80         | 72         | 82         | 84         | 77         | 76         | 67         | 67         | 72         | 79         | 85         |
|      | <b>TRACE &amp; TOXIC</b> |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | Total Arsenic (As) mg/L  |            |            |            |            |            |            |            |            |            |            | 0.00366    |            |
| 2    | Cadmium (Cd) mg/L        |            |            |            |            |            |            |            |            |            |            | 0.00011    |            |
| 3    | Total Chromium(Cr) mg/L  |            |            |            |            |            |            |            |            |            |            | 0.01407    |            |
| 4    | Copper (Cu) mg/L         |            |            |            |            |            |            |            |            |            |            | 0.00347    |            |
| 5    | Iron (Fe) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.026      |            |
| 6    | Lead (Pb) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.00159    |            |
| 7    | Mercury (Hg) mg/L        |            |            |            |            |            |            |            |            |            |            | --         |            |
| 8    | Nickel (Ni) mg/L         |            |            |            |            |            |            |            |            |            |            | 0.00416    |            |
| 9    | Zinc (Zn) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.0104     |            |
|      | <b>CHEMICAL INDICES</b>  |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | HAR_Ca (mgCaCO3/L)       | 91         | 65         | 65         | 78         | 78         | 86         | 91         | 112        | 108        | 108        | 99         | 91         |
| 2    | HAR_Total (mgCaCO3/L)    | 134        | 103        | 99         | 142        | 146        | 163        | 172        | 198        | 198        | 198        | 176        | 163        |
| 3    | Na% (%)                  | 8          | 9          | 9          | 6          | 7          | 7          | 6          | 6          | 7          | 7          | 7          | 10         |
| 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        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.3        |
|      | <b>PESTICIDES</b>        |            |            |            |            |            |            |            |            |            |            |            |            |

# Water Quality Datasheet for the period : 2015-2016

Station Name : AYODHYA ( GGU00M9)

Local River : Ghagra

Well Water Analysis

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters                        | 02/11/2015 | 02/05/2016 |
|------|-----------------------------------|------------|------------|
|      |                                   | B          | B          |
|      | <b>PHYSICAL</b>                   |            |            |
| 1    | Colour_Cod (-)                    | Brown      | Brown      |
| 2    | EC_GEN (µmho/cm)                  | 2000       | 1080       |
| 3    | Odour_Code (-)                    | odour free | odour free |
| 4    | pH_GEN (pH units)                 | 7.7        | 7.2        |
| 5    | TDS (mg/L)                        | 1200       | 690        |
| 6    | Temp (deg C)                      | 22.0       | 23.5       |
|      | <b>CHEMICAL</b>                   |            |            |
| 1    | Alk-Phen (mgCaCO3/L)              | 0.0        | 0.0        |
| 2    | ALK-TOT (mgCaCO3/L)               | 432        | 256        |
| 3    | B (mg/L)                          | 0.33       | 0.27       |
| 4    | Ca (mg/L)                         | 98         | 76         |
| 5    | Cl (mg/L)                         | 193.8      | 132.1      |
| 6    | CO3 (mg/L)                        | 0.0        | 0.0        |
| 7    | F (mg/L)                          | 0.53       | 0.34       |
| 8    | HCO3 (mg/L)                       | 527        | 312        |
| 9    | K (mg/L)                          | 106.4      | 93.8       |
| 10   | Mg (mg/L)                         | 41.3       | 40.2       |
| 11   | Na (mg/L)                         | 130.0      | 81.9       |
| 12   | NH3-N (mg N/L)                    | 1.35       | 1.19       |
| 13   | NO2+NO3 (mg N/L)                  | 2.40       | 2.36       |
| 14   | NO2-N (mgN/L)                     | 0.90       | 0.39       |
| 15   | NO3-N (mgN/L)                     | 1.50       | 1.98       |
| 16   | o-PO4-P (mg P/L)                  | 1.044      | 0.548      |
| 17   | SO4 (mg/L)                        | 92.6       | 244.8      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |            |            |
|      | <b>TRACE &amp; TOXIC</b>          |            |            |
|      | <b>CHEMICAL INDICES</b>           |            |            |
| 1    | HAR_Ca (mgCaCO3/L)                | 245        | 189        |
| 2    | HAR_Total (mgCaCO3/L)             | 417        | 357        |
| 3    | Na% (%)                           | 34         | 27         |
| 4    | RSC (-)                           | 0.3        | 0.0        |
| 5    | SAR (-)                           | 2.8        | 1.9        |
|      | <b>PESTICIDES</b>                 |            |            |

# Water Quality Summary for the period : 2015-2016

Station Name : AYODHYA ( GGU00M9)

Division : M Ganga Div. I, Lucknow

Local River : Ghagra

Sub-Division : U Rapti SD, Gonda

## River Water Summary

| S.No | Parameters                        | Number of Observations | Maximum | Minimum | Mean  |
|------|-----------------------------------|------------------------|---------|---------|-------|
|      | <b>PHYSICAL</b>                   |                        |         |         |       |
| 1    | Q (cumec)                         | 366                    | 7605    | 66.15   | 1430  |
| 2    | EC_GEN (µmho/cm)                  | 12                     | 350     | 200     | 269   |
| 3    | pH_GEN (pH units)                 | 12                     | 8.9     | 8.1     | 8.3   |
| 4    | TDS (mg/L)                        | 12                     | 201     | 118     | 164   |
| 5    | Temp (deg C)                      | 12                     | 29.0    | 12.0    | 21.1  |
|      | <b>CHEMICAL</b>                   |                        |         |         |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 12                     | 12.0    | 0.0     | 3.7   |
| 2    | ALK-TOT (mgCaCO3/L)               | 12                     | 176     | 76      | 138   |
| 3    | B (mg/L)                          | 12                     | 0.21    | 0.15    | 0.17  |
| 4    | Ca (mg/L)                         | 12                     | 45      | 26      | 36    |
| 5    | Cl (mg/L)                         | 12                     | 12.1    | 8.2     | 9.7   |
| 6    | CO3 (mg/L)                        | 12                     | 14.4    | 0.0     | 4.4   |
| 7    | F (mg/L)                          | 12                     | 0.36    | 0.25    | 0.29  |
| 8    | HCO3 (mg/L)                       | 12                     | 210     | 93      | 159   |
| 9    | K (mg/L)                          | 12                     | 6.6     | 2.7     | 4.2   |
| 10   | Mg (mg/L)                         | 12                     | 21.6    | 8.3     | 16.5  |
| 11   | Na (mg/L)                         | 12                     | 8.3     | 4.4     | 5.9   |
| 12   | NH3-N (mg N/L)                    | 12                     | 0.44    | 0.24    | 0.31  |
| 13   | NO2+NO3 (mg N/L)                  | 12                     | 0.56    | 0.43    | 0.46  |
| 14   | NO2-N (mgN/L)                     | 12                     | 0.06    | 0.00    | 0.01  |
| 15   | NO3-N (mgN/L)                     | 12                     | 0.50    | 0.42    | 0.44  |
| 16   | o-PO4-P (mg P/L)                  | 12                     | 0.382   | 0.238   | 0.305 |
| 17   | SO4 (mg/L)                        | 12                     | 18.7    | 16.3    | 17.8  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                        |         |         |       |
| 1    | BOD3-27 (mg/L)                    | 12                     | 1.6     | 0.8     | 1.2   |
| 2    | COD (mg/L)                        | 12                     | 8.0     | 4.0     | 6.6   |
| 3    | DO (mg/L)                         | 12                     | 7.3     | 6.7     | 6.9   |
| 4    | DO_SAT% (%)                       | 12                     | 87      | 67      | 77    |
|      | <b>TRACE &amp; TOXIC</b>          |                        |         |         |       |
|      | <b>CHEMICAL INDICES</b>           |                        |         |         |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 12                     | 112     | 65      | 89    |
| 2    | HAR_Total (mgCaCO3/L)             | 12                     | 198     | 99      | 158   |
| 3    | Na% (%)                           | 12                     | 10      | 6       | 7     |
| 4    | RSC (-)                           | 12                     | 0.0     | 0.0     | 0     |
| 5    | SAR (-)                           | 12                     | 0.3     | 0.2     | 0.2   |
|      | <b>PESTICIDES</b>                 |                        |         |         |       |

# Water Quality Summary for the period : 2015-2016

Station Name : AYODHYA ( GGU00M9)

Division : M Ganga Div. I, Lucknow

Local River : Ghagra

Sub-Division : U Rapti SD, Gonda

## Well Water Summary

| S.No | Parameters                        | Number of Observations | Maximum | Minimum | Mean  |
|------|-----------------------------------|------------------------|---------|---------|-------|
|      | <b>PHYSICAL</b>                   |                        |         |         |       |
| 1    | EC_GEN (μmho/cm)                  | 2                      | 2000    | 1080    | 1540  |
| 2    | pH_GEN (pH units)                 | 2                      | 7.7     | 7.2     | 7.4   |
| 3    | TDS (mg/L)                        | 2                      | 1200    | 690     | 945   |
| 4    | Temp (deg C)                      | 2                      | 23.5    | 22.0    | 22.8  |
|      | <b>CHEMICAL</b>                   |                        |         |         |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 2                      | 0.0     | 0.0     | 0.0   |
| 2    | ALK-TOT (mgCaCO3/L)               | 2                      | 432     | 256     | 344   |
| 3    | B (mg/L)                          | 2                      | 0.33    | 0.27    | 0.30  |
| 4    | Ca (mg/L)                         | 2                      | 98      | 76      | 87    |
| 5    | Cl (mg/L)                         | 2                      | 193.8   | 132.1   | 162.9 |
| 6    | CO3 (mg/L)                        | 2                      | 0.0     | 0.0     | 0.0   |
| 7    | F (mg/L)                          | 2                      | 0.53    | 0.34    | 0.44  |
| 8    | HCO3 (mg/L)                       | 2                      | 527     | 312     | 420   |
| 9    | K (mg/L)                          | 2                      | 106.4   | 93.8    | 100.1 |
| 10   | Mg (mg/L)                         | 2                      | 41.3    | 40.2    | 40.8  |
| 11   | Na (mg/L)                         | 2                      | 130.0   | 81.9    | 105.9 |
| 12   | NH3-N (mg N/L)                    | 2                      | 1.35    | 1.19    | 1.27  |
| 13   | NO2+NO3 (mg N/L)                  | 2                      | 2.40    | 2.36    | 2.38  |
| 14   | NO2-N (mgN/L)                     | 2                      | 0.90    | 0.39    | 0.64  |
| 15   | NO3-N (mgN/L)                     | 2                      | 1.98    | 1.50    | 1.74  |
| 16   | o-PO4-P (mg P/L)                  | 2                      | 1.044   | 0.548   | 0.796 |
| 17   | SO4 (mg/L)                        | 2                      | 244.8   | 92.6    | 168.7 |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                        |         |         |       |
|      | <b>TRACE &amp; TOXIC</b>          |                        |         |         |       |
|      | <b>CHEMICAL INDICES</b>           |                        |         |         |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 2                      | 245     | 189     | 217   |
| 2    | HAR_Total (mgCaCO3/L)             | 2                      | 417     | 357     | 387   |
| 3    | Na% (%)                           | 2                      | 34      | 27      | 31    |
| 4    | RSC (-)                           | 2                      | 0.3     | 0.0     | 0.2   |
| 5    | SAR (-)                           | 2                      | 2.8     | 1.9     | 2.3   |
|      | <b>PESTICIDES</b>                 |                        |         |         |       |

Water Quality Seasonal Average for the period: 2006-2016

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

Station Name : AYODHYA ( GGU00M9)

Local River : Ghagra

River Water

| S.No | Parameters                        | Flood     |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Jun - Oct |       |       |       |       |       |       |       |       |       |
|      |                                   | 2006      | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Q (cumec)                         | 3972      | 9105  | 6367  | 2850  | 5487  | 5490  | 3614  | 4089  | 3051  | 3350  |
| 2    | EC_FLD (µmho/cm)                  |           |       |       |       |       |       | 162   |       |       |       |
| 3    | EC_GEN (µmho/cm)                  | 282       | 285   | 295   | 237   | 223   | 185   | 180   | 226   | 278   | 238   |
| 4    | pH_FLD (pH units)                 | 7.5       | 7.3   | 7.9   | 8.8   | 8.5   | 8.4   | 8.3   | 8.0   |       |       |
| 5    | pH_GEN (pH units)                 | 8.1       | 8.0   | 7.9   | 8.0   | 7.9   | 7.9   | 8.0   | 8.4   | 8.2   | 8.3   |
| 6    | TDS (mg/L)                        |           |       | 195   | 170   | 134   | 112   | 109   | 149   | 162   | 141   |
| 7    | Temp (deg C)                      | 28.2      | 27.6  | 27.1  | 28.5  | 28.7  | 27.1  | 27.8  | 25.5  | 24.2  | 24.4  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 2.0       | 4.7   | 5.7   | 2.0   | 3.2   | 0.8   | 3.2   | 7.0   | 1.6   | 4.0   |
| 2    | ALK-TOT (mgCaCO3/L)               | 119       | 136   | 149   | 137   | 122   | 114   | 120   | 123   | 106   | 101   |
| 3    | B (mg/L)                          | 0.04      | 0.06  | 0.15  | 0.13  | 0.13  | 0.32  | 0.15  | 0.17  | 0.21  | 0.17  |
| 4    | Ca (mg/L)                         | 24        | 33    | 34    | 37    | 31    | 26    | 30    | 29    | 24    | 30    |
| 5    | Cl (mg/L)                         | 18.0      | 9.4   | 10.9  | 14.7  | 13.6  | 9.7   | 13.6  | 13.6  | 13.6  | 8.5   |
| 6    | CO3 (mg/L)                        | 2.4       | 7.0   | 6.9   | 2.4   | 3.8   | 1.0   | 3.8   | 9.6   | 1.9   | 4.8   |
| 7    | F (mg/L)                          | 0.12      | 0.07  | 0.13  | 0.15  | 0.16  | 0.13  | 0.13  | 0.16  | 0.19  | 0.27  |
| 8    | Fe (mg/L)                         | 0.1       | 0.1   |       |       |       | 0.1   |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 141       | 137   | 168   | 162   | 141   | 137   | 139   | 136   | 125   | 113   |
| 10   | K (mg/L)                          | 8.2       | 3.4   | 3.6   | 4.0   | 4.1   | 3.5   | 4.0   | 4.3   | 3.0   | 3.1   |
| 11   | Mg (mg/L)                         | 9.9       | 8.7   | 5.3   | 18.2  | 17.1  | 15.6  | 19.0  | 17.6  | 15.7  | 12.0  |
| 12   | Na (mg/L)                         | 16.2      | 8.0   | 8.5   | 10.0  | 7.1   | 4.5   | 5.4   | 9.3   | 5.8   | 4.9   |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.20  | 0.15  | 0.47  | 0.57  | 0.27  | 0.36  | 0.30  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.10  | 0.08  | 0.09  | 0.70  | 0.59  | 0.59  | 0.56  | 0.47  |
| 15   | NO2-N (mgN/L)                     | 0.09      | 0.05  | 0.05  | 0.03  | 0.04  | 0.15  | 0.15  | 0.23  | 0.17  | 0.02  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.05  | 0.05  | 0.05  | 0.55  | 0.44  | 0.36  | 0.39  | 0.45  |
| 17   | o-PO4-P (mg P/L)                  | 0.002     | 0.010 | 0.012 |       | 0.081 | 0.095 | 0.308 | 0.300 | 0.498 | 0.267 |
| 18   | P-Tot (mgP/L)                     |           |       |       | 0.121 |       |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 9.2       | 9.7   | 8.9   | 6.8   | 5.4   |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 49.1      | 34.2  | 19.7  | 20.2  | 21.3  | 11.5  | 18.0  | 18.0  | 15.6  | 18.0  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
| 1    | BOD3-27 (mg/L)                    | 0.5       | 0.5   | 0.6   | 0.9   | 0.8   | 0.7   | 0.9   | 1.1   | 0.9   | 1.0   |
| 2    | COD (mg/L)                        |           |       |       |       | 3.5   | 13.6  | 4.6   | 5.0   | 4.2   | 5.2   |
| 3    | DO (mg/L)                         | 7.2       | 7.6   | 7.2   | 7.5   | 7.3   | 7.6   | 7.6   | 7.3   | 6.8   | 6.8   |
| 4    | DO_SAT% (%)                       | 92        | 96    | 90    | 97    | 95    | 95    | 97    | 88    | 81    | 81    |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 61        | 83    | 84    | 92    | 78    | 66    | 74    | 71    | 60    | 75    |
| 2    | HAR_Total (mgCaCO3/L)             | 102       | 119   | 106   | 168   | 149   | 131   | 153   | 145   | 126   | 125   |
| 3    | Na% (%)                           | 24        | 12    | 15    | 11    | 9     | 7     | 7     | 12    | 9     | 8     |
| 4    | RSC (-)                           | 0.4       | 0.1   | 0.9   | 0.1   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 0.7       | 0.3   | 0.4   | 0.3   | 0.3   | 0.2   | 0.2   | 0.3   | 0.2   | 0.2   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

Water Quality Seasonal Average for the period: 2006-2016

Station Name : AYODHYA ( GGU00M9)

Local River : Ghagra

River Water

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters                        | Winter    |           |           |           |           |           |           |           |           |           |
|------|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|      |                                   | Nov - Feb |           |           |           |           |           |           |           |           |           |
|      |                                   | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 |
|      | <b>PHYSICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Q (cumec)                         | 445.4     | 824.2     | 834.5     | 1061      | 839.9     | 531.8     | 723.8     | 921.1     | 912.4     | 309.4     |
| 2    | EC_FLD (µmho/cm)                  |           |           |           |           |           |           |           |           |           |           |
| 3    | EC_GEN (µmho/cm)                  | 280       | 374       | 309       | 303       | 290       | 260       | 283       | 320       | 300       | 285       |
| 4    | pH_FLD (pH units)                 |           | 9.3       | 8.5       | 8.5       | 8.5       | 8.8       | 8.9       | 7.0       |           |           |
| 5    | pH_GEN (pH units)                 | 8.3       | 8.0       | 8.0       | 8.4       | 8.0       | 8.0       | 8.1       | 8.4       | 8.5       | 8.3       |
| 6    | TDS (mg/L)                        |           |           | 197       | 182       | 180       | 158       | 187       | 207       | 167       | 174       |
| 7    | Temp (deg C)                      | 20.4      | 20.4      | 18.9      | 17.4      | 18.8      | 18.8      | 16.4      | 17.1      | 14.3      | 16.4      |
|      | <b>CHEMICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Alk-Phen (mgCaCO3/L)              | 4.0       | 9.6       | 8.3       | 1.0       | 0.0       | 0.0       | 0.0       | 6.0       | 10.0      | 3.0       |
| 2    | ALK-TOT (mgCaCO3/L)               | 128       | 199       | 153       | 150       | 121       | 157       | 128       | 127       | 133       | 166       |
| 3    | B (mg/L)                          | 0.03      | 0.13      | 0.15      | 0.14      | 0.16      | 0.16      | 0.16      | 0.18      | 0.21      | 0.18      |
| 4    | Ca (mg/L)                         | 29        | 45        | 32        | 38        | 30        | 36        | 30        | 31        | 44        | 40        |
| 5    | Cl (mg/L)                         | 19.0      | 37.5      | 12.5      | 15.0      | 14.0      | 14.0      | 15.0      | 14.0      | 11.4      | 10.0      |
| 6    | CO3 (mg/L)                        | 4.8       | 12.6      | 10.5      | 1.2       | 0.0       | 0.0       | 0.0       | 7.2       | 12.0      | 3.6       |
| 7    | F (mg/L)                          | 0.16      | 0.12      | 0.14      | 0.18      | 0.14      | 0.15      | 0.17      | 0.18      | 0.26      | 0.29      |
| 8    | Fe (mg/L)                         | 0.1       | 0.2       |           |           |           |           |           |           |           |           |
| 9    | HCO3 (mg/L)                       | 146       | 179       | 171       | 181       | 148       | 192       | 156       | 140       | 138       | 195       |
| 10   | K (mg/L)                          | 5.6       | 80.5      | 3.3       | 5.6       | 4.9       | 4.1       | 4.6       | 3.4       | 2.9       | 4.8       |
| 11   | Mg (mg/L)                         | 12.1      | 9.6       | 11.2      | 20.6      | 16.0      | 20.1      | 18.3      | 19.1      | 17.3      | 20.1      |
| 12   | Na (mg/L)                         | 11.3      | 49.3      | 8.2       | 8.5       | 6.7       | 6.2       | 7.1       | 6.8       | 7.2       | 6.1       |
| 13   | NH3-N (mg N/L)                    |           |           |           | 0.20      | 0.18      | 0.62      | 0.45      | 0.34      | 0.33      | 0.32      |
| 14   | NO2+NO3 (mg N/L)                  |           |           | 0.11      | 0.08      | 0.09      | 0.68      | 0.44      | 0.57      | 0.54      | 0.46      |
| 15   | NO2-N (mgN/L)                     | 0.08      | 0.06      | 0.05      | 0.04      | 0.04      | 0.13      | 0.09      | 0.24      | 0.11      | 0.00      |
| 16   | NO3-N (mgN/L)                     |           |           | 0.06      | 0.04      | 0.04      | 0.55      | 0.35      | 0.33      | 0.42      | 0.45      |
| 17   | o-PO4-P (mg P/L)                  | 0.010     | 0.074     | 0.023     | 0.163     | 0.127     | 0.119     | 0.408     | 0.274     | 0.364     | 0.313     |
| 18   | P-Tot (mgP/L)                     |           |           |           | 0.188     |           |           |           |           |           |           |
| 19   | SiO2 (mg/L)                       | 10.2      | 17.7      | 6.9       | 6.5       | 6.1       |           |           |           |           |           |
| 20   | SO4 (mg/L)                        | 63.5      | 58.6      | 19.3      | 23.4      | 18.8      | 12.0      | 18.2      | 16.8      | 26.9      | 18.5      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |           |           |           |           |           |           |           |           |           |
| 1    | BOD3-27 (mg/L)                    | 0.5       | 0.5       | 0.4       | 0.9       | 0.5       | 0.7       | 1.0       | 1.4       | 0.8       | 1.4       |
| 2    | COD (mg/L)                        |           |           |           |           | 3.3       | 10.3      | 6.3       | 8.0       | 4.3       | 7.8       |
| 3    | DO (mg/L)                         | 7.1       | 7.7       | 7.6       | 7.9       | 7.8       | 7.6       | 7.4       | 6.3       | 7.0       | 7.1       |
| 4    | DO_SAT% (%)                       | 79        | 81        | 81        | 82        | 83        | 81        | 75        | 65        | 68        | 72        |
|      | <b>TRACE &amp; TOXIC</b>          |           |           |           |           |           |           |           |           |           |           |
|      | <b>CHEMICAL INDICES</b>           |           |           |           |           |           |           |           |           |           |           |
| 1    | HAR_Ca (mgCaCO3/L)                | 73        | 112       | 80        | 95        | 74        | 90        | 74        | 76        | 110       | 99        |
| 2    | HAR_Total (mgCaCO3/L)             | 124       | 152       | 126       | 181       | 141       | 174       | 150       | 156       | 182       | 183       |
| 3    | Na% (%)                           | 16        | 20        | 12        | 9         | 9         | 7         | 9         | 9         | 8         | 7         |
| 4    | RSC (-)                           | 0.1       | 0.5       | 0.6       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       |
| 5    | SAR (-)                           | 0.4       | 1.6       | 0.3       | 0.3       | 0.2       | 0.2       | 0.3       | 0.2       | 0.2       | 0.2       |
|      | <b>PESTICIDES</b>                 |           |           |           |           |           |           |           |           |           |           |

**Water Quality Seasonal Average for the period: 2006-2016**

Station Name : AYODHYA ( GGU00M9)

Local River : Ghagra

River Water

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters                        | Summer    |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Mar - May |       |       |       |       |       |       |       |       |       |
|      |                                   | 2007      | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Q (cumec)                         | 318.3     | 214.9 | 221.1 | 299.7 | 267.8 | 373.6 | 658.6 | 251.0 | 533.9 | 108.4 |
| 2    | EC_FLD (µmho/cm)                  |           |       |       |       |       |       |       |       |       |       |
| 3    | EC_GEN (µmho/cm)                  | 334       | 277   | 325   | 320   | 287   | 300   | 293   | 340   | 287   | 300   |
| 4    | pH_FLD (pH units)                 |           |       |       | 9.0   | 8.5   | 8.7   | 7.8   | 9.0   | 7.0   |       |
| 5    | pH_GEN (pH units)                 | 8.0       | 8.2   | 8.1   | 8.2   | 8.2   | 8.2   | 8.0   | 8.3   | 8.8   | 8.4   |
| 6    | TDS (mg/L)                        |           |       | 235   | 189   | 168   | 173   | 192   | 204   | 158   | 187   |
| 7    | Temp (deg C)                      | 24.3      | 24.2  | 22.8  | 24.3  | 21.0  | 24.0  | 23.3  | 20.5  | 20.0  | 21.8  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 2.7       | 7.2   |       | 5.3   | 4.0   | 6.6   | 12.0  | 9.3   | 13.3  | 4.0   |
| 2    | ALK-TOT (mgCaCO3/L)               | 136       | 194   |       | 151   | 128   | 171   | 151   | 161   | 135   | 161   |
| 3    | B (mg/L)                          | 0.01      | 0.19  | 0.13  | 0.15  | 0.16  | 0.17  | 0.18  | 0.19  | 0.20  | 0.18  |
| 4    | Ca (mg/L)                         | 32        | 43    | 31    | 35    | 31    | 33    | 31    | 34    | 39    | 40    |
| 5    | Cl (mg/L)                         | 16.0      | 16.6  | 13.4  | 17.3  | 17.3  | 18.6  | 19.9  | 14.7  | 11.4  | 11.4  |
| 6    | CO3 (mg/L)                        | 3.2       | 9.7   | 6.0   | 6.4   | 4.8   | 8.0   | 14.4  | 11.2  | 16.0  | 4.8   |
| 7    | F (mg/L)                          | 0.16      | 0.09  | 0.16  | 0.18  | 0.14  | 0.16  | 0.19  | 0.21  | 0.27  | 0.34  |
| 8    | Fe (mg/L)                         | 0.1       | 0.3   |       |       |       |       |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 159       | 221   | 190   | 171   | 146   | 192   | 155   | 174   | 132   | 187   |
| 10   | K (mg/L)                          | 4.3       | 4.6   | 4.0   | 5.3   | 5.9   | 6.6   | 5.6   | 4.0   | 2.9   | 5.2   |
| 11   | Mg (mg/L)                         | 14.4      | 9.6   | 14.1  | 20.3  | 17.5  | 23.4  | 19.9  | 22.4  | 16.8  | 19.2  |
| 12   | Na (mg/L)                         | 8.8       | 9.2   | 9.4   | 10.5  | 8.1   | 10.5  | 10.1  | 8.8   | 6.8   | 7.2   |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.22  | 0.16  | 0.66  | 0.39  | 0.37  | 0.35  | 0.32  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.10  | 0.81  | 0.31  | 0.56  | 0.59  | 0.59  | 0.52  | 0.44  |
| 15   | NO2-N (mgN/L)                     | 0.08      | 0.08  | 0.05  | 0.04  | 0.13  | 0.14  | 0.21  | 0.19  | 0.04  | 0.00  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.05  | 0.77  | 0.18  | 0.42  | 0.39  | 0.40  | 0.48  | 0.43  |
| 17   | o-PO4-P (mg P/L)                  | 0.010     | 0.021 | 0.062 | 0.248 | 0.155 | 0.241 | 0.379 | 0.282 | 0.265 | 0.358 |
| 18   | P-Tot (mgP/L)                     |           |       |       | 0.250 |       |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 10.5      | 10.5  | 7.1   | 6.5   | 6.6   |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 58.2      | 28.6  | 27.7  | 22.2  | 20.3  | 13.3  | 19.8  | 18.4  | 17.8  | 16.6  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
| 1    | BOD3-27 (mg/L)                    | 0.6       | 0.5   | 0.4   | 1.0   | 0.9   | 0.9   | 1.0   | 1.0   | 1.0   | 1.3   |
| 2    | COD (mg/L)                        |           |       |       |       | 23.0  | 12.0  | 14.0  | 6.3   | 5.3   | 7.3   |
| 3    | DO (mg/L)                         | 6.8       | 7.4   | 7.4   | 7.4   | 7.6   | 7.4   | 7.8   | 6.5   | 7.2   | 6.9   |
| 4    | DO_SAT% (%)                       | 82        | 88    | 86    | 88    | 85    | 88    | 91    | 72    | 79    | 79    |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 79        | 107   | 78    | 88    | 77    | 83    | 77    | 85    | 98    | 99    |
| 2    | HAR_Total (mgCaCO3/L)             | 139       | 147   | 136   | 172   | 150   | 181   | 160   | 178   | 168   | 179   |
| 3    | Na% (%)                           | 12        | 12    | 13    | 11    | 10    | 11    | 12    | 10    | 8     | 8     |
| 4    | RSC (-)                           | 0.0       | 1.0   | 0.6   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 0.3       | 0.3   | 0.4   | 0.4   | 0.3   | 0.3   | 0.4   | 0.3   | 0.2   | 0.2   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

**Water Quality Seasonal Average for the period: 2006-2016**

Division : M Ganga Div. I, Lucknow

Station Name : AYODHYA ( GGU00M9)

Sub-Division : U Rapti SD, Gonda

Local River : Ghagra

**Well Water**

| S.No | Parameters                        | Flood<br>Jun - Oct |       |       |      |      |      |      |      |      |      |
|------|-----------------------------------|--------------------|-------|-------|------|------|------|------|------|------|------|
|      |                                   | 2006               | 2007  | 2008  | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|      | <b>PHYSICAL</b>                   |                    |       |       |      |      |      |      |      |      |      |
| 1    | EC_GEN (µmho/cm)                  | 1845               | 1692  | 648   |      |      |      |      |      |      |      |
| 2    | pH_FLD (pH units)                 |                    |       | 7.5   |      |      |      |      |      |      |      |
| 3    | pH_GEN (pH units)                 | 8.1                | 7.6   | 7.3   |      |      |      |      |      |      |      |
| 4    | TDS (mg/L)                        |                    |       | 534   |      |      |      |      |      |      |      |
| 5    | Temp (deg C)                      | 25.9               | 26.7  | 25.3  |      |      |      |      |      |      |      |
|      | <b>CHEMICAL</b>                   |                    |       |       |      |      |      |      |      |      |      |
| 1    | Alk-Phen (mgCaCO3/L)              | 4.0                | 12.5  | 12.1  |      |      |      |      |      |      |      |
| 2    | ALK-TOT (mgCaCO3/L)               | 938                | 557   | 738   |      |      |      |      |      |      |      |
| 3    | B (mg/L)                          | 0.12               | 0.10  | 0.23  |      |      |      |      |      |      |      |
| 4    | Ca (mg/L)                         | 68                 | 58    | 60    |      |      |      |      |      |      |      |
| 5    | Cl (mg/L)                         | 151.7              | 115.4 | 159.9 |      |      |      |      |      |      |      |
| 6    | CO3 (mg/L)                        | 4.8                | 15.1  | 14.6  |      |      |      |      |      |      |      |
| 7    | F (mg/L)                          |                    | 0.04  | 0.00  |      |      |      |      |      |      |      |
| 8    | Fe (mg/L)                         | 0.2                | 0.2   |       |      |      |      |      |      |      |      |
| 9    | HCO3 (mg/L)                       | 567                | 324   | 435   |      |      |      |      |      |      |      |
| 10   | K (mg/L)                          | 174.9              | 229.7 | 230.7 |      |      |      |      |      |      |      |
| 11   | Mg (mg/L)                         | 76.4               | 34.5  | 24.1  |      |      |      |      |      |      |      |
| 12   | Na (mg/L)                         | 94.2               | 121.6 | 190.1 |      |      |      |      |      |      |      |
| 13   | NH3-N (mg N/L)                    |                    |       |       |      |      |      |      |      |      |      |
| 14   | NO2+NO3 (mg N/L)                  |                    |       | 0.10  |      |      |      |      |      |      |      |
| 15   | NO2-N (mgN/L)                     | 0.43               | 0.03  | 0.10  |      |      |      |      |      |      |      |
| 16   | NO3-N (mgN/L)                     |                    |       | 0.00  |      |      |      |      |      |      |      |
| 17   | o-PO4-P (mg P/L)                  | 0.151              | 0.205 | 0.217 |      |      |      |      |      |      |      |
| 18   | P-Tot (mgP/L)                     |                    |       |       |      |      |      |      |      |      |      |
| 19   | SiO2 (mg/L)                       | 28.8               | 32.8  | 44.0  |      |      |      |      |      |      |      |
| 20   | SO4 (mg/L)                        | 446.3              | 345.7 | 150.2 |      |      |      |      |      |      |      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                    |       |       |      |      |      |      |      |      |      |
|      | <b>TRACE &amp; TOXIC</b>          |                    |       |       |      |      |      |      |      |      |      |
|      | <b>CHEMICAL INDICES</b>           |                    |       |       |      |      |      |      |      |      |      |
| 1    | HAR_Ca (mgCaCO3/L)                | 171                | 146   | 150   |      |      |      |      |      |      |      |
| 2    | HAR_Total (mgCaCO3/L)             | 489                | 289   | 250   |      |      |      |      |      |      |      |
| 3    | Na% (%)                           | 22                 | 32    | 43    |      |      |      |      |      |      |      |
| 4    | RSC (-)                           | 0.0                | 0.4   | 2.6   |      |      |      |      |      |      |      |
| 5    | SAR (-)                           | 1.9                | 3.5   | 5.2   |      |      |      |      |      |      |      |
|      | <b>PESTICIDES</b>                 |                    |       |       |      |      |      |      |      |      |      |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name : AYODHYA ( GGU00M9)

Local River : Ghagra

Well Water

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters                        | Winter    |           |           |           |           |           |           |           |           |           |
|------|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|      |                                   | Nov - Feb |           |           |           |           |           |           |           |           |           |
|      |                                   | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 |
|      | <b>PHYSICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | EC_GEN (µmho/cm)                  | 2447      | 605       | 640       | 2200      | 2000      | 1990      | 1960      | 2300      | 2200      | 2000      |
| 2    | pH_FLD (pH units)                 |           |           |           |           |           | 8.5       |           |           |           |           |
| 3    | pH_GEN (pH units)                 | 7.6       | 7.9       | 7.3       | 7.4       | 7.8       | 7.3       | 7.3       | 7.5       | 8.8       | 7.7       |
| 4    | TDS (mg/L)                        |           |           | 534       | 1400      | 1210      | 1200      | 1180      | 1500      | 1200      | 1200      |
| 5    | Temp (deg C)                      | 22.3      | 22.8      | 25.0      | 25.5      | 25.0      | 24.5      | 24.5      | 23.0      | 22.0      | 22.0      |
|      | <b>CHEMICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Alk-Phen (mgCaCO3/L)              | 13.9      | 14.4      | 4.0       | 0.0       | 0.0       | 0.0       | 19.9      | 0.0       | 27.9      | 0.0       |
| 2    | ALK-TOT (mgCaCO3/L)               | 1014      | 378       | 328       | 496       | 221       | 440       | 436       | 472       | 468       | 432       |
| 3    | B (mg/L)                          | 0.07      | 0.17      | 0.22      | 0.22      | 0.17      | 0.23      | 0.23      | 0.29      | 0.30      | 0.33      |
| 4    | Ca (mg/L)                         | 79        | 54        | 56        | 93        | 86        | 119       | 77        | 86        | 88        | 98        |
| 5    | Cl (mg/L)                         | 158.0     | 95.1      | 148.0     | 428.1     | 448.0     | 451.9     | 230.0     | 226.1     | 215.8     | 193.8     |
| 6    | CO3 (mg/L)                        | 16.8      | 17.4      | 4.8       | 0.0       | 0.0       | 0.0       | 24.0      | 0.0       | 33.6      | 0.0       |
| 7    | F (mg/L)                          |           |           | 0.00      | 0.23      | 0.27      | 0.15      | 0.21      | 0.30      | 0.13      | 0.53      |
| 8    | Fe (mg/L)                         | 0.3       | 0.2       |           |           |           |           |           |           |           |           |
| 9    | HCO3 (mg/L)                       | 601       | 213       | 195       | 605       | 269       | 537       | 483       | 576       | 503       | 527       |
| 10   | K (mg/L)                          | 197.5     | 237.5     | 109.1     | 174.8     | 176.3     | 156.0     | 174.8     | 169.3     | 171.6     | 106.4     |
| 11   | Mg (mg/L)                         | 79.7      | 18.0      | 7.2       | 87.7      | 68.2      | 105.2     | 37.1      | 101.1     | 34.0      | 41.3      |
| 12   | Na (mg/L)                         | 105.5     | 137.0     | 239.9     | 134.6     | 123.3     | 113.4     | 122.2     | 141.0     | 148.0     | 129.9     |
| 13   | NH3-N (mg N/L)                    |           |           |           | 0.22      | 0.18      | 0.58      | 1.03      | 1.25      | 1.35      | 1.35      |
| 14   | NO2+NO3 (mg N/L)                  |           |           | 0.08      | 0.18      | 0.15      | 0.53      | 0.60      | 1.81      | 3.12      | 2.40      |
| 15   | NO2-N (mgN/L)                     | 0.04      | 0.05      | 0.08      | 0.07      | 0.08      | 0.30      | 0.22      | 0.50      | 1.99      | 0.90      |
| 16   | NO3-N (mgN/L)                     |           |           | 0.00      | 0.11      | 0.07      | 0.22      | 0.38      | 1.32      | 1.13      | 1.50      |
| 17   | o-PO4-P (mg P/L)                  | 0.217     | 0.207     | 0.196     | 0.248     | 0.351     | 0.176     | 0.500     | 0.362     | 0.734     | 1.044     |
| 18   | P-Tot (mgP/L)                     |           |           |           | 0.130     |           |           |           |           |           |           |
| 19   | SiO2 (mg/L)                       | 36.5      | 36.0      | 40.0      | 28.0      | 13.0      |           |           |           |           |           |
| 20   | SO4 (mg/L)                        | 645.8     | 132.0     | 140.2     | 16.8      | 131.5     | 91.2      | 63.6      | 354.2     | 85.9      | 92.6      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |           |           |           |           |           |           |           |           |           |
|      | <b>TRACE &amp; TOXIC</b>          |           |           |           |           |           |           |           |           |           |           |
|      | <b>CHEMICAL INDICES</b>           |           |           |           |           |           |           |           |           |           |           |
| 1    | HAR_Ca (mgCaCO3/L)                | 197       | 135       | 141       | 232       | 215       | 297       | 194       | 215       | 220       | 245       |
| 2    | HAR_Total (mgCaCO3/L)             | 529       | 210       | 171       | 598       | 499       | 735       | 348       | 636       | 361       | 417       |
| 3    | Na% (%)                           | 23        | 37        | 63        | 26        | 27        | 21        | 32        | 27        | 36        | 34        |
| 4    | RSC (-)                           | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 1.8       | 0.0       | 2.2       | 0.3       |
| 5    | SAR (-)                           | 2.0       | 4.1       | 8.0       | 2.4       | 2.4       | 1.8       | 2.9       | 2.4       | 3.4       | 2.8       |
|      | <b>PESTICIDES</b>                 |           |           |           |           |           |           |           |           |           |           |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name : AYODHYA ( GGU00M9)

