केवल सरकारी प्रयोग हेतु
FOR OFFICIAL USE ONLY

जल गुणवत्ता आँकड़े
वर्ष पुस्तिका
जून–2016 से मई–2017
(गोमती बेसिन)

WATER QUALITY DATA
YEAR BOOK
JUNE-2016 TO MAY-2017
(GOMTI BASIN)

केन्द्रीय जल आयोग
जल विज्ञानीय प्रेक्षण परिमंडल
देहरादून

CENTRAL WATER COMMISSION
HYDROLOGICAL OBSERVATION CIRCLE
DEHRADUN

केवल सरकारी प्रयोग हेतु

गोमती बेसिन

जल गुणवत्ता ऑकड़े वर्ष पुस्तिका

जून–2016 से मई–2017

केन्द्रीय जल आयोग

जल विज्ञानीय प्रेक्षण परिमंडल

देहरादून

प्रस्तावना

सदियों से भारत की नदियाँ इस देश की आस्था और संस्कृति के किनारों को स्पर्श कर प्रवाहित होती रही हैं तथा उत्थान और पतन के कम में उलझी मानव सभ्यता के विकास की मूक साक्षी रही हैं। इनमें से ही एक नदी है गोमती, जोकि गंगा की प्रमुख सहायक नदियों में से एक है। समय के साथ–साथ मानव का जीवन जटिल हुआ है, कुछ आवास और रोजगार की सतत मांग के कारण तो कुछ भौतिक आवश्यकताओं में निरन्तर वृद्धि के कारण शहरीकरण और औद्योगीकरण की गति तीव्र हुई हैं। दुर्भाग्यवश मनुष्य की प्रगति और प्रकृति के अपरिहार्य संरक्षण में सामंजस्य नहीं रह पाया है और नदियों व जल स्त्रोतों का प्रदूषण एक विकराल समस्या बनकर हमें चुनौती दे रहा है। ज्ञान और शिक्षा के प्रसार से प्राकृतिक संसाधनों के विवेकपूर्ण दोहन की आवश्यकता महसूस हुई है। उपलब्ध जल स्त्रोतों और नदियों पर एक वैज्ञानिक सूझ भरी निगरानी हमें न केवल आसन्न खतरों की चेतावनी देती है, वरन् जल की उपादेयता और गुणवत्ता पर भी कभी हताश तो कभी उत्साहित परन्तु सदैव उपयोगी टिप्पणी करती है। नदियों के गुणवत्ता के आँकड़ों का प्रेक्षण, संकलन और विश्लेषण भी इसी जागरूक प्रयास का एक आवश्यक पहलू है। अच्छी गुणवत्ता वाले जल की माँग में जबरदस्त वृद्धि के कारण यह आवश्यक हो गया है कि जल की गुणवत्ता का प्रबोधन एवं प्रबन्धन किया जाए। जल की गुणवत्ता के आँकड़े का समुचित विश्लेषण प्रबन्धन एंव मूल्यांकन सुनियोजित जल गुणवत्ता प्रबोधन कार्यक्रम का एक महत्वपूर्ण घटक है। भारतवर्ष में सभी प्रमुख नदियों एवं उनकी सहायक नदियों के जल गुणवत्ता आँकडों का एकत्रीकरण, विश्लेषण, मूल्यांकन एवं संकलन जैसा महत्वपूर्ण कार्य केन्द्रीय जल आयोग द्वारा इसके क्षेत्र–स्थलों एवं विभिन्न प्रयोगशालाओं के नेटवर्क के माध्यम से निस्पादित किया जा रहा है।

जल गुणवत्ता आँकड़े वर्ष पुस्तिका, 2016–2017 के वर्तमान अंक में जून–2016 से मई– 2017 तक की अवधि हेतु गोमती बेसिन के जल के "भौतिक, रासायनिक एवं जैविक अभिलक्षणों" का संकलन किया गया है।

यह आशा की जाती है कियह अंक गोमती बेसिन के जल गुणवत्ता प्रबोधन से जुड़े वैज्ञानिकों, अभियन्ताओं एंव पर्यावरणविदों के लिए लाभदायक सिद्ध होगा।

(सुधीर कुमार)
अधीक्षण अभियन्ता
जल विज्ञानीय प्रेक्षण परिमंडल
देहरादून

अभिस्वीकृति

जल गुणवत्ता आँकड़े वर्ष पुस्तिका, 2016–2017का यह प्रकाशन ऊपरी गंगा बेसिन में जल विज्ञानीय एवं जल–मौसम विज्ञानीय प्रेक्षणों पर कार्यरत केन्द्रीय जल आयोग के अनेक अभियन्ताओं तथा वैज्ञानिकों के अथक एवं समर्पित प्रयासों की देन है। केन्द्रीय जल आयोग के जल विज्ञानीय प्रेक्षण परिमण्डल, देहरादून व इसके अधीनस्थ मध्य गंगा मण्डल – द्वितीय, लखनऊ तथा जल विज्ञानीय प्रेक्षण परिमण्डल, वाराणसी व इसके अधीनस्थ मध्य गंगा मण्डल–तृतीय, वाराणसी एवं इनके अधीनस्थ सम्बन्धित उपमण्डलों तथा क्षेत्र–स्थलों पर कार्यरत समस्त अधिकारी एवं कर्मचारी आँकड़ों के एकत्रीकरण व संकलन में अपने समर्पण एवं सहयोग के लिये प्रशंसा के पात्र है।

ऊपरी गंगा बेसिन संगठन, केन्द्रीय जल आयोग, लखनऊ के मुख्य अभियन्ता, श्री संजय कुमार सिब्बलका उनके द्वारा प्रदान किए गए बहुमूल्य मार्ग दर्शन एवं प्रेरणा के लिए आभार व्यक्त किया जाता है।

समन्वय एवं संकलन का यह महत्वपूर्ण कार्य अधिसासी अभियन्ता, मध्य गंगा मण्डल द्वितीय,लखनऊ तथा सम्बन्धित सभी अधिकारियों एवं कर्मचारियों के समर्पित प्रयासों के फलस्वरूप ही संभव हो पाया है। इस परिमंडल में कार्यरत श्री पवन कुमार नगायच, अवर अभियंता का गोमती नदी के जल गुणवत्ता ऑकड़े वर्ष पुस्तिका 2016–17 को तैयार करने मेंएवंपुस्तिका के प्रकाशन में महत्वपूर्ण योगदान रहा है।

(सुधीर कुमार)
अधीक्षण अभियन्ता
जल विज्ञानीय प्रेक्षण परिमंडल
देहरादून

विषय सूची

1. प्रस्तावना

1.1 विषय क्षेत्र

सिंचाई, औद्योगिक एवं घरेलू उपयोग हेतु स्वच्छ एवं ताजे जल की लगातार बढ़ती मांग के कारण उपलब्ध ताजे जल, जिसके भारतवर्ष में मुख्य स्त्रोत नदियाँ ही हैं, की गुणवत्ता का निरन्तर प्रबोधन करना अति आवश्यक हो गया है। इसी परिप्रेक्ष्य में जल गुणवत्ता आँकड़े वर्ष पुस्तिका के इस अंक में जून–2016 से मई–2017 तक की अवधि हेतु गोमती नदी बेसिन के जल गुणवत्ता आँकड़ों का संकलन किया गया है।

1.2 सूचना स्त्रोत

ऊपरी गंगा बेसिन संगठन, लखनऊ के तत्वावधान में जल विज्ञानीय प्रेक्षण परिमंडल, देहरादून के अधीनस्थ मध्य गंगा मंडल – द्वितीय, लखनऊ गोमती बेसिन में तीन स्थलों पर एवं जल विज्ञानीय प्रेक्षण परिमंडल, वाराणसी के अधीनस्थ मध्य गंगा मंडल – तृतीय, वाराणसी में दो स्थलों पर जल गुणवत्ता आँकड़ों के प्रेक्षण का कार्य कर रहे हैं। इस पुस्तिका में वर्ष 2016–17 के लिए प्रेक्षित तथा निर्धारित जल गुणवत्ता आँकड़े प्रस्तुत किए गए हैं। विभिन्न प्रेक्षण स्थलों का विवरण तालिका संख्या–1 में नीचे दिया गया है। इन प्रेक्षण स्थलों में से कम संख्या 1,2 व 5 जल विज्ञानीय प्रेक्षण परिमंडल, देहरादून के कार्य क्षेत्र में हैं तथा कम संख्या 3, व 4 जल विज्ञानीय प्रेक्षण परिमंडल, वाराणसी के कार्य क्षेत्र में हैं।

तालिका संख्या – 1

कम संख्या	स्थल का नाम	स्थल कोड़
1	गोमती – नीमसार	GGX00U5
2	गोमती – लखनऊ	GGX00Q3
3	गोमती – सुल्तानपर	GGX00H3
4	गोमती – माईघाट	GGX00B4
5	सई – रायबरेली (गोमती की सहायक नदी)	GGX10M2

1.3 प्रेक्षण की विधि

प्रत्येक माह के प्रथम कार्य दिवस को सभी जल गुणवत्ता प्रेक्षण स्थलों से जल नमूने एकत्र करके मण्डलीय प्रयोगशाला में पहुँचाए जाते है, जहाँ पर इनका विभिन्न अवयवों जैसे पी0एच0 मूल्य, विशिष्ट चालकता, पोटेशियम (K^+के रूप में), सोडियम (Na^+के रूप में), कैलशियम Ca^{++}के रूप में,), मैग्नीशियम (Mg^{++}के रूप में), आयरन (Fe^{+++}के रूप में), अमोनियाकृत नाइट्रोजन($NH4^+$के रूप में), कार्बोनेट (CO_3^{--}के रूप में), बाईकार्बोनेट (HCO_3^-के रूप में), क्लोराइड (Cl^- के रूप में) फ्लोराइड़ (F^- के रूप में), सल्फेट (So_4^{--}के रूप में), नाइट्रेट (No_3^-के रूप में), नाइट्राइट (No_2^-के रूप में), फॉस्फेट (PO_4^{---}के रूप में), एवं सिलिका (SiO_2के रूप में) आदि के निर्धारण हेतु व्यवस्थित ढंग से विश्लेषण किया जाता है।

पी0एच0 मूल्य एवं विशिष्ट चालकता का निर्धारण क्रमशः डिजिटल पी0एच0मापी एवं चालकता मापी द्वारा किया जाता है। Cl^-, CO_3^{--}, Ca^{++}एवं Mg^{++}का निर्धारण अनुमापन विधि द्वारा किया जाता है। So_4^{--}का निर्धारण नेफेलोमीटर के द्वारा टरबिडिमीट्रिक विधि से किया जाता है। Na^+एवं K^+का आकलन फ्लेम फोटोमीटर की सहायता से ज्वाला उत्सर्जन विधि द्वारा किया जाता है। अन्य सभी प्राचलों का निर्धारण पराबैंगनी स्पेक्ट्रोफोटोमीटर द्वारा रंगमापीय आकलन की विधि से किया जाता है।

ऊपर वर्णित प्राचलों के अतिरिक्त लगभग सभी स्थलों पर घुलित ऑक्सीजन का भी आकलन किया जाता है। कुछ निश्चित स्थलों पर जैवरासायनिक ऑक्सीजन माँग (बी0ओ0डी0) का भी आकलन किया जाता है।

जल गुणवत्ता के विभिन्न प्राचलों के आकलन हेतु अपनाई गई तकनीकें सारणी संख्या–2 में नीचे दी गई हैं।

सारणी संख्या–2

प्राचल	विधि	यन्त्र / औजार
भौतिक अभिलक्षण		
तापक्रम	तापमापक विधि	तापमापी
रंग	चाक्षुष	–
पी0एच0मूल्य	विद्युतीय	पी0एच0मापी
चालकता	विद्युतीय	चालकतामापी
टरबिडिटी	टरबिडिमापक	नेफेलोमीटर
अवशेष	भारमापक	आयतनमापी / ग्लासवेयर
रासायनिक अभिलक्षण		
कैलशियम	अनुमापन	आयतनमापी / ग्लासवेयर
मैग्नीशियम	अनुमापन	आयतनमापी / ग्लासवेयर
सोडियम	ज्वाला उत्सर्जन	फ्लेम फोटोमीटर
पॉटेशियम	रंगमापीय	फ्लेम फोटोमीटर
आयरन	अनुमापन	कलरीमीटर / स्पेक्ट्रोफोटोमीटर
कार्बोनेट	अनुमापन	आयतनमापी / ग्लासवेयर
बाईकार्बोनेट	टरबिडिमीट्रिक	नेफेलोमीटर
सल्फेट	अनुमापन	आयतनमापी / ग्लासवेयर
फ्लोराइड	रंग परिवर्धन	कलरीमीटर / स्पेक्ट्रोफोटोमीटर
नाईट्रेट	रंग परिवर्धन	कलरीमीटर / स्पेक्ट्रोफोटोमीटर
सिलिका	रंग परिवर्धन	कलरीमीटर / स्पेक्ट्रोफोटोमीटर
फॉस्फेट	रंग परिवर्धन	कलरीमीटर / स्पेक्ट्रोफोटोमीटर
जैविक अभिलक्षण		
घुलित ऑक्सीजन	योगीकरण एवं अनुमापन	आयतनमापी / ग्लासवेयर
जैवरासायनिक ऑक्सीजन माँग (बी0ओ0डी0)	योगीकरण एवं अनुमापन	आयतनमापी / ग्लासवेयर

2. जल गुणवत्ता आँकड़े

2.1 व्याख्यात्मक टिप्पणी

नीचे दी गई व्याख्यात्मक टिप्पणी संकलित आँकड़ों में प्रस्तुत जल वैज्ञानिक प्राचलों को समझने के लिए दी गई है।

(I) जल वर्ष 2016–2017 को 01.06.2016 से 31.05.2017 तक माना गया है।

(II) प्रत्येक माह में केवल एक बार, सामान्यतः प्रथम कार्य दिवस को नदी के मुख्य बहाव वाले भाग से जल नमूने एकत्र किए जाते हैं।

(III) नदी जल नमूनों के साथ नदी में मिल रहें तल प्रवाह की रासायनिकसंरचना के बारे में जानकारी प्राप्त करने हेतु निकटस्थ कुएँ से भूमिगत जल नमूने भी एकत्र किए जाते है।

(iv) नदी जल नमूनें एकत्र करने के एक घन्टे के अन्दर स्थल प्रयोगशाला में घुलित ऑक्सीजन का आकलन कर लिया जाता हैं।

(V) अन्य सभी जल गुणवत्ता प्राचलों का विश्लेषण मण्डलीय प्रयोगशाला में किया जाता है।

(Vi) कठोरता संख्या (एच0 एन0) सोडियम प्रतिशतता (एस0पी0), सोडियम एडजोर्पशन अनुपात (एस0ए0आर0) एवं अवशिष्ट सोडियम कार्बोनेट (आर0एस0सी0) आदि रासायनिक सूचकों की गणना निम्नानुसार की जाती है:

(क) जल नमूने में निहित ca^{++}एवं Mg^{++}के कुल योग को $CaCo_3$ के तुल्यांकी भागों के रूप में व्यक्त करके कठोरता संख्या की गणना की जाती है।

कठोरता संख्या (एच0एन0) $=(Ca^{++} + Mg^{++})x\ 50$

(ख) सोडियम प्रतिशतता (एस0पी0)$=(Na^{+}\ x100)/(Ca^{++} + Mg^{++} + Na^{+} + K^{+})\%$ जहाँ आयनों की सान्द्रता मिली इक्यूइवैलेन्ट/लीटर में है।

(ग) सोडियम एडजोर्पशन अनुपात (एस0ए0आर0) $= Na^{+}/\{(Ca^{++}+Mg^{++})/2\}1/2$जहाँ आयनों की सान्द्रता मिली इक्यूइवैलेन्ट/लीटर में है।

(घ) अवशिष्ट सोडियम कार्बोनेट (आर0एस0सी0) $=(CO_3^{--} + H\ CO_3^{-}) -(Ca^{++}+Mg^{++})$जहाँ आयनों की सान्द्रता मिली इक्यूइवैलेन्ट/लीटर में है।

(Vii) विशिष्ट चालकता एवं सोडियम एडजोर्पशन अनुपात (एस0ए0आर0) के आधार पर जल नमूनों का यू0एस0सैलिनिटीप्रयोगशाला द्वारा निर्दिष्ट मानकों के अनुसार वर्गीकरण किया जाता हैं।

(Viii) सिलिका (Sio_2) की सान्द्रता मिलीग्राम/लीटर में दर्शायी गयी है तथा इसकों ऋणायनिक योग में सम्मिलित नहीकिया गया है।

(ix) मापक प्राधिकारी का सन्दर्भ उस क्षेत्र मण्डल से है जोकि जल नमूनों के एकत्रीकरण एवं विश्लेषण के लिए जिम्मेदार है। मण्डल के नाम को उसके नाम में निहित प्रत्येक शब्द के प्रथम अक्षर लिखने के बाद मं0 जोड़कर संक्षिप्त कर दिया गया हैं। उदाहरणार्थ, 'मध्य गंगा मण्डल – 2 कोम0गं0मं0–2' के द्वारा निरूपित किया गया है। इन संक्षिप्ताक्षरों का सन्दर्भ'निरूपण' की सूची में दिया गया है।

(x) प्रेक्षण स्थल कोड संख्या एक विशिष्ट सात स्तम्भों वाली अल्फा–न्यूमेरिक सन्दर्भ संख्या है जोकि डाटा बैंक में जल गुणवत्ता आँकड़ों के भण्डारण एवं उनकी पुनः प्राप्ति को सुविधाजनक बनाती है। इस कोड संख्या का प्रथम स्तम्भ या तो एक समेकित नदी बेसिन की पहचान है और या फिर सुविधा के लिये एक ऐसे क्षेत्र का सूचक है जिसमें नदी के विभिन्न संस्पर्शी पोषक क्षेत्र निहित है। द्वितीय स्तम्भ एक ऐसी स्वतन्त्र नदी प्रणाली का सूचक है जिसके या तो एक अथवा अधिक समुद्री मुहाने हैं या फिर जिसमें नदी दूसरे देश में प्रवेश करने हेतु अंतरराष्ट्रीय सीमा से गुजरती हैं तृतीय, चतुर्थ एवं पंचम् स्तम्भ मुहाने से अपवाह (अपस्ट्रीम) की दशा में क्रमशः प्रथम, द्वितीय एवं तृतीय क्रम की सहायक नदियाँ निरूपित करते हैं। छठे व सातवें स्तम्भ नदी के लिए निर्धारित 225 खाँचों में से किसी एक खाँचे विशेष में नदी की स्थिति दर्शाते हैं। रिक्त स्तम्भ स्थानों को शून्य द्वारा भरा गया है।

2.2 प्रस्तुतीकरण विधि

आगे के पृष्ठों में, स्थलानुसार इतिहास पृष्ठ तथा जल गुणवत्ता विश्लेषण तालिकाओं सहित जल गुणवत्ता आँकडों का प्रस्तुतीकरण किया गया है। इतिहास पृष्ठ जल गुणवत्ता प्रेक्षण स्थल का संक्षिप्त विवरण दर्शाता है। जिन स्थलों पर प्रेक्षण हेतु कुआँ उपलब्ध है, उन स्थलों हेतु नदी जल एवं कुआँ जल, दोनों के लिए अलग–अलग जल गुणवत्ता विश्लेषण तालिकाएं दी गयी हैं।

जल गुणवत्ता विश्लेषण तालिकाओं में दैनिक प्रेक्षित निस्सारण एवं जल नमूनों के निम्नलिखित भौतिक, रासायनिक तथा जैविक अभिलक्षण प्रस्तुत किए गए है।

भौतिक प्राचलः

- निस्सारण, पी0एच0मूल्य, विशिष्ट चालकता।

रासायनिक प्राचलः

- K^+, Na^+, Ca^{++}, Mg^{++}, Fe^{+++}, NH_4^+ की सान्द्रताएं एवं धनायनिक योग की सान्द्रता मिलीग्राम/लीटर में है।
- CO_3^{--} , HCO_3^- , Cl^-, F^- , SO_4^{--} ,No_3^- ,No_2^- , PO_4^{---} की सान्द्रताएं एवं ऋणायनिक योग की सान्द्रता मिली इक्यूइवैलेन्ट/लीटर में तथा सिलिका (SiO_2) की सान्द्रता मिलीग्राम/लीटर में है।

जैविक एवं जीवाण्विक प्राचल :

- घुलित ऑक्सीजल एवं बी0ओ0डी0 के मान मिलीग्राम/लीटर में है।

रासायनिक सूचकः

- कठोरता संख्या (एच0एन0) सोडियम प्रतिशतता (एस0पी0) सोडियम एडजोर्पशन अनुपात (एस0ए0आर0) एवं अवशिष्ट सोडियम कार्बोनेट (आर0एस0सी0) में सभी आयनों कीसान्द्रताएं मिली इक्यूइवैलेनट/लीटर में है।

HISTORY SHEET

&

W.Q. DATA

(GOMTI BASIN)

2.3 GOMTI-NEEMSAR

HISTORY SHEET

		Water Year	**: 2016-2017**
Site	**: NEEMSAR**	**Code**	**: GGXOOU5**
State	: Uttar Pradesh	District	Sitapur
Basin	: Ganga-Brahm-Meghna Basin	Independent River	: Ganga
Tributary	: Gomti	Sub Tributary	:
Sub-Sub Tributary	:	Local River	: GOMTI
Division	: M Ganga Div. II, Lucknow	Sub-Division	: Gomti Subdivision, Lucknow
Drainage Area	: 3590 Sq. Km.	Bank	: Left
Latitude	: 27°21'00"	Longitude	: 80°29'00"
	Opening Date	Closing Date	
Gauge	: 21/7/1976		
Discharge	: 21/7/1976		
Sediment	:		
Water Quality	: 15/1/1977		

Water Quality Datasheet for the period : 2016-2017

Station Name : NEEMSAR (GGXOOU5) | **Division : M Ganga Div. II, Lucknow**

Local River : GOMTI | **River Water Analysis** | **Sub-Division : Gomti Subdivision, Lucknow**

S.No	Parameters	1/8/2016	1/11/2016	1/2/2017	1/5/2017
		A	A	A	A
	PHYSICAL				
1	Q (cumec)				
2	Colour_Cod (-)	Brown	Clear	Clear	Clear
3	EC_GEN (µmho/cm)	142	370	340	365
4	Odour_Code (-)	odour free	odour free	odour free	odour free
5	pH_FLD (pH units)	8.0	8.0	8.0	7.5
6	pH_GEN (pH units)	7.9	8.3	8.1	8.0
7	TDS (mg/L)	88	225	211	224
8	Temp (deg C)	31.0	22.0	20.0	28.0
9	Turb (NTU)	5.9	0.6	0.8	0.8
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	0.0	8.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	48	169	226	164
3	B (mg/L)	0.20	0.35	0.30	0.34
4	Ca (mg/L)	21	32	34	38
5	Cl (mg/L)	3.6	13.1	16.0	16.0
6	CO3 (mg/L)	0.0	9.6	0.0	0.0
7	F (mg/L)	0.19	0.44	0.38	0.40
8	Fe (mg/L)	0.3			
9	HCO3 (mg/L)	59	187	275	200
10	K (mg/L)	4.3	10.2	20.1	8.6
11	Mg (mg/L)	5.8	34.9	31.3	34.1
12	Na (mg/L)	2.8	9.4	9.2	10.1
13	NH3-N (mg N/L)	0.31	0.63	0.60	0.64
14	NO2+NO3 (mg N/L)	0.71	0.99	0.87	0.94
15	NO2-N (mgN/L)	0.32	0.48	0.40	0.44
16	NO3-N (mgN/L)	0.39	0.51	0.47	0.50
17	P-Tot (mgP/L)	0.320	0.440	0.400	0.560
18	SO4 (mg/L)	14.9	30.2	25.9	27.0
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	3.9	2.3	9.4	5.9
2	COD (mg/L)	8.0	7.0	17.0	8.0
3	DO (mg/L)	4.7	5.3	5.9	4.7
4	DO_SAT% (%)	63	61	65	60
5	FCol-MPN (MPN/100mL)	1200	800	2500	3000
6	Tcol-MPN (MPN/100mL)	6800	3000	4000	5000
	TRACE & TOXIC				
1	As (µg/L)	2.42			
2	Cd (µg/L)	0.35			
3	Zn (µg/L)	0.14			
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	52	80	86	95
2	HAR_Total (mgCaCO3/L)	76	225	216	237
3	Na% (%)	7	8	8	8
4	RSC (-)	0.0	0.0	0.2	0.0
5	SAR (-)	0.1	0.3	0.3	0.3
	PESTICIDES				

Note - Analysis of Total & Faecal coliform started w.e.f.01.08.2016

Water Quality Summary for the period : 2016-2017

Station Name : NEEMSAR (GGXOOU5)

Local River : GOMTI

Division : M Ganga Div. II, Lucknow

Sub-Division : Gomti Subdivision, Lucknow

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_GEN (µmho/cm)	4	370	142	304
3	pH_FLD (pH units)	4	8.0	7.5	7.9
4	pH_GEN (pH units)	4	8.3	7.9	8.1
5	TDS (mg/L)	4	225	88	187
6	Temp (deg C)	4	31.0	20.0	25.3
7	Turb (NTU)	4	5.9	0.6	2
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	4	8.0	0.0	2
2	ALK-TOT (mgCaCO3/L)	4	226	48	152
3	B (mg/L)	4	0.35	0.20	0.3
4	Ca (mg/L)	4	38	21	31
5	Cl (mg/L)	4	16.0	3.6	12.2
6	CO3 (mg/L)	4	9.6	0.0	2.4
7	F (mg/L)	4	0.44	0.19	0.35
8	Fe (mg/L)	1	0.3	0.3	0.3
9	HCO3 (mg/L)	4	275	59	180
10	K (mg/L)	4	20.1	4.3	10.8
11	Mg (mg/L)	4	34.9	5.8	26.5
12	Na (mg/L)	4	10.1	2.8	7.9
13	NH3-N (mg N/L)	4	0.64	0.31	0.55
14	NO2+NO3 (mg N/L)	4	0.99	0.71	0.88
15	NO2-N (mgN/L)	4	0.48	0.32	0.41
16	NO3-N (mgN/L)	4	0.51	0.39	0.47
17	P-Tot (mgP/L)	4	0.560	0.320	0.43
18	SO4 (mg/L)	4	30.2	14.9	24.5
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	4	9.4	2.3	5.4
2	COD (mg/L)	4	17.0	7.0	10
3	DO (mg/L)	4	5.9	4.7	5.1
4	DO_SAT% (%)	4	65	60	62
5	FCol-MPN (MPN/100mL)	4	3000	800	1875
6	Tcol-MPN (MPN/100mL)	4	6800	3000	4700
	TRACE & TOXIC				
1	As (µg/L)	1	2.42	2.42	2.42
2	Cd (µg/L)	1	0.35	0.35	0.35
3	Zn (µg/L)	1	0.14	0.14	0.14
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	4	95	52	78
2	HAR_Total (mgCaCO3/L)	4	237	76	188
3	Na% (%)	4	8	7	8
4	RSC (-)	4	0.2	0.0	0.1
5	SAR (-)	4	0.3	0.1	0.2
	PESTICIDES				

Water Quality Seasonal Average for the period: 2006-2017

Station Name : NEEMSAR (GGXOOU5)
Local River : GOMTI

Well Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

S.No	Parameters	Flood Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	EC_GEN (µmho/cm)	363	303	330								
2	pH_FLD (pH units)	8.3	7.8	7.8								
3	pH_GEN (pH units)	7.7	8.0	7.8								
4	TDS (mg/L)											
5	Temp (deg C)	25.3	27.5	27.5								
6	Turb (NTU)											
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	0.0										
2	ALK-TOT (mgCaCO3/L)	188										
3	B (mg/L)	0.00	0.01	0.03								
4	Ca (mg/L)	38	37	36								
5	Cl (mg/L)	22.7	20.2	38.1								
6	CO3 (mg/L)	0.0	0.0	12.8								
7	F (mg/L)	0.22	0.20	0.23								
8	Fe (mg/L)	0.1	0.1	1.0								
9	HCO3 (mg/L)	171	153	143								
10	K (mg/L)	4.8	4.7	4.8								
11	Mg (mg/L)	22.7	22.4	23.3								
12	Na (mg/L)	12.6	12.7	18.9								
13	NH3-N (mg N/L)	0.00										
14	NO2+NO3 (mg N/L)	0.49	0.69	1.12								
15	NO2-N (mgN/L)	0.02	0.02	0.06								
16	NO3-N (mgN/L)	0.48	0.67	1.06								
17	o-PO4-P (mg P/L)	0.028	0.031	0.034								
18	SiO2 (mg/L)	9.7	5.2	6.7								
19	SO4 (mg/L)	14.6	13.4	13.4								

Water Quality Seasonal Average for the period: 2006-2017

Station Name : NEEMSAR (GGXOOU5)
Local River : GOMTI

Well Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

S.No	Parameters	Flood Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	BIOLOGICAL/BACTERIOLOGICAL											
1	COD(mg/L)											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	96	92	89								
2	HAR_Total (mgCaCO3/L)	191	185	202								
3	Na% (%)	12	13	18								
4	RSC(-)	0.0	0.0	0.0								
5	SAR(-)	0.4	0.4	0.6								
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : NEEMSAR (GGXOOU5)
Local River : GOMTI

Well Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

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	2016-2017
	PHYSICAL											
1	EC_GEN (µmho/cm)	275	320	210	470	500	400	400	390	670	1180	
2	pH_FLD (pH units)	8.5	7.8	8.3	8.0	7.5	7.5	8.5	7.5	8.4	8.0	
3	pH_GEN (pH units)	8.1	8.0	8.2	8.4	7.5	7.2	8.4	8.2	8.4	8.4	
4	TDS (mg/L)				285	305	250	252	234	310	710	
5	Temp (deg C)	21.5	23.0	24.6	25.0	24.0	26.0	25.0	26.0	28.0	26.0	
6	Turb (NTU)				1.2	2.0	4.1	3.2	3.8			
	CHEMICAL											
1	Alk-Phen (mgCaC03/L)	0.0			39.8	0.0	0.0				43.8	
2	ALK-TOT (mgCaC03/L)	110			232	184	180				272	
3	B (mg/L)	0.00	0.02	0.06	0.16	0.22	0.08	0.06	0.06	0.08	0.57	
4	Ca (mg/L)	33	38	30	31	40	38	38	46	101	101	
5	Cl (mg/L)	19.0	20.9	29.1	32.0	40.1	32.0	25.9	22.0	80.2	46.2	
6	CO3 (mg/L)	0.0	0.0	12.0	48.0	0.0	0.0	19.2	0.0	96.0	52.8	
7	F (mg/L)	0.14	0.23	0.24	0.25	0.40	0.21	0.34	0.36	0.40	0.67	
8	Fe (mg/L)	0.0	0.1	0.1								
9	HCO3 (mg/L)	134	161	120	185	224	220	195	259	237	224	
10	K (mg/L)	4.7	4.9	3.5	5.5	7.0	5.9	4.3	5.9	5.1	20.7	
11	Mg (mg/L)	19.1	22.2	19.1	19.6	24.8	21.6	18.6	29.9	57.7	46.4	
12	Na (mg/L)	12.5	15.1	15.9	19.5	24.1	21.2	17.9	15.9	11.0	24.4	
13	NH3-N (mg N/L)				0.17	0.25	0.25	0.10	0.20	0.97	1.18	
14	NO2+NO3 (mg N/L)	0.67	0.81	0.87	1.75	2.94	2.85	3.09	0.59	4.87	15.51	
15	NO2-N (mgN/L)	0.02	0.03	0.03	0.06	0.11	0.29	0.29	0.19	0.39	0.94	
16	NO3-N (mgN/L)	0.64	0.78	0.83	1.70	2.83	2.56	2.80	0.39	4.48	14.57	
17	o-PO4-P (mg P/L)	0.021	0.026	0.041	0.072	0.093	0.062	0.062	0.062	0.155	0.269	
18	SiO2 (mg/L)	7.2	5.4	6.4								
19	SO4 (mg/L)	12.7	13.9	5.0	9.6	20.2	20.2	20.2	16.8	12.5	78.7	

