गोमती बेसिन

जल गुणवत्ता ऑकड़े वर्ष पुस्तिका

जून–2015 से मई–2016

केन्द्रीय जल आयोग

जल विज्ञानीय प्रेक्षण परिमंडल

देहरादून

प्रस्तावना

सदियों से भारत की नदियां इस देश की आस्था और संस्कृति के किनारों को स्पर्श कर प्रवाहित होती रही हैं तथा उत्थान और पतन के क्रम 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, 2015–2016 के वर्तमान अंक में जून–2015 से मई– 2016 तक की अवधि हेतु गोमती बेसिन के जल के "भौतिक, रासायनिक एवं जैविक अभिलक्षणों" का संकलन किया गया है।

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

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अधीक्षण अभियन्ता
जल विज्ञानीय प्रेक्षण परिमण्डल
देहरादून

अभिस्वीकृति

जल गुणवत्ता आँकड़े वर्ष पुस्तिका, 2015–2016 का 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 सिब्बल** का 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 दिनेश रजक, उपमंडलीय अभियन्ता का गोमती नदी के जल गुणवत्ता ऑकड़े वर्ष पुस्तिका 2015–16 को तैयार करने में एवं श्री पवन कुमार नगायच, अवर अभियंता का पुस्तिका के प्रकाशन में महत्वपूर्ण योगदान रहा है।

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विषय सूची

1. परिचय

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 नदियां 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–2014 से मई–2015 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 2014–15 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 क्रम संख्या 1,2 व 5 जल विज्ञानीय प्रेक्षण परिमंडल, देहरादून के कार्य क्षेत्र में हैं तथा क्रम संख्या 3, व 4 जल विज्ञानीय प्रेक्षण परिमंडल, वाराणसी के कार्य क्षेत्र में हैं।

तालिका संख्या – 1

क्रम 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_2 के 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		
तापकम	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 2014–2015 को 01.06.2014 से 31.05.2015 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 रासायनिक संरचना 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) = $(Ca^{++} + Mg^{++}) \times 50$

(ख) सोडियम प्रतिशतता (एस0पी0)=$(Na^{+} \times 100)/(Ca^{++} + Mg^{++} + Na^{+} + K^{+})\%$ 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 यू0एस0 सैलिनिटी प्रयोगशाला 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 नही किया 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 को म0गं0मं0–2' 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 प्राचल :

- निस्सारण, पी0एच0मूल्य, विशिष्ट चालकता।

रासायनिक प्राचल :

- 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 सूचक :

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

HISTORY SHEET

&

W.Q. DATA

(GOMTI BASIN)

2.3 GOMTI - NEEMSAR

HISTORY SHEET

		Water Year	: **2015-2016**
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 : 2015-2016

Station Name : NEEMSAR (GGXOOU5)

Local River : GOMTI

River Water Analysis

Division : M Ganga Div. II, Lucknow

Sub-Division : Gomti Subdivision, Lucknow

S.No	Parameters	01/08/2015	02/11/2015	01/02/2016	02/05/2016
		A	A	A	A
	PHYSICAL				
1	Q (cumec)	26.28	11.89	9.590	5.920
2	Colour_Cod (-)	Clear	Clear	Clear	Light Brown
3	EC_GEN (µmho/cm)	350	390	370	340
4	Odour_Code (-)	odour free	odour free	odour free	odour free
5	pH_FLD (pH units)	8.5	8.0	8.0	8.5
6	pH_GEN (pH units)	8.4	8.5	8.6	8.9
7	TDS (mg/L)	215	234	290	209
8	Temp (deg C)	31.0	28.0	18.0	28.0
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	8.0	8.0	8.0	0.4
2	ALK-TOT (mgCaCO3/L)	68	68	72	89
3	B (mg/L)		0.17		0.20
4	Ca (mg/L)	34	38	36	28
5	Cl (mg/L)	25.9	28.0	25.9	14.0
6	CO3 (mg/L)	9.6	9.6	9.6	0.5
7	F (mg/L)	0.89	0.42	0.36	0.42
8	HCO3 (mg/L)	63	63	68	107
9	K (mg/L)	4.7	5.1	4.3	4.4
10	Mg (mg/L)	18.6	20.7	18.6	22.5
11	Na (mg/L)	18.2	18.9	14.7	10.4
12	NH3-N (mg N/L)	0.32	0.51	0.45	0.42
13	NO2+NO3 (mg N/L)	10.11	10.71	10.26	9.82
14	NO2-N (mgN/L)	0.44	0.62	0.59	0.62
15	NO3-N (mgN/L)	9.67	10.09	9.67	9.20
16	o-PO4-P (mg P/L)	0.258	0.279	0.248	
17	P-Tot (mgP/L)				0.780
18	SO4 (mg/L)	61.4	76.8	62.9	35.5

Water Quality Datasheet for the period : 2015-2016

Station Name : NEEMSAR (GGXOOU5)

Local River : GOMTI

River Water Analysis

Division : M Ganga Div. II, Lucknow

Sub-Division : Gomti Subdivision, Lucknow

S.No	Parameters	01/08/2015	02/11/2015	01/02/2016	02/05/2016
		A	A	A	A
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	2.7	2.7	11.0	11.0
2	COD (mg/L)	7.0	7.0	14.0	20.0
3	DO (mg/L)	6.3	5.9	3.7	2.7
4	DO_SAT% (%)	84	75	39	35
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	86	95	91	71
2	HAR_Total (mgCaCO3/L)	163	181	168	164
3	Na% (%)	19	18	16	12
4	RSC (-)	0.0	0.0	0.0	0.0
5	SAR (-)	0.6	0.6	0.5	0.4
	PESTICIDES				

Water Quality Datasheet for the period : 2015-2016

Station Name : NEEMSAR (GGXOOU5)

Local River : GOMTI

Well Water Analysis

Division : M Ganga Div. II, Lucknow

Sub-Division : Gomti Subdivision, Lucknow

S.No	Parameters	02/11/2015	02/05/2016
		B	B
	PHYSICAL		
1	Colour_Cod (-)	Clear	Clear
2	EC_GEN (µmho/cm)	1180	520
3	Odour_Code (-)	odour free	odour free
4	pH_FLD (pH units)	8.0	8.0
5	pH_GEN (pH units)	8.4	8.4
6	TDS (mg/L)	710	330
7	Temp (deg C)	26.0	26.0
	CHEMICAL		
1	Alk-Phen (mgCaCO3/L)	43.8	32.4
2	ALK-TOT (mgCaCO3/L)	272	285
3	B (mg/L)	0.57	0.38
4	Ca (mg/L)	101	86
5	Cl (mg/L)	46.2	49.7
6	CO3 (mg/L)	52.8	39.0
7	F (mg/L)	0.67	0.42
8	HCO3 (mg/L)	224	268
9	K (mg/L)	20.7	19.2
10	Mg (mg/L)	46.4	40.2
11	Na (mg/L)	24.4	28.8
12	NH3-N (mg N/L)	1.18	0.63
13	NO2+NO3 (mg N/L)	15.51	1.06
14	NO2-N (mgN/L)	0.94	0.47
15	NO3-N (mgN/L)	14.57	0.59
16	o-PO4-P (mg P/L)	0.269	0.165
17	SO4 (mg/L)	78.7	40.3
	BIOLOGICAL/BACTERIOLOGICAL		
	TRACE & TOXIC		
	CHEMICAL INDICES		
1	HAR_Ca (mgCaCO3/L)	253	215
2	HAR_Total (mgCaCO3/L)	446	383
3	Na% (%)	10	13
4	RSC (-)	0.0	0.0
5	SAR (-)	0.5	0.6
	PESTICIDES		

Water Quality Summary for the period : 2015-2016

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)	4	26.28	5.920	13.42
2	EC_GEN (µmho/cm)	4	390	340	363
3	pH_FLD (pH units)	4	8.5	8.0	8.3
4	pH_GEN (pH units)	4	8.9	8.4	8.6
5	TDS (mg/L)	4	290	209	237
6	Temp (deg C)	4	31.0	18.0	26.3
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	4	8.0	0.4	6.1
2	ALK-TOT (mgCaCO3/L)	4	89	68	74
3	B (mg/L)	2	0.20	0.17	0.19
4	Ca (mg/L)	4	38	28	34
5	Cl (mg/L)	4	28.0	14.0	23.5
6	CO3 (mg/L)	4	9.6	0.5	7.3
7	F (mg/L)	4	0.89	0.36	0.52
8	HCO3 (mg/L)	4	107	63	76
9	K (mg/L)	4	5.1	4.3	4.6
10	Mg (mg/L)	4	22.5	18.6	20.1
11	Na (mg/L)	4	18.9	10.4	15.5
12	NH3-N (mg N/L)	4	0.51	0.32	0.43
13	NO2+NO3 (mg N/L)	4	10.71	9.82	10.23
14	NO2-N (mgN/L)	4	0.62	0.44	0.57
15	NO3-N (mgN/L)	4	10.09	9.20	9.66
16	o-PO4-P (mg P/L)	3	0.279	0.248	0.262
17	P-Tot (mgP/L)	1	0.780	0.780	0.78
18	SO4 (mg/L)	4	76.8	35.5	59.2
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	4	11.0	2.7	6.8
2	COD (mg/L)	4	20.0	7.0	12
3	DO (mg/L)	4	6.3	2.7	4.7
4	DO_SAT% (%)	4	84	35	59
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	4	95	71	86
2	HAR_Total (mgCaCO3/L)	4	181	163	169
3	Na% (%)	4	19	12	16
4	RSC (-)	4	0.0	0.0	0
5	SAR (-)	4	0.6	0.4	0.5
	PESTICIDES				

Water Quality Summary for the period : 2015-2016

Station Name : NEEMSAR (GGXOOU5)

Local River : GOMTI

Division : M Ganga Div. II, Lucknow

Sub-Division : Gomti Subdivision, Lucknow

Well Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	EC_GEN (µmho/cm)	2	1180	520	850
2	pH_FLD (pH units)	2	8.0	8.0	8.0
3	pH_GEN (pH units)	2	8.4	8.4	8.4
4	TDS (mg/L)	2	710	330	520
5	Temp (deg C)	2	26.0	26.0	26.0
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	2	43.8	32.4	38.1
2	ALK-TOT (mgCaCO3/L)	2	285	272	278
3	B (mg/L)	2	0.57	0.38	0.47
4	Ca (mg/L)	2	101	86	94
5	Cl (mg/L)	2	49.7	46.2	48.0
6	CO3 (mg/L)	2	52.8	39.0	45.9
7	F (mg/L)	2	0.67	0.42	0.54
8	HCO3 (mg/L)	2	268	224	246
9	K (mg/L)	2	20.7	19.2	19.9
10	Mg (mg/L)	2	46.4	40.2	43.3
11	Na (mg/L)	2	28.8	24.4	26.6
12	NH3-N (mg N/L)	2	1.18	0.63	0.91
13	NO2+NO3 (mg N/L)	2	15.51	1.06	8.28
14	NO2-N (mgN/L)	2	0.94	0.47	0.70
15	NO3-N (mgN/L)	2	14.57	0.59	7.58
16	o-PO4-P (mg P/L)	2	0.269	0.165	0.217
17	SO4 (mg/L)	2	78.7	40.3	59.5
	BIOLOGICAL/BACTERIOLOGICAL				
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	2	253	215	234
2	HAR_Total (mgCaCO3/L)	2	446	383	414
3	Na% (%)	2	13	10	12
4	RSC (-)	2	0.0	0.0	0.0
5	SAR (-)	2	0.6	0.5	0.6
	PESTICIDES				