Local River : Ghagra

Well Water

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters                        | Summer    |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Mar - May |       |       |       |       |       |       |       |       |       |
|      |                                   | 2007      | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | EC_GEN (µmho/cm)                  | 2463      | 509   | 1680  | 760   | 990   | 620   | 760   | 1490  | 1220  | 1080  |
| 2    | pH_FLD (pH units)                 |           |       |       |       | 7.5   | 8.0   |       |       |       |       |
| 3    | pH_GEN (pH units)                 | 7.5       | 8.1   | 7.8   | 7.8   | 7.5   | 7.9   | 7.7   | 8.2   | 9.1   | 7.2   |
| 4    | TDS (mg/L)                        |           |       | 412   | 450   | 600   | 380   | 500   | 930   | 710   | 690   |
| 5    | Temp (deg C)                      | 23.8      | 22.4  | 24.5  | 24.0  | 23.0  | 23.0  | 23.5  | 23.5  | 21.5  | 23.5  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 21.2      | 11.3  |       | 0.0   | 0.0   | 19.9  | 27.9  | 0.0   | 31.9  | 0.0   |
| 2    | ALK-TOT (mgCaCO3/L)               | 1030      | 398   |       | 300   | 116   | 224   | 264   | 136   | 332   | 256   |
| 3    | B (mg/L)                          | 0.07      | 0.19  | 0.18  | 0.18  | 0.14  | 0.17  | 0.23  | 0.30  | 0.31  | 0.27  |
| 4    | Ca (mg/L)                         | 76        | 48    | 40    | 81    | 45    | 40    | 45    | 40    | 19    | 76    |
| 5    | Cl (mg/L)                         | 162.0     | 48.3  | 16.0  | 91.9  | 183.9 | 91.9  | 95.8  | 220.1 | 91.9  | 132.1 |
| 6    | CO3 (mg/L)                        | 25.6      | 13.6  | 0.0   | 0.0   | 0.0   | 24.0  | 33.6  | 0.0   | 38.4  | 0.0   |
| 7    | F (mg/L)                          | 0.05      |       | 0.11  | 0.17  | 0.18  | 0.11  | 0.27  | 0.23  | 0.30  | 0.34  |
| 8    | Fe (mg/L)                         | 0.2       | 0.3   |       |       |       |       |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 602       | 229   | 210   | 366   | 142   | 224   | 254   | 166   | 327   | 312   |
| 10   | K (mg/L)                          | 217.5     | 84.1  | 91.1  | 62.2  | 57.9  | 80.5  | 59.0  | 134.5 | 87.6  | 93.8  |
| 11   | Mg (mg/L)                         | 78.4      | 13.6  | 17.5  | 33.0  | 32.0  | 21.6  | 55.8  | 47.5  | 80.6  | 40.2  |
| 12   | Na (mg/L)                         | 111.6     | 53.5  | 120.1 | 40.7  | 48.8  | 46.2  | 36.6  | 137.1 | 67.6  | 81.9  |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.28  | 0.21  | 1.04  | 1.11  | 1.42  | 0.98  | 1.19  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.08  | 0.18  | 0.63  | 2.17  | 2.32  | 4.52  | 1.89  | 2.36  |
| 15   | NO2-N (mgN/L)                     | 0.04      | 0.08  | 0.00  | 0.10  | 0.26  | 0.25  | 0.44  | 3.44  | 0.43  | 0.39  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.08  | 0.08  | 0.36  | 1.92  | 1.88  | 1.08  | 1.46  | 1.98  |
| 17   | o-PO4-P (mg P/L)                  | 0.251     | 0.086 | 0.238 | 0.382 | 0.372 | 0.496 | 0.548 | 0.465 | 0.558 | 0.548 |
| 18   | P-Tot (mgP/L)                     |           |       |       | 0.380 |       |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 40.0      | 19.7  | 44.0  | 11.0  | 11.8  |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 630.1     | 65.4  | 35.0  | 34.6  | 48.5  | 35.5  | 94.1  | 307.2 | 150.2 | 244.8 |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 189       | 120   | 99    | 202   | 112   | 99    | 112   | 99    | 48    | 189   |
| 2    | HAR_Total (mgCaCO3/L)             | 516       | 177   | 172   | 340   | 245   | 189   | 344   | 297   | 383   | 357   |
| 3    | Na% (%)                           | 24        | 20    | 48    | 18    | 25    | 26    | 16    | 39    | 23    | 27    |
| 4    | RSC (-)                           | 0.5       | 0.7   | 0.0   | 0.0   | 0.0   | 0.7   | 0.0   | 0.0   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 2.1       | 1.6   | 4.0   | 1.0   | 1.4   | 1.5   | 0.9   | 3.5   | 1.5   | 1.9   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

## HISTORY SHEET

|                   |                            |                   |                     |
|-------------------|----------------------------|-------------------|---------------------|
|                   |                            | <b>Water Year</b> | <b>: 2015-2016</b>  |
| <b>Site</b>       | <b>: BASTI</b>             | <b>Code</b>       | <b>: GGU40J3</b>    |
| State             | : Uttar Pradesh            | District          | Basti               |
| Basin             | : Ganga-Brahm-Meghna Basin | Independent River | : Ganga             |
| Tributary         | : Ghagra                   | Sub Tributary     | : Kwano             |
| Sub-Sub Tributary | : -                        | Local River       | : Kwano             |
| Division          | : M Ganga Div. I, Lucknow  | Sub-Division      | : U Rapti SD, Gonda |
| Drainage Area     | : 3005 Sq. Km.             | Bank              | : Left              |
| Latitude          | : 26°46'46"                | Longitude         | : 82°42'42"         |
|                   | Opening Date               | Closing Date      |                     |
| Gauge             | : 24/04/1959               |                   |                     |
| Discharge         | :                          |                   |                     |
| Sediment          | : 01/06/2010               |                   |                     |
| Water Quality     | : 01/05/1976               |                   |                     |

# Water Quality Datasheet for the period : 2015-2016

Station Name : BASTI ( GGU40J3)

Local River : Ghagra

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

## River Water Analysis

| S.No | Parameters                        | 01/06/2015 | 01/07/2015 | 01/08/2015 | 01/09/2015 | 01/10/2015 | 02/11/2015  | 01/12/2015 | 01/01/2016 | 01/02/2016 | 01/03/2016 | 01/04/2016 | 02/05/2016 |
|------|-----------------------------------|------------|------------|------------|------------|------------|-------------|------------|------------|------------|------------|------------|------------|
|      |                                   | A          | A          | A          | A          | A          | A           | A          | A          | A          | A          | A          | A          |
|      | <b>PHYSICAL</b>                   |            |            |            |            |            |             |            |            |            |            |            |            |
| 1    | Q (cumec)                         | 9.050      | 67.63      | 23.65      | 73.84      | 18.87      | 21.46       | 20.76      | 26.06      | 26.60      | 4.750      | 3.630      | 3.280      |
| 2    | Colour_Cod (-)                    | Clear      | Brown      | Brown      | Brown      | Clear      | Light Brown | Clear      | Brown      | Brown      | Brown      | Clear      | Clear      |
| 3    | EC_GEN (μmho/cm)                  | 490        | 260        | 370        | 300        | 350        | 350         | 420        | 460        | 400        | 370        | 410        | 430        |
| 4    | 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 |
| 5    | pH_GEN (pH units)                 | 8.8        | 8.3        | 8.4        | 8.3        | 8.4        | 8.0         | 8.3        | 8.1        | 8.1        | 8.3        | 8.2        | 7.9        |
| 6    | TDS (mg/L)                        | 280        | 152        | 220        | 187        | 220        | 216         | 260        | 280        | 250        | 230        | 260        | 270        |
| 7    | Temp (deg C)                      | 31.5       | 29.5       | 31.5       | 28.5       | 27.0       | 26.0        | 26.5       | 25.0       | 23.0       | 20.5       | 20.0       | 27.0       |
|      | <b>CHEMICAL</b>                   |            |            |            |            |            |             |            |            |            |            |            |            |
| 1    | Alk-Phen (mgCaCO3/L)              | 23.9       | 4.0        | 12.0       | 12.0       | 12.0       | 0.0         | 12.0       | 0.0        | 0.0        | 8.0        | 0.0        | 0.0        |
| 2    | ALK-TOT (mgCaCO3/L)               | 200        | 96         | 160        | 188        | 208        | 228         | 220        | 224        | 212        | 208        | 212        | 208        |
| 3    | B (mg/L)                          | 0.22       | 0.18       | 0.19       | 0.18       | 0.17       | 0.19        | 0.19       | 0.21       | 0.20       | 0.18       | 0.20       | 0.21       |
| 4    | Ca (mg/L)                         | 48         | 26         | 43         | 45         | 50         | 55          | 52         | 57         | 55         | 52         | 50         | 38         |
| 5    | Cl (mg/L)                         | 44.0       | 24.1       | 28.0       | 16.0       | 18.1       | 19.9        | 19.9       | 22.0       | 24.1       | 19.9       | 22.0       | 28.0       |
| 6    | CO3 (mg/L)                        | 28.8       | 4.8        | 14.4       | 14.4       | 14.4       | 0.0         | 14.4       | 0.0        | 0.0        | 9.6        | 0.0        | 0.0        |
| 7    | F (mg/L)                          | 0.29       | 0.30       | 0.29       | 0.30       | 0.32       | 0.32        | 0.32       | 0.34       | 0.38       | 0.32       | 0.34       | 0.40       |
| 8    | HCO3 (mg/L)                       | 185        | 107        | 166        | 200        | 224        | 278         | 239        | 273        | 259        | 234        | 259        | 254        |
| 9    | K (mg/L)                          | 7.0        | 5.9        | 5.9        | 3.9        | 4.7        | 5.9         | 6.3        | 7.0        | 7.4        | 5.9        | 6.3        | 9.4        |
| 10   | Mg (mg/L)                         | 23.7       | 12.4       | 14.5       | 23.7       | 24.8       | 27.8        | 27.8       | 26.9       | 23.7       | 22.7       | 25.8       | 32.0       |
| 11   | Na (mg/L)                         | 29.9       | 15.4       | 16.8       | 9.9        | 11.3       | 13.1        | 12.7       | 13.8       | 15.2       | 13.1       | 13.6       | 18.6       |
| 12   | NH3-N (mg N/L)                    | 0.41       | 0.28       | 0.32       | 3.09       | 0.34       | 0.34        | 0.34       | 0.37       | 0.35       | 0.34       | 0.35       | 0.38       |
| 13   | NO2+NO3 (mg N/L)                  | 0.59       | 0.49       | 0.53       | 0.48       | 0.53       | 0.56        | 0.53       | 0.60       | 0.57       | 0.52       | 0.53       | 0.73       |
| 14   | NO2-N (mgN/L)                     | 0.08       | 0.04       | 0.06       | 0.03       | 0.06       | 0.06        | 0.06       | 0.08       | 0.08       | 0.04       | 0.08       | 0.22       |
| 15   | NO3-N (mgN/L)                     | 0.50       | 0.45       | 0.48       | 0.45       | 0.48       | 0.50        | 0.48       | 0.52       | 0.49       | 0.48       | 0.45       | 0.50       |
| 16   | o-PO4-P (mg P/L)                  | 0.362      | 0.289      | 0.289      | 0.269      | 0.289      | 0.331       | 0.341      | 0.382      | 0.393      | 0.382      | 0.372      | 0.444      |
| 17   | SO4 (mg/L)                        | 19.2       | 19.2       | 18.7       | 19.7       | 19.7       | 21.1        | 19.2       | 20.2       | 19.2       | 17.8       | 1.7        | 19.7       |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |            |            |            |            |            |             |            |            |            |            |            |            |
| 1    | BOD3-27 (mg/L)                    | 5.5        | 3.5        | 4.7        | 5.5        | 4.7        | 3.9         | 3.1        | 2.9        | 2.4        | 2.6        | 2.6        | 2.7        |
| 2    | COD (mg/L)                        | 14.0       | 15.0       | 17.0       | 12.0       | 11.0       | 13.0        | 12.0       | 13.0       | 12.0       | 13.0       | 12.0       | 16.0       |

# Water Quality Datasheet for the period : 2015-2016

Station Name : BASTI ( GGU40J3)

Division : M Ganga Div. I, Lucknow

Local River : Ghagra

## River Water Analysis

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters               | 01/06/2015 | 01/07/2015 | 01/08/2015 | 01/09/2015 | 01/10/2015 | 02/11/2015 | 01/12/2015 | 01/01/2016 | 01/02/2016 | 01/03/2016 | 01/04/2016 | 02/05/2016 |
|------|--------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|      |                          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          |
| 3    | DO (mg/L)                | 3.1        | 4.5        | 3.9        | 4.3        | 4.1        | 5.3        | 5.9        | 6.1        | 6.5        | 6.3        | 6.1        | 6.3        |
| 4    | DO_SAT% (%)              | 42         | 59         | 53         | 55         | 52         | 65         | 73         | 74         | 75         | 69         | 67         | 79         |
|      | <b>TRACE &amp; TOXIC</b> |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | Total Arsenic (As) mg/L  |            |            |            |            |            |            |            |            |            |            | 0.00176    |            |
| 2    | Cadmium (Cd) mg/L        |            |            |            |            |            |            |            |            |            |            | 0.00012    |            |
| 3    | Total Chromium(Cr) mg/L  |            |            |            |            |            |            |            |            |            |            | 0.00198    |            |
| 4    | Copper (Cu) mg/L         |            |            |            |            |            |            |            |            |            |            | 0.00306    |            |
| 5    | Iron (Fe) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.02       |            |
| 6    | Lead (Pb) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.00154    |            |
| 7    | Mercury (Hg) mg/L        |            |            |            |            |            |            |            |            |            |            | --         |            |
| 8    | Nickel (Ni) mg/L         |            |            |            |            |            |            |            |            |            |            | 0.00559    |            |
| 9    | Zinc (Zn) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.0102     |            |
|      | <b>CHEMICAL INDICES</b>  |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | HAR_Ca (mgCaCO3/L)       | 121        | 65         | 108        | 112        | 125        | 138        | 129        | 142        | 138        | 129        | 125        | 95         |
| 2    | HAR_Total (mgCaCO3/L)    | 219        | 116        | 168        | 211        | 228        | 253        | 245        | 254        | 236        | 224        | 232        | 228        |
| 3    | Na% (%)                  | 22         | 21         | 17         | 9          | 10         | 10         | 10         | 10         | 12         | 11         | 11         | 15         |
| 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 (-)                  | 0.9        | 0.6        | 0.6        | 0.3        | 0.3        | 0.4        | 0.4        | 0.4        | 0.4        | 0.4        | 0.4        | 0.5        |
|      | <b>PESTICIDES</b>        |            |            |            |            |            |            |            |            |            |            |            |            |

# Water Quality Datasheet for the period : 2015-2016

Station Name : BASTI ( GGU40J3)

Local River : Ghagra

Well Water Analysis

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters                        | 02/11/2015  | 02/05/2016 |
|------|-----------------------------------|-------------|------------|
|      |                                   | B           | B          |
|      | <b>PHYSICAL</b>                   |             |            |
| 1    | Colour_Cod (-)                    | Light Brown | Clear      |
| 2    | EC_GEN (µmho/cm)                  | 1150        | 1060       |
| 3    | Odour_Code (-)                    | odour free  | odour free |
| 4    | pH_GEN (pH units)                 | 7.9         | 7.9        |
| 5    | TDS (mg/L)                        | 710         | 680        |
| 6    | Temp (deg C)                      | 25.0        | 25.0       |
|      | <b>CHEMICAL</b>                   |             |            |
| 1    | Alk-Phen (mgCaCO3/L)              | 0.0         | 0.0        |
| 2    | ALK-TOT (mgCaCO3/L)               | 296         | 280        |
| 3    | B (mg/L)                          | 0.23        | 0.31       |
| 4    | Ca (mg/L)                         | 65          | 74         |
| 5    | Cl (mg/L)                         | 104.0       | 69.9       |
| 6    | CO3 (mg/L)                        | 0.0         | 0.0        |
| 7    | F (mg/L)                          | 0.68        | 0.44       |
| 8    | HCO3 (mg/L)                       | 361         | 342        |
| 9    | K (mg/L)                          | 47.3        | 11.7       |
| 10   | Mg (mg/L)                         | 32.0        | 41.3       |
| 11   | Na (mg/L)                         | 65.6        | 47.2       |
| 12   | NH3-N (mg N/L)                    | 1.17        | 1.04       |
| 13   | NO2+NO3 (mg N/L)                  | 2.30        | 2.11       |
| 14   | NO2-N (mgN/L)                     | 0.63        | 0.48       |
| 15   | NO3-N (mgN/L)                     | 1.67        | 1.63       |
| 16   | o-PO4-P (mg P/L)                  | 0.796       | 0.568      |
| 17   | SO4 (mg/L)                        | 38.9        | 112.8      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |             |            |
|      | <b>TRACE &amp; TOXIC</b>          |             |            |
|      | <b>CHEMICAL INDICES</b>           |             |            |
| 1    | HAR_Ca (mgCaCO3/L)                | 164         | 185        |
| 2    | HAR_Total (mgCaCO3/L)             | 297         | 357        |
| 3    | Na% (%)                           | 29          | 22         |
| 4    | RSC (-)                           | 0.0         | 0.0        |
| 5    | SAR (-)                           | 1.7         | 1.1        |
|      | <b>PESTICIDES</b>                 |             |            |

# Water Quality Summary for the period : 2015-2016

Station Name : BASTI ( GGU40J3)

Division : M Ganga Div. I, Lucknow

Local River : Ghagra

Sub-Division : U Rapti SD, Gonda

## River Water Summary

| S.No | Parameters                        | Number of Observations | Maximum | Minimum | Mean  |
|------|-----------------------------------|------------------------|---------|---------|-------|
|      | <b>PHYSICAL</b>                   |                        |         |         |       |
| 1    | Q (cumec)                         | 12                     | 73.84   | 3.280   | 24.97 |
| 2    | EC_GEN (µmho/cm)                  | 12                     | 490     | 260     | 384   |
| 3    | pH_GEN (pH units)                 | 12                     | 8.8     | 7.9     | 8.3   |
| 4    | TDS (mg/L)                        | 12                     | 280     | 152     | 235   |
| 5    | Temp (deg C)                      | 12                     | 31.5    | 20.0    | 26.3  |
|      | <b>CHEMICAL</b>                   |                        |         |         |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 12                     | 23.9    | 0.0     | 7     |
| 2    | ALK-TOT (mgCaCO3/L)               | 12                     | 228     | 96      | 197   |
| 3    | B (mg/L)                          | 12                     | 0.22    | 0.17    | 0.19  |
| 4    | Ca (mg/L)                         | 12                     | 57      | 26      | 47    |
| 5    | Cl (mg/L)                         | 12                     | 44.0    | 16.0    | 23.8  |
| 6    | CO3 (mg/L)                        | 12                     | 28.8    | 0.0     | 8.4   |
| 7    | F (mg/L)                          | 12                     | 0.40    | 0.29    | 0.33  |
| 8    | HCO3 (mg/L)                       | 12                     | 278     | 107     | 223   |
| 9    | K (mg/L)                          | 12                     | 9.4     | 3.9     | 6.3   |
| 10   | Mg (mg/L)                         | 12                     | 32.0    | 12.4    | 23.8  |
| 11   | Na (mg/L)                         | 12                     | 29.9    | 9.9     | 15.3  |
| 12   | NH3-N (mg N/L)                    | 12                     | 3.09    | 0.28    | 0.57  |
| 13   | NO2+NO3 (mg N/L)                  | 12                     | 0.73    | 0.48    | 0.55  |
| 14   | NO2-N (mgN/L)                     | 12                     | 0.22    | 0.03    | 0.07  |
| 15   | NO3-N (mgN/L)                     | 12                     | 0.52    | 0.45    | 0.48  |
| 16   | o-PO4-P (mg P/L)                  | 12                     | 0.444   | 0.269   | 0.345 |
| 17   | SO4 (mg/L)                        | 12                     | 21.1    | 1.7     | 17.9  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                        |         |         |       |
| 1    | BOD3-27 (mg/L)                    | 12                     | 5.5     | 2.4     | 3.7   |
| 2    | COD (mg/L)                        | 12                     | 17.0    | 11.0    | 13.3  |
| 3    | DO (mg/L)                         | 12                     | 6.5     | 3.1     | 5.2   |
| 4    | DO_SAT% (%)                       | 12                     | 79      | 42      | 63    |
|      | <b>TRACE &amp; TOXIC</b>          |                        |         |         |       |
|      | <b>CHEMICAL INDICES</b>           |                        |         |         |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 12                     | 142     | 65      | 119   |
| 2    | HAR_Total (mgCaCO3/L)             | 12                     | 254     | 116     | 218   |
| 3    | Na% (%)                           | 12                     | 22      | 9       | 13    |
| 4    | RSC (-)                           | 12                     | 0.0     | 0.0     | 0     |
| 5    | SAR (-)                           | 12                     | 0.9     | 0.3     | 0.5   |
|      | <b>PESTICIDES</b>                 |                        |         |         |       |

# Water Quality Summary for the period : 2015-2016

Station Name : BASTI ( GGU40J3)

Division : M Ganga Div. I, Lucknow

Local River : Ghagra

Sub-Division : U Rapti SD, Gonda

## Well Water Summary

| S.No | Parameters                        | Number of Observations | Maximum | Minimum | Mean  |
|------|-----------------------------------|------------------------|---------|---------|-------|
|      | <b>PHYSICAL</b>                   |                        |         |         |       |
| 1    | EC_GEN (μmho/cm)                  | 2                      | 1150    | 1060    | 1105  |
| 2    | pH_GEN (pH units)                 | 2                      | 7.9     | 7.9     | 7.9   |
| 3    | TDS (mg/L)                        | 2                      | 710     | 680     | 695   |
| 4    | Temp (deg C)                      | 2                      | 25.0    | 25.0    | 25.0  |
|      | <b>CHEMICAL</b>                   |                        |         |         |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 2                      | 0.0     | 0.0     | 0.0   |
| 2    | ALK-TOT (mgCaCO3/L)               | 2                      | 296     | 280     | 288   |
| 3    | B (mg/L)                          | 2                      | 0.31    | 0.23    | 0.27  |
| 4    | Ca (mg/L)                         | 2                      | 74      | 65      | 70    |
| 5    | Cl (mg/L)                         | 2                      | 104.0   | 69.9    | 87.0  |
| 6    | CO3 (mg/L)                        | 2                      | 0.0     | 0.0     | 0.0   |
| 7    | F (mg/L)                          | 2                      | 0.68    | 0.44    | 0.56  |
| 8    | HCO3 (mg/L)                       | 2                      | 361     | 342     | 351   |
| 9    | K (mg/L)                          | 2                      | 47.3    | 11.7    | 29.5  |
| 10   | Mg (mg/L)                         | 2                      | 41.3    | 32.0    | 36.6  |
| 11   | Na (mg/L)                         | 2                      | 65.6    | 47.2    | 56.4  |
| 12   | NH3-N (mg N/L)                    | 2                      | 1.17    | 1.04    | 1.10  |
| 13   | NO2+NO3 (mg N/L)                  | 2                      | 2.30    | 2.11    | 2.21  |
| 14   | NO2-N (mgN/L)                     | 2                      | 0.63    | 0.48    | 0.56  |
| 15   | NO3-N (mgN/L)                     | 2                      | 1.67    | 1.63    | 1.65  |
| 16   | o-PO4-P (mg P/L)                  | 2                      | 0.796   | 0.568   | 0.682 |
| 17   | SO4 (mg/L)                        | 2                      | 112.8   | 38.9    | 75.8  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                        |         |         |       |
|      | <b>TRACE &amp; TOXIC</b>          |                        |         |         |       |
|      | <b>CHEMICAL INDICES</b>           |                        |         |         |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 2                      | 185     | 164     | 174   |
| 2    | HAR_Total (mgCaCO3/L)             | 2                      | 357     | 297     | 327   |
| 3    | Na% (%)                           | 2                      | 29      | 22      | 25    |
| 4    | RSC (-)                           | 2                      | 0.0     | 0.0     | 0.0   |
| 5    | SAR (-)                           | 2                      | 1.7     | 1.1     | 1.4   |
|      | <b>PESTICIDES</b>                 |                        |         |         |       |

Water Quality Seasonal Average for the period: 2006-2016

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

Station Name : BASTI ( GGU40J3)

Local River : Ghagra

River Water

| S.No | Parameters                        | Flood     |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Jun - Oct |       |       |       |       |       |       |       |       |       |
|      |                                   | 2006      | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Q (cumec)                         |           |       |       |       | 130.7 |       |       |       |       | 38.61 |
| 2    | EC_FLD (µmho/cm)                  |           |       |       |       |       |       | 310   |       |       |       |
| 3    | EC_GEN (µmho/cm)                  | 258       | 256   | 190   | 432   | 334   | 244   | 254   | 302   | 366   | 354   |
| 4    | pH_FLD (pH units)                 | 9.5       | 9.0   |       |       | 8.0   | 8.5   | 8.6   |       |       |       |
| 5    | pH_GEN (pH units)                 | 8.0       | 7.5   | 7.1   | 8.2   | 8.0   | 7.7   | 8.0   | 7.9   | 8.4   | 8.4   |
| 6    | TDS (mg/L)                        |           |       | 127   | 273   | 199   | 143   | 149   | 193   | 222   | 212   |
| 7    | Temp (deg C)                      | 29.4      | 28.3  | 28.3  | 29.4  | 29.3  | 28.3  | 31.0  | 30.3  | 29.1  | 29.6  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 2.0       | 5.8   | 5.7   | 1.0   | 11.2  | 5.6   | 1.6   | 1.6   | 5.6   | 12.7  |
| 2    | ALK-TOT (mgCaCO3/L)               | 94        | 141   | 144   | 220   | 154   | 135   | 142   | 141   | 116   | 170   |
| 3    | B (mg/L)                          | 0.03      | 0.07  | 0.15  | 0.16  | 0.14  | 0.28  | 0.13  | 0.17  | 0.22  | 0.19  |
| 4    | Ca (mg/L)                         | 17        | 23    | 38    | 39    | 31    | 29    | 32    | 30    | 25    | 42    |
| 5    | Cl (mg/L)                         | 9.7       | 27.1  | 15.0  | 15.5  | 20.9  | 11.3  | 13.6  | 16.0  | 24.4  | 26.1  |
| 6    | CO3 (mg/L)                        | 2.4       | 7.0   | 6.9   | 1.2   | 13.4  | 6.7   | 1.9   | 1.9   | 6.7   | 15.4  |
| 7    | F (mg/L)                          | 0.13      | 0.13  | 0.13  | 0.17  | 0.15  | 0.12  | 0.14  | 0.17  | 0.16  | 0.30  |
| 8    | Fe (mg/L)                         | 0.1       | 0.1   |       |       |       | 0.1   |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 110       | 115   | 161   | 266   | 161   | 151   | 170   | 168   | 128   | 177   |
| 10   | K (mg/L)                          | 10.2      | 3.8   | 3.6   | 4.6   | 4.2   | 4.7   | 4.9   | 2.5   | 4.1   | 5.5   |
| 11   | Mg (mg/L)                         | 14.8      | 10.0  | 8.7   | 19.8  | 17.8  | 13.0  | 19.6  | 16.5  | 16.7  | 19.8  |
| 12   | Na (mg/L)                         | 16.8      | 7.8   | 8.4   | 29.0  | 25.6  | 16.2  | 18.1  | 13.8  | 16.7  | 16.7  |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.08  | 0.18  | 0.43  | 0.55  | 0.25  | 0.32  | 0.89  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.18  | 0.09  | 0.22  | 1.13  | 0.71  | 0.56  | 0.49  | 0.52  |
| 15   | NO2-N (mgN/L)                     | 0.14      | 0.05  | 0.05  | 0.06  | 0.15  | 0.14  | 0.15  | 0.22  | 0.15  | 0.05  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.13  | 0.03  | 0.07  | 0.99  | 0.56  | 0.34  | 0.34  | 0.47  |
| 17   | o-PO4-P (mg P/L)                  | 0.045     | 0.180 | 0.101 | 0.064 | 0.103 | 0.134 | 0.293 | 0.260 | 0.424 | 0.300 |
| 18   | P-Tot (mgP/L)                     |           |       |       | 0.100 |       |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 8.6       | 9.7   | 8.8   | 5.4   | 5.4   |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 52.0      | 24.0  | 26.1  | 17.9  | 17.8  | 13.4  | 18.0  | 14.7  | 11.9  | 19.3  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
| 1    | BOD3-27 (mg/L)                    |           |       |       | 2.5   | 2.3   | 2.1   | 2.1   | 1.5   | 2.8   | 4.8   |
| 2    | COD (mg/L)                        |           |       |       |       | 12.0  | 31.4  | 10.4  | 9.8   | 13.2  | 13.8  |
| 3    | DO (mg/L)                         | 6.3       | 7.5   | 7.9   | 6.3   | 6.4   | 6.4   | 6.4   | 6.2   | 6.5   | 4.0   |
| 4    | DO_SAT% (%)                       | 83        | 96    | 101   | 82    | 84    | 83    | 85    | 83    | 84    | 52    |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 43        | 57    | 96    | 97    | 77    | 72    | 80    | 76    | 64    | 106   |
| 2    | HAR_Total (mgCaCO3/L)             | 105       | 99    | 132   | 180   | 151   | 126   | 162   | 144   | 133   | 188   |
| 3    | Na% (%)                           | 23        | 14    | 12    | 26    | 26    | 20    | 19    | 17    | 20    | 16    |
| 4    | RSC (-)                           | 0.4       | 0.2   | 0.3   | 0.9   | 0.2   | 0.2   | 0.1   | 0.1   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 0.7       | 0.3   | 0.3   | 0.9   | 0.9   | 0.6   | 0.6   | 0.5   | 0.6   | 0.5   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

**Water Quality Seasonal Average for the period: 2006-2016**

Station Name : BASTI ( GGU40J3)

Local River : Ghagra

River Water

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters                        | Winter    |           |           |           |           |           |           |           |           |           |
|------|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|      |                                   | Nov - Feb |           |           |           |           |           |           |           |           |           |
|      |                                   | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 |
|      | <b>PHYSICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Q (cumec)                         |           |           | 9.450     |           | 10.12     |           |           |           |           | 23.72     |
| 2    | EC_FLD (µmho/cm)                  |           |           |           |           |           |           |           |           |           |           |
| 3    | EC_GEN (µmho/cm)                  | 468       | 149       | 299       | 408       | 430       | 368       | 457       | 495       | 455       | 408       |
| 4    | pH_FLD (pH units)                 |           |           |           | 9.0       | 8.8       | 8.3       | 8.8       | 9.0       |           |           |
| 5    | pH_GEN (pH units)                 | 7.9       | 7.3       | 8.1       | 8.4       | 7.9       | 7.8       | 7.9       | 8.2       | 8.2       | 8.1       |
| 6    | TDS (mg/L)                        |           |           | 155       | 240       | 258       | 202       | 272       | 320       | 246       | 252       |
| 7    | Temp (deg C)                      | 21.0      | 20.5      | 19.1      | 19.0      | 19.4      | 19.1      | 18.5      | 20.5      | 21.0      | 25.1      |
|      | <b>CHEMICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Alk-Phen (mgCaCO3/L)              | 4.0       | 9.7       | 1.2       | 10.2      | 0.0       | 3.0       | 0.0       | 9.0       | 13.9      | 3.0       |
| 2    | ALK-TOT (mgCaCO3/L)               | 86        | 160       | 293       | 176       | 137       | 207       | 144       | 144       | 193       | 221       |
| 3    | B (mg/L)                          | 0.02      | 0.13      | 0.12      | 0.18      | 0.18      | 0.16      | 0.16      | 0.18      | 0.23      | 0.20      |
| 4    | Ca (mg/L)                         | 28        | 29        | 40        | 41        | 27        | 42        | 28        | 34        | 59        | 55        |
| 5    | Cl (mg/L)                         | 19.0      | 39.8      | 13.9      | 15.0      | 16.0      | 15.0      | 18.7      | 26.0      | 34.0      | 21.5      |
| 6    | CO3 (mg/L)                        | 4.8       | 11.7      | 1.5       | 12.3      | 0.0       | 3.6       | 0.0       | 10.8      | 16.8      | 3.6       |
| 7    | F (mg/L)                          | 0.23      | 0.15      | 0.15      | 0.20      | 0.18      | 0.14      | 0.16      | 0.18      | 0.36      | 0.34      |
| 8    | Fe (mg/L)                         | 0.1       | 0.2       |           |           |           |           |           |           |           |           |
| 9    | HCO3 (mg/L)                       | 95        | 172       | 354       | 189       | 167       | 245       | 176       | 154       | 201       | 262       |
| 10   | K (mg/L)                          | 5.9       | 4.1       | 3.8       | 2.5       | 4.5       | 3.9       | 3.0       | 2.2       | 4.3       | 6.6       |
| 11   | Mg (mg/L)                         | 14.7      | 13.8      | 16.9      | 16.2      | 14.9      | 24.3      | 17.5      | 19.6      | 23.7      | 26.5      |
| 12   | Na (mg/L)                         | 11.2      | 8.3       | 26.2      | 23.8      | 22.6      | 23.0      | 18.9      | 22.6      | 25.0      | 13.7      |
| 13   | NH3-N (mg N/L)                    |           |           |           | 0.11      | 0.17      | 0.62      | 0.46      | 0.34      | 0.31      | 0.35      |
| 14   | NO2+NO3 (mg N/L)                  |           |           | 0.17      | 0.12      | 0.80      | 0.86      | 0.43      | 0.61      | 0.51      | 0.57      |
| 15   | NO2-N (mgN/L)                     | 0.07      | 0.06      | 0.06      | 0.05      | 0.07      | 0.13      | 0.09      | 0.27      | 0.11      | 0.07      |
| 16   | NO3-N (mgN/L)                     |           |           | 0.12      | 0.07      | 0.74      | 0.72      | 0.35      | 0.33      | 0.40      | 0.50      |
| 17   | o-PO4-P (mg P/L)                  | 0.238     | 0.168     | 0.041     | 0.184     | 0.165     | 0.114     | 0.379     | 0.300     | 0.336     | 0.362     |
| 18   | P-Tot (mgP/L)                     |           |           | 0.047     | 0.227     |           |           |           |           |           |           |
| 19   | SiO2 (mg/L)                       | 10.6      | 10.5      | 6.2       | 6.9       | 6.3       |           |           |           |           |           |
| 20   | SO4 (mg/L)                        | 21.0      | 37.0      | 2.6       | 16.2      | 16.5      | 13.6      | 18.7      | 18.8      | 55.0      | 19.9      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |           |           |           |           |           |           |           |           |           |
| 1    | BOD3-27 (mg/L)                    |           |           |           | 1.6       | 2.0       | 2.0       | 2.1       | 2.6       | 2.1       | 3.1       |
| 2    | COD (mg/L)                        |           |           |           |           | 7.0       | 25.0      | 20.7      | 12.0      | 11.3      | 12.5      |
| 3    | DO (mg/L)                         | 6.9       | 7.6       | 6.8       | 7.2       | 6.4       | 6.8       | 6.2       | 6.3       | 6.0       | 5.9       |
| 4    | DO_SAT% (%)                       | 78        | 85        | 74        | 77        | 69        | 73        | 66        | 69        | 68        | 72        |
|      | <b>TRACE &amp; TOXIC</b>          |           |           |           |           |           |           |           |           |           |           |
|      | <b>CHEMICAL INDICES</b>           |           |           |           |           |           |           |           |           |           |           |
| 1    | HAR_Ca (mgCaCO3/L)                | 70        | 73        | 101       | 102       | 67        | 105       | 69        | 86        | 148       | 137       |
| 2    | HAR_Total (mgCaCO3/L)             | 131       | 130       | 171       | 169       | 129       | 206       | 142       | 168       | 247       | 247       |
| 3    | Na% (%)                           | 15        | 12        | 25        | 23        | 27        | 19        | 22        | 23        | 18        | 10        |
| 4    | RSC (-)                           | 0.0       | 0.6       | 2.4       | 0.3       | 0.2       | 0.2       | 0.1       | 0.0       | 0.0       | 0.0       |
| 5    | SAR (-)                           | 0.4       | 0.3       | 0.9       | 0.8       | 0.9       | 0.7       | 0.7       | 0.8       | 0.7       | 0.4       |
|      | <b>PESTICIDES</b>                 |           |           |           |           |           |           |           |           |           |           |

**Water Quality Seasonal Average for the period: 2006-2016**

Station Name : BASTI ( GGU40J3)

Local River : Ghagra

River Water

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters                        | Summer    |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Mar - May |       |       |       |       |       |       |       |       |       |
|      |                                   | 2007      | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Q (cumec)                         |           |       | 6.283 |       | 6.477 |       |       |       |       | 3.887 |
| 2    | EC_FLD (µmho/cm)                  |           |       |       |       |       |       |       |       |       |       |
| 3    | EC_GEN (µmho/cm)                  | 446       | 163   | 385   | 480   | 420   | 470   | 433   | 550   | 467   | 403   |
| 4    | pH_FLD (pH units)                 |           |       | 9.0   | 8.5   | 9.0   | 7.8   | 9.0   | 7.5   |       |       |
| 5    | pH_GEN (pH units)                 | 7.8       | 7.4   | 8.3   | 8.5   | 8.2   | 8.0   | 8.2   | 8.3   | 8.9   | 8.1   |
| 6    | TDS (mg/L)                        |           |       | 236   | 288   | 253   | 280   | 280   | 347   | 267   | 253   |
| 7    | Temp (deg C)                      | 22.2      | 19.2  | 24.5  | 26.0  | 22.7  | 23.5  | 23.3  | 21.5  | 24.3  | 22.5  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 4.0       | 9.7   | 11.6  | 10.6  | 4.0   | 2.7   | 13.3  | 8.0   | 13.3  | 2.7   |
| 2    | ALK-TOT (mgCaCO3/L)               | 100       | 184   | 262   | 209   | 157   | 214   | 192   | 177   | 196   | 209   |
| 3    | B (mg/L)                          | 0.01      | 0.19  | 0.08  | 0.19  | 0.20  | 0.18  | 0.19  | 0.23  | 0.22  | 0.20  |
| 4    | Ca (mg/L)                         | 30        | 41    | 32    | 37    | 30    | 38    | 33    | 36    | 44    | 46    |
| 5    | Cl (mg/L)                         | 18.0      | 36.8  | 16.6  | 19.9  | 18.6  | 18.7  | 25.4  | 37.2  | 36.0  | 23.3  |
| 6    | CO3 (mg/L)                        | 4.8       | 11.7  | 14.0  | 12.8  | 4.8   | 3.2   | 16.0  | 9.6   | 16.0  | 3.2   |
| 7    | F (mg/L)                          | 0.22      | 0.14  | 0.15  | 0.17  | 0.15  | 0.16  | 0.17  | 0.23  | 0.27  | 0.35  |
| 8    | Fe (mg/L)                         | 0.1       | 0.2   |       |       |       |       |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 112       | 201   | 291   | 229   | 182   | 254   | 202   | 197   | 207   | 249   |
| 10   | K (mg/L)                          | 4.3       | 4.7   | 3.4   | 4.2   | 5.2   | 6.6   | 4.0   | 5.2   | 5.5   | 7.2   |
| 11   | Mg (mg/L)                         | 15.8      | 14.4  | 15.5  | 22.3  | 16.5  | 28.2  | 22.0  | 21.0  | 23.0  | 26.8  |
| 12   | Na (mg/L)                         | 8.7       | 9.4   | 32.4  | 29.1  | 28.4  | 19.8  | 26.7  | 31.1  | 29.4  | 15.1  |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.21  | 0.16  | 0.69  | 0.38  | 0.37  | 0.33  | 0.36  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.10  | 0.16  | 0.28  | 0.89  | 0.68  | 1.11  | 0.54  | 0.59  |
| 15   | NO2-N (mgN/L)                     | 0.07      | 0.08  | 0.03  | 0.07  | 0.12  | 0.16  | 0.21  | 0.73  | 0.06  | 0.11  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.08  | 0.09  | 0.16  | 0.74  | 0.47  | 0.38  | 0.48  | 0.48  |
| 17   | o-PO4-P (mg P/L)                  | 0.234     | 0.169 |       | 0.331 | 0.196 | 0.241 | 0.355 | 0.241 | 0.296 | 0.400 |
| 18   | P-Tot (mgP/L)                     |           |       | 0.050 | 0.320 |       |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 10.7      | 10.8  | 2.1   | 6.7   | 6.5   |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 22.1      | 42.1  | 20.3  | 11.0  | 19.4  | 12.5  | 22.6  | 21.1  | 17.1  | 13.1  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
| 1    | BOD3-27 (mg/L)                    |           |       |       | 2.5   | 2.2   | 1.9   | 1.4   | 2.9   | 3.3   | 2.6   |
| 2    | COD (mg/L)                        |           |       |       |       | 13.0  | 21.0  | 29.3  | 14.7  | 12.0  | 13.7  |
| 3    | DO (mg/L)                         | 7.3       | 8.1   | 5.9   | 6.5   | 6.4   | 6.1   | 6.2   | 6.2   | 5.5   | 6.2   |
| 4    | DO_SAT% (%)                       | 83        | 88    | 70    | 79    | 74    | 71    | 73    | 70    | 65    | 72    |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 75        | 103   | 79    | 92    | 74    | 95    | 82    | 90    | 109   | 116   |
| 2    | HAR_Total (mgCaCO3/L)             | 140       | 163   | 143   | 185   | 143   | 212   | 173   | 178   | 205   | 228   |
| 3    | Na% (%)                           | 12        | 11    | 32    | 25    | 29    | 16    | 25    | 27    | 24    | 12    |
| 4    | RSC (-)                           | 0.0       | 0.4   | 2.4   | 0.5   | 0.3   | 0.1   | 0.4   | 0.0   | 0.1   | 0.0   |
| 5    | SAR (-)                           | 0.3       | 0.3   | 1.2   | 0.9   | 1.0   | 0.6   | 0.9   | 1.0   | 0.9   | 0.4   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