Water Quality Seasonal Average for the period: 2006-2017

Station Name : NEEMSAR (GGXOOU5)
Local River : GOMTI

Well Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

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	2016-2017
	BIOLOGICAL/BACTERIOLOGICAL											
1	COD (mg/L)						22.0					
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	82	95	75	78	99	95	95	116	254	253	
2	HAR_Total (mgCaCO3/L)	161	187	185	159	202	185	172	241	494	446	
3	Na% (%)	14	15	18	21	20	19	18	12	5	10	
4	RSC (-)	0.0	0.0	0.0	1.5	0.0	0.0	0.4	0.0	0.0	0.0	
5	SAR (-)	0.4	0.5	0.6	0.7	0.7	0.7	0.6	0.4	0.2	0.5	
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : NEEMSAR (GGXOOU5)
Local River : GOMTI

Well Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

S.No	Parameters	Summer Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	EC_GEN (µmho/cm)	300	420	440	470	510	480	580	420	500	520	
2	pH_FLD (pH units)	8.0	8.0	8.0	7.5	7.5	8.5	8.0	8.0		8.0	
3	pH_GEN (pH units)	7.9	8.1	7.5	8.4	8.1	7.9	7.7	8.2	9.1	8.4	
4	TDS (mg/L)				285	320	295	350	255	280	330	
5	Temp (deg C)	24.0	24.5	24.0	25.0	24.0	24.0	25.0	25.0		26.0	
6	Turb (NTU)				1.7	4.5	3.3	4.2	4.2			
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	0.0			39.8		0.0	0.0	0.0	19.9	32.4	
2	ALK-TOT (mgCaCO3/L)	120			264		200	244	220	168	285	
3	B (mg/L)	0.00	0.03	0.16	0.20	0.12	0.10	0.10	0.10	0.31	0.38	
4	Ca (mg/L)	34	40	38	38	41	41	60	50	52	86	
5	Cl (mg/L)	22.0	25.9	36.2	39.0	44.0	30.2	38.0	36.2	34.1	49.7	
6	CO3 (mg/L)	0.0	0.0	0.0	48.0	0.0	0.0	0.0	0.0	24.0	39.0	
7	F (mg/L)	0.15	0.27	0.40	0.32	0.46	0.40	0.46	0.47	0.53	0.42	
8	Fe (mg/L)	0.0	0.1	0.1								
9	HCO3 (mg/L)	146	166	156	224	259	244	298	268	156	268	
10	K (mg/L)	5.5	5.9	5.1	7.0	7.8	5.1	7.4	7.0	15.6	19.2	
11	Mg (mg/L)	22.7	23.7	21.6	23.7	24.8	23.7	34.0	32.0	22.7	40.2	
12	Na (mg/L)	13.8	17.5	19.1	23.0	25.8	20.2	26.7	23.5	21.6	28.8	
13	NH3-N (mg N/L)				0.21	0.34	0.20	0.25	0.39	0.88	0.63	
14	NO2+NO3 (mg N/L)	0.64	0.99	1.26	2.38	3.22	3.48	5.57	6.41	9.53	1.06	
15	NO2-N (mgN/L)	0.01	0.04	0.11	0.10	0.14	0.40	0.39	0.39	0.70	0.47	
16	NO3-N (mgN/L)	0.63	0.95	1.15	2.28	3.08	3.08	5.18	6.03	8.83	0.59	
17	o-PO4-P (mg P/L)	0.021	0.031	0.072	0.083	0.114	0.093	0.093	0.134	0.238	0.165	
18	SiO2 (mg/L)	6.4	6.8	11.2								
19	SO4 (mg/L)	12.5	16.8	12.0	14.9	29.8	24.0	27.8	20.2	23.5	40.3	

13

Water Quality Seasonal Average for the period: 2006-2017

Station Name : NEEMSAR (GGXOOU5)
Local River : GOMTI

Well Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

S.No	Parameters	Summer Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	BIOLOGICAL/BACTERIOLOGICAL											
1	COD (mg/L)					38.0	30.0					
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	86	99	95	95	103	103	151	125	129	215	
2	HAR_Total (mgCaCO3/L)	181	198	219	193	206	202	292	258	224	383	
3	Na% (%)	14	16	18	20	21	18	16	16	16	13	
4	RSC (-)	0.0	0.0	0.0	1.4	0.1	0.0	0.0	0.0	0.0	0.0	
5	SAR (-)	0.4	0.5	0.6	0.7	0.8	0.6	0.7	0.6	0.6	0.6	
	PESTICIDES											

2.4 GOMTI - LUCKNOW

HISTORY SHEET

		Water Year	**: 2016-2017**
Site	**: LUCKNOW**	**Code**	**: GGXOOQ3**
State	: Uttar Pradesh	District	Lucknow
Basin	: Ganga-Brahm-Meghna Basin	Independent River	: Ganga
Tributary	: Gomti	Sub Tributary	:
Sub-Sub Tributary	:	Local River	: Gomti
Division	: M Ganga Div. II, Lucknow	Sub-Division	: Gomti Subdivision, Lucknow
Drainage Area	: 10503 Sq. Km.	Bank	: Left
Latitude	: 26°05'00"	Longitude	: 80°57'00"
	Opening Date	Closing Date	
Gauge	: 5/9/1969		
Discharge	: 9/9/1969		
Sediment	: 30/10/1976		
Water Quality	: 2/7/1973		

Water Quality Datasheet for the period : 2016-2017

Station Name : LUCKNOW (GGXOOQ3)
Local River : Gomti

River Water Analysis

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

S.No	Parameters	1/6/2016	1/7/2016	1/8/2016	1/9/2016	1/10/2016	1/11/2016	1/12/2016	2/1/2017	1/2/2017	1/3/2017	5/4/2017	1/5/2017
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Light Brown	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear
3	EC_GEN (µmho/cm)	660	610	240	290	300	440	460	390	410	460	682	540
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_FLD (pH units)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.5	8.0	8.0	8.0
6	pH_GEN (pH units)	8.3	8.2	8.3	7.8	7.7	7.9	7.4	8.1	7.5	7.7	7.8	7.7
7	TDS (mg/L)	400	370	148	178	190	268	280	236	256	286	411	328
8	Temp (deg C)	29.0	32.5	29.0	31.5	30.5	27.5	21.5	16.5	19.5	23.5	28.0	30.0
9	Turb (NTU)	4.2	0.7	0.6	0.5	0.8	0.4	0.7	0.5	0.6	0.6	0.8	0.6
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	12.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	132	136	86	100	121	169	200	228	232	256	168	272
3	B (mg/L)	0.02	0.26	0.24	0.29	0.32	0.47	0.49	0.40	0.44	0.48	0.50	0.46
4	Ca (mg/L)	41	36	26	34	35	35	36	34	30	34	50	40
5	Cl (mg/L)	35.9	50.1	15.3	14.9	15.6	20.6	21.7	22.0	22.8	31.4	34.1	30.0
6	CO3 (mg/L)	0.0	0.0	15.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.74	0.68	0.36	0.42	0.44	0.59	0.61	0.53	0.56	0.62	0.68	0.64
8	Fe (mg/L)			0.3				0.3				0.3	
9	HCO3 (mg/L)	161	166	73	122	148	206	244	278	283	312	205	332
10	K (mg/L)	11.8	11.7	7.4	9.0	9.8	12.1	12.5	22.3	22.9	23.8	25.4	24.1
11	Mg (mg/L)	30.6	20.0	8.5	13.7	14.9	33.2	28.1	32.8	45.3	34.9	27.8	37.2
12	Na (mg/L)	22.3	31.1	11.0	11.3	11.5	15.4	15.6	12.4	13.6	18.0	23.0	19.6
13	NH3-N (mg N/L)	1.15	0.93	0.58	0.66	0.69	0.73	0.76	0.70	0.75	0.86	0.90	0.81
14	NO2+NO3 (mg N/L)	1.94	1.75	0.84	0.92	0.77	1.10	1.17	1.09	1.14	1.22	1.11	1.18
15	NO2-N (mgN/L)	0.76	0.70	0.35	0.40	0.23	0.50	0.54	0.47	0.50	0.53	0.36	0.46
16	NO3-N (mgN/L)	1.18	1.05	0.49	0.52	0.54	0.60	0.63	0.62	0.64	0.69	0.75	0.72
17	P-Tot (mgP/L)	1.010	0.029	0.360	0.820	0.860	0.930	0.950	1.080	1.120	1.200	1.280	1.240
18	SO4 (mg/L)	49.4	41.8	28.8	30.2	30.2	35.5	36.0	32.2	33.1	23.0	26.9	22.0

Water Quality Datasheet for the period : 2016-2017

Station Name : LUCKNOW (GGXOOQ3)
Local River : Gomti

River Water Analysis

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

S.No	Parameters	1/6/2016	1/7/2016	1/8/2016	1/9/2016	1/10/2016	1/11/2016	1/12/2016	2/1/2017	1/2/2017	1/3/2017	5/4/2017	1/5/2017
		A	A	A	A	A	A	A	A	A	A	A	A
	BIOLOGICAL/BACTERIOLOGICAL												
1	BOD3-27 (mg/L)	39.2	11.6	15.7	11.8	4.0	5.9	7.8	6.2	15.6	19.6	9.4	2.0
2	COD (mg/L)	48.0	26.0	26.0	19.0	7.0	12.0	10.0	8.0	18.0	25.0	15.0	7.8
3	DO (mg/L)	0.4	0.8	1.4	3.7	3.9	1.6	0.0	0.0	1.6	0.0	0.0	2.0
4	DO_SAT% (%)	5	11	18	50	52	20	0	0	17	0	0	26
5	FCol-MPN (MPN/100mL)			5000	6000	7000	3000	5000	20000	6000	10000	50000	15000
6	Tcol-MPN (MPN/100mL)			15000	12000	14000	5000	200000	22000	10000	30000	100000	80000
	TRACE & TOXIC												
1	As (µg/L)			3.34				6.61				8.00	
2	Cd (µg/L)			0.35				0.07				0.00	
3	Cr (µg/L)			0.40				44.38				5.00	
4	Cu (µg/L)			12.48				8.06				10.00	
5	Ni (µg/L)			0.31				21.67				53.00	
6	Pb (µg/L)			2.52				1.82				2.00	
7	Zn (µg/L)			0.31				11.00				11.00	
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	103	90	66	84	87	88	89	85	75	85	126	99
2	HAR_Total (mgCaCO3/L)	230	174	101	141	149	226	206	222	264	230	242	254
3	Na% (%)	17	26	18	14	13	12	13	10	9	13	15	13
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.6	0.0	0.4
5	SAR (-)	0.6	1.0	0.5	0.4	0.4	0.4	0.5	0.4	0.4	0.5	0.6	0.5
	PESTICIDES												

Note - Analysis of Total & Faecal coliform started w.e.f.01.08.2016

Water Quality Summary for the period : 2016-2017

Station Name : LUCKNOW (GGXOOQ3) Division : M Ganga Div. II, Lucknow

Local River : Gomti Sub-Division : Gomti Subdivision, Lucknow

	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL	**River Water Summary**			
1	Q (cumec)				
2	EC_GEN (µmho/cm)	12	682	240	457
3	pH_FLD (pH units)	12	8.0	7.5	8
4	pH_GEN (pH units)	12	8.3	7.4	7.9
5	TDS (mg/L)	12	411	148	279
6	Temp (deg C)	12	32.5	16.5	26.6
7	Turb (NTU)	12	4.2	0.4	0.9
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	12.7	0.0	1.1
2	ALK-TOT (mgCaCO3/L)	12	272	86	175
3	B (mg/L)	12	0.50	0.02	0.36
4	Ca (mg/L)	12	50	26	36
5	Cl (mg/L)	12	50.1	14.9	26.2
6	CO3 (mg/L)	12	15.3	0.0	1.3
7	F (mg/L)	12	0.74	0.36	0.57
8	Fe (mg/L)	3	0.3	0.3	0.3
9	HCO3 (mg/L)	12	332	73	211
10	K (mg/L)	12	25.4	7.4	16.1
11	Mg (mg/L)	12	45.3	8.5	27.3
12	Na (mg/L)	12	31.1	11.0	17.1
13	NH3-N (mg N/L)	12	1.15	0.58	0.79
14	NO2+NO3 (mg N/L)	12	1.94	0.77	1.19
15	NO2-N (mgN/L)	12	0.76	0.23	0.48
16	NO3-N (mgN/L)	12	1.18	0.49	0.7
17	P-Tot (mgP/L)	12	1.280	0.029	0.907
18	SO4 (mg/L)	12	49.4	22.0	32.4
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	39.2	2.0	12.4
2	COD (mg/L)	12	48.0	7.0	18.5
3	DO (mg/L)	12	3.9	0.0	1.3
4	DO_SAT% (%)	12	52	0	17
5	FCol-MPN (MPN/100mL)	10	50000	3000	12700
6	Tcol-MPN (MPN/100mL)	10	200000	5000	48800
	TRACE & TOXIC				
1	As (µg/L)	3	8.00	3.34	5.98
2	Cd (µg/L)	2	0.35	0.07	0.21
3	Cr (µg/L)	2	44.38	5.00	24.69
4	Cu (µg/L)	3	12.48	8.06	10.18
5	Ni (µg/L)	2	53.00	21.67	37.34
6	Pb (µg/L)	2	2.00	1.82	1.91
7	Zn (µg/L)	3	11.00	0.31	7.44
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	126	66	90
2	HAR_Total (mgCaCO3/L)	12	264	101	203
3	Na% (%)	12	26	9	15
4	RSC (-)	12	0.6	0.0	0.1
5	SAR (-)	12	1.0	0.4	0.5
	PESTICIDES				

2.5 GOMTI-SULTANPUR

HISTORY SHEET

		Water Year	: **2016-2017**
Site	: **SULTANPUR**	**Code**	: **GGX00H3**
State	: Uttar Pradesh	District	Sultanpur
Basin	: Ganga-Brahm-Meghna Basin	Independent River	: Ganga
Tributary	: Gomti	Sub Tributary	:
Sub-Sub Tributary	:	Local River	: Gomti
Division	: M Ganga Div. III, Varanasi	Sub-Division	: M Ganga Yamuna SD, Allahabad
Drainage Area	: 15481 Sq. Km.	Bank	: Right
Latitude	: 26°17'00"	Longitude	: 82°08'00"
	Opening Date	Closing Date	
Gauge	: 17/9/1969		
Discharge	: 17/9/1969		
Sediment	:		
Water Quality	: 11/5/1994		

Water Quality Datasheet for the period : 2016-2017

Station Name : SULTANPUR (GGX00H3)

Local River : Gomti

River Water Analysis

Division : M Ganga Div. III, Varanasi

Sub-Division : M Ganga Yamuna SD, Allahabad

S.No	Parameters	1./6/2016	01/07/2016	01/08/2016	01/09/2016	01/10/2016	01/11/2016	01/12/2016	02/01/2017	01/02/2017	01/03/2017	01/04/2017	01/05/2017
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)	23.89	42.19	116.0	98.14	158.7	46.66	36.01	41.81	39.32	21.00	29.05	16.61
2	Colour_Cod (-)	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Clear	Clear	Light Brown
3	EC_FLD (µmho/cm)	582	380	192	290	360	478	379	510	488	520	670	740
4	EC_GEN (µmho/cm)	587	385	201	294	369	480	382	516	493	526	674	742
5	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
6	pH_FLD (pH units)	8.1	8.2	7.9	7.9	8.1	9.0	7.6	8.2	8.1	8.2	8.3	8.4
7	pH_GEN (pH units)	8.1	8.1	7.7	7.8	7.9	7.9	7.6	8.1	8.0	8.1	8.2	8.3
8	TDS (mg/L)	350	240	126	144	184	240	251	260	247	262	338	423
9	Temp (deg C)	32.0	32.0	29.0	32.0	30.0	24.0	21.0	17.0	18.0	21.0	28.0	28.5
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	192	112	64	96	88	90	93	72	86	93	102	140
3	B (mg/L)	0.04	0.03	0.02	0.03	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
4	Ca (mg/L)	74	53	40	42	40	41	43	44	45	47	47	36
5	Cl (mg/L)	48.0	40.0	38.0	44.0	40.0	36.0	42.0	40.0	44.0	56.0	40.0	42.0
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.49	0.42	0.25	0.29	0.28	0.29	0.26	0.28	0.29	0.29	0.29	0.32
8	Fe (mg/L)	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.3
9	HCO3 (mg/L)	234	137	78	117	107	110	113	88	104	113	125	171
10	K (mg/L)	12.0	11.0	10.0	11.0	10.0	9.0	10.0	9.0	9.0	11.0	10.0	16.0
11	Mg (mg/L)	11.9	11.4	10.8	14.7	13.6	14.5	16.7	17.5	18.0	19.6	19.6	16.5
12	Na (mg/L)	29.0	27.0	22.0	26.0	23.0	20.0	26.0	23.0	25.0	28.0	35.0	30.0
13	NH3-N (mg N/L)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
14	NO2+NO3 (mg N/L)	0.32	0.30	0.29	0.27	0.26	0.27	0.25	0.26	0.27	0.28	0.29	0.30
15	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
16	NO3-N (mgN/L)	0.32	0.30	0.29	0.27	0.26	0.27	0.25	0.26	0.27	0.28	0.29	0.30
17	P-Tot (mgP/L)	0.170	0.162	0.154	0.166	0.015	0.144	0.136	0.148	0.154	0.162	0.166	0.158
18	SiO2 (mg/L)	8.6	7.9	7.4	9.2	8.8	8.5	8.9	8.2	8.6	8.5	8.8	9.0
19	SO4 (mg/L)	30.0	30.0	26.0	31.0	30.0	32.0	36.0	28.0	32.0	37.0	39.0	51.0

Water Quality Datasheet for the period : 2016-2017

Station Name : SULTANPUR (GGX00H3)

Local River : Gomti

River Water Analysis

Division : M Ganga Div. III, Varanasi

Sub-Division : M Ganga Yamuna SD, Allahabad

S.No	Parameters	1./6/2016	01/07/2016	01/08/2016	01/09/2016	01/10/2016	01/11/2016	01/12/2016	02/01/2017	01/02/2017	01/03/2017	01/04/2017	01/05/2017
		A	A	A	A	A	A	A	A	A	A	A	A
	BIOLOGICAL/BACTERIOLOGICAL												
1	BOD3-27 (mg/L)	3.2	2.9	2.5	2.8	2.2	4.3	3.2	2.6	2.2	3.6	4.2	5.9
2	COD (mg/L)	10.7	18.0	5.9	13.3	23.2	22.5	20.6	20.4	18.6	26.0	31.1	32.7
3	DO (mg/L)	7.9	7.8	5.9	6.5	5.8	8.9	7.5	5.7	6.8	5.5	6.9	4.9
4	DO_SAT% (%)	108	107	76	89	76	106	85	59	71	62	89	63
5	FCol-MPN (MPN/100mL)	2300	2000	1400	1100	1500	1400	1100	900	1000	1600	1900	2200
6	Tcol-MPN (MPN/100mL)	4800	4500	3400	3100	3700	3200	2700	3000	4000	4300	4700	5000
	TRACE & TOXIC												
1	As (µg/L)												2.0
2	Cd (µg/L)												1.5
3	Cr (µg/L)												4.0
4	Ni (µg/L)												5.0
5	Pb (µg/L)												2.0
6	Zn (µg/L)												3.0
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	185	133	101	106	99	101	107	110	112	117	117	90
2	HAR_Total (mgCaCO3/L)	235	181	146	167	156	162	176	183	187	199	199	159
3	Na% (%)	20	23	23	24	23	20	23	21	22	22	27	27
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.8	0.9	0.8	0.9	0.8	0.7	0.9	0.7	0.8	0.9	1.1	1.0
	PESTICIDES												

21

Water Quality Datasheet for the period : 2016-2017

Station Name : SULTANPUR (GGX00H3)

Local River : Gomti

Well Water Analysis

Division : M Ganga Div. III, Varanasi

Sub-Division : M Ganga Yamuna SD, Allahabad

S.No	Parameters	01/11/2016 B	01/05/2017 B
	PHYSICAL		
1	Colour_Cod (-)	Clear	Light Brown
2	EC_FLD (µmho/cm)	1654	1830
3	EC_GEN (µmho/cm)	1662	1838
4	Odour_Code (-)	odour free	odour free
5	pH_FLD (pH units)	7.4	7.9
6	pH_GEN (pH units)	7.3	7.9
7	TDS (mg/L)	830	1040
8	Temp (deg C)	22.5	27.0
	CHEMICAL		
1	Alk-Phen (mgCaCO3/L)	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	392	424
3	B (mg/L)	0.00	0.00
4	Ca (mg/L)	77	79
5	Cl (mg/L)	94.0	122.0
6	CO3 (mg/L)	0.0	0.0
7	F (mg/L)	0.26	0.28
8	Fe (mg/L)	0.3	0.2
9	HCO3 (mg/L)	478	517
10	K (mg/L)	15.0	80.0
11	Mg (mg/L)	71.7	67.1
12	Na (mg/L)	58.0	75.0
13	NH3-N (mg N/L)	0.05	0.05
14	NO2+NO3 (mg N/L)	3.99	3.62
15	NO2-N (mgN/L)	0.00	0.00
16	NO3-N (mgN/L)	3.99	3.62
17	P-Tot (mgP/L)	0.132	0.156
18	SiO2 (mg/L)	9.1	9.7
19	SO4 (mg/L)	52.0	60.0
	BIOLOGICAL/BACTERIOLOGICAL		
	TRACE & TOXIC		
	CHEMICAL INDICES		
1	HAR_Ca (mgCaCO3/L)	194	198
2	HAR_Total (mgCaCO3/L)	492	477
3	Na% (%)	20	22
4	RSC (-)	0.0	0.0
5	SAR (-)	1.1	1.5
	PESTICIDES		

Water Quality Summary for the period : 2016-2017

Station Name : SULTANPUR (GGX00H3)

Local River : Gomti

Division : M Ganga Div. III, Varanasi

Sub-Division : M Ganga Yamuna SD, Allahabad

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)	12	158.7	16.61	55.78
2	EC_FLD (µmho/cm)	12	740	192	466
3	EC_GEN (µmho/cm)	12	742	201	471
4	pH_FLD (pH units)	12	9.0	7.6	8.2
5	pH_GEN (pH units)	12	8.3	7.6	8.0
6	TDS (mg/L)	12	423	126	255
7	Temp (deg C)	12	32.0	17.0	26.0
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	12	192	64	102
3	B (mg/L)	12	0.04	0.02	0.03
4	Ca (mg/L)	12	74	36	46
5	Cl (mg/L)	12	56.0	36.0	42.5
6	CO3 (mg/L)	12	0.0	0.0	0.0
7	F (mg/L)	12	0.49	0.25	0.31
8	Fe (mg/L)	12	0.3	0.2	0.3
9	HCO3 (mg/L)	12	234	78	125
10	K (mg/L)	12	16.0	9.0	10.7
11	Mg (mg/L)	12	19.6	10.8	15.4
12	Na (mg/L)	12	35.0	20.0	26.2
13	NH3-N (mg N/L)	12	0.05	0.05	0.05
14	NO2+NO3 (mg N/L)	12	0.32	0.25	0.28
15	NO2-N (mgN/L)	12	0.00	0.00	0.0
16	NO3-N (mgN/L)	12	0.32	0.25	0.28
17	P-Tot (mgP/L)	12	0.170	0.015	0.145
18	SiO2 (mg/L)	12	9.2	7.4	8.5
19	SO4 (mg/L)	12	51.0	26.0	33.5
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	5.9	2.2	3.3
2	COD (mg/L)	12	32.7	5.9	20.3
3	DO (mg/L)	12	8.9	4.9	6.7
4	DO_SAT% (%)	12	108	59	83
5	FCol-MPN (MPN/100mL)	12	2300	900	1533
6	Tcol-MPN (MPN/100mL)	12	5000	2700	3867
	TRACE & TOXIC				
1	As (µg/L)	1	2.0	2.0	2.0
2	Cd (µg/L)	1	1.5	1.5	1.5
3	Cr (µg/L)	1	4.0	4.0	4.0
4	Ni (µg/L)	1	5.0	5.0	5.0
5	Pb (µg/L)	1	2.0	2.0	2.0
6	Zn (µg/L)	1	3.0	3.0	3.0
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	185	90	115
2	HAR_Total (mgCaCO3/L)	12	235	146	179
3	Na% (%)	12	27	20	23
4	RSC (-)	12	0.0	0.0	0.0
5	SAR (-)	12	1.1	0.7	0.9
	PESTICIDES				

Water Quality Summary for the period : 2016-2017

Station Name : SULTANPUR (GGX00H3) **Division : M Ganga Div. III, Varanasi**

Local River : Gomti **Sub-Division : M Ganga Yamuna SD, Allahabad**

Well Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	EC_FLD (µmho/cm)	2	1830	1654	1742
2	EC_GEN (µmho/cm)	2	1838	1662	1750
3	pH_FLD (pH units)	2	7.9	7.4	7.7
4	pH_GEN (pH units)	2	7.9	7.3	7.6
5	TDS (mg/L)	2	1040	830	935
6	Temp (deg C)	2	27.0	22.5	24.8
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	2	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	2	424	392	408
3	B (mg/L)	2	0.00	0.00	0.00
4	Ca (mg/L)	2	79	77	78
5	Cl (mg/L)	2	122.0	94.0	108.0
6	CO3 (mg/L)	2	0.0	0.0	0.0
7	F (mg/L)	2	0.28	0.26	0.27
8	Fe (mg/L)	2	0.3	0.2	0.3
9	HCO3 (mg/L)	2	517	478	498
10	K (mg/L)	2	80.0	15.0	47.5
11	Mg (mg/L)	2	71.7	67.1	69.4
12	Na (mg/L)	2	75.0	58.0	66.5
13	NH3-N (mg N/L)	2	0.05	0.05	0.05
14	NO2+NO3 (mg N/L)	2	3.99	3.62	3.80
15	NO2-N (mgN/L)	2	0.00	0.00	0.00
16	NO3-N (mgN/L)	2	3.99	3.62	3.80
17	P-Tot (mgP/L)	2	0.156	0.132	0.144
18	SiO2 (mg/L)	2	9.7	9.1	9.4
19	SO4 (mg/L)	2	60.0	52.0	56.0
	BIOLOGICAL/BACTERIOLOGICAL				
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	2	198	194	196
2	HAR_Total (mgCaCO3/L)	2	492	477	485
3	Na% (%)	2	22	20	21
4	RSC (-)	2	0.0	0.0	0.0
5	SAR (-)	2	1.5	1.1	1.3
	PESTICIDES				

Water Quality Seasonal Average for the period: 2007-2017

Station Name : SULTANPUR (GGX00H3)
Local River : Gomti

Well Water

Division : M Ganga Div. III, Varanasi
Sub-Division : M Ganga Yamuna SD, Allahabad

S.No	Parameters	Flood Jun - Oct									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL										
1	EC_FLD (µmho/cm)	903	1186	712	615						
2	EC_GEN (µmho/cm)	907	1175	701	622						
3	pH_FLD (pH units)	8.4	7.8	8.1	8.4						
4	pH_GEN (pH units)	8.4	8.4	8.2	8.3						
5	TDS (mg/L)			413	313						
6	Temp (deg C)	28.1	28.9	27.9	28.6						
7	Turb (NTU)			0.2	0.1						
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	141.2	19.9	15.5	15.9						
2	ALK-TOT (mgCaCO3/L)	740	412	278	226						
3	B (mg/L)	0.10	0.00	0.04	0.02						
4	Ca (mg/L)	70	60	59	31						
5	Cl (mg/L)	56.4	94.3	97.4	42.4						
6	CO3 (mg/L)	170.1	24.0	18.7	19.2						
7	F (mg/L)	0.44	0.55	0.79	0.76						
8	Fe (mg/L)	0.3	0.1	0.2	0.3						
9	HCO3 (mg/L)	355	453	301	236						
10	K (mg/L)	25.8	8.8	13.3	6.8						
11	Mg (mg/L)	42.2	45.9	25.6	26.8						
12	Na (mg/L)	118.4	224.1	84.3	48.4						
13	NH3-N (mg N/L)	0.05	0.05	0.05	0.05						
14	NO2+NO3 (mg N/L)	2.80	2.99	1.15	5.18						
15	NO2-N (mgN/L)	0.04	0.02	0.04	0.00						
16	NO3-N (mgN/L)	2.76	2.98	1.11	5.18						
17	Org-N (mgN/L)		0.0	0.0	0.0						
18	P-Tot (mgP/L)	0.007	0.004	0.023	0.044						
19	SiO2 (mg/L)	11.7	9.6	7.9	13.6						
20	SO4 (mg/L)	60.4	56.4	24.5	21.4						

25

Water Quality Seasonal Average for the period: 2007-2017

Station Name : SULTANPUR (GGX00H3) | **Division : M Ganga Div. III, Varanasi**

Local River : Gomti | **Well Water** | **Sub-Division : M Ganga Yamuna SD, Allahabad**

S.No	Parameters	Flood									
		Jun - Oct									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	BIOLOGICAL/BACTERIOLOGICAL										
1	COD (mg/L)			1.0							
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	174	151	148	77						
2	HAR_Total (mgCaCO3/L)	350	342	255	189						
3	Na% (%)	41	58	40	34						
4	RSC (-)	4.7	1.5	0.6	0.8						
5	SAR (-)	2.8	5.3	2.3	1.5						
	PESTICIDES										

Water Quality Seasonal Average for the period: 2007-2017

Station Name : SULTANPUR (GGX00H3)
Local River : Gomti

Well Water

Division : M Ganga Div. III, Varanasi
Sub-Division : M Ganga Yamuna SD, Allahabad