Water Quality Seasonal Average for the period: 2006-2016

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
	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							
	BIOLOGICAL/BACTERIOLOGICAL										
1	COD (mg/L)										

Water Quality Seasonal Average for the period: 2006-2016

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
	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: 2006-2016

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
	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 (mgCaCO3/L)	0.0			39.8	0.0	0.0				43.8
2	ALK-TOT (mgCaCO3/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
	BIOLOGICAL/BACTERIOLOGIC										
1	COD (mg/L)						22.0				

Water Quality Seasonal Average for the period: 2006-2016

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
	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: 2006-2016

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

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

S.No	Parameters	Summer Mar - May									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	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
	BIOLOGICAL/BACTERIOLOGIC										
1	COD (mg/L)					38.0	30.0				

Water Quality Seasonal Average for the period: 2006-2016

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
	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	: **2015-2016**
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 : 2015-2016

Station Name : LUCKNOW (GGXOOQ3)
Local River : Gomti

River Water Analysis

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

S.No	Parameters	01/06/2015	01/07/2015	01/08/2015	01/09/2015	01/10/2015	02/11/2015	01/12/2015	01/01/2016	01/02/2016	01/03/2016	01/04/2016	02/05/2016
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)		4.520	53.64	54.85	64.23	21.00	16.42	19.01	19.15	27.68	30.09	19.44
2	Colour_Cod (-)	Brown	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear
3	EC_GEN (µmho/cm)	680	570	440	330	380	390	470	460	500	530	580	660
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	8.0	8.0	8.0	8.0
6	pH_GEN (pH units)	8.4	8.5	8.5	7.8	8.4	8.0	8.5	8.1	7.9	7.8	7.9	8.6
7	TDS (mg/L)	406	330	269	199	228	234	285	280	310	322	352	412
8	Temp (deg C)	30.0	26.5	29.5	33.0	31.5	27.5	22.5	22.0	16.5	24.0	28.0	30.0
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	15.2	15.9	12.0	0.0	12.0	0.0	12.0	0.0	0.0	0.0	0.0	15.9
2	ALK-TOT (mgCaCO3/L)	87	92	80	96	104	104	124	120	128	136	132	144
3	B (mg/L)						0.22						0.36
4	Ca (mg/L)	41	33	36	28	29	33	46	45	48	50	41	36
5	Cl (mg/L)	50.1	32.0	24.1	17.8	18.1	19.9	24.1	22.0	24.1	25.9	35.9	46.0
6	CO3 (mg/L)	18.3	19.2	14.4	0.0	14.4	0.0	14.4	0.0	0.0	0.0	0.0	19.2
7	F (mg/L)	0.53	0.61	0.51	0.65	0.67	0.67	0.68	0.67	0.70	0.72	0.74	0.77
8	HCO3 (mg/L)	68	73	68	117	98	127	122	146	156	166	161	137
9	K (mg/L)	9.0	8.2	7.0	4.7	5.1	5.1	6.3	6.3	6.3	6.6	11.7	12.6
10	Mg (mg/L)	29.9	23.7	25.8	20.7	21.6	21.6	26.9	25.8	26.9	27.8	30.6	34.9
11	Na (mg/L)	33.4	21.9	18.6	12.0	12.9	13.1	14.3	14.0	15.4	15.6	22.3	27.1
12	NH3-N (mg N/L)	0.86	2.54	0.65	0.60	0.72	0.72	0.97	0.94	0.97	0.98	1.09	1.15
13	NO2+NO3 (mg N/L)	22.97	19.66	17.34	15.66	16.19	16.49	16.92	16.61	16.93	16.94	17.28	17.59
14	NO2-N (mgN/L)	0.69	0.61	0.52	0.25	0.63	0.66	0.66	0.63	0.68	0.69	0.79	0.79
15	NO3-N (mgN/L)	22.28	19.06	16.81	15.41	15.55	15.83	16.25	15.97	16.25	16.25	16.53	16.80
16	o-PO4-P (mg P/L)	0.548	0.331	0.269	0.248	0.248	0.258	0.279	0.279	0.289	0.300	0.331	10.954
17	SO4 (mg/L)	25.0	17.8	63.8	18.2	17.3	23.0	42.2	45.1	47.5	48.5	49.4	45.1
	BIOLOGICAL/BACTERIOLOGICAL												
1	BOD3-27 (mg/L)	26.4	20.0	15.7	9.8	25.5	23.6	27.4	29.4	21.6	23.5	18.9	13.7
2	COD (mg/L)	28.0	23.0	21.0	14.0	27.0	25.0	30.0	32.0	24.0	30.0	28.0	20.0
3	DO (mg/L)	1.0	0.0	1.6	1.8	0.6	0.8	1.0	1.0	0.0	0.0	0.0	2.0
4	DO_SAT% (%)	13	0	20	25	8	10	11	11	0	0	0	26

Water Quality Datasheet for the period : 2015-2016

Station Name : LUCKNOW (GGXOOQ3)

Division : M Ganga Div. II, Lucknow

Local River : Gomti

River Water Analysis

Sub-Division : Gomti Subdivision, Lucknow

S.No	Parameters	01/06/2015	01/07/2015	01/08/2015	01/09/2015	01/10/2015	02/11/2015	01/12/2015	01/01/2016	01/02/2016	01/03/2016	01/04/2016	02/05/2016
		A	A	A	A	A	A	A	A	A	A	A	A
	TRACE & TOXIC												
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	103	82	91	69	73	83	116	112	121	125	104	89
2	HAR_Total (mgCaCO3/L)	228	180	198	155	163	173	228	219	232	240	231	235
3	Na% (%)	23	20	16	14	14	14	12	12	12	12	17	19
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	1.0	0.7	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.6	0.8
	PESTICIDES												

Water Quality Summary for the period : 2015-2016

Station Name : LUCKNOW (GGXOOQ3)

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)	155	85.34	4.520	37.27
2	EC_GEN (µmho/cm)	12	680	330	499
3	pH_FLD (pH units)	12	8.0	8.0	8
4	pH_GEN (pH units)	12	8.6	7.8	8.2
5	TDS (mg/L)	12	412	199	302
6	Temp (deg C)	12	33.0	16.5	26.8
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	15.9	0.0	6.9
2	ALK-TOT (mgCaCO3/L)	12	144	80	112
3	B (mg/L)	2	0.36	0.22	0.29
4	Ca (mg/L)	12	50	28	39
5	Ci (mg/L)	12	50.1	17.8	28.3
6	CO3 (mg/L)	12	19.2	0.0	8.3
7	F (mg/L)	12	0.77	0.51	0.66
8	HCO3 (mg/L)	12	166	68	120
9	K (mg/L)	12	12.6	4.7	7.4
10	Mg (mg/L)	12	34.9	20.7	26.3
11	Na (mg/L)	12	33.4	12.0	18.4
12	NH3-N (mg N/L)	12	2.54	0.60	1.01
13	NO2+NO3 (mg N/L)	12	22.97	15.66	17.55
14	NO2-N (mgN/L)	12	0.79	0.25	0.63
15	NO3-N (mgN/L)	12	22.28	15.41	16.92
16	o-PO4-P (mg P/L)	12	10.954	0.248	1.194
17	SO4 (mg/L)	12	63.8	17.3	36.9
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	29.4	9.8	21.3
2	COD (mg/L)	12	32.0	14.0	25.2
3	DO (mg/L)	12	2.0	0.0	0.8
4	DO_SAT% (%)	12	26	0	10
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	125	69	97
2	HAR_Total (mgCaCO3/L)	12	240	155	207
3	Na% (%)	12	23	12	15
4	RSC (-)	12	0.0	0.0	0
5	SAR (-)	12	1.0	0.4	0.6
	PESTICIDES				

2.5 GOMTI - SULTANPUR

HISTORY SHEET

		Water Year	: 2015-2016
Site	: SULTANPUR	Code	: GGX00H3
State	: Uttar Pradesh	District	Sultanpur
Basin	: Ganga-Brahm-Meghna Basin	Independent Ri	: 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 : 2015-2016

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	6/1/2015	7/1/2015	8/1/2015	9/1/2015	10/1/2015	11/2/2015	12/1/2015	1/1/2016	2/1/2016	3/1/2016	4/1/2016	5/2/2015
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)	24.29	66.41	82.46	107.5	60.76	80.13	39.49	44.64	47.26	29.68	30.43	28.36
2	Colour_Cod (-)	Clear	Clear	Clear	Light Brown	Clear	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Clear	Dark Brown
3	EC_FLD (µmho/cm)	680	460	370	370	450	470	640	520	590	630	580	560
4	EC_GEN (µmho/cm)	523	453	365	368	441	464	633	518	584	623	578	550
5	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
6	pH_FLD (pH units)	7.5	7.3	7.8	7.3	8.0	7.7	8.1	7.5	7.6	7.7	7.8	7.9
7	pH_GEN (pH units)	7.8	7.9	7.8	7.4	8.1	7.8	8.1	7.8	7.8	7.9	7.9	7.9
8	TDS (mg/L)	315	272	218	221	265	282	380	311	350	374	350	390
9	Temp (deg C)	26.0	23.0	24.0	27.0	23.5	15.5	10.0	8.0	8.0	11.5	27.5	28.0
10	Turb (NTU)	0.2	0.4	0.2	1.4	0.4	1.0	4.0	1.1	1.2	1.4	1.2	1.5
	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)	156	144	124	124	160	184	240	204	216	224	184	228
3	B (mg/L)	0.20	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.04
4	Ca (mg/L)	46	34	29	29	37	42	58	46	53	56	42	56
5	Cl (mg/L)	36.0	26.0	20.0	20.0	26.0	28.0	44.0	36.0	42.0	44.0	28.0	44.0
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)	0.41	0.25	0.25	0.26	0.32	0.36	0.48	0.38	0.40	0.44	0.36	0.46
8	Fe (mg/L)	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2
9	HCO3 (mg/L)	190	176	151	151	195	224	293	249	264	273	224	278
10	K (mg/L)	9.0	6.0	5.0	5.0	6.0	7.0	12.0	9.0	10.0	10.0	7.0	11.0
11	Mg (mg/L)	17.6	14.6	11.7	12.7	15.6	19.5	24.4	17.6	21.5	23.4	19.5	24.4
12	Na (mg/L)	24.0	18.0	14.0	14.0	18.0	19.0	32.0	25.0	30.0	32.0	20.0	32.0
13	NH3-N (mg N/L)	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00
14	NO2+NO3 (mg N/L)	0.34	0.29	0.28	0.28	0.29	0.30	0.35	0.33	0.34	0.34	0.35	0.35
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)	0.34	0.29	0.28	0.28	0.29	0.30	0.35	0.33	0.34	0.34	0.35	0.35
17	P-Tot (mgP/L)	0.164	0.142	0.126	0.128	0.134	0.142	0.176	0.156	0.160	0.182	0.144	0.186
18	SiO2 (mg/L)	8.4	7.8	7.2	7.1	7.5	7.8	8.8	7.4	7.6	7.8	7.2	8.0
19	SO4 (mg/L)	28.0	32.0	18.0	17.0	20.0	22.0	30.0	24.0	28.0	30.0	24.0	32.0