# Water Quality Seasonal Average for the period: 2006-2016

Division : M Ganga Div. I, Lucknow

Station Name : BASTI ( GGU40J3)

Sub-Division : U Rapti SD, Gonda

Local River : Ghagra

Well Water

| S.No | Parameters                        | Flood     |       |       |      |      |      |      |      |      |      |
|------|-----------------------------------|-----------|-------|-------|------|------|------|------|------|------|------|
|      |                                   | Jun - Oct |       |       |      |      |      |      |      |      |      |
|      |                                   | 2006      | 2007  | 2008  | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|      | <b>PHYSICAL</b>                   |           |       |       |      |      |      |      |      |      |      |
| 1    | EC_GEN (µmho/cm)                  | 1520      | 912   | 900   |      |      |      |      |      |      |      |
| 2    | pH_FLD (pH units)                 |           |       |       |      |      |      |      |      |      |      |
| 3    | pH_GEN (pH units)                 | 8.1       | 7.7   | 7.9   |      |      |      |      |      |      |      |
| 4    | TDS (mg/L)                        |           |       | 507   |      |      |      |      |      |      |      |
| 5    | Temp (deg C)                      | 26.3      | 25.5  | 25.8  |      |      |      |      |      |      |      |
|      | <b>CHEMICAL</b>                   |           |       |       |      |      |      |      |      |      |      |
| 1    | Alk-Phen (mgCaCO3/L)              | 6.4       | 15.6  | 36.9  |      |      |      |      |      |      |      |
| 2    | ALK-TOT (mgCaCO3/L)               | 1260      | 949   | 813   |      |      |      |      |      |      |      |
| 3    | B (mg/L)                          | 0.17      | 0.06  |       |      |      |      |      |      |      |      |
| 4    | Ca (mg/L)                         | 81        | 83    | 104   |      |      |      |      |      |      |      |
| 5    | Cl (mg/L)                         | 79.7      | 54.5  | 164.9 |      |      |      |      |      |      |      |
| 6    | CO3 (mg/L)                        | 7.7       | 18.8  | 44.4  |      |      |      |      |      |      |      |
| 7    | F (mg/L)                          |           | 0.00  | 0.23  |      |      |      |      |      |      |      |
| 8    | Fe (mg/L)                         | 0.2       | 0.2   |       |      |      |      |      |      |      |      |
| 9    | HCO3 (mg/L)                       | 760       | 560   | 450   |      |      |      |      |      |      |      |
| 10   | K (mg/L)                          | 120.0     | 191.2 | 235.6 |      |      |      |      |      |      |      |
| 11   | Mg (mg/L)                         | 47.7      | 26.0  | 28.8  |      |      |      |      |      |      |      |
| 12   | Na (mg/L)                         | 129.0     | 199.5 | 174.0 |      |      |      |      |      |      |      |
| 13   | NH3-N (mg N/L)                    |           |       |       |      |      |      |      |      |      |      |
| 14   | NO2+NO3 (mg N/L)                  |           |       |       |      |      |      |      |      |      |      |
| 15   | NO2-N (mgN/L)                     | 0.39      | 0.53  | 0.61  |      |      |      |      |      |      |      |
| 16   | NO3-N (mgN/L)                     |           |       |       |      |      |      |      |      |      |      |
| 17   | o-PO4-P (mg P/L)                  | 0.666     | 0.657 | 0.682 |      |      |      |      |      |      |      |
| 18   | SiO2 (mg/L)                       | 22.6      | 28.8  | 44.0  |      |      |      |      |      |      |      |
| 19   | SO4 (mg/L)                        | 184.4     | 52.6  | 36.0  |      |      |      |      |      |      |      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |      |      |      |      |      |      |      |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |      |      |      |      |      |      |      |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |      |      |      |      |      |      |      |
| 1    | HAR_Ca (mgCaCO3/L)                | 202       | 207   | 260   |      |      |      |      |      |      |      |
| 2    | HAR_Total (mgCaCO3/L)             | 401       | 315   | 380   |      |      |      |      |      |      |      |
| 3    | Na% (%)                           | 31        | 44    | 32    |      |      |      |      |      |      |      |
| 4    | RSC (-)                           | 5.4       | 3.6   | 1.3   |      |      |      |      |      |      |      |
| 5    | SAR (-)                           | 2.9       | 4.9   | 3.9   |      |      |      |      |      |      |      |
|      | <b>PESTICIDES</b>                 |           |       |       |      |      |      |      |      |      |      |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name : BASTI ( GGU40J3)

Local River : Ghagra

Well Water

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters                        | Winter    |           |           |           |           |           |           |           |           |           |
|------|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|      |                                   | Nov - Feb |           |           |           |           |           |           |           |           |           |
|      |                                   | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 |
|      | <b>PHYSICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | EC_GEN (µmho/cm)                  | 1021      | 829       | 890       |           |           | 790       | 740       | 600       | 1200      | 1150      |
| 2    | pH_FLD (pH units)                 |           |           |           |           |           |           |           |           |           |           |
| 3    | pH_GEN (pH units)                 | 7.8       | 7.8       | 7.8       |           |           | 7.8       | 7.9       | 8.2       | 8.9       | 7.9       |
| 4    | TDS (mg/L)                        |           |           | 512       |           |           | 470       | 440       | 390       | 700       | 710       |
| 5    | Temp (deg C)                      | 23.6      | 21.6      | 26.0      |           |           | 23.5      | 22.0      | 26.0      | 23.5      | 25.0      |
|      | <b>CHEMICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Alk-Phen (mgCaCO3/L)              | 8.0       | 28.9      | 6.0       |           |           | 27.9      | 19.9      | 0.0       | 67.7      | 0.0       |
| 2    | ALK-TOT (mgCaCO3/L)               | 1479      | 665       | 308       |           |           | 292       | 332       | 200       | 376       | 296       |
| 3    | B (mg/L)                          | 0.01      | 0.15      |           |           |           | 0.19      | 0.18      | 0.21      | 0.32      | 0.23      |
| 4    | Ca (mg/L)                         | 90        | 94        | 55        |           |           | 52        | 71        | 33        | 62        | 65        |
| 5    | Cl (mg/L)                         | 103.5     | 28.8      | 104.0     |           |           | 148.0     | 0.8       | 32.0      | 85.9      | 104.0     |
| 6    | CO3 (mg/L)                        | 9.6       | 34.9      | 7.2       |           |           | 33.6      | 24.0      | 0.0       | 81.6      | 0.0       |
| 7    | F (mg/L)                          |           |           | 0.22      |           |           | 0.13      | 0.18      | 0.21      | 0.80      | 0.68      |
| 8    | Fe (mg/L)                         | 0.3       | 0.2       |           |           |           |           |           |           |           |           |
| 9    | HCO3 (mg/L)                       | 892       | 370       | 181       |           |           | 288       | 356       | 244       | 293       | 361       |
| 10   | K (mg/L)                          | 168.8     | 200.5     | 7.4       |           |           | 1.6       | 0.8       | 3.1       | 53.1      | 47.3      |
| 11   | Mg (mg/L)                         | 33.3      | 25.8      | 19.2      |           |           | 78.5      | 53.7      | 42.3      | 46.4      | 32.0      |
| 12   | Na (mg/L)                         | 175.0     | 213.8     | 44.4      |           |           | 30.4      | 20.1      | 26.0      | 62.9      | 65.6      |
| 13   | NH3-N (mg N/L)                    |           |           |           |           |           | 0.65      | 1.06      | 1.07      | 0.94      | 1.17      |
| 14   | NO2+NO3 (mg N/L)                  |           |           |           |           |           | 0.52      | 0.69      | 2.14      | 1.83      | 2.30      |
| 15   | NO2-N (mgN/L)                     | 0.59      | 0.53      | 0.61      |           |           | 0.21      | 0.27      | 0.33      | 0.15      | 0.63      |
| 16   | NO3-N (mgN/L)                     |           |           |           |           |           | 0.31      | 0.42      | 1.81      | 1.68      | 1.67      |
| 17   | o-PO4-P (mg P/L)                  | 0.829     | 0.643     | 0.506     |           |           | 0.165     | 0.400     | 0.434     | 0.620     | 0.796     |
| 18   | SiO2 (mg/L)                       | 30.0      | 33.0      | 44.0      |           |           |           |           |           |           |           |
| 19   | SO4 (mg/L)                        | 99.0      | 21.1      | 34.1      |           |           | 21.1      | 37.8      | 68.2      | 35.0      | 38.9      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |           |           |           |           |           |           |           |           |           |
|      | <b>TRACE &amp; TOXIC</b>          |           |           |           |           |           |           |           |           |           |           |
|      | <b>CHEMICAL INDICES</b>           |           |           |           |           |           |           |           |           |           |           |
| 1    | HAR_Ca (mgCaCO3/L)                | 225       | 235       | 138       |           |           | 129       | 176       | 82        | 155       | 164       |
| 2    | HAR_Total (mgCaCO3/L)             | 363       | 342       | 218       |           |           | 456       | 400       | 258       | 348       | 297       |
| 3    | Na% (%)                           | 40        | 44        | 30        |           |           | 13        | 10        | 18        | 25        | 29        |
| 4    | RSC (-)                           | 7.7       | 0.4       | 0.0       |           |           | 0.0       | 0.0       | 0.0       | 0.6       | 0.0       |
| 5    | SAR (-)                           | 4.0       | 5.0       | 1.3       |           |           | 0.6       | 0.4       | 0.7       | 1.5       | 1.7       |
|      | <b>PESTICIDES</b>                 |           |           |           |           |           |           |           |           |           |           |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name : BASTI ( GGU40J3)

Local River : Ghagra

Well Water

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters                        | Summer<br>Mar - May |       |      |      |      |       |       |       |       |       |
|------|-----------------------------------|---------------------|-------|------|------|------|-------|-------|-------|-------|-------|
|      |                                   | 2007                | 2008  | 2009 | 2010 | 2011 | 2012  | 2013  | 2014  | 2015  | 2016  |
|      | <b>PHYSICAL</b>                   |                     |       |      |      |      |       |       |       |       |       |
| 1    | EC_GEN (µmho/cm)                  | 1013                | 850   |      |      |      | 1090  | 1220  | 1100  | 1500  | 1060  |
| 2    | pH_FLD (pH units)                 |                     |       |      |      |      | 8.0   |       |       |       |       |
| 3    | pH_GEN (pH units)                 | 7.8                 | 7.9   |      |      |      | 7.8   | 7.9   | 8.7   | 8.9   | 7.9   |
| 4    | TDS (mg/L)                        |                     |       |      |      |      | 620   | 820   | 690   | 880   | 680   |
| 5    | Temp (deg C)                      | 23.3                | 20.0  |      |      |      | 23.0  | 22.0  | 24.0  | 24.0  | 25.0  |
|      | <b>CHEMICAL</b>                   |                     |       |      |      |      |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 14.6                | 33.9  |      |      |      | 35.9  | 23.9  | 12.0  | 39.8  | 0.0   |
| 2    | ALK-TOT (mgCaCO3/L)               | 1547                | 786   |      |      |      | 572   | 312   | 460   | 404   | 280   |
| 3    | B (mg/L)                          | 0.02                | 0.23  |      |      |      | 0.13  | 0.22  | 0.32  | 0.31  | 0.31  |
| 4    | Ca (mg/L)                         | 87                  | 104   |      |      |      | 79    | 48    | 59    | 72    | 74    |
| 5    | Cl (mg/L)                         | 106.0               | 56.7  |      |      |      | 423.9 | 199.9 | 176.1 | 114.0 | 69.9  |
| 6    | CO3 (mg/L)                        | 17.6                | 40.8  |      |      |      | 43.2  | 28.8  | 14.4  | 48.0  | 0.0   |
| 7    | F (mg/L)                          | 0.00                |       |      |      |      | 0.11  | 0.27  | 0.27  | 0.30  | 0.44  |
| 8    | Fe (mg/L)                         | 0.3                 | 0.3   |      |      |      |       |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 926                 | 438   |      |      |      | 610   | 322   | 532   | 395   | 342   |
| 10   | K (mg/L)                          | 186.6               | 215.3 |      |      |      | 140.8 | 13.3  | 59.8  | 4.7   | 11.7  |
| 11   | Mg (mg/L)                         | 33.0                | 29.6  |      |      |      | 51.6  | 78.5  | 87.7  | 102.2 | 41.3  |
| 12   | Na (mg/L)                         | 187.0               | 225.3 |      |      |      | 72.4  | 76.8  | 97.5  | 84.4  | 47.2  |
| 13   | NH3-N (mg N/L)                    |                     |       |      |      |      | 1.24  | 1.35  | 0.95  | 0.65  | 1.04  |
| 14   | NO2+NO3 (mg N/L)                  |                     |       |      |      |      | 2.77  | 2.64  | 1.69  | 1.54  | 2.11  |
| 15   | NO2-N (mgN/L)                     | 0.63                | 0.58  |      |      |      | 0.26  | 0.34  | 0.10  | 0.00  | 0.48  |
| 16   | NO3-N (mgN/L)                     |                     |       |      |      |      | 2.51  | 2.30  | 1.60  | 1.54  | 1.63  |
| 17   | o-PO4-P (mg P/L)                  | 0.758               | 0.692 |      |      |      | 0.444 | 0.548 | 0.455 | 0.661 | 0.568 |
| 18   | SiO2 (mg/L)                       | 34.7                | 40.0  |      |      |      |       |       |       |       |       |
| 19   | SO4 (mg/L)                        | 101.4               | 30.1  |      |      |      | 37.4  | 32.6  | 127.2 | 169.9 | 112.8 |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                     |       |      |      |      |       |       |       |       |       |
|      | <b>TRACE &amp; TOXIC</b>          |                     |       |      |      |      |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |                     |       |      |      |      |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 218                 | 260   |      |      |      | 198   | 121   | 147   | 181   | 185   |
| 2    | HAR_Total (mgCaCO3/L)             | 355                 | 383   |      |      |      | 413   | 448   | 512   | 606   | 357   |
| 3    | Na% (%)                           | 41                  | 43    |      |      |      | 21    | 27    | 27    | 23    | 22    |
| 4    | RSC (-)                           | 8.7                 | 0.9   |      |      |      | 3.2   | 0.0   | 0.0   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 4.3                 | 5.0   |      |      |      | 1.6   | 1.6   | 1.9   | 1.5   | 1.1   |
|      | <b>PESTICIDES</b>                 |                     |       |      |      |      |       |       |       |       |       |

## HISTORY SHEET

|                   |                            |                   |                     |
|-------------------|----------------------------|-------------------|---------------------|
|                   |                            | <b>Water Year</b> | <b>: 2015-2016</b>  |
| <b>Site</b>       | <b>: BALRAMPUR</b>         | <b>Code</b>       | <b>: GGU30U4</b>    |
| State             | : Uttar Pradesh            | District          | Gonda               |
| Basin             | : Ganga-Brahm-Meghna Basin | Independent River | : Ganga             |
| Tributary         | : Ghagra                   | Sub Tributary     | : Rapti             |
| Sub-Sub Tributary | : -                        | Local River       | : Rapti             |
| Division          | : M Ganga Div. I, Lucknow  | Sub-Division      | : U Rapti SD, Gonda |
| Drainage Area     | : 8219 Sq. Km.             | Bank              | : Right             |
| Latitude          | : 27°27'27"                | Longitude         | : 82°12'12"         |
|                   | Opening Date               | Closing Date      |                     |
| Gauge             | : 11/07/1970               |                   |                     |
| Discharge         | :                          |                   |                     |
| Sediment          | : 23/01/1982               |                   |                     |
| Water Quality     | : 01/05/1976               |                   |                     |

# Water Quality Datasheet for the period : 2015-2016

Station Name : BALRAMPUR ( GGU30u4)

Local River : Rapti

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

## River Water Analysis

| S.No | Parameters                        | 01/06/2015  | 01/07/2015 | 01/08/2015 | 01/09/2015 | 01/10/2015 | 02/11/2015  | 01/12/2015  | 01/01/2016  | 01/02/2016  | 01/03/2016  | 01/04/2016 | 02/05/2016 |
|------|-----------------------------------|-------------|------------|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|------------|------------|
|      |                                   | A           | A          | A          | A          | A          | A           | A           | A           | A           | A           | A          | A          |
|      | <b>PHYSICAL</b>                   |             |            |            |            |            |             |             |             |             |             |            |            |
| 1    | Q (cumec)                         | 15.13       | 138.6      | 132.2      | 455.8      | 157.9      | 80.71       | 36.80       | 36.62       | 45.90       | 17.04       | 13.85      | 7.610      |
| 2    | Colour_Cod (-)                    | Light Brown | Brown      | Brown      | Brown      | Brown      | Light Brown | Light Brown | Light Brown | Light Brown | Light Brown | Clear      | Clear      |
| 3    | EC_GEN (μmho/cm)                  | 560         | 290        | 320        | 260        | 260        | 290         | 300         | 290         | 270         | 270         | 290        | 310        |
| 4    | 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 |
| 5    | pH_GEN (pH units)                 | 9.4         | 8.4        | 8.3        | 7.9        | 8.3        | 8.3         | 8.5         | 8.5         | 8.4         | 8.3         | 8.3        | 8.4        |
| 6    | TDS (mg/L)                        | 320         | 167        | 186        | 163        | 156        | 180         | 186         | 184         | 170         | 168         | 186        | 193        |
| 7    | Temp (deg C)                      | 30.0        | 28.0       | 30.5       | 31.0       | 33.0       | 29.0        | 23.5        | 17.0        | 17.5        | 23.0        | 26.0       | 28.5       |
|      | <b>CHEMICAL</b>                   |             |            |            |            |            |             |             |             |             |             |            |            |
| 1    | Alk-Phen (mgCaCO3/L)              | 19.9        | 12.0       | 8.0        | 0.0        | 4.0        | 12.0        | 15.9        | 8.0         | 8.0         | 0.0         | 8.0        | 4.0        |
| 2    | ALK-TOT (mgCaCO3/L)               | 184         | 100        | 120        | 0          | 160        | 184         | 200         | 188         | 168         | 148         | 168        | 152        |
| 3    | B (mg/L)                          | 0.21        | 0.18       | 0.18       | 0.17       | 0.16       | 0.18        | 0.18        | 0.18        | 0.17        | 0.16        | 0.17       | 0.19       |
| 4    | Ca (mg/L)                         | 46          | 36         | 38         | 40         | 36         | 41          | 43          | 45          | 40          | 38          | 38         | 31         |
| 5    | Cl (mg/L)                         | 13.8        | 9.9        | 9.9        | 8.2        | 9.9        | 9.9         | 9.9         | 8.2         | 9.9         | 9.9         | 9.9        | 18.1       |
| 6    | CO3 (mg/L)                        | 24.0        | 14.4       | 9.6        | 0.0        | 4.8        | 14.4        | 19.2        | 9.6         | 9.6         | 0.0         | 9.6        | 4.8        |
| 7    | F (mg/L)                          | 0.29        | 0.29       | 0.27       | 0.29       | 0.30       | 0.30        | 0.30        | 0.30        | 0.30        | 0.30        | 0.30       | 0.36       |
| 8    | HCO3 (mg/L)                       | 176         | 93         | 127        | 195        | 185        | 195         | 205         | 210         | 185         | 181         | 185        | 176        |
| 9    | K (mg/L)                          | 7.8         | 4.3        | 3.9        | 3.5        | 3.9        | 5.1         | 5.5         | 5.5         | 4.3         | 3.9         | 3.9        | 7.8        |
| 10   | Mg (mg/L)                         | 22.7        | 7.2        | 11.3       | 20.7       | 18.6       | 21.6        | 23.7        | 20.7        | 18.6        | 17.5        | 19.6       | 22.7       |
| 11   | Na (mg/L)                         | 9.2         | 6.2        | 6.4        | 4.4        | 6.2        | 6.2         | 6.4         | 5.8         | 6.4         | 6.0         | 6.7        | 10.6       |
| 12   | NH3-N (mg N/L)                    | 0.42        | 0.27       | 0.28       | 0.28       | 0.29       | 0.31        | 0.34        | 0.34        | 0.31        | 0.29        | 0.32       | 0.35       |
| 13   | NO2+NO3 (mg N/L)                  | 0.55        | 0.46       | 0.49       | 0.46       | 0.49       | 0.49        | 0.48        | 0.46        | 0.43        | 0.43        | 0.43       | 0.46       |
| 14   | NO2-N (mgN/L)                     | 0.06        | 0.04       | 0.04       | 0.01       | 0.01       | 0.01        | 0.04        | 0.00        | 0.00        | 0.01        | 0.00       | 0.00       |
| 15   | NO3-N (mgN/L)                     | 0.49        | 0.42       | 0.45       | 0.45       | 0.48       | 0.48        | 0.43        | 0.46        | 0.43        | 0.42        | 0.43       | 0.46       |
| 16   | o-PO4-P (mg P/L)                  | 0.351       | 0.279      | 0.269      | 0.258      | 0.269      | 0.310       | 0.320       | 0.331       | 0.331       | 0.331       | 0.331      | 0.393      |
| 17   | SO4 (mg/L)                        | 20.6        | 19.7       | 17.3       | 18.7       | 18.7       | 19.7        | 18.2        | 18.7        | 18.2        | 16.8        | 16.3       | 17.8       |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |             |            |            |            |            |             |             |             |             |             |            |            |
| 1    | BOD3-27 (mg/L)                    | 2.2         | 1.4        | 1.4        | 1.6        | 1.6        | 1.6         | 1.4         | 1.0         | 1.0         | 1.0         | 1.0        | 1.0        |
| 2    | COD (mg/L)                        | 9.0         | 6.0        | 7.0        | 7.0        | 7.0        | 8.0         | 8.0         | 8.0         | 6.0         | 6.0         | 7.0        | 6.0        |

# Water Quality Datasheet for the period : 2015-2016

Station Name : BALRAMPUR ( GGU30U4)

Division : M Ganga Div. I, Lucknow

Local River : Rapti

## River Water Analysis

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters               | 01/06/2015 | 01/07/2015 | 01/08/2015 | 01/09/2015 | 01/10/2015 | 02/11/2015 | 01/12/2015 | 01/01/2016 | 01/02/2016 | 01/03/2016 | 01/04/2016 | 02/05/2016 |
|------|--------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|      |                          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          |
| 3    | DO (mg/L)                | 6.1        | 6.7        | 6.7        | 6.7        | 6.9        | 6.9        | 6.9        | 7.3        | 7.5        | 6.9        | 7.1        | 7.1        |
| 4    | DO_SAT% (%)              | 80         | 85         | 88         | 90         | 96         | 89         | 80         | 75         | 77         | 80         | 87         | 90         |
|      | <b>TRACE &amp; TOXIC</b> |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | Total Arsenic (As) mg/L  |            |            |            |            |            |            |            |            |            |            | 0.00317    |            |
| 2    | Cadmium (Cd) mg/L        |            |            |            |            |            |            |            |            |            |            | 0.0001     |            |
| 3    | Total Chromium(Cr) mg/L  |            |            |            |            |            |            |            |            |            |            | 0.04505    |            |
| 4    | Copper (Cu) mg/L         |            |            |            |            |            |            |            |            |            |            | 0.00444    |            |
| 5    | Iron (Fe) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.027      |            |
| 6    | Lead (Pb) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.00157    |            |
| 7    | Mercury (Hg) mg/L        |            |            |            |            |            |            |            |            |            |            | --         |            |
| 8    | Nickel (Ni) mg/L         |            |            |            |            |            |            |            |            |            |            | 0.00393    |            |
| 9    | Zinc (Zn) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.0089     |            |
|      | <b>CHEMICAL INDICES</b>  |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | HAR_Ca (mgCaCO3/L)       | 116        | 91         | 95         | 99         | 91         | 103        | 108        | 112        | 99         | 95         | 95         | 78         |
| 2    | HAR_Total (mgCaCO3/L)    | 211        | 120        | 142        | 185        | 168        | 193        | 206        | 198        | 176        | 167        | 176        | 172        |
| 3    | Na% (%)                  | 8          | 10         | 9          | 5          | 7          | 6          | 6          | 6          | 7          | 7          | 7          | 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 (-)                  | 0.3        | 0.2        | 0.2        | 0.1        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.4        |
|      | <b>PESTICIDES</b>        |            |            |            |            |            |            |            |            |            |            |            |            |

# Water Quality Datasheet for the period : 2015-2016

Station Name : BALRAMPUR ( GGU30U4)

Local River : Rapti

Well Water Analysis

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters                        | 02/11/2015 | 02/05/2016 |
|------|-----------------------------------|------------|------------|
|      |                                   | B          | B          |
|      | <b>PHYSICAL</b>                   |            |            |
| 1    | Colour_Cod (-)                    | Clear      | Clear      |
| 2    | EC_GEN (µmho/cm)                  | 2400       | 2400       |
| 3    | Odour_Code (-)                    | odour free | odour free |
| 4    | pH_GEN (pH units)                 | 7.8        | 7.9        |
| 5    | TDS (mg/L)                        | 1500       | 1530       |
| 6    | Temp (deg C)                      | 28.5       | 26.0       |
|      | <b>CHEMICAL</b>                   |            |            |
| 1    | Alk-Phen (mgCaCO3/L)              | 0.0        | 0.0        |
| 2    | ALK-TOT (mgCaCO3/L)               | 500        | 340        |
| 3    | B (mg/L)                          | 0.35       | 0.30       |
| 4    | Ca (mg/L)                         | 101        | 105        |
| 5    | Cl (mg/L)                         | 286.1      | 220.1      |
| 6    | CO3 (mg/L)                        | 0.0        | 0.0        |
| 7    | F (mg/L)                          | 0.44       | 0.44       |
| 8    | HCO3 (mg/L)                       | 610        | 415        |
| 9    | K (mg/L)                          | 153.7      | 94.2       |
| 10   | Mg (mg/L)                         | 45.4       | 71.2       |
| 11   | Na (mg/L)                         | 186.3      | 144.9      |
| 12   | NH3-N (mg N/L)                    | 1.46       | 1.31       |
| 13   | NO2+NO3 (mg N/L)                  | 2.92       | 2.75       |
| 14   | NO2-N (mgN/L)                     | 0.86       | 0.39       |
| 15   | NO3-N (mgN/L)                     | 2.06       | 2.37       |
| 16   | o-PO4-P (mg P/L)                  | 1.385      | 0.620      |
| 17   | SO4 (mg/L)                        | 110.9      | 308.2      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |            |            |
|      | <b>TRACE &amp; TOXIC</b>          |            |            |
|      | <b>CHEMICAL INDICES</b>           |            |            |
| 1    | HAR_Ca (mgCaCO3/L)                | 254        | 263        |
| 2    | HAR_Total (mgCaCO3/L)             | 443        | 559        |
| 3    | Na% (%)                           | 39         | 32         |
| 4    | RSC (-)                           | 1.2        | 0.0        |
| 5    | SAR (-)                           | 3.9        | 2.7        |
|      | <b>PESTICIDES</b>                 |            |            |

# Water Quality Summary for the period : 2015-2016

Station Name : BALRAMPUR ( GGU30U4)

Division : M Ganga Div. I, Lucknow

Local River : Rapti

Sub-Division : U Rapti SD, Gonda

## River Water Summary

| S.No | Parameters                        | Number of Observations | Maximum | Minimum | Mean  |
|------|-----------------------------------|------------------------|---------|---------|-------|
|      | <b>PHYSICAL</b>                   |                        |         |         |       |
| 1    | Q (cumec)                         | 366                    | 894.0   | 7.270   | 106.9 |
| 2    | EC_GEN (µmho/cm)                  | 12                     | 560     | 260     | 309   |
| 3    | pH_GEN (pH units)                 | 12                     | 9.4     | 7.9     | 8.4   |
| 4    | TDS (mg/L)                        | 12                     | 320     | 156     | 188   |
| 5    | Temp (deg C)                      | 12                     | 33.0    | 17.0    | 26.4  |
|      | <b>CHEMICAL</b>                   |                        |         |         |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 11                     | 19.9    | 0.0     | 9.1   |
| 2    | ALK-TOT (mgCaCO3/L)               | 11                     | 200     | 100     | 161   |
| 3    | B (mg/L)                          | 12                     | 0.21    | 0.16    | 0.18  |
| 4    | Ca (mg/L)                         | 12                     | 46      | 31      | 39    |
| 5    | Cl (mg/L)                         | 12                     | 18.1    | 8.2     | 10.6  |
| 6    | CO3 (mg/L)                        | 12                     | 24.0    | 0.0     | 10    |
| 7    | F (mg/L)                          | 12                     | 0.36    | 0.27    | 0.3   |
| 8    | HCO3 (mg/L)                       | 12                     | 210     | 93      | 176   |
| 9    | K (mg/L)                          | 12                     | 7.8     | 3.5     | 5     |
| 10   | Mg (mg/L)                         | 12                     | 23.7    | 7.2     | 18.7  |
| 11   | Na (mg/L)                         | 12                     | 10.6    | 4.4     | 6.7   |
| 12   | NH3-N (mg N/L)                    | 12                     | 0.42    | 0.27    | 0.32  |
| 13   | NO2+NO3 (mg N/L)                  | 12                     | 0.55    | 0.43    | 0.47  |
| 14   | NO2-N (mgN/L)                     | 12                     | 0.06    | 0.00    | 0.02  |
| 15   | NO3-N (mgN/L)                     | 12                     | 0.49    | 0.42    | 0.45  |
| 16   | o-PO4-P (mg P/L)                  | 12                     | 0.393   | 0.258   | 0.314 |
| 17   | SO4 (mg/L)                        | 12                     | 20.6    | 16.3    | 18.4  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                        |         |         |       |
| 1    | BOD3-27 (mg/L)                    | 12                     | 2.2     | 1.0     | 1.3   |
| 2    | COD (mg/L)                        | 12                     | 9.0     | 6.0     | 7.1   |
| 3    | DO (mg/L)                         | 12                     | 7.5     | 6.1     | 6.9   |
| 4    | DO_SAT% (%)                       | 12                     | 96      | 75      | 85    |
|      | <b>TRACE &amp; TOXIC</b>          |                        |         |         |       |
|      | <b>CHEMICAL INDICES</b>           |                        |         |         |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 12                     | 116     | 78      | 98    |
| 2    | HAR_Total (mgCaCO3/L)             | 12                     | 211     | 120     | 176   |
| 3    | Na% (%)                           | 12                     | 11      | 5       | 8     |
| 4    | RSC (-)                           | 12                     | 0.0     | 0.0     | 0     |
| 5    | SAR (-)                           | 12                     | 0.4     | 0.1     | 0.2   |
|      | <b>PESTICIDES</b>                 |                        |         |         |       |

# Water Quality Summary for the period : 2015-2016

Station Name : BALRAMPUR ( GGU30U4)

Division : M Ganga Div. I, Lucknow

Local River : Rapti

Sub-Division : U Rapti SD, Gonda

## Well Water Summary

| S.No | Parameters                        | Number of Observations | Maximum | Minimum | Mean  |
|------|-----------------------------------|------------------------|---------|---------|-------|
|      | <b>PHYSICAL</b>                   |                        |         |         |       |
| 1    | EC_GEN (μmho/cm)                  | 2                      | 2400    | 2400    | 2400  |
| 2    | pH_GEN (pH units)                 | 2                      | 7.9     | 7.8     | 7.8   |
| 3    | TDS (mg/L)                        | 2                      | 1530    | 1500    | 1515  |
| 4    | Temp (deg C)                      | 2                      | 28.5    | 26.0    | 27.3  |
|      | <b>CHEMICAL</b>                   |                        |         |         |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 2                      | 0.0     | 0.0     | 0.0   |
| 2    | ALK-TOT (mgCaCO3/L)               | 2                      | 500     | 340     | 420   |
| 3    | B (mg/L)                          | 2                      | 0.35    | 0.30    | 0.33  |
| 4    | Ca (mg/L)                         | 2                      | 105     | 101     | 103   |
| 5    | Cl (mg/L)                         | 2                      | 286.1   | 220.1   | 253.1 |
| 6    | CO3 (mg/L)                        | 2                      | 0.0     | 0.0     | 0.0   |
| 7    | F (mg/L)                          | 2                      | 0.44    | 0.44    | 0.44  |
| 8    | HCO3 (mg/L)                       | 2                      | 610     | 415     | 512   |
| 9    | K (mg/L)                          | 2                      | 153.7   | 94.2    | 123.9 |
| 10   | Mg (mg/L)                         | 2                      | 71.2    | 45.4    | 58.3  |
| 11   | Na (mg/L)                         | 2                      | 186.3   | 144.9   | 165.6 |
| 12   | NH3-N (mg N/L)                    | 2                      | 1.46    | 1.31    | 1.38  |
| 13   | NO2+NO3 (mg N/L)                  | 2                      | 2.92    | 2.75    | 2.83  |
| 14   | NO2-N (mgN/L)                     | 2                      | 0.86    | 0.39    | 0.62  |
| 15   | NO3-N (mgN/L)                     | 2                      | 2.37    | 2.06    | 2.21  |
| 16   | o-PO4-P (mg P/L)                  | 2                      | 1.385   | 0.620   | 1.002 |
| 17   | SO4 (mg/L)                        | 2                      | 308.2   | 110.9   | 209.5 |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                        |         |         |       |
|      | <b>TRACE &amp; TOXIC</b>          |                        |         |         |       |
|      | <b>CHEMICAL INDICES</b>           |                        |         |         |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 2                      | 263     | 254     | 258   |
| 2    | HAR_Total (mgCaCO3/L)             | 2                      | 559     | 443     | 501   |
| 3    | Na% (%)                           | 2                      | 39      | 32      | 35    |
| 4    | RSC (-)                           | 2                      | 1.2     | 0.0     | 0.6   |
| 5    | SAR (-)                           | 2                      | 3.9     | 2.7     | 3.3   |
|      | <b>PESTICIDES</b>                 |                        |         |         |       |

Water Quality Seasonal Average for the period: 2006-2016

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

Station Name : BALRAMPUR( GGU30U4)

Local River : Rapti

River Water

| S.No | Parameters                        | Flood     |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Jun - Oct |       |       |       |       |       |       |       |       |       |
|      |                                   | 2006      | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Q (cumec)                         | 334.1     | 724.7 | 496.4 | 400.9 | 395.3 | 387.2 | 390.6 | 506.1 | 266.4 | 179.9 |
| 2    | EC_FLD (µmho/cm)                  |           |       |       |       |       |       | 210   |       |       |       |
| 3    | EC_GEN (µmho/cm)                  | 304       | 292   | 331   | 263   | 274   | 221   | 226   | 366   | 312   | 338   |
| 4    | pH_FLD (pH units)                 | 7.0       | 7.2   |       |       | 7.1   | 8.0   | 7.6   | 7.1   |       |       |
| 5    | pH_GEN (pH units)                 | 8.0       | 8.2   | 8.4   | 7.9   | 8.0   | 7.8   | 8.1   | 8.2   | 8.4   | 8.4   |
| 6    | TDS (mg/L)                        |           |       | 223   | 192   | 164   | 132   | 134   | 237   | 189   | 198   |
| 7    | Temp (deg C)                      | 30.3      | 30.6  | 28.8  | 30.7  | 30.8  | 31.2  | 30.1  | 30.5  | 29.9  | 30.5  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 4.0       | 5.8   | 5.7   | 1.0   | 5.6   | 1.6   | 1.6   | 0.8   | 8.3   | 11.0  |
| 2    | ALK-TOT (mgCaCO3/L)               | 187       | 196   | 155   | 164   | 140   | 122   | 134   | 146   | 122   | 141   |
| 3    | B (mg/L)                          | 0.09      | 0.09  | 0.16  | 0.15  | 0.13  | 0.23  | 0.14  | 0.19  | 0.22  | 0.18  |
| 4    | Ca (mg/L)                         | 24        | 33    | 34    | 37    | 32    | 27    | 30    | 31    | 25    | 39    |
| 5    | Cl (mg/L)                         | 12.4      | 10.5  | 12.9  | 14.3  | 14.4  | 12.9  | 13.6  | 16.0  | 14.4  | 10.4  |
| 6    | CO3 (mg/L)                        | 1.9       | 7.0   | 6.9   | 1.2   | 6.7   | 1.9   | 1.9   | 1.0   | 10.0  | 10.6  |
| 7    | F (mg/L)                          | 0.00      | 0.14  | 0.13  | 0.15  | 0.16  | 0.13  | 0.14  | 0.17  | 0.18  | 0.28  |
| 8    | Fe (mg/L)                         | 0.1       | 0.2   |       |       |       | 0.1   |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 177       | 165   | 175   | 197   | 157   | 144   | 160   | 176   | 129   | 155   |
| 10   | K (mg/L)                          | 7.5       | 3.8   | 4.0   | 4.8   | 4.8   | 4.6   | 4.8   | 4.5   | 4.5   | 4.7   |
| 11   | Mg (mg/L)                         | 13.8      | 9.6   | 8.7   | 17.5  | 17.5  | 17.3  | 20.4  | 19.4  | 18.1  | 16.1  |
| 12   | Na (mg/L)                         | 17.0      | 8.5   | 8.5   | 10.7  | 8.1   | 7.1   | 6.5   | 10.0  | 5.4   | 6.5   |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.08  | 0.15  | 0.49  | 0.50  | 0.28  | 0.34  | 0.31  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.09  | 0.10  | 0.08  | 0.87  | 0.63  | 0.61  | 0.38  | 0.49  |
| 15   | NO2-N (mgN/L)                     | 0.01      | 0.04  | 0.05  | 0.05  | 0.04  | 0.15  | 0.15  | 0.24  | 0.02  | 0.03  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.04  | 0.05  | 0.04  | 0.71  | 0.48  | 0.37  | 0.35  | 0.46  |
| 17   | o-PO4-P (mg P/L)                  | 0.006     | 0.031 | 0.019 | 0.031 | 0.072 | 0.116 | 0.262 | 0.320 | 0.430 | 0.285 |
| 18   | P-Tot (mgP/L)                     |           |       |       | 0.077 |       |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 12.6      | 9.9   | 8.8   | 6.3   | 5.6   |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 43.0      | 23.8  | 15.9  | 20.6  | 15.0  | 14.5  | 12.1  | 16.5  | 15.3  | 19.0  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
| 1    | BOD3-27 (mg/L)                    |           |       |       | 1.0   | 0.9   | 0.8   | 0.9   | 1.0   | 1.0   | 1.6   |
| 2    | COD (mg/L)                        |           |       |       |       | 4.5   | 6.0   | 5.0   | 5.6   | 5.0   | 7.2   |
| 3    | DO (mg/L)                         | 7.1       | 7.0   | 7.1   | 7.0   | 7.6   | 7.4   | 7.3   | 6.9   | 6.7   | 6.6   |
| 4    | DO_SAT% (%)                       | 94        | 93    | 92    | 94    | 101   | 100   | 96    | 91    | 88    | 88    |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 60        | 83    | 84    | 92    | 80    | 68    | 75    | 77    | 62    | 98    |
| 2    | HAR_Total (mgCaCO3/L)             | 118       | 123   | 120   | 165   | 153   | 140   | 160   | 158   | 138   | 165   |
| 3    | Na% (%)                           | 22        | 13    | 13    | 12    | 10    | 10    | 8     | 12    | 8     | 8     |
| 4    | RSC (-)                           | 0.6       | 0.5   | 0.7   | 0.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 0.7       | 0.3   | 0.3   | 0.4   | 0.3   | 0.3   | 0.2   | 0.3   | 0.2   | 0.2   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