S.No	Parameters	Winter									
		Nov - Feb									
		2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL										
1	EC_FLD (µmho/cm)	867	1158	801	707	820				1200	1654
2	EC_GEN (µmho/cm)	870	1145	809	714	699				1195	1662
3	pH_FLD (pH units)	8.7	7.8	8.1	8.2	7.5				7.1	7.4
4	pH_GEN (pH units)	8.7	8.5	8.2	8.1	7.8				7.8	7.3
5	TDS (mg/L)			468	367	383				720	830
6	Temp (deg C)	29.8	27.6	26.6	26.2	25.5				26.5	22.5
7	Turb (NTU)			0.1	0.1						
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	39.8	19.9	0.0	0.0	0.0				0.0	0.0
2	ALK-TOT (mgCaCO3/L)	442	409	234	185	188				414	392
3	B (mg/L)	0.00	0.06	0.00	0.00	0.04				0.02	0.00
4	Ca (mg/L)	67	58	56	33	32				67	77
5	Cl (mg/L)	63.0	132.6	88.0	46.5	58.0				120.0	94.0
6	CO3 (mg/L)	48.0	24.0	0.0	0.0	0.0				0.0	0.0
7	F (mg/L)	0.20	0.48	0.49	0.46	0.29				0.48	0.26
8	Fe (mg/L)	0.3	0.0	0.2	0.2	0.2				0.2	0.3
9	HCO3 (mg/L)	442	450	286	226	229				505	478
10	K (mg/L)	9.0	9.0	8.2	7.5	8.0				10.0	15.0
11	Mg (mg/L)	54.1	42.6	28.7	34.2	28.2				61.5	71.7
12	Na (mg/L)	119.0	188.4	75.2	82.8	45.0				75.0	58.0
13	NH3-N (mg N/L)	0.05	0.05	0.05	0.05	0.05				0.05	0.05
14	NO2+NO3 (mg N/L)	1.78	2.07	1.83	3.98	3.25				2.24	3.99
15	NO2-N (mgN/L)	0.03	0.00	0.03	0.00	0.00				0.00	0.00
16	NO3-N (mgN/L)	1.65	2.07	1.81	3.98	3.25				2.24	3.99
17	Org-N (mgN/L)			0.0	0.0						
18	P-Tot (mgP/L)	0.021	0.020	0.017	0.166	0.150				0.004	0.132
19	SiO2 (mg/L)	9.3	7.5	23.5	9.3	8.1				7.2	9.1
20	SO4 (mg/L)	60.0	38.7	43.8	34.0	42.0				32.0	52.0

Water Quality Seasonal Average for the period: 2007-2017

Station Name : SULTANPUR (GGX00H3)

Local River : Gomti

Well Water

Division : M Ganga Div. III, Varanasi

Sub-Division : M Ganga Yamuna SD, Allahabad

S.No	Parameters	Winter									
		Nov - Feb									
		2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	BIOLOGICAL/BACTERIOLOGICAL										
1	COD (mg/L)			3.2							
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	167	146	141	82	80				168	194
2	HAR_Total (mgCaCO3/L)	392	323	261	224	197				425	492
3	Na% (%)	39	55	38	44	32				27	20
4	RSC (-)	1.1	1.8	0.0	0.0	0.0				0.0	0.0
5	SAR (-)	2.6	4.6	2.0	2.4	1.4				1.6	1.1
	PESTICIDES										

Water Quality Seasonal Average for the period: 2007-2017

Station Name : SULTANPUR (GGX00H3)
Local River : Gomti

Well Water

Division : M Ganga Div. III, Varanasi
Sub-Division : M Ganga Yamuna SD, Allahabad

S.No	Parameters	Summer Mar - May									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL										
1	EC_FLD (µmho/cm)	1109	727	939	360	710				2050	1830
2	EC_GEN (µmho/cm)	1100	718	919	692	700				2030	1838
3	pH_FLD (pH units)	8.4	7.7	8.2	7.6	7.6				7.5	7.9
4	pH_GEN (pH units)	8.5	8.5	8.3	7.8	7.7				7.6	7.9
5	TDS (mg/L)			442	352	407				1220	1040
6	Temp (deg C)	28.0	27.5	25.8	24.5	26.0				25.0	27.0
7	Turb (NTU)			0.1	0.1						
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	26.6	19.9	51.8	19.9	0.0				0.0	0.0
2	ALK-TOT (mgCaCO3/L)	420	387	334	260	216				604	424
3	B (mg/L)		0.05	0.00	0.00	0.02				0.00	0.00
4	Ca (mg/L)	66	66	70	35	46				114	79
5	Cl (mg/L)	61.3	218.6	87.4	60.0	58.0				148.0	122.0
6	CO3 (mg/L)	32.0	24.0	62.4	24.0	0.0				0.0	0.0
7	F (mg/L)		0.64	0.69	0.38	0.37				0.57	0.28
8	Fe (mg/L)		0.1	0.3	0.2	0.2				0.4	0.2
9	HCO3 (mg/L)	447	423	281	268	264				737	517
10	K (mg/L)	7.3	13.4	7.3	9.0	9.0				16.0	80.0
11	Mg (mg/L)	51.5	32.1	32.5	51.8	35.6				99.9	67.1
12	Na (mg/L)	247.0	163.2	52.0	84.0	45.0				78.0	75.0
13	NH3-N (mg N/L)		0.05	0.05	0.05	0.05				0.00	0.05
14	NO2+NO3 (mg N/L)		1.17	5.82	3.89	3.72				5.12	3.62
15	NO2-N (mgN/L)		0.00	0.00	0.00	0.00				0.00	0.00
16	NO3-N (mgN/L)		1.17	5.82	3.89	3.72				5.12	3.62
17	Org-N (mgN/L)			0.0	0.0						
18	P-Tot (mgP/L)		0.027	0.001	0.224	0.185				0.316	0.156
19	SiO2 (mg/L)		8.8	14.0	8.2	8.3				10.8	9.7
20	SO4 (mg/L)	57.7	18.9	38.6	38.0	46.0				84.0	60.0

Water Quality Seasonal Average for the period: 2007-2017

Station Name : SULTANPUR (GGX00H3)
Local River : Gomti

Well Water

Division : M Ganga Div. III, Varanasi
Sub-Division : M Ganga Yamuna SD, Allahabad

S.No	Parameters	Summer									
		Mar - May									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	BIOLOGICAL/BACTERIOLOGICAL										
1	COD (mg/L)			6.1							
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	165	164	175	88	114				285	198
2	HAR_Total (mgCaCO3/L)	380	298	310	304	262				701	477
3	Na% (%)	58	53	24	37	26				19	22
4	RSC (-)	0.8	1.8	0.9	0.0	0.0				0.0	0.0
5	SAR (-)	5.5	4.1	1.3	2.1	1.2				1.3	1.5
	PESTICIDES										

2.6 GOMTI-MAIGHAT

HISTORY SHEET

		Water Year	**: 2016-2017**
Site	**: MAIGHAT**	**Code**	**: GGXOOB4**
State	: Uttar Pradesh	District	Jaunpur
Basin	: Ganga-Brahm-Meghna Basin	Independent River	: Ganga
Tributary	: Gomti	Sub Tributary	: Sai
Sub-Sub Tributary	:	Local River	: Gomti
Division	: M Ganga Div. III, Varanasi	Sub-Division	: M Ganga - C Sarju SD, Varanasi
Drainage Area	: 30042 Sq. Km.	Bank	: Left
Latitude	: 25°38'17"	Longitude	: 82°51'47"
	Opening Date	Closing Date	
Gauge	: 7/9/1959		
Discharge	: 7/9/1959		
Sediment	: 19/8/1961		
Water Quality	: 9/6/1963		

Water Quality Datasheet for the period : 2016-2017

Station Name : MAIGHAT (GGXOOB4)
Local River : Gomti

River Water Analysis

Division : M Ganga Div. III, Varanasi
Sub-Division : M Ganga - C Sarju SD, Varanasi

S.No	Parameters	01/06/2016	01/07/2016	01/08/2016	01/09/2016	01/10/2016	01/11/2016	01/12/2016	02/01/2017	01/02/2017	01/03/2017	01/04/2017	01/05/2017
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)	23.12	31.48	168.2	239.5	323.8	121.2	74.98	50.68	63.67	26.38	48.91	27.73
2	Colour_Cod (-)	Light Brown	Light Brown	Brown	Brown	Brown	Light Brown	Light Brown	Light Brown	Light Brown	Clear	Clear	Clear
3	EC_FLD (µmho/cm)	430	399	350	262	337	406	455	581	540	610	540	580
4	EC_GEN (µmho/cm)	437	406	355	267	412	412	460	588	544	617	549	587
5	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
6	pH_FLD (pH units)	8.3	8.2	8.1	8.0	8.1	7.8	7.9	7.8	8.1	7.9	8.2	8.0
7	pH_GEN (pH units)	8.2	8.1	8.0	7.9	7.8	7.8	7.8	7.7	8.0	7.9	8.1	8.0
8	TDS (mg/L)	270	245	210	134	172	205	262	294	271	309	268	332
9	Temp (deg C)	32.0	31.5	31.0	31.0	30.0	30.0	23.5	14.0	16.5	22.0	27.5	30.5
10	Turb (NTU)	2.0	4.6	4.7	3.6	2.0	1.7	1.0	0.8	0.4	0.8	0.4	0.6
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	212	158	94	102	97	100	108	114	116	124	112	152
3	B (mg/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
4	Ca (mg/L)	45	59	47	46	46	44	45	46	48	48	44	38
5	Cl (mg/L)	60.0	42.0	36.0	40.0	36.0	38.0	42.0	44.0	46.0	50.0	24.0	28.0
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.54	0.41	0.37	0.35	0.36	0.37	0.32	0.29	0.31	0.34	0.31	0.36
8	Fe (mg/L)	0.2	0.2	0.2	0.2	162.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2
9	HCO3 (mg/L)	259	193	115	125	118	122	132	139	142	151	137	185
10	K (mg/L)	13.0	8.0	8.0	10.0	10.0	9.0	10.0	10.0	10.0	12.0	8.0	7.0
11	Mg (mg/L)	42.3	22.3	17.9	16.5	17.5	17.1	18.6	19.8	21.3	21.3	20.4	17.5
12	Na (mg/L)	36.0	30.0	21.0	25.0	22.0	20.0	26.0	30.0	28.0	30.0	22.0	20.0
13	NH3-N (mg N/L)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
14	NO2+NO3 (mg N/L)	0.20	0.18	0.17	0.19	0.17	0.18	0.19	0.20	0.20	0.20	0.17	0.21
15	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
16	NO3-N (mgN/L)	0.20	0.18	0.17	0.19	0.17	0.18	0.19	0.20	0.20	0.20	0.17	0.21
17	P-Tot (mgP/L)	0.192	0.158	0.132	0.162	0.174	0.170	0.184	0.192	0.204	0.200	0.174	0.196
18	SiO2 (mg/L)	9.8	9.2	8.1	9.7	10.2	9.8	10.4	10.7	10.9	10.5	8.6	9.5
19	SO4 (mg/L)	40.0	28.0	22.0	30.0	26.0	24.0	32.0	35.0	38.0	34.0	26.0	33.0

Water Quality Datasheet for the period : 2016-2017

Station Name : MAIGHAT (GGXOOB4)

Division : M Ganga Div. III, Varanasi

Local River : Gomti

River Water Analysis

Sub-Division : M Ganga - C Sarju SD, Varanasi

S.No	Parameters	01/06/2016	01/07/2016	01/08/2016	01/09/2016	01/10/2016	01/11/2016	01/12/2016	02/01/2017	01/02/2017	01/03/2017	01/04/2017	01/05/2017
		A	A	A	A	A	A	A	A	A	A	A	A
	BIOLOGICAL/BACTERIOLOGICAL												
1	BOD3-27 (mg/L)	4.0	3.7	2.2	1.8	1.8	2.6	3.0	2.8	2.2	2.4	3.2	3.1
2	COD (mg/L)	21.3	8.9	11.5	12.2	16.4	20.9	17.6	20.1	25.2	25.8	29.2	27.8
3	DO (mg/L)	6.4	7.7	6.1	6.7	5.9	8.3	7.0	6.3	7.7	6.7	5.1	6.1
4	DO_SAT% (%)	87	104	82	90	79	110	81	61	78	77	65	81
5	FCol-MPN (MPN/100mL)	2900	2400	1200	900	1100	1000	800	900	1000	1100	1400	1200
6	Tcol-MPN (MPN/100mL)	5200	5000	3500	2600	2800	2400	2100	2500	3000	3400	4000	3500
	TRACE & TOXIC												
1	As (µg/L)												6.0
2	Cd (µg/L)												2.5
3	Cr (µg/L)												7.5
4	Ni (µg/L)												7.0
5	Pb (µg/L)												6.0
6	Zn (µg/L)												6.5
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	111	148	117	116	114	111	113	116	120	120	109	95
2	HAR_Total (mgCaCO3/L)	288	241	191	185	187	182	190	199	208	208	194	168
3	Na% (%)	21	21	19	22	19	18	22	24	22	23	19	20
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	0.8	0.7	0.8	0.7	0.6	0.8	0.9	0.8	0.9	0.7	0.7
	PESTICIDES												

Water Quality Datasheet for the period : 2016-2017

Station Name : MAIGHAT (GGXOOB4)

Local River : Gomti **Well Water Analysis** **Division : M Ganga Div. III, Varanasi**

Sub Division : M Ganga - C Sarju SD, Varanasi

S.No	Parameters	01/11/2016	01/05/2017
		B	B
	PHYSICAL		
1	Colour_Cod (-)	Clear	Clear
2	EC_FLD (µmho/cm)	1615	1670
3	EC_GEN (µmho/cm)	1620	1673
4	Odour_Code (-)	odour free	odour free
5	pH_FLD (pH units)	7.8	8.0
6	pH_GEN (pH units)	7.7	7.9
7	TDS (mg/L)	802	945
8	Temp (deg C)	28.0	26.5
	CHEMICAL		
1	Alk-Phen (mgCaCO3/L)	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	232	244
3	B (mg/L)	0.00	0.04
4	Ca (mg/L)	60	55
5	Cl (mg/L)	102.0	98.0
6	CO3 (mg/L)	0.0	0.0
7	F (mg/L)	0.49	0.45
8	Fe (mg/L)	0.3	0.4
9	HCO3 (mg/L)	283	298
10	K (mg/L)	13.0	18.0
11	Mg (mg/L)	33.0	36.1
12	Na (mg/L)	66.0	58.0
13	NH3-N (mg N/L)	0.05	0.05
14	NO2+NO3 (mg N/L)	2.76	2.51
15	NO2-N (mgN/L)	0.00	0.00
16	NO3-N (mgN/L)	2.76	2.51
17	P-Tot (mgP/L)	0.128	0.135
18	SiO2 (mg/L)	9.5	10.0
19	SO4 (mg/L)	96.0	83.0
	BIOLOGICAL/BACTERIOLOGICAL		
	TRACE & TOXIC		
	CHEMICAL INDICES		
1	HAR_Ca (mgCaCO3/L)	151	138
2	HAR_Total (mgCaCO3/L)	288	288
3	Na% (%)	32	29
4	RSC (-)	0.0	0.0
5	SAR (-)	1.7	1.5
	PESTICIDES		

Water Quality Summary for the period : 2016-2017

Station Name : MAIGHAT (GGXOOB4)
Local River : Gomti

Division : M Ganga Div. III, Varanasi
Sub-Division : M Ganga - C Sarju SD, Varanasi

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)	365	633.3	19.04	110.7
2	EC_FLD (µmho/cm)	12	610	262	458
3	EC_GEN (µmho/cm)	12	617	267	470
4	pH_FLD (pH units)	12	8.3	7.8	8
5	pH_GEN (pH units)	12	8.2	7.7	7.9
6	TDS (mg/L)	12	332	134	248
7	Temp (deg C)	12	32.0	14.0	26.6
8	Turb (NTU)	12	4.7	0.4	1.9
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	0.0	0.0	0
2	ALK-TOT (mgCaCO3/L)	12	212	94	124
3	B (mg/L)	12	0.00	0.00	0
4	Ca (mg/L)	12	59	38	46
5	Cl (mg/L)	12	60.0	24.0	40.5
6	CO3 (mg/L)	12	0.0	0.0	0
7	F (mg/L)	12	0.54	0.29	0.36
8	Fe (mg/L)	12	162.0	0.2	13.7
9	HCO3 (mg/L)	12	259	115	151
10	K (mg/L)	12	13.0	7.0	9.6
11	Mg (mg/L)	12	42.3	16.5	21
12	Na (mg/L)	12	36.0	20.0	25.8
13	NH3-N (mg N/L)	12	0.05	0.05	0.05
14	NO2+NO3 (mg N/L)	12	0.21	0.17	0.19
15	NO2-N (mgN/L)	12	0.00	0.00	0
16	NO3-N (mgN/L)	12	0.21	0.17	0.19
17	P-Tot (mgP/L)	12	0.204	0.132	0.178
18	SiO2 (mg/L)	12	10.9	8.1	9.8
19	SO4 (mg/L)	12	40.0	22.0	30.7
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	4.0	1.8	2.7
2	COD (mg/L)	12	29.2	8.9	19.7
3	DO (mg/L)	12	8.3	5.1	6.7
4	DO_SAT% (%)	12	110	61	83
5	FCol-MPN (MPN/100mL)	12	2900	800	1325
6	Tcol-MPN (MPN/100mL)	12	5200	2100	3333
	TRACE & TOXIC				
1	As (µg/L)	1	6.0	6.0	6
2	Cd (µg/L)	1	2.5	2.5	2.5
3	Cr (µg/L)	1	7.5	7.5	7.5
4	Ni (µg/L)	1	7.0	7.0	7
5	Pb (µg/L)	1	6.0	6.0	6
6	Zn (µg/L)	1	6.5	6.5	6.5
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	148	95	116
2	HAR_Total (mgCaCO3/L)	12	288	168	203
3	Na% (%)	12	24	18	21
4	RSC (-)	12	0.0	0.0	0
5	SAR (-)	12	0.9	0.6	0.8
	PESTICIDES				

Water Quality Summary for the period : 2016-2017

Station Name : MAIGHAT (GGXOOB4) **Division : M Ganga Div. III, Varanasi**

Local River : Gomti **Sub-Division : M Ganga - C Sarju SD, Varanasi**

Well Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	EC_FLD (µmho/cm)	2	1670	1615	1643
2	EC_GEN (µmho/cm)	2	1673	1620	1647
3	pH_FLD (pH units)	2	8.0	7.8	7.9
4	pH_GEN (pH units)	2	7.9	7.7	7.8
5	TDS (mg/L)	2	945	802	874
6	Temp (deg C)	2	28.0	26.5	27.3
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	2	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	2	244	232	238
3	B (mg/L)	2	0.04	0.00	0.02
4	Ca (mg/L)	2	60	55	58
5	Cl (mg/L)	2	102.0	98.0	100.0
6	CO3 (mg/L)	2	0.0	0.0	0.0
7	F (mg/L)	2	0.49	0.45	0.47
8	Fe (mg/L)	2	0.4	0.3	0.3
9	HCO3 (mg/L)	2	298	283	290
10	K (mg/L)	2	18.0	13.0	15.5
11	Mg (mg/L)	2	36.1	33.0	34.6
12	Na (mg/L)	2	66.0	58.0	62.0
13	NH3-N (mg N/L)	2	0.05	0.05	0.05
14	NO2+NO3 (mg N/L)	2	2.76	2.51	2.63
15	NO2-N (mgN/L)	2	0.00	0.00	0.00
16	NO3-N (mgN/L)	2	2.76	2.51	2.63
17	P-Tot (mgP/L)	2	0.135	0.128	0.132
18	SiO2 (mg/L)	2	10.0	9.5	9.7
19	SO4 (mg/L)	2	96.0	83.0	89.5
	BIOLOGICAL/BACTERIOLOGICAL				
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	2	151	138	144
2	HAR_Total (mgCaCO3/L)	2	288	288	288
3	Na% (%)	2	32	29	31
4	RSC (-)	2	0.0	0.0	0.0
5	SAR (-)	2	1.7	1.5	1.6
	PESTICIDES				

Water Quality Seasonal Average for the period: 2007-2017

Station Name : MAIGHAT (GGXOOB4)
Local River : Gomti

Well Water

Division : M Ganga Div. III, Varanasi
Sub-Division : M Ganga - C Sarju SD, Varanasi

S.No	Parameters	Flood									
		Jun - Oct									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL										
1	EC_FLD (µmho/cm)	1152	1312	885	952						
2	EC_GEN (µmho/cm)	1136	1302	926	944						
3	pH_FLD (pH units)	7.9	7.6	8.0	8.0						
4	pH_GEN (pH units)	8.5	8.4	8.1	8.3						
5	TDS (mg/L)			564	481						
6	Temp (deg C)	26.9	26.9	27.0	27.5						
7	Turb (NTU)			0.1							
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	68.1	41.4	4.0	8.0						
2	ALK-TOT (mgCaCO3/L)	575	307	300	169						
3	B (mg/L)	0.08	0.00	0.00	0.00						
4	Ca (mg/L)	46	56	40	27						
5	Cl (mg/L)	67.0	223.3	107.6	72.0						
6	CO3 (mg/L)	82.1	49.9	4.8	9.6						
7	F (mg/L)	0.65	0.50	0.47	0.65						
8	Fe (mg/L)	0.2	0.1	0.1	0.1						
9	HCO3 (mg/L)	377	274	356	186						
10	K (mg/L)	8.4	10.7	9.7	6.8						
11	Mg (mg/L)	46.8	32.7	43.1	27.6						
12	Na (mg/L)	256.4	162.9	100.4	80.0						
13	NH3-N (mg N/L)	0.05	0.05	0.05	0.05						
14	NO2+NO3 (mg N/L)	3.30	3.27	3.64	2.17						
15	NO2-N (mgN/L)	0.02	0.01	0.07	0.02						
16	NO3-N (mgN/L)	3.28	3.26	3.57	2.15						
17	Org-N (mgN/L)			0.0	0.0						
18	P-Tot (mgP/L)	0.008	0.013	0.025	0.105						
19	SiO2 (mg/L)	12.4	11.0	7.6	11.6						
20	SO4 (mg/L)	49.8	39.2	74.1	66.4						

Water Quality Seasonal Average for the period: 2007-2017

Station Name : MAIGHAT (GGXOOB4)

Local River : Gomti

Division : M Ganga Div. III, Varanasi

Sub-Division : M Ganga - C Sarju SD, Varanasi

Well Water

S.No	Parameters	Flood									
		Jun - Oct									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	BIOLOGICAL/BACTERIOLOGICAL										
1	COD (mg/L)			1.0							
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	114	140	101	68						
2	HAR_Total (mgCaCO3/L)	309	277	280	183						
3	Na% (%)	64	55	43	48						
4	RSC (-)	2.8	0.7	0.5	0.1						
5	SAR (-)	6.4	4.3	2.6	2.6						
	PESTICIDES										

Water Quality Seasonal Average for the period: 2007-2017

Station Name : MAIGHAT (GGXOOB4)
Local River : Gomti

Well Water

Division : M Ganga Div. III, Varanasi
Sub-Division : M Ganga - C Sarju SD, Varanasi

S.No	Parameters	Winter Nov - Feb									
		2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL										
1	EC_FLD (µmho/cm)	1088	1273	853	1080	1340	1175	1000	1330	1570	1615
2	EC_GEN (µmho/cm)	1084	1261	848	1075	1355	1170	990	1310	1555	1620
3	pH_FLD (pH units)	8.5	7.7	7.9	8.0	8.2	7.8	7.8	8.0	7.6	7.8
4	pH_GEN (pH units)	8.6	8.3	8.1	8.2	7.9	8.0	8.0	7.8	7.7	7.7
5	TDS (mg/L)			443	553	811	730	698	788	934	802
6	Temp (deg C)	26.6	26.0	26.6	26.4	23.0	26.5	26.0	26.5	16.5	28.0
7	Turb (NTU)			0.1							
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	72.6	63.6	7.0	6.6	0.0	0.0	0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	457	326	289	176	164	184	169	168	250	232
3	B (mg/L)	0.13	0.00	0.00	0.01	0.03	0.01	0.02	0.03	0.03	0.00
4	Ca (mg/L)	61	45	41	32	29	42	45	40	53	60
5	Cl (mg/L)	73.0	225.6	103.8	67.0	126.0	92.0	122.0	90.0	104.0	102.0
6	CO3 (mg/L)	87.5	76.7	8.4	8.0	0.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.34	0.40	0.87	0.44	0.47	0.48	0.46	0.42	0.58	0.49
8	Fe (mg/L)	0.2	0.1	0.1	0.1	0.1	0.3	0.1	0.3	0.3	0.3
9	HCO3 (mg/L)	380	242	335	199	200	224	206	205	305	283
10	K (mg/L)	9.0	9.8	4.5	8.0	8.0	10.0	16.0	9.0	15.0	13.0
11	Mg (mg/L)	36.1	38.9	41.1	24.8	24.2	31.8	28.5	28.7	39.0	33.0
12	Na (mg/L)	258.0	170.7	98.1	111.3	110.0	144.0	92.0	60.0	78.0	66.0
13	NH3-N (mg N/L)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.05
14	NO2+NO3 (mg N/L)	5.34	4.10	3.11	2.03	1.88	2.82	1.98	2.24	2.72	2.76
15	NO2-N (mgN/L)	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	NO3-N (mgN/L)	5.31	4.09	3.08	2.03	1.88	2.82	1.98	2.24	2.72	2.76
17	Org-N (mgN/L)			0.0	0.0						
18	P-Tot (mgP/L)	0.028	0.026	0.025	0.244	0.001	0.001	0.003	0.001	0.144	0.128
19	SiO2 (mg/L)	9.0	8.6	20.6	8.6	9.3	8.8	8.5	8.7	9.8	9.5
20	SO4 (mg/L)	48.3	31.6	70.3	75.5	92.0	98.0	84.0	80.0	90.0	96.0

Water Quality Seasonal Average for the period: 2007-2017

Station Name : MAIGHAT (GGXOOB4)

Local River : Gomti

Division : M Ganga Div. III, Varanasi

Sub-Division : M Ganga - C Sarju SD, Varanasi

Well Water

S.No	Parameters	Winter									
		Nov - Feb									
		2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	BIOLOGICAL/BACTERIOLOGICAL										
1	COD (mg/L)			4.0							
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	151	113	101	79	73	105	113	99	132	151
2	HAR_Total (mgCaCO3/L)	302	276	273	182	173	238	232	219	295	288
3	Na% (%)	64	57	44	55	57	56	44	36	35	32
4	RSC (-)	3.2	1.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	6.5	4.5	2.6	3.6	3.6	4.1	2.6	1.8	2.0	1.7
	PESTICIDES										

Water Quality Seasonal Average for the period: 2007-2017

Station Name : MAIGHAT (GGXOOB4)
Local River : Gomti

Well Water

Division : M Ganga Div. III, Varanasi
Sub-Division : M Ganga - C Sarju SD, Varanasi

S.No	Parameters	Summer									
		Mar - May									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL										
1	EC_FLD (µmho/cm)	1088	1213	973	1000	1040	1185	1020	1520	1700	1670
2	EC_GEN (µmho/cm)	1084	1197	959	995	1020	1170	1010	1515	1680	1673
3	pH_FLD (pH units)	8.7	7.6	8.1	7.7	7.8	7.8	8.0	8.0	8.1	8.0
4	pH_GEN (pH units)	9.1	8.3	8.4	7.9	8.0	8.0	8.1	8.0	8.2	7.9
5	TDS (mg/L)			558	496	721	730	716	910	1008	945
6	Temp (deg C)	27.0	26.5	27.2	27.0	27.0	26.5	27.0	26.5	25.0	26.5
7	Turb (NTU)			0.1							
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	58.4	66.4	20.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	441	384	232	172	176	184	187	240	304	244
3	B (mg/L)	0.22	0.00	0.00	0.00	0.00	0.26	0.03	0.03	0.04	0.04
4	Ca (mg/L)	59	43	61	45	43	42	48	51	59	55
5	Cl (mg/L)	66.7	252.3	76.0	76.0	138.0	92.0	136.0	100.0	120.0	98.0
6	CO3 (mg/L)	70.3	80.0	24.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.49	0.29	1.15	0.52	0.49	0.48	0.48	0.56	0.62	0.45
8	Fe (mg/L)	0.2	0.1	0.2	0.1	0.1	0.3	0.1	0.3	0.3	0.4
9	HCO3 (mg/L)	394	306	233	210	215	224	228	293	371	298
10	K (mg/L)	8.7	16.6	6.1	8.0	10.0	10.0	22.0	14.0	18.0	18.0
11	Mg (mg/L)	34.4	45.5	29.0	28.6	26.5	31.8	26.2	38.1	42.9	36.1
12	Na (mg/L)	235.0	187.4	68.3	96.0	108.0	144.0	105.0	74.0	90.0	58.0
13	NH3-N (mg N/L)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00		0.05
14	NO2+NO3 (mg N/L)		4.13	2.42	2.36	2.24	2.82	2.16	0.27	2.81	2.51
15	NO2-N (mgN/L)		0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	NO3-N (mgN/L)		4.11	2.39	2.36	2.24	2.82	2.16	0.27	2.81	2.51
17	Org-N (mgN/L)			0.1	0.0						
18	P-Tot (mgP/L)	0.045	0.001	0.352	0.001	0.001	0.001	0.002	0.001	0.156	0.135
19	SiO2 (mg/L)	9.9	9.5	12.4	7.9	8.5	8.8	9.2	9.6	10.2	9.9
20	SO4 (mg/L)	48.0	35.9	37.1	96.0	98.0	98.0	92.0	88.0	96.0	83.0

Water Quality Seasonal Average for the period: 2007-2017

Station Name : MAIGHAT (GGXOOB4)

Local River : Gomti

Division : M Ganga Div. III, Varanasi

Sub-Division : M Ganga - C Sarju SD, Varanasi

Well Water

S.No	Parameters	Summer									
		Mar - May									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	BIOLOGICAL/BACTERIOLOGICAL										
1	COD (mg/L)			3.8							
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	147	108	152	112	108	105	121	128	148	138
2	HAR_Total (mgCaCO3/L)	290	297	272	231	219	238	230	287	327	288
3	Na% (%)	63	56	35	47	51	56	47	35	36	29
4	RSC (-)	3.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	6.0	4.7	1.8	2.8	3.2	4.1	3.0	1.9	2.2	1.5
	PESTICIDES										

2.7 SAI - RAEBARELI

HISTORY SHEET

		Water Year	: **2016-2017**
Site	: **RAEBARELI**	**Code**	: **GGX10M2**
State	: Uttar Pradesh	District	Rae Bareli
Basin	: Ganga-Brahm-Meghna Basin	Independent River	: Ganga
Tributary	: Gomti	Sub Tributary	:
Sub-Sub Tributary	:	Local River	: SAI
Division	: M Ganga Div. II, Lucknow	Sub-Division	: Gomti Subdivision, Lucknow
Drainage Area	: 7530 Sq. Km.	Bank	: Left
Latitude	: 26°15'00"	Longitude	: 81°15'00"
	Opening Date	Closing Date	
Gauge	: 1/7/1970		
Discharge	: 5/7/1970		
Sediment	:		
Water Quality	: 6/8/1977		