Water Quality Datasheet for the period : 2015-2016

Station Name : SULTANPUR (GGX00H3)

Local River : Gomti

River Water Analysis

Division : M Ganga Div. III, Varanas

Sub-Division : M Ganga Yamuna SD, Allahabad

S.No	Parameters	6/1/2015	7/1/2015	8/1/2015	9/1/2015	10/1/2015	11/2/2015	12/1/2015	1/1/2016	2/1/2016	3/1/2016	4/1/2016	5/2/2016
		A	A	A	A	A	A	A	A	A	A	A	A
	BIOLOGICAL/BACTERIOLOGICAL												
1	BOD3-27 (mg/L)	3.7	3.5	2.9	2.8	2.9	4.9	2.8	3.1	3.3	3.5	3.7	4.5
2	COD (mg/L)	23.6	10.5	9.4	9.0	10.2	17.5	20.5	19.4	18.5	16.2	18.4	20.1
3	DO (mg/L)	6.1	5.9	6.3	6.5	6.3	5.3	6.1	5.9	6.3	5.9	7.5	4.9
4	DO_SAT% (%)	75	69	74	81	73	53	54	50	50	53	94	63
5	FCol-MPN (MPN/100mL)	2600	2100	1800	1600	1700	1900	2100	2000	1900	1900	3500	2600
6	Tcol-MPN (MPN/100mL)	4500	4400	3200	2900	3000	3400	3800	4000	4000	4000	8000	5000
	TRACE & TOXIC												
1	As (μg/L)												1.5
2	Cd (μg/L)												2.5
3	Cr (μg/L)												4.5
4	Ni (μg/L)												6.0
5	Pb (μg/L)												2.5
6	Zn (μg/L)												4.0
	CHEMICAL INDICES												
1	HAR_Ca (mgCaC03/L)	116	84	72	72	92	106	144	116	132	140	106	140
2	HAR_Total (mgCaC03/L)	189	145	121	125	157	187	246	189	222	238	187	242
3	Na% (%)	21	20	19	19	19	18	21	21	22	22	18	21
4	RSC (-)	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0
5	SAR (-)	0.8	0.7	0.6	0.5	0.6	0.6	0.9	0.8	0.9	0.9	0.6	0.9
	PESTICIDES												

Water Quality Datasheet for the period : 2015-2016

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	11/2/2015	5/2/2016
		B	B
	PHYSICAL		
1	Colour_Cod (-)	Clear	Clear
2	EC_FLD (µmho/cm)	1200	2050
3	EC_GEN (µmho/cm)	1195	2030
4	Odour_Code (-)	odour free	odour free
5	pH_FLD (pH units)	7.1	7.5
6	pH_GEN (pH units)	7.8	7.6
7	TDS (mg/L)	720	1220
8	Temp (deg C)	26.5	25.0
	CHEMICAL		
1	Alk-Phen (mgCaCO3/L)	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	414	604
3	B (mg/L)	0.02	0.00
4	Ca (mg/L)	67	114
5	Cl (mg/L)	120.0	148.0
6	CO3 (mg/L)	0.0	0.0
7	F (mg/L)	0.48	0.57
8	Fe (mg/L)	0.2	0.4
9	HCO3 (mg/L)	505	737
10	K (mg/L)	10.0	16.0
11	Mg (mg/L)	61.5	99.9
12	Na (mg/L)	75.0	78.0
13	NH3-N (mg N/L)	0.05	0.00
14	NO2+NO3 (mg N/L)	2.24	5.12
15	NO2-N (mgN/L)	0.00	0.00
16	NO3-N (mgN/L)	2.24	5.12
17	P-Tot (mgP/L)	0.004	0.316
18	SiO2 (mg/L)	7.2	10.8
19	SO4 (mg/L)	32.0	84.0
	BIOLOGICAL/BACTERIOLOGICAL		
	TRACE & TOXIC		
	CHEMICAL INDICES		
1	HAR_Ca (mgCaCO3/L)	168	285
2	HAR_Total (mgCaCO3/L)	425	701
3	Na% (%)	27	19
4	RSC (-)	0.0	0.0
5	SAR (-)	1.6	1.3
	PESTICIDES		

Water Quality Summary for the period : 2015-2016

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	107.5	24.29	53.45
2	EC_FLD (µmho/cm)	12	680	370	535
3	EC_GEN (µmho/cm)	12	650	365	517
4	pH_FLD (pH units)	12	8.1	7.3	7.7
5	pH_GEN (pH units)	12	8.1	7.4	7.8
6	TDS (mg/L)	12	390	218	311
7	Temp (deg C)	12	28.0	8.0	19.3
8	Turb (NTU)	9	4.0	0.2	1.2
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	0.0	0.0	0
2	ALK-TOT (mgCaCO3/L)	12	240	124	182
3	B (mg/L)	12	0.20	0.02	0.04
4	Ca (mg/L)	12	58	29	44
5	Cl (mg/L)	12	44.0	20.0	32.8
6	CO3 (mg/L)	12	0.0	0.0	0
7	F (mg/L)	12	0.48	0.25	0.36
8	Fe (mg/L)	12	0.3	0.2	0.2
9	HCO3 (mg/L)	12	293	151	222
10	K (mg/L)	12	12.0	5.0	8.1
11	Mg (mg/L)	12	24.4	11.7	18.5
12	Na (mg/L)	12	32.0	14.0	23.2
13	NH3-N (mg N/L)	12	0.05	0.00	0.01
14	NO2+NO3 (mg N/L)	12	0.35	0.28	0.32
15	NO2-N (mgN/L)	12	0.00	0.00	0
16	NO3-N (mgN/L)	12	0.35	0.28	0.32
17	P-Tot (mgP/L)	12	0.186	0.126	0.153
18	SiO2 (mg/L)	12	8.8	7.1	7.7
19	SO4 (mg/L)	12	32.0	17.0	25.4
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	4.9	2.8	3.5
2	COD (mg/L)	12	23.6	9.0	16.1
3	DO (mg/L)	12	7.5	4.9	6.1
4	DO_SAT% (%)	10	94	50	69
5	FCol-MPN (MPN/100mL)	12	3500	1600	2142
6	Tcol-MPN (MPN/100mL)	12	8000	2900	4183
	TRACE & TOXIC				
1	As (µg/L)	1	1.5	1.5	1.5
2	Cd (µg/L)	1	2.5	2.5	2.5
3	Cr (µg/L)	1	4.5	4.5	4.5
4	Ni (µg/L)	1	6.0	6.0	6.0
5	Pb (µg/L)	1	2.5	2.5	2.5
6	Zn (µg/L)	1	4.0	4.0	4.0
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	144	72	110
2	HAR_Total (mgCaCO3/L)	12	246	121	187
3	Na% (%)	12	22	18	20
4	RSC (-)	12	0.3	0.0	0
5	SAR (-)	12	0.9	0.5	0.7
	PESTICIDES				

Water Quality Summary for the period : 2015-2016

Station Name : SULTANPUR (GGX00H3)

Local River : Gomti

Division : M Ganga Div. III, Varanasi

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	2050	1200	1625
2	EC_GEN (µmho/cm)	2	2030	1195	1613
3	pH_FLD (pH units)	2	7.5	7.1	7.3
4	pH_GEN (pH units)	2	7.8	7.6	7.7
5	TDS (mg/L)	2	1220	720	970
6	Temp (deg C)	2	26.5	25.0	25.8
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	2	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	2	604	414	509
3	B (mg/L)	2	0.02	0.00	0.01
4	Ca (mg/L)	2	114	67	91
5	Cl (mg/L)	2	148.0	120.0	134.0
6	CO3 (mg/L)	2	0.0	0.0	0.0
7	F (mg/L)	2	0.57	0.48	0.52
8	Fe (mg/L)	2	0.4	0.2	0.3
9	HCO3 (mg/L)	2	737	505	621
10	K (mg/L)	2	16.0	10.0	13.0
11	Mg (mg/L)	2	99.9	61.5	80.7
12	Na (mg/L)	2	78.0	75.0	76.5
13	NH3-N (mg N/L)	2	0.05	0.00	0.03
14	NO2+NO3 (mg N/L)	2	5.12	2.24	3.68
15	NO2-N (mgN/L)	2	0.00	0.00	0.00
16	NO3-N (mgN/L)	2	5.12	2.24	3.68
17	P-Tot (mgP/L)	2	0.316	0.004	0.160
18	SiO2 (mg/L)	2	10.8	7.2	9.0
19	SO4 (mg/L)	2	84.0	32.0	58.0
	BIOLOGICAL/BACTERIOLOGICAL				
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	2	285	168	226
2	HAR_Total (mgCaCO3/L)	2	701	425	563
3	Na% (%)	2	27	19	23
4	RSC (-)	2	0.0	0.0	0.0
5	SAR (-)	2	1.6	1.3	1.4
	PESTICIDES				

Water Quality Seasonal Average for the period: 2006-2016

Station Name : SULTANPUR (GGX00H3)

Local River : Gomti

Well Water

Division : M Ganga Div. III, Varanas

Sub-Division : M Ganga Yamuna SD, Allahabac

S.No	Parameters	Flood									
		Jun - Oct									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
	PHYSICAL										
1	EC_FLD (µmho/cm)	2437	903	1186	712	615					
2	EC_GEN (µmho/cm)	2432	907	1175	701	622					
3	pH_FLD (pH units)	8.5	8.4	7.8	8.1	8.4					
4	pH_GEN (pH units)	8.5	8.4	8.4	8.2	8.3					
5	TDS (mg/L)				413	313					
6	Temp (deg C)	28.1	28.1	28.9	27.9	28.6					
7	Turb (NTU)				0.2	0.1					
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	47.8	141.2	19.9	15.5	15.9					
2	ALK-TOT (mgCaCO3/L)	836	740	412	278	226					
3	B (mg/L)	0.00	0.10	0.00	0.04	0.02					
4	Ca (mg/L)	61	70	60	59	31					
5	Cl (mg/L)	535.8	56.4	94.3	97.4	42.4					
6	CO3 (mg/L)	57.6	170.1	24.0	18.7	19.2					
7	F (mg/L)	0.19	0.44	0.55	0.79	0.76					
8	Fe (mg/L)	0.0	0.3	0.1	0.2	0.3					
9	HCO3 (mg/L)	903	355	453	301	236					
10	K (mg/L)	11.8	25.8	8.8	13.3	6.8					
11	Mg (mg/L)	62.3	42.2	45.9	25.6	26.8					
12	Na (mg/L)	566.0	118.4	224.1	84.3	48.4					
13	NH3-N (mg N/L)	0.05	0.05	0.05	0.05	0.05					
14	NO2+NO3 (mg N/L)	0.09	2.80	2.99	1.15	5.18					
15	NO2-N (mgN/L)	0.07	0.04	0.02	0.04	0.00					
16	NO3-N (mgN/L)	0.03	2.76	2.98	1.11	5.18					
17	P-Tot (mgP/L)	0.004	0.007	0.004	0.023	0.044					
18	SiO2 (mg/L)	8.7	11.7	9.6	7.9	13.6					
19	SO4 (mg/L)	87.2	60.4	56.4	24.5	21.4					