Water Quality Seasonal Average for the period: 2006-2016

Station Name : BALRAMPUR( GGU30U4)

Local River : Rapti

River Water

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters                        | Winter    |           |           |           |           |           |           |           |           |           |
|------|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|      |                                   | Nov - Feb |           |           |           |           |           |           |           |           |           |
|      |                                   | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 |
|      | <b>PHYSICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Q (cumec)                         | 53.56     | 82.62     | 91.81     | 97.93     | 99.86     | 75.20     | 70.93     | 76.20     | 62.57     | 50.01     |
| 2    | EC_FLD (µmho/cm)                  |           |           |           |           |           |           |           |           |           |           |
| 3    | EC_GEN (µmho/cm)                  | 344       | 266       | 329       | 338       | 320       | 303       | 328       | 370       | 360       | 288       |
| 4    | pH_FLD (pH units)                 |           |           |           | 7.3       | 7.1       | 7.4       | 6.9       | 7.2       |           |           |
| 5    | pH_GEN (pH units)                 | 8.0       | 8.3       | 8.1       | 8.3       | 8.1       | 8.1       | 8.1       | 8.5       | 8.6       | 8.4       |
| 6    | TDS (mg/L)                        |           |           | 242       | 210       | 192       | 183       | 203       | 240       | 197       | 180       |
| 7    | Temp (deg C)                      | 19.5      | 21.9      | 21.1      | 19.0      | 20.3      | 19.6      | 20.0      | 21.6      | 19.9      | 21.8      |
|      | <b>CHEMICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Alk-Phen (mgCaCO3/L)              |           | 8.5       | 7.5       | 6.0       | 0.0       | 0.0       | 0.0       | 7.0       | 19.9      | 11.0      |
| 2    | ALK-TOT (mgCaCO3/L)               |           | 182       | 208       | 158       | 120       | 181       | 135       | 133       | 161       | 185       |
| 3    | B (mg/L)                          | 0.02      | 0.15      | 0.15      | 0.14      | 0.16      | 0.17      | 0.17      | 0.20      | 0.22      | 0.18      |
| 4    | Ca (mg/L)                         | 34        | 42        | 37        | 38        | 29        | 36        | 29        | 31        | 48        | 42        |
| 5    | Cl (mg/L)                         | 17.0      | 17.4      | 13.5      | 15.4      | 13.0      | 15.0      | 15.0      | 15.0      | 13.9      | 9.5       |
| 6    | CO3 (mg/L)                        | 3.6       | 10.2      | 9.0       | 7.2       | 0.0       | 0.0       | 0.0       | 8.4       | 24.0      | 13.2      |
| 7    | F (mg/L)                          | 0.00      | 0.13      | 0.15      | 0.16      | 0.16      | 0.15      | 0.16      | 0.17      | 0.21      | 0.30      |
| 8    | Fe (mg/L)                         | 0.1       | 0.3       |           |           |           |           |           |           |           |           |
| 9    | HCO3 (mg/L)                       | 170       | 201       | 235       | 178       | 146       | 221       | 165       | 145       | 148       | 199       |
| 10   | K (mg/L)                          | 5.2       | 4.0       | 3.1       | 3.1       | 4.6       | 4.4       | 4.5       | 3.8       | 2.7       | 5.1       |
| 11   | Mg (mg/L)                         | 12.4      | 13.9      | 17.1      | 18.6      | 16.8      | 24.0      | 19.3      | 19.1      | 16.8      | 21.1      |
| 12   | Na (mg/L)                         | 12.7      | 8.7       | 8.0       | 13.4      | 6.8       | 8.0       | 7.3       | 8.0       | 7.8       | 6.2       |
| 13   | NH3-N (mg N/L)                    |           |           |           | 0.10      | 0.16      | 0.65      | 0.45      | 0.36      | 0.33      | 0.32      |
| 14   | NO2+NO3 (mg N/L)                  |           |           | 0.14      | 0.08      | 0.09      | 0.62      | 0.46      | 0.57      | 0.49      | 0.47      |
| 15   | NO2-N (mgN/L)                     | 0.06      | 0.06      | 0.05      | 0.04      | 0.04      | 0.14      | 0.10      | 0.24      | 0.10      | 0.01      |
| 16   | NO3-N (mgN/L)                     |           |           | 0.09      | 0.05      | 0.04      | 0.48      | 0.37      | 0.33      | 0.39      | 0.45      |
| 17   | o-PO4-P (mg P/L)                  | 0.034     | 0.031     | 0.014     | 0.169     | 0.134     | 0.111     | 0.390     | 0.297     | 0.333     | 0.323     |
| 18   | P-Tot (mgP/L)                     |           |           | 0.097     | 0.141     |           |           |           |           |           |           |
| 19   | SiO2 (mg/L)                       | 14.8      | 10.9      | 7.4       | 6.4       | 6.0       |           |           |           |           |           |
| 20   | SO4 (mg/L)                        | 54.4      | 13.2      | 12.7      | 18.1      | 17.2      | 12.0      | 18.1      | 14.0      | 20.8      | 18.7      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |           |           |           |           |           |           |           |           |           |
| 1    | BOD3-27 (mg/L)                    |           |           |           | 1.2       | 0.6       | 0.9       | 0.7       | 1.0       | 1.0       | 1.2       |
| 2    | COD (mg/L)                        |           |           |           |           | 3.3       | 8.8       | 5.8       | 5.0       | 3.0       | 7.5       |
| 3    | DO (mg/L)                         | 7.1       | 7.1       | 7.1       | 7.1       | 7.5       | 7.4       | 7.1       | 6.8       | 6.8       | 7.1       |
| 4    | DO_SAT% (%)                       | 78        | 81        | 80        | 75        | 83        | 80        | 77        | 77        | 74        | 80        |
|      | <b>TRACE &amp; TOXIC</b>          |           |           |           |           |           |           |           |           |           |           |
|      | <b>CHEMICAL INDICES</b>           |           |           |           |           |           |           |           |           |           |           |
| 1    | HAR_Ca (mgCaCO3/L)                | 85        | 105       | 91        | 95        | 72        | 90        | 73        | 79        | 120       | 105       |
| 2    | HAR_Total (mgCaCO3/L)             | 136       | 163       | 163       | 172       | 142       | 190       | 154       | 158       | 190       | 193       |
| 3    | Na% (%)                           | 16        | 10        | 10        | 14        | 9         | 8         | 9         | 10        | 8         | 6         |
| 4    | RSC (-)                           | 0.2       | 0.4       | 0.9       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       |
| 5    | SAR (-)                           | 0.5       | 0.3       | 0.3       | 0.4       | 0.2       | 0.3       | 0.3       | 0.3       | 0.2       | 0.2       |
|      | <b>PESTICIDES</b>                 |           |           |           |           |           |           |           |           |           |           |

**Water Quality Seasonal Average for the period: 2006-2016**

Station Name : BALRAMPUR( GGU30U4)

Local River : Rapti

River Water

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters                        | Summer    |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Mar - May |       |       |       |       |       |       |       |       |       |
|      |                                   | 2007      | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Q (cumec)                         | 21.13     | 27.97 | 26.16 | 28.96 | 37.20 | 29.51 | 31.73 | 29.81 | 37.16 | 12.83 |
| 2    | EC_FLD (µmho/cm)                  |           |       |       |       |       |       |       |       |       |       |
| 3    | EC_GEN (µmho/cm)                  | 344       | 279   | 340   | 347   | 313   | 340   | 333   | 400   | 317   | 290   |
| 4    | pH_FLD (pH units)                 |           |       |       | 7.5   | 7.5   | 8.0   | 7.5   |       |       |       |
| 5    | pH_GEN (pH units)                 | 8.2       | 8.4   | 8.1   | 8.2   | 8.2   | 8.1   | 8.3   | 8.2   | 8.8   | 8.3   |
| 6    | TDS (mg/L)                        |           |       | 229   | 208   | 185   | 198   | 223   | 247   | 176   | 182   |
| 7    | Temp (deg C)                      | 25.7      | 22.7  | 24.2  | 25.7  | 24.0  | 23.2  | 23.5  | 23.2  | 25.3  | 25.8  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 2.7       | 8.1   | 13.3  | 4.0   | 2.7   | 5.3   | 8.0   | 6.6   | 14.6  | 4.0   |
| 2    | ALK-TOT (mgCaCO3/L)               | 141       | 217   | 211   | 149   | 123   | 197   | 159   | 153   | 153   | 156   |
| 3    | B (mg/L)                          | 0.01      | 0.21  | 0.11  | 0.16  | 0.18  | 0.15  | 0.18  | 0.21  | 0.20  | 0.17  |
| 4    | Ca (mg/L)                         | 36        | 45    | 33    | 32    | 29    | 33    | 33    | 36    | 36    | 36    |
| 5    | Cl (mg/L)                         | 16.7      | 26.6  | 15.3  | 18.6  | 14.7  | 17.3  | 21.3  | 20.1  | 13.3  | 12.7  |
| 6    | CO3 (mg/L)                        | 3.2       | 9.7   | 16.0  | 4.8   | 3.2   | 6.4   | 9.6   | 8.0   | 17.6  | 4.8   |
| 7    | F (mg/L)                          | 0.08      | 0.14  | 0.13  | 0.16  | 0.16  | 0.15  | 0.19  | 0.19  | 0.22  | 0.32  |
| 8    | Fe (mg/L)                         | 0.2       | 0.3   |       |       |       |       |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 166       | 244   | 225   | 172   | 143   | 228   | 174   | 171   | 151   | 181   |
| 10   | K (mg/L)                          | 4.0       | 4.8   | 3.9   | 5.1   | 5.4   | 6.4   | 4.5   | 4.0   | 3.4   | 5.2   |
| 11   | Mg (mg/L)                         | 14.8      | 14.4  | 14.4  | 22.1  | 17.2  | 28.2  | 21.0  | 21.7  | 20.3  | 19.9  |
| 12   | Na (mg/L)                         | 9.3       | 9.4   | 10.2  | 12.0  | 8.1   | 10.4  | 12.2  | 8.7   | 7.2   | 7.7   |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.16  | 0.15  | 0.61  | 0.38  | 0.33  | 0.35  | 0.32  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 1.02  | 0.10  | 0.27  | 0.49  | 0.64  | 0.57  | 0.50  | 0.44  |
| 15   | NO2-N (mgN/L)                     | 0.05      | 0.08  | 0.06  | 0.05  | 0.12  | 0.15  | 0.20  | 0.17  | 0.04  | 0.00  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.96  | 0.06  | 0.16  | 0.34  | 0.44  | 0.40  | 0.46  | 0.44  |
| 17   | o-PO4-P (mg P/L)                  | 0.034     | 0.031 |       | 0.196 | 0.114 | 0.227 | 0.355 | 0.265 | 0.248 | 0.351 |
| 18   | P-Tot (mgP/L)                     |           |       | 0.059 | 0.199 | 0.145 |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 15.1      | 11.5  | 6.9   | 6.0   | 6.3   |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 54.9      | 20.2  | 19.9  | 40.5  | 19.5  | 8.5   | 12.9  | 20.0  | 14.7  | 17.0  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
| 1    | BOD3-27 (mg/L)                    |           |       |       | 1.0   | 0.8   | 0.9   | 0.8   | 1.0   | 1.3   | 1.0   |
| 2    | COD (mg/L)                        |           |       |       |       | 9.0   | 6.0   | 17.3  | 6.7   | 6.7   | 6.3   |
| 3    | DO (mg/L)                         | 7.0       | 7.1   | 7.3   | 7.6   | 7.4   | 7.2   | 7.4   | 6.5   | 7.0   | 7.0   |
| 4    | DO_SAT% (%)                       | 86        | 82    | 86    | 93    | 87    | 84    | 87    | 75    | 85    | 86    |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 90        | 113   | 81    | 79    | 72    | 83    | 83    | 91    | 89    | 89    |
| 2    | HAR_Total (mgCaCO3/L)             | 152       | 173   | 141   | 171   | 144   | 201   | 170   | 181   | 173   | 172   |
| 3    | Na% (%)                           | 11        | 10    | 13    | 13    | 11    | 10    | 13    | 9     | 8     | 9     |
| 4    | RSC (-)                           | 0.0       | 0.9   | 1.4   | 0.0   | 0.0   | 0.1   | 0.0   | 0.0   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 0.3       | 0.3   | 0.4   | 0.4   | 0.3   | 0.3   | 0.4   | 0.3   | 0.2   | 0.3   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

# Water Quality Seasonal Average for the period: 2006-2016

Division : M Ganga Div. I, Lucknow

Station Name : BALRAMPUR( GGU30U4)

Sub-Division : U Rapti SD, Gonda

Local River : Rapti

Well Water

| S.No | Parameters                        | Flood<br>Jun - Oct |       |       |      |      |      |      |      |      |      |
|------|-----------------------------------|--------------------|-------|-------|------|------|------|------|------|------|------|
|      |                                   | 2006               | 2007  | 2008  | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|      | <b>PHYSICAL</b>                   |                    |       |       |      |      |      |      |      |      |      |
| 1    | EC_GEN (µmho/cm)                  | 1073               | 874   | 1875  |      |      |      |      |      |      |      |
| 2    | pH_FLD (pH units)                 |                    |       |       |      |      |      |      |      |      |      |
| 3    | pH_GEN (pH units)                 | 7.9                | 7.5   | 7.7   |      |      |      |      |      |      |      |
| 4    | TDS (mg/L)                        |                    |       | 500   |      |      |      |      |      |      |      |
| 5    | Temp (deg C)                      | 28.9               | 30.6  | 27.8  |      |      |      |      |      |      |      |
|      | <b>CHEMICAL</b>                   |                    |       |       |      |      |      |      |      |      |      |
| 1    | Alk-Phen (mgCaCO3/L)              | 6.4                | 17.4  | 66.7  |      |      |      |      |      |      |      |
| 2    | ALK-TOT (mgCaCO3/L)               | 434                | 598   | 1070  |      |      |      |      |      |      |      |
| 3    | B (mg/L)                          | 0.15               | 0.08  |       |      |      |      |      |      |      |      |
| 4    | Ca (mg/L)                         | 55                 | 77    | 112   |      |      |      |      |      |      |      |
| 5    | Cl (mg/L)                         | 77.7               | 149.4 | 280.1 |      |      |      |      |      |      |      |
| 6    | CO3 (mg/L)                        | 7.7                | 20.9  | 80.4  |      |      |      |      |      |      |      |
| 7    | F (mg/L)                          | 0.00               | 0.04  | 0.23  |      |      |      |      |      |      |      |
| 8    | Fe (mg/L)                         | 0.2                | 0.2   |       |      |      |      |      |      |      |      |
| 9    | HCO3 (mg/L)                       | 257                | 344   | 571   |      |      |      |      |      |      |      |
| 10   | K (mg/L)                          | 351.3              | 385.1 | 275.7 |      |      |      |      |      |      |      |
| 11   | Mg (mg/L)                         | 34.3               | 26.9  | 43.3  |      |      |      |      |      |      |      |
| 12   | Na (mg/L)                         | 295.4              | 326.4 | 239.4 |      |      |      |      |      |      |      |
| 13   | NH3-N (mg N/L)                    |                    |       |       |      |      |      |      |      |      |      |
| 14   | NO2+NO3 (mg N/L)                  |                    |       |       |      |      |      |      |      |      |      |
| 15   | NO2-N (mgN/L)                     | 0.39               | 0.43  | 0.51  |      |      |      |      |      |      |      |
| 16   | NO3-N (mgN/L)                     |                    |       |       |      |      |      |      |      |      |      |
| 17   | o-PO4-P (mg P/L)                  | 0.351              | 0.426 | 0.393 |      |      |      |      |      |      |      |
| 18   | P-Tot (mgP/L)                     |                    |       |       |      |      |      |      |      |      |      |
| 19   | SiO2 (mg/L)                       | 65.8               | 70.8  | 84.0  |      |      |      |      |      |      |      |
| 20   | SO4 (mg/L)                        | 245.1              | 69.8  | 84.0  |      |      |      |      |      |      |      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                    |       |       |      |      |      |      |      |      |      |
| 1    | BOD3-27 (mg/L)                    |                    |       |       |      |      |      |      |      |      |      |
|      | <b>TRACE &amp; TOXIC</b>          |                    |       |       |      |      |      |      |      |      |      |
|      | <b>CHEMICAL INDICES</b>           |                    |       |       |      |      |      |      |      |      |      |
| 1    | HAR_Ca (mgCaCO3/L)                | 138                | 193   | 280   |      |      |      |      |      |      |      |
| 2    | HAR_Total (mgCaCO3/L)             | 280                | 305   | 460   |      |      |      |      |      |      |      |
| 3    | Na% (%)                           | 47                 | 47    | 35    |      |      |      |      |      |      |      |
| 4    | RSC (-)                           | 0.0                | 0.4   | 2.9   |      |      |      |      |      |      |      |
| 5    | SAR (-)                           | 8.3                | 8.3   | 4.9   |      |      |      |      |      |      |      |
|      | <b>PESTICIDES</b>                 |                    |       |       |      |      |      |      |      |      |      |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name :BALRAMPUR ( GGU30U4)

Local River : Rapti

Well Water

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters                 | Winter    |           |           |           |           |           |           |           |           |           |
|------|----------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|      |                            | Nov - Feb |           |           |           |           |           |           |           |           |           |
|      |                            | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 |
|      |                            |           |           |           |           |           |           |           |           |           |           |
|      | PHYSICAL                   |           |           |           |           |           |           |           |           |           |           |
| 1    | EC_GEN (µmho/cm)           | 243       | 1818      | 1900      | 2000      | 1800      | 1590      | 1290      | 2200      | 2300      | 2400      |
| 2    | pH_FLD (pH units)          |           |           |           |           |           |           |           |           |           |           |
| 3    | pH_GEN (pH units)          | 7.4       | 7.8       | 7.7       | 8.1       | 8.0       | 8.2       | 7.7       | 8.3       | 8.5       | 7.8       |
| 4    | TDS (mg/L)                 |           |           | 604       | 1230      | 1090      | 960       | 780       | 1430      | 1200      | 1500      |
| 5    | Temp (deg C)               | 20.0      | 23.5      | 27.5      | 25.5      | 27.0      | 27.5      | 26.5      | 26.0      | 26.0      | 28.5      |
|      | CHEMICAL                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Alk-Phen (mgCaCO3/L)       | 8.0       | 26.5      | 15.9      |           | 0.0       | 31.9      | 27.9      | 0.0       | 31.9      | 0.0       |
| 2    | ALK-TOT (mgCaCO3/L)        | 400       | 897       | 208       |           | 295       | 248       | 328       | 352       | 480       | 500       |
| 3    | B (mg/L)                   | 0.04      | 0.16      |           |           | 0.18      | 0.17      | 0.25      | 0.27      | 0.35      | 0.35      |
| 4    | Ca (mg/L)                  | 56        | 94        | 47        |           | 79        | 46        | 112       | 57        | 71        | 101       |
| 5    | Cl (mg/L)                  | 55.5      | 225.1     | 123.9     |           | 495.9     | 344.0     | 208.0     | 252.1     | 290.0     | 286.1     |
| 6    | CO3 (mg/L)                 | 9.6       | 31.9      | 19.2      |           | 0.0       | 38.4      | 33.6      | 0.0       | 38.4      | 0.0       |
| 7    | F (mg/L)                   |           |           | 0.22      |           | 0.21      | 0.15      | 0.25      | 0.30      | 0.21      | 0.44      |
| 8    | Fe (mg/L)                  | 0.3       | 0.3       |           |           |           |           |           |           |           |           |
| 9    | HCO3 (mg/L)                | 234       | 515       | 107       |           | 360       | 224       | 332       | 429       | 508       | 610       |
| 10   | K (mg/L)                   | 377.9     | 388.7     | 56.3      |           | 136.9     | 109.1     | 91.0      | 138.8     | 132.5     | 153.7     |
| 11   | Mg (mg/L)                  | 23.5      | 39.0      | 24.1      |           | 67.1      | 51.6      | 65.0      | 96.0      | 53.7      | 45.4      |
| 12   | Na (mg/L)                  | 304.6     | 334.5     | 310.0     |           | 194.1     | 164.9     | 108.7     | 185.4     | 191.4     | 186.3     |
| 13   | NH3-N (mg N/L)             |           |           |           |           | 0.31      | 0.66      | 1.00      | 0.95      | 1.18      | 1.46      |
| 14   | NO2+NO3 (mg N/L)           |           |           |           |           | 0.15      | 0.49      | 0.66      | 2.72      | 3.73      | 2.92      |
| 15   | NO2-N (mgN/L)              | 0.50      | 0.43      | 0.50      |           | 0.08      | 0.25      | 0.29      | 0.52      | 1.59      | 0.86      |
| 16   | NO3-N (mgN/L)              |           |           |           |           | 0.07      | 0.24      | 0.37      | 2.20      | 2.14      | 2.06      |
| 17   | o-PO4-P (mg P/L)           | 0.488     | 0.400     | 0.465     |           | 0.176     | 0.165     | 0.660     | 0.713     | 1.292     | 1.385     |
| 18   | P-Tot (mgP/L)              |           |           |           |           |           |           |           |           |           |           |
| 19   | SiO2 (mg/L)                | 74.5      | 73.0      | 44.0      |           | 22.0      |           |           |           |           |           |
| 20   | SO4 (mg/L)                 | 305.4     | 67.0      | 72.0      |           | 74.4      | 92.6      | 271.2     | 399.8     | 105.1     | 110.9     |
|      | BIOLOGICAL/BACTERIOLOGICAL |           |           |           |           |           |           |           |           |           |           |
| 1    | BOD3-27 (mg/L)             |           |           |           |           |           |           |           |           |           |           |
|      | TRACE & TOXIC              |           |           |           |           |           |           |           |           |           |           |
|      | CHEMICAL INDICES           |           |           |           |           |           |           |           |           |           |           |
| 1    | HAR_Ca (mgCaCO3/L)         | 141       | 235       | 117       |           | 198       | 116       | 280       | 142       | 177       | 254       |
| 2    | HAR_Total (mgCaCO3/L)      | 239       | 398       | 217       |           | 477       | 331       | 550       | 542       | 400       | 443       |
| 3    | Na% (%)                    | 48        | 45        | 70        |           | 39        | 43        | 26        | 36        | 42        | 39        |
| 4    | RSC (-)                    | 0.0       | 1.6       | 0.0       |           | 0.0       | 0.0       | 0.0       | 0.0       | 1.7       | 1.2       |
| 5    | SAR (-)                    | 8.6       | 7.3       | 9.2       |           | 3.9       | 4.0       | 2.0       | 3.5       | 4.2       | 3.9       |
|      | PESTICIDES                 |           |           |           |           |           |           |           |           |           |           |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name :BALRAMPUR ( GGU30U4)

Local River : Rapti

Well Water

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

| S.No | Parameters                        | Summer    |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Mar - May |       |       |       |       |       |       |       |       |       |
|      |                                   | 2007      | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | EC_GEN (µmho/cm)                  | 260       | 1857  | 1730  | 3100  | 2600  | 2400  | 3000  | 3200  | 2900  | 2400  |
| 2    | pH_FLD (pH units)                 |           |       |       |       |       | 8.0   |       |       |       |       |
| 3    | pH_GEN (pH units)                 | 7.4       | 7.9   | 7.8   | 8.1   | 7.8   | 7.6   | 7.9   | 8.1   | 8.5   | 7.9   |
| 4    | TDS (mg/L)                        |           |       | 511   | 1900  | 1500  | 1460  | 1800  | 1770  | 1700  | 1530  |
| 5    | Temp (deg C)                      | 25.7      | 22.7  | 25.5  | 27.5  | 27.5  | 26.0  | 27.5  | 25.5  | 26.0  | 26.0  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 14.6      | 32.2  | 0.0   | 0.0   | 0.0   | 15.9  | 0.0   | 0.0   | 8.0   | 0.0   |
| 2    | ALK-TOT (mgCaCO3/L)               | 406       | 997   | 208   | 564   | 120   | 464   | 380   | 536   | 448   | 340   |
| 3    | B (mg/L)                          | 0.04      | 0.22  | 0.23  | 0.16  | 0.18  | 0.21  | 0.25  | 0.37  | 0.38  | 0.30  |
| 4    | Ca (mg/L)                         | 59        | 109   | 34    | 124   | 55    | 120   | 77    | 82    | 107   | 105   |
| 5    | Cl (mg/L)                         | 58.0      | 260.0 | 12.1  | 472.1 | 795.9 | 668.1 | 543.9 | 400.1 | 390.1 | 220.1 |
| 6    | CO3 (mg/L)                        | 17.6      | 38.8  | 0.0   | 0.0   | 0.0   | 19.2  | 0.0   | 0.0   | 9.6   | 0.0   |
| 7    | F (mg/L)                          | 0.01      |       | 0.13  | 0.19  | 0.19  | 0.15  | 0.23  | 0.19  | 0.40  | 0.44  |
| 8    | Fe (mg/L)                         | 0.3       | 0.4   |       |       |       |       |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 229       | 568   | 254   | 688   | 146   | 527   | 464   | 654   | 527   | 415   |
| 10   | K (mg/L)                          | 386.6     | 403.8 | 80.5  | 159.9 | 152.5 | 223.3 | 146.2 | 330.8 | 156.0 | 94.2  |
| 11   | Mg (mg/L)                         | 25.1      | 42.4  | 25.8  | 62.0  | 27.8  | 65.0  | 78.5  | 70.2  | 64.0  | 71.2  |
| 12   | Na (mg/L)                         | 317.3     | 348.7 | 170.0 | 262.0 | 413.1 | 293.5 | 311.9 | 279.9 | 273.9 | 144.9 |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.20  | 0.29  | 0.97  | 1.04  | 1.14  | 1.18  | 1.31  |
| 14   | NO2+NO3 (mg N/L)                  |           |       |       | 0.20  | 0.76  | 4.46  | 3.81  | 22.33 | 2.43  | 2.75  |
| 15   | NO2-N (mgN/L)                     | 0.54      | 0.48  |       | 0.12  | 0.44  | 0.39  | 0.40  | 2.29  | 0.59  | 0.39  |
| 16   | NO3-N (mgN/L)                     |           |       |       | 0.08  | 0.32  | 4.08  | 3.40  | 20.04 | 1.84  | 2.37  |
| 17   | o-PO4-P (mg P/L)                  | 0.493     | 0.444 |       | 0.310 |       | 0.765 | 0.672 | 0.920 | 0.796 | 0.620 |
| 18   | P-Tot (mgP/L)                     |           |       |       | 0.310 | 0.217 |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 78.7      | 80.0  | 44.0  | 29.0  | 16.5  |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 98.7      | 76.6  | 23.5  | 27.4  | 99.8  | 83.5  | 226.1 | 456.0 | 285.1 | 308.2 |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
| 1    | BOD3-27 (mg/L)                    |           |       |       |       | 0.5   |       |       |       |       |       |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 148       | 273   | 85    | 310   | 138   | 301   | 194   | 206   | 267   | 263   |
| 2    | HAR_Total (mgCaCO3/L)             | 252       | 450   | 193   | 568   | 253   | 572   | 521   | 499   | 533   | 559   |
| 3    | Na% (%)                           | 48        | 44    | 56    | 43    | 67    | 43    | 49    | 40    | 45    | 32    |
| 4    | RSC (-)                           | 0.0       | 1.7   | 0.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.8   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 8.7       | 7.2   | 5.4   | 4.8   | 11.3  | 5.4   | 6.0   | 5.5   | 5.2   | 2.7   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

## HISTORY SHEET

|                   |                            |                   |                                 |
|-------------------|----------------------------|-------------------|---------------------------------|
|                   |                            | <b>Water Year</b> | <b>: 2015-2016</b>              |
| <b>Site</b>       | <b>: BANSI</b>             | <b>Code</b>       | <b>: GGU30N9</b>                |
| State             | : Uttar Pradesh            | District          | Sidharthnagar                   |
| Basin             | : Ganga-Brahm-Meghna Basin | Independent River | : Ganga                         |
| Tributary         | : Ghagra                   | Sub Tributary     | : Rapti                         |
| Sub-Sub Tributary | :                          | Local River       | :                               |
| Division          | : M Ganga Div. I, Lucknow  | Sub-Division      | : L Rapti Ghaghra SD, Gorakhpur |
| Drainage Area     | : 9575 Sq. Km.             | Bank              | :                               |
| Latitude          | : 27°11'11"                | Longitude         | : 82°18'18"                     |
|                   | Opening Date               | Closing Date      |                                 |
| Gauge             | : 16/06/1971               |                   |                                 |
| Discharge         | : 01/07/2014               |                   |                                 |
| Sediment          | :                          |                   |                                 |
| Water Quality     | : 01/07/2014               |                   |                                 |

# Water Quality Datasheet for the period : 2015-2016

Station Name : BANSI ( GGU30N9)

Local River : Rapti

## River Water Analysis

Division : M Ganga Div. I, Lucknow

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters                        | 01/06/2015 | 01/07/2015 | 01/08/2015 | 01/09/2015 | 01/10/2015 | 02/11/2015 | 01/12/2015 | 01/01/2016 | 01/02/2016 | 01/03/2016 | 01/04/2016 | 02/05/2016 |
|------|-----------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|      |                                   | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          |
|      | <b>PHYSICAL</b>                   |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | Q (cumec)                         | 24.96      | 173.9      | 123.7      | 267.7      | 179.0      | 157.6      | 130.2      | 108.6      | 66.07      | 32.85      | 13.96      | 10.98      |
| 2    | Colour_Cod (-)                    | Clear      | Brown      | Brown      | Brown      | Brown      | Clear      | Clear      | Clear      | Clear      | Clear      | Clear      | Clear      |
| 3    | EC_GEN (μmho/cm)                  | 330        | 220        | 280        | 240        | 240        | 300        | 300        | 320        | 270        | 280        | 300        | 340        |
| 4    | 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 |
| 5    | pH_GEN (pH units)                 | 9.1        | 8.2        | 8.3        | 8.2        | 8.3        | 8.3        | 8.5        | 8.4        | 8.4        | 8.3        | 8.3        | 8.4        |
| 6    | TDS (mg/L)                        | 190        | 132        | 165        | 141        | 147        | 183        | 186        | 196        | 168        | 171        | 192        | 210        |
| 7    | Temp (deg C)                      | 32.0       | 27.0       | 31.0       | 31.0       | 31.0       | 26.0       | 22.0       | 16.0       | 18.0       | 25.0       | 24.0       | 28.0       |
|      | <b>CHEMICAL</b>                   |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | Alk-Phen (mgCaCO3/L)              | 12.0       | 0.0        | 8.0        | 0.0        | 8.0        | 8.0        | 15.9       | 8.0        | 8.0        | 8.0        | 0.0        | 8.0        |
| 2    | ALK-TOT (mgCaCO3/L)               | 136        | 92         | 112        | 140        | 168        | 160        | 196        | 192        | 184        | 176        | 176        | 168        |
| 3    | B (mg/L)                          | 0.21       | 0.16       | 0.17       | 0.17       | 0.17       | 0.17       | 0.17       | 0.19       | 0.18       | 0.17       | 0.18       | 0.19       |
| 4    | Ca (mg/L)                         | 33         | 33         | 33         | 33         | 41         | 36         | 43         | 48         | 43         | 43         | 43         | 28         |
| 5    | Cl (mg/L)                         | 16.0       | 9.9        | 9.9        | 8.2        | 9.9        | 9.9        | 9.9        | 9.9        | 12.1       | 9.9        | 9.9        | 18.1       |
| 6    | CO3 (mg/L)                        | 14.4       | 0.0        | 9.6        | 0.0        | 9.6        | 9.6        | 19.2       | 9.6        | 9.6        | 9.6        | 0.0        | 9.6        |
| 7    | F (mg/L)                          | 0.29       | 0.29       | 0.27       | 0.29       | 0.29       | 0.30       | 0.29       | 0.30       | 0.32       | 0.30       | 0.30       | 0.36       |
| 8    | HCO3 (mg/L)                       | 137        | 112        | 117        | 171        | 185        | 176        | 200        | 215        | 205        | 195        | 215        | 185        |
| 9    | K (mg/L)                          | 3.5        | 4.7        | 3.9        | 3.3        | 3.9        | 5.1        | 5.1        | 5.5        | 4.7        | 4.3        | 4.7        | 8.2        |
| 10   | Mg (mg/L)                         | 18.6       | 9.2        | 10.3       | 19.6       | 20.7       | 21.6       | 24.8       | 20.7       | 20.7       | 20.7       | 20.7       | 29.9       |
| 11   | Na (mg/L)                         | 9.0        | 6.4        | 6.2        | 4.6        | 5.5        | 6.4        | 6.0        | 6.9        | 6.7        | 6.2        | 6.4        | 10.6       |
| 12   | NH3-N (mg N/L)                    | 0.44       | 0.25       | 0.27       | 0.31       | 0.31       | 0.31       | 0.34       | 0.34       | 0.32       | 0.31       | 0.31       | 0.35       |
| 13   | NO2+NO3 (mg N/L)                  | 0.53       | 0.46       | 0.49       | 0.48       | 0.52       | 0.48       | 0.46       | 0.49       | 0.45       | 0.46       | 0.56       | 0.59       |
| 14   | NO2-N (mgN/L)                     | 0.04       | 0.03       | 0.04       | 0.01       | 0.06       | 0.00       | 0.00       | 0.00       | 0.00       | 0.03       | 0.12       | 0.15       |
| 15   | NO3-N (mgN/L)                     | 0.49       | 0.43       | 0.45       | 0.46       | 0.46       | 0.48       | 0.46       | 0.49       | 0.45       | 0.43       | 0.43       | 0.43       |
| 16   | o-PO4-P (mg P/L)                  | 0.320      | 0.269      | 0.258      | 0.248      | 0.269      | 0.300      | 0.320      | 0.331      | 0.351      | 0.362      | 0.351      | 0.403      |
| 17   | SO4 (mg/L)                        | 18.2       | 19.2       | 17.8       | 18.2       | 18.2       | 20.2       | 18.2       | 18.7       | 18.2       | 16.8       | 16.8       | 18.2       |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | BOD3-27 (mg/L)                    | 1.8        | 1.2        | 1.6        | 1.6        | 1.8        | 1.4        | 1.2        | 1.4        | 1.2        | 1.4        | 1.6        | 1.4        |
| 2    | COD (mg/L)                        | 6.0        | 8.0        | 7.0        | 8.0        | 9.0        | 7.0        | 8.0        | 8.0        | 7.0        | 8.0        | 8.0        | 9.0        |

# Water Quality Datasheet for the period : 2015-2016

Station Name : BANSI ( GGU30N9)

Division : M Ganga Div. I, Lucknow

Local River : Rapti

## River Water Analysis

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters               | 01/06/2015 | 01/07/2015 | 01/08/2015 | 01/09/2015 | 01/10/2015 | 02/11/2015 | 01/12/2015 | 01/01/2016 | 01/02/2016 | 01/03/2016 | 01/04/2016 | 02/05/2016 |
|------|--------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|      |                          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          |
| 3    | DO (mg/L)                | 6.7        | 6.7        | 6.7        | 6.5        | 6.7        | 7.1        | 7.1        | 7.1        | 7.3        | 6.9        | 6.9        | 6.9        |
| 4    | DO_SAT% (%)              | 91         | 84         | 90         | 87         | 90         | 87         | 81         | 72         | 77         | 83         | 81         | 88         |
|      | <b>TRACE &amp; TOXIC</b> |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | Total Arsenic (As) mg/L  |            |            |            |            |            |            |            |            |            |            | 0.00304    |            |
| 2    | Cadmium (Cd) mg/L        |            |            |            |            |            |            |            |            |            |            | 0.0001     |            |
| 3    | Total Chromium(Cr) mg/L  |            |            |            |            |            |            |            |            |            |            | 0.22433    |            |
| 4    | Copper (Cu) mg/L         |            |            |            |            |            |            |            |            |            |            | 0.00346    |            |
| 5    | Iron (Fe) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.074      |            |
| 6    | Lead (Pb) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.00161    |            |
| 7    | Mercury (Hg) mg/L        |            |            |            |            |            |            |            |            |            |            | --         |            |
| 8    | Nickel (Ni) mg/L         |            |            |            |            |            |            |            |            |            |            | 0.0038     |            |
| 9    | Zinc (Zn) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.127      |            |
|      | <b>CHEMICAL INDICES</b>  |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | HAR_Ca (mgCaCO3/L)       | 82         | 82         | 82         | 82         | 103        | 91         | 108        | 121        | 108        | 108        | 108        | 69         |
| 2    | HAR_Total (mgCaCO3/L)    | 159        | 120        | 125        | 163        | 189        | 181        | 211        | 207        | 194        | 194        | 194        | 194        |
| 3    | Na% (%)                  | 11         | 10         | 9          | 6          | 6          | 7          | 6          | 7          | 7          | 6          | 7          | 10         |
| 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 (-)                  | 0.3        | 0.3        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.3        |
|      | <b>PESTICIDES</b>        |            |            |            |            |            |            |            |            |            |            |            |            |

# Water Quality Summary for the period : 2015-2016

Station Name : BANSI ( GGU30N9)

Division : M Ganga Div. I, Lucknow

Local River : Rapti

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

## River Water Summary

| S.No | Parameters                        | Number of Observations | Maximum | Minimum | Mean  |
|------|-----------------------------------|------------------------|---------|---------|-------|
|      | <b>PHYSICAL</b>                   |                        |         |         |       |
| 1    | Q (cumec)                         | 366                    | 6746    | 120.4   | 1728  |
| 2    | EC_GEN (μmho/cm)                  | 12                     | 330     | 177     | 265   |
| 3    | pH_GEN (pH units)                 | 12                     | 8.9     | 8.0     | 8.3   |
| 4    | TDS (mg/L)                        | 12                     | 192     | 103     | 162   |
| 5    | Temp (deg C)                      | 12                     | 31.0    | 17.0    | 25.5  |
|      | <b>CHEMICAL</b>                   |                        |         |         |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 12                     | 8.0     | 0.0     | 2.7   |
| 2    | ALK-TOT (mgCaCO3/L)               | 12                     | 176     | 76      | 137   |
| 3    | B (mg/L)                          | 12                     | 0.20    | 0.16    | 0.17  |
| 4    | Ca (mg/L)                         | 12                     | 46      | 26      | 37    |
| 5    | Cl (mg/L)                         | 12                     | 13.8    | 6.0     | 9.7   |
| 6    | CO3 (mg/L)                        | 12                     | 9.6     | 0.0     | 3.2   |
| 7    | F (mg/L)                          | 12                     | 0.32    | 0.23    | 0.29  |
| 8    | HCO3 (mg/L)                       | 12                     | 200     | 93      | 160   |
| 9    | K (mg/L)                          | 12                     | 6.6     | 2.9     | 4.1   |
| 10   | Mg (mg/L)                         | 12                     | 20.7    | 5.1     | 15.2  |
| 11   | Na (mg/L)                         | 12                     | 8.5     | 4.1     | 5.8   |
| 12   | NH3-N (mg N/L)                    | 12                     | 0.44    | 0.24    | 0.31  |
| 13   | NO2+NO3 (mg N/L)                  | 12                     | 0.56    | 0.41    | 0.46  |
| 14   | NO2-N (mgN/L)                     | 12                     | 0.12    | 0.00    | 0.02  |
| 15   | NO3-N (mgN/L)                     | 12                     | 0.50    | 0.41    | 0.44  |
| 16   | o-PO4-P (mg P/L)                  | 12                     | 0.351   | 0.238   | 0.301 |
| 17   | SO4 (mg/L)                        | 12                     | 18.7    | 16.3    | 17.7  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                        |         |         |       |
| 1    | BOD3-27 (mg/L)                    | 12                     | 1.6     | 0.6     | 1.2   |
| 2    | COD (mg/L)                        | 12                     | 10.0    | 4.0     | 6.8   |
| 3    | DO (mg/L)                         | 12                     | 7.3     | 6.5     | 6.9   |
| 4    | DO_SAT% (%)                       | 12                     | 92      | 75      | 84    |
|      | <b>TRACE &amp; TOXIC</b>          |                        |         |         |       |
|      | <b>CHEMICAL INDICES</b>           |                        |         |         |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 12                     | 116     | 65      | 92    |
| 2    | HAR_Total (mgCaCO3/L)             | 12                     | 194     | 86      | 155   |
| 3    | Na% (%)                           | 12                     | 10      | 6       | 8     |
| 4    | RSC (-)                           | 12                     | 0.0     | 0.0     | 0     |
| 5    | SAR (-)                           | 12                     | 0.3     | 0.2     | 0.2   |
|      | <b>PESTICIDES</b>                 |                        |         |         |       |