Water Quality Datasheet for the period : 2016-2017

Station Name : RAEBARELI (GGX10M2)
Local River : SAI

River Water Analysis

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

S.No	Parameters	1/6/2016	1/7/2016	1/8/2016	1/9/2016	1/10/2016	1/11/2016	11/12/2016	2/1/2017	1/2/2017	1/3/2017	5/4/2017	1/5/2017
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Clear	Clear	No Flow	No Flow
3	EC_GEN (µmho/cm)	770	740	270	310	330	430	560	370	440	710		
4	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free		
5	pH_FLD (pH units)	8.5	8.0	7.5	7.5	7.5	8.0	7.5	8.0	7.5	8.0		
6	pH_GEN (pH units)	8.7	8.4	7.8	7.9	8.0	8.3	7.6	8.0	7.7	8.0		
7	TDS (mg/L)	470	480	160	186	200	260	340	225	270	436		
8	Temp (deg C)	30.0	30.0	30.0	32.0	32.0	27.0	20.0	17.0	17.0	22.0		
9	Turb (NTU)	5.6	4.6	6.6	6.8	7.2	4.8	6.2	5.4	0.7	0.8		
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	23.9	33.1	0.0	0.0	0.0	8.0	0.0	0.0	0.0	0.0		
2	ALK-TOT (mgCaCO3/L)	156	227	60	108	130	148	164	184	215	431		
3	B (mg/L)	0.03	0.31	0.23	0.28	0.32	0.42	0.46	0.35	0.39	0.49		
4	Ca (mg/L)	34	42	21	26	26	34	34	33	34	48		
5	Cl (mg/L)	51.1	47.9	19.5	17.0	19.9	33.7	35.1	24.1	34.0	96.4		
6	CO3 (mg/L)	28.8	39.9	0.0	0.0	0.0	9.6	0.0	0.0	0.0	0.0		
7	F (mg/L)	0.53	0.48	0.25	0.30	0.32	0.46	0.44	0.38	0.45	0.63		
8	Fe (mg/L)			0.8				0.8					
9	HCO3 (mg/L)	132	195	73	132	158	160	200	224	263	526		
10	K (mg/L)	11.7	10.9	5.9	18.0	30.5	20.3	22.7	19.2	23.4	25.3		
11	Mg (mg/L)	22.5	35.1	11.9	13.7	10.8	24.8	17.7	22.5	30.1	72.9		
12	Na (mg/L)	30.8	29.7	13.6	12.4	12.7	20.2	22.3	16.1	20.9	52.0		
13	NH3-N (mg N/L)	0.98	0.88	0.34	0.41	0.44	0.60	0.72	0.59	0.78	0.89		
14	NO2+NO3 (mg N/L)	1.50	1.42	0.71	0.79	0.68	0.90	1.11	1.04	1.17	1.61		
15	NO2-N (mgN/L)	0.81	0.76	0.30	0.36	0.22	0.33	0.44	0.39	0.46	0.55		
16	NO3-N (mgN/L)	0.69	0.66	0.41	0.43	0.46	0.57	0.67	0.65	0.71	1.06		
17	P-Tot (mgP/L)	0.980	0.870	0.390	0.430	0.460	0.580	0.590	0.880	0.920	1.000		
18	SO4 (mg/L)	40.8	35.5	15.4	17.8	18.2	28.3	31.2	26.4	27.8	37.5		

44

Water Quality Datasheet for the period : 2016-2017

Station Name : RAEBARELI (GGX10M2)

Local River : SAI

Division : M Ganga Div. II, Lucknow

Sub-Division : Gomti Subdivision, Lucknow

River Water Analysis

S.No	Parameters	1/6/2016	1/7/2016	1/8/2016	1/9/2016	1/10/2016	1/11/2016	11/12/2016	2/1/2017	1/2/2017	1/3/2017	5/4/2017	1/5/2017
		A	A	A	A	A	A	A	A	A	A	A	A
	BIOLOGICAL/BACTERIOLOGICAL												
1	BOD3-27 (mg/L)	21.6	15.8	6.2	9.8	4.7	2.7	11.8	8.2	7.8	9.4		
2	COD (mg/L)	35.0	28.0	15.0	17.0	10.0	9.0	18.0	14.0	10.0	17.0		
3	DO (mg/L)	1.4	1.2	3.5	3.3	5.8	4.7	1.9	4.3	2.0	1.8		
4	DO_SAT% (%)	18	16	47	46	80	59	21	45	20	20		
5	FCol-MPN (MPN/100mL)			3300	10000	18000	11000	2300	4500	4000	4000		
6	Tcol-MPN (MPN/100mL)			11000	30000	20000	13000	5000	8000	5000	15000		
	TRACE & TOXIC												
1	As (µg/L)			5.62				2.15					
2	Cd (µg/L)			0.11				0.06					
3	Cr (µg/L)			1.10				54.77					
4	Cu (µg/L)			5.60				12.58					
5	Ni (µg/L)			0.29				23.34					
6	Pb (µg/L)			0.51				1.84					
7	Zn (µg/L)			0.29				27.70					
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	86	106	54	65	66	84	86	84	86	119		
2	HAR_Total (mgCaCO3/L)	180	252	103	122	111	187	160	177	212	423		
3	Na% (%)	26	20	21	16	16	17	21	15	16	20		
4	RSC (-)	0.0	0.0	0.0	0.0	0.4	0.0	0.1	0.2	0.1	0.2		
5	SAR (-)	1.0	0.8	0.6	0.5	0.5	0.6	0.8	0.5	0.6	1.1		
	PESTICIDES												

Note - Analysis of Total & Faecal coliform started w.e.f.01.08.2016

45

Water Quality Summary for the period : 2016-2017

Station Name : RAEBARELI (GGX10M2)

Local River : SAI

Division : M Ganga Div. II, Lucknow

Sub-Division : Gomti Subdivision, Lucknow

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_GEN (µmho/cm)	10	770	270	493
3	pH_FLD (pH units)	10	8.5	7.5	7.8
4	pH_GEN (pH units)	10	8.7	7.6	8
5	TDS (mg/L)	10	480	160	303
6	Temp (deg C)	10	32.0	17.0	25.7
7	Turb (NTU)	10	7.2	0.7	4.9
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	10	33.1	0.0	6.5
2	ALK-TOT (mgCaCO3/L)	10	431	60	182
3	B (mg/L)	10	0.49	0.03	0.33
4	Ca (mg/L)	10	48	21	33
5	Cl (mg/L)	10	96.4	17.0	37.9
6	CO3 (mg/L)	10	39.9	0.0	7.8
7	F (mg/L)	10	0.63	0.25	0.42
8	Fe (mg/L)	2	0.8	0.8	0.8
9	HCO3 (mg/L)	10	526	73	206
10	K (mg/L)	10	30.5	5.9	18.8
11	Mg (mg/L)	10	72.9	10.8	26.2
12	Na (mg/L)	10	52.0	12.4	23.1
13	NH3-N (mg N/L)	10	0.98	0.34	0.66
14	NO2+NO3 (mg N/L)	10	1.61	0.68	1.09
15	NO2-N (mgN/L)	10	0.81	0.22	0.46
16	NO3-N (mgN/L)	10	1.06	0.41	0.63
17	P-Tot (mgP/L)	10	1.000	0.390	0.71
18	SO4 (mg/L)	10	40.8	15.4	27.9
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	10	21.6	2.7	9.8
2	COD (mg/L)	10	35.0	9.0	17.3
3	DO (mg/L)	10	5.8	1.2	3
4	DO_SAT% (%)	10	80	16	37
5	FCol-MPN (MPN/100mL)	8	18000	2300	7138
6	Tcol-MPN (MPN/100mL)	8	30000	5000	13375
	TRACE & TOXIC				
1	As (µg/L)	2	5.62	2.15	3.88
2	Cd (µg/L)	2	0.11	0.06	0.08
3	Cr (µg/L)	1	54.77	1.10	27.94
4	Cu (µg/L)	2	12.58	5.60	9.09
5	Ni (µg/L)	1	23.34	23.34	23.34
6	Pb (µg/L)	1	1.84	0.51	1.18
7	Zn (µg/L)	2	27.70	0.29	14
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	10	119	54	83
2	HAR_Total (mgCaCO3/L)	10	423	103	193
3	Na% (%)	10	26	15	19
4	RSC (-)	10	0.4	0.0	0.1
5	SAR (-)	10	1.1	0.5	0.7
	PESTICIDES				

Water Quality Seasonal Average for the period: 2006-2017

Station Name : RAEBARELI (GGX10M2)
Local River : SAI

Well Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

S.No	Parameters	Flood										
		Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	EC_GEN (µmho/cm)											
2	pH_GEN (pH units)											
3	Temp (deg C)											
	CHEMICAL											
1	ALK-TOT (mgCaCO3/L)											
2	B (mg/L)											
3	Ca (mg/L)											
4	Cl (mg/L)											
5	F (mg/L)											
6	HCO3 (mg/L)											
7	K (mg/L)											
8	Mg (mg/L)											
9	Na (mg/L)											
10	NO2+NO3 (mg N/L)											
11	NO2-N (mgN/L)											
12	NO3-N (mgN/L)											
13	o-PO4-P (mg P/L)											
14	SiO2 (mg/L)											
15	SO4 (mg/L)											
	BIOLOGICAL/BACTERIOLOGICAL											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)											
2	HAR_Total (mgCaCO3/L)											
3	Na% (%)											
4	RSC (-)											
5	SAR (-)											
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : RAEBARELI (GGX10M2)
Local River : SAI

Well Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

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	2016-2017
	PHYSICAL											
1	EC_GEN (µmho/cm)											
2	pH_GEN (pH units)											
3	Temp (deg C)											
	CHEMICAL											
1	ALK-TOT (mgCaCO3/L)											
2	B (mg/L)											
3	Ca (mg/L)											
4	Cl (mg/L)											
5	F (mg/L)											
6	HCO3 (mg/L)											
7	K (mg/L)											
8	Mg (mg/L)											
9	Na (mg/L)											
10	NO2+NO3 (mg N/L)											
11	NO2-N (mgN/L)											
12	NO3-N (mgN/L)											
13	o-PO4-P (mg P/L)											
14	SiO2 (mg/L)											
15	SO4 (mg/L)											
	BIOLOGICAL/BACTERIOLOGICAL											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)											
2	HAR_Total (mgCaCO3/L)											
3	Na% (%)											
4	RSC (-)											
5	SAR (-)											
	PESTICIDES											

48

Water Quality Seasonal Average for the period: 2006-2017

Station Name : RAEBARELI (GGX10M2)
Local River : SAI

Well Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

S.No	Parameters	Summer										
		Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	EC_GEN (µmho/cm)											
2	pH_GEN (pH units)											
3	Temp (deg C)											
	CHEMICAL											
1	ALK-TOT (mgCaCO3/L)											
2	B (mg/L)											
3	Ca (mg/L)											
4	Cl (mg/L)											
5	F (mg/L)											
6	HCO3 (mg/L)											
7	K (mg/L)											
8	Mg (mg/L)											
9	Na (mg/L)											
10	NO2+NO3 (mg N/L)											
11	NO2-N (mgN/L)											
12	NO3-N (mgN/L)											
13	o-PO4-P (mg P/L)											
14	SiO2 (mg/L)											
15	SO4 (mg/L)											
	BIOLOGICAL/BACTERIOLOGICAL											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)											
2	HAR_Total (mgCaCO3/L)											
3	Na% (%)											
4	RSC (-)											
5	SAR (-)											
	PESTICIDES											

49

TREND OF WATER QUALITY (GOMTI BASIN)

3. WATER QUALITY TREND

3.1 Tolerance and Classification

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.

3.2 Gomti at Neemsar

The variation of average concentration of all the parameters examined during flood, winter and summer season has been shown in the Table No.6,7&8 respectively.

From the Table 6,7&8, it is evident that average value of pH are within tolerance.

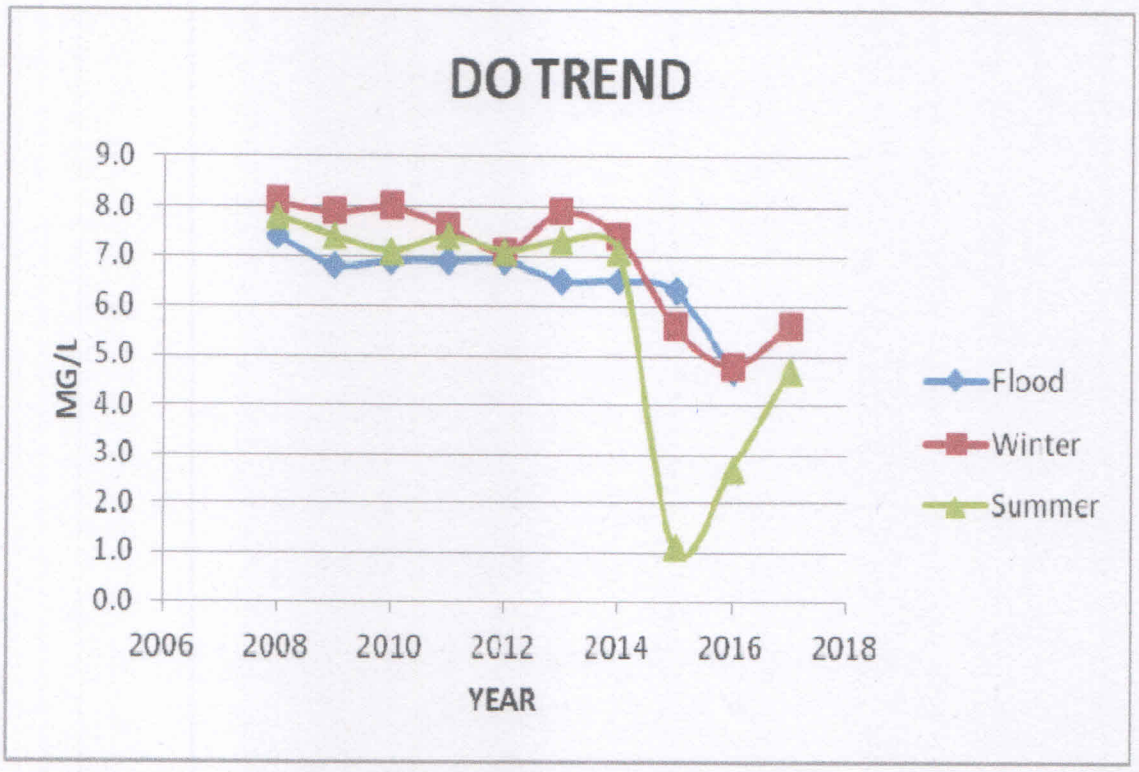
3.2.1Trends in the variation of Dissolved Oxygen

Table no. 6,7&8demonstrate the average value of D.O. which is ranged from minimum 4.7 ppm in 2016 to maximum concentration of 7.4 ppm in 2008during flood season. In winter season the average value of D.O. ranged from minimum4.8 ppm in the year 2015-16 to maximum 8.1 ppm in the year 2007-08. Minimum value of average D.O. content during summer season was observed 1.1 ppm in 2015 and maximum of which was 7.8 ppm observed in 2008. It has further been observed that D.O. in the winter season is comparatively high in comparison to other seasons. On an average it can be said that the value of thisparameter at the site is not satisfactory.

Seasonal average value of D.O. variation for the flood, winter and summer seasons has been depicted in figure-1.

Figure-1

AVERAGE D.O TREND AT NEEMSAR(SEASON WISE)



3.2.2 Trends in the variation of Bio-Chemical Oxygen Demand

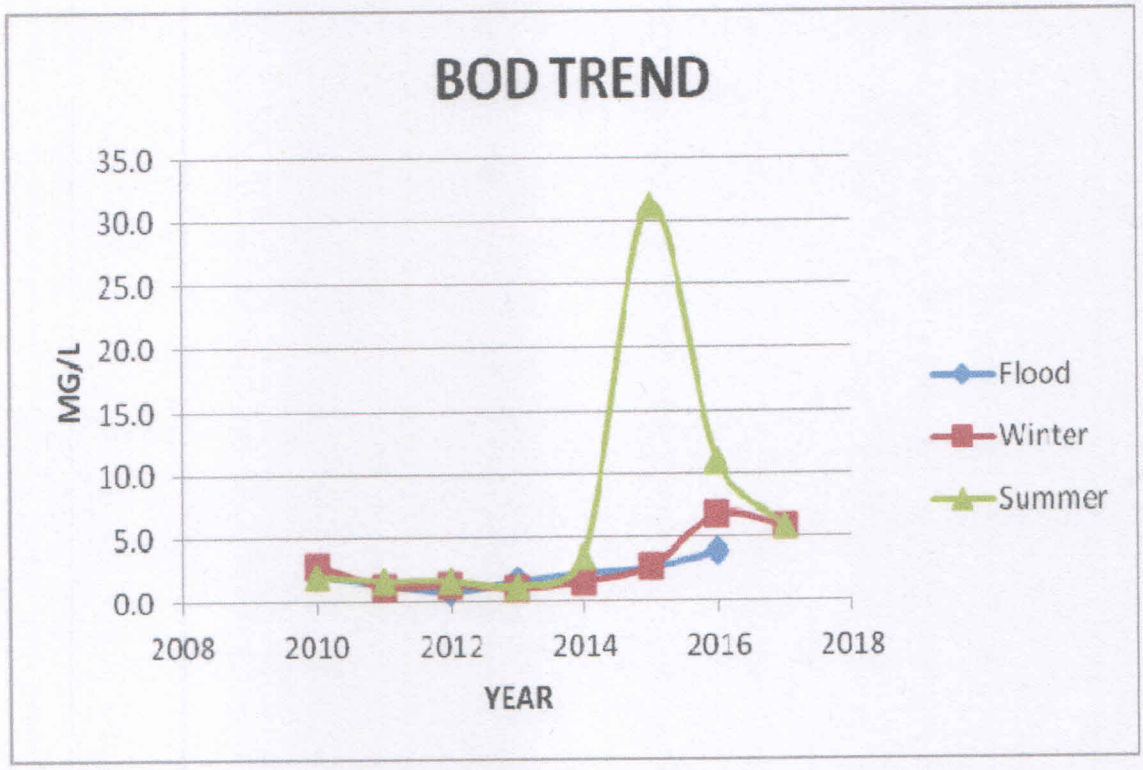
During Flood season, the average value of this parameter ranged from minimum 0.8 ppm in 2012& to maximum of 3.9 ppm in the year 2016. During winter season, the average value of this parameter ranged from minimum 1.0 ppm in 2012-13 to maximum of 6.8 ppm in the year 2015-16.

During summer maximum value of average B.O.D. was observed 31.3 ppm in 2015 and minimum of 1.2 ppm in 2013.

Season wise (flood,winter and summer) trend of variation of average B.O.D. at this site for the periods 2010 to 2017 has been depicted in figure -2

Figure-2

AVERAGE B.O.D TREND AT NEEMSAR (SEASON WISE)

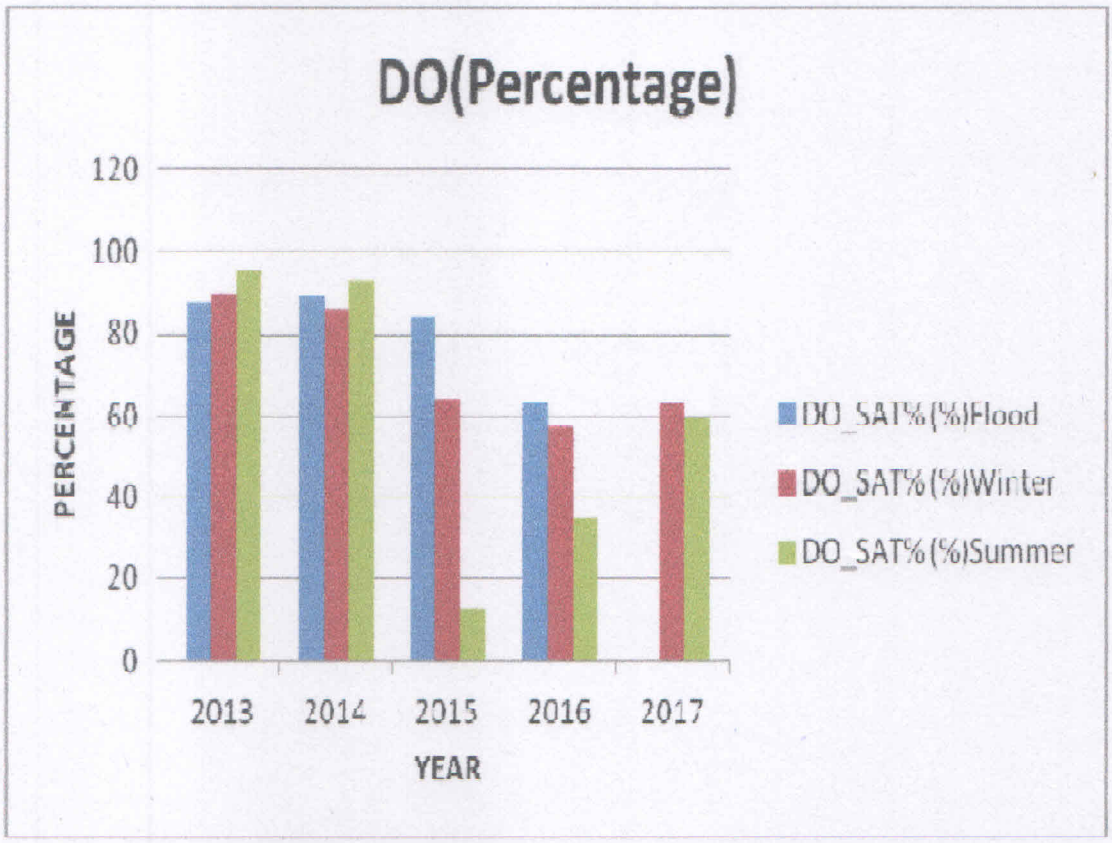


Yearly trend of this parameter starting from year 2013 to 2017 has also been depicted in the figure No. 3

Figure-3

Water Quality Trend of D.O (Percentage)

(SEASON WISE)



3.2.3 Trends in the variation of chloride

Perusal of table No.6,7&8shows that the average value of this parameter ranged from minimum 3.5ppm in 2017 to maximum concentration of 32.1 ppm in 2009 during flood season. For winterseason minimum value of chloride concentration was found in 13.0 ppm in 2007-08 to max. of 39.1 ppm in 2014-15. During the summer season maximum chloride concentration was found 35.9 ppm in 2015 and minimum was 14.0 ppm in 2016.

3.2.4 Trends in the variation of specific conductance

Perusal of table No.6,7&8shows that average value of Specific conductance ranged from minimum of 142 microsiemen/cm in the year 2017 to maximum of 410microsiemen/cm in the year 2006 during flood season. During winter season minimum specific conductance observed was 310microsiemen/cm 2009-10 to maximum of 450microsiemen/cm in the year 2014-15. During the summer season of2008 the maximum value of this parameter was 560microsiemen/cm and Minimum 340microsiemen/cm was observed in summer season of 2016.

3.3 Gomti atLucknow

The variation of average concentration of all the examined parameters during flood, winter and summer season has been shown in the Table No.9,10& 11 respectively.From the Table 9,10&11, it is evident that average value of pH is within tolerance limit.

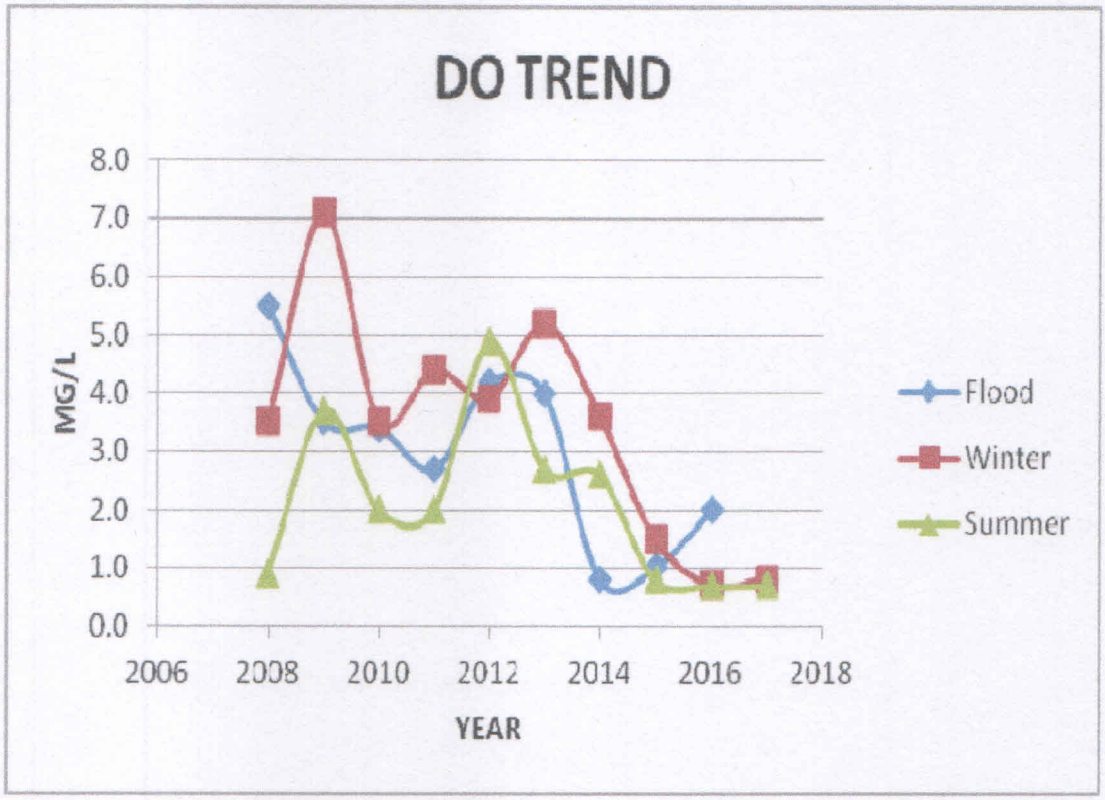
3.3.1 Trends in the variation of Dissolved Oxygen

Table no. 9,10&11demonstrate the average value of D.O. which is ranging from minimum 0.8 ppm in 2014 to maximum concentration of 5.5 ppm in 2008 during flood season. In winter season the average value of D.O. ranged from minimum0.7 ppm in the year 2015-16 to maximum 7.1 ppm in the year 2008-09. Minimum value of average D.O. content during summer season was observed 0.7 ppm in 2016& 2017 and maximum of which was 4.9 ppm observed in 2012. It has further been observed that D.O. in the winter season is comparatively high in comparison to other seasons.

Seasonal average value of D.O. variation for the flood, winter and summer seasons has been depicted in figure-4.

Figure-4

AVERAGE D.O TREND AT LUCKNOW (SEASON WISE)



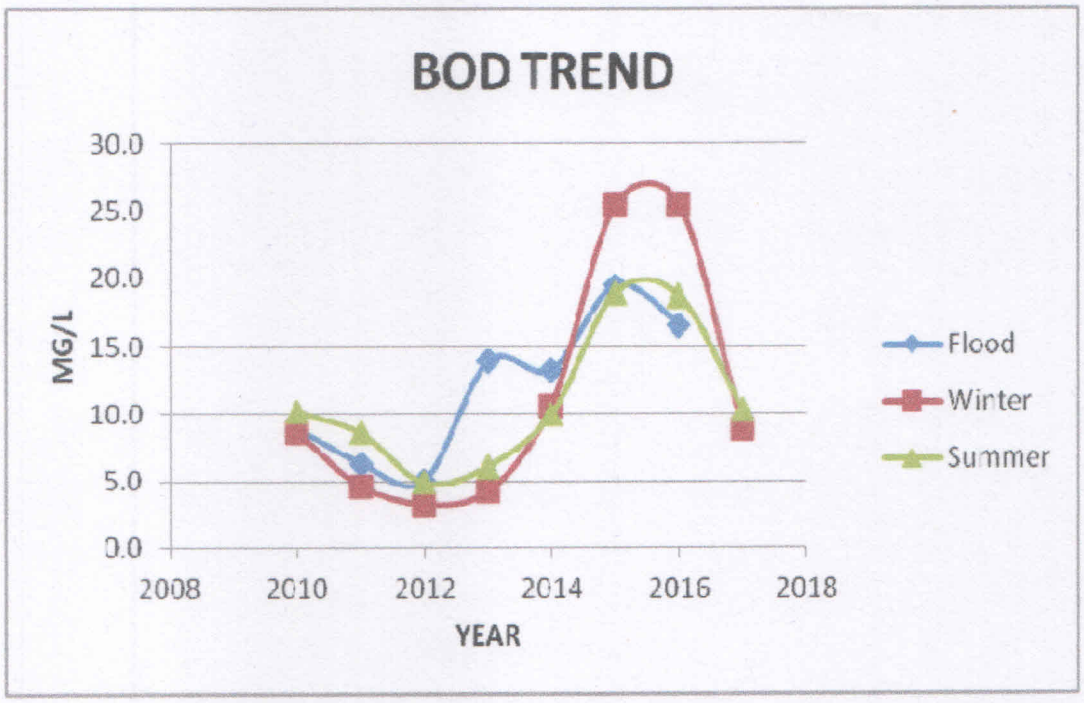
3.3.2 Trends in the variation of Bio-Chemical Oxygen Demand

During flood season, the average value of this parameter ranged from minimum 5.0 ppm in 2012 to maximum of 19.5 ppm in the year 2015.During winter season, the average value of this parameter ranged from minimum 3.2 ppm in 2011-12 to maximum of 25.5 ppm in the year 2015-16. During summer maximum value of average B.O.D. was observed 18.9 ppm in 2015 and minimum of 4.9 ppm in 2012.