Water Quality Seasonal Average for the period: 2006-2016

Station Name : SULTANPUR (GGX00H3)

Local River : Gomti

Well Water

Division : M Ganga Div. III, Varanas

Sub-Division : M Ganga Yamuna SD, Allahabad

S.No	Parameters	Flood									
		Jun - Oct									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
	BIOLOGICAL/BACTERIOLOGICAL										
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	152	174	151	148	77					
2	HAR_Total (mgCaCO3/L)	412	350	342	255	189					
3	Na% (%)	70	41	58	40	34					
4	RSC (-)	9.7	4.7	1.5	0.6	0.8					
5	SAR (-)	12.8	2.8	5.3	2.3	1.5					
	PESTICIDES										

Water Quality Seasonal Average for the period: 2006-2016

Station Name : SULTANPUR (GGX00H3)
Local River : Gomti

Well Water

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

S.No	Parameters	Winter									
		Nov - Feb									
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
	PHYSICAL										
1	EC_FLD (µmho/cm)	1404	867	1158	801	707	820				1200
2	EC_GEN (µmho/cm)	1397	870	1145	809	714	699				1195
3	pH_FLD (pH units)	8.1	8.7	7.8	8.1	8.2	7.5				7.1
4	pH_GEN (pH units)	8.1	8.7	8.5	8.2	8.1	7.8				7.8
5	TDS (mg/L)				468	367	383				720
6	Temp (deg C)	27.6	29.8	27.6	26.6	26.2	25.5				26.5
7	Turb (NTU)				0.1	0.1					
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	39.8	39.8	19.9	0.0	0.0	0.0				0.0
2	ALK-TOT (mgCaCO3/L)	390	442	409	234	185	188				414
3	B (mg/L)	0.01	0.00	0.06	0.00	0.00	0.04				0.02
4	Ca (mg/L)	52	67	58	56	33	32				67
5	Cl (mg/L)	47.2	63.0	132.6	88.0	46.5	58.0				120.0
6	CO3 (mg/L)	48.0	48.0	24.0	0.0	0.0	0.0				0.0
7	F (mg/L)	0.32	0.20	0.48	0.49	0.46	0.29				0.48
8	Fe (mg/L)	0.0	0.3	0.0	0.2	0.2	0.2				0.2
9	HCO3 (mg/L)	378	442	450	286	226	229				505
10	K (mg/L)	12.8	9.0	9.0	8.2	7.5	8.0				10.0
11	Mg (mg/L)	38.0	54.1	42.6	28.7	34.2	28.2				61.5
12	Na (mg/L)	277.0	119.0	188.4	75.2	82.8	45.0				75.0
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)	0.71	1.78	2.07	1.83	3.98	3.25				2.24
15	NO2-N (mgN/L)	0.04	0.03	0.00	0.03	0.00	0.00				0.00
16	NO3-N (mgN/L)	0.66	1.65	2.07	1.81	3.98	3.25				2.24
17	P-Tot (mgP/L)	0.013	0.021	0.020	0.017	0.166	0.150				0.004
18	SiO2 (mg/L)	10.2	9.3	7.5	23.5	9.3	8.1				7.2
19	SO4 (mg/L)	64.4	60.0	38.7	43.8	34.0	42.0				32.0

Water Quality Seasonal Average for the period: 2006-2016

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									
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
	BIOLOGICAL/BACTERIOLOGICAL										
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	130	167	146	141	82	80				168
2	HAR_Total (mgCaCO3/L)	288	392	323	261	224	197				425
3	Na% (%)	65	39	55	38	44	32				27
4	RSC (-)	2.8	1.1	1.8	0.0	0.0	0.0				0.0
5	SAR (-)	7.2	2.6	4.6	2.0	2.4	1.4				1.6
	PESTICIDES										

Water Quality Seasonal Average for the period: 2006-2016

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

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

S.No	Parameters	Summer									
		Mar - May									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL										
1	EC_FLD (µmho/cm)	1078	1109	727	939	360	710				2050
2	EC_GEN (µmho/cm)	1070	1100	718	919	692	700				2030
3	pH_FLD (pH units)	7.9	8.4	7.7	8.2	7.6	7.6				7.5
4	pH_GEN (pH units)	7.9	8.5	8.5	8.3	7.8	7.7				7.6
5	TDS (mg/L)				442	352	407				1220
6	Temp (deg C)	27.8	28.0	27.5	25.8	24.5	26.0				25.0
7	Turb (NTU)				0.1	0.1					
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	52.5	26.6	19.9	51.8	19.9	0.0				0.0
2	ALK-TOT (mgCaCO3/L)	553	420	387	334	260	216				604
3	B (mg/L)	0.01		0.05	0.00	0.00	0.02				0.00
4	Ca (mg/L)	58	66	66	70	35	46				114
5	Cl (mg/L)	47.3	61.3	218.6	87.4	60.0	58.0				148.0
6	CO3 (mg/L)	63.2	32.0	24.0	62.4	24.0	0.0				0.0
7	F (mg/L)	0.55		0.64	0.69	0.38	0.37				0.57
8	Fe (mg/L)	0.0		0.1	0.3	0.2	0.2				0.4
9	HCO3 (mg/L)	273	447	423	281	268	264				737
10	K (mg/L)	11.7	7.3	13.4	7.3	9.0	9.0				16.0
11	Mg (mg/L)	37.5	51.5	32.1	32.5	51.8	35.6				99.9
12	Na (mg/L)	126.3	247.0	163.2	52.0	84.0	45.0				78.0
13	NH3-N (mg N/L)	0.05		0.05	0.05	0.05	0.05				0.00
14	NO2+NO3 (mg N/L)	0.84		1.17	5.82	3.89	3.72				5.12
15	NO2-N (mgN/L)	0.02		0.00	0.00	0.00	0.00				0.00
16	NO3-N (mgN/L)	0.82		1.17	5.82	3.89	3.72				5.12
17	P-Tot (mgP/L)	0.002		0.027	0.001	0.224	0.185				0.316
18	SiO2 (mg/L)	14.3		8.8	14.0	8.2	8.3				10.8
19	SO4 (mg/L)	53.3	57.7	18.9	38.6	38.0	46.0				84.0

Water Quality Seasonal Average for the period: 2005-2016

Station Name : SULTANPUR (GGX00H3)

Local River : Gomti

Well Water

Division : M Ganga Div. III, Varanas

Sub-Division : M Ganga Yamuna SD, Allahabad

S.No	Parameters	Summer Mar - May									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	BIOLOGICAL/BACTERIOLOGICAL										
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	146	165	164	175	88	114				285
2	HAR_Total (mgCaCO3/L)	302	380	298	310	304	263				701
3	Na% (%)	47	58	53	24	37	26				19
4	RSC (-)	0.5	0.8	1.8	0.9	0.0	0.0				0.0
5	SAR (-)	3.2	5.5	4.1	1.3	2.1	1.2				1.3
	PESTICIDES										

2.6 GOMTI-MAIGHAT

HISTORY SHEET

		Water Year	**: 2015-2016**
Site	**: MAIGHAT**	**Code**	**: GGXOOB4**
State	: Uttar Pradesh	District	Jaunpur
Basin	: Ganga-Brahm-Meghna Basin	Independent Ri	: 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 : 2015-2016

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

Local River : Gomti | **River Water Analysis** | **Sub-Division : M Ganga - C Sarju SD, Varanas**

S.No	Parameters	01/06/2015	01/07/2015	01/08/2015	01/09/2015	01/10/2015	02/11/2015	01/12/2015	01/01/2016	01/02/2016	01/03/2016	01/04/2016	02/05/2016
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)	33.19	46.28	391.1	183.0	87.84	100.9	28.78	56.34	44.28	23.36	40.92	10.99
2	Colour_Cod (-)	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Clear	Light Brown	Light Brown	Light Brown
3	EC_FLD (µmho/cm)	620	450	330	360	440	430	620	520	530	595	570	680
4	EC_GEN (µmho/cm)	617	447	322	353	436	419	619	514	525	590	563	670
5	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
6	pH_FLD (pH units)	7.9	8.0	7.9	7.3	8.1	7.9	8.1	8.0	8.1	8.1	8.3	8.1
7	pH_GEN (pH units)	8.0	8.2	8.0	7.4	8.2	8.0	8.1	8.1	8.2	8.2	8.4	8.2
8	TDS (mg/L)	370	270	194	212	260	252	370	310	315	354	340	402
9	Temp (deg C)	35.0	33.5	31.0	33.0	32.0	27.0	25.5	15.0	18.5	23.5	27.0	30.5
10	Turb (NTU)	0.3	0.2	0.4	0.3	0.5	1.2	0.8	1.0	1.2	1.4	2.0	1.4
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	216	176	160	160	208	200	216	196	200	212	200	228
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)	41	35	30	32	42	40	45	38	40	43	40	46
5	Cl (mg/L)	58.0	32.0	20.0	22.0	28.0	24.0	48.0	38.0	40.0	46.0	42.0	50.0
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)	0.58	0.36	0.30	0.32	0.38	0.30	0.48	0.42	0.44	0.48	0.46	0.52
8	Fe (mg/L)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
9	HCO3 (mg/L)	264	215	195	195	254	244	264	239	244	259	244	278
10	K (mg/L)	12.0	9.0	5.0	5.0	7.0	6.0	11.0	8.0	9.0	10.0	8.0	12.0
11	Mg (mg/L)	26.4	18.5	16.6	17.6	21.5	20.5	26.4	22.5	21.5	26.4	23.4	29.3
12	Na (mg/L)	41.0	24.0	14.0	15.0	19.0	18.0	37.0	28.0	29.0	31.0	28.0	34.0
13	NH3-N (mg N/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
14	NO2+NO3 (mg N/L)	0.19	0.15	0.12	0.13	0.13	0.13	0.18	0.17	0.18	0.18	0.17	0.19
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)	0.19	0.15	0.12	0.13	0.13	0.13	0.18	0.17	0.18	0.18	0.17	0.19
17	P-Tot (mgP/L)	0.182	0.114	0.126	0.140	0.144	0.132	0.174	0.166	0.172	0.176	0.174	0.184
18	SiO2 (mg/L)	11.2	8.1	7.2	7.4	8.0	7.4	10.2	9.5	9.6	9.8	9.4	9.6
19	SO4 (mg/L)	42.0	34.0	16.0	17.0	19.0	17.0	36.0	28.0	30.0	34.0	32.0	38.0