# Water Quality Seasonal Average for the period: 2014-2016

Station Name : BANSI ( GGU30N9)

Division : M Ganga Div. I, Lucknow

Local River : Rapti

River Water

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters                        | Flood     |       | Winter    |           | Summer    |       |
|------|-----------------------------------|-----------|-------|-----------|-----------|-----------|-------|
|      |                                   | Jun - Oct |       | Nov - Feb |           | Mar - May |       |
|      |                                   | 2014      | 2015  | 2014-2015 | 2015-2016 | 2015      | 2016  |
|      |                                   |           |       |           |           |           |       |
|      | <b>PHYSICAL</b>                   |           |       |           |           |           |       |
| 1    | Q (cumec)                         |           | 153.8 |           | 115.6     |           | 19.26 |
| 2    | EC_GEN (µmho/cm)                  | 280       | 262   | 355       | 298       | 360       | 307   |
| 3    | pH_GEN (pH units)                 | 8.4       | 8.4   | 8.6       | 8.4       | 8.8       | 8.3   |
| 4    | TDS (mg/L)                        | 169       | 155   | 198       | 183       | 200       | 191   |
| 5    | Temp (deg C)                      | 29.0      | 30.4  | 19.3      | 20.5      | 26.0      | 25.7  |
|      | <b>CHEMICAL</b>                   |           |       |           |           |           |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 5.0       | 5.6   | 10.0      | 10.0      | 9.3       | 5.3   |
| 2    | ALK-TOT (mgCaCO3/L)               | 100       | 130   | 171       | 183       | 156       | 173   |
| 3    | B (mg/L)                          | 0.21      | 0.18  | 0.21      | 0.18      | 0.20      | 0.18  |
| 4    | Ca (mg/L)                         | 19        | 34    | 49        | 43        | 38        | 38    |
| 5    | Cl (mg/L)                         | 15.0      | 10.8  | 12.5      | 10.5      | 15.4      | 12.7  |
| 6    | CO3 (mg/L)                        | 6.0       | 6.7   | 12.0      | 12.0      | 11.2      | 6.4   |
| 7    | F (mg/L)                          | 0.17      | 0.28  | 0.23      | 0.30      | 0.24      | 0.32  |
| 8    | HCO3 (mg/L)                       | 110       | 144   | 184       | 199       | 168       | 198   |
| 9    | K (mg/L)                          | 4.3       | 3.9   | 3.5       | 5.1       | 4.7       | 5.7   |
| 10   | Mg (mg/L)                         | 16.5      | 15.7  | 20.1      | 21.9      | 18.9      | 23.7  |
| 11   | Na (mg/L)                         | 6.5       | 6.3   | 7.3       | 6.5       | 8.4       | 7.7   |
| 12   | NH3-N (mg N/L)                    | 0.33      | 0.31  | 0.31      | 0.33      | 0.34      | 0.32  |
| 13   | NO2+NO3 (mg N/L)                  | 0.37      | 0.50  | 0.44      | 0.47      | 0.49      | 0.54  |
| 14   | NO2-N (mgN/L)                     | 0.02      | 0.04  | 0.04      | 0.00      | 0.02      | 0.10  |
| 15   | NO3-N (mgN/L)                     | 0.35      | 0.46  | 0.39      | 0.47      | 0.46      | 0.43  |
| 16   | o-PO4-P (mg P/L)                  | 0.406     | 0.273 | 0.320     | 0.326     | 0.255     | 0.372 |
| 17   | P-Tot (mgP/L)                     |           |       |           |           |           |       |
| 18   | SO4 (mg/L)                        | 14.3      | 18.3  | 24.7      | 18.8      | 15.2      | 17.3  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |           |           |           |       |
| 1    | BOD3-27 (mg/L)                    | 0.8       | 1.6   | 0.9       | 1.3       | 1.2       | 1.4   |
| 2    | COD (mg/L)                        | 4.5       | 7.6   | 5.8       | 7.5       | 6.3       | 8.3   |
| 3    | DO (mg/L)                         | 6.7       | 6.6   | 7.1       | 7.1       | 7.1       | 6.9   |
| 4    | DO_SAT% (%)                       | 87        | 88    | 77        | 79        | 87        | 84    |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |           |           |           |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |           |           |           |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 49        | 86    | 124       | 107       | 96        | 95    |
| 2    | HAR_Total (mgCaCO3/L)             | 117       | 151   | 208       | 198       | 175       | 194   |
| 3    | Na% (%)                           | 10        | 8     | 7         | 7         | 9         | 8     |
| 4    | SAR (-)                           | 0.3       | 0.2   | 0.2       | 0.2       | 0.3       | 0.2   |
|      | <b>PESTICIDES</b>                 |           |       |           |           |           |       |

## HISTORY SHEET

|                   |                            |                   |                                 |
|-------------------|----------------------------|-------------------|---------------------------------|
|                   |                            | <b>Water Year</b> | <b>: 2015-2016</b>              |
| <b>Site</b>       | <b>: REGAULI</b>           | <b>Code</b>       | <b>: GGU30H1</b>                |
| State             | : Uttar Pradesh            | District          | Gorakhpur                       |
| Basin             | : Ganga-Brahm-Meghna Basin | Independent River | : Ganga                         |
| Tributary         | : Ghagra                   | Sub Tributary     | : Rapti                         |
| Sub-Sub Tributary | : Burhi Rapti              | Local River       | : Rapti                         |
| Division          | : M Ganga Div. I, Lucknow  | Sub-Division      | : L Rapti Ghaghra SD, Gorakhpur |
| Drainage Area     | : 16387 Sq. Km.            | Bank              | : Left                          |
| Latitude          | : 26°46'46"                | Longitude         | : 83°18'18"                     |
|                   | Opening Date               | Closing Date      |                                 |
| Gauge             | : 01/01/1976               |                   |                                 |
| Discharge         | :                          |                   |                                 |
| Sediment          | : 01/04/1978               |                   |                                 |
| Water Quality     | : 01/06/1996               |                   |                                 |

# Water Quality Datasheet for the period : 2015-2016

Station Name : REGAULI ( GGU30H1)

Local River : Rapti

## River Water Analysis

Division : M Ganga Div. I, Lucknow

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters                        | 01/06/2015  | 01/07/2015 | 01/08/2015 | 01/09/2015 | 01/10/2015 | 02/11/2015 | 01/12/2015 | 01/01/2016 | 01/02/2016 | 01/03/2016 | 01/04/2016 | 02/05/2016 |
|------|-----------------------------------|-------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|      |                                   | A           | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          |
|      | <b>PHYSICAL</b>                   |             |            |            |            |            |            |            |            |            |            |            |            |
| 1    | Q (cumec)                         | 38.98       | 280.3      | 382.1      | 1113       | 198.9      | 183.8      | 108.8      | 69.69      | 90.87      | 41.56      | 38.71      | 20.73      |
| 2    | Colour_Cod (-)                    | Light Brown | Brown      | Brown      | Brown      | Brown      | Clear      | Clear      | Clear      | Clear      | Clear      | Clear      | Clear      |
| 3    | EC_GEN (μmho/cm)                  | 350         | 240        | 340        | 310        | 280        | 310        | 330        | 340        | 300        | 310        | 330        | 390        |
| 4    | 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 |
| 5    | pH_GEN (pH units)                 | 9.2         | 8.3        | 7.9        | 8.3        | 8.3        | 8.3        | 8.3        | 8.3        | 8.3        | 8.3        | 8.2        | 8.2        |
| 6    | TDS (mg/L)                        | 196         | 141        | 198        | 194        | 173        | 190        | 210        | 210        | 184        | 181        | 200        | 240        |
| 7    | Temp (deg C)                      | 31.0        | 28.0       | 27.0       | 25.5       | 31.5       | 26.0       | 24.0       | 13.5       | 13.0       | 23.5       | 23.0       | 30.0       |
|      | <b>CHEMICAL</b>                   |             |            |            |            |            |            |            |            |            |            |            |            |
| 1    | Alk-Phen (mgCaCO3/L)              | 12.0        | 8.0        | 0.0        | 8.0        | 4.0        | 12.0       | 0.0        | 4.0        | 0.0        | 4.0        | 0.0        | 0.0        |
| 2    | ALK-TOT (mgCaCO3/L)               | 128         | 96         | 132        | 152        | 164        | 196        | 184        | 196        | 172        | 172        | 184        | 184        |
| 3    | B (mg/L)                          | 0.21        | 0.17       | 0.18       | 0.17       | 0.17       | 0.18       | 0.18       | 0.19       | 0.19       | 0.17       | 0.19       | 0.20       |
| 4    | Ca (mg/L)                         | 34          | 29         | 40         | 36         | 41         | 43         | 41         | 50         | 41         | 43         | 45         | 24         |
| 5    | Cl (mg/L)                         | 18.1        | 12.1       | 12.1       | 8.2        | 12.1       | 12.1       | 12.1       | 12.1       | 9.9        | 12.1       | 12.1       | 22.0       |
| 6    | CO3 (mg/L)                        | 14.4        | 9.6        | 0.0        | 9.6        | 4.8        | 14.4       | 0.0        | 4.8        | 0.0        | 4.8        | 0.0        | 0.0        |
| 7    | F (mg/L)                          | 0.25        | 0.29       | 0.27       | 0.29       | 0.29       | 0.29       | 0.32       | 0.30       | 0.34       | 0.32       | 0.32       | 0.38       |
| 8    | HCO3 (mg/L)                       | 127         | 98         | 161        | 166        | 190        | 210        | 224        | 229        | 210        | 200        | 224        | 224        |
| 9    | K (mg/L)                          | 5.9         | 3.5        | 3.5        | 3.1        | 4.3        | 5.5        | 5.9        | 5.9        | 4.7        | 4.3        | 4.7        | 8.2        |
| 10   | Mg (mg/L)                         | 17.5        | 10.3       | 14.5       | 19.6       | 20.7       | 23.7       | 24.8       | 23.7       | 20.7       | 20.7       | 22.7       | 35.1       |
| 11   | Na (mg/L)                         | 10.6        | 6.9        | 6.4        | 5.1        | 6.4        | 6.9        | 6.4        | 6.9        | 6.9        | 6.7        | 6.9        | 12.7       |
| 12   | NH3-N (mg N/L)                    | 0.41        | 0.27       | 0.28       | 0.29       | 0.31       | 0.31       | 0.34       | 0.35       | 0.34       | 0.31       | 0.34       | 0.37       |
| 13   | NO2+NO3 (mg N/L)                  | 0.55        | 0.48       | 0.50       | 0.45       | 0.49       | 0.52       | 0.52       | 0.55       | 0.46       | 0.45       | 0.53       | 0.64       |
| 14   | NO2-N (mgN/L)                     | 0.04        | 0.04       | 0.04       | 0.01       | 0.03       | 0.04       | 0.06       | 0.06       | 0.00       | 0.01       | 0.10       | 0.18       |
| 15   | NO3-N (mgN/L)                     | 0.50        | 0.43       | 0.46       | 0.43       | 0.46       | 0.48       | 0.46       | 0.49       | 0.46       | 0.43       | 0.43       | 0.46       |
| 16   | o-PO4-P (mg P/L)                  | 0.289       | 0.289      | 0.269      | 0.258      | 0.279      | 0.310      | 0.331      | 0.341      | 0.351      | 0.351      | 0.362      | 0.424      |
| 17   | SO4 (mg/L)                        | 18.2        | 19.2       | 17.3       | 18.7       | 18.7       | 20.2       | 18.7       | 19.2       | 18.2       | 17.3       | 16.8       | 18.7       |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |             |            |            |            |            |            |            |            |            |            |            |            |
| 1    | BOD3-27 (mg/L)                    | 2.0         | 1.4        | 1.8        | 1.8        | 1.8        | 2.0        | 2.0        | 1.6        | 1.4        | 1.2        | 1.4        | 2.4        |
| 2    | COD (mg/L)                        | 8.0         | 5.0        | 8.0        | 7.0        | 8.0        | 10.0       | 10.0       | 9.0        | 7.0        | 7.0        | 8.0        | 14.0       |

# Water Quality Datasheet for the period : 2015-2016

Station Name : REGAULI ( GGU30H1)

Division : M Ganga Div. I, Lucknow

Local River : Rapti

## River Water Analysis

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters               | 01/06/2015 | 01/07/2015 | 01/08/2015 | 01/09/2015 | 01/10/2015 | 02/11/2015 | 01/12/2015 | 01/01/2016 | 01/02/2016 | 01/03/2016 | 01/04/2016 | 02/05/2016 |
|------|--------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|      |                          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          |
| 3    | DO (mg/L)                | 6.5        | 6.7        | 6.5        | 6.5        | 6.7        | 6.5        | 6.5        | 6.9        | 7.1        | 6.9        | 6.9        | 6.5        |
| 4    | DO_SAT% (%)              | 87         | 85         | 81         | 78         | 90         | 80         | 77         | 65         | 67         | 80         | 80         | 86         |
|      | <b>TRACE &amp; TOXIC</b> |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | Total Arsenic (As) mg/L  |            |            |            |            |            |            |            |            |            |            | 0.00373    |            |
| 2    | Cadmium (Cd) mg/L        |            |            |            |            |            |            |            |            |            |            | 0.00011    |            |
| 3    | Total Chromium(Cr) mg/L  |            |            |            |            |            |            |            |            |            |            | 0.02054    |            |
| 4    | Copper (Cu) mg/L         |            |            |            |            |            |            |            |            |            |            | --         |            |
| 5    | Iron (Fe) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.02       |            |
| 6    | Lead (Pb) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.00145    |            |
| 7    | Mercury (Hg) mg/L        |            |            |            |            |            |            |            |            |            |            | --         |            |
| 8    | Nickel (Ni) mg/L         |            |            |            |            |            |            |            |            |            |            | 0.00337    |            |
| 9    | Zinc (Zn) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.0086     |            |
|      | <b>CHEMICAL INDICES</b>  |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | HAR_Ca (mgCaCO3/L)       | 86         | 73         | 99         | 91         | 103        | 108        | 103        | 125        | 103        | 108        | 112        | 60         |
| 2    | HAR_Total (mgCaCO3/L)    | 159        | 116        | 159        | 172        | 189        | 206        | 206        | 223        | 189        | 194        | 207        | 206        |
| 3    | Na% (%)                  | 12         | 11         | 8          | 6          | 7          | 7          | 6          | 6          | 7          | 7          | 7          | 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 (-)                  | 0.4        | 0.3        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.4        |
|      | <b>PESTICIDES</b>        |            |            |            |            |            |            |            |            |            |            |            |            |

# Water Quality Summary for the period : 2015-2016

Station Name : REGAULI ( GGU30H1)

Division : M Ganga Div. I, Lucknow

Local River : Rapti

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

## River Water Summary

| S.No | Parameters                        | Number of Observations | Maximum | Minimum | Mean  |
|------|-----------------------------------|------------------------|---------|---------|-------|
|      | <b>PHYSICAL</b>                   |                        |         |         |       |
| 1    | Q (cumec)                         | 366                    | 1128    | 18.78   | 202.0 |
| 2    | EC_GEN (μmho/cm)                  | 12                     | 390     | 240     | 319   |
| 3    | pH_GEN (pH units)                 | 12                     | 9.2     | 7.9     | 8.3   |
| 4    | TDS (mg/L)                        | 12                     | 240     | 141     | 193   |
| 5    | Temp (deg C)                      | 12                     | 31.5    | 13.0    | 24.7  |
|      | <b>CHEMICAL</b>                   |                        |         |         |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 12                     | 12.0    | 0.0     | 4.3   |
| 2    | ALK-TOT (mgCaCO3/L)               | 12                     | 196     | 96      | 163   |
| 3    | B (mg/L)                          | 12                     | 0.21    | 0.17    | 0.18  |
| 4    | Ca (mg/L)                         | 12                     | 50      | 24      | 39    |
| 5    | Cl (mg/L)                         | 12                     | 22.0    | 8.2     | 12.9  |
| 6    | CO3 (mg/L)                        | 12                     | 14.4    | 0.0     | 5.2   |
| 7    | F (mg/L)                          | 12                     | 0.38    | 0.25    | 0.3   |
| 8    | HCO3 (mg/L)                       | 12                     | 229     | 98      | 189   |
| 9    | K (mg/L)                          | 12                     | 8.2     | 3.1     | 5     |
| 10   | Mg (mg/L)                         | 12                     | 35.1    | 10.3    | 21.2  |
| 11   | Na (mg/L)                         | 12                     | 12.7    | 5.1     | 7.4   |
| 12   | NH3-N (mg N/L)                    | 12                     | 0.41    | 0.27    | 0.33  |
| 13   | NO2+NO3 (mg N/L)                  | 12                     | 0.64    | 0.45    | 0.51  |
| 14   | NO2-N (mgN/L)                     | 12                     | 0.18    | 0.00    | 0.05  |
| 15   | NO3-N (mgN/L)                     | 12                     | 0.50    | 0.43    | 0.46  |
| 16   | o-PO4-P (mg P/L)                  | 12                     | 0.424   | 0.258   | 0.321 |
| 17   | SO4 (mg/L)                        | 12                     | 20.2    | 16.8    | 18.4  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                        |         |         |       |
| 1    | BOD3-27 (mg/L)                    | 12                     | 2.4     | 1.2     | 1.7   |
| 2    | COD (mg/L)                        | 12                     | 14.0    | 5.0     | 8.4   |
| 3    | DO (mg/L)                         | 12                     | 7.1     | 6.5     | 6.6   |
| 4    | DO_SAT% (%)                       | 12                     | 90      | 65      | 80    |
|      | <b>TRACE &amp; TOXIC</b>          |                        |         |         |       |
|      | <b>CHEMICAL INDICES</b>           |                        |         |         |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 12                     | 125     | 60      | 97    |
| 2    | HAR_Total (mgCaCO3/L)             | 12                     | 223     | 116     | 186   |
| 3    | Na% (%)                           | 12                     | 12      | 6       | 8     |
| 4    | RSC (-)                           | 12                     | 0.0     | 0.0     | 0     |
| 5    | SAR (-)                           | 12                     | 0.4     | 0.2     | 0.2   |
|      | <b>PESTICIDES</b>                 |                        |         |         |       |

Water Quality Seasonal Average for the period: 2006-2016

Division : M Ganga Div. I, Lucknow  
Sub-Division : L Rapti Ghaghra SD, Gorakhpur

Station Name : REGAULI( GGU30H1)  
Local River : Rapti

River Water

| S.No | Parameters                        | Flood     |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Jun - Oct |       |       |       |       |       |       |       |       |       |
|      |                                   | 2006      | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Q (cumec)                         | 604.3     | 1356  | 1278  | 918.4 | 1035  | 653.0 | 687.5 | 1273  | 504.4 | 402.7 |
| 2    | EC_FLD (µmho/cm)                  |           |       |       |       |       |       | 250   |       |       |       |
| 3    | EC_GEN (µmho/cm)                  | 311       | 256   | 291   | 290   | 278   | 220   | 245   | 308   | 306   | 304   |
| 4    | pH_FLD (pH units)                 |           | 7.0   | 7.0   | 8.0   |       | 7.0   | 7.6   |       |       |       |
| 5    | pH_GEN (pH units)                 | 8.0       | 7.9   | 8.0   | 8.0   | 8.0   | 7.8   | 8.0   | 8.3   | 8.4   | 8.4   |
| 6    | TDS (mg/L)                        |           |       | 198   | 194   | 167   | 127   | 147   | 199   | 190   | 180   |
| 7    | Temp (deg C)                      | 31.0      | 28.8  | 27.8  | 26.9  | 26.6  | 26.4  | 26.9  | 27.3  | 29.8  | 28.6  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 2.4       | 5.8   | 5.7   | 2.0   | 4.0   | 3.2   | 2.4   | 5.6   | 6.4   | 6.4   |
| 2    | ALK-TOT (mgCaCO3/L)               | 136       | 167   | 283   | 168   | 145   | 117   | 139   | 149   | 109   | 134   |
| 3    | B (mg/L)                          | 0.05      | 0.09  | 0.16  | 0.14  | 0.13  | 0.15  | 0.15  | 0.20  | 0.21  | 0.18  |
| 4    | Ca (mg/L)                         | 29        | 31    | 35    | 37    | 32    | 28    | 31    | 31    | 23    | 36    |
| 5    | Cl (mg/L)                         | 10.2      | 10.9  | 14.9  | 14.8  | 17.7  | 12.1  | 13.6  | 15.3  | 20.3  | 12.5  |
| 6    | CO3 (mg/L)                        | 2.9       | 7.0   | 6.9   | 2.4   | 4.8   | 3.8   | 2.9   | 6.7   | 7.7   | 7.7   |
| 7    | F (mg/L)                          | 0.15      | 0.14  | 0.13  | 0.15  | 0.14  | 0.13  | 0.14  | 0.17  | 0.19  | 0.27  |
| 8    | Fe (mg/L)                         | 74.5      | 0.2   |       |       |       | 0.1   |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 160       | 130   | 182   | 200   | 167   | 135   | 164   | 168   | 117   | 148   |
| 10   | K (mg/L)                          | 8.1       | 3.6   | 4.1   | 4.8   | 4.5   | 4.6   | 5.6   | 4.8   | 4.4   | 4.1   |
| 11   | Mg (mg/L)                         | 11.9      | 10.6  | 8.7   | 18.5  | 17.5  | 13.8  | 19.8  | 18.2  | 17.3  | 16.5  |
| 12   | Na (mg/L)                         | 16.3      | 8.3   | 8.4   | 11.8  | 11.8  | 7.7   | 8.6   | 10.3  | 7.8   | 7.1   |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.07  | 0.15  | 0.52  | 0.54  | 0.29  | 0.39  | 0.31  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.11  | 0.10  | 0.09  | 0.98  | 1.18  | 0.60  | 0.39  | 0.49  |
| 15   | NO2-N (mgN/L)                     | 0.01      | 0.04  | 0.05  | 0.06  | 0.04  | 0.14  | 0.14  | 0.23  | 0.02  | 0.03  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.06  | 0.04  | 0.05  | 0.84  | 1.04  | 0.37  | 0.38  | 0.46  |
| 17   | o-PO4-P (mg P/L)                  | 0.000     | 0.000 | 0.000 | 0.047 | 0.072 | 0.145 | 0.273 | 0.322 | 0.482 | 0.277 |
| 18   | P-Tot (mgP/L)                     |           |       |       | 0.098 |       |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 10.7      | 9.9   | 8.8   | 6.8   | 5.5   |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 26.9      | 19.0  | 15.9  | 17.5  | 13.7  | 11.7  | 14.8  | 17.3  | 15.8  | 18.4  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
| 1    | BOD3-27 (mg/L)                    |           |       |       | 1.0   | 1.1   | 0.9   | 1.0   | 1.2   | 0.9   | 1.7   |
| 2    | COD (mg/L)                        |           |       |       |       | 6.0   | 6.0   | 6.8   | 7.6   | 5.2   | 7.2   |
| 3    | DO (mg/L)                         |           |       |       | 7.1   | 7.4   | 7.4   | 7.3   | 6.8   | 6.7   | 6.5   |
| 4    | DO_SAT% (%)                       |           |       |       | 88    | 92    | 92    | 91    | 86    | 88    | 84    |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 72        | 79    | 88    | 92    | 80    | 71    | 77    | 78    | 59    | 90    |
| 2    | HAR_Total (mgCaCO3/L)             | 122       | 123   | 124   | 169   | 153   | 128   | 159   | 154   | 131   | 159   |
| 3    | Na% (%)                           | 22        | 13    | 13    | 13    | 13    | 11    | 10    | 12    | 11    | 9     |
| 4    | RSC (-)                           | 0.3       | 0.1   | 0.7   | 0.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 0.7       | 0.3   | 0.3   | 0.4   | 0.4   | 0.3   | 0.3   | 0.4   | 0.3   | 0.2   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

Water Quality Seasonal Average for the period: 2006-2016

Station Name : REGAULI( GGU30H1)

Local River : Rapti

River Water

Division : M Ganga Div. I, Lucknow

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters                        | Winter    |           |           |           |           |           |           |           |           |           |
|------|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|      |                                   | Nov - Feb |           |           |           |           |           |           |           |           |           |
|      |                                   | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 |
|      | <b>PHYSICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Q (cumec)                         | 94.09     | 281.3     | 122.6     | 122.4     | 159.4     | 168.0     | 140.4     | 195.1     | 277.4     | 113.3     |
| 2    | EC_FLD (µmho/cm)                  |           |           |           |           |           |           |           |           |           |           |
| 3    | EC_GEN (µmho/cm)                  | 329       | 811       | 340       | 355       | 343       | 320       | 368       | 420       | 415       | 320       |
| 4    | pH_FLD (pH units)                 |           |           |           | 7.0       | 7.0       | 7.7       |           |           |           |           |
| 5    | pH_GEN (pH units)                 | 7.9       | 7.8       | 7.9       | 8.3       | 7.9       | 7.9       | 8.0       | 8.3       | 8.5       | 8.3       |
| 6    | TDS (mg/L)                        |           |           | 204       | 223       | 210       | 182       | 221       | 273       | 226       | 199       |
| 7    | Temp (deg C)                      | 21.8      | 19.3      | 21.4      | 21.5      | 21.9      | 21.1      | 20.6      | 20.0      | 19.6      | 19.1      |
|      | <b>CHEMICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Alk-Phen (mgCaCO3/L)              | 2.0       | 13.7      | 8.7       | 3.7       | 0.0       | 2.0       | 0.0       | 8.0       | 14.9      | 4.0       |
| 2    | ALK-TOT (mgCaCO3/L)               | 133       | 404       | 358       | 153       | 119       | 189       | 138       | 135       | 178       | 187       |
| 3    | B (mg/L)                          | 0.02      | 0.15      | 0.14      | 0.16      | 0.16      | 0.17      | 0.16      | 0.19      | 0.21      | 0.19      |
| 4    | Ca (mg/L)                         | 32        | 57        | 36        | 38        | 27        | 37        | 30        | 31        | 51        | 44        |
| 5    | Cl (mg/L)                         | 15.4      | 84.1      | 12.5      | 13.0      | 13.0      | 12.1      | 14.0      | 15.0      | 19.0      | 11.5      |
| 6    | CO3 (mg/L)                        | 2.4       | 16.5      | 10.5      | 4.5       | 0.0       | 2.4       | 0.0       | 7.2       | 18.0      | 4.8       |
| 7    | F (mg/L)                          | 0.17      | 0.18      | 0.14      | 0.17      | 0.16      | 0.12      | 0.16      | 0.18      | 0.26      | 0.31      |
| 8    | Fe (mg/L)                         | 0.1       | 0.2       |           |           |           |           |           |           |           |           |
| 9    | HCO3 (mg/L)                       | 157       | 288       | 238       | 177       | 145       | 226       | 168       | 148       | 181       | 218       |
| 10   | K (mg/L)                          | 5.1       | 21.6      | 3.6       | 3.5       | 4.6       | 4.6       | 5.7       | 3.8       | 3.0       | 5.5       |
| 11   | Mg (mg/L)                         | 12.1      | 17.6      | 16.8      | 16.8      | 17.0      | 25.0      | 19.1      | 19.9      | 19.6      | 23.2      |
| 12   | Na (mg/L)                         | 12.8      | 19.4      | 11.6      | 12.2      | 6.8       | 9.0       | 8.2       | 8.5       | 12.1      | 6.8       |
| 13   | NH3-N (mg N/L)                    |           |           |           | 0.11      | 0.15      | 0.64      | 0.48      | 0.34      | 0.33      | 0.33      |
| 14   | NO2+NO3 (mg N/L)                  |           |           | 0.10      | 0.08      | 0.09      | 0.48      | 0.47      | 0.58      | 0.48      | 0.51      |
| 15   | NO2-N (mgN/L)                     | 0.05      | 0.23      | 0.05      | 0.04      | 0.04      | 0.15      | 0.09      | 0.26      | 0.05      | 0.04      |
| 16   | NO3-N (mgN/L)                     |           |           | 0.05      | 0.04      | 0.04      | 0.33      | 0.38      | 0.32      | 0.42      | 0.47      |
| 17   | o-PO4-P (mg P/L)                  | 0.000     | 0.158     | 0.000     | 0.152     | 0.132     | 0.119     | 0.385     | 0.307     | 0.369     | 0.333     |
| 18   | P-Tot (mgP/L)                     |           |           | 0.026     | 0.175     |           |           |           |           |           |           |
| 19   | SiO2 (mg/L)                       | 11.7      | 19.5      | 7.5       | 5.9       | 6.4       |           |           |           |           |           |
| 20   | SO4 (mg/L)                        | 27.6      | 85.8      | 6.2       | 17.8      | 18.0      | 12.1      | 17.9      | 17.8      | 19.4      | 19.1      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |           |           |           |           |           |           |           |           |           |
| 1    | BOD3-27 (mg/L)                    |           |           |           | 1.4       | 0.9       | 0.9       | 0.9       | 1.1       | 0.8       | 1.7       |
| 2    | COD (mg/L)                        |           |           |           |           | 4.8       | 8.3       | 5.5       | 5.0       | 4.0       | 9.0       |
| 3    | DO (mg/L)                         |           |           | 7.2       | 7.2       | 7.7       | 7.4       | 7.3       | 7.1       | 7.0       | 6.7       |
| 4    | DO_SAT% (%)                       |           |           | 78        | 80        | 88        | 83        | 81        | 77        | 76        | 72        |
|      | <b>TRACE &amp; TOXIC</b>          |           |           |           |           |           |           |           |           |           |           |
|      | <b>CHEMICAL INDICES</b>           |           |           |           |           |           |           |           |           |           |           |
| 1    | HAR_Ca (mgCaCO3/L)                | 80        | 143       | 90        | 96        | 68        | 93        | 74        | 77        | 128       | 110       |
| 2    | HAR_Total (mgCaCO3/L)             | 130       | 217       | 160       | 165       | 139       | 197       | 154       | 160       | 210       | 206       |
| 3    | Na% (%)                           | 17        | 13        | 14        | 13        | 9         | 9         | 10        | 10        | 11        | 7         |
| 4    | RSC (-)                           | 0.1       | 1.0       | 1.1       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       |
| 5    | SAR (-)                           | 0.5       | 0.5       | 0.4       | 0.4       | 0.3       | 0.3       | 0.3       | 0.3       | 0.4       | 0.2       |
|      | <b>PESTICIDES</b>                 |           |           |           |           |           |           |           |           |           |           |

Water Quality Seasonal Average for the period: 2006-2016

Station Name : REGAULI( GGU30H1)

Local River : Rapti

River Water

Division : M Ganga Div. I, Lucknow  
Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters                        | Summer    |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Mar - May |       |       |       |       |       |       |       |       |       |
|      |                                   | 2007      | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Q (cumec)                         | 48.59     | 54.52 | 38.42 | 41.33 | 64.25 | 83.32 | 65.21 | 114.4 | 140.4 | 33.67 |
| 2    | EC_FLD (µmho/cm)                  |           |       |       |       |       |       |       |       |       |       |
| 3    | EC_GEN (µmho/cm)                  | 354       | 219   | 354   | 390   | 350   | 380   | 383   | 450   | 350   | 343   |
| 4    | pH_FLD (pH units)                 |           |       | 7.0   | 7.0   |       | 8.0   |       |       |       |       |
| 5    | pH_GEN (pH units)                 | 8.1       | 8.0   | 8.0   | 8.3   | 8.1   | 8.1   | 8.0   | 8.3   | 8.8   | 8.2   |
| 6    | TDS (mg/L)                        |           |       | 255   | 238   | 210   | 222   | 247   | 280   | 195   | 207   |
| 7    | Temp (deg C)                      | 23.8      | 23.7  | 24.8  | 25.7  | 25.3  | 22.8  | 25.3  | 23.7  | 25.8  | 25.5  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 4.0       | 8.1   | 10.0  | 4.0   | 0.0   | 5.3   | 0.0   | 2.7   | 15.9  | 1.3   |
| 2    | ALK-TOT (mgCaCO3/L)               | 264       | 220   | 224   | 161   | 124   | 211   | 163   | 153   | 161   | 180   |
| 3    | B (mg/L)                          | 0.02      | 0.21  | 0.07  | 0.15  | 0.17  | 0.16  | 0.17  | 0.20  | 0.21  | 0.19  |
| 4    | Ca (mg/L)                         | 36        | 45    | 33    | 34    | 26    | 36    | 34    | 31    | 38    | 37    |
| 5    | Cl (mg/L)                         | 18.7      | 29.8  | 16.0  | 17.3  | 16.0  | 14.7  | 22.7  | 21.4  | 14.7  | 15.4  |
| 6    | CO3 (mg/L)                        | 4.8       | 9.7   | 12.0  | 4.8   | 0.0   | 6.4   | 0.0   | 3.2   | 19.2  | 1.6   |
| 7    | F (mg/L)                          | 0.07      | 0.18  | 0.14  | 0.16  | 0.14  | 0.16  | 0.16  | 0.18  | 0.16  | 0.34  |
| 8    | Fe (mg/L)                         | 0.2       | 0.3   |       |       |       |       |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 156       | 248   | 249   | 187   | 151   | 244   | 198   | 181   | 158   | 216   |
| 10   | K (mg/L)                          | 3.8       | 5.0   | 5.0   | 4.8   | 6.0   | 6.9   | 6.4   | 4.7   | 4.0   | 5.7   |
| 11   | Mg (mg/L)                         | 14.4      | 14.4  | 15.1  | 20.4  | 18.2  | 27.2  | 21.3  | 21.3  | 20.0  | 26.2  |
| 12   | Na (mg/L)                         | 9.6       | 9.2   | 12.7  | 13.5  | 8.7   | 11.3  | 13.1  | 11.5  | 9.5   | 8.7   |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.14  | 0.16  | 0.62  | 0.40  | 0.37  | 0.34  | 0.34  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.11  | 0.09  | 0.29  | 0.65  | 0.59  | 0.48  | 0.48  | 0.54  |
| 15   | NO2-N (mgN/L)                     | 0.05      | 0.08  | 0.05  | 0.05  | 0.12  | 0.15  | 0.20  | 0.17  | 0.00  | 0.10  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.06  | 0.04  | 0.17  | 0.50  | 0.40  | 0.32  | 0.47  | 0.44  |
| 17   | o-PO4-P (mg P/L)                  | 0.000     | 0.000 |       | 0.196 | 0.127 | 0.234 | 0.369 | 0.279 | 0.265 | 0.379 |
| 18   | P-Tot (mgP/L)                     |           |       | 0.033 | 0.200 |       |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 11.9      | 11.3  | 6.7   | 5.9   | 6.3   |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 28.8      | 18.9  | 15.0  | 16.6  | 18.7  | 10.1  | 19.7  | 22.1  | 14.1  | 17.6  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
| 1    | BOD3-27 (mg/L)                    |           |       | 0.6   | 1.1   | 0.7   | 1.1   | 0.9   | 1.2   | 1.2   | 1.6   |
| 2    | COD (mg/L)                        |           |       |       |       | 6.7   | 13.3  | 14.0  | 8.0   | 6.7   | 9.7   |
| 3    | DO (mg/L)                         |           |       | 7.2   | 7.3   | 7.3   | 7.2   | 6.9   | 6.5   | 6.9   | 6.7   |
| 4    | DO_SAT% (%)                       |           |       | 86    | 88    | 89    | 83    | 84    | 76    | 84    | 82    |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 89        | 113   | 83    | 85    | 66    | 90    | 86    | 79    | 96    | 93    |
| 2    | HAR_Total (mgCaCO3/L)             | 149       | 173   | 146   | 169   | 142   | 203   | 175   | 167   | 179   | 202   |
| 3    | Na% (%)                           | 12        | 10    | 15    | 14    | 11    | 11    | 14    | 13    | 11    | 8     |
| 4    | RSC (-)                           | 0.0       | 0.9   | 1.6   | 0.1   | 0.0   | 0.3   | 0.0   | 0.1   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 0.3       | 0.3   | 0.5   | 0.5   | 0.3   | 0.3   | 0.4   | 0.4   | 0.3   | 0.3   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

**Water Quality Seasonal Average for the period: 2006-2016**

**Station Name :REGAULI ( GGU30H1)**

**Local River : Rapti**

**Division : M Ganga Div. I, Lucknow**

**Sub-Division : L Rapti Ghaghra SD, Gorakhpur**

**Well Water**

| S.No | Parameters                        | Flood<br>Jun - Oct |       |       |      |      |      |      |      |      |      |
|------|-----------------------------------|--------------------|-------|-------|------|------|------|------|------|------|------|
|      |                                   | 2006               | 2007  | 2008  | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|      | <b>PHYSICAL</b>                   |                    |       |       |      |      |      |      |      |      |      |
| 1    | EC_GEN (μmho/cm)                  | 1860               | 1757  | 1880  |      |      |      |      |      |      |      |
| 2    | pH_GEN (pH units)                 | 8.1                | 7.7   | 7.7   |      |      |      |      |      |      |      |
| 3    | TDS (mg/L)                        |                    |       | 398   |      |      |      |      |      |      |      |
| 4    | Temp (deg C)                      | 26.0               | 27.2  | 25.8  |      |      |      |      |      |      |      |
|      | <b>CHEMICAL</b>                   |                    |       |       |      |      |      |      |      |      |      |
| 1    | Alk-Phen (mgCaCO3/L)              | 19.1               | 29.0  | 16.9  |      |      |      |      |      |      |      |
| 2    | ALK-TOT (mgCaCO3/L)               | 903                | 809   | 939   |      |      |      |      |      |      |      |
| 3    | B (mg/L)                          | 0.21               | 0.14  | 0.24  |      |      |      |      |      |      |      |
| 4    | Ca (mg/L)                         | 81                 | 83    | 104   |      |      |      |      |      |      |      |
| 5    | Cl (mg/L)                         | 194.0              | 201.5 | 270.2 |      |      |      |      |      |      |      |
| 6    | CO3 (mg/L)                        | 23.0               | 34.9  | 20.4  |      |      |      |      |      |      |      |
| 7    | F (mg/L)                          |                    |       | 0.11  |      |      |      |      |      |      |      |
| 8    | Fe (mg/L)                         | 0.2                | 0.2   |       |      |      |      |      |      |      |      |
| 9    | HCO3 (mg/L)                       | 527                | 458   | 552   |      |      |      |      |      |      |      |
| 10   | K (mg/L)                          | 26.4               | 52.0  | 50.0  |      |      |      |      |      |      |      |
| 11   | Mg (mg/L)                         | 36.3               | 26.4  | 28.8  |      |      |      |      |      |      |      |
| 12   | Na (mg/L)                         | 13.8               | 35.7  | 32.7  |      |      |      |      |      |      |      |
| 13   | NH3-N (mg N/L)                    |                    |       |       |      |      |      |      |      |      |      |
| 14   | NO2+NO3 (mg N/L)                  |                    |       |       |      |      |      |      |      |      |      |
| 15   | NO2-N (mgN/L)                     | 0.14               | 0.55  | 0.68  |      |      |      |      |      |      |      |
| 16   | NO3-N (mgN/L)                     |                    |       |       |      |      |      |      |      |      |      |
| 17   | o-PO4-P (mg P/L)                  | 0.453              | 0.468 | 0.465 |      |      |      |      |      |      |      |
| 18   | P-Tot (mgP/L)                     |                    |       |       |      |      |      |      |      |      |      |
| 19   | SiO2 (mg/L)                       | 25.2               | 33.3  | 52.0  |      |      |      |      |      |      |      |
| 20   | SO4 (mg/L)                        | 175.1              | 170.4 | 255.8 |      |      |      |      |      |      |      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                    |       |       |      |      |      |      |      |      |      |
|      | <b>TRACE &amp; TOXIC</b>          |                    |       |       |      |      |      |      |      |      |      |
|      | <b>CHEMICAL INDICES</b>           |                    |       |       |      |      |      |      |      |      |      |
| 1    | HAR_Ca (mgCaCO3/L)                | 202                | 207   | 260   |      |      |      |      |      |      |      |
| 2    | HAR_Total (mgCaCO3/L)             | 353                | 317   | 380   |      |      |      |      |      |      |      |
| 3    | Na% (%)                           | 7                  | 17    | 13    |      |      |      |      |      |      |      |
| 4    | RSC (-)                           | 2.4                | 2.4   | 2.2   |      |      |      |      |      |      |      |
| 5    | SAR (-)                           | 0.3                | 0.9   | 0.7   |      |      |      |      |      |      |      |
|      | <b>PESTICIDES</b>                 |                    |       |       |      |      |      |      |      |      |      |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name :REGAULI ( GGU30H1)