Season wise (flood, winter and summer) trend of variation of average B.O.D. at this site for the periods 2010 to 2017 has been depicted in figure -5

Figure-5

AVERAGE B.O.D TREND AT LUCKNOW (SEASON WISE)

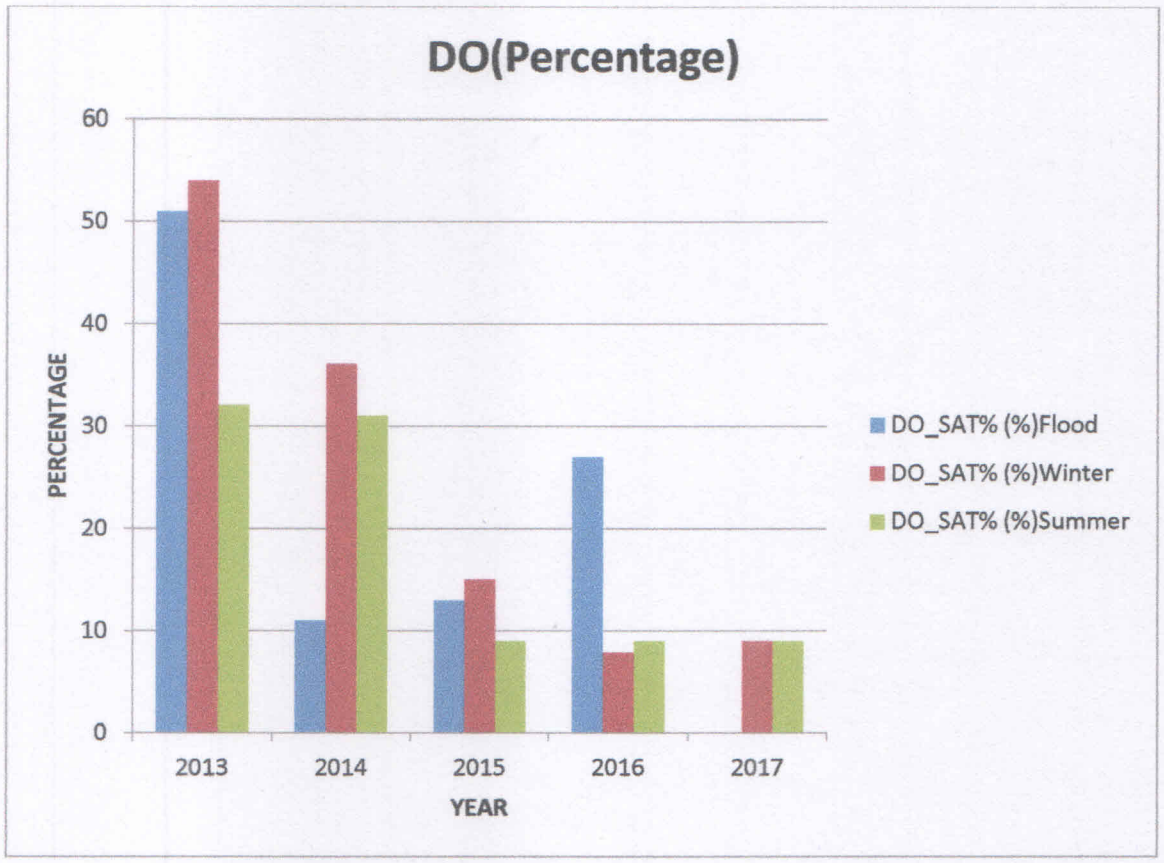


Yearly trend of this parameter starting from year 2013 to 2017 has also been depicted in the figure No.6

Figure-6

Water Quality Trend of D.O (Percentage)

(SEASON WISE)



3.3.3 Trends in the variation of chloride

Perusal of table No.9,10&11 shows that the average value of this parameter ranged from minimum 11.9ppm in 2006 to maximum concentration of 31.7 ppm in 2010 during flood season. For winterseason minimum value of chloride concentration was found in 13.5 ppm in 2012-13 to max. of 40.9 ppm in 2014-15. During the summer season maximum chloride concentration was found 43.4 ppm in 2010 and minimum was 18.7 ppm in 2007.

3.3.4 Trends in the variation of specific conductance

Perusal of table No.9,10&11 shows that average value of Specific conductance ranged from minimum of 300microsiemen/cm in the year 2011 to maximum of 480microsiemen/cm in the year 2015 during flood season. During winter season minimum specific conductance observed was 358microsiemen/cm 2009-10 to maximum of 490microsiemen/cm in the year 2006-07. During the summer season of2008 the maximum value of this parameter was 657microsiemen/cm and Minimum 517 microsiemen/cm was observed in summer season of 2011.

3.4 Gomti at Sultanpur

The variation of average concentration of all the examined parameters during flood, winter and summer season has been shown in the Table No. 12, 13 & 14 respectively.

From the Table 12, 13 & 14, it is evident that average value of pH are within tolerance limit except in the flood season of the years 2007 where it is found to be 9.0. In the winter season 8.7 in the year 2008-09. During summer season of the year 2008 pH 8.7, 2010 pH 8.6, 2011 pH 8.7 are found above tolerance limit.

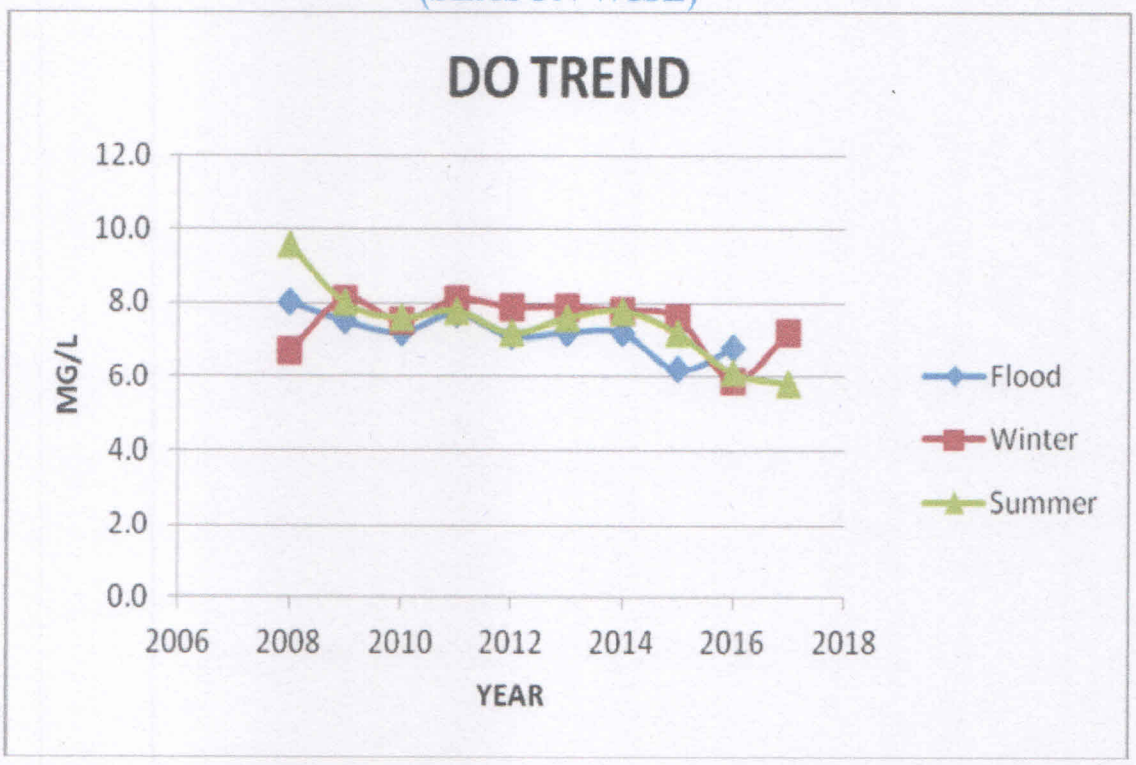
3.4.1 Trends in the variation of Dissolved Oxygen

Table no. 12, 13 & 14 demonstrate the average value of D.O. which is ranged from minimum 6.2 ppm in 2015 to maximum concentration of 8.0 ppm in 2008 during flood season. In winter season the average value of D.O. ranged from minimum 5.9 ppm in the year 2015-16 to maximum 8.1 ppm in the year 2008-09 & 2010-11. Minimum value of average D.O. content during summer season was observed 5.8 ppm in 2017 and maximum of which was 9.6 ppm observed in 2008. It has further been observed that D.O. in the winter season is comparatively high in comparison to other seasons. On an average it can be said that the value of this parameter at the site is very satisfactory.

Seasonal average value of D.O. variation for the flood, winter and summer seasons has been depicted in figure -7.

Figure-7

AVERAGE D.O. TREND AT SULTANPUR (SEASON WISE)



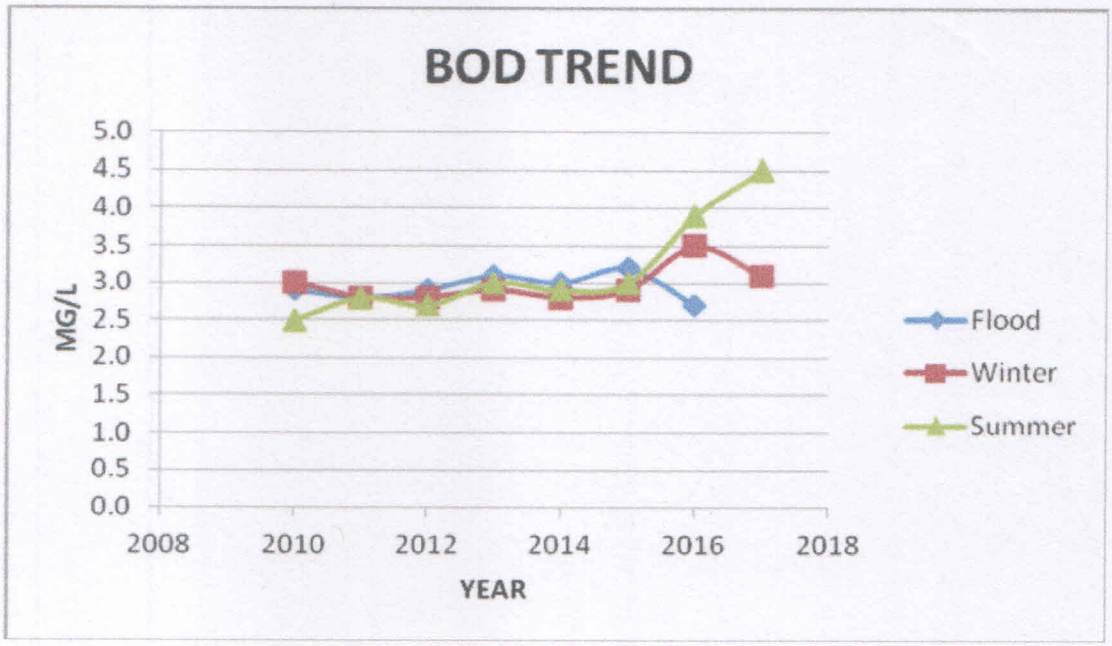
3.4.2 Trends in the variation of Bio-Chemical Oxygen Demand

During flood season maximum value of average B.O.D. was observed 3.3 ppm in 2007 & 2008 and minimum of 2.7 ppm in 2017. In winter season, the average value of this parameter ranged from minimum 2.4 ppm in 2008-09 to maximum of 3.5 ppm in the year 2015-16. During summer maximum value of average B.O.D. was observed 4.5 ppm in 2017 and minimum of 2.5 ppm in 2010. The value of this parameter at Sultanpur site is not alarming.

Season wise (flood, winter and summer) trend of variation of average B.O.D. at this site for the periods 2008 to 2017 has been depicted in figure -8

Figure - 8

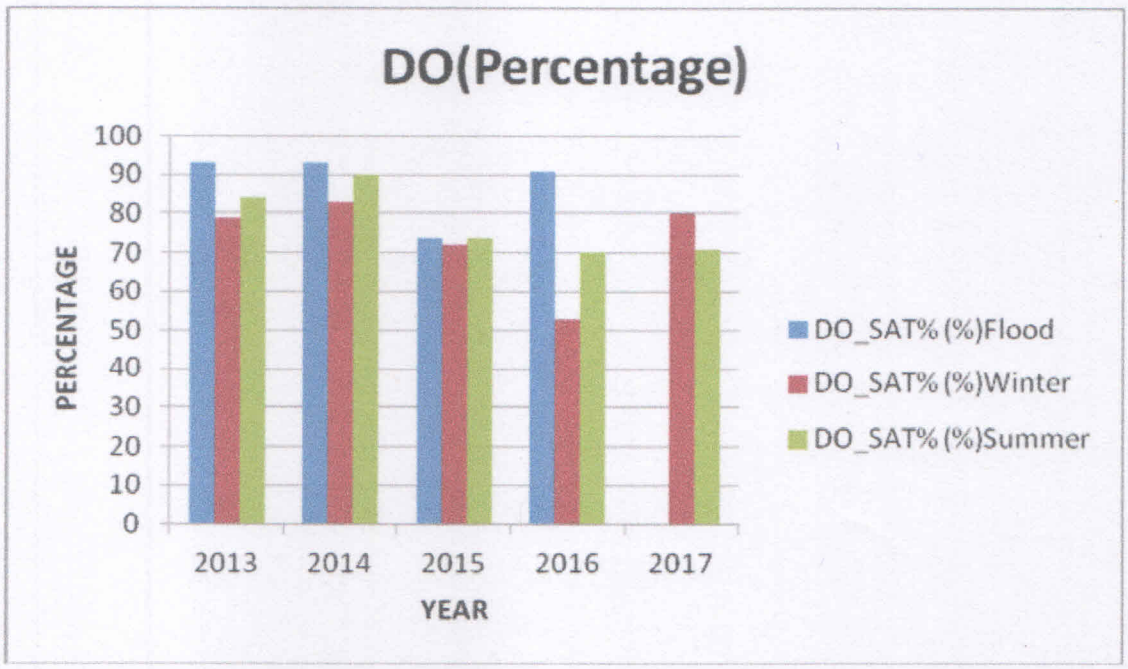
AVERAGE B.O.D TREND AT SULTANPUR (SEASON WISE)



Yearly trend of this parameter starting from year 2013 to 2017 has also been depicted in the figure No. 9

Figure - 9

Water Quality Trend of D.O (Percentage)
(SEASON WISE)



3.4.3 Trends in the variation of chloride

Perusal of table No. 12, 13 & 14 shows that the average value of this parameter ranged from minimum 22.8 ppm in 2010 to maximum concentration of 86.7 ppm in 2009 during flood season. For winter season minimum value of chloride concentration was found in 27.5 ppm in 2012-13 to max. Of 72.3 ppm in 2009-10. During the summer season maximum chloride concentration was found 207.4 ppm in 2009 and minimum was 24.0 ppm in 2014.

3.4.4 Trends in the variation of specific conductance

Perusal of table No.12, 13 & 14 shows that average value of Specific conductance ranged from minimum of 281 microsiemen/cm in the year 2004 & 2010 to maximum of 430 microsiemen /cm in the year 2015 during flood season. During winter season minimum specific conductance observed was 316 microsiemen /cm 2011-12 to maximum of 550 microsiemen /cm in the year 2015-16. During the summer season of 2016 the maximum value of this parameter was 647 microsiemen /cm and Minimum 327 microsiemen /cm was observed in summer season of 2017 & 2012 respectively.

3.4.5 Trends in the variation of Trace and Toxic metal

Perusal of table No.12, 13 & 14 indicates that the concentration of all 6 trace and toxic metals in the river at this site is found well within tolerance limit.

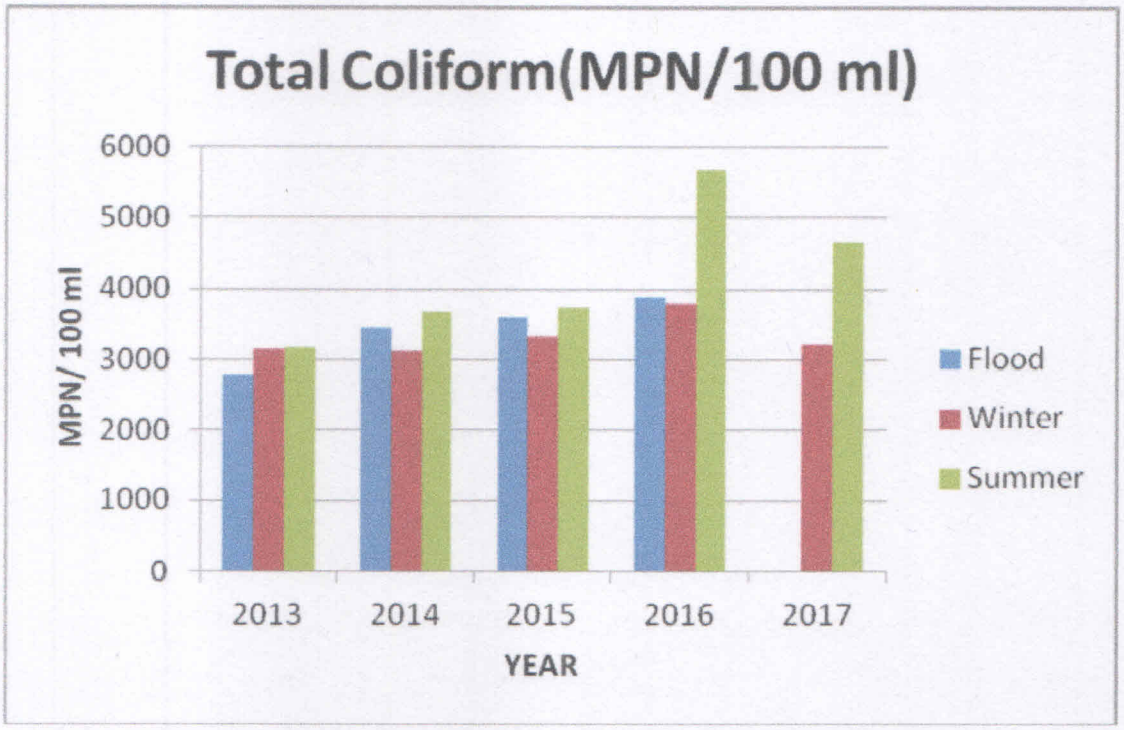
3.4.6 Trends in the variation of Total Coliform Concentration

The bar chart figure No. 10 is self explanatory, it is observed that the Total Coliform at the site was always below 5000 MPN/100 ml for the last 10 years of the observations except for some period of the year 2009 & 2010. The value of this parameter was found above 5000 MPN/100 ml from October 2009 to May 2010 and summer season of 2010 & 2016.

In the year 2007 for all water samples the value was observed between 500 to 5000 MPN/100 ml showing gradual decrease in summer and gradual increase in Winter & Summer season from 2007 to 2008. During the year 2009 the value of this parameter was above 5000 MPN/100 ml for almost all samples. During the year 2010-11 & 2011-12 for all water samples the value was observed within 500-5000 MPN / 100 ml. Thus it can be said that bacterial contamination at this site is quite nominal except one year 2009-10 & summer of 2016.

Figure-10

Water Quality Trend of Total Coliform (MPN/100 ml)
(SEASON WISE)



3.5 Gomti at Maighat

The variation of average concentration of all the examined parameters during flood, winter and summer season has been shown in the Table No. 15, 16 & 17 respectively.

From the Table 15, 16 & 17, it is evident that average value of pH are within tolerance limit except in the flood season of the years 2008 where it is found to be 8.9. In the winter season 9.0 of the year 2008-09 and in the summer season of 2008 pH value was 9.1.

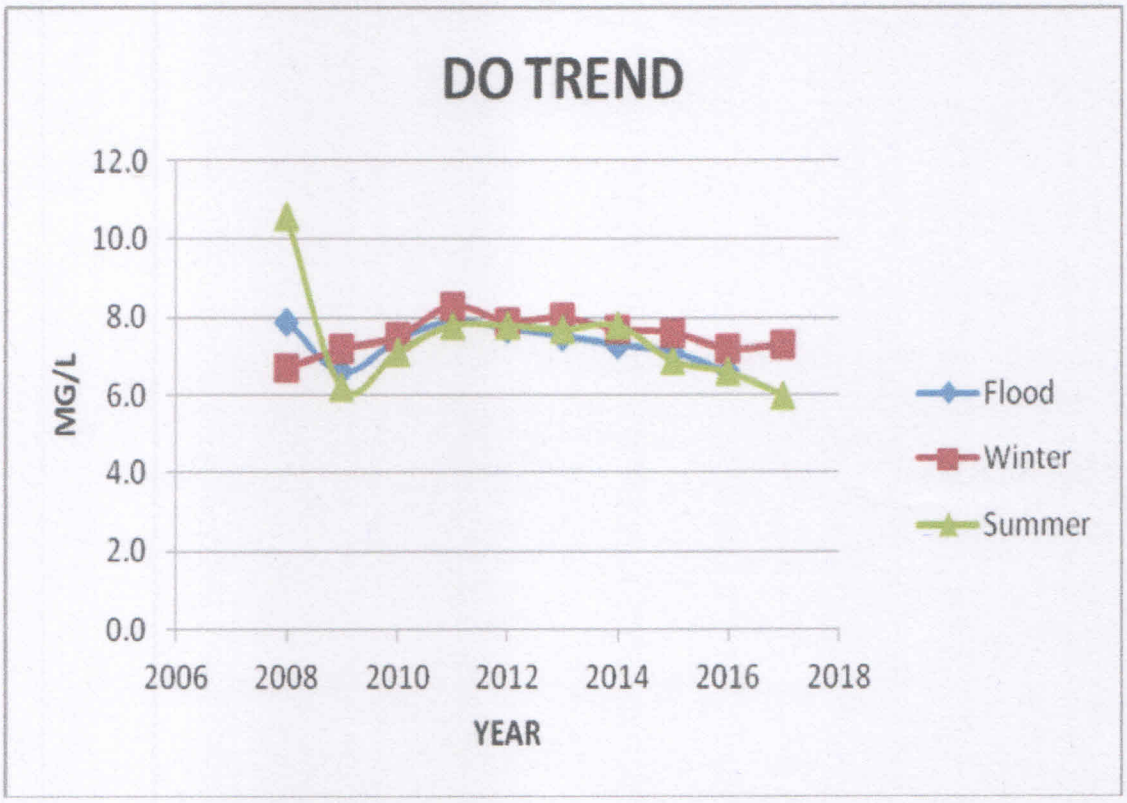
3.5.1 Trends in the variation of Dissolved Oxygen

Table no. 15, 16 & 17 demonstrate the average value of D.O. which is ranged from minimum 6.6 ppm in 2009 & 2016 to maximum concentration of 7.9 ppm, in 2008 & 2011 respectively during flood season. In winter season the average value of D.O. ranged from minimum 6.7 ppm in the year 2007-08 to maximum 8.3 ppm in the year 2010-11. Minimum value of average D.O. content during summer season was observed 6.0 ppm in 2017 and maximum of which was 10.6 ppm observed in 2008. It has further been observed that D.O. in the winter season is comparatively high in comparison to other seasons. On an average it can be said that the value of this parameter at the site is quite satisfactory.

Seasonal average value of D.O. variation for the flood, winter and summer seasons has been depicted in figure-11.

Figure-11

AVERAGE D.O TREND AT MAIGHAT (SEASON WISE)



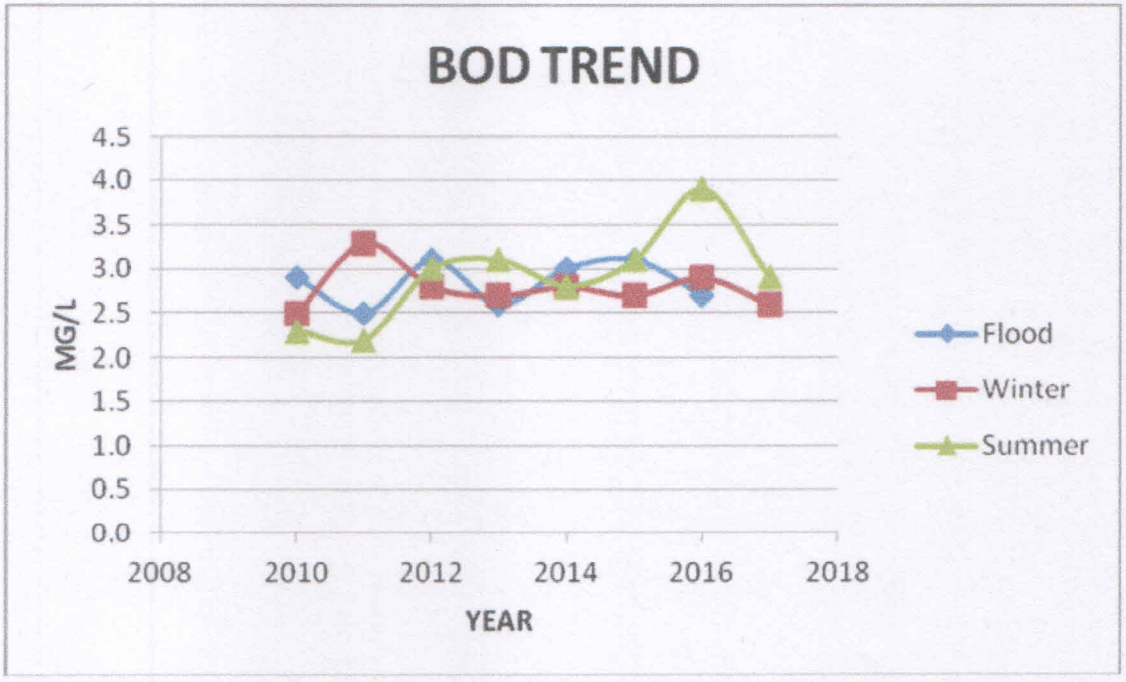
3.5.2 Trends in the variation of Bio-Chemical Oxygen Demand

During flood season, the average value of this parameter ranged from minimum 2.5 ppm in 2011 to maximum of 3.4 ppm in the year 2008. During winter season maximum value of average B.O.D. was observed 3.4 ppm in 2007-08 and minimum of 2.4 ppm in 2008-09. During summer maximum value of average B.O.D. was observed 3.9 ppm in 2016 and minimum of 2.2 ppm in 2009 & 2011.

Season wise (flood, winter and summer) trend of variation of average B.O.D. at this site for the periods 2010 to 2017 has been depicted in figure -12

Figure-12

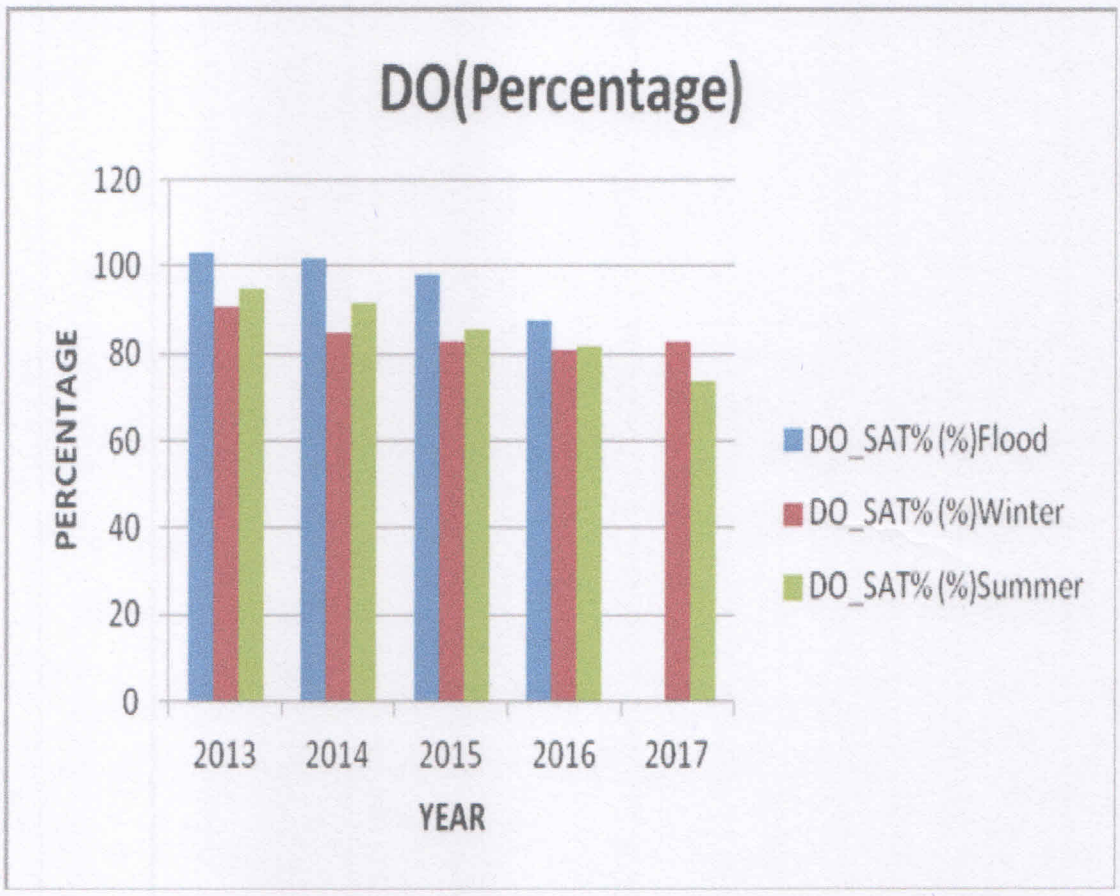
AVERAGE B.O.D TREND AT MAIGHAT (SEASON WISE)



Yearly trend of this parameter starting from year 2013 to 2017 has also been depicted in the figure no. 13.

Figure-13

Water Quality trend of D.O.(Percentage)
(SEASON WISE)



3.5.3 Trends in the variation of chloride

Perusal of table No. 15, 16 & 17 shows that the average value of this parameter ranged from minimum 29.2 ppm in 2007 to maximum concentration of 98.6 ppm in 2009 during flood season. For winter season minimum value of chloride concentration was found in 26.8 ppm in 2007-08 to max. of 86.4 ppm in 2009-10. During the summer season maximum chloride concentration was found 127.1 ppm in 2009 and minimum was 26.7 ppm in 2008.

3.5.4 Trends in the variation of specific conductance

Perusal of table No. 15, 16 & 17 shows that average value of Specific conductance ranged from minimum of 293 Micro siemen/cm in the year 2008 to maximum of 505 Micro siemen/cm in the year 2009 during flood season. During winter season minimum specific conductance observed was 287 Micro siemen/cm 2007-08 to maximum of 519 Micro siemen/cm in the year 2015-16. During the summer season of 2016 the maximum value of this parameter was 608 Micro siemen/cm and Minimum 306 Micro siemen/cm was observed in summer season of 2011.

3.5.5 Trends in the variation of Trace and Toxic metal

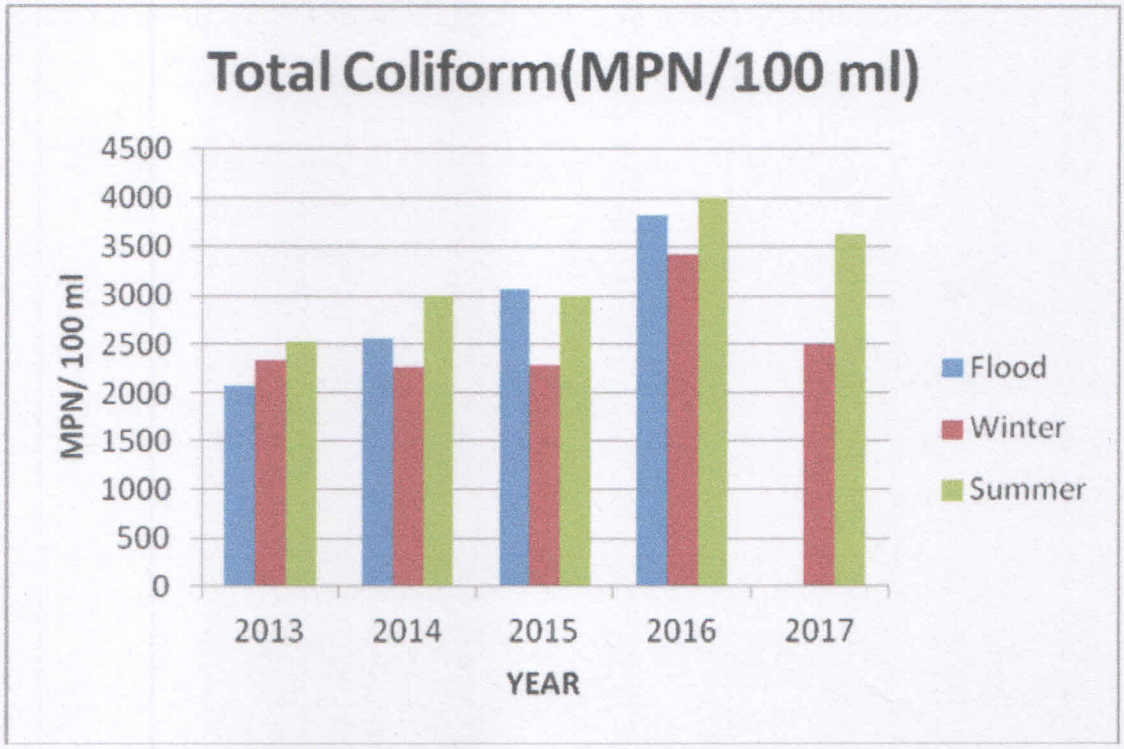
Perusal of table No.15, 16 & 17 indicates that the concentration of all 6 trace and toxic metals in the river at this site is found well within tolerance limit.