Water Quality Datasheet for the period : 2015-2016

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	01/06/2015	01/07/2015	01/08/2015	01/09/2015	01/10/2015	02/11/2015	01/12/2015	01/01/2016	01/02/2016	01/03/2016	01/04/2016	02/05/2016
		A	A	A	A	A	A	A	A	A	A	A	A
	BIOLOGICAL/BACTERIOLOGICAL												
1	BOD3-27 (mg/L)	3.5	3.3	2.9	2.7	2.9	3.3	2.4	2.9	3.1	2.7	4.3	4.5
2	COD (mg/L)	22.3	11.1	10.5	11.4	12.0	17.1	19.4	18.5	19.1	17.2	18.3	24.2
3	DO (mg/L)	6.9	7.1	7.3	7.3	6.9	6.3	6.7	8.2	7.8	7.1	7.1	5.7
4	DO_SAT% (%)	99	98	98	101	94	79	81	82	83	82	89	75
5	FCol-MPN (MPN/100mL)	1900	1800	1500	1400	1500	1700	1900	1800	1900	1900	2200	2500
6	Tcol-MPN (MPN/100mL)	3500	3300	2900	2700	3000	3300	3500	3400	3500	3500	4000	4500
	TRACE & TOXIC												
1	As (µg/L)												7.0
2	Cd (µg/L)												2.5
3	Cr (µg/L)												9.0
4	Ni (µg/L)												7.0
5	Pb (µg/L)												7.8
6	Zn (µg/L)												10.5
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	102	88	76	80	104	100	112	96	100	108	100	116
2	HAR_Total (mgCaCO3/L)	211	165	145	153	194	186	222	190	190	218	198	238
3	Na% (%)	28	23	17	17	17	17	26	23	24	23	23	23
4	RSC (-)	0.1	0.2	0.3	0.2	0.3	0.3	0.0	0.2	0.2	0.0	0.1	0.0
5	SAR (-)	1.2	0.8	0.5	0.5	0.6	0.6	1.1	0.9	0.9	0.9	0.9	1.0
	PESTICIDES												

Water Quality Datasheet for the period : 2015-2016

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	02/11/2015	02/05/2016
		B	B
	PHYSICAL		
1	Colour_Cod (-)	Clear	Clear
2	EC_FLD (µmho/cm)	1570	1700
3	EC_GEN (µmho/cm)	1555	1680
4	Odour_Code (-)	odour free	odour free
5	pH_FLD (pH units)	7.6	8.1
6	pH_GEN (pH units)	7.7	8.2
7	TDS (mg/L)	934	1008
8	Temp (deg C)	16.5	25.0
	CHEMICAL		
1	Alk-Phen (mgCaCO3/L)	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	250	304
3	B (mg/L)	0.03	0.04
4	Ca (mg/L)	53	59
5	Cl (mg/L)	104.0	120.0
6	CO3 (mg/L)	0.0	0.0
7	F (mg/L)	0.58	0.62
8	Fe (mg/L)	0.3	0.3
9	HCO3 (mg/L)	305	371
10	K (mg/L)	15.0	18.0
11	Mg (mg/L)	39.0	42.9
12	Na (mg/L)	78.0	90.0
13	NH3-N (mg N/L)	0.00	0.00
14	NO2+NO3 (mg N/L)	2.72	2.81
15	NO2-N (mgN/L)	0.00	0.00
16	NO3-N (mgN/L)	2.72	2.81
17	P-Tot (mgP/L)	0.144	0.156
18	SiO2 (mg/L)	9.8	10.2
19	SO4 (mg/L)	90.0	96.0
	BIOLOGICAL/BACTERIOLOGICAL		
	TRACE & TOXIC		
	CHEMICAL INDICES		
1	HAR_Ca (mgCaCO3/L)	132	148
2	HAR_Total (mgCaCO3/L)	295	327
3	Na% (%)	35	36
4	RSC (-)	0.0	0.0
5	SAR (-)	2.0	2.2
	PESTICIDES		

Water Quality Summary for the period : 2015-2016

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)	367	391.1	0.290	74.67
2	EC_FLD (µmho/cm)	12	680	330	512
3	EC_GEN (µmho/cm)	12	670	322	506
4	pH_FLD (pH units)	12	8.3	7.3	8
5	pH_GEN (pH units)	12	8.4	7.4	8.1
6	TDS (mg/L)	12	402	194	304
7	Temp (deg C)	12	35.0	15.0	27.6
8	Turb (NTU)	12	2.0	0.2	0.9
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	0.0	0.0	0
2	ALK-TOT (mgCaCO3/L)	12	228	160	198
3	B (mg/L)	12	0.00	0.00	0
4	Ca (mg/L)	12	46	30	39
5	Cl (mg/L)	12	58.0	20.0	37.3
6	CO3 (mg/L)	12	0.0	0.0	0
7	F (mg/L)	12	0.58	0.30	0.42
8	Fe (mg/L)	12	0.2	0.2	0.2
9	HCO3 (mg/L)	12	278	195	241
10	K (mg/L)	12	12.0	5.0	8.5
11	Mg (mg/L)	12	29.3	16.6	22.5
12	Na (mg/L)	12	41.0	14.0	26.5
13	NH3-N (mg N/L)	12	0.00	0.00	0
14	NO2+NO3 (mg N/L)	12	0.19	0.12	0.16
15	NO2-N (mgN/L)	12	0.00	0.00	0
16	NO3-N (mgN/L)	12	0.19	0.12	0.16
17	P-Tot (mgP/L)	12	0.184	0.114	0.157
18	SiO2 (mg/L)	12	11.2	7.2	9
19	SO4 (mg/L)	12	42.0	16.0	28.6
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	4.5	2.4	3.2
2	COD (mg/L)	12	24.2	10.5	16.8
3	DO (mg/L)	12	8.2	5.7	7.0
4	DO_SAT% (%)	12	101	75	88
5	FCol-MPN (MPN/100mL)	12	2500	1400	1833
6	Tcol-MPN (MPN/100mL)	12	4500	2700	3425
	TRACE & TOXIC				
1	As (µg/L)	1	7.0	7.0	7
2	Cd (µg/L)	1	2.8	2.8	2.8
3	Cr (µg/L)	1	9.0	9.0	9
4	Ni (µg/L)	1	7.0	7.0	7
5	Pb (µg/L)	1	7.8	7.8	7.8
6	Zn (µg/L)	1	10.5	10.5	10.5
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	116	76	99
2	HAR_Total (mgCaCO3/L)	12	238	145	193
3	Na% (%)	12	28	17	22
4	RSC (-)	12	0.3	0.0	0.2
5	SAR (-)	12	1.2	0.5	0.8
	PESTICIDES				

Water Quality Summary for the period : 2015-2016

Station Name : MAIGHAT (GGXOOB4)

Local River : Gomti

Division : M Ganga Div. III, Varanasi

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	1700	1570	1635
2	EC_GEN (µmho/cm)	2	1680	1555	1618
3	pH_FLD (pH units)	2	8.1	7.6	7.9
4	pH_GEN (pH units)	2	8.2	7.7	8.0
5	TDS (mg/L)	2	1008	934	971
6	Temp (deg C)	2	25.0	16.5	20.8
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	2	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	2	304	250	277
3	B (mg/L)	2	0.04	0.03	0.03
4	Ca (mg/L)	2	59	53	56
5	Cl (mg/L)	2	120.0	104.0	112.0
6	CO3 (mg/L)	2	0.0	0.0	0.0
7	F (mg/L)	2	0.62	0.58	0.60
8	Fe (mg/L)	2	0.3	0.3	0.3
9	HCO3 (mg/L)	2	371	305	338
10	K (mg/L)	2	18.0	15.0	16.5
11	Mg (mg/L)	2	42.9	39.0	41.0
12	Na (mg/L)	2	90.0	78.0	84.0
13	NH3-N (mg N/L)	1	0.00	0.00	0.00
14	NO2+NO3 (mg N/L)	2	2.81	2.72	2.77
15	NO2-N (mgN/L)	2	0.00	0.00	0.00
16	NO3-N (mgN/L)	2	2.81	2.72	2.77
17	P-Tot (mgP/L)	2	0.156	0.144	0.150
18	SiO2 (mg/L)	2	10.2	9.8	10.0
19	SO4 (mg/L)	2	96.0	90.0	93.0
	BIOLOGICAL/BACTERIOLOGICAL				
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	2	148	132	140
2	HAR_Total (mgCaCO3/L)	2	327	295	311
3	Na% (%)	2	36	35	36
4	RSC (-)	2	0.0	0.0	0.0
5	SAR (-)	2	2.2	2.0	2.1
	PESTICIDES				

Water Quality Seasonal Average for the period: 2006-2016

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									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
	PHYSICAL										
1	EC_FLD (µmho/cm)	1072	1152	1312	885	952					
2	EC_GEN (µmho/cm)	1317	1136	1302	926	944					
3	pH_FLD (pH units)	8.3	7.9	7.6	8.0	8.0					
4	pH_GEN (pH units)	8.3	8.5	8.4	8.1	8.3					
5	TDS (mg/L)				564	481					
6	Temp (deg C)	27.0	26.9	26.9	27.0	27.5					
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	59.8	68.1	41.4	4.0	8.0					
2	ALK-TOT (mgCaCO3/L)	518	575	307	300	169					
3	B (mg/L)	0.00	0.08	0.00	0.00	0.00					
4	Ca (mg/L)	26	46	56	40	27					
5	Cl (mg/L)	573.8	67.0	223.3	107.6	72.0					
6	CO3 (mg/L)	72.0	82.1	49.9	4.8	9.6					
7	F (mg/L)	0.29	0.65	0.50	0.47	0.65					
8	Fe (mg/L)	0.0	0.2	0.1	0.1	0.1					
9	HCO3 (mg/L)	346	377	274	356	186					
10	K (mg/L)	5.6	8.4	10.7	9.7	6.8					
11	Mg (mg/L)	27.5	46.8	32.7	43.1	27.6					
12	Na (mg/L)	203.5	256.4	162.9	100.4	80.0					
13	NH3-N (mg N/L)	0.05	0.05	0.05	0.05	0.05					
14	NO2+NO3 (mg N/L)	3.28	3.30	3.27	3.64	2.17					
15	NO2-N (mgN/L)	0.05	0.02	0.01	0.07	0.02					
16	NO3-N (mgN/L)	3.23	3.28	3.26	3.57	2.15					
17	P-Tot (mgP/L)	0.001	0.008	0.013	0.025	0.105					
18	SiO2 (mg/L)	11.7	12.4	11.0	7.6	11.6					
19	SO4 (mg/L)	60.4	49.8	39.2	74.1	66.4					

Water Quality Seasonal Average for the period: 2006-2016

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									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
	BIOLOGICAL/BACTERIOLOGICAL										
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	66	114	140	101	68					
2	HAR_Total (mgCaCO3/L)	180	309	277	280	183					
3	Na% (%)	65	64	55	43	48					
4	RSC (-)	4.5	2.8	0.7	0.5	0.1					
5	SAR (-)	6.6	6.4	4.3	2.6	2.6					
	PESTICIDES										