Local River : Rapti

Well Water

Division : M Ganga Div. I, Lucknow

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters                        | Winter    |           |           |           |           |           |           |           |           |           |
|------|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|      |                                   | Nov - Feb |           |           |           |           |           |           |           |           |           |
|      |                                   | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 |
|      | <b>PHYSICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | EC_GEN (μmho/cm)                  | 1336      | 2035      | 2130      | 940       | 1390      | 1460      |           |           |           |           |
| 2    | pH_GEN (pH units)                 | 7.7       | 7.8       | 7.7       | 7.4       | 7.6       | 7.6       |           |           |           |           |
| 3    | TDS (mg/L)                        |           |           | 392       | 560       | 850       | 880       |           |           |           |           |
| 4    | Temp (deg C)                      | 20.3      | 18.0      | 24.0      | 27.0      | 25.0      | 26.0      |           |           |           |           |
|      | <b>CHEMICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Alk-Phen (mgCaCO3/L)              | 16.9      | 28.9      | 13.9      | 0.0       | 0.0       | 4.0       |           |           |           |           |
| 2    | ALK-TOT (mgCaCO3/L)               | 828       | 989       | 300       | 260       | 272       | 320       |           |           |           |           |
| 3    | B (mg/L)                          | 0.20      | 0.17      |           | 0.19      | 0.16      | 0.12      |           |           |           |           |
| 4    | Ca (mg/L)                         | 95        | 94        | 67        | 72        | 84        | 77        |           |           |           |           |
| 5    | Cl (mg/L)                         | 214.5     | 225.1     | 280.1     | 120.0     | 263.8     | 284.0     |           |           |           |           |
| 6    | CO3 (mg/L)                        | 20.4      | 34.8      | 16.8      | 0.0       | 0.0       | 4.8       |           |           |           |           |
| 7    | F (mg/L)                          |           |           | 0.22      | 0.21      | 0.19      | 0.11      |           |           |           |           |
| 8    | Fe (mg/L)                         | 0.3       | 0.3       |           |           |           |           |           |           |           |           |
| 9    | HCO3 (mg/L)                       | 484       | 568       | 166       | 317       | 331       | 381       |           |           |           |           |
| 10   | K (mg/L)                          | 38.6      | 62.2      | 105.2     | 14.1      | 129.4     | 141.5     |           |           |           |           |
| 11   | Mg (mg/L)                         | 31.7      | 27.6      | 24.1      | 29.9      | 40.2      | 44.3      |           |           |           |           |
| 12   | Na (mg/L)                         | 24.0      | 45.0      | 98.9      | 46.0      | 92.9      | 89.5      |           |           |           |           |
| 13   | NH3-N (mg N/L)                    |           |           |           | 0.20      | 0.18      | 0.60      |           |           |           |           |
| 14   | NO2+NO3 (mg N/L)                  |           |           |           | 0.14      | 0.17      | 0.53      |           |           |           |           |
| 15   | NO2-N (mgN/L)                     | 0.23      | 0.59      | 0.66      | 0.04      | 0.11      | 0.33      |           |           |           |           |
| 16   | NO3-N (mgN/L)                     |           |           |           | 0.10      | 0.06      | 0.20      |           |           |           |           |
| 17   | o-PO4-P (mg P/L)                  | 0.576     | 0.481     | 0.393     | 0.289     | 0.248     | 0.176     |           |           |           |           |
| 18   | P-Tot (mgP/L)                     |           |           |           | 0.290     |           |           |           |           |           |           |
| 19   | SiO2 (mg/L)                       | 33.0      | 41.0      | 44.0      | 28.0      | 26.5      |           |           |           |           |           |
| 20   | SO4 (mg/L)                        | 40.1      | 239.0     | 229.9     | 12.5      | 96.5      | 31.2      |           |           |           |           |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |           |           |           |           |           |           |           |           |           |
|      | <b>TRACE &amp; TOXIC</b>          |           |           |           |           |           |           |           |           |           |           |
|      | <b>CHEMICAL INDICES</b>           |           |           |           |           |           |           |           |           |           |           |
| 1    | HAR_Ca (mgCaCO3/L)                | 237       | 235       | 168       | 181       | 211       | 194       |           |           |           |           |
| 2    | HAR_Total (mgCaCO3/L)             | 369       | 350       | 268       | 305       | 378       | 378       |           |           |           |           |
| 3    | Na% (%)                           | 11        | 19        | 35        | 24        | 27        | 26        |           |           |           |           |
| 4    | RSC (-)                           | 1.3       | 3.5       | 0.0       | 0.0       | 0.0       | 0.0       |           |           |           |           |
| 5    | SAR (-)                           | 0.5       | 1.0       | 2.6       | 1.1       | 2.1       | 2.0       |           |           |           |           |
|      | <b>PESTICIDES</b>                 |           |           |           |           |           |           |           |           |           |           |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name :REGAULI ( GGU30H1)

Local River : Rapti

Well Water

Division : M Ganga Div. I, Lucknow

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters                        | Summer    |       |       |      |      |      |      |      |      |      |
|------|-----------------------------------|-----------|-------|-------|------|------|------|------|------|------|------|
|      |                                   | Mar - May |       |       |      |      |      |      |      |      |      |
|      |                                   | 2007      | 2008  | 2009  | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|      | <b>PHYSICAL</b>                   |           |       |       |      |      |      |      |      |      |      |
| 1    | EC_GEN (μmho/cm)                  | 1350      | 1993  | 1310  |      |      |      |      |      |      |      |
| 2    | pH_GEN (pH units)                 | 7.7       | 7.8   | 7.9   |      |      |      |      |      |      |      |
| 3    | TDS (mg/L)                        |           |       | 576   |      |      |      |      |      |      |      |
| 4    | Temp (deg C)                      | 22.8      | 22.3  | 26.5  |      |      |      |      |      |      |      |
|      | <b>CHEMICAL</b>                   |           |       |       |      |      |      |      |      |      |      |
| 1    | Alk-Phen (mgCaCO3/L)              | 18.6      | 32.2  | 4.0   |      |      |      |      |      |      |      |
| 2    | ALK-TOT (mgCaCO3/L)               | 824       | 1022  | 389   |      |      |      |      |      |      |      |
| 3    | B (mg/L)                          | 0.22      | 0.22  | 0.17  |      |      |      |      |      |      |      |
| 4    | Ca (mg/L)                         | 95        | 101   | 52    |      |      |      |      |      |      |      |
| 5    | Cl (mg/L)                         | 205.3     | 249.9 | 62.1  |      |      |      |      |      |      |      |
| 6    | CO3 (mg/L)                        | 22.4      | 38.8  | 4.8   |      |      |      |      |      |      |      |
| 7    | F (mg/L)                          | 0.02      |       | 0.15  |      |      |      |      |      |      |      |
| 8    | Fe (mg/L)                         | 0.3       | 0.4   |       |      |      |      |      |      |      |      |
| 9    | HCO3 (mg/L)                       | 480       | 584   | 465   |      |      |      |      |      |      |      |
| 10   | K (mg/L)                          | 46.1      | 68.7  | 51.2  |      |      |      |      |      |      |      |
| 11   | Mg (mg/L)                         | 33.0      | 31.2  | 32.9  |      |      |      |      |      |      |      |
| 12   | Na (mg/L)                         | 30.0      | 48.7  | 71.3  |      |      |      |      |      |      |      |
| 13   | NH3-N (mg N/L)                    |           |       |       |      |      |      |      |      |      |      |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.15  |      |      |      |      |      |      |      |
| 15   | NO2-N (mgN/L)                     | 0.27      | 0.64  | 0.07  |      |      |      |      |      |      |      |
| 16   | NO3-N (mgN/L)                     |           |       | 0.08  |      |      |      |      |      |      |      |
| 17   | o-PO4-P (mg P/L)                  | 0.592     | 0.510 |       |      |      |      |      |      |      |      |
| 18   | P-Tot (mgP/L)                     |           |       | 0.410 |      |      |      |      |      |      |      |
| 19   | SiO2 (mg/L)                       | 38.7      | 48.0  | 33.0  |      |      |      |      |      |      |      |
| 20   | SO4 (mg/L)                        | 44.8      | 247.4 | 39.8  |      |      |      |      |      |      |      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |      |      |      |      |      |      |      |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |      |      |      |      |      |      |      |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |      |      |      |      |      |      |      |
| 1    | HAR_Ca (mgCaCO3/L)                | 237       | 253   | 129   |      |      |      |      |      |      |      |
| 2    | HAR_Total (mgCaCO3/L)             | 374       | 383   | 266   |      |      |      |      |      |      |      |
| 3    | Na% (%)                           | 13        | 18    | 32    |      |      |      |      |      |      |      |
| 4    | RSC (-)                           | 1.2       | 3.2   | 2.5   |      |      |      |      |      |      |      |
| 5    | SAR (-)                           | 0.7       | 1.1   | 1.9   |      |      |      |      |      |      |      |
|      | <b>PESTICIDES</b>                 |           |       |       |      |      |      |      |      |      |      |

## HISTORY SHEET

|                   |                            |                   |                                 |
|-------------------|----------------------------|-------------------|---------------------------------|
|                   |                            | <b>Water Year</b> | <b>: 2015-2016</b>              |
| <b>Site</b>       | <b>: BIRDGHAT</b>          | <b>Code</b>       | <b>: GGU30F5</b>                |
| State             | : Uttar Pradesh            | District          | Gorakhpur                       |
| Basin             | : Ganga-Brahm-Meghna Basin | Independent River | : Ganga                         |
| Tributary         | : Ghagra                   | Sub Tributary     | : Rapti                         |
| Sub-Sub Tributary | :                          | Local River       | : Rapti                         |
| Division          | : M Ganga Div. I, Lucknow  | Sub-Division      | : L Rapti Ghaghra SD, Gorakhpur |
| Drainage Area     | : 20093 Sq. Km.            | Bank              | : Left                          |
| Latitude          | : 26°46'46"                | Longitude         | : 83°21'21"                     |
|                   | Opening Date               | Closing Date      |                                 |
| Gauge             | : 26/04/1959               |                   |                                 |
| Discharge         | : 26/04/1959               |                   |                                 |
| Sediment          | : 01/01/1963               |                   |                                 |
| Water Quality     | : 01/04/1962               |                   |                                 |

# Water Quality Datasheet for the period : 2015-2016

Station Name : BIRDDGHAT ( GGU30F5)

Local River : Rapti

## River Water Analysis

Division : M Ganga Div. I, Lucknow

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters                        | 01/06/2015 | 01/07/2015 | 01/08/2015 | 01/09/2015 | 01/10/2015  | 02/11/2015 | 01/12/2015 | 01/01/2016 | 01/02/2016 | 01/03/2016 | 01/04/2016 | 02/05/2016 |
|------|-----------------------------------|------------|------------|------------|------------|-------------|------------|------------|------------|------------|------------|------------|------------|
|      |                                   | A          | A          | A          | A          | A           | A          | A          | A          | A          | A          | A          | A          |
|      | <b>PHYSICAL</b>                   |            |            |            |            |             |            |            |            |            |            |            |            |
| 1    | Q (cumec)                         | 52.26      | 169.8      | 185.1      | 423.5      | 383.6       | 367.2      | 244.7      | 199.9      | 171.4      | 183.3      | 170.9      | 161.5      |
| 2    | Colour_Cod (-)                    | Clear      | Clear      | Brown      | Brown      | Light Brown | Clear      | Clear      | Clear      | Clear      | Clear      | Clear      | Clear      |
| 3    | EC_GEN (μmho/cm)                  | 480        | 290        | 310        | 280        | 240         | 340        | 330        | 360        | 330        | 330        | 430        | 440        |
| 4    | 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 |
| 5    | pH_GEN (pH units)                 | 8.8        | 8.3        | 8.1        | 8.1        | 8.4         | 8.3        | 8.4        | 8.3        | 8.1        | 8.3        | 7.9        | 8.2        |
| 6    | TDS (mg/L)                        | 270        | 168        | 184        | 166        | 145         | 210        | 210        | 220        | 210        | 200        | 280        | 270        |
| 7    | Temp (deg C)                      | 29.0       | 28.6       | 22.0       | 22.0       | 22.5        | 26.5       | 24.0       | 23.0       | 23.5       | 23.0       | 21.0       | 29.5       |
|      | <b>CHEMICAL</b>                   |            |            |            |            |             |            |            |            |            |            |            |            |
| 1    | Alk-Phen (mgCaCO3/L)              | 15.9       | 4.0        | 0.0        | 0.0        | 8.0         | 15.9       | 8.0        | 0.0        | 0.0        | 8.0        | 0.0        | 0.0        |
| 2    | ALK-TOT (mgCaCO3/L)               | 156        | 96         | 116        | 132        | 152         | 220        | 192        | 208        | 184        | 188        | 216        | 212        |
| 3    | B (mg/L)                          | 0.21       | 0.18       | 0.18       | 0.17       | 0.17        | 0.18       | 0.18       | 0.20       | 0.19       | 0.18       | 0.20       | 0.21       |
| 4    | Ca (mg/L)                         | 38         | 33         | 36         | 33         | 40          | 50         | 45         | 53         | 46         | 48         | 53         | 45         |
| 5    | Cl (mg/L)                         | 25.9       | 16.0       | 13.8       | 9.9        | 9.9         | 12.1       | 12.1       | 12.1       | 12.1       | 12.1       | 24.1       | 28.0       |
| 6    | CO3 (mg/L)                        | 19.2       | 4.8        | 0.0        | 0.0        | 9.6         | 19.2       | 9.6        | 0.0        | 0.0        | 9.6        | 0.0        | 0.0        |
| 7    | F (mg/L)                          | 0.25       | 0.29       | 0.27       | 0.29       | 0.29        | 0.30       | 0.30       | 0.32       | 0.34       | 0.32       | 0.36       | 0.38       |
| 8    | HCO3 (mg/L)                       | 151        | 107        | 142        | 161        | 166         | 229        | 215        | 254        | 224        | 210        | 264        | 259        |
| 9    | K (mg/L)                          | 6.6        | 4.7        | 4.7        | 3.3        | 3.5         | 5.1        | 5.5        | 6.3        | 5.1        | 4.7        | 6.6        | 9.0        |
| 10   | Mg (mg/L)                         | 19.6       | 11.3       | 11.3       | 18.6       | 16.5        | 25.8       | 24.8       | 24.8       | 21.6       | 21.6       | 25.8       | 25.8       |
| 11   | Na (mg/L)                         | 16.8       | 9.0        | 8.3        | 5.8        | 6.0         | 7.4        | 6.7        | 7.4        | 7.1        | 7.4        | 14.5       | 18.9       |
| 12   | NH3-N (mg N/L)                    | 0.44       | 0.27       | 0.29       | 0.29       | 0.31        | 0.32       | 0.34       | 0.35       | 0.34       | 0.32       | 0.34       | 0.38       |
| 13   | NO2+NO3 (mg N/L)                  | 0.53       | 0.48       | 0.52       | 0.45       | 0.50        | 0.55       | 0.52       | 0.56       | 0.53       | 0.46       | 0.50       | 0.71       |
| 14   | NO2-N (mgN/L)                     | 0.04       | 0.04       | 0.04       | 0.01       | 0.04        | 0.06       | 0.06       | 0.06       | 0.06       | 0.03       | 0.07       | 0.22       |
| 15   | NO3-N (mgN/L)                     | 0.49       | 0.43       | 0.48       | 0.43       | 0.46        | 0.49       | 0.46       | 0.50       | 0.48       | 0.43       | 0.43       | 0.49       |
| 16   | o-PO4-P (mg P/L)                  | 0.341      | 0.289      | 0.279      | 0.258      | 0.279       | 0.320      | 0.320      | 0.351      | 0.362      | 0.362      | 0.382      | 0.455      |
| 17   | SO4 (mg/L)                        | 19.2       | 20.2       | 17.8       | 18.7       | 19.2        | 20.6       | 19.2       | 19.2       | 18.7       | 17.8       | 17.8       | 19.2       |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |            |            |            |            |             |            |            |            |            |            |            |            |
| 1    | BOD3-27 (mg/L)                    | 2.9        | 2.0        | 2.2        | 1.8        | 2.0         | 1.4        | 1.8        | 1.8        | 1.8        | 1.6        | 2.9        | 2.0        |
| 2    | COD (mg/L)                        | 10.0       | 9.0        | 11.0       | 8.0        | 9.0         | 7.0        | 9.0        | 10.0       | 8.0        | 9.0        | 14.0       | 11.0       |

# Water Quality Datasheet for the period : 2015-2016

Station Name : BIRGDHAT ( GGU30F5)

Division : M Ganga Div. I, Lucknow

Local River : Rapti

## River Water Analysis

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters               | 01/06/2015 | 01/07/2015 | 01/08/2015 | 01/09/2015 | 01/10/2015 | 02/11/2015 | 01/12/2015 | 01/01/2016 | 01/02/2016 | 01/03/2016 | 01/04/2016 | 02/05/2016 |
|------|--------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|      |                          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          |
| 3    | DO (mg/L)                | 5.9        | 6.3        | 6.1        | 6.7        | 6.5        | 6.7        | 6.7        | 6.9        | 6.9        | 6.7        | 6.3        | 6.7        |
| 4    | DO_SAT% (%)              | 76         | 80         | 70         | 76         | 74         | 82         | 79         | 80         | 80         | 78         | 70         | 87         |
|      | <b>TRACE &amp; TOXIC</b> |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | Total Arsenic (As) mg/L  |            |            |            |            |            |            |            |            |            |            | 0.00454    |            |
| 2    | Cadmium (Cd) mg/L        |            |            |            |            |            |            |            |            |            |            | 0.00016    |            |
| 3    | Total Chromium(Cr) mg/L  |            |            |            |            |            |            |            |            |            |            | 0.00257    |            |
| 4    | Copper (Cu) mg/L         |            |            |            |            |            |            |            |            |            |            | --         |            |
| 5    | Iron (Fe) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.028      |            |
| 6    | Lead (Pb) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.00185    |            |
| 7    | Mercury (Hg) mg/L        |            |            |            |            |            |            |            |            |            |            | --         |            |
| 8    | Nickel (Ni) mg/L         |            |            |            |            |            |            |            |            |            |            | 0.00431    |            |
| 9    | Zinc (Zn) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.0159     |            |
|      | <b>CHEMICAL INDICES</b>  |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | HAR_Ca (mgCaCO3/L)       | 95         | 82         | 91         | 82         | 99         | 125        | 112        | 134        | 116        | 121        | 134        | 112        |
| 2    | HAR_Total (mgCaCO3/L)    | 176        | 129        | 138        | 159        | 168        | 232        | 215        | 237        | 206        | 211        | 241        | 219        |
| 3    | Na% (%)                  | 17         | 13         | 11         | 7          | 7          | 6          | 6          | 6          | 7          | 7          | 11         | 15         |
| 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 (-)                  | 0.6        | 0.3        | 0.3        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.4        | 0.6        |
|      | <b>PESTICIDES</b>        |            |            |            |            |            |            |            |            |            |            |            |            |

# Water Quality Summary for the period : 2015-2016

Station Name : BIRGDHAT ( GGU30F5)

Division : M Ganga Div. I, Lucknow

Local River : Rapti

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

## River Water Summary

| S.No | Parameters                        | Number of Observations | Maximum | Minimum | Mean  |
|------|-----------------------------------|------------------------|---------|---------|-------|
|      | <b>PHYSICAL</b>                   |                        |         |         |       |
| 1    | Q (cumec)                         | 366                    | 576.7   | 45.72   | 233.8 |
| 2    | EC_GEN (μmho/cm)                  | 12                     | 480     | 240     | 347   |
| 3    | pH_GEN (pH units)                 | 12                     | 8.8     | 7.9     | 8.3   |
| 4    | TDS (mg/L)                        | 12                     | 280     | 145     | 211   |
| 5    | Temp (deg C)                      | 12                     | 29.5    | 21.0    | 24.6  |
|      | <b>CHEMICAL</b>                   |                        |         |         |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 12                     | 15.9    | 0.0     | 5     |
| 2    | ALK-TOT (mgCaCO3/L)               | 12                     | 220     | 96      | 173   |
| 3    | B (mg/L)                          | 12                     | 0.21    | 0.17    | 0.19  |
| 4    | Ca (mg/L)                         | 12                     | 53      | 33      | 43    |
| 5    | Cl (mg/L)                         | 12                     | 28.0    | 9.9     | 15.7  |
| 6    | CO3 (mg/L)                        | 12                     | 19.2    | 0.0     | 6     |
| 7    | F (mg/L)                          | 12                     | 0.38    | 0.25    | 0.31  |
| 8    | HCO3 (mg/L)                       | 12                     | 264     | 107     | 198   |
| 9    | K (mg/L)                          | 12                     | 9.0     | 3.3     | 5.4   |
| 10   | Mg (mg/L)                         | 12                     | 25.8    | 11.3    | 20.6  |
| 11   | Na (mg/L)                         | 12                     | 18.9    | 5.8     | 9.6   |
| 12   | NH3-N (mg N/L)                    | 12                     | 0.44    | 0.27    | 0.33  |
| 13   | NO2+NO3 (mg N/L)                  | 12                     | 0.71    | 0.45    | 0.53  |
| 14   | NO2-N (mgN/L)                     | 12                     | 0.22    | 0.01    | 0.06  |
| 15   | NO3-N (mgN/L)                     | 12                     | 0.50    | 0.43    | 0.47  |
| 16   | o-PO4-P (mg P/L)                  | 12                     | 0.455   | 0.258   | 0.333 |
| 17   | SO4 (mg/L)                        | 12                     | 20.6    | 17.8    | 19    |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                        |         |         |       |
| 1    | BOD3-27 (mg/L)                    | 12                     | 2.9     | 1.4     | 2     |
| 2    | COD (mg/L)                        | 12                     | 14.0    | 7.0     | 9.6   |
| 3    | DO (mg/L)                         | 12                     | 6.9     | 5.9     | 6.5   |
| 4    | DO_SAT% (%)                       | 12                     | 87      | 70      | 78    |
|      | <b>TRACE &amp; TOXIC</b>          |                        |         |         |       |
|      | <b>CHEMICAL INDICES</b>           |                        |         |         |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 12                     | 134     | 82      | 108   |
| 2    | HAR_Total (mgCaCO3/L)             | 12                     | 241     | 129     | 194   |
| 3    | Na% (%)                           | 12                     | 17      | 6       | 9     |
| 4    | RSC (-)                           | 12                     | 0.0     | 0.0     | 0     |
| 5    | SAR (-)                           | 12                     | 0.6     | 0.2     | 0.3   |
|      | <b>PESTICIDES</b>                 |                        |         |         |       |

Water Quality Seasonal Average for the period: 2006-2016

Division : M Ganga Div. I, Lucknow  
Sub-Division : L Rapti Ghaghra SD, Gorakhpur

Station Name : BIRDGHAT( GGU30F5)  
Local River : Rapti

River Water

| S.No | Parameters                        | Flood     |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Jun - Oct |       |       |       |       |       |       |       |       |       |
|      |                                   | 2006      | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Q (cumec)                         | 546.9     | 1947  | 1361  | 957.9 | 782.1 | 351.8 | 394.6 | 1146  | 473.1 | 242.9 |
| 2    | EC_FLD (µmho/cm)                  | 662       | 350   |       |       |       |       | 310   |       |       |       |
| 3    | EC_GEN (µmho/cm)                  | 279       | 267   | 289   | 285   | 264   | 232   | 245   | 300   | 324   | 320   |
| 4    | pH_FLD (pH units)                 | 7.2       | 7.9   |       |       |       |       | 8.0   |       |       |       |
| 5    | pH_GEN (pH units)                 | 8.2       | 8.0   | 8.0   | 7.9   | 7.9   | 7.7   | 7.9   | 8.1   | 8.2   | 8.3   |
| 6    | TDS (mg/L)                        |           |       | 196   | 193   | 158   | 135   | 148   | 193   | 194   | 187   |
| 7    | Temp (deg C)                      | 30.3      | 26.1  | 25.7  | 25.3  | 24.2  | 19.8  | 20.5  | 20.6  | 29.0  | 24.8  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 2.8       | 3.6   | 5.7   | 2.0   | 5.6   | 1.6   | 1.6   | 4.8   | 4.8   | 5.6   |
| 2    | ALK-TOT (mgCaCO3/L)               | 128       | 242   | 258   | 174   | 136   | 128   | 138   | 143   | 106   | 130   |
| 3    | B (mg/L)                          | 0.03      | 0.08  | 0.16  | 0.15  | 0.14  | 0.17  | 0.15  | 0.19  | 0.21  | 0.18  |
| 4    | Ca (mg/L)                         | 13        | 34    | 37    | 36    | 31    | 28    | 30    | 32    | 24    | 36    |
| 5    | Cl (mg/L)                         | 11.0      | 14.9  | 16.0  | 14.3  | 14.4  | 12.9  | 13.6  | 14.5  | 19.2  | 15.1  |
| 6    | CO3 (mg/L)                        | 3.4       | 5.8   | 6.9   | 2.4   | 6.7   | 1.9   | 1.9   | 5.8   | 5.8   | 6.7   |
| 7    | F (mg/L)                          | 0.20      | 0.08  | 0.13  | 0.14  | 0.13  | 0.10  | 0.13  | 0.18  | 0.21  | 0.27  |
| 8    | Fe (mg/L)                         | 0.1       | 0.2   |       |       |       | 0.1   |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 149       | 176   | 194   | 207   | 152   | 152   | 165   | 163   | 118   | 145   |
| 10   | K (mg/L)                          | 8.7       | 3.6   | 4.1   | 4.8   | 3.8   | 5.6   | 6.3   | 4.8   | 4.4   | 4.6   |
| 11   | Mg (mg/L)                         | 14.6      | 5.4   | 6.3   | 18.4  | 16.9  | 15.5  | 20.6  | 18.9  | 17.1  | 15.5  |
| 12   | Na (mg/L)                         | 16.8      | 8.1   | 8.6   | 11.9  | 8.3   | 9.0   | 9.4   | 10.3  | 7.0   | 9.2   |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.06  | 0.17  | 0.60  | 0.54  | 0.29  | 0.35  | 0.32  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.18  | 0.10  | 0.11  | 0.95  | 1.41  | 0.60  | 0.40  | 0.50  |
| 15   | NO2-N (mgN/L)                     | 0.01      | 0.04  | 0.05  | 0.06  | 0.05  | 0.15  | 0.39  | 0.24  | 0.02  | 0.04  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.13  | 0.04  | 0.06  | 0.80  | 1.02  | 0.36  | 0.38  | 0.46  |
| 17   | o-PO4-P (mg P/L)                  | 0.072     | 0.031 | 0.027 | 0.036 | 0.089 | 0.163 | 0.316 | 0.324 | 0.436 | 0.289 |
| 18   | P-Tot (mgP/L)                     |           |       |       | 0.082 |       |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 8.0       | 9.7   | 8.8   | 7.2   | 5.8   |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 37.1      | 17.5  | 15.6  | 15.7  | 13.4  | 10.8  | 16.0  | 18.8  | 15.6  | 19.0  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
| 1    | BOD3-27 (mg/L)                    |           |       |       | 1.0   | 1.1   | 0.9   | 1.2   | 1.2   | 1.0   | 2.2   |
| 2    | COD (mg/L)                        |           |       |       |       |       | 30.6  | 9.2   | 7.4   | 7.2   | 9.4   |
| 3    | DO (mg/L)                         | 6.9       | 6.6   | 6.3   | 7.1   | 8.4   | 8.1   | 7.9   | 7.0   | 6.7   | 6.3   |
| 4    | DO_SAT% (%)                       | 91        | 81    | 78    | 86    | 99    | 89    | 87    | 77    | 87    | 75    |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 32        | 86    | 92    | 91    | 78    | 71    | 76    | 79    | 59    | 89    |
| 2    | HAR_Total (mgCaCO3/L)             | 93        | 108   | 118   | 168   | 148   | 135   | 162   | 158   | 131   | 154   |
| 3    | Na% (%)                           | 28        | 14    | 14    | 13    | 11    | 12    | 11    | 12    | 10    | 11    |
| 4    | RSC (-)                           | 0.8       | 0.9   | 1.1   | 0.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 0.8       | 0.3   | 0.3   | 0.4   | 0.3   | 0.3   | 0.3   | 0.4   | 0.3   | 0.3   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

Water Quality Seasonal Average for the period: 2006-2016

Station Name : BIRDGHAT( GGU30F5)

Local River : Rapti

River Water

Division : M Ganga Div. I, Lucknow

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters                        | Winter    |           |           |           |           |           |           |           |           |           |
|------|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|      |                                   | Nov - Feb |           |           |           |           |           |           |           |           |           |
|      |                                   | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 |
|      | <b>PHYSICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Q (cumec)                         | 73.70     | 145.3     | 100.4     | 130.6     | 162.8     | 126.9     | 162.6     | 265.0     | 153.8     | 245.8     |
| 2    | EC_FLD (µmho/cm)                  |           |           |           |           |           |           |           |           |           |           |
| 3    | EC_GEN (µmho/cm)                  | 429       | 215       | 327       | 375       | 338       | 330       | 355       | 405       | 433       | 340       |
| 4    | pH_FLD (pH units)                 |           |           |           |           |           | 8.0       |           |           |           |           |
| 5    | pH_GEN (pH units)                 | 8.3       | 8.1       | 8.1       | 8.4       | 7.8       | 8.0       | 8.0       | 8.4       | 8.4       | 8.3       |
| 6    | TDS (mg/L)                        |           |           | 199       | 233       | 205       | 188       | 215       | 263       | 241       | 213       |
| 7    | Temp (deg C)                      | 20.0      | 16.8      | 17.0      | 15.0      | 20.5      | 13.4      | 13.1      | 17.1      | 19.3      | 24.3      |
|      | <b>CHEMICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Alk-Phen (mgCaCO3/L)              | 4.0       | 8.5       | 7.5       | 7.5       | 0.0       | 1.0       | 0.0       | 6.0       | 19.9      | 6.0       |
| 2    | ALK-TOT (mgCaCO3/L)               | 138       | 218       | 273       | 160       | 117       | 180       | 137       | 134       | 174       | 201       |
| 3    | B (mg/L)                          | 0.02      | 0.14      | 0.13      | 0.15      | 0.16      | 0.15      | 0.18      | 0.18      | 0.21      | 0.19      |
| 4    | Ca (mg/L)                         | 21        | 42        | 36        | 43        | 28        | 39        | 30        | 32        | 49        | 49        |
| 5    | Cl (mg/L)                         | 21.0      | 27.5      | 12.5      | 15.0      | 14.0      | 15.0      | 16.0      | 15.0      | 20.9      | 12.1      |
| 6    | CO3 (mg/L)                        | 4.8       | 10.2      | 9.0       | 9.0       | 0.0       | 1.2       | 0.0       | 7.2       | 24.0      | 7.2       |
| 7    | F (mg/L)                          | 0.18      | 0.11      | 0.15      | 0.16      | 0.15      | 0.16      | 0.17      | 0.19      | 0.26      | 0.32      |
| 8    | Fe (mg/L)                         | 0.1       | 0.2       |           |           |           |           |           |           |           |           |
| 9    | HCO3 (mg/L)                       | 159       | 246       | 314       | 177       | 143       | 217       | 167       | 149       | 163       | 231       |
| 10   | K (mg/L)                          | 5.2       | 4.1       | 3.2       | 3.2       | 4.8       | 4.7       | 5.9       | 4.4       | 3.7       | 5.5       |
| 11   | Mg (mg/L)                         | 10.8      | 12.0      | 17.4      | 13.9      | 16.0      | 21.4      | 19.3      | 20.1      | 20.6      | 24.2      |
| 12   | Na (mg/L)                         | 11.2      | 8.3       | 11.6      | 29.6      | 7.0       | 9.5       | 8.7       | 8.7       | 12.8      | 7.1       |
| 13   | NH3-N (mg N/L)                    |           |           |           | 0.06      | 0.16      | 0.65      | 0.45      | 0.37      | 0.31      | 0.34      |
| 14   | NO2+NO3 (mg N/L)                  |           |           | 0.14      | 0.09      | 0.09      | 0.63      | 0.46      | 0.56      | 0.45      | 0.54      |
| 15   | NO2-N (mgN/L)                     | 0.05      | 0.06      | 0.05      | 0.04      | 0.05      | 0.17      | 0.10      | 0.27      | 0.02      | 0.06      |
| 16   | NO3-N (mgN/L)                     |           |           | 0.09      | 0.05      | 0.04      | 0.47      | 0.36      | 0.29      | 0.43      | 0.48      |
| 17   | o-PO4-P (mg P/L)                  | 0.031     | 0.031     | 0.007     | 0.129     | 0.134     | 0.124     | 0.403     | 0.333     | 0.357     | 0.338     |
| 18   | P-Tot (mgP/L)                     |           |           | 0.011     | 0.150     |           |           |           |           |           |           |
| 19   | SiO2 (mg/L)                       | 9.8       | 10.5      | 6.1       | 6.4       | 5.9       |           |           |           |           |           |
| 20   | SO4 (mg/L)                        | 26.0      | 11.8      | 9.2       | 14.6      | 18.4      | 12.1      | 14.1      | 18.6      | 21.2      | 19.4      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |           |           |           |           |           |           |           |           |           |
| 1    | BOD3-27 (mg/L)                    |           |           |           | 1.5       | 0.9       | 1.0       | 1.1       | 1.2       | 1.5       | 1.7       |
| 2    | COD (mg/L)                        |           |           |           |           | 3.0       | 11.3      | 10.0      | 7.3       | 7.5       | 8.5       |
| 3    | DO (mg/L)                         | 6.8       | 6.8       | 7.0       | 7.0       | 8.6       | 8.7       | 7.5       | 6.9       | 6.2       | 6.8       |
| 4    | DO_SAT% (%)                       | 75        | 70        | 72        | 69        | 96        | 84        | 72        | 72        | 68        | 80        |
|      | <b>TRACE &amp; TOXIC</b>          |           |           |           |           |           |           |           |           |           |           |
|      | <b>CHEMICAL INDICES</b>           |           |           |           |           |           |           |           |           |           |           |
| 1    | HAR_Ca (mgCaCO3/L)                | 53        | 105       | 90        | 108       | 70        | 98        | 74        | 81        | 122       | 122       |
| 2    | HAR_Total (mgCaCO3/L)             | 98        | 155       | 162       | 165       | 137       | 187       | 155       | 164       | 208       | 222       |
| 3    | Na% (%)                           | 19        | 10        | 14        | 22        | 10        | 10        | 10        | 10        | 11        | 6         |
| 4    | RSC (-)                           | 0.8       | 1.3       | 2.2       | 0.1       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       |
| 5    | SAR (-)                           | 0.5       | 0.3       | 0.4       | 1.0       | 0.3       | 0.3       | 0.3       | 0.3       | 0.4       | 0.2       |
|      | <b>PESTICIDES</b>                 |           |           |           |           |           |           |           |           |           |           |

**Water Quality Seasonal Average for the period: 2006-2016**

Station Name : BIRDGHAT( GGU30F5)

Local River : Rapti

River Water

Division : M Ganga Div. I, Lucknow

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters                        | Summer    |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Mar - May |       |       |       |       |       |       |       |       |       |
|      |                                   | 2007      | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Q (cumec)                         | 46.87     | 48.88 | 41.19 | 56.37 | 65.88 | 66.22 | 96.05 | 75.07 | 76.33 | 171.9 |
| 2    | EC_FLD (µmho/cm)                  |           |       |       |       |       |       |       |       |       |       |
| 3    | EC_GEN (µmho/cm)                  | 352       | 225   | 362   | 417   | 370   | 407   | 383   | 460   | 437   | 400   |
| 4    | pH_FLD (pH units)                 |           |       |       |       |       | 7.8   | 8.0   |       |       |       |
| 5    | pH_GEN (pH units)                 | 7.9       | 8.2   | 8.1   | 8.2   | 8.0   | 8.0   | 8.1   | 8.2   | 8.8   | 8.1   |
| 6    | TDS (mg/L)                        |           |       | 236   | 253   | 237   | 236   | 247   | 287   | 247   | 250   |
| 7    | Temp (deg C)                      | 22.7      | 20.3  | 19.2  | 20.2  | 19.7  | 20.5  | 18.3  | 17.7  | 23.5  | 24.5  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 4.0       | 4.7   | 14.9  | 4.0   | 1.3   | 9.3   | 8.0   | 6.6   | 18.6  | 2.7   |
| 2    | ALK-TOT (mgCaCO3/L)               | 136       | 252   | 246   | 160   | 131   | 216   | 171   | 164   | 180   | 205   |
| 3    | B (mg/L)                          | 0.02      | 0.19  | 0.07  | 0.17  | 0.18  | 0.16  | 0.18  | 0.24  | 0.21  | 0.20  |
| 4    | Ca (mg/L)                         | 25        | 45    | 36    | 34    | 28    | 33    | 33    | 37    | 41    | 49    |
| 5    | Cl (mg/L)                         | 20.0      | 36.8  | 15.3  | 18.6  | 16.0  | 17.3  | 21.3  | 24.0  | 28.6  | 21.4  |
| 6    | CO3 (mg/L)                        | 4.8       | 9.7   | 18.0  | 4.8   | 1.6   | 11.2  | 9.6   | 8.0   | 22.4  | 3.2   |
| 7    | F (mg/L)                          | 0.18      | 0.05  | 0.12  | 0.15  | 0.16  | 0.17  | 0.19  | 0.18  | 0.18  | 0.35  |
| 8    | Fe (mg/L)                         | 0.1       | 0.3   |       |       |       |       |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 156       | 292   | 264   | 185   | 156   | 241   | 189   | 184   | 174   | 244   |
| 10   | K (mg/L)                          | 4.0       | 5.0   | 4.3   | 4.4   | 5.2   | 7.2   | 6.8   | 5.2   | 5.6   | 6.8   |
| 11   | Mg (mg/L)                         | 14.1      | 14.4  | 14.1  | 20.6  | 17.9  | 30.9  | 23.4  | 22.0  | 25.1  | 24.4  |
| 12   | Na (mg/L)                         | 8.8       | 43.1  | 14.6  | 14.6  | 9.8   | 11.8  | 13.7  | 12.9  | 17.9  | 13.6  |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.14  | 0.17  | 0.65  | 0.39  | 0.37  | 0.35  | 0.35  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.13  | 0.09  | 0.29  | 0.70  | 0.63  | 0.69  | 0.50  | 0.56  |
| 15   | NO2-N (mgN/L)                     | 0.05      | 0.09  | 0.05  | 0.04  | 0.12  | 0.15  | 0.23  | 0.38  | 0.02  | 0.11  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.08  | 0.05  | 0.16  | 0.55  | 0.40  | 0.32  | 0.48  | 0.45  |
| 17   | o-PO4-P (mg P/L)                  | 0.034     | 0.031 |       | 0.992 | 0.162 | 0.224 | 0.382 | 0.276 | 0.296 | 0.400 |
| 18   | P-Tot (mgP/L)                     |           |       | 0.018 | 0.217 |       |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 10.3      | 10.7  | 2.3   | 6.1   | 5.9   |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 27.4      | 17.4  | 14.1  | 17.3  | 18.9  | 9.9   | 20.5  | 21.0  | 19.7  | 18.2  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
| 1    | BOD3-27 (mg/L)                    |           |       | 0.8   | 1.3   | 1.0   | 1.6   | 0.9   | 1.2   | 2.0   | 2.2   |
| 2    | COD (mg/L)                        |           |       |       |       | 13.0  | 17.3  | 13.0  | 8.7   | 9.3   | 11.3  |
| 3    | DO (mg/L)                         | 6.3       | 6.6   | 7.2   | 7.6   | 9.1   | 7.3   | 7.3   | 6.4   | 6.3   | 6.5   |
| 4    | DO_SAT% (%)                       | 73        | 73    | 77    | 84    | 99    | 80    | 77    | 67    | 73    | 78    |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 62        | 113   | 89    | 86    | 70    | 83    | 83    | 93    | 102   | 122   |
| 2    | HAR_Total (mgCaCO3/L)             | 120       | 173   | 148   | 172   | 145   | 212   | 181   | 185   | 206   | 224   |
| 3    | Na% (%)                           | 13        | 26    | 17    | 15    | 12    | 11    | 14    | 13    | 16    | 11    |
| 4    | RSC (-)                           | 0.3       | 1.7   | 2.0   | 0.1   | 0.0   | 0.1   | 0.0   | 0.0   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 0.4       | 1.4   | 0.5   | 0.5   | 0.4   | 0.4   | 0.4   | 0.4   | 0.5   | 0.4   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