3.5.6 Trends in the variation of Total Coliform Concentration

It is evident from the bar chart figure No- 14 that the Total Coliform at the site is below 5000 MPN/100 ml for the last 10 years of the analysis of this parameter except 8250 MPN/100 ml in the year 2009-10.The value of this parameter showing gradual decrease almost all samples. During the year 2016-17 for all water samples the value was observed within 500-5000 MPN / 100 ml. Thus it can be said that bacterial contamination at this site is quite nominal.

Figure - 14

Water Quality Trend of Total Coliform (MPN/100 ml)
(SEASON WISE)



3.6 Sai at Raebareilly

The variation of average concentration of all the examined parameters during flood, winter and summer season has been shown in the Table No.18,19 & 20 respectively.

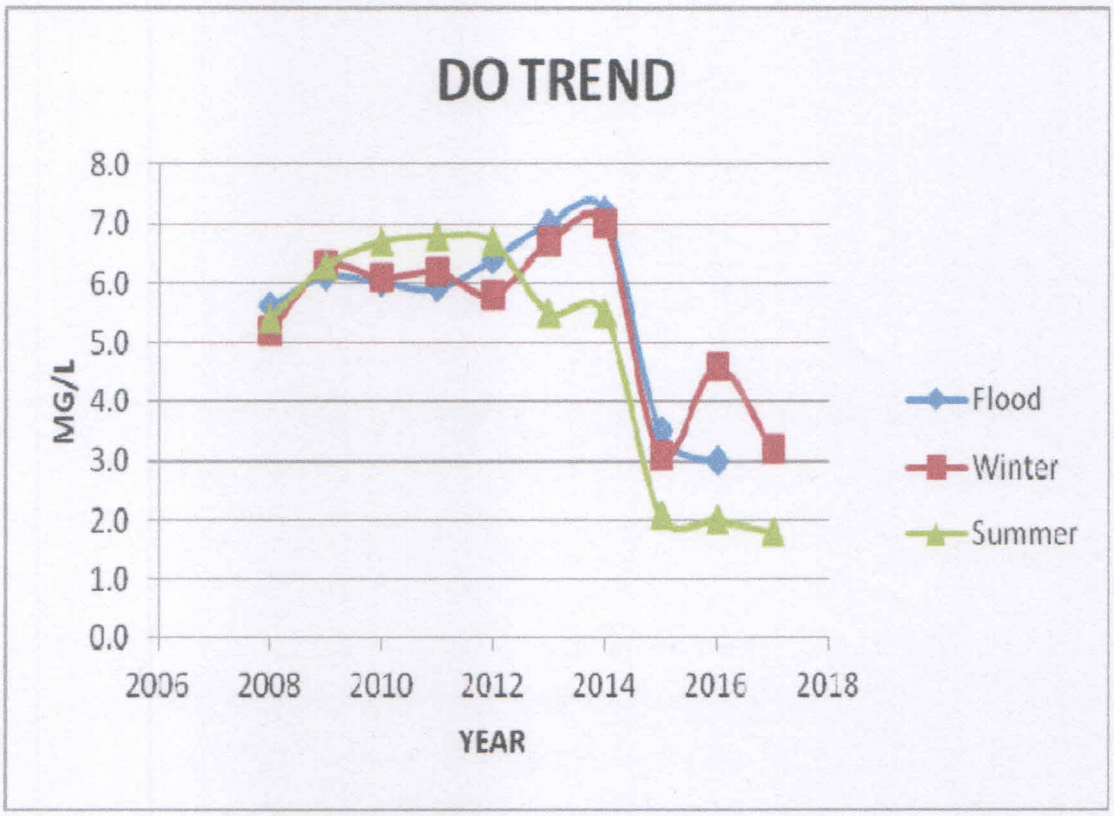
3.6.1Trends in the variation of Dissolved Oxygen

Table no. 18,19 & 20demonstrate the average value of Dissolved Oxygen, which is ranged from minimum 3.0 ppm in 2016 to maximum concentration of 8.2 ppm in 2006, during flood season. In winter season the average value of D.O. ranged from minimum3.1 ppm in the year 2014-15 to maximum 7.0ppm in the year 2013-14. Minimum value of average D.O. content during summer season was observed 1.8 ppm in 2017 and maximum of which was 6.8 ppm observed in 2011. It has further been observed that D.O. in the winter season is comparatively high in comparison to other seasons.

Seasonal average value of D.O. variation for the flood, winter and summer seasons has been depicted in figure-15.

Figure-15

AVERAGE D.O TREND AT RAI BAREILLY (SEASON WISE)



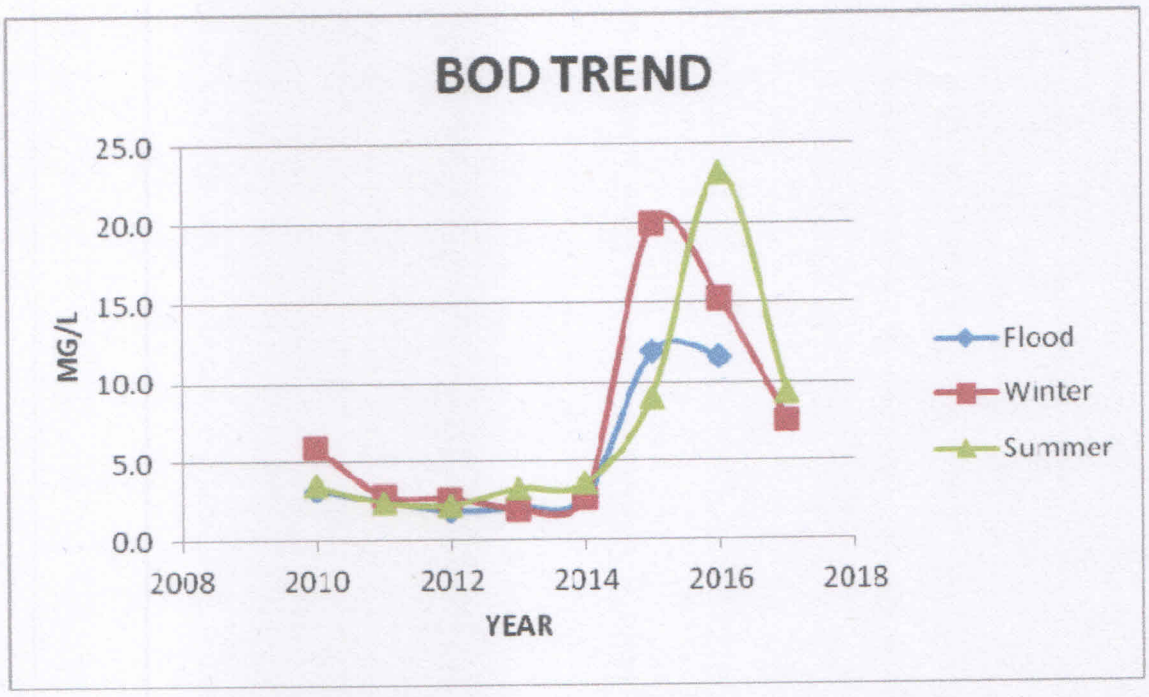
3.6.2Trends in the variation of Bio-Chemical Oxygen Demand

During winter season, the average value of this parameter ranged from minimum 1.9 ppm in 2012-13 to maximum of 20.0 ppm in the year 2014-15. During summer maximum value of average B.O.D. was observed 23.2 ppm in 2016and minimum of 2.2 ppm in 2012.During Flood season, the average value of this parameter ranged from minimum 1.8ppm in 2012 and maximum value of average B.O.D. was observed 12.0 ppm in 2015.

Season wise (flood,winter and summer) trend of variation of average B.O.D. at this site for the periods 2010 to 2017 has been depicted in figure -16

Figure-16

AVERAGE B.O.D TREND AT RAI BAREILLY (SEASON WISE)

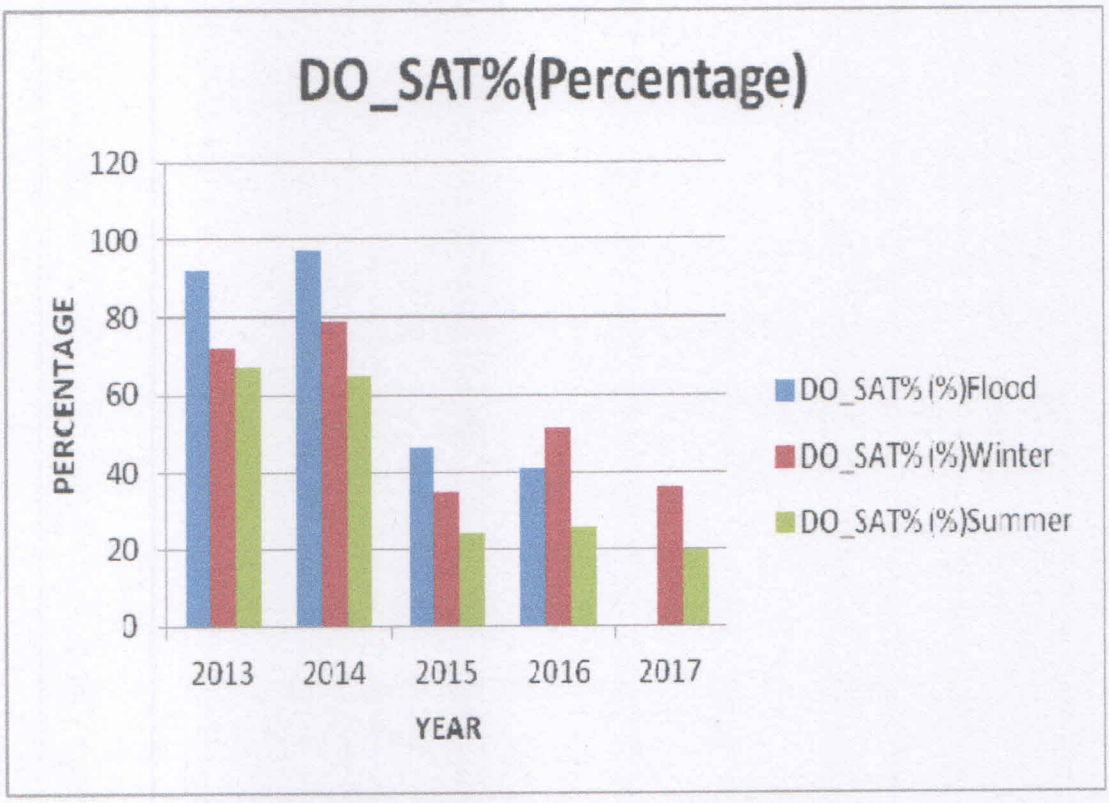


Yearly trend of this parameter starting from year 2013 to 2017 has also been depicted in the figure No.17

Figure-17

Water Quality Trend of D.O (Percentage)

(SEASON WISE)



3.6.3Trends in the variation of chloride

Perusal of table No.18,19 & 20shows that the average value of this parameter ranged from minimum 14.3ppm in 2012 to maximum concentration of 43.9 ppm in 2015 during flood season. For winterseason minimum value of chloride concentration was found in 17.0 ppm in 2012-13 to max. of 54.7 ppm in 2014-15. During the summer season maximum chloride concentration was found 96.4 ppm in 2017 and minimum was 18.7 ppm in 2012.

3.6.4Trends in the variation of specific conductance

Perusal of table No.18, 19& 20shows that average value of Specific conductance ranged from minimum of 356 Micro siemen/cm in the year 2008 to maximum of 574 Micro siemen/cm in the year 2014 during flood season. During winter season minimum specific conductance observed was 308 Micro siemen/cm 2009-10 to maximum of 608 Micro siemen/cm in the year 2014-15. During the summer season of2016 the maximum value of this parameter was 773 Micro siemen/cm and Minimum 430 Micro siemen/cm was observed in summer season of 2011.

TABLES

TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS – A

TABLE-1

S. No.	Characteristic	Tolerance
(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 CaCO3), mg/l ,(Max)	300
(x)	Calcium Hardness (as CaCO3), mg/l, (Max)	200
(xi)	Magnesium (as CaCO3), mg/1,(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/1,(Max)	0.5
(xv)	Chlorides (as Cl), mg/l,(Max)	250
(xvi)	Sulphate (as SO4), mg/l ,(Max)	400
(xvii)	Nitrates (as NO2), mg/1,(Max)	20
(xviii)	Fluorides (as F,) mg/l,(Max)	1.5
(xix)	Phenolic compounds(as C6H5OH), mg/l,(Max)	0.002
(xx)	Mercury (as Hg), mg/l ,(Max)	0.001
(xxi)	Cadmium (as Cd), mg/1,(Max)	0.01
(xxii)	Selenium (as Se), mg/l ,(Max)	0.01
(xxiii)	Arsenic (as As), mg/1,(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 (asCr6+), mg/l,(Max)	0.05
(xxviii)	Anionic detergents, (as MBAS), mg/l ,(Max) .	0.2
(xxix)	Poly-nuclear aromatic hydrocarbons (PAH),	0.2
(xxx)	(Min)eral oil, mg/l ,(Max)	0.01
(xxxi)	Barium (as Ba), mg/l ,(Max)	1.0
(xxxii)	Silver (as Ag), mg/l (Max)	0.05
(xxxiii)	Pesticides	Absent
(xxxiv)	Alpha emitters, µc/ml, (Max)	10^{-9}
(xxxv)	Beta emitters, µc/ml, (Max)	10^{-8}

TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS – B

TABLE- 2

S. No.	Characteristic	Tolerance
(i)	pH Value	6.5 to 8.5
(ii)	Dissolved Oxygen, mg/1,(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 C6H5OH) mg/l, (Max)	0.005
(x)	Chromium (as Cr6+), mg/l, (Max)	1.0
(xi)	Anionic detergents (as MBAS), mg/l, (Max)	1.0
(xii)	Alpha emitters, µc/ml, (Max)	10^{-8}

TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS – C

TABLE- 3

S. No.	Characteristic	Tolerance
(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 Cr6+), 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 SO4), 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 C6H5OH), 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 NO3), mg/1,(Max)	50
(xxiv)	Alpha emititers, µc/mg, (Max)	10-9
(xxv)	Beta emitters, µc/ml, (Max)	10-8

TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS -D

Table-4

S. No.	Characteristic	Tolerance
(1)	(2)	(3)
(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, μ S, (Max)	1000
(v)	Free Carbon Dioxide (as $C0_2$),mg/1, (Max)	6.0
(vi)	Oils and Grease, mg/l, (Max)	0.1
(vii)	Alpha emitters, μ c/ml, (Max)	10^{-9}
(viii)	Beta emitters, μ c/ml, (Max)	10^{-8}

TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS -E

Table-5

S. No.	Characteristic	Tolerance
(i)	pH value	6.0 to 8.5
(ii)	Electrical Conductance at 25°C, μ 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_4), mg/l, (Max)	1000
(vii)	Chlorides (as Cl), Mg/l, (Max)	600
(viii)	Sodium Percentage, (Max)	60
(ix)	Alpha emitters, μ c/ml, (Max)	10^{-9}
(x)	Beta emitters, μ c/ml, (Max)	10^{-8}

Water Quality Seasonal Average for the period: 2006-2017

Station Name : NEEMSAR (GGXOOU5)
Local River : GOMTI

River Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

TABLE-6

S.No	Parameters	Flood Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	Q (cumec)	39.75	31.66	200.3	15.57	103.3	61.12	16.72	100.4	32.45	26.28	
2	EC_GEN (µmho/cm)	410	333	290	335	190	220	390	190	250	350	142
3	pH_FLD (pH units)	7.5	8.0	8.0	7.8	7.0	8.0	8.5	8.5	8.0	8.5	8.0
4	pH_GEN (pH units)	7.8	8.0	7.9	7.8	7.7	8.1	8.4	7.8	8.1	8.4	7.9
5	TDS (mg/L)			173	200	115	135	235	115	150	215	88
6	Temp (deg C)	29.5	30.0	30.0	32.0	30.8	32.0	30.0	31.0	32.0	31.0	31.0
7	Turb (NTU)				14.7	5.7	2.6	2.8	4.4	3.0		5.9
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	4.0	0.0	0.0		0.0		23.9	0.0	0.0	8.0	0.0
2	ALK-TOT (mgCaCO3/L)	284	248	126		76		124	100	140	68	48
3	B (mg/L)	0.00	0.00	0.02								0.20
4	Ca (mg/L)	34	37	29	26	19	17	22	26	33	34	21
5	Cl (mg/L)	14.7	13.4	28.8	32.1	22.0	12.1	13.8	12.1	16.0	25.9	3.5
6	CO3 (mg/L)	3.2	3.2	0.0	0.0	0.0	0.0	28.8	0.0	0.0	9.6	0.0
7	F (mg/L)	0.13	0.24	0.26	0.47	0.15	0.17	0.17	0.13	0.17	0.89	0.19
8	Fe (mg/L)	0.1	0.0	0.2	0.0	0.0						0.3
9	HCO3 (mg/L)	161	155	172	134	93	93	93	122	171	63	59
10	K (mg/L)	4.8	5.7	3.8	4.7	5.9	3.1	2.0	2.0	3.5	4.7	4.3
11	Mg (mg/L)	15.8	18.5	15.1	13.4	6.2	8.3	15.4	14.5	17.5	18.6	5.8
12	Na (mg/L)	16.5	15.2	20.8	23.0	15.4	7.1	9.7	8.3	11.0	18.2	2.8
13	NH3-N (mg N/L)				0.15	0.07	0.10	0.10	0.10	0.20	0.32	0.31
14	NO2+NO3 (mg N/L)	0.66	0.52	0.61	1.08	0.41	2.06	3.88	5.14	7.76	10.11	0.71
15	NO2-N (mgN/L)	0.02	0.04	0.01	0.08	0.06	0.10	0.10	0.10	0.19	0.44	0.32
16	NO3-N (mgN/L)	0.64	0.48	0.59	1.00	0.35	1.96	3.78	5.04	7.57	9.67	0.39
17	o-PO4-P (mg P/L)	0.010	0.041	0.038	0.093	0.031	0.031	0.031	0.310	0.093	0.258	0.320
18	SiO2 (mg/L)	4.9	4.6	4.6								
19	SO4 (mg/L)	20.2	21.1	10.7	13.0	6.2	4.3	3.8	5.8	10.1	61.4	14.9

58

Water Quality Seasonal Average for the period: 2006-2017

Station Name : NEEMSAR (GGXOOU5)
Local River : GOMTI

River Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

S.No	Parameters	Flood Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)					2.0	1.4	0.8	1.6	2.2	2.7	3.9
2	COD (mg/L)						6.0	6.0	5.0	9.0	7.0	8.0
3	DO (mg/L)	6.5	6.6	7.4	6.8	6.9	6.9	6.9	6.5	6.5	6.3	4.7
4	DO_SAT% (%)	85	87	98	93	91	94	91	88	89	84	63
5	FCol-MPN (MPN/100mL)											1200
6	Tcol-MPN (MPN/100mL)											6800
	TRACE & TOXIC											
1	As (µg/L)											2.42
2	Cd (µg/L)											0.35
3	Zn (µg/L)											0.14
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	85	92	73	65	48	43	56	65	82	86	52
2	HAR_Total (mgCaCO3/L)	150	169	136	120	73	77	120	125	154	163	76
3	Na% (%)	19	15	25	29	29	16	15	12	13	19	7
4	RSC (-)	0.0	0.0	0.2	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0
5	SAR (-)	0.6	0.5	0.8	0.9	0.8	0.4	0.4	0.3	0.4	0.6	0.1
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : NEEMSAR (GGXOOU5)
Local River : GOMTI

River Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

TABLE-7

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	2016-2017
	PHYSICAL											
1	Q (cumec)	13.07	13.58	24.28	31.29	26.58	20.80	27.50	23.52		10.74	
2	EC_GEN (µmho/cm)	395	330	440	310	390	380	410	330	450	380	355
3	pH_FLD (pH units)	7.5	7.8	7.5	8.5	8.0	7.7	8.5	8.5	8.5	8.0	8.0
4	pH_GEN (pH units)	8.3	8.0	8.3	8.5	8.4	8.0	8.2	8.6	8.6	8.5	8.2
5	TDS (mg/L)			265	188	235	233	245	198	245	262	218
6	Temp (deg C)	19.8	18.5	22.5	22.5	22.5	21.5	21.5	22.0	23.0	23.0	21.0
7	Turb (NTU)				1.5	1.3	1.5	2.6	2.0			0.7
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	10.0		0.0	0.0	0.0	15.9	47.8	8.0	4.0
2	ALK-TOT (mgCaCO3/L)	264	248	168		114	152	124	132	204	70	197
3	B (mg/L)	0.00	0.02	0.08			0.06	0.06	0.06	0.85	0.17	0.33
4	Ca (mg/L)	36	37	30	21	23	34	33	41	46	37	33
5	Cl (mg/L)	16.9	13.0	30.2	25.0	27.0	14.9	14.0	19.0	39.1	27.0	14.6
6	CO3 (mg/L)	0.0	0.0	12.0	21.6	0.0	0.0	0.0	19.2	48.0	9.6	4.8
7	F (mg/L)	0.15	0.25	0.44	0.31	0.18	0.23	0.19	0.29	0.30	0.39	0.41
8	Fe (mg/L)	0.1	0.1	0.0	0.0	0.0						
9	HCO3 (mg/L)	149	151	181	134	139	193	151	134	142	66	231
10	K (mg/L)	5.5	4.9	4.3	9.0	5.9	3.7	2.2	3.1	6.1	4.7	15.1
11	Mg (mg/L)	19.6	18.0	15.4	10.3	10.8	18.5	18.0	23.2	28.4	19.6	33.1
12	Na (mg/L)	14.0	18.2	22.9	15.8	16.4	10.1	9.7	11.6	19.4	16.8	9.3
13	NH3-N (mg N/L)				0.11	0.04	0.05	0.15	0.34	0.31	0.48	0.62
14	NO2+NO3 (mg N/L)	0.82	0.66	0.95	0.97	0.75	3.41	3.51	6.50	15.91	10.49	0.93
15	NO2-N (mgN/L)	0.03	0.04	0.05	0.08	0.11	0.19	0.14	0.34	0.43	0.61	0.44
16	NO3-N (mgN/L)	0.79	0.62	0.90	0.89	0.64	3.22	3.36	6.17	15.48	9.88	0.49
17	o-PO4-P (mg P/L)	0.021	0.031	0.072	0.057	0.072	0.047	0.047	0.109	0.269	0.264	0.420
18	SiO2 (mg/L)	3.8	4.3	5.1								
19	SO4 (mg/L)	18.2	18.7	11.0	9.1	7.7	6.0	10.6	19.2	13.0	69.8	28.1

Water Quality Seasonal Average for the period: 2006-2017

Station Name : NEEMSAR (GGXOOU5)
Local River : GOMTI

River Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

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	2016-2017
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)				2.9	1.2	1.3	1.0	1.5	2.7	6.8	5.9
2	COD (mg/L)						7.0	4.0	5.5	4.0	10.5	12.0
3	DO (mg/L)	7.2	8.1	7.9	8.0	7.6	7.1	7.9	7.4	5.6	4.8	5.6
4	DO_SAT% (%)	78	86	92	93	88	81	90	86	65	57	63
5	FCol-MPN (MPN/100mL)											1650
6	Tcol-MPN (MPN/100mL)											3500
	TRACE & TOXIC											
1	As (µg/L)											
2	Cd (µg/L)											
3	Zn (µg/L)											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	90	93	76	52	58	84	82	103	116	93	83
2	HAR_Total (mgCaCO3/L)	172	168	140	95	103	161	157	200	234	175	221
3	Na% (%)	15	18	26	25	25	12	12	11	15	17	8
4	RSC (-)	0.0	0.0	0.6	1.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1
5	SAR (-)	0.5	0.6	0.8	0.7	0.7	0.3	0.3	0.4	0.6	0.6	0.3
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : NEEMSAR (GGXOOU5)
Local River : GOMTI

River Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

TABLE-8

S.No	Parameters	Summer Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	Q (cumec)	14.44	9.420	14.58	12.21	13.53	11.72	12.87	15.72		5.920	
2	EC_GEN (µmho/cm)	430	560	500	490	440	390	480	480	510	340	365
3	pH_FLD (pH units)	8.5	8.5	8.5	9.0	9.0	8.5	8.5	8.5	8.0	8.5	7.5
4	pH_GEN (pH units)	7.9	8.0	8.1	8.7	8.8	8.7	8.7	8.6	9.0	8.9	8.0
5	TDS (mg/L)			310	295	265	235	290	290	300	209	224
6	Temp (deg C)	27.0	26.0	26.0	30.0	27.0	28.0	30.0	30.0	22.0	28.0	28.0
7	Turb (NTU)				4.4	1.0	3.2	2.2	3.8			0.8
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	0.0		0.0		12.0			19.9	15.9	0.4	0.0
2	ALK-TOT (mgCaCO3/L)	328		168		144			192	156	89	164
3	B (mg/L)	0.00	0.05	0.12	0.20	0.08	0.04	0.08	0.10	0.20	0.20	0.34
4	Ca (mg/L)	40	43	33	26	26	29	40	55	29	28	38
5	Cl (mg/L)	18.1	19.9	34.1	28.0	30.2	18.1	18.1	24.1	35.9	14.0	16.0
6	CO3 (mg/L)	0.0	0.0	0.0	14.4	14.4	14.4	7.2	24.0	19.2	0.5	0.0
7	F (mg/L)	0.21	0.38	0.55	0.40	0.21	0.23	0.23	0.51	0.59	0.42	0.40
8	Fe (mg/L)	0.0	0.2	0.0	0.0							
9	HCO3 (mg/L)	200	166	205	146	146	181	161	185	151	107	200
10	K (mg/L)	7.8	6.3	5.5	9.8	9.0	3.9	2.7	3.9	5.9	4.4	8.6
11	Mg (mg/L)	21.6	21.6	17.5	13.4	11.3	19.6	20.7	27.8	24.8	22.5	34.1
12	Na (mg/L)	21.6	26.7	24.6	17.3	19.5	10.4	12.6	16.1	23.5	10.4	10.1
13	NH3-N (mg N/L)				0.17	0.08	0.20	0.15	0.51	0.35	0.42	0.64
14	NO2+NO3 (mg N/L)	1.06	0.84	1.26	1.33	1.02	4.54	6.64	10.63	15.94	9.82	0.94
15	NO2-N (mgN/L)	0.03	0.07	0.11	0.15	0.15	0.19	0.19	0.40	0.52	0.62	0.44
16	NO3-N (mgN/L)	1.04	0.77	1.15	1.18	0.87	4.34	6.45	10.23	15.41	9.20	0.50
17	o-PO4-P (mg P/L)	0.041	0.052	0.114	0.083	0.083	0.145	0.062	0.165	0.351	0.780	0.560
18	SiO2 (mg/L)	3.8	6.5	5.8								
19	SO4 (mg/L)	24.0	20.2	14.4	11.5	8.6	6.2	13.9	22.1	7.7	35.5	27.0

Water Quality Seasonal Average for the period: 2006-2017

Station Name : NEEMSAR (GGXOOU5)
Local River : GOMTI

River Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

S.No	Parameters	Summer Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)				2.0	1.6	1.6	1.2	3.5	31.3	11.0	5.9
2	COD (mg/L)					14.0	3.0	7.0	10.0	32.0	20.0	8.0
3	DO (mg/L)	7.4	7.8	7.4	7.1	7.4	7.1	7.3	7.1	1.1	2.7	4.7
4	DO_SAT% (%)	93	97	91	93	93	90	96	93	13	35	60
5	FCol-MPN (MPN/100mL)											3000
6	Tcol-MPN (MPN/100mL)											5000
	TRACE & TOXIC											
1	As (µg/L)											
2	Cd (µg/L)											
3	Zn (µg/L)											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	99	108	82	65	65	73	99	138	73	71	95
2	HAR_Total (mgCaCO3/L)	189	198	154	120	112	155	185	253	176	164	237
3	Na% (%)	19	22	25	22	26	12	13	12	22	12	8
4	RSC (-)	0.0	0.0	0.3	0.5	0.7	0.4	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.7	0.8	0.9	0.7	0.8	0.4	0.4	0.4	0.8	0.4	0.3
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : LUCKNOW (GGXOOQ3)
Local River : Gomti

River Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

TABLE-9

S.No	Parameters	Flood Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	Q (cumec)	101.2	65.46	467.8	74.31	29.18	90.82	85.21	114.5	34.95	44.31	
2	EC_GEN (µmho/cm)	424	370	322	432	374	300	404	366	458	480	420
3	pH_FLD (pH units)	7.5	7.5	7.4	7.5	7.7	7.5	7.6	7.2	8.2	8.0	8.0
4	pH_GEN (pH units)	7.9	7.9	7.6	8.0	8.0	8.0	8.7	7.9	8.6	8.3	8.1
5	TDS (mg/L)			192	212	251	183	246	221	281	286	257
6	Temp (deg C)	29.5	29.5	30.0	25.3	30.7	29.4	31.1	28.8	30.6	30.1	30.5
7	Turb (NTU)				6.8	5.6	3.1	6.2	7.9	4.7		1.4
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	2.4		0.0		0.0	2.4	13.9	0.0	15.1	11.0	2.5
2	ALK-TOT (mgCaCO3/L)	237		121		94	158	142	151	155	92	115
3	B (mg/L)	0.00	0.06	0.08								0.23
4	Ca (mg/L)	38	38	33	25	26	33	30	47	53	33	34
5	Cl (mg/L)	11.9	16.8	17.6	28.5	31.7	18.8	15.5	19.2	26.1	28.4	26.4
6	CO3 (mg/L)	2.9	0.0	0.0	4.8	7.7	2.9	16.8	0.0	18.2	13.3	3.1
7	F (mg/L)	0.31	0.32	0.51	0.61	0.41	0.33	0.33	0.32	0.46	0.59	0.53
8	Fe (mg/L)	0.3	0.1	0.2	0.2							0.3
9	HCO3 (mg/L)	162	183	147	166	153	187	140	190	152	85	134
10	K (mg/L)	6.8	5.6	11.9	12.5	8.4	4.1	2.4	3.1	6.9	6.8	9.9
11	Mg (mg/L)	19.8	23.1	18.1	19.2	14.2	18.3	19.0	24.2	22.9	24.3	17.6
12	Na (mg/L)	18.4	19.6	16.3	19.1	20.8	12.1	11.2	12.6	17.7	19.7	17.4
13	NH3-N (mg N/L)				0.47	0.24	0.12	0.16	0.34	0.44	1.07	0.80
14	NO2+NO3 (mg N/L)	1.13	26.57	1.28	1.26	1.04	4.07	5.85	11.25	15.26	18.36	1.24
15	NO2-N (mgN/L)	0.06	0.05	0.04	0.06	0.08	0.09	0.17	0.35	0.44	0.54	0.49
16	NO3-N (mgN/L)	1.06	26.52	1.24	1.20	0.96	3.98	5.69	10.90	14.82	17.82	0.76
17	o-PO4-P (mg P/L)	0.141	0.064	0.076	0.076	0.417	0.079	0.110	0.107	0.169	0.329	0.616
18	SiO2 (mg/L)	9.7	7.1	5.2								
19	SO4 (mg/L)	21.5	23.0	18.4	15.2	9.6	3.6	6.1	14.1	19.0	28.4	36.1

Water Quality Seasonal Average for the period: 2006-2017

Station Name : LUCKNOW (GGXOOQ3)
Local River : Gomti

River Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

S.No	Parameters	Flood Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)	7.8				8.9	6.3	5.0	13.9	13.3	19.5	16.5
2	COD (mg/L)					26.0	11.4	20.0	52.2	47.0	22.6	25.2
3	DO (mg/L)	3.2	4.5	5.5	3.5	3.4	2.7	4.2	4.0	0.8	1.0	2.0
4	DO_SAT% (%)	42	58	73	46	45	35	57	51	11	13	27
5	FCol-MPN (MPN/100mL)											6000
6	Tcol-MPN (MPN/100mL)											13667
	TRACE & TOXIC											
1	As (µg/L)											3.34
2	Cd (µg/L)											0.35
3	Cr (µg/L)											
4	Cu (µg/L)											12.48
5	Ni (µg/L)											
6	Pb (µg/L)											
7	Zn (µg/L)											0.31
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	96	95	83	62	64	83	76	119	132	83	86
2	HAR_Total (mgCaCO3/L)	178	191	158	142	124	159	155	219	228	185	159
3	Na% (%)	18	18	17	21	25	13	13	11	14	18	18
4	RSC (-)	0.0	0.0	0.0	0.2	0.3	0.1	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.6	0.6	0.6	0.7	0.8	0.4	0.4	0.4	0.5	0.6	0.6
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : LUCKNOW (GGXOOQ3)
Local River : Gomti

River Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

TABLE-10

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	2016-2017
	PHYSICAL											
1	Q (cumec)	31.44	30.27	63.68	147.6	29.31	40.10	60.92	58.78	34.83	18.90	
2	EC_GEN (µmho/cm)	490	468	373	358	423	405	413	443	483	455	425
3	pH_FLD (pH units)	7.5	7.5	7.5	7.5	7.5	7.5	7.5	8.0	8.0	8.0	7.9
4	pH_GEN (pH units)	7.8	7.5	7.9	8.0	8.0	8.0	8.1	8.3	8.4	8.1	7.7
5	TDS (mg/L)			228	218	257	247	249	266	268	277	260
6	Temp (deg C)	18.9	17.8	19.5	12.9	17.0	18.6	17.4	15.0	19.0	22.1	21.3
7	Turb (NTU)				2.4	1.2	1.7	6.2	1.5			0.6
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	3.0	0.0	0.0			5.3	0.0	0.0	27.9	3.0	0.0
2	ALK-TOT (mgCaCO3/L)	318	320	119			171	143	191	203	119	207
3	B (mg/L)	0.26	0.10	0.07			0.06	0.08	0.08	0.26	0.22	0.45
4	Ca (mg/L)	46	49	25	26	34	34	37	53	44	43	34
5	Cl (mg/L)	22.0	20.0	17.0	36.1	29.1	13.9	13.5	20.0	40.9	22.5	21.8
6	CO3 (mg/L)	3.6	0.0	0.0	0.0	4.8	9.6	0.0	6.0	33.6	3.6	0.0
7	F (mg/L)	0.35	0.48	0.49	0.57	0.31	0.30	0.22	0.35	0.27	0.68	0.57
8	Fe (mg/L)	0.3	0.2	0.1	0.2			0.0				0.3
9	HCO3 (mg/L)	217	192	145	161	184	182	174	213	179	138	253
10	K (mg/L)	7.8	10.0	11.5	10.1	6.3	3.1	1.6	4.2	5.8	6.0	17.5
11	Mg (mg/L)	25.0	27.3	14.9	18.3	15.5	20.1	21.4	26.3	30.4	25.3	34.8
12	Na (mg/L)	19.6	22.1	15.5	21.7	18.2	9.7	9.5	13.6	27.1	14.2	14.3
13	NH3-N (mg N/L)				0.42	0.30	0.18	0.15	0.32	0.32	0.90	0.74
14	NO2+NO3 (mg N/L)	1.60	1.46	1.10	1.24	0.79	5.82	6.01	12.38	18.71	16.74	1.12
15	NO2-N (mgN/L)	0.06	0.07	0.05	0.06	0.12	0.18	0.19	0.29	0.42	0.66	0.50
16	NO3-N (mgN/L)	1.54	1.39	1.05	1.18	0.67	5.64	5.81	12.09	18.29	16.08	0.62
17	o-PO4-P (mg P/L)	0.134	0.083	0.067	0.062	0.057	0.140	0.078	0.103	0.245	0.276	1.020
18	SiO2 (mg/L)	10.2	6.9	4.8								
19	SO4 (mg/L)	24.6	23.2	15.7	13.1	6.4	5.5	10.3	15.5	21.1	39.5	34.2

Water Quality Seasonal Average for the period: 2006-2017

Station Name : LUCKNOW (GGXOOQ3)
Local River : Gomti

River Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

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	2016-2017
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)	10.0			8.6	4.6	3.2	4.2	10.6	25.4	25.5	8.9
2	COD (mg/L)						13.6	15.8	27.5	27.8	27.8	12.0
3	DO (mg/L)	1.7	3.5	7.1	3.5	4.4	3.9	5.2	3.6	1.5	0.7	0.8
4	DO_SAT% (%)	18	38	77	36	53	42	54	36	15	8	9
5	FCol-MPN (MPN/100mL)											8500
6	Tcol-MPN (MPN/100mL)											59250
	TRACE & TOXIC											
1	As (µg/L)											6.61
2	Cd (µg/L)											0.07
3	Cr (µg/L)											44.38
4	Cu (µg/L)											8.06
5	Ni (µg/L)											21.67
6	Pb (µg/L)											1.82
7	Zn (µg/L)											11.00
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	116	123	62	66	86	86	94	133	111	108	84
2	HAR_Total (mgCaCO3/L)	220	237	125	142	150	170	183	243	238	213	229
3	Na% (%)	16	16	19	24	20	11	10	11	20	12	11
4	RSC (-)	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.6	0.6	0.6	0.8	0.6	0.3	0.3	0.4	0.8	0.4	0.4
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : LUCKNOW (GGXOOQ3)
Local River : Gomti

River Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

TABLE-11

S.No	Parameters	Summer Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	Q (cumec)	29.26	25.31	36.26	38.28	27.46	46.16	54.61	54.43		25.74	
2	EC_GEN (µmho/cm)	540	657	557	603	517	563	520	547	553	590	561
3	pH_FLD (pH units)	7.5	7.5	7.5	7.4	7.5	7.8	7.5	7.7	8.3	8.0	8.0
4	pH_GEN (pH units)	8.0	7.7	7.9	8.4	8.1	8.5	8.5	8.3	8.5	8.1	7.7
5	TDS (mg/L)			337	367	310	340	312	330	303	362	342
6	Temp (deg C)	25.2	24.7	24.7	26.3	21.1	24.3	24.8	23.3	21.3	27.3	27.2
7	Turb (NTU)				1.9	1.2	2.3	3.4	1.2			0.7
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	5.3	0.0	0.0		0.0	15.9	8.0	17.3	25.9	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	406	336	144		195	188	170	203	212	134	232
3	B (mg/L)	0.23	0.10	0.14	0.20	0.10	0.10	0.12	0.10	0.34	0.36	0.48
4	Ca (mg/L)	49	57	30	31	42	42	54	64	40	42	41
5	Cl (mg/L)	18.7	29.9	28.8	43.4	34.1	20.6	22.7	27.3	36.0	35.9	31.8
6	CO3 (mg/L)	6.4	0.0	0.0	16.0	0.0	22.4	6.4	20.8	20.8	6.4	0.0
7	F (mg/L)	0.38	0.77	0.70	0.72	0.49	0.38	0.35	0.42	0.51	0.74	0.65
8	Fe (mg/L)	0.2	0.3	0.3	0.2							0.3
9	HCO3 (mg/L)	241	207	181	195	226	190	205	205	190	155	283
10	K (mg/L)	8.5	11.5	14.1	12.5	8.1	3.5	3.3	5.6	16.9	10.3	24.4
11	Mg (mg/L)	27.5	32.7	21.3	21.3	18.2	22.4	29.6	28.6	30.6	31.1	33.3
12	Na (mg/L)	26.8	26.6	20.0	29.1	21.1	13.3	15.9	18.1	27.6	21.7	20.2
13	NH3-N (mg N/L)			0.62	0.53	0.34	0.22	0.40	0.43	0.54	1.06	0.86
14	NO2+NO3 (mg N/L)	1.87	1.67	1.40	1.83	1.36	6.67	11.28	14.00	26.38	17.27	1.17
15	NO2-N (mgN/L)	0.10	0.10	0.09	0.15	0.15	0.23	0.40	0.50	0.46	0.74	0.45
16	NO3-N (mgN/L)	1.77	1.56	1.31	1.68	1.21	6.45	10.88	13.50	25.92	16.53	0.72
17	o-PO4-P (mg P/L)	0.114	0.096	0.561	0.141	0.110	0.138	0.131	0.138	0.400	0.324	1.240
18	SiO2 (mg/L)	10.3	8.1	4.1								
19	SO4 (mg/L)	27.0	26.7	18.4	19.0	7.7	8.8	16.6	20.8	17.6	47.7	24.0

Water Quality Seasonal Average for the period: 2006-2017

Station Name : LUCKNOW (GGXOOQ3)
Local River : Gomti

River Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

S.No	Parameters	Summer Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)				10.2	8.6	4.9	6.1	10.0	18.9	18.7	10.3
2	COD (mg/L)					44.0	13.7	21.7	27.3	27.0	26.0	15.9
3	DO (mg/L)	1.0	0.9	3.7	2.0	2.0	4.9	2.7	2.6	0.8	0.7	0.7
4	DO_SAT% (%)	13	11	44	24	23	59	32	31	9	9	9
5	FCol-MPN (MPN/100mL)											25000
6	Tcol-MPN (MPN/100mL)											70000
	TRACE & TOXIC											
1	As (µg/L)											8.00
2	Cd (µg/L)											
3	Cr (µg/L)											5.00
4	Cu (µg/L)											10.00
5	Ni (µg/L)											53.00
6	Pb (µg/L)											2.00
7	Zn (µg/L)											11.00
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	122	142	76	77	106	105	136	161	101	106	103
2	HAR_Total (mgCaCO3/L)	236	278	165	166	182	198	259	279	228	235	242
3	Na% (%)	19	17	19	26	19	13	12	12	20	16	14
4	RSC (-)	0.0	0.0	0.0	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.3
5	SAR (-)	0.8	0.7	0.7	1.0	0.7	0.4	0.4	0.5	0.8	0.6	0.6
	PESTICIDES											

Water Quality Seasonal Average for the period: 2007-2017

Station Name : SULTANPUR (GGX00H3)

Local River : Gomti

River Water

Division : M Ganga Div. III, Varanasi

Sub-Division : M Ganga Yamuna SD, Allahabad

TABLE-12

S.No	Parameters	Flood Jun - Oct									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL										
1	Q (cumec)	112.3	662.7	146.3	189.3	200.8	156.1	224.7	50.59	68.28	87.78
2	EC_FLD (µmho/cm)	309	305	413	277	335	325	300	434	466	361
3	EC_GEN (µmho/cm)	311	291	424	281	326	313	294	427	430	367
4	pH_FLD (pH units)	8.5	8.4	8.2	8.4	8.2	7.7	8.0	7.9	7.6	8.0
5	pH_GEN (pH units)	8.5	9.0	8.4	8.3	8.6	7.9	8.2	7.9	7.8	7.9
6	SS (mg/L)										
7	TDS (mg/L)			314	150	203	199	200	256	258	209
8	Temp (deg C)	32.6	30.2	32.5	32.8	28.7	29.5	28.3	28.8	24.7	31.0
9	Turb (NTU)			0.7	0.2	0.1			3.1	0.5	
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	29.1	6.0	5.6	23.9	19.9	8.0	5.3	4.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	151	106	212	221	170	152	142	141	142	110
3	B (mg/L)	0.04	0.00	0.06	0.04	0.00	0.10	0.03	0.02	0.06	0.03
4	Ca (mg/L)	48	26	31	38	45	49	47	44	35	50
5	Cl (mg/L)	31.6	25.6	86.7	22.8	37.6	27.6	29.0	28.4	25.6	42.0
6	CO3 (mg/L)	35.0	7.2	6.7	28.8	24.0	9.6	6.4	4.8	0.0	0.0
7	F (mg/L)	0.12	0.16	0.40	0.66	0.22	0.53	0.41	0.32	0.30	0.35
8	Fe (mg/L)	0.1	0.1	0.1	0.3	0.1	0.2	0.2	0.2	0.2	0.2
9	HCO3 (mg/L)	113	115	245	211	159	166	160	162	173	135
10	K (mg/L)	5.8	9.0	6.5	7.0	6.8	7.8	8.2	7.4	6.2	10.8
11	Mg (mg/L)	14.6	15.0	28.1	16.5	20.6	17.1	17.0	15.0	14.4	12.5
12	Na (mg/L)	26.8	35.4	70.7	25.0	22.8	21.2	19.6	21.4	17.6	25.4
13	NH3-N (mg N/L)	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.01	0.05
14	NO2+NO3 (mg N/L)	0.02	0.07	0.86	0.18	0.30	0.39	0.33	0.30	0.30	0.29
15	NO2-N (mgN/L)	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
16	NO3-N (mgN/L)	0.01	0.07	0.84	0.18	0.30	0.38	0.33	0.30	0.30	0.29
17	o-PO4-P (mg P/L)								0.027	0.052	
18	Org-N (mgN/L)		0.0	0.3	0.0						
19	P-Tot (mgP/L)	0.050	0.036	0.252	0.028	0.045	0.001	0.001	0.092	0.139	0.133
20	SiO2 (mg/L)	5.9	5.4	7.8	8.5	8.0	8.6	8.5	8.2	7.6	8.4
21	SO4 (mg/L)	26.4	26.6	19.7	12.8	29.6	28.8	25.0	24.2	23.0	29.4

Water Quality Seasonal Average for the period: 2007-2017

Division : M Ganga Div. III, Varanasi

Station Name : SULTANPUR (GGX00H3)

Sub-Division : M Ganga Yamuna SD, Allahabad

Local River : Gomti

River Water

S.No	Parameters	Flood Jun - Oct									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	BIOLOGICAL/BACTERIOLOGICAL										
1	BOD3-27 (mg/L)	3.3	3.3	3.0	2.9	2.8	2.9	3.1	3.0	3.2	2.7
2	COD (mg/L)	11.5	5.7	8.8	12.8	12.9	12.9	11.4	17.7	12.5	14.2
3	DO (mg/L)	6.7	8.0	7.5	7.2	7.7	7.1	7.2	7.2	6.2	6.8
4	DO_SAT% (%)	92	106	103	100	99	92	93	93	74	91
5	FCol-MPN (MPN/100mL)	1140	1000	1640	1320	1380	1340	1480	1840	1960	1660
6	Tcol-MPN (MPN/100mL)	2500	2200	4940	2880	3020	2960	2780	3460	3600	3900
	TRACE & TOXIC										
1	As (µg/L)										
2	Cd (µg/L)										
3	Cr (µg/L)										
4	Ni (µg/L)										
5	Pb (µg/L)										
6	Zn (µg/L)										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	121	64	77	95	113	123	117	111	87	125
2	HAR_Total (mgCaCO3/L)	182	127	194	164	199	194	187	173	148	177
3	Na% (%)	24	36	43	23	20	18	18	20	20	23
4	RSC (-)	0.0	0.0	0.4	1.2	0.1	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.9	1.4	2.2	0.8	0.7	0.7	0.6	0.7	0.6	0.8
	PESTICIDES										

Water Quality Seasonal Average for the period: 2007-2017

Station Name : SULTANPUR (GGX00H3)
Local River : Gomti

River Water

Division : M Ganga Div. III, Varanasi
Sub-Division : M Ganga Yamuna SD, Allahabad

TABLE-13

S.No	Parameters	Winter Nov - Feb									
		2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL										
1	Q (cumec)	49.63	94.95	81.28	69.82	79.32	57.16	71.45	47.53	52.88	40.95
2	EC_FLD (µmho/cm)	499	364	390	323	324	334	333	413	555	464
3	EC_GEN (µmho/cm)	497	350	489	329	316	323	329	406	550	468
4	pH_FLD (pH units)	8.5	8.1	8.3	8.5	8.2	8.0	8.1	7.9	7.7	8.2
5	pH_GEN (pH units)	8.6	8.7	8.3	8.4	8.5	8.3	8.3	8.0	7.9	7.9
6	SS (mg/L)										
7	TDS (mg/L)			276	166	224	187	206	247	331	250
8	Temp (deg C)	23.1	22.8	20.3	20.4	19.8	15.1	18.9	13.1	10.4	20.0
9	Turb (NTU)			0.1	0.1				3.6	1.8	
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	24.9	12.4	4.0	19.9	19.9	10.0	3.3	5.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	271	155	185	214	160	146	133	144	211	85
3	B (mg/L)	0.05	0.05	0.03	0.03	0.02	0.03	0.03	0.03	0.03	0.03
4	Ca (mg/L)	46	34	30	39	37	48	47	44	50	43
5	Cl (mg/L)	41.7	67.1	72.3	29.0	31.3	30.0	27.5	32.0	37.5	40.5
6	CO3 (mg/L)	30.0	15.0	4.8	24.0	24.0	12.0	4.0	6.0	0.0	0.0
7	F (mg/L)	0.10	0.22	0.19	0.33	0.30	0.35	0.36	0.30	0.41	0.28
8	Fe (mg/L)	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
9	HCO3 (mg/L)	244	159	215	212	146	154	154	163	257	104
10	K (mg/L)	8.5	9.5	5.9	6.8	7.0	6.5	8.0	7.0	9.5	9.3
11	Mg (mg/L)	30.6	23.9	24.6	20.2	19.5	15.1	14.5	16.2	20.7	16.7
12	Na (mg/L)	57.2	57.4	59.3	20.8	21.5	21.0	21.3	20.5	26.5	23.5
13	NH3-N (mg N/L)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.01	0.05
14	NO2+NO3 (mg N/L)	0.44	0.22	0.42	0.42	0.33	0.30	0.31	0.28	0.33	0.26
15	NO2-N (mgN/L)	0.01	0.00	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00
16	NO3-N (mgN/L)	0.43	0.22	0.41	0.41	0.32	0.30	0.31	0.28	0.33	0.26
17	o-PO4-P (mg P/L)								0.044		
18	Org-N (mgN/L)	0.0	0.0	0.6	0.0						
19	P-Tot (mgP/L)	0.008	0.009	0.032	0.198	0.182	0.125	0.001	0.109	0.159	0.146
20	SiO2 (mg/L)	7.4	7.0	8.2	8.0	8.3	8.4	8.6	7.8	7.9	8.6
21	SO4 (mg/L)	41.0	25.5	15.0	16.5	17.0	20.0	25.0	21.5	26.0	32.0

Water Quality Seasonal Average for the period: 2007-2017

Station Name : SULTANPUR (GGX00H3)

Local River : Gomti

River Water

Division : M Ganga Div. III, Varanasi

Sub-Division : M Ganga Yamuna SD, Allahabad

S.No	Parameters	Winter Nov - Feb									
		2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	BIOLOGICAL/BACTERIOLOGICAL										
1	BOD3-27 (mg/L)	3.2	2.4	3.0	2.8	2.8	2.9	2.8	2.9	3.5	3.1
2	COD (mg/L)	8.2	4.3	10.9	11.7	11.7	16.0	11.5	19.8	19.0	20.5
3	DO (mg/L)	6.7	8.1	7.5	8.1	7.9	7.9	7.8	7.6	5.9	7.2
4	DO_SAT% (%)	76	94	83	90	86	79	83	72	53	80
5	FCoI-MPN (MPN/100mL)	825	1125	1900	1275	1325	1400	2025	1500	1975	1100
6	TcoI-MPN (MPN/100mL)	2400	2875	13500	2925	2975	3150	3125	3325	3800	3225
	TRACE & TOXIC										
1	As (µg/L)										
2	Cd (µg/L)										
3	Cr (µg/L)										
4	Ni (µg/L)										
5	Pb (µg/L)										
6	Zn (µg/L)										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	116	86	75	98	92	121	117	111	125	107
2	HAR_Total (mgCaCO3/L)	244	185	178	182	174	184	178	179	211	177
3	Na% (%)	29	38	41	19	20	19	20	19	20	21
4	RSC (-)	0.3	0.1	0.3	0.9	0.0	0.0	0.0	0.0	0.1	0.0
5	SAR (-)	1.5	1.8	1.9	0.7	0.7	0.7	0.7	0.7	0.8	0.8
	PESTICIDES										

Water Quality Seasonal Average for the period: 2007-2017

Station Name : SULTANPUR (GGX00H3)

Local River : Gomti

River Water

Division : M Ganga Div. III, Varanasi

Sub-Division : M Ganga Yamuna SD, Allahabad

TABLE-14

S.No	Parameters	Summer Mar - May									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL										
1	Q (cumec)	29.15	52.19	45.23	38.10	53.65	48.61	64.19	45.91	29.49	22.22
2	EC_FLD (µmho/cm)	467	572	524	389	335	366	349	513	623	643
3	EC_GEN (µmho/cm)	460	559	512	387	327	363	343	505	617	647
4	pH_FLD (pH units)	8.7	7.7	8.6	8.7	8.2	8.4	8.2	8.0	7.8	8.3
5	pH_GEN (pH units)	9.3	8.7	8.7	8.7	8.6	8.5	8.5	8.0	7.9	8.2
6	SS (mg/L)									18	
7	TDS (mg/L)			264	202	230	222	210	301	371	341
8	Temp (deg C)	27.5	27.2	26.2	23.0	24.2	20.7	22.7	16.8	22.3	25.8
9	Turb (NTU)			0.1	0.1				1.2	1.4	
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	33.2	19.9	22.6	19.9	19.9	19.9	7.7	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	234	208	181	131	162	164	140	148	212	112
3	B (mg/L)		0.01	0.03	0.02	0.03	0.16	0.03	0.03	0.03	0.03
4	Ca (mg/L)	32	36	39	64	40	44	46	46	52	43
5	Cl (mg/L)	30.7	207.4	50.1	24.7	32.0	32.7	24.0	35.3	38.7	46.0
6	CO3 (mg/L)	40.0	24.0	27.2	24.0	24.0	24.0	9.3	0.0	0.0	0.0
7	F (mg/L)		0.18	0.30	1.30	0.29	0.31	0.36	0.38	0.42	0.30
8	Fe (mg/L)		0.1	0.2	0.3	0.2	0.2	0.2	0.3	0.2	0.3
9	HCO3 (mg/L)	102	205	165	111	149	151	151	181	259	136
10	K (mg/L)	7.7	8.7	5.3	8.0	8.0	8.7	8.0	8.7	9.3	12.3
11	Mg (mg/L)	20.6	34.4	29.5	14.6	20.0	16.0	14.7	17.4	22.4	18.6
12	Na (mg/L)	34.0	141.2	38.2	24.0	23.0	24.0	20.0	23.0	28.0	31.0
13	NH3-N (mg N/L)		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.05
14	NO2+NO3 (mg N/L)		0.08	0.06	0.85	0.46	0.38	0.32	0.33	0.34	0.29
15	NO2-N (mgN/L)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	NO3-N (mgN/L)		0.08	0.06	0.85	0.46	0.38	0.32	0.33	0.34	0.29
17	o-PO4-P (mg P/L)								0.031		
18	Org-N (mgN/L)		0.0	0.0	0.0						
19	P-Tot (mgP/L)		0.001	0.014	0.207	0.191	0.194	0.001	0.157	0.171	0.162
20	SiO2 (mg/L)		8.4	8.8	8.1	8.4	8.4	8.7	8.7	7.7	8.8
21	SO4 (mg/L)	35.3	21.7	22.0	19.0	20.3	20.0	22.0	27.3	28.7	42.3

Water Quality Seasonal Average for the period: 2007-2017

Station Name : SULTANPUR (GGX00H3)

Local River : Gomti

River Water

Division : M Ganga Div. III, Varanasi

Sub-Division : M Ganga Yamuna SD, Allahabad

S.No	Parameters	Summer Mar - May									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	BIOLOGICAL/BACTERIOLOGICAL										
1	BOD3-27 (mg/L)	2.9	2.9	2.5	2.8	2.7	3.0	2.9	3.0	3.9	4.5
2	COD (mg/L)	5.2	4.4	20.5	10.0	13.5	14.4	13.7	21.4	18.2	29.9
3	DO (mg/L)	9.6	8.0	7.6	7.8	7.2	7.6	7.8	7.2	6.1	5.8
4	DO_SAT% (%)	121	100	94	91	85	84	90	74	70	71
5	FCol-MPN (MPN/100mL)	867	1067	1467	1667	1533	1567	2367	2033	2667	1900
6	Tcol-MPN (MPN/100mL)	2067	2933	6333	3133	3133	3167	3700	3767	5667	4667
	TRACE & TOXIC										
1	As (µg/L)				9.0	2.0	2.0	2.0	3.0	1.5	2.0
2	Cd (µg/L)				6.0	3.0	3.0	2.5	2.0	2.5	1.5
3	Cr (µg/L)				67.0	2.0	3.0	5.0	6.0	4.5	4.0
4	Ni (µg/L)				20.0	6.0	5.0	5.0	7.0	6.0	5.0
5	Pb (µg/L)					2.0	2.0	2.0	3.0	2.5	2.0
6	Zn (µg/L)					1.2	2.0	3.0	5.0	4.0	3.0
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	79	89	97	161	99	111	116	115	129	108
2	HAR_Total (mgCaCO3/L)	165	233	220	222	183	177	178	188	222	185
3	Na% (%)	30	56	27	18	21	22	19	20	21	25
4	RSC (-)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	1.2	4.0	1.1	0.7	0.7	0.8	0.7	0.7	0.8	1.0
	PESTICIDES										

102

Water Quality Seasonal Average for the period: 2007-2017

Station Name : MAIGHAT (GGXOOB4)
Local River : Gomti

River Water

Division : M Ganga Div. III, Varanasi
Sub-Division : M Ganga - C Sarju SD, Varanasi

TABLE-15

S.No	Parameters	Flood Jun - Oct									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL										
1	Q (cumec)	168.7	686.0	263.9	327.3	339.7	215.5	424.2	124.6	148.3	157.2
2	EC_FLD (µmho/cm)	326	305	510	334	351	326	310	352	440	356
3	EC_GEN (µmho/cm)	307	293	505	330	339	324	303	348	435	375
4	pH_FLD (pH units)	7.3	8.1	8.0	8.2	8.3	7.9	8.0	8.0	7.8	8.1
5	pH_GEN (pH units)	7.8	8.9	8.1	8.6	8.6	8.1	8.2	8.2	8.0	8.0
6	TDS (mg/L)			114	180	204	200	200	209	261	206
7	Temp (deg C)	30.7	30.2	31.5	30.0	31.1	30.0	32.5	33.3	32.9	31.1
8	Turb (NTU)			0.4	0.4	0.1			4.0	0.3	3.4
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	24.8	5.5	0.0	31.9	0.0	0.0	0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	184	81	167	238	178	175	166	164	184	133
3	B (mg/L)	0.17	0.00	0.06	0.01	0.01	0.04	0.03	0.01	0.00	0.00
4	Ca (mg/L)	39	26	24	35	35	34	32	32	36	49
5	Cl (mg/L)	29.2	57.0	98.6	30.6	41.8	48.8	46.8	36.4	32.0	42.8
6	CO3 (mg/L)	29.9	6.6	0.0	38.4	0.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.17	0.23	0.59	0.72	0.26	0.50	0.43	0.33	0.39	0.40
8	Fe (mg/L)	0.1	0.0	0.1	0.2	0.0	0.2	0.1	0.1	0.2	32.5
9	HCO3 (mg/L)	103	86	204	212	218	214	203	200	224	162
10	K (mg/L)	5.6	8.7	8.0	5.8	7.0	8.2	8.2	7.8	7.6	9.8
11	Mg (mg/L)	17.3	10.2	22.5	20.7	23.0	22.6	19.6	22.2	20.1	23.3
12	Na (mg/L)	26.2	37.4	87.4	28.8	29.8	33.6	33.4	30.4	22.6	26.8
13	NH3-N (mg N/L)	0.05	0.05	0.52	0.05	0.05	0.05	0.05	0.00	0.00	0.05
14	NO2+NO3 (mg N/L)	0.06	0.21	0.33	0.02	0.18	0.18	0.18	0.17	0.15	0.18
15	NO2-N (mgN/L)	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	NO3-N (mgN/L)	0.05	0.20	0.32	0.02	0.18	0.18	0.18	0.17	0.15	0.18
19	P-Tot (mgP/L)	0.055	0.032	0.317	0.085	0.030	0.097	0.080	0.077	0.141	0.164
20	SiO2 (mg/L)	8.3	7.7	6.8	9.2	7.8	9.4	9.3	9.1	8.4	9.4
21	SO4 (mg/L)	27.0	46.8	30.2	17.0	24.7	29.4	32.0	27.2	25.6	29.2

Water Quality Seasonal Average for the period: 2007-2017

Station Name : MAIGHAT (GGXOOB4)
Local River : Gomti

River Water

Division : M Ganga Div. III, Varanasi
Sub-Division : M Ganga - C Sarju SD, Varanasi