Water Quality Seasonal Average for the period: 2006-2016

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									
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
	PHYSICAL										
1	EC_FLD (µmho/cm)	1588	1088	1273	853	1080	1340	1175	1000	1330	1570
2	EC_GEN (µmho/cm)	1167	1084	1261	848	1075	1355	1170	990	1310	1555
3	pH_FLD (pH units)	8.1	8.5	7.7	7.9	8.0	8.2	7.8	7.8	8.0	7.6
4	pH_GEN (pH units)	8.4	8.6	8.3	8.1	8.2	7.9	8.0	8.0	7.8	7.7
5	TDS (mg/L)				443	553	811	730	698	788	934
6	Temp (deg C)	24.6	26.6	26.0	26.6	26.4	23.0	26.5	26.0	26.5	16.5
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	49.8	72.6	63.6	7.0	6.6	0.0	0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	772	457	326	289	176	164	184	169	168	250
3	B (mg/L)	0.01	0.13	0.00	0.00	0.01	0.03	0.01	0.02	0.03	0.03
4	Ca (mg/L)	40	61	45	41	32	29	42	45	40	53
5	Cl (mg/L)	65.4	73.0	225.6	103.8	67.0	126.0	92.0	122.0	90.0	104.0
6	CO3 (mg/L)	60.0	87.5	76.7	8.4	8.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.29	0.34	0.40	0.87	0.44	0.47	0.48	0.46	0.42	0.58
8	Fe (mg/L)	0.0	0.2	0.1	0.1	0.1	0.1	0.3	0.1	0.3	0.3
9	HCO3 (mg/L)	555	380	242	335	199	200	224	206	205	305
10	K (mg/L)	9.8	9.0	9.8	4.5	8.0	8.0	10.0	16.0	9.0	15.0
11	Mg (mg/L)	30.6	36.1	38.9	41.1	24.8	24.2	31.8	28.5	28.7	39.0
12	Na (mg/L)	218.8	258.0	170.7	98.1	111.3	110.0	144.0	92.0	60.0	78.0
13	NH3-N (mg N/L)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00
14	NO2+NO3 (mg N/L)	3.73	5.34	4.10	3.11	2.03	1.88	2.82	1.98	2.24	2.72
15	NO2-N (mgN/L)	0.05	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
16	NO3-N (mgN/L)	3.67	5.31	4.09	3.08	2.03	1.88	2.82	1.98	2.24	2.72
17	P-Tot (mgP/L)	0.012	0.028	0.026	0.025	0.244	0.001	0.001	0.003	0.001	0.144
18	SiO2 (mg/L)	13.1	9.0	8.6	20.6	8.6	9.3	8.8	8.5	8.7	9.8
19	SO4 (mg/L)	65.4	48.3	31.6	70.3	75.5	92.0	98.0	84.0	80.0	90.0

Water Quality Seasonal Average for the period: 2006-2016

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									
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
	BIOLOGICAL/BACTERIOLOGI										
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	101	151	113	101	79	73	105	113	99	132
2	HAR_Total (mgCaCO3/L)	228	302	276	273	182	173	238	232	219	295
3	Na% (%)	67	64	57	44	55	57	56	44	36	35
4	RSC (-)	6.6	3.2	1.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	6.3	6.5	4.5	2.6	3.6	3.6	4.1	2.6	1.8	2.0
	PESTICIDES										

Water Quality Seasonal Average for the period: 2006-2016

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									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL										
1	EC_FLD (µmho/cm)	1273	1088	1213	973	1000	1040	1185	1020	1520	1700
2	EC_GEN (µmho/cm)	1256	1084	1197	959	995	1020	1170	1010	1515	1680
3	pH_FLD (pH units)	7.9	8.7	7.6	8.1	7.7	7.8	7.8	8.0	8.0	8.1
4	pH_GEN (pH units)	8.0	9.1	8.3	8.4	7.9	8.0	8.0	8.1	8.0	8.2
5	TDS (mg/L)				558	496	721	730	716	910	1008
6	Temp (deg C)	24.3	27.0	26.5	27.2	27.0	27.0	26.5	27.0	26.5	25.0
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	58.4	58.4	66.4	20.2	0.0	0.0	0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	766	441	384	232	172	176	184	187	240	304
3	B (mg/L)	0.05	0.22	0.00	0.00	0.00	0.00	0.26	0.03	0.03	0.04
4	Ca (mg/L)	35	59	43	61	45	43	42	48	51	59
5	Cl (mg/L)	60.7	66.7	252.3	76.0	76.0	138.0	92.0	136.0	100.0	120.0
6	CO3 (mg/L)	70.4	70.3	80.0	24.3	0.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.45	0.49	0.29	1.15	0.52	0.49	0.48	0.48	0.56	0.62
8	Fe (mg/L)	0.0	0.2	0.1	0.2	0.1	0.1	0.3	0.1	0.3	0.3
9	HCO3 (mg/L)	396	394	306	233	210	215	224	228	293	371
10	K (mg/L)	9.0	8.7	16.6	6.1	8.0	10.0	10.0	22.0	14.0	18.0
11	Mg (mg/L)	43.4	34.4	45.5	29.0	28.6	26.5	31.8	26.2	38.1	42.9
12	Na (mg/L)	250.7	235.0	187.4	68.3	96.0	108.0	144.0	105.0	74.0	90.0
13	NH3-N (mg N/L)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00	
14	NO2+NO3 (mg N/L)	4.40		4.13	2.42	2.36	2.24	2.82	2.16	0.27	2.81
15	NO2-N (mgN/L)	0.05		0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00
16	NO3-N (mgN/L)	4.35		4.11	2.39	2.36	2.24	2.82	2.16	0.27	2.81
17	P-Tot (mgP/L)	0.009	0.045	0.001	0.352	0.001	0.001	0.001	0.002	0.001	0.156
18	SiO2 (mg/L)	15.2	9.9	9.5	12.4	7.9	8.5	8.8	9.2	9.6	10.2
19	SO4 (mg/L)	60.7	48.0	35.9	37.1	96.0	98.0	98.0	92.0	88.0	95.0

Water Quality Seasonal Average for the period: 2006-2016

Station Name : MAIGHAT (GGXOOB4)

Local River : Gomti

Well Water

Division : M Ganga Div. III, Varanas

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

S.No	Parameters	Summer									
		Mar - May									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	BIOLOGICAL/BACTERIOLOG										
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	87	147	108	152	112	108	105	121	128	148
2	HAR_Total (mgCaCO3/L)	268	290	297	272	231	219	238	230	287	327
3	Na% (%)	66	63	56	35	47	51	56	47	35	36
4	RSC (-)	3.5	3.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	6.7	6.0	4.7	1.8	2.8	3.2	4.1	3.0	1.9	2.2
	PESTICIDES										

2.7 SAI - RAEBARELI

HISTORY SHEET

		Water Year	**: 2015-2016**
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 : 2015-2016

Station Name : RAEBARELI (GGX10M2) | **Division : M Ganga Div. II, Lucknow**

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

S.No	Parameters	6/1/2015	7/1/2015	8/1/2015	9/1/2015	10/1/2015	11/2/2015	12/1/2015	1/1/2016	2/1/2016	3/1/2016	4/1/2016	5/2/2016
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)	8.370	7.930	30.42	28.37	21.76	16.99	2.380	1.920	2.980	0.933	0.967	0.500
2	Colour_Cod (-)	Clear	Brown	Brown	Light Brown	Brown	Brown	Light Brown	Light Brown	Light Brown	Light Brown	Brown	Light Brown
3	EC_GEN (µmho/cm)	320	520	350	350	270	320	600	600	490	690	710	920
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)	7.5	8.0	8.5	8.0	8.0	8.0	8.5	8.5	8.5	8.0	8.5	8.0
6	pH_GEN (pH units)	8.1	8.4	8.4	8.2	8.4	8.4	8.6	8.6	8.1	7.9	8.3	8.7
7	TDS (mg/L)	192	300	214	207	157	192	370	366	310	416	430	552
8	Temp (deg C)	31.0	30.0	30.0	28.0	29.0	26.5	22.0	16.0	20.0	24.0	28.0	32.0
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	0.0	19.9	8.0	0.0	8.0	8.0	15.9	12.0	0.0	0.0	15.9	35.9
2	ALK-TOT (mgCaCO3/L)	84	112	68	92	76	84	128	88	116	0	188	188
3	B (mg/L)				3.46		0.16						0.44
4	Ca (mg/L)	29	36	26	26	24	31	48	48	41	52	45	58
5	Cl (mg/L)	60.0	51.8	45.8	34.1	28.0	30.2	34.1	32.3	21.7	25.9	47.9	52.0
6	CO3 (mg/L)	0.0	24.0	9.6	0.0	9.6	9.6	19.2	14.4	0.0	0.0	19.2	43.2
7	F (mg/L)	0.51	0.49	0.38	0.59	0.49	0.51	0.53	0.53	0.40	0.61	0.63	0.65
8	HCO3 (mg/L)	102	88	63	112	73	83	117	78	142	190	190	142
9	K (mg/L)	5.9	7.0	6.3	5.1	4.2	4.5	5.5	5.9	5.1	6.3	13.7	4.4
10	Mg (mg/L)	16.5	19.6	16.5	16.5	14.5	17.0	21.6	20.7	16.5	28.9	24.5	26.5
11	Na (mg/L)	38.2	39.6	29.7	23.7	19.3	19.8	20.5	20.5	14.7	16.8	26.0	10.4
12	NH3-N (mg N/L)	0.60	0.65	0.51	0.60	0.62	0.72	1.10	1.05	0.88	1.00	1.02	1.13
13	NO2+NO3 (mg N/L)	21.43	8.45	7.38	7.13	5.67	6.48	10.90	11.05	10.56	13.12	13.27	11.89
14	NO2-N (mgN/L)	0.41	0.61	0.51	0.26	0.48	0.59	0.68	0.68	0.61	0.79	0.80	0.99
15	NO3-N (mgN/L)	21.02	7.85	6.87	6.87	5.18	5.89	10.23	10.37	9.95	12.33	12.47	10.90
16	o-PO4-P (mg P/L)	0.238	0.289	0.227	0.227	0.207	0.217	0.300	0.289	0.258	0.300	0.320	
17	P-Tot (mgP/L)												1.100
18	SO4 (mg/L)	17.8	19.7	33.6	31.7	26.9	48.0	52.8	57.6	32.6	43.2	44.6	47.0
	BIOLOGICAL/BACTERIOLOGICAL												
1	BOD3-27 (mg/L)	17.7	13.3	17.7	7.8	3.7	15.3	17.6	8.6	19.6	18.8	25.4	25.4
2	COD (mg/L)	19.0	15.0	20.0	13.0	9.0	18.0	26.0	13.0	26.0	29.0	35.0	36.0
3	DO (mg/L)	1.8	3.9	2.0	2.9	7.1	4.7	4.9	6.7	2.0	1.8	1.8	2.6
4	DO_SAT% (%)	24	52	26	38	92	58	56	67	22	21	22	35

Water Quality Datasheet for the period : 2015-2016

Station Name : RAEBARELI (GGX10M2)

Local River : SAI

River Water Analysis

Division : M Ganga Div. II, Lucknow

Sub-Division : Gomti Subdivision, Lucknow

S.No	Parameters	6/1/2015	7/1/2015	8/1/2015	9/1/2015	10/1/2015	11/2/2015	12/1/2015	1/1/2016	2/1/2016	3/1/2016	4/1/2016	5/2/2016
		A	A	A	A	A	A	A	A	A	A	A	A
	TRACE & TOXIC												
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	73	91	65	65	60	78	121	121	103	129	112	145
2	HAR_Total (mgCaCO3/L)	142	172	133	133	120	148	211	207	172	249	214	255
3	Na% (%)	36	32	31	27	25	22	17	17	15	12	20	8
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	1.4	1.3	1.1	0.9	0.8	0.7	0.6	0.6	0.5	0.5	0.8	0.3
	PESTICIDES												