# Water Quality Seasonal Average for the period: 2006-2016

Division : M Ganga Div. I, Lucknow

Station Name :BIRDGHAT ( GGU30F5)

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

Local River : Rapti

Well Water

| S.No | Parameters                        | Flood     |       |       |      |      |      |      |      |      |      |
|------|-----------------------------------|-----------|-------|-------|------|------|------|------|------|------|------|
|      |                                   | Jun - Oct |       |       |      |      |      |      |      |      |      |
|      |                                   | 2006      | 2007  | 2008  | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|      | <b>PHYSICAL</b>                   |           |       |       |      |      |      |      |      |      |      |
| 1    | EC_GEN (μmho/cm)                  | 1950      | 1554  | 1890  |      |      |      |      |      |      |      |
| 2    | pH_GEN (pH units)                 | 8.0       | 7.6   | 7.2   |      |      |      |      |      |      |      |
| 3    | TDS (mg/L)                        |           |       | 410   |      |      |      |      |      |      |      |
| 4    | Temp (deg C)                      | 27.0      | 24.5  | 23.0  |      |      |      |      |      |      |      |
|      | <b>CHEMICAL</b>                   |           |       |       |      |      |      |      |      |      |      |
| 1    | Alk-Phen (mgCaCO3/L)              | 1.0       | 26.5  | 6.0   |      |      |      |      |      |      |      |
| 2    | ALK-TOT (mgCaCO3/L)               | 1605      | 830   | 308   |      |      |      |      |      |      |      |
| 3    | B (mg/L)                          | 0.12      | 0.12  | 0.22  |      |      |      |      |      |      |      |
| 4    | Ca (mg/L)                         | 76        | 82    | 104   |      |      |      |      |      |      |      |
| 5    | Cl (mg/L)                         | 150.5     | 37.6  | 139.9 |      |      |      |      |      |      |      |
| 6    | CO3 (mg/L)                        | 1.2       | 31.9  | 7.2   |      |      |      |      |      |      |      |
| 7    | F (mg/L)                          |           |       |       |      |      |      |      |      |      |      |
| 8    | Fe (mg/L)                         | 0.1       | 0.2   |       |      |      |      |      |      |      |      |
| 9    | HCO3 (mg/L)                       | 977       | 473   | 181   |      |      |      |      |      |      |      |
| 10   | K (mg/L)                          | 3.4       | 11.1  | 4.3   |      |      |      |      |      |      |      |
| 11   | Mg (mg/L)                         | 31.7      | 24.1  | 28.8  |      |      |      |      |      |      |      |
| 12   | Na (mg/L)                         | 13.8      | 30.9  | 41.2  |      |      |      |      |      |      |      |
| 13   | NH3-N (mg N/L)                    |           |       |       |      |      |      |      |      |      |      |
| 14   | NO2+NO3 (mg N/L)                  |           |       |       |      |      |      |      |      |      |      |
| 15   | NO2-N (mgN/L)                     | 0.48      | 0.54  | 0.61  |      |      |      |      |      |      |      |
| 16   | NO3-N (mgN/L)                     |           |       |       |      |      |      |      |      |      |      |
| 17   | o-PO4-P (mg P/L)                  | 0.380     | 0.450 | 0.506 |      |      |      |      |      |      |      |
| 18   | P-Tot (mgP/L)                     |           |       |       |      |      |      |      |      |      |      |
| 19   | SiO2 (mg/L)                       | 17.2      | 32.0  | 44.0  |      |      |      |      |      |      |      |
| 20   | SO4 (mg/L)                        | 35.0      | 36.0  | 58.1  |      |      |      |      |      |      |      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |      |      |      |      |      |      |      |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |      |      |      |      |      |      |      |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |      |      |      |      |      |      |      |
| 1    | HAR_Ca (mgCaCO3/L)                | 190       | 205   | 260   |      |      |      |      |      |      |      |
| 2    | HAR_Total (mgCaCO3/L)             | 323       | 305   | 380   |      |      |      |      |      |      |      |
| 3    | Na% (%)                           | 8         | 17    | 19    |      |      |      |      |      |      |      |
| 4    | RSC (-)                           | 9.6       | 2.8   | 0.0   |      |      |      |      |      |      |      |
| 5    | SAR (-)                           | 0.3       | 0.8   | 0.9   |      |      |      |      |      |      |      |
|      | <b>PESTICIDES</b>                 |           |       |       |      |      |      |      |      |      |      |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name :BIRDGHAT ( GGU30F5)

Local River : Rapti

Well Water

Division : M Ganga Div. I, Lucknow

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters                        | Winter    |           |           |           |           |           |           |           |           |           |
|------|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|      |                                   | Nov - Feb |           |           |           |           |           |           |           |           |           |
|      |                                   | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 |
|      | <b>PHYSICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | EC_GEN (μmho/cm)                  | 1323      | 1803      | 1910      | 900       | 1110      |           |           |           |           |           |
| 2    | pH_GEN (pH units)                 | 7.5       | 7.8       | 7.2       | 7.4       | 7.3       |           |           |           |           |           |
| 3    | TDS (mg/L)                        |           |           | 404       | 550       | 680       |           |           |           |           |           |
| 4    | Temp (deg C)                      | 20.1      | 18.9      | 22.5      | 18.5      | 22.0      |           |           |           |           |           |
|      | <b>CHEMICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Alk-Phen (mgCaCO3/L)              | 7.0       | 28.9      | 4.0       | 0.0       | 0.0       |           |           |           |           |           |
| 2    | ALK-TOT (mgCaCO3/L)               | 1675      | 927       | 304       | 200       | 197       |           |           |           |           |           |
| 3    | B (mg/L)                          | 0.04      | 0.15      |           | 0.17      | 0.19      |           |           |           |           |           |
| 4    | Ca (mg/L)                         | 86        | 93        | 61        | 67        | 40        |           |           |           |           |           |
| 5    | Cl (mg/L)                         | 167.0     | 56.3      | 104.0     | 72.1      | 128.2     |           |           |           |           |           |
| 6    | CO3 (mg/L)                        | 8.4       | 34.9      | 4.8       | 0.0       | 0.0       |           |           |           |           |           |
| 7    | F (mg/L)                          |           |           | 0.22      | 0.27      | 0.23      |           |           |           |           |           |
| 8    | Fe (mg/L)                         | 0.2       | 0.3       |           |           |           |           |           |           |           |           |
| 9    | HCO3 (mg/L)                       | 1013      | 530       | 181       | 244       | 240       |           |           |           |           |           |
| 10   | K (mg/L)                          | 6.7       | 16.7      | 5.1       | 15.6      | 52.0      |           |           |           |           |           |
| 11   | Mg (mg/L)                         | 34.6      | 25.2      | 28.8      | 14.5      | 15.4      |           |           |           |           |           |
| 12   | Na (mg/L)                         | 24.8      | 39.0      | 18.2      | 28.5      | 86.5      |           |           |           |           |           |
| 13   | NH3-N (mg N/L)                    |           |           |           | 0.15      | 0.20      |           |           |           |           |           |
| 14   | NO2+NO3 (mg N/L)                  |           |           |           | 0.18      | 0.18      |           |           |           |           |           |
| 15   | NO2-N (mgN/L)                     | 0.58      | 0.59      | 0.61      | 0.11      | 0.11      |           |           |           |           |           |
| 16   | NO3-N (mgN/L)                     |           |           |           | 0.07      | 0.07      |           |           |           |           |           |
| 17   | o-PO4-P (mg P/L)                  | 0.501     | 0.460     | 0.455     | 0.207     | 0.300     |           |           |           |           |           |
| 18   | P-Tot (mgP/L)                     |           |           |           | 0.210     |           |           |           |           |           |           |
| 19   | SiO2 (mg/L)                       | 31.0      | 37.0      | 44.0      | 32.0      | 24.7      |           |           |           |           |           |
| 20   | SO4 (mg/L)                        | 25.0      | 42.8      | 54.2      | 13.9      | 38.4      |           |           |           |           |           |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |           |           |           |           |           |           |           |           |           |
|      | <b>TRACE &amp; TOXIC</b>          |           |           |           |           |           |           |           |           |           |           |
|      | <b>CHEMICAL INDICES</b>           |           |           |           |           |           |           |           |           |           |           |
| 1    | HAR_Ca (mgCaCO3/L)                | 215       | 233       | 153       | 168       | 99        |           |           |           |           |           |
| 2    | HAR_Total (mgCaCO3/L)             | 359       | 338       | 273       | 228       | 163       |           |           |           |           |           |
| 3    | Na% (%)                           | 13        | 19        | 12        | 20        | 45        |           |           |           |           |           |
| 4    | RSC (-)                           | 9.7       | 3.1       | 0.0       | 0.0       | 0.7       |           |           |           |           |           |
| 5    | SAR (-)                           | 0.6       | 0.9       | 0.5       | 0.8       | 3.0       |           |           |           |           |           |
|      | <b>PESTICIDES</b>                 |           |           |           |           |           |           |           |           |           |           |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name :BIRDGHAT ( GGU30F5)

Local River : Rapti

Well Water

Division : M Ganga Div. I, Lucknow

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters                        | Summer    |       |      |      |      |      |      |      |      |      |
|------|-----------------------------------|-----------|-------|------|------|------|------|------|------|------|------|
|      |                                   | Mar - May |       |      |      |      |      |      |      |      |      |
|      |                                   | 2007      | 2008  | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|      | <b>PHYSICAL</b>                   |           |       |      |      |      |      |      |      |      |      |
| 1    | EC_GEN (μmho/cm)                  | 1340      | 1855  |      |      |      |      |      |      |      |      |
| 2    | pH_GEN (pH units)                 | 7.5       | 7.9   |      |      |      |      |      |      |      |      |
| 3    | TDS (mg/L)                        |           |       |      |      |      |      |      |      |      |      |
| 4    | Temp (deg C)                      | 17.5      | 17.5  |      |      |      |      |      |      |      |      |
|      | <b>CHEMICAL</b>                   |           |       |      |      |      |      |      |      |      |      |
| 1    | Alk-Phen (mgCaCO3/L)              | 12.0      | 33.9  |      |      |      |      |      |      |      |      |
| 2    | ALK-TOT (mgCaCO3/L)               | 1689      | 1000  |      |      |      |      |      |      |      |      |
| 3    | B (mg/L)                          | 0.05      | 0.21  |      |      |      |      |      |      |      |      |
| 4    | Ca (mg/L)                         | 83        | 104   |      |      |      |      |      |      |      |      |
| 5    | Cl (mg/L)                         | 167.9     | 85.0  |      |      |      |      |      |      |      |      |
| 6    | CO3 (mg/L)                        | 14.4      | 40.8  |      |      |      |      |      |      |      |      |
| 7    | F (mg/L)                          | 0.00      |       |      |      |      |      |      |      |      |      |
| 8    | Fe (mg/L)                         | 0.2       | 0.4   |      |      |      |      |      |      |      |      |
| 9    | HCO3 (mg/L)                       | 1015      | 568   |      |      |      |      |      |      |      |      |
| 10   | K (mg/L)                          | 8.2       | 25.2  |      |      |      |      |      |      |      |      |
| 11   | Mg (mg/L)                         | 34.0      | 30.0  |      |      |      |      |      |      |      |      |
| 12   | Na (mg/L)                         | 27.1      | 47.0  |      |      |      |      |      |      |      |      |
| 13   | NH3-N (mg N/L)                    |           |       |      |      |      |      |      |      |      |      |
| 14   | NO2+NO3 (mg N/L)                  |           |       |      |      |      |      |      |      |      |      |
| 15   | NO2-N (mgN/L)                     | 0.61      | 0.64  |      |      |      |      |      |      |      |      |
| 16   | NO3-N (mgN/L)                     |           |       |      |      |      |      |      |      |      |      |
| 17   | o-PO4-P (mg P/L)                  | 0.579     | 0.501 |      |      |      |      |      |      |      |      |
| 18   | P-Tot (mgP/L)                     |           |       |      |      |      |      |      |      |      |      |
| 19   | SiO2 (mg/L)                       | 36.0      | 43.0  |      |      |      |      |      |      |      |      |
| 20   | SO4 (mg/L)                        | 27.8      | 50.9  |      |      |      |      |      |      |      |      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |      |      |      |      |      |      |      |      |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |      |      |      |      |      |      |      |      |
|      | <b>CHEMICAL INDICES</b>           |           |       |      |      |      |      |      |      |      |      |
| 1    | HAR_Ca (mgCaCO3/L)                | 207       | 260   |      |      |      |      |      |      |      |      |
| 2    | HAR_Total (mgCaCO3/L)             | 348       | 385   |      |      |      |      |      |      |      |      |
| 3    | Na% (%)                           | 14        | 20    |      |      |      |      |      |      |      |      |
| 4    | RSC (-)                           | 10.2      | 3.0   |      |      |      |      |      |      |      |      |
| 5    | SAR (-)                           | 0.6       | 1.0   |      |      |      |      |      |      |      |      |
|      | <b>PESTICIDES</b>                 |           |       |      |      |      |      |      |      |      |      |

## HISTORY SHEET

|                   |                            |                   |                                 |
|-------------------|----------------------------|-------------------|---------------------------------|
|                   |                            | <b>Water Year</b> | <b>: 2015-2016</b>              |
| <b>Site</b>       | <b>: TURTIPAR</b>          | <b>Code</b>       | <b>: GGU00F1</b>                |
| State             | : Uttar Pradesh            | District          | Ballia                          |
| Basin             | : Ganga-Brahm-Meghna Basin | Independent River | : Ganga                         |
| Tributary         | : Ghagra                   | Sub Tributary     | :                               |
| Sub-Sub Tributary | :                          | Local River       | : Ghaghra                       |
| Division          | : M Ganga Div. I, Lucknow  | Sub-Division      | : L Rapti Ghaghra SD, Gorakhpur |
| Drainage Area     | : 113088 Sq. Km.           | Bank              | : Right                         |
| Latitude          | : 26°10'10"                | Longitude         | : 83°53'53"                     |
|                   | Opening Date               | Closing Date      |                                 |
| Gauge             | : 12/11/1962               |                   |                                 |
| Discharge         | :                          |                   |                                 |
| Sediment          | : 14/02/1963               |                   |                                 |
| Water Quality     | : 03/10/1963               |                   |                                 |

# Water Quality Datasheet for the period : 2015-2016

Station Name : TURTIPAR ( GGU00F1)

Local River : Ghaghra

## River Water Analysis

Division : M Ganga Div. I, Lucknow

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters                        | 01/06/2015 | 01/07/2015 | 01/08/2015 | 01/09/2015 | 01/10/2015 | 02/11/2015 | 01/12/2015 | 01/01/2016 | 01/02/2016 | 01/03/2016 | 01/04/2016 | 02/05/2016 |
|------|-----------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|      |                                   | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          |
|      | <b>PHYSICAL</b>                   |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | Q (cumec)                         | 1241       | 4904       | 7847       | 7491       | 2173       | 821.4      | 962.5      | 532.7      | 275.7      | 202.6      | 189.1      | 304.0      |
| 2    | Colour_Cod (-)                    | Clear      | Clear      | Brown      | Clear      | Clear      | Clear      | Clear      | Clear      | Clear      | Clear      | Clear      | Clear      |
| 3    | EC_GEN (μmho/cm)                  | 210        | 210        | 210        | 280        | 280        | 280        | 260        | 320        | 300        | 320        | 320        | 320        |
| 4    | 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 |
| 5    | pH_GEN (pH units)                 | 8.8        | 8.0        | 8.1        | 8.1        | 8.3        | 8.4        | 8.4        | 8.4        | 8.3        | 8.4        | 8.2        | 8.3        |
| 6    | TDS (mg/L)                        | 124        | 128        | 124        | 174        | 171        | 170        | 163        | 194        | 185        | 194        | 200        | 197        |
| 7    | Temp (deg C)                      | 31.5       | 28.0       | 30.0       | 32.0       | 33.0       | 28.0       | 26.0       | 19.5       | 18.5       | 24.0       | 25.0       | 28.0       |
|      | <b>CHEMICAL</b>                   |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | Alk-Phen (mgCaCO3/L)              | 12.0       | 0.0        | 0.0        | 0.0        | 4.0        | 8.0        | 12.0       | 8.0        | 4.0        | 8.0        | 0.0        | 0.0        |
| 2    | ALK-TOT (mgCaCO3/L)               | 108        | 0          | 84         | 104        | 140        | 176        | 160        | 188        | 168        | 176        | 164        | 164        |
| 3    | B (mg/L)                          | 0.21       | 0.16       | 0.16       | 0.16       | 0.16       | 0.18       | 0.17       | 0.18       | 0.17       | 0.17       | 0.18       | 0.20       |
| 4    | Ca (mg/L)                         | 34         | 28         | 28         | 28         | 34         | 38         | 34         | 48         | 41         | 41         | 41         | 41         |
| 5    | Cl (mg/L)                         | 9.9        | 9.9        | 8.2        | 6.0        | 9.9        | 9.9        | 8.2        | 12.1       | 9.9        | 9.9        | 12.1       | 18.1       |
| 6    | CO3 (mg/L)                        | 14.4       | 0.0        | 0.0        | 0.0        | 4.8        | 9.6        | 14.4       | 9.6        | 4.8        | 9.6        | 0.0        | 0.0        |
| 7    | F (mg/L)                          | 0.29       | 0.27       | 0.25       | 0.25       | 0.29       | 0.30       | 0.29       | 0.30       | 0.30       | 0.30       | 0.32       | 0.38       |
| 8    | HCO3 (mg/L)                       | 102        | 102        | 102        | 127        | 161        | 195        | 166        | 210        | 195        | 195        | 200        | 200        |
| 9    | K (mg/L)                          | 3.5        | 2.7        | 2.7        | 3.5        | 3.5        | 4.7        | 4.7        | 5.5        | 4.7        | 4.7        | 4.7        | 6.3        |
| 10   | Mg (mg/L)                         | 9.2        | 9.2        | 9.2        | 14.5       | 17.5       | 20.7       | 18.6       | 22.7       | 20.7       | 20.7       | 20.7       | 20.7       |
| 11   | Na (mg/L)                         | 5.3        | 5.8        | 4.6        | 3.9        | 5.3        | 6.0        | 5.5        | 6.7        | 6.7        | 6.9        | 6.9        | 10.6       |
| 12   | NH3-N (mg N/L)                    | 0.44       | 0.24       | 2.39       | 0.27       | 0.29       | 0.31       | 0.32       | 0.34       | 0.31       | 0.29       | 0.34       | 0.37       |
| 13   | NO2+NO3 (mg N/L)                  | 0.56       | 0.43       | 0.46       | 0.45       | 0.45       | 0.48       | 0.43       | 0.48       | 0.42       | 0.45       | 0.56       | 0.60       |
| 14   | NO2-N (mgN/L)                     | 0.06       | 0.03       | 0.03       | 0.01       | 0.01       | 0.00       | 0.00       | 0.00       | 0.00       | 0.03       | 0.12       | 0.15       |
| 15   | NO3-N (mgN/L)                     | 0.50       | 0.41       | 0.43       | 0.43       | 0.43       | 0.48       | 0.43       | 0.48       | 0.42       | 0.42       | 0.43       | 0.45       |
| 16   | o-PO4-P (mg P/L)                  | 0.320      | 0.258      | 0.248      | 0.248      | 0.269      | 0.300      | 0.289      | 0.331      | 0.320      | 0.341      | 0.351      | 0.403      |
| 17   | SO4 (mg/L)                        | 18.7       | 18.7       | 16.8       | 17.8       | 18.2       | 19.2       | 17.8       | 18.7       | 18.2       | 16.8       | 16.8       | 18.2       |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | BOD3-27 (mg/L)                    | 1.2        | 0.8        | 1.2        | 1.4        | 1.4        | 1.4        | 1.2        | 1.4        | 1.2        | 1.4        | 1.6        | 1.4        |
| 2    | COD (mg/L)                        | 4.0        | 3.0        | 5.0        | 6.0        | 6.0        | 7.0        | 7.0        | 9.0        | 6.0        | 8.0        | 9.0        | 9.0        |

# Water Quality Datasheet for the period : 2015-2016

Station Name : TURTIPAR ( GGU00F1)

Division : M Ganga Div. I, Lucknow

Local River : Ghaghra

## River Water Analysis

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters               | 01/06/2015 | 01/07/2015 | 01/08/2015 | 01/09/2015 | 01/10/2015 | 02/11/2015 | 01/12/2015 | 01/01/2016 | 01/02/2016 | 01/03/2016 | 01/04/2016 | 02/05/2016 |
|------|--------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|      |                          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          | A          |
| 3    | DO (mg/L)                | 6.7        | 6.9        | 6.9        | 6.7        | 6.9        | 7.1        | 7.3        | 7.1        | 7.3        | 6.7        | 6.9        | 6.9        |
| 4    | DO_SAT% (%)              | 90         | 88         | 91         | 91         | 96         | 90         | 89         | 76         | 77         | 79         | 83         | 88         |
|      | <b>TRACE &amp; TOXIC</b> |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | Total Arsenic (As) mg/L  |            |            |            |            |            |            |            |            |            |            | 0.00875    |            |
| 2    | Cadmium (Cd) mg/L        |            |            |            |            |            |            |            |            |            |            | 0.00009    |            |
| 3    | Total Chromium(Cr) mg/L  |            |            |            |            |            |            |            |            |            |            | 0.0185     |            |
| 4    | Copper (Cu) mg/L         |            |            |            |            |            |            |            |            |            |            | 0.00334    |            |
| 5    | Iron (Fe) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.029      |            |
| 6    | Lead (Pb) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.00132    |            |
| 7    | Mercury (Hg) mg/L        |            |            |            |            |            |            |            |            |            |            | --         |            |
| 8    | Nickel (Ni) mg/L         |            |            |            |            |            |            |            |            |            |            | 0.00336    |            |
| 9    | Zinc (Zn) mg/L           |            |            |            |            |            |            |            |            |            |            | 0.0113     |            |
|      | <b>CHEMICAL INDICES</b>  |            |            |            |            |            |            |            |            |            |            |            |            |
| 1    | HAR_Ca (mgCaCO3/L)       | 86         | 69         | 69         | 69         | 86         | 95         | 86         | 121        | 103        | 103        | 103        | 103        |
| 2    | HAR_Total (mgCaCO3/L)    | 124        | 107        | 107        | 129        | 159        | 181        | 163        | 215        | 189        | 189        | 189        | 189        |
| 3    | Na% (%)                  | 8          | 10         | 8          | 6          | 7          | 7          | 7          | 6          | 7          | 7          | 7          | 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        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.2        | 0.3        |
|      | <b>PESTICIDES</b>        |            |            |            |            |            |            |            |            |            |            |            |            |

# Water Quality Datasheet for the period : 2015-2016

Station Name : TURTIPAR ( GGU00F1)

Local River : Ghaghra

Well Water Analysis

Division : M Ganga Div. I, Lucknow

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters                        | 02/11/2015 | 02/05/2016 |
|------|-----------------------------------|------------|------------|
|      |                                   | B          | B          |
|      | <b>PHYSICAL</b>                   |            |            |
| 1    | Colour_Cod (-)                    | Brown      | Brown      |
| 2    | EC_GEN (µmho/cm)                  | 1860       | 990        |
| 3    | Odour_Code (-)                    | odour free | odour free |
| 4    | pH_GEN (pH units)                 | 7.9        | 7.9        |
| 5    | TDS (mg/L)                        | 1090       | 570        |
| 6    | Temp (deg C)                      | 25.0       | 26.0       |
|      | <b>CHEMICAL</b>                   |            |            |
| 1    | Alk-Phen (mgCaCO3/L)              | 0.0        | 0.0        |
| 2    | ALK-TOT (mgCaCO3/L)               | 344        | 184        |
| 3    | B (mg/L)                          | 0.27       | 0.27       |
| 4    | Ca (mg/L)                         | 93         | 65         |
| 5    | Cl (mg/L)                         | 177.9      | 82.0       |
| 6    | CO3 (mg/L)                        | 0.0        | 0.0        |
| 7    | F (mg/L)                          | 0.51       | 0.38       |
| 8    | HCO3 (mg/L)                       | 420        | 224        |
| 9    | K (mg/L)                          | 39.5       | 48.5       |
| 10   | Mg (mg/L)                         | 36.1       | 35.1       |
| 11   | Na (mg/L)                         | 114.1      | 55.2       |
| 12   | NH3-N (mg N/L)                    | 1.04       | 1.08       |
| 13   | NO2+NO3 (mg N/L)                  | 2.34       | 2.66       |
| 14   | NO2-N (mgN/L)                     | 0.76       | 0.43       |
| 15   | NO3-N (mgN/L)                     | 1.58       | 2.23       |
| 16   | o-PO4-P (mg P/L)                  | 1.323      | 0.579      |
| 17   | SO4 (mg/L)                        | 67.2       | 194.9      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |            |            |
|      | <b>TRACE &amp; TOXIC</b>          |            |            |
|      | <b>CHEMICAL INDICES</b>           |            |            |
| 1    | HAR_Ca (mgCaCO3/L)                | 232        | 164        |
| 2    | HAR_Total (mgCaCO3/L)             | 382        | 310        |
| 3    | Na% (%)                           | 37         | 25         |
| 4    | RSC (-)                           | 0.0        | 0.0        |
| 5    | SAR (-)                           | 2.5        | 1.4        |
|      | <b>PESTICIDES</b>                 |            |            |

# Water Quality Summary for the period : 2015-2016

Station Name : TURTIPAR( GGU00F1)

Division : M Ganga Div. I, Lucknow

Local River : Ghaghra

Sub-Division : L Rapti Ghaghra, Gorakhpur

## River Water Summary

| S.No | Parameters                        | Number of Observations | Maximum | Minimum | Mean  |
|------|-----------------------------------|------------------------|---------|---------|-------|
|      | <b>PHYSICAL</b>                   |                        |         |         |       |
| 1    | Q (cumec)                         | 366                    | 9798    | 127.7   | 2123  |
| 2    | EC_GEN (μmho/cm)                  | 12                     | 320     | 210     | 276   |
| 3    | pH_GEN (pH units)                 | 12                     | 8.8     | 8.0     | 8.3   |
| 4    | TDS (mg/L)                        | 12                     | 200     | 124     | 169   |
| 5    | Temp (deg C)                      | 12                     | 33.0    | 18.5    | 27    |
|      | <b>CHEMICAL</b>                   |                        |         |         |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 11                     | 12.0    | 0.0     | 5.1   |
| 2    | ALK-TOT (mgCaCO3/L)               | 11                     | 188     | 84      | 148   |
| 3    | B (mg/L)                          | 12                     | 0.21    | 0.16    | 0.18  |
| 4    | Ca (mg/L)                         | 12                     | 48      | 28      | 36    |
| 5    | Cl (mg/L)                         | 12                     | 18.1    | 6.0     | 10.4  |
| 6    | CO3 (mg/L)                        | 12                     | 14.4    | 0.0     | 5.6   |
| 7    | F (mg/L)                          | 12                     | 0.38    | 0.25    | 0.29  |
| 8    | HCO3 (mg/L)                       | 12                     | 210     | 102     | 163   |
| 9    | K (mg/L)                          | 12                     | 6.3     | 2.7     | 4.3   |
| 10   | Mg (mg/L)                         | 12                     | 22.7    | 9.2     | 17    |
| 11   | Na (mg/L)                         | 12                     | 10.6    | 3.9     | 6.2   |
| 12   | NH3-N (mg N/L)                    | 12                     | 2.39    | 0.24    | 0.49  |
| 13   | NO2+NO3 (mg N/L)                  | 12                     | 0.60    | 0.42    | 0.48  |
| 14   | NO2-N (mgN/L)                     | 12                     | 0.15    | 0.00    | 0.04  |
| 15   | NO3-N (mgN/L)                     | 12                     | 0.50    | 0.41    | 0.44  |
| 16   | o-PO4-P (mg P/L)                  | 12                     | 0.403   | 0.248   | 0.307 |
| 17   | SO4 (mg/L)                        | 12                     | 19.2    | 16.8    | 18    |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                        |         |         |       |
| 1    | BOD3-27 (mg/L)                    | 12                     | 1.6     | 0.8     | 1.3   |
| 2    | COD (mg/L)                        | 12                     | 9.0     | 3.0     | 6.6   |
| 3    | DO (mg/L)                         | 12                     | 7.3     | 6.7     | 6.9   |
| 4    | DO_SAT% (%)                       | 12                     | 96      | 76      | 86    |
|      | <b>TRACE &amp; TOXIC</b>          |                        |         |         |       |
|      | <b>CHEMICAL INDICES</b>           |                        |         |         |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 12                     | 121     | 69      | 91    |
| 2    | HAR_Total (mgCaCO3/L)             | 12                     | 215     | 107     | 162   |
| 3    | Na% (%)                           | 12                     | 11      | 6       | 8     |
| 4    | RSC (-)                           | 12                     | 0.0     | 0.0     | 0     |
| 5    | SAR (-)                           | 12                     | 0.3     | 0.2     | 0.2   |
|      | <b>PESTICIDES</b>                 |                        |         |         |       |

**Water Quality Summary for the period : 2015-2016**

**Station Name : TURTIPAR ( GGU00F1)**

**Division : M Ganga Div. I, Lucknow**

**Local River : Ghaghra**

**Sub-Division : L Rapti Ghaghra SD, Gorakhpur**

**Well Water Summary**

| S.No | Parameters                        | Number of Observations | Maximum | Minimum | Mean  |
|------|-----------------------------------|------------------------|---------|---------|-------|
|      | <b>PHYSICAL</b>                   |                        |         |         |       |
| 1    | EC_GEN (μmho/cm)                  | 2                      | 1860    | 990     | 1425  |
| 2    | pH_GEN (pH units)                 | 2                      | 7.9     | 7.9     | 7.9   |
| 3    | TDS (mg/L)                        | 2                      | 1090    | 570     | 830   |
| 4    | Temp (deg C)                      | 2                      | 26.0    | 25.0    | 25.5  |
|      | <b>CHEMICAL</b>                   |                        |         |         |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 2                      | 0.0     | 0.0     | 0.0   |
| 2    | ALK-TOT (mgCaCO3/L)               | 2                      | 344     | 184     | 264   |
| 3    | B (mg/L)                          | 2                      | 0.27    | 0.27    | 0.27  |
| 4    | Ca (mg/L)                         | 2                      | 93      | 65      | 79    |
| 5    | Cl (mg/L)                         | 2                      | 177.9   | 82.0    | 129.9 |
| 6    | CO3 (mg/L)                        | 2                      | 0.0     | 0.0     | 0.0   |
| 7    | F (mg/L)                          | 2                      | 0.51    | 0.38    | 0.45  |
| 8    | HCO3 (mg/L)                       | 2                      | 420     | 224     | 322   |
| 9    | K (mg/L)                          | 2                      | 48.5    | 39.5    | 44.0  |
| 10   | Mg (mg/L)                         | 2                      | 36.1    | 35.1    | 35.6  |
| 11   | Na (mg/L)                         | 2                      | 114.1   | 55.2    | 84.6  |
| 12   | NH3-N (mg N/L)                    | 2                      | 1.08    | 1.04    | 1.06  |
| 13   | NO2+NO3 (mg N/L)                  | 2                      | 2.66    | 2.34    | 2.50  |
| 14   | NO2-N (mgN/L)                     | 2                      | 0.76    | 0.43    | 0.59  |
| 15   | NO3-N (mgN/L)                     | 2                      | 2.23    | 1.58    | 1.91  |
| 16   | o-PO4-P (mg P/L)                  | 2                      | 1.323   | 0.579   | 0.951 |
| 17   | SO4 (mg/L)                        | 2                      | 194.9   | 67.2    | 131.0 |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                        |         |         |       |
|      | <b>TRACE &amp; TOXIC</b>          |                        |         |         |       |
|      | <b>CHEMICAL INDICES</b>           |                        |         |         |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 2                      | 232     | 164     | 198   |
| 2    | HAR_Total (mgCaCO3/L)             | 2                      | 382     | 310     | 346   |
| 3    | Na% (%)                           | 2                      | 37      | 25      | 31    |
| 4    | RSC (-)                           | 2                      | 0.0     | 0.0     | 0.0   |
| 5    | SAR (-)                           | 2                      | 2.5     | 1.4     | 2.0   |
|      | <b>PESTICIDES</b>                 |                        |         |         |       |

Water Quality Seasonal Average for the period: 2006-2016

Division : M Ganga Div. I, Lucknow  
Sub-Division : L Rapti Ghaghra SD, Gorakhpur

Station Name : TURTIPAR( GGU00F1)  
Local River : Ghaghra

River Water

| S.No | Parameters                        | Flood     |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Jun - Oct |       |       |       |       |       |       |       |       |       |
|      |                                   | 2006      | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Q (cumec)                         | 3829      | 5711  | 8398  | 4252  | 5378  | 3365  | 4387  | 7295  | 4660  | 4731  |
| 2    | EC_FLD (µmho/cm)                  |           |       |       |       |       |       | 183   |       |       |       |
| 3    | EC_GEN (µmho/cm)                  | 298       | 276   | 267   | 280   | 252   | 197   | 207   | 238   | 238   | 238   |
| 4    | pH_FLD (pH units)                 | 8.0       | 7.2   | 7.3   | 8.0   | 7.7   | 7.5   | 7.6   | 7.7   |       |       |
| 5    | pH_GEN (pH units)                 | 8.1       | 8.0   | 8.0   | 8.1   | 8.0   | 7.9   | 8.2   | 8.3   | 8.4   | 8.2   |
| 6    | TDS (mg/L)                        |           |       | 177   | 200   | 152   | 119   | 121   | 159   | 148   | 144   |
| 7    | Temp (deg C)                      | 31.1      | 30.2  | 29.1  | 30.4  | 29.3  | 30.4  | 30.2  | 23.9  | 29.2  | 30.9  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 1.7       | 4.8   | 5.7   | 2.0   | 3.2   | 1.6   | 4.0   | 4.0   | 5.6   | 4.0   |
| 2    | ALK-TOT (mgCaCO3/L)               | 100       | 154   | 200   | 137   | 129   | 112   | 121   | 134   | 107   | 109   |
| 3    | B (mg/L)                          | 0.03      | 0.07  | 0.15  | 0.13  | 0.13  | 0.32  | 0.15  | 0.17  | 0.22  | 0.17  |
| 4    | Ca (mg/L)                         | 27        | 33    | 34    | 38    | 30    | 28    | 30    | 29    | 25    | 30    |
| 5    | Cl (mg/L)                         | 10.8      | 9.4   | 10.9  | 14.7  | 13.6  | 9.7   | 12.9  | 13.6  | 14.4  | 8.8   |
| 6    | CO3 (mg/L)                        | 2.1       | 5.8   | 6.9   | 2.4   | 3.8   | 1.9   | 4.8   | 4.8   | 6.7   | 3.8   |
| 7    | F (mg/L)                          | 0.18      | 0.15  | 0.16  | 0.15  | 0.14  | 0.16  | 0.13  | 0.16  | 0.16  | 0.27  |
| 8    | Fe (mg/L)                         | 0.1       | 0.1   |       |       |       | 0.1   |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 117       | 148   | 168   | 162   | 149   | 132   | 138   | 154   | 117   | 119   |
| 10   | K (mg/L)                          | 7.6       | 3.5   | 3.5   | 4.2   | 4.3   | 3.6   | 4.1   | 4.3   | 3.8   | 3.2   |
| 11   | Mg (mg/L)                         | 12.6      | 8.7   | 5.8   | 18.7  | 17.3  | 15.1  | 19.4  | 17.3  | 15.7  | 11.9  |
| 12   | Na (mg/L)                         | 14.8      | 8.1   | 8.5   | 10.3  | 8.3   | 4.6   | 5.6   | 9.2   | 5.8   | 5.0   |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.16  | 0.17  | 0.52  | 0.56  | 0.27  | 0.36  | 0.72  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.11  | 0.08  | 0.10  | 0.75  | 0.61  | 0.60  | 0.51  | 0.47  |
| 15   | NO2-N (mgN/L)                     | 0.04      | 0.05  | 0.05  | 0.03  | 0.04  | 0.14  | 0.15  | 0.23  | 0.16  | 0.03  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.06  | 0.05  | 0.06  | 0.61  | 0.46  | 0.37  | 0.35  | 0.44  |
| 17   | o-PO4-P (mg P/L)                  | 0.004     | 0.029 | 0.025 | 0.036 | 0.087 | 0.101 | 0.324 | 0.293 | 0.502 | 0.269 |
| 18   | P-Tot (mgP/L)                     |           |       |       | 0.126 |       |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 2.3       | 6.3   | 8.0   | 6.6   | 5.1   |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 46.9      | 38.1  | 21.2  | 20.1  | 20.4  | 14.6  | 17.8  | 15.6  | 16.3  | 18.0  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
| 1    | BOD3-27 (mg/L)                    |           |       |       | 0.9   | 0.9   | 0.7   | 0.9   | 1.0   | 1.0   | 1.2   |
| 2    | COD (mg/L)                        |           |       |       |       | 4.5   | 13.2  | 4.0   | 4.6   | 4.6   | 4.8   |
| 3    | DO (mg/L)                         | 7.0       | 7.1   | 7.2   | 7.4   | 7.7   | 7.5   | 7.5   | 7.3   | 7.2   | 6.8   |
| 4    | DO_SAT% (%)                       | 94        | 94    | 94    | 98    | 100   | 99    | 98    | 86    | 94    | 91    |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 69        | 83    | 84    | 95    | 76    | 70    | 75    | 71    | 62    | 76    |
| 2    | HAR_Total (mgCaCO3/L)             | 121       | 119   | 108   | 173   | 148   | 132   | 155   | 143   | 127   | 126   |
| 3    | Na% (%)                           | 20        | 13    | 14    | 11    | 10    | 7     | 7     | 12    | 9     | 8     |
| 4    | RSC (-)                           | 0.2       | 0.3   | 0.8   | 0.1   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 0.6       | 0.3   | 0.4   | 0.3   | 0.3   | 0.2   | 0.2   | 0.3   | 0.2   | 0.2   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