S.No	Parameters	Flood Jun - Oct									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	BIOLOGICAL/BACTERIOLOGICAL										
1	BOD3-27 (mg/L)	3.3	3.4	2.9	2.9	2.5	3.1	2.6	3.0	3.1	2.7
2	COD (mg/L)	10.7	10.5	6.7	10.5	10.3	12.3	9.4	16.6	13.5	14.1
3	DO (mg/L)	6.6	7.9	6.6	7.4	7.9	7.7	7.5	7.3	7.1	6.6
4	DO_SAT% (%)	88	104	89	98	106	101	103	102	98	88
5	FCol-MPN (MPN/100mL)	240	325	1800	820	960	1080	920	1340	1620	1700
6	Tcol-MPN (MPN/100mL)	640	850	3080	1560	2020	2160	2080	2560	3080	3820
	TRACE & TOXIC										
1	As (µg/L)										
2	Cd (µg/L)										
3	Cr (µg/L)										
4	Ni (µg/L)										
5	Pb (µg/L)										
6	Zn (µg/L)										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	97	66	61	88	86	84	80	79	90	121
2	HAR_Total (mgCaCO3/L)	169	108	155	175	182	178	162	172	174	218
3	Na% (%)	25	42	54	24	25	28	30	27	20	20
4	RSC (-)	0.0	0.0	0.3	1.3	0.1	0.0	0.2	0.0	0.2	0.0
5	SAR (-)	0.9	1.6	3.1	0.9	1.0	1.1	1.1	1.0	0.7	0.8
	PESTICIDES										

Water Quality Seasonal Average for the period: 2007-2017

Station Name : MAIGHAT (GGXOOB4)
Local River : Gomti

River Water

Division : M Ganga Div. III, Varanasi
Sub-Division : M Ganga - C Sarju SD, Varanasi

TABLE-16

S.No	Parameters	Winter Nov - Feb									
		2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL										
1	Q (cumec)	80.02	153.1	142.9	99.76	100.4	75.27	117.0	89.82	57.58	77.64
2	EC_FLD (µmho/cm)	289	320	331	318	355	340	300	353	525	496
3	EC_GEN (µmho/cm)	287	306	329	314	342	335	292	347	519	501
4	pH_FLD (pH units)	7.6	8.3	8.1	8.3	8.4	8.0	7.7	7.9	8.0	7.9
5	pH_GEN (pH units)	7.9	9.0	8.2	8.5	8.6	8.2	8.0	8.0	8.1	7.8
6	TDS (mg/L)			130	163	171	186	172	207	312	258
7	Temp (deg C)	22.1	22.0	19.5	22.5	21.0	22.1	20.6	20.0	21.5	21.0
8	Turb (NTU)			0.1	0.1	0.1			4.3	1.1	1.0
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	19.0	10.0	3.0	18.3	0.9	0.0	0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	150	123	159	206	166	163	164	174	203	110
3	B (mg/L)	0.18	0.05	0.00	0.04	0.03	0.03	0.04	0.00	0.00	0.00
4	Ca (mg/L)	34	33	26	32	34	35	32	34	41	46
5	Cl (mg/L)	26.8	81.7	86.4	32.5	39.5	42.5	41.5	45.0	37.5	42.5
6	CO3 (mg/L)	22.9	12.0	3.6	22.0	1.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.11	0.21	0.28	0.47	0.22	0.30	0.43	0.23	0.41	0.32
8	Fe (mg/L)	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
9	HCO3 (mg/L)	99	126	187	206	200	199	200	212	248	134
10	K (mg/L)	6.5	8.4	5.0	6.0	7.3	7.5	8.3	8.5	8.5	9.8
11	Mg (mg/L)	19.8	13.9	18.6	25.8	24.7	22.9	19.4	23.0	22.7	19.2
12	Na (mg/L)	27.8	51.4	76.5	17.3	28.0	30.0	30.0	30.5	28.0	26.0
13	NH3-N (mg N/L)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.05
14	NO2+NO3 (mg N/L)	0.11	0.22	1.68	0.08	0.05	0.08	0.09	0.11	0.17	0.19
15	NO2-N (mgN/L)	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	NO3-N (mgN/L)	0.10	0.22	1.68	0.08	0.05	0.08	0.09	0.11	0.17	0.19
19	P-Tot (mgP/L)	0.059	0.023	0.052	0.102	0.090	0.106	0.127	0.107	0.161	0.188
20	SiO2 (mg/L)	7.3	8.2	9.4	7.9	8.0	8.2	10.3	7.8	9.2	10.5
21	SO4 (mg/L)	30.8	16.6	18.4	23.0	19.8	29.5	27.0	33.5	27.8	32.3

591

Water Quality Seasonal Average for the period: 2007-2017

Station Name : MAIGHAT (GGXOOB4)
Local River : Gomti

River Water

Division : M Ganga Div. III, Varanasi
Sub-Division : M Ganga - C Sarju SD, Varanasi

S.No	Parameters	Winter Nov - Feb									
		2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	BIOLOGICAL/BACTERIOLOGICAL										
1	BOD3-27 (mg/L)	3.4	2.4	2.5	3.3	2.8	2.7	2.8	2.7	2.9	2.6
2	COD (mg/L)	8.0	8.6	5.5	10.5	10.2	15.8	10.5	16.3	18.5	21.0
3	DO (mg/L)	6.7	7.2	7.5	8.3	7.9	8.0	7.7	7.6	7.2	7.3
4	DO_SAT% (%)	77	83	82	96	88	91	85	83	81	83
5	FCol-MPN (MPN/100mL)	125	700	3025	750	825	1325	1200	1175	1825	925
6	Tcol-MPN (MPN/100mL)	775	1375	8250	1875	2000	2350	2275	2300	3425	2500
	TRACE & TOXIC										
1	As (µg/L)										
2	Cd (µg/L)										
3	Cr (µg/L)										
4	Ni (µg/L)										
5	Pb (µg/L)										
6	Zn (µg/L)										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	85	82	66	79	84	88	80	85	102	115
2	HAR_Total (mgCaCO3/L)	168	140	143	187	187	184	160	181	197	195
3	Na% (%)	26	42	53	16	24	25	28	26	22	21
4	RSC (-)	0.0	0.0	0.4	0.5	0.0	0.0	0.1	0.1	0.2	0.0
5	SAR (-)	0.9	1.9	2.8	0.6	0.9	1.0	1.0	1.0	0.9	0.8
	PESTICIDES										

Water Quality Seasonal Average for the period: 2007-2017

Station Name : MAIGHAT (GGXOOB4)
Local River : Gomti

River Water

Division : M Ganga Div. III, Varanasi
Sub-Division : M Ganga - C Sarju SD, Varanasi

TABLE-17

S.No	Parameters	Summer Mar - May									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL										
1	Q (cumec)	38.27	60.90	59.48	53.30	50.73	82.05	93.26	69.49	25.09	34.34
2	EC_FLD (µmho/cm)	393	522	493	310	363	392	320	490	615	577
3	EC_GEN (µmho/cm)	390	511	486	306	346	385	311	485	608	584
4	pH_FLD (pH units)	8.7	7.8	8.5	8.4	8.3	8.3	8.1	8.0	8.2	8.0
5	pH_GEN (pH units)	9.1	8.2	8.6	8.5	8.6	8.3	8.3	8.1	8.2	8.0
6	TDS (mg/L)			265	158	189	210	163	291	365	303
7	Temp (deg C)	25.0	27.2	28.0	26.8	26.3	26.3	23.8	26.7	27.0	26.7
8	Turb (NTU)			0.1	0.1	0.1			0.9	1.6	0.6
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	13.3	33.2	4.2	19.9	6.6	0.0	0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	117	187	131	192	166	220	155	201	213	129
3	B (mg/L)	0.21	0.05	0.00	0.04	0.03	0.04	0.04	0.00	0.00	0.00
4	Ca (mg/L)	34	36	40	29	34	34	33	36	43	43
5	Cl (mg/L)	26.7	127.1	89.2	36.7	50.7	41.3	37.3	49.3	46.0	34.0
6	CO3 (mg/L)	16.0	40.0	5.1	24.0	8.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.12	0.21	0.79	0.38	0.26	0.43	0.43	0.45	0.49	0.34
8	Fe (mg/L)	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.2
9	HCO3 (mg/L)	111	146	150	185	186	268	189	246	260	158
10	K (mg/L)	6.3	10.8	5.3	7.3	9.0	9.0	8.0	9.3	10.0	9.0
11	Mg (mg/L)	20.5	25.3	22.2	27.9	23.7	23.8	20.1	24.7	26.4	19.7
12	Na (mg/L)	34.7	88.6	65.4	25.3	33.0	33.3	31.0	34.0	31.0	24.0
13	NH3-N (mg N/L)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.05
14	NO2+NO3 (mg N/L)	0.11	0.23	0.01	0.11	0.18	0.18	0.09	0.16	0.18	0.19
15	NO2-N (mgN/L)	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	NO3-N (mgN/L)	0.10	0.23	0.01	0.11	0.18	0.18	0.09	0.16	0.18	0.19
19	P-Tot (mgP/L)	0.049	0.015	0.042	0.068	0.129	0.133	0.132	0.144	0.178	0.190
20	SiO2 (mg/L)	8.2	8.8	10.8	8.0	8.3	8.3	10.9	9.1	9.6	9.5
21	SO4 (mg/L)	31.0	22.1	24.2	21.3	23.7	28.0	24.7	35.3	34.7	31.0

Water Quality Seasonal Average for the period: 2007-2017

Station Name : MAIGHAT (GGXOOB4)
Local River : Gomti

River Water

Division : M Ganga Div. III, Varanasi
Sub-Division : M Ganga - C Sarju SD, Varanasi

S.No	Parameters	Summer Mar - May									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	BIOLOGICAL/BACTERIOLOGICAL										
1	BOD3-27 (mg/L)	3.2	2.2	2.3	2.2	3.0	3.1	2.8	3.1	3.9	2.9
2	COD (mg/L)	10.3	4.9	11.3	10.4	11.4	15.6	12.9	18.3	19.9	27.6
3	DO (mg/L)	10.6	6.2	7.1	7.8	7.8	7.7	7.8	6.9	6.6	6.0
4	DO_SAT% (%)	128	78	91	97	96	95	92	86	82	74
5	FCol-MPN (MPN/100mL)	133	667	717	1033	1000	1233	1600	1600	2200	1233
6	Tcol-MPN (MPN/100mL)	533	1333	2200	2167	2233	2533	3000	3000	4000	3633
	TRACE & TOXIC										
1	As (µg/L)				7.0	16.0	14.0	16.0	14.0	7.0	6.0
2	Cd (µg/L)				3.8	26.0	12.0	9.0	6.0	2.5	2.5
3	Cr (µg/L)				30.8	13.0	7.0	12.0	11.0	9.0	7.5
4	Ni (µg/L)				8.3	3.0	5.0	6.2	8.0	7.0	7.0
5	Pb (µg/L)				6.8	9.5	8.0	10.4	11.0	7.8	6.0
6	Zn (µg/L)				160.0	60.0	10.5	32.0	30.0	10.5	6.5
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	85	90	99	73	86	86	83	90	108	108
2	HAR_Total (mgCaCO3/L)	171	196	192	190	184	185	166	193	218	190
3	Na% (%)	30	48	42	22	27	27	28	27	23	21
4	RSC (-)	0.0	0.0	0.0	0.1	0.0	0.8	0.0	0.2	0.0	0.0
5	SAR (-)	1.2	2.8	2.1	0.8	1.1	1.1	1.0	1.1	0.9	0.8
	PESTICIDES										

Water Quality Seasonal Average for the period: 2006-2017

Station Name : RAEBARELI (GGX10M2)
Local River : SAI

River Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

TABLE-18

S.No	Parameters	Flood Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	Q (cumec)	48.85	25.10	67.76	25.24	49.40	55.54	42.36	50.36	6.362	19.37	
2	EC_FLD (µmho/cm)									410		
3	EC_GEN (µmho/cm)	482	394	356	436	440	392	418	422	574	362	484
4	pH_FLD (pH units)	8.3	8.3	7.7	8.1	8.5	8.1	8.1	8.1	8.0	8.0	7.8
5	pH_GEN (pH units)	7.9	8.0	7.7	8.0	8.3	8.1	8.6	8.0	8.5	8.3	8.1
6	TDS (mg/L)			214	261	267	236	254	254	349	214	299
7	Temp (deg C)	30.7	30.1	28.8	30.1	30.4	29.8	31.2	30.0	31.4	29.6	30.8
8	Turb (NTU)				18.3	3.5	41.5	6.5	12.4	3.6		6.2
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	0.0		0.0		8.0	0.0	15.4	0.0	14.3	7.2	11.4
2	ALK-TOT (mgCaCO3/L)	347		147		148	151	123	199	191	86	136
3	B (mg/L)	0.07	0.09	0.02							3.46	0.23
4	Ca (mg/L)	40	41	33	44	34	33	26	59	62	28	30
5	Cl (mg/L)	22.8	18.4	17.2	24.4	32.9	25.3	14.3	23.9	41.7	43.9	31.1
6	CO3 (mg/L)	0.0	1.0	0.0	3.8	10.6	3.8	14.9	0.0	17.3	8.6	13.7
7	F (mg/L)	0.36	0.32	0.31	0.54	0.47	0.32	0.26	0.45	0.52	0.49	0.38
8	Fe (mg/L)	0.2	0.2	0.1	0.3							0.8
9	HCO3 (mg/L)	225	181	180	190	186	209	121	243	198	88	138
10	K (mg/L)	7.2	8.1	6.9	9.5	9.1	4.8	3.3	3.8	7.3	5.7	15.4
11	Mg (mg/L)	21.0	21.9	18.0	17.3	16.3	21.0	16.5	31.8	29.3	16.7	18.8
12	Na (mg/L)	21.9	20.7	12.5	16.7	21.3	16.0	9.9	16.1	27.7	30.1	19.8
13	NH3-N (mg N/L)				0.10	0.14	0.17	0.15	0.38	0.56	0.60	0.61
14	NO2+NO3 (mg N/L)	2.42	1.50	0.99	1.34	1.43	4.94	6.18	13.93	16.44	10.01	1.02
15	NO2-N (mgN/L)	0.04	0.07	0.13	0.07	0.12	0.12	0.13	0.51	0.63	0.46	0.49
16	NO3-N (mgN/L)	2.39	1.43	0.86	1.27	1.31	4.82	6.05	13.42	15.81	9.56	0.53
17	o-PO4-P (mg P/L)	0.134	0.097	0.064	0.056	0.118	0.097	0.064	0.169	0.198	0.238	
18	P-Tot (mgP/L)											0.626
19	SiO2 (mg/L)	10.2	8.0	5.5								
20	SO4 (mg/L)	25.4	26.8	17.7	27.5	19.0	7.8	6.9	19.7	23.6	25.9	25.5

Water Quality Seasonal Average for the period: 2006-2017

Station Name : RAEBARELI (GGX10M2)
Local River : SAI

River Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

S.No	Parameters	Flood Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)					3.2	2.4	1.8	2.0	2.7	12.0	11.6
2	COD (mg/L)					28.0	9.8	11.2	11.0	13.6	15.2	21.0
3	DO (mg/L)	8.2	4.7	5.6	6.1	6.0	5.9	6.4	7.0	7.2	3.5	3.0
4	DO_SAT% (%)	109	62	73	81	80	78	86	92	97	46	41
5	FCol-MPN (MPN/100mL)											10433
6	Tcol-MPN (MPN/100mL)											20333
	TRACE & TOXIC											
1	As (µg/L)											5.62
2	Cd (µg/L)											0.11
3	Cr (µg/L)											
4	Cu (µg/L)											5.60
5	Ni (µg/L)											
6	Pb (µg/L)											
7	Zn (µg/L)											0.29
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	99	102	83	110	86	83	65	147	155	71	75
2	HAR_Total (mgCaCO3/L)	187	193	157	182	154	170	133	279	277	140	153
3	Na% (%)	20	18	14	16	22	16	13	11	18	30	20
4	RSC (-)	0.3	0.0	0.0	0.1	0.4	0.2	0.0	0.0	0.0	0.0	0.1
5	SAR (-)	0.7	0.6	0.4	0.5	0.7	0.5	0.4	0.4	0.7	1.1	0.7
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : RAEBARELI (GGX10M2)
Local River : SAI

River Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

TABLE-19

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	2016-2017
	PHYSICAL											
1	Q (cumec)	3.407	5.698	8.858	11.13	9.125	11.14	9.233	9.460		6.818	
2	EC_FLD (µmho/cm)									650		
3	EC_GEN (µmho/cm)	470	398	430	308	388	478	420	473	608	503	450
4	pH_FLD (pH units)	8.3	8.0	7.8	7.5	7.9	8.3	8.5	8.5	8.5	8.4	7.8
5	pH_GEN (pH units)	8.3	8.0	8.1	8.4	8.4	8.2	8.1	8.6	8.7	8.4	7.9
6	TDS (mg/L)			255	190	236	290	254	284	338	310	274
7	Temp (deg C)	19.3	18.3	20.5	18.5	20.3	20.0	19.0	20.8	20.0	21.1	20.3
8	Turb (NTU)				2.5	1.2	1.7	5.7	2.6			4.3
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	7.0		4.0		0.0	12.0	7.5	18.9	22.9	9.0	2.0
2	ALK-TOT (mgCaCO3/L)	358		175		148	149	154	230	187	104	178
3	B (mg/L)	0.10	0.08	0.08			0.08	0.04	0.08	0.90	0.16	0.40
4	Ca (mg/L)	46	39	42	34	33	28	40	68	49	42	34
5	Cl (mg/L)	24.9	18.0	20.5	17.9	34.1	20.0	17.0	31.1	54.7	29.6	31.8
6	CO3 (mg/L)	8.4	0.0	4.8	15.6	10.8	10.8	9.0	22.8	27.6	10.8	2.4
7	F (mg/L)	0.43	0.47	0.42	0.47	0.34	0.28	0.31	0.46	0.53	0.49	0.43
8	Fe (mg/L)	0.3	0.3	0.3	0.1							0.8
9	HCO3 (mg/L)	210	200	204	199	187	163	170	234	172	105	212
10	K (mg/L)	11.9	10.4	8.8	9.1	8.8	2.9	3.4	4.4	4.3	5.2	21.4
11	Mg (mg/L)	24.5	21.4	21.1	13.6	16.2	19.9	25.0	36.1	26.3	19.0	23.8
12	Na (mg/L)	19.7	24.2	14.4	14.0	21.8	13.0	11.6	20.5	41.3	18.9	19.9
13	NH3-N (mg N/L)				0.08	0.06	0.22	0.30	0.47	0.35	0.94	0.67
14	NO2+NO3 (mg N/L)	1.53	1.27	1.08	1.16	1.29	6.14	7.35	17.40	24.12	9.75	1.05
15	NO2-N (mgN/L)	0.07	0.08	0.08	0.08	0.15	0.11	0.21	0.62	0.44	0.64	0.40
16	NO3-N (mgN/L)	1.46	1.19	1.00	1.08	1.14	6.03	7.15	16.78	23.68	9.11	0.65
17	o-PO4-P (mg P/L)	0.150	0.078	0.075	0.041	0.140	0.090	0.070	0.152	0.271	0.266	
18	P-Tot (mgP/L)											0.742
19	SiO2 (mg/L)	9.3	7.0	6.0								
20	SO4 (mg/L)	31.0	26.9	23.4	21.4	8.0	6.4	12.0	24.7	28.7	47.8	28.4

Water Quality Seasonal Average for the period: 2006-2017

Station Name : RAEBARELI (GGX10M2)
Local River : SAI

River Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

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	2016-2017
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)				5.9	2.8	2.6	1.9	2.6	20.0	15.3	7.6
2	COD (mg/L)						10.8	10.8	10.3	21.3	20.8	12.8
3	DO (mg/L)	5.5	5.2	6.3	6.1	6.2	5.8	6.7	7.0	3.1	4.6	3.2
4	DO_SAT% (%)	59	54	70	66	69	64	72	79	35	51	36
5	FCol-MPN (MPN/100mL)											5450
6	Tcol-MPN (MPN/100mL)											7750
	TRACE & TOXIC											
1	As (µg/L)											2.15
2	Cd (µg/L)											0.06
3	Cr (µg/L)											54.77
4	Cu (µg/L)											12.58
5	Ni (µg/L)											23.34
6	Pb (µg/L)											1.84
7	Zn (µg/L)											27.70
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	114	97	106	85	82	71	100	171	124	105	85
2	HAR_Total (mgCaCO3/L)	216	186	194	142	149	154	204	321	233	184	184
3	Na% (%)	16	21	13	17	23	15	11	12	28	18	17
4	RSC (-)	0.1	0.0	0.1	1.0	0.5	0.1	0.0	0.0	0.1	0.0	0.1
5	SAR (-)	0.6	0.8	0.5	0.5	0.8	0.5	0.4	0.5	1.2	0.6	0.6
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : RAEBARELI (GGX10M2)
Local River : SAI

River Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

TABLE-20

S.No	Parameters	Summer Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	Q (cumec)	3.843	3.467	4.850	7.743	5.587	6.363	8.365	5.023		0.800	
2	EC_FLD (µmho/cm)											
3	EC_GEN (µmho/cm)	460	603	643	550	430	513	547	707	603	773	710
4	pH_FLD (pH units)	7.8	8.0	8.0	7.8	8.2	8.0	8.0	8.0	8.2	8.2	8.0
5	pH_GEN (pH units)	8.2	7.8	8.2	8.6	8.4	8.8	8.7	8.4	8.8	8.3	8.0
6	TDS (mg/L)			387	337	258	310	329	428	351	466	436
7	Temp (deg C)	26.7	25.0	25.5	24.7	24.3	25.7	25.3	24.0	23.7	28.0	22.0
8	Turb (NTU)				2.4	1.4	3.6	3.7	1.5			0.8
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	0.0		0.0		8.0	17.3	7.0	12.0	22.6	25.9	0.0
2	ALK-TOT (mgCaCO3/L)	317		192		190	157	138	244	155	188	431
3	B (mg/L)	0.13	0.09	0.20	0.20	0.12	0.06	0.10	0.14	0.36	0.44	0.49
4	Ca (mg/L)	44	45	52	41	40	30	49	77	39	51	48
5	Cl (mg/L)	23.3	25.4	33.4	28.0	33.4	18.7	24.0	52.1	64.5	41.9	96.4
6	CO3 (mg/L)	0.0	0.0	9.6	12.8	6.4	20.8	8.8	14.4	27.2	20.8	0.0
7	F (mg/L)	0.46	0.70	0.66	0.67	0.36	0.29	0.42	0.53	0.41	0.63	0.63
8	Fe (mg/L)	0.3	0.3	0.5	0.2							
9	HCO3 (mg/L)	194	194	218	216	216	150	172	268	133	174	526
10	K (mg/L)	8.7	11.9	12.4	10.8	8.1	3.5	4.4	8.3	7.4	8.1	25.3
11	Mg (mg/L)	24.7	25.1	24.1	17.9	18.5	19.9	27.5	39.5	25.8	26.7	72.9
12	Na (mg/L)	23.3	26.0	22.6	18.8	20.5	12.0	16.6	34.5	45.5	17.7	52.0
13	NH3-N (mg N/L)			0.21	0.21	0.13	0.23	0.40	0.60	0.62	1.05	0.89
14	NO2+NO3 (mg N/L)	1.61	1.35	1.62	1.99	1.48	7.53	10.75	24.41	21.15	12.76	1.61
15	NO2-N (mgN/L)	0.09	0.10	0.15	0.12	0.15	0.15	0.42	0.73	0.50	0.86	0.55
16	NO3-N (mgN/L)	1.52	1.25	1.47	1.86	1.33	7.38	10.32	23.68	20.64	11.90	1.06
17	o-PO4-P (mg P/L)	0.162	0.090	0.134	0.114	0.131	0.079	0.141	0.217	0.369	0.310	
18	P-Tot (mgP/L)										1.100	1.000
19	SiO2 (mg/L)	9.4	8.6	7.1								
20	SO4 (mg/L)	30.6	27.8	32.2	28.0	7.0	8.8	18.1	28.6	34.9	44.9	37.5

Water Quality Seasonal Average for the period: 2006-2017

Station Name : RAEBARELI (GGX10M2)
Local River : SAI

River Water

Division : M Ganga Div. II, Lucknow
Sub-Division : Gomti Subdivision, Lucknow

S.No	Parameters	Summer Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)				3.5	2.4	2.2	3.3	3.6	9.1	23.2	9.4
2	COD (mg/L)					7.5	9.7	13.0	23.0	27.7	33.3	17.0
3	DO (mg/L)	4.7	5.4	6.3	6.7	6.8	6.7	5.5	5.5	2.1	2.0	1.8
4	DO_SAT% (%)	58	65	76	80	81	82	67	65	24	26	20
5	FCol-MPN (MPN/100mL)											4000
6	Tcol-MPN (MPN/100mL)											15000
	TRACE & TOXIC											
1	As (µg/L)											
2	Cd (µg/L)											
3	Cr (µg/L)											
4	Cu (µg/L)											
5	Ni (µg/L)											
6	Pb (µg/L)											
7	Zn (µg/L)											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	110	113	131	103	99	76	123	192	98	129	119
2	HAR_Total (mgCaCO3/L)	213	218	231	178	176	159	238	357	205	240	423
3	Na% (%)	19	20	17	18	19	14	13	17	31	13	20
4	RSC (-)	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.2
5	SAR (-)	0.7	0.8	0.6	0.6	0.7	0.4	0.5	0.8	1.4	0.5	1.1
	PESTICIDES											

114

5. निरूपण

किमी0	:	किलोमीटर
क्यूमेक	:	क्यूबिक मीटर प्रति सेकण्ड
म0गं0मं0	:	मध्य गंगा मण्डल
मिमी0	:	मिलीमीटर
सेमी0	:	सेन्टीमीटर
डी0ओ0	:	Dissolved Oxygen (घुलित ऑक्सीजन)
बी0ओ0डी0	:	Bio- Chemical Oxygen Demand (जैवरासायनिक ऑक्सीजन माँग)
पी0पी0एम0	:	Parts per Million
एच0एन0	:	Hardness Number (कठोरता संख्या)
एस0पी0	:	Sodium Percentage (सोडियम प्रतिशतता)
एस0ए0आर0	:	Sodium Adsorption Ratio (सोडियम एडजोर्पशनअनुपात)
आर0एस0सी0	:	Residual Sodium Carbonate (अवशिष्ट सोडियम कार्बोनेट)
K^+	:	पॉटेशियम आयन
Na^+	:	सोडियम आयन
Ca^{++}	:	कैलशियम आयन
Mg^{++}	:	मैग्नीशियम आयन
Al^{+++}	:	एल्यूमिनियम आयन
Fe^{+++}	:	लॉह आयन
NH_4^+	:	अमोनियम आयन
CO_3^{--}	:	कार्बोनेट आयन
HCO_3^-	:	बाईकार्बोनेट आयन
Cl^-	:	क्लोराइड आयन
F^-	:	फ्लोराइड आयन
SO_4^{--}	:	सल्फेट आयन
SO_3^{--}	:	सल्फाइट आयन
NO_3^-	:	नाइट्रेट आयन
NO_2^-	:	नाइट्राइट आयन
PO_4^{---}	:	फॉस्फेट आयन
SiO_2	:	सिलिका

6. शब्दार्थ

हिन्दी	:	English
विशिष्ट	:	Unique
अवशिष्ट	:	Residual
अपवाह	:	Up Stream
अभिलक्षण	:	Characteristics
अक्षांश	:	Lattitude
आकलन	:	Estimation
औद्योगिक	:	Industrial
क्रम संख्या	:	Serial Number
कठोरता संख्या	:	Hardness Number
गेज का शून्य सापेक्ष तल	:	Zero R.L. of Gauge
मापक प्राधिकारी	:	Measuring Analysis
चालकता मापी	:	Conductivity Meter
जलोत्सारण क्षेत्र	:	Drainage Area
जल गुणवत्ता पर भारतीय मानक:		Indian Standars on water quality
जनपद	:	District
व्यवस्थितढंग से विश्लेषण	:	Systematic Analysis
व्याख्यात्मक टिप्पणी	:	Explanatory Notes
विवरण	:	Particulars
विशिष्ठ चालकता	:	Specific Conductance, Conductivity
इतिहास पृष्ठ	:	History Sheet
भण्डारण	:	Storage
भौतिक	:	Physical
धनायनिक योग	:	Cationic Toatal
ऋणायनिक योग	:	Anionic Total
जैविक	:	Biological
जीवाण्विक	:	Bacteriological
सान्द्रता	:	Concentration
सोडियम प्रतिशतता	:	Sodium Percentage
संक्षिप्ताक्षर	:	Abbreviations

हिन्दी		English
समेकित	:	Integral
अनुमापन	:	Titration
रंग मापीय	:	Colorimetric
रंग परिवर्धन	:	Colour development
समुद्री मुहाने	:	Outlet to the sea
सिंचाई	:	Irrigation
सूचक मानचित्र	:	Index Map
सूचना स्त्रोत	:	Source of Information
स्थल	:	Site
सहायक नदी	:	Tributary
रासायनिक	:	Chemical
प्रस्तावना	:	Introduction
पृष्ठ संख्या	:	Page Number
प्रेक्षण की विधि	:	Observation Technique
प्रस्तुतीकरणविधि	:	Method of Presentation
प्रबोधन करना	:	To monitor
प्राचल	:	parameter
पी0एच0 मीटर	:	PH Meter
पुनः प्राप्ति	:	Retrieval
ज्वाला उत्सर्जन	:	Flame Emission
भारमापक	:	Gravimetric
टरबिडिमापक	:	Turbidimeter
तुल्यांकी भाग	:	Equivalent Parts
देशान्तर	:	Longitude
दैनिक प्रेक्षित निस्सारण	:	Daily Observed discharge
चुनींदा	:	Selected
नगण्य	:	Nil
निरूपण	:	Notations
नियंत्रित कचरा निपटान	:	Controlled Waste Disposal
निर्धारण	:	Determination

हिन्दी		English
निर्धारित	:	Earmarked
विषय सूची	:	Table of Contents
विषय क्षेत्र	:	Scope
वर्गीकरण	:	Classification
सूक्ष्म मात्रिक एवं विषैले	:	Trace and Toxic
रासायनिक सूचक	:	Chemical Indices
संस्पर्शी	:	Contiguous
सहय् सीमाएँ	:	Tolerance Limits
चाक्षुष	:	Visual
घुलित ऑक्सीजन	:	Dissolved oxygen
जैवरासायनिक ऑक्सीजन माँग	:	Biochemical Oxygen Demand
यौगीकरण	:	Fixation
तल प्रवाह	:	Base Flow
खाँचा	:	Slot
यन्त्र / औजार	:	Instrumentation/Apparatus
तापमापक	:	Thermometric
शुद्धीकरण	:	Treatment
संकमण हटाना	:	Disaffection
संचरण	:	propagation
श्रेणी 'अ'	:	Class 'A'
श्रेणी 'ब'	:	Class 'B'
श्रेणी 'स'	:	Class 'C'
श्रेणी 'द'	:	Class 'D'

FIGURE No.-1

INDEX MAP OF GOMTI BASIN