Water Quality Summary for the period : 2015-2016

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)	12	30.42	0.500	10.54
2	EC_GEN (µmho/cm)	12	920	270	512
3	pH_FLD (pH units)	12	8.5	7.5	8.2
4	pH_GEN (pH units)	12	8.7	7.9	8.3
5	TDS (mg/L)	12	552	157	309
6	Temp (deg C)	12	32.0	16.0	26.4
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	11	35.9	0.0	11.2
2	ALK-TOT (mgCaCO3/L)	11	188	68	111
3	B (mg/L)	3	3.46	0.16	1.35
4	Ca (mg/L)	12	58	24	39
5	Cl (mg/L)	12	60.0	21.7	38.7
6	CO3 (mg/L)	12	43.2	0.0	12.4
7	F (mg/L)	12	0.65	0.38	0.53
8	HCO3 (mg/L)	12	190	63	115
9	K (mg/L)	12	13.7	4.2	6.1
10	Mg (mg/L)	12	28.9	14.5	19.9
11	Na (mg/L)	12	39.6	10.4	23.3
12	NH3-N (mg N/L)	12	1.13	0.51	0.82
13	NO2+NO3 (mg N/L)	12	21.43	5.67	10.61
14	NO2-N (mgN/L)	12	0.99	0.26	0.62
15	NO3-N (mgN/L)	12	21.02	5.18	9.99
16	o-PO4-P (mg P/L)	11	0.320	0.207	0.261
17	P-Tot (mgP/L)	1	1.100	1.100	1.1
18	SO4 (mg/L)	12	57.6	17.8	38
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	25.4	3.7	15.9
2	COD (mg/L)	12	36.0	9.0	21.6
3	DO (mg/L)	12	7.1	1.8	3.5
4	DO_SAT% (%)	12	92	21	43
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	145	60	97
2	HAR_Total (mgCaCO3/L)	12	255	120	180
3	Na% (%)	12	36	8	22
4	RSC (-)	12	0.0	0.0	0
5	SAR (-)	12	1.4	0.3	0.8
	PESTICIDES				

Water Quality Seasonal Average for the period: 2006-2016

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
	PHYSICAL										
1	EC_GEN (µmho/cm)										
2	pH_GEN (pH units)										
3	Temp (deg C)										
	CHEMICAL										
1	ALK-TOT (mgCaC03/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										

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Water Quality Seasonal Average for the period: 2006-2016

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
	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/BACTERIOLOGI										
	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: 2006-2016

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
	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/BACTERIOLOGI										
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)										
2	HAR_Total (mgCaCO3/L)										
3	Na% (%)										
4	RSC (-)										
5	SAR (-)										
	PESTICIDES										

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 23 parameters 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 limit except in the summer season of the year 2010 its value is 9.0 and it is 9.0 in the year 2011 respectively.

3.2.1 Trends in the variation of Dissolved Oxygen

Table no. 6, 7 & 8 demonstrate the average value of D.O. which is ranged from minimum 6.3 ppm in 2015 to maximum concentration of 7.4 ppm, in 2008 during flood season. In winter season the average value of D.O. ranged from minimum 4.8 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 this parameter 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)

3.2.2Trends in the variation of Bio-Chemical Oxygen Demand

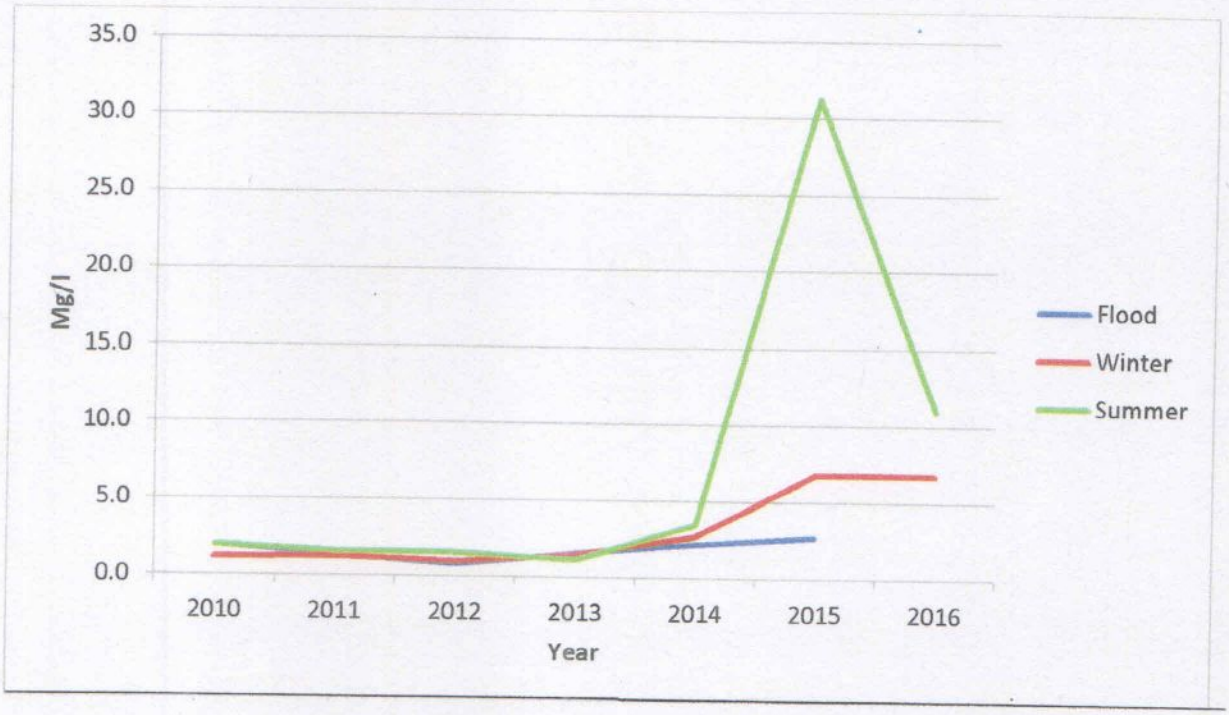
During Flood season, the average value of this parameter ranged from minimum 0.8 ppm in 2012 & to maximum of 2.7 ppm in the year 2015. During winter season, the average value of this parameter ranged from minimum 1.0 ppm in 2012-13 to maximum of 6.8 ppm in the year 2015-16.

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 2015 has been depicted in figure -2

Figure-2

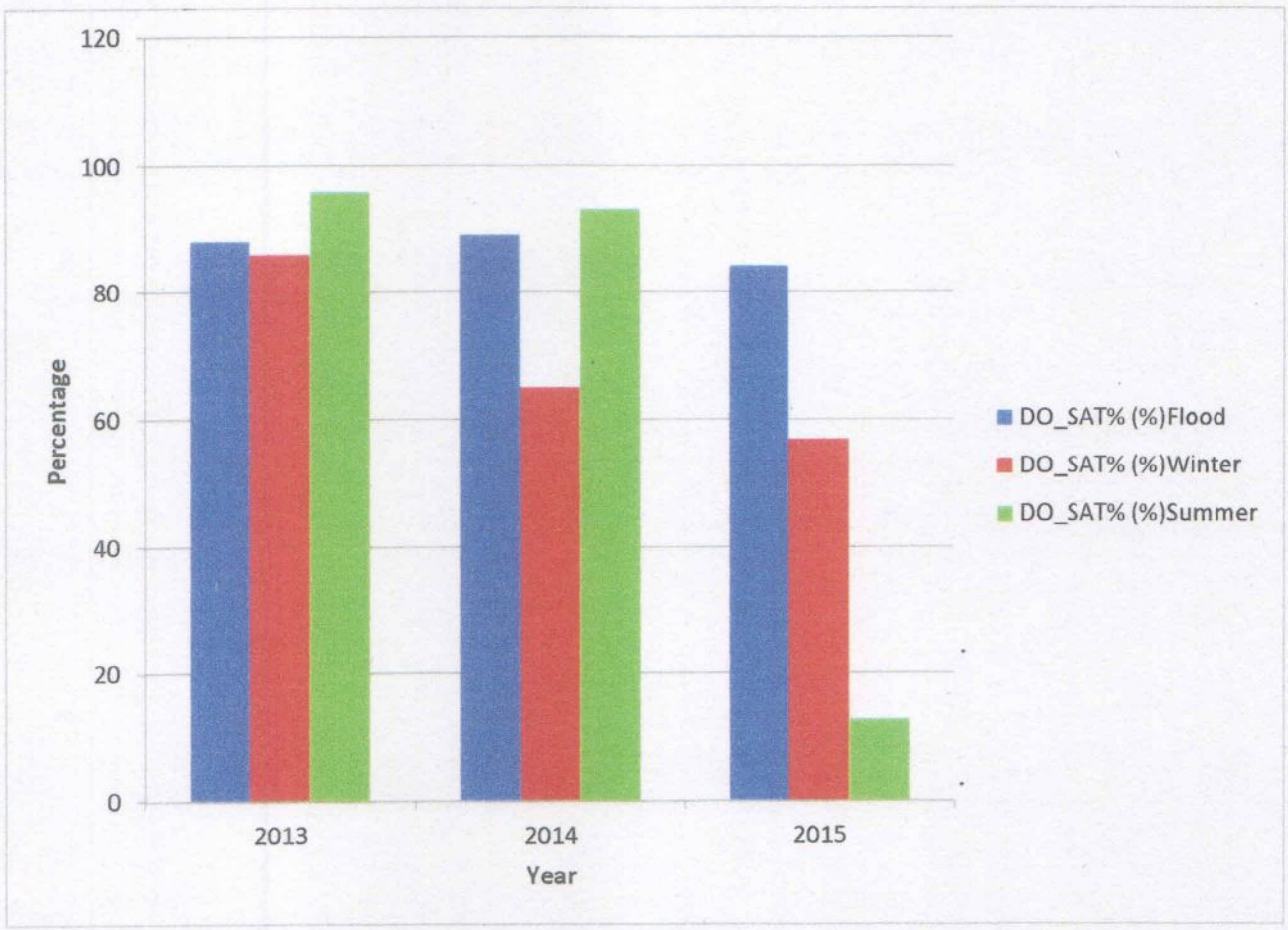
AVERAGE B.O.D TREND AT NEEMSAR (SEASON WISE)



Yearly trend of this parameter starting from year 2013 to 2015 has also been depicted in the figure No. 3

Figure-3

Water Quality Trend of D.O (Percentage)



3.2.3 Trends in the variation of chloride

Perusal of table No. 6, 7 & 8 shows that the average value of this parameter ranged from minimum 12.1 ppm in 2011 & 2013 to maximum concentration of 32.1 ppm in 2009 during flood season. For winter season 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. The value of this parameter is satisfactory.

3.2.4 Trends in the variation of specific conductance

Perusal of table No. 6, 7 & 8 shows that average value of Specific conductance ranged from minimum of 190 Micro siemen/cm in the year 2010 & 2013 to maximum of 410 Micro siemen/cm in the year 2006 during flood season. During winter season minimum specific conductance observed was 310 Micro siemen/cm 2009-10 to maximum of 450 Micro siemen /cm in the year 2014-15. During the summer season of 2008 the maximum value of this parameter was 560 Micro siemen/cm and Minimum 340 Micro siemen/cm was observed in summer season of 2016.

3.3 Gomti at Lucknow

The variation of average concentration of all the 23 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.