**Water Quality Seasonal Average for the period: 2006-2016**

Station Name : TURTIPAR( GGU00F1)

Local River : Ghaghra

River Water

Division : M Ganga Div. I, Lucknow

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters                        | Winter    |           |           |           |           |           |           |           |           |           |
|------|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|      |                                   | Nov - Feb |           |           |           |           |           |           |           |           |           |
|      |                                   | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 |
|      | <b>PHYSICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Q (cumec)                         | 704.6     | 1110      | 1198      | 2583      | 1203      | 563.4     | 903.7     | 1477      | 1485      | 648.1     |
| 2    | EC_FLD (µmho/cm)                  |           |           |           |           |           |           |           |           |           |           |
| 3    | EC_GEN (µmho/cm)                  | 273       | 254       | 302       | 313       | 308       | 273       | 290       | 340       | 330       | 290       |
| 4    | pH_FLD (pH units)                 |           | 8.0       | 8.0       | 8.0       | 7.6       | 7.6       | 7.5       | 7.5       |           |           |
| 5    | pH_GEN (pH units)                 | 8.3       | 8.1       | 8.0       | 8.4       | 8.1       | 8.0       | 7.9       | 8.4       | 8.4       | 8.4       |
| 6    | TDS (mg/L)                        |           |           | 180       | 193       | 185       | 163       | 192       | 220       | 182       | 178       |
| 7    | Temp (deg C)                      | 22.0      | 21.6      | 20.6      | 19.4      | 21.4      | 24.6      | 22.8      | 20.9      | 20.5      | 23.0      |
|      | <b>CHEMICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Alk-Phen (mgCaCO3/L)              | 4.0       | 9.7       | 1.7       | 5.0       | 0.0       | 0.0       | 0.0       | 6.0       | 12.0      | 8.0       |
| 2    | ALK-TOT (mgCaCO3/L)               | 105       | 172       | 273       | 152       | 117       | 160       | 132       | 127       | 153       | 173       |
| 3    | B (mg/L)                          | 0.02      | 0.13      | 0.14      | 0.15      | 0.16      | 0.16      | 0.17      | 0.17      | 0.22      | 0.18      |
| 4    | Ca (mg/L)                         | 31        | 41        | 33        | 43        | 29        | 37        | 30        | 31        | 50        | 40        |
| 5    | Cl (mg/L)                         | 18.5      | 14.9      | 14.5      | 16.0      | 14.0      | 14.0      | 15.0      | 16.0      | 13.0      | 10.0      |
| 6    | CO3 (mg/L)                        | 4.8       | 11.7      | 4.5       | 6.0       | 0.0       | 0.0       | 0.0       | 7.2       | 14.4      | 9.6       |
| 7    | F (mg/L)                          | 0.18      | 0.19      | 0.14      | 0.18      | 0.15      | 0.16      | 0.16      | 0.19      | 0.29      | 0.30      |
| 8    | Fe (mg/L)                         | 0.1       | 0.2       |           |           |           |           |           |           |           |           |
| 9    | HCO3 (mg/L)                       | 118       | 186       | 195       | 173       | 143       | 195       | 161       | 140       | 157       | 192       |
| 10   | K (mg/L)                          | 5.5       | 3.9       | 3.3       | 5.6       | 4.8       | 4.0       | 4.6       | 3.8       | 2.9       | 4.9       |
| 11   | Mg (mg/L)                         | 14.2      | 7.8       | 11.9      | 18.1      | 16.5      | 20.6      | 18.8      | 19.8      | 15.7      | 20.7      |
| 12   | Na (mg/L)                         | 12.4      | 8.5       | 8.3       | 9.9       | 6.6       | 6.1       | 7.3       | 7.6       | 7.4       | 6.2       |
| 13   | NH3-N (mg N/L)                    |           |           |           | 0.20      | 0.16      | 0.63      | 0.46      | 0.34      | 0.32      | 0.32      |
| 14   | NO2+NO3 (mg N/L)                  |           |           | 0.11      | 0.76      | 0.08      | 0.59      | 0.44      | 0.56      | 0.51      | 0.45      |
| 15   | NO2-N (mgN/L)                     | 0.06      | 0.06      | 0.06      | 0.04      | 0.04      | 0.14      | 0.10      | 0.23      | 0.09      | 0.00      |
| 16   | NO3-N (mgN/L)                     |           |           | 0.06      | 0.72      | 0.04      | 0.46      | 0.34      | 0.33      | 0.42      | 0.45      |
| 17   | o-PO4-P (mg P/L)                  | 0.031     | 0.031     | 0.026     | 0.152     | 0.132     | 0.121     | 0.398     | 0.282     | 0.372     | 0.310     |
| 18   | P-Tot (mgP/L)                     |           |           |           | 0.180     |           |           |           |           |           |           |
| 19   | SiO2 (mg/L)                       | 4.1       | 7.5       | 6.4       | 6.5       | 5.9       |           |           |           |           |           |
| 20   | SO4 (mg/L)                        | 52.1      | 33.4      | 18.1      | 25.6      | 19.2      | 8.8       | 14.7      | 16.6      | 39.0      | 18.5      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |           |           |           |           |           |           |           |           |           |
| 1    | BOD3-27 (mg/L)                    |           |           |           | 1.1       | 0.5       | 0.7       | 0.9       | 1.0       | 1.0       | 1.3       |
| 2    | COD (mg/L)                        |           |           |           |           | 3.8       | 9.3       | 5.5       | 5.3       | 4.8       | 7.3       |
| 3    | DO (mg/L)                         | 7.3       | 7.3       | 7.1       | 7.5       | 7.5       | 7.5       | 7.9       | 7.3       | 7.3       | 7.2       |
| 4    | DO_SAT% (%)                       | 83        | 82        | 78        | 82        | 84        | 90        | 91        | 82        | 80        | 83        |
|      | <b>TRACE &amp; TOXIC</b>          |           |           |           |           |           |           |           |           |           |           |
|      | <b>CHEMICAL INDICES</b>           |           |           |           |           |           |           |           |           |           |           |
| 1    | HAR_Ca (mgCaCO3/L)                | 78        | 103       | 82        | 108       | 72        | 92        | 74        | 79        | 125       | 101       |
| 2    | HAR_Total (mgCaCO3/L)             | 137       | 135       | 131       | 183       | 141       | 177       | 153       | 161       | 190       | 187       |
| 3    | Na% (%)                           | 16        | 12        | 12        | 10        | 9         | 7         | 9         | 9         | 8         | 7         |
| 4    | RSC (-)                           | 0.0       | 0.8       | 0.7       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       | 0.0       |
| 5    | SAR (-)                           | 0.5       | 0.3       | 0.3       | 0.3       | 0.2       | 0.2       | 0.3       | 0.3       | 0.2       | 0.2       |
|      | <b>PESTICIDES</b>                 |           |           |           |           |           |           |           |           |           |           |

**Water Quality Seasonal Average for the period: 2006-2016**

Station Name : TURTIPAR( GGU00F1)

Local River : Ghaghra

River Water

Division : M Ganga Div. I, Lucknow

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters                        | Summer    |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Mar - May |       |       |       |       |       |       |       |       |       |
|      |                                   | 2007      | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Q (cumec)                         | 402.0     | 226.1 | 278.6 | 543.9 | 319.8 | 315.0 | 488.2 | 527.6 | 1053  | 231.9 |
| 2    | EC_FLD (µmho/cm)                  |           |       |       |       |       |       |       |       |       |       |
| 3    | EC_GEN (µmho/cm)                  | 323       | 264   | 327   | 317   | 333   | 327   | 297   | 373   | 300   | 320   |
| 4    | pH_FLD (pH units)                 |           |       | 8.0   | 8.0   | 7.5   | 7.8   | 7.5   | 7.5   |       |       |
| 5    | pH_GEN (pH units)                 | 8.0       | 8.2   | 8.1   | 8.3   | 8.2   | 8.1   | 8.2   | 8.4   | 8.7   | 8.3   |
| 6    | TDS (mg/L)                        |           |       | 227   | 189   | 191   | 187   | 195   | 230   | 168   | 197   |
| 7    | Temp (deg C)                      | 25.5      | 25.7  | 22.8  | 27.2  | 23.2  | 24.8  | 22.0  | 22.2  | 22.3  | 25.7  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 2.7       | 8.1   |       | 8.0   | 3.3   | 2.7   | 10.6  | 12.0  | 9.3   | 2.7   |
| 2    | ALK-TOT (mgCaCO3/L)               | 121       | 197   |       | 152   | 128   | 173   | 159   | 158   | 143   | 168   |
| 3    | B (mg/L)                          | 0.02      | 0.19  | 0.12  | 0.15  | 0.17  | 0.17  | 0.18  | 0.21  | 0.20  | 0.18  |
| 4    | Ca (mg/L)                         | 32        | 43    | 29    | 36    | 32    | 34    | 33    | 35    | 38    | 41    |
| 5    | Cl (mg/L)                         | 16.0      | 18.2  | 12.7  | 17.3  | 17.3  | 16.0  | 19.9  | 17.3  | 14.0  | 13.4  |
| 6    | CO3 (mg/L)                        | 3.2       | 9.7   | 12.0  | 9.6   | 4.0   | 3.2   | 12.8  | 9.6   | 11.2  | 3.2   |
| 7    | F (mg/L)                          | 0.19      | 0.20  | 0.14  | 0.20  | 0.14  | 0.16  | 0.19  | 0.20  | 0.29  | 0.34  |
| 8    | Fe (mg/L)                         | 0.1       | 0.3   |       |       |       |       |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 142       | 221   | 207   | 166   | 148   | 205   | 168   | 176   | 151   | 198   |
| 10   | K (mg/L)                          | 4.3       | 4.4   | 3.8   | 5.1   | 6.1   | 5.6   | 5.7   | 4.7   | 4.0   | 5.2   |
| 11   | Mg (mg/L)                         | 14.1      | 11.2  | 13.7  | 19.6  | 16.8  | 24.4  | 20.6  | 22.0  | 17.9  | 20.7  |
| 12   | Na (mg/L)                         | 9.5       | 9.4   | 11.0  | 12.2  | 9.0   | 11.6  | 10.7  | 10.2  | 7.5   | 8.1   |
| 13   | NH3-N (mg N/L)                    |           |       |       | 0.22  | 0.16  | 0.68  | 0.41  | 0.37  | 0.35  | 0.33  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.10  | 0.08  | 0.30  | 0.57  | 0.62  | 0.57  | 0.54  | 0.54  |
| 15   | NO2-N (mgN/L)                     | 0.06      | 0.08  | 0.05  | 0.04  | 0.13  | 0.15  | 0.23  | 0.18  | 0.05  | 0.10  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.05  | 0.05  | 0.16  | 0.42  | 0.39  | 0.39  | 0.49  | 0.43  |
| 17   | o-PO4-P (mg P/L)                  | 0.031     | 0.031 | 0.062 | 0.255 | 0.183 | 0.251 | 0.369 | 0.303 | 0.269 | 0.365 |
| 18   | P-Tot (mgP/L)                     |           |       |       | 0.257 |       |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 5.1       | 8.4   | 7.6   | 6.3   | 6.2   |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 52.8      | 35.4  | 22.6  | 17.2  | 20.3  | 9.6   | 20.3  | 18.9  | 17.4  | 17.3  |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
| 1    | BOD3-27 (mg/L)                    |           |       | 0.4   | 1.0   | 0.8   | 0.8   | 1.1   | 1.1   | 1.3   | 1.4   |
| 2    | COD (mg/L)                        |           |       |       |       | 12.7  | 8.0   | 21.3  | 7.3   | 5.7   | 8.7   |
| 3    | DO (mg/L)                         | 7.2       | 7.1   | 7.3   | 7.4   | 7.5   | 7.4   | 8.0   | 7.3   | 7.1   | 6.8   |
| 4    | DO_SAT% (%)                       | 88        | 86    | 84    | 93    | 87    | 89    | 91    | 83    | 81    | 83    |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 79        | 107   | 73    | 91    | 80    | 86    | 83    | 87    | 96    | 103   |
| 2    | HAR_Total (mgCaCO3/L)             | 138       | 153   | 130   | 172   | 151   | 188   | 169   | 179   | 171   | 189   |
| 3    | Na% (%)                           | 13        | 11    | 15    | 13    | 11    | 11    | 12    | 11    | 9     | 8     |
| 4    | RSC (-)                           | 0.0       | 0.9   | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 0.4       | 0.3   | 0.4   | 0.4   | 0.3   | 0.4   | 0.4   | 0.3   | 0.2   | 0.3   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

**Water Quality Seasonal Average for the period: 2006-2016**

**Station Name :TURTIPAR ( GGU00F1)**

**Local River : Ghaghra**

**Division : M Ganga Div. I, Lucknow**

**Sub-Division : L Rapti Ghaghra SD, Gorakhpur**

**Well Water**

| S.No | Parameters                        | Flood<br>Jun - Oct |       |       |      |      |      |      |      |      |      |
|------|-----------------------------------|--------------------|-------|-------|------|------|------|------|------|------|------|
|      |                                   | 2006               | 2007  | 2008  | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|      | <b>PHYSICAL</b>                   |                    |       |       |      |      |      |      |      |      |      |
| 1    | EC_GEN (µmho/cm)                  | 1813               | 1479  | 630   |      |      |      |      |      |      |      |
| 2    | pH_FLD (pH units)                 |                    |       |       |      |      |      |      |      |      |      |
| 3    | pH_GEN (pH units)                 | 8.2                | 7.7   | 8.0   |      |      |      |      |      |      |      |
| 4    | TDS (mg/L)                        |                    |       | 584   |      |      |      |      |      |      |      |
| 5    | Temp (deg C)                      | 29.1               | 27.8  | 29.0  |      |      |      |      |      |      |      |
|      | <b>CHEMICAL</b>                   |                    |       |       |      |      |      |      |      |      |      |
| 1    | Alk-Phen (mgCaCO3/L)              | 17.5               | 15.9  | 29.6  |      |      |      |      |      |      |      |
| 2    | ALK-TOT (mgCaCO3/L)               | 1039               | 889   | 804   |      |      |      |      |      |      |      |
| 3    | B (mg/L)                          | 0.11               | 0.08  | 0.23  |      |      |      |      |      |      |      |
| 4    | Ca (mg/L)                         | 62                 | 90    | 108   |      |      |      |      |      |      |      |
| 5    | Cl (mg/L)                         | 147.5              | 153.4 | 126.7 |      |      |      |      |      |      |      |
| 6    | CO3 (mg/L)                        | 21.1               | 19.1  | 35.7  |      |      |      |      |      |      |      |
| 7    | F (mg/L)                          |                    | 0.04  | 0.22  |      |      |      |      |      |      |      |
| 8    | Fe (mg/L)                         | 0.2                | 0.2   |       |      |      |      |      |      |      |      |
| 9    | HCO3 (mg/L)                       | 612                | 523   | 454   |      |      |      |      |      |      |      |
| 10   | K (mg/L)                          | 16.0               | 30.3  | 53.2  |      |      |      |      |      |      |      |
| 11   | Mg (mg/L)                         | 31.4               | 18.2  | 24.1  |      |      |      |      |      |      |      |
| 12   | Na (mg/L)                         | 28.8               | 48.4  | 58.8  |      |      |      |      |      |      |      |
| 13   | NH3-N (mg N/L)                    |                    |       |       |      |      |      |      |      |      |      |
| 14   | NO2+NO3 (mg N/L)                  |                    |       | 0.23  |      |      |      |      |      |      |      |
| 15   | NO2-N (mgN/L)                     | 0.14               | 0.16  | 0.23  |      |      |      |      |      |      |      |
| 16   | NO3-N (mgN/L)                     |                    |       | 0.00  |      |      |      |      |      |      |      |
| 17   | o-PO4-P (mg P/L)                  | 0.147              | 0.196 | 0.217 |      |      |      |      |      |      |      |
| 18   | P-Tot (mgP/L)                     |                    |       |       |      |      |      |      |      |      |      |
| 19   | SiO2 (mg/L)                       | 31.2               | 28.7  | 44.0  |      |      |      |      |      |      |      |
| 20   | SO4 (mg/L)                        | 236.4              | 171.0 | 34.1  |      |      |      |      |      |      |      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |                    |       |       |      |      |      |      |      |      |      |
|      | <b>TRACE &amp; TOXIC</b>          |                    |       |       |      |      |      |      |      |      |      |
|      | <b>CHEMICAL INDICES</b>           |                    |       |       |      |      |      |      |      |      |      |
| 1    | HAR_Ca (mgCaCO3/L)                | 155                | 225   | 270   |      |      |      |      |      |      |      |
| 2    | HAR_Total (mgCaCO3/L)             | 286                | 301   | 370   |      |      |      |      |      |      |      |
| 3    | Na% (%)                           | 17                 | 24    | 22    |      |      |      |      |      |      |      |
| 4    | RSC (-)                           | 5.1                | 3.2   | 1.7   |      |      |      |      |      |      |      |
| 5    | SAR (-)                           | 0.7                | 1.2   | 1.3   |      |      |      |      |      |      |      |
|      | <b>PESTICIDES</b>                 |                    |       |       |      |      |      |      |      |      |      |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name :TURTIPAR ( GGU00F1)

Local River : Ghaghra

Well Water

Division : M Ganga Div. I, Lucknow

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

| S.No | Parameters                        | Winter    |           |           |           |           |           |           |           |           |           |
|------|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|      |                                   | Nov - Feb |           |           |           |           |           |           |           |           |           |
|      |                                   | 2006-2007 | 2007-2008 | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 |
|      | <b>PHYSICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | EC_GEN (μmho/cm)                  | 1909      | 608       | 680       | 1650      | 1960      | 1970      | 1030      | 1150      | 1100      | 1860      |
| 2    | pH_FLD (pH units)                 |           |           |           |           |           | 8.0       | 7.5       |           |           |           |
| 3    | pH_GEN (pH units)                 | 8.0       | 7.8       | 8.3       | 7.8       | 7.5       | 7.5       | 7.5       | 7.9       | 8.9       | 7.9       |
| 4    | TDS (mg/L)                        |           |           | 564       | 1010      | 1190      | 1190      | 620       | 710       | 600       | 1090      |
| 5    | Temp (deg C)                      | 25.0      | 25.8      |           | 28.0      | 28.0      | 30.0      | 29.0      | 26.5      | 29.0      | 25.0      |
|      | <b>CHEMICAL</b>                   |           |           |           |           |           |           |           |           |           |           |
| 1    | Alk-Phen (mgCaCO3/L)              | 22.9      | 14.5      | 6.0       | 0.0       | 0.0       | 35.9      | 27.9      | 0.0       | 31.9      | 0.0       |
| 2    | ALK-TOT (mgCaCO3/L)               | 1105      | 752       | 260       | 448       | 547       | 468       | 352       | 360       | 344       | 344       |
| 3    | B (mg/L)                          | 0.05      | 0.16      | 0.22      | 0.25      | 0.17      | 0.21      | 0.24      | 0.26      | 0.32      | 0.27      |
| 4    | Ca (mg/L)                         | 81        | 86        | 54        | 52        | 93        | 86        | 60        | 62        | 74        | 93        |
| 5    | Cl (mg/L)                         | 146.0     | 118.8     | 196.0     | 196.0     | 464.0     | 344.0     | 144.0     | 82.0      | 90.2      | 177.9     |
| 6    | CO3 (mg/L)                        | 27.6      | 17.5      | 7.2       | 0.0       | 0.0       | 43.2      | 33.6      | 0.0       | 38.4      | 0.0       |
| 7    | F (mg/L)                          | 0.00      | 0.06      | 0.00      | 0.19      | 0.28      | 0.15      | 0.18      | 0.32      | 0.34      | 0.51      |
| 8    | Fe (mg/L)                         | 0.2       | 0.2       |           |           |           |           |           |           |           |           |
| 9    | HCO3 (mg/L)                       | 645       | 441       | 151       | 547       | 667       | 483       | 361       | 439       | 342       | 420       |
| 10   | K (mg/L)                          | 20.7      | 33.2      | 47.3      | 21.9      | 76.6      | 43.4      | 13.3      | 34.4      | 26.5      | 39.5      |
| 11   | Mg (mg/L)                         | 31.7      | 14.4      | 21.6      | 68.2      | 54.7      | 50.5      | 41.3      | 62.0      | 28.9      | 36.1      |
| 12   | Na (mg/L)                         | 36.1      | 46.8      | 41.4      | 170.9     | 370.3     | 261.0     | 145.3     | 60.0      | 98.9      | 114.1     |
| 13   | NH3-N (mg N/L)                    |           |           |           | 0.20      | 0.31      | 0.56      | 0.83      | 0.97      | 1.01      | 1.04      |
| 14   | NO2+NO3 (mg N/L)                  |           |           | 0.23      | 0.19      | 0.19      | 0.65      | 0.76      | 2.31      | 1.78      | 2.34      |
| 15   | NO2-N (mgN/L)                     | 0.17      | 0.14      | 0.23      | 0.08      | 0.11      | 0.32      | 0.33      | 0.39      | 0.19      | 0.76      |
| 16   | NO3-N (mgN/L)                     |           |           | 0.00      | 0.11      | 0.08      | 0.34      | 0.43      | 1.92      | 1.58      | 1.58      |
| 17   | o-PO4-P (mg P/L)                  | 0.202     | 0.163     | 0.403     | 0.465     | 0.475     | 0.165     | 0.600     | 0.610     | 1.219     | 1.323     |
| 18   | P-Tot (mgP/L)                     |           |           |           | 0.250     |           |           |           |           |           |           |
| 19   | SiO2 (mg/L)                       | 39.0      | 35.5      | 42.0      | 32.0      | 26.0      |           |           |           |           |           |
| 20   | SO4 (mg/L)                        | 390.1     | 24.4      | 30.2      | 22.6      | 157.0     | 68.6      | 67.5      | 105.1     | 63.8      | 67.2      |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |           |           |           |           |           |           |           |           |           |
|      | <b>TRACE &amp; TOXIC</b>          |           |           |           |           |           |           |           |           |           |           |
|      | <b>CHEMICAL INDICES</b>           |           |           |           |           |           |           |           |           |           |           |
| 1    | HAR_Ca (mgCaCO3/L)                | 203       | 215       | 135       | 129       | 232       | 215       | 151       | 155       | 185       | 232       |
| 2    | HAR_Total (mgCaCO3/L)             | 336       | 275       | 225       | 413       | 460       | 426       | 323       | 413       | 305       | 382       |
| 3    | Na% (%)                           | 18        | 22        | 24        | 46        | 59        | 54        | 48        | 22        | 39        | 37        |
| 4    | RSC (-)                           | 4.8       | 2.3       | 0.0       | 0.8       | 1.8       | 0.9       | 0.6       | 0.0       | 0.8       | 0.0       |
| 5    | SAR (-)                           | 0.9       | 1.2       | 1.2       | 3.7       | 7.5       | 5.5       | 3.5       | 1.3       | 2.5       | 2.5       |
|      | <b>PESTICIDES</b>                 |           |           |           |           |           |           |           |           |           |           |

# Water Quality Seasonal Average for the period: 2006-2016

Station Name :TURTIPAR ( GGU00F1)

Local River : Ghaghra

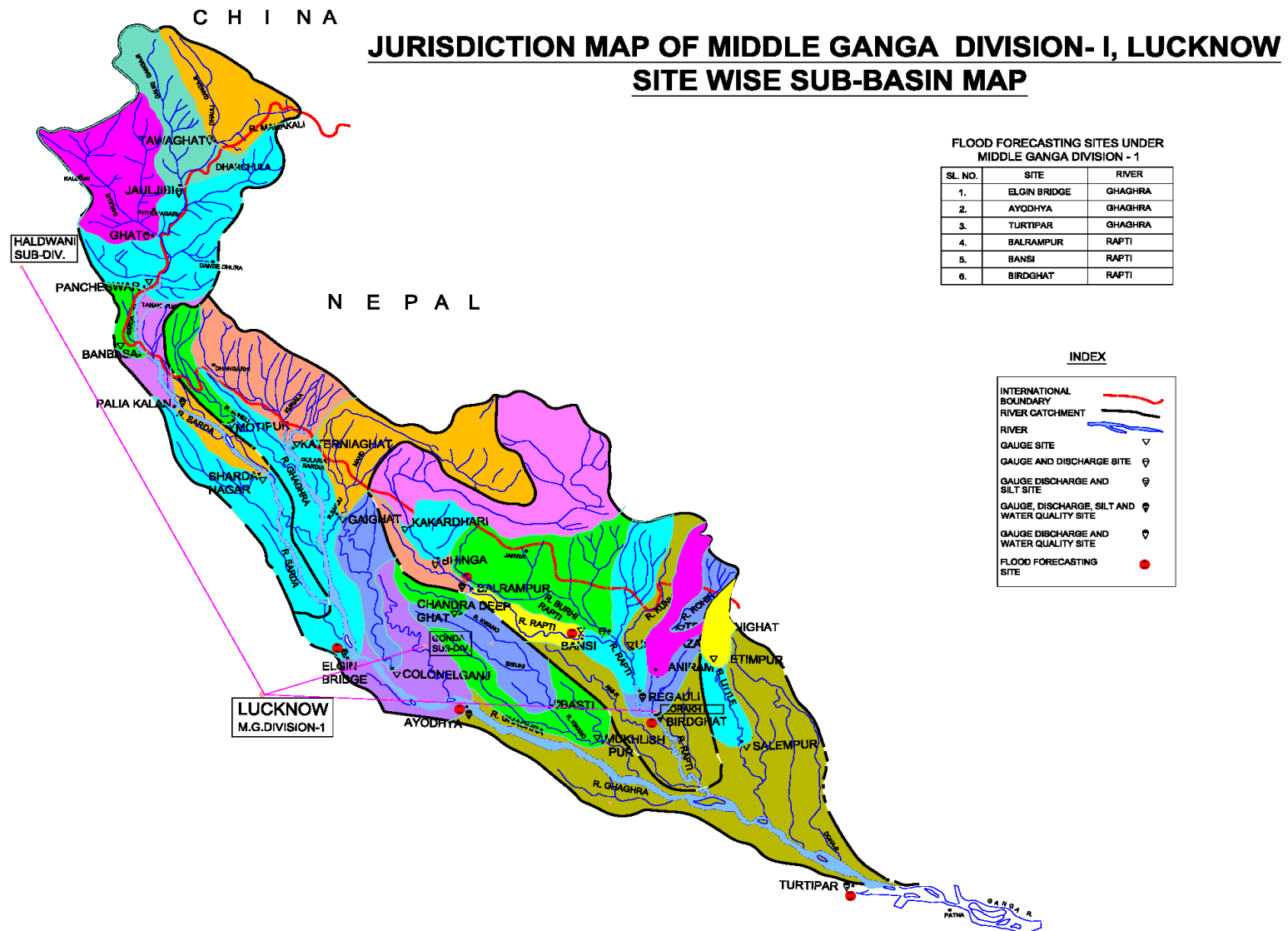
Well Water

Division : M Ganga Div. I, Lucknow

Sub-Division : L Rapti Ghaghra SD, Gorakhpur

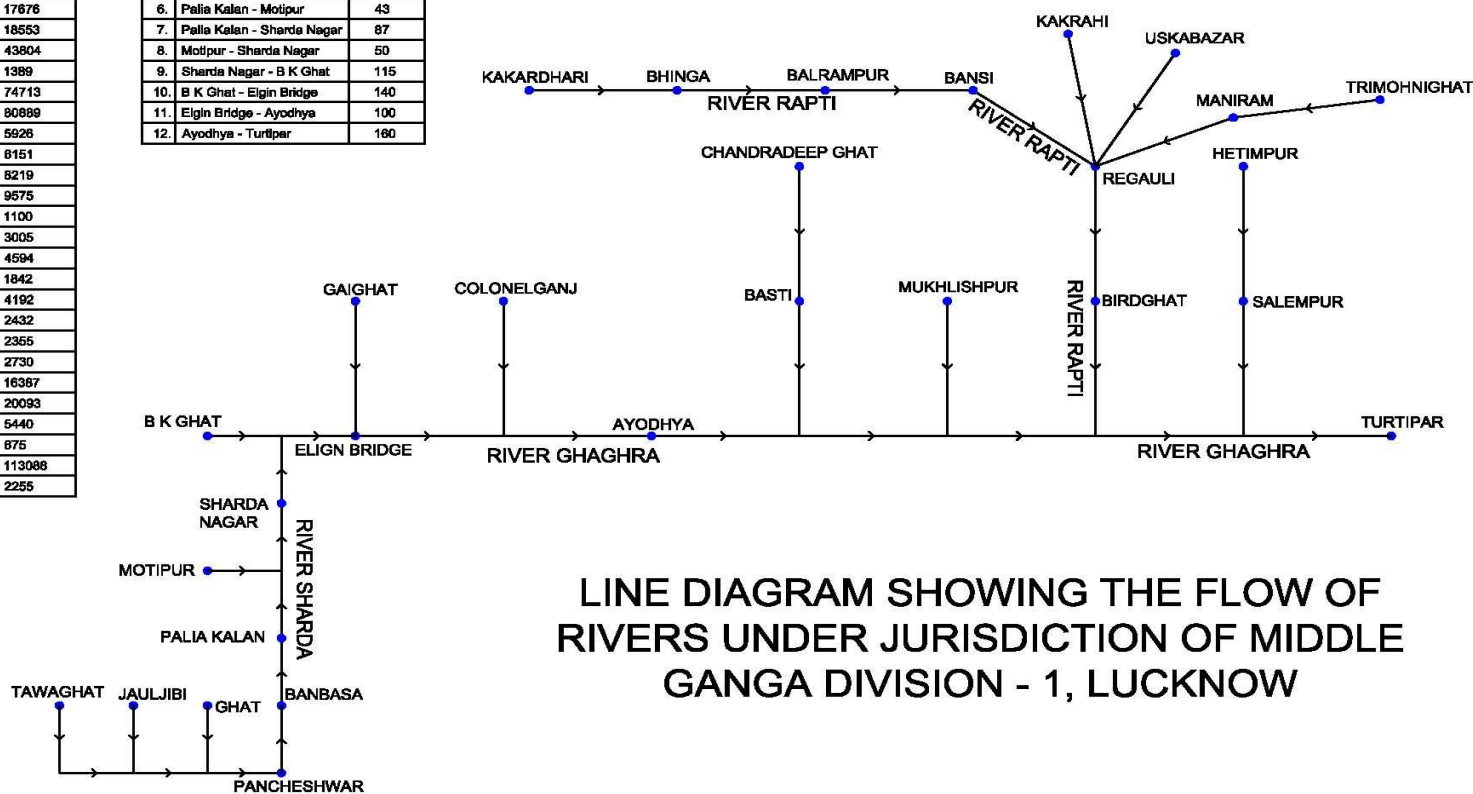
| S.No | Parameters                        | Summer    |       |       |       |       |       |       |       |       |       |
|------|-----------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                   | Mar - May |       |       |       |       |       |       |       |       |       |
|      |                                   | 2007      | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|      | <b>PHYSICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | EC_GEN (µmho/cm)                  | 1933      | 643   | 1120  | 1840  | 2100  | 2200  | 1610  | 1760  | 1520  | 990   |
| 2    | pH_FLD (pH units)                 |           |       |       |       |       | 8.0   |       |       |       |       |
| 3    | pH_GEN (pH units)                 | 7.9       | 7.9   | 7.9   | 7.5   | 7.5   | 7.9   | 7.7   | 8.0   | 9.3   | 7.9   |
| 4    | TDS (mg/L)                        |           |       | 513   | 1120  | 1280  | 1340  | 1070  | 1090  | 900   | 570   |
| 5    | Temp (deg C)                      | 24.8      | 26.2  | 26.0  | 29.0  | 25.5  | 25.0  | 25.0  | 25.0  | 24.0  | 26.0  |
|      | <b>CHEMICAL</b>                   |           |       |       |       |       |       |       |       |       |       |
| 1    | Alk-Phen (mgCaCO3/L)              | 21.2      | 22.6  |       | 42.8  | 0.0   | 35.9  | 35.9  | 0.0   | 43.8  | 0.0   |
| 2    | ALK-TOT (mgCaCO3/L)               | 1118      | 1003  |       | 338   | 180   | 672   | 328   | 232   | 240   | 184   |
| 3    | B (mg/L)                          | 0.03      | 0.23  | 0.41  | 0.13  | 0.16  | 0.23  | 0.19  | 0.34  | 0.32  | 0.27  |
| 4    | Ca (mg/L)                         | 84        | 105   | 21    | 64    | 34    | 69    | 48    | 55    | 21    | 65    |
| 5    | Cl (mg/L)                         | 149.5     | 166.7 | 297.8 | 480.0 | 640.1 | 384.1 | 435.9 | 368.1 | 258.1 | 82.0  |
| 6    | CO3 (mg/L)                        | 25.6      | 27.2  | 7.2   | 51.6  | 0.0   | 43.2  | 43.2  | 0.0   | 52.8  | 0.0   |
| 7    | F (mg/L)                          | 0.03      |       | 0.19  | 0.19  | 0.28  | 0.13  | 0.27  | 0.17  | 0.28  | 0.38  |
| 8    | Fe (mg/L)                         | 0.2       | 0.3   |       |       |       |       |       |       |       |       |
| 9    | HCO3 (mg/L)                       | 656       | 584   | 742   | 307   | 220   | 732   | 312   | 283   | 185   | 224   |
| 10   | K (mg/L)                          | 22.0      | 50.7  | 50.4  | 20.3  | 94.2  | 253.8 | 69.2  | 147.4 | 34.8  | 48.5  |
| 11   | Mg (mg/L)                         | 33.0      | 23.2  | 50.5  | 42.3  | 22.7  | 37.2  | 53.7  | 53.7  | 49.6  | 35.1  |
| 12   | Na (mg/L)                         | 40.4      | 66.7  | 70.2  | 368.7 | 402.0 | 287.0 | 268.4 | 242.0 | 205.2 | 55.2  |
| 13   | NH3-N (mg N/L)                    |           |       |       |       | 0.34  | 0.79  | 0.93  | 1.07  | 1.00  | 1.08  |
| 14   | NO2+NO3 (mg N/L)                  |           |       | 0.25  | 0.16  | 0.81  | 4.18  | 2.87  | 1.84  | 2.07  | 2.66  |
| 15   | NO2-N (mgN/L)                     | 0.19      | 0.21  | 0.15  | 0.12  | 0.39  | 0.41  | 0.36  | 0.00  | 0.54  | 0.43  |
| 16   | NO3-N (mgN/L)                     |           |       | 0.10  | 0.04  | 0.42  | 3.77  | 2.51  | 1.84  | 1.53  | 2.23  |
| 17   | o-PO4-P (mg P/L)                  | 0.234     | 0.234 | 0.537 | 0.134 | 0.506 | 0.723 | 0.692 | 0.847 | 0.641 | 0.579 |
| 18   | P-Tot (mgP/L)                     |           |       |       | 0.520 |       |       |       |       |       |       |
| 19   | SiO2 (mg/L)                       | 42.0      | 42.7  | 40.0  | 6.8   | 23.2  |       |       |       |       |       |
| 20   | SO4 (mg/L)                        | 384.0     | 30.1  | 87.4  | 120.0 | 87.8  | 59.0  | 69.1  | 311.0 | 159.8 | 194.9 |
|      | <b>BIOLOGICAL/BACTERIOLOGICAL</b> |           |       |       |       |       |       |       |       |       |       |
|      | <b>TRACE &amp; TOXIC</b>          |           |       |       |       |       |       |       |       |       |       |
|      | <b>CHEMICAL INDICES</b>           |           |       |       |       |       |       |       |       |       |       |
| 1    | HAR_Ca (mgCaCO3/L)                | 209       | 263   | 52    | 160   | 86    | 172   | 121   | 138   | 52    | 164   |
| 2    | HAR_Total (mgCaCO3/L)             | 347       | 360   | 262   | 336   | 181   | 327   | 344   | 361   | 258   | 310   |
| 3    | Na% (%)                           | 19        | 26    | 32    | 69    | 74    | 49    | 58    | 49    | 60    | 25    |
| 4    | RSC (-)                           | 4.7       | 3.3   | 7.2   | 0.1   | 0.0   | 6.9   | 0.0   | 0.0   | 0.0   | 0.0   |
| 5    | SAR (-)                           | 0.9       | 1.5   | 1.9   | 8.8   | 13.1  | 6.9   | 6.3   | 5.6   | 5.6   | 1.4   |
|      | <b>PESTICIDES</b>                 |           |       |       |       |       |       |       |       |       |       |

# Index Map



| SL. NO. | SITE            | CATCHMENT AREA (Sq Km) |
|---------|-----------------|------------------------|
| 1.      | Tewaghat        | 1225                   |
| 2.      | Jauljibi        | 2150                   |
| 3.      | Ghat            | 3900                   |
| 4.      | Pancheswar      | 12283                  |
| 5.      | Banbasa         | 15820                  |
| 6.      | Palia Kalan     | 17876                  |
| 7.      | Sharda Nagar    | 18553                  |
| 8.      | B K Ghat        | 43804                  |
| 9.      | Motipur         | 1389                   |
| 10.     | Elgin Bridge    | 74713                  |
| 11.     | Ayodhya         | 80889                  |
| 12.     | Kakardhari      | 5926                   |
| 13.     | Bhinga          | 8151                   |
| 14.     | Balrampur       | 8219                   |
| 15.     | Bansi           | 9575                   |
| 16.     | Chandradeepghat | 1100                   |
| 17.     | Basti           | 3005                   |
| 18.     | Galgat          | 4594                   |
| 19.     | Colonelganj     | 1842                   |
| 20.     | Kakrahi         | 4192                   |
| 21.     | Uskabazar       | 2432                   |
| 22.     | Trimohinighat   | 2355                   |
| 23.     | Maniram         | 2730                   |
| 24.     | Regauli         | 16387                  |
| 25.     | Birdghat        | 20093                  |
| 26.     | Mukhlispur      | 5440                   |
| 27.     | Hetimpur        | 875                    |
| 28.     | Turtipar        | 113088                 |
| 29.     | Salempur        | 2255                   |

| SL. NO. | SITE DESCRIPTION (From - To) | DISTANCE (Km) |
|---------|------------------------------|---------------|
| 1.      | Tewaghat - Jauljibi          | 50            |
| 2.      | Jauljibi - Ghat              | 217           |
| 3.      | Ghat - Pancheswar            | 85            |
| 4.      | Pancheswar - Banbasa         | 155           |
| 5.      | Banbasa - Palia Kalan        | 155           |
| 6.      | Palia Kalan - Motipur        | 43            |
| 7.      | Palia Kalan - Sharda Nagar   | 87            |
| 8.      | Motipur - Sharda Nagar       | 50            |
| 9.      | Sharda Nagar - B K Ghat      | 115           |
| 10.     | B K Ghat - Elgin Bridge      | 140           |
| 11.     | Elgin Bridge - Ayodhya       | 100           |
| 12.     | Ayodhya - Turtipar           | 160           |



## ABBREVIATIONS AND SYMBOLS

|         |                                                       |
|---------|-------------------------------------------------------|
| N       | : North                                               |
| E       | : East                                                |
| sq. km. | : Square Kilometre                                    |
| m       | : Metre                                               |
| o       | : Degree                                              |
| '       | : Minute                                              |
| ''      | : Second                                              |
| SP      | :Sodium Percentage                                    |
| RSC     | : Residual Sodium Carbonate                           |
| SAR     | : Sodium Adsorption Ratio                             |
| HAR     | : Hardness                                            |
| mg/l    | : Milligram per Litre                                 |
| ml.     | : Millilitre                                          |
| pH      | : Negative Logarithm of Hydrogen<br>Ion Concentration |