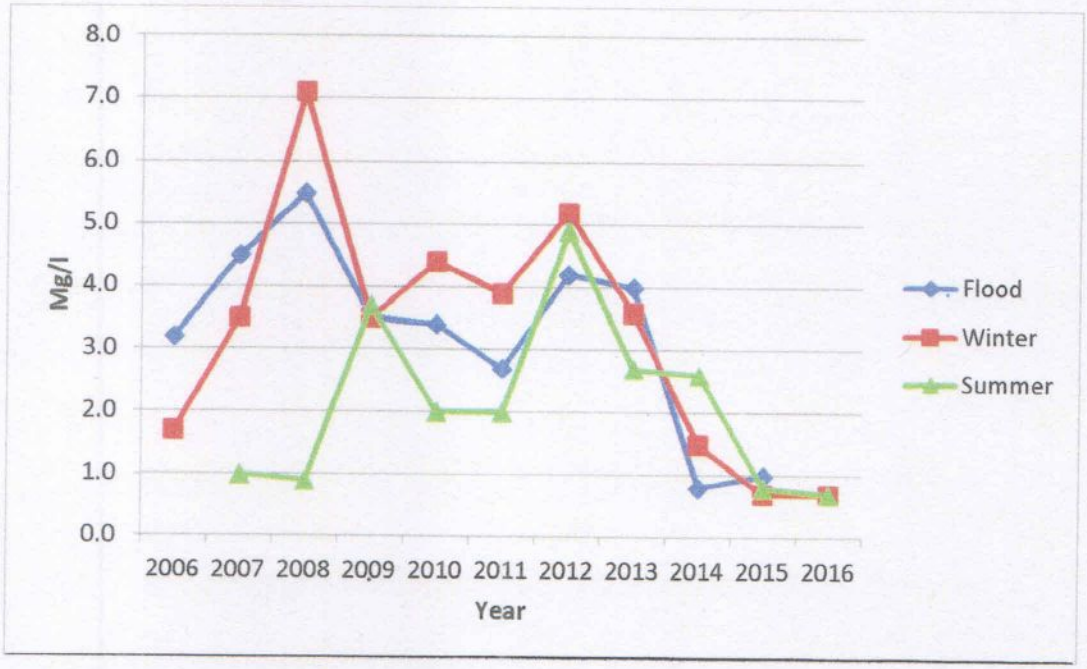
3.3.1 Trends in the variation of Dissolved Oxygen

Table no. 9, 10 & 11 demonstrate 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 minimum 0.7 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 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)



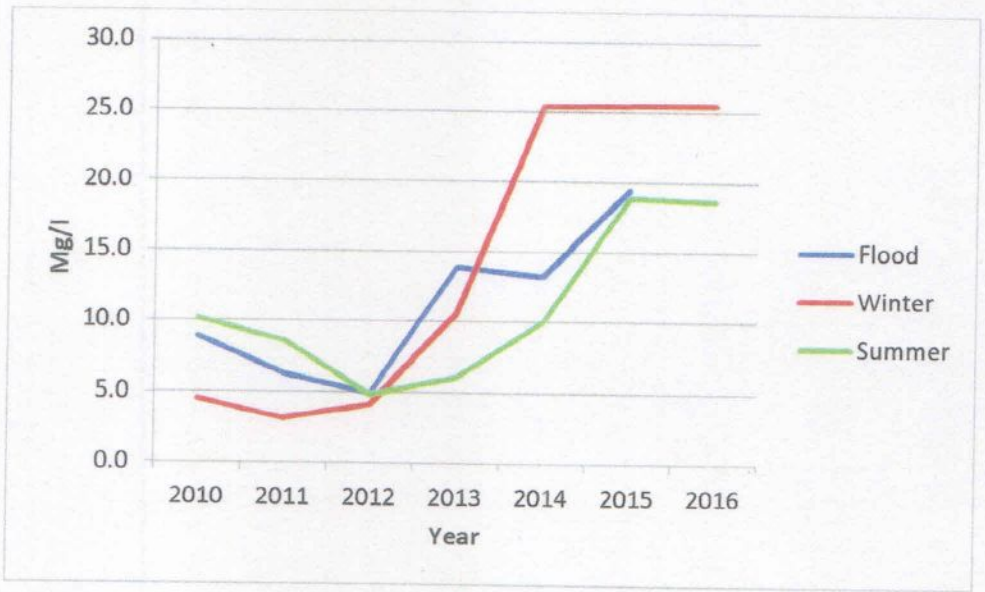
3.3.2 Trends in the variation of Bio-Chemical Oxygen Demand

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. 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 2016 has been depicted in figure -5

Figure-5

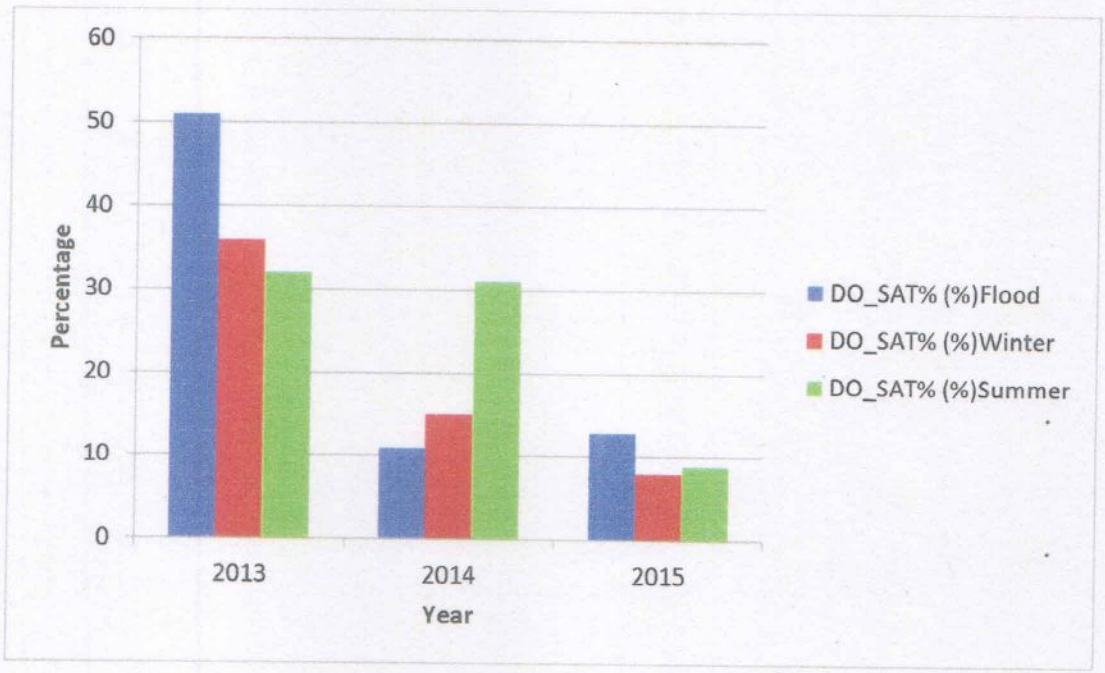
AVERAGE B.O.D TREND AT LUCKNOW (SEASON WISE)



Yearly trend of this parameter starting from year 2013 to 2015 has also been depicted in the figure No.6

Figure-6

Water Quality Trend of D.O (Percentage)



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 11.9 ppm in 2006 to maximum concentration of 31.7 ppm in 2010 during flood season. For winter season 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. The value of this parameter is satisfactory.

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 300 Micro siemen/cm in the year 2011 to maximum of 480 Micro siemen/cm in the year 2015 during flood season. During winter season minimum specific conductance observed was 358 Micro siemen/cm 2009-10 to maximum of 490 Micro siemen/cm in the year 2006-07. During the summer season of 2008 the maximum value of this parameter was 657 Micro siemen/cm and Minimum 517 Micro siemen/cm was observed in summer season of 2011.

3.4 Gomti at Sultanpur

The variation of average concentration of all the 34 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 2006 where it is found to be 8.7. In the winter season 8.7 in the year 2006-07. During Summer season of the year 2007 pH 8.6, 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 5.6 ppm in 2006 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 6.1 ppm in 2016 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)

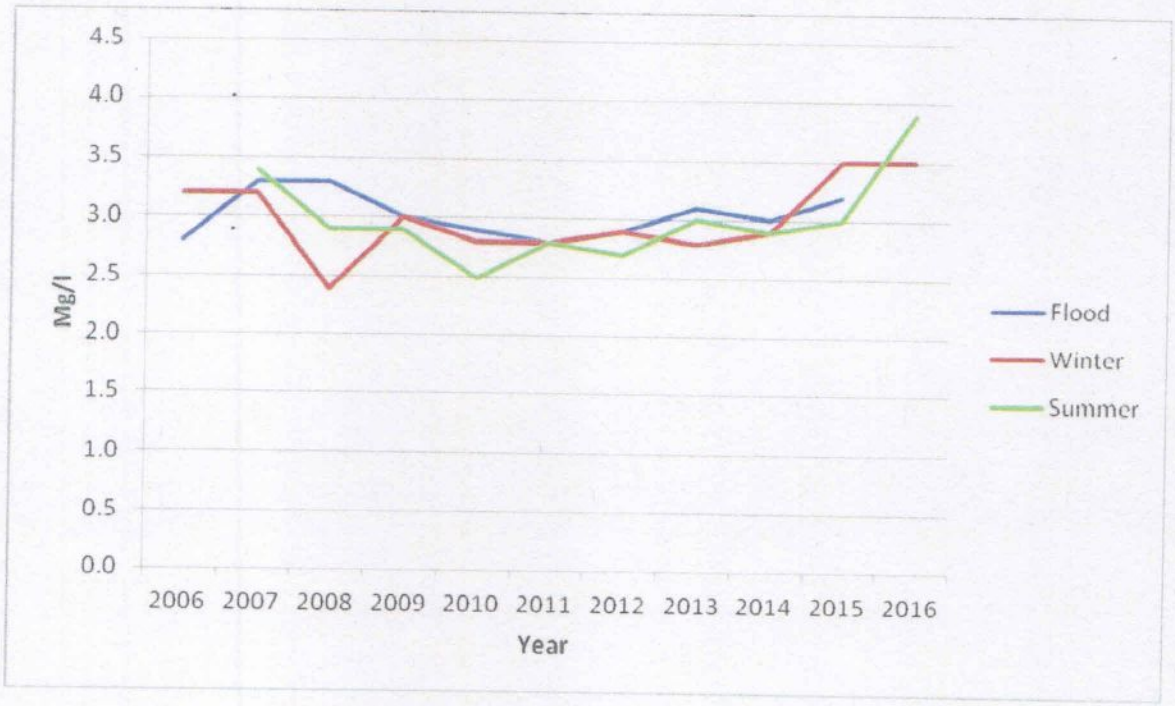
3.4.2 Trends in the variation of Bio-Chemical Oxygen Demand

During 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 3.9 ppm in 2016 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 2006 to 2016 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 2015 has also been depicted in the figure No. 9

Figure - 9

Water Quality Trend of D.O (Percentage)

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. The value of this parameter is satisfactory .

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 Micro siemen/cm in the year 2004 & 2010 to maximum of 430 Micro siemen/cm in the year 2015 during flood season. During winter season minimum specific conductance observed was 316 Micro siemen/cm 2011-12 to maximum of 550 Micro siemen/cm in the year 2015-16. During the summer season of 2016 the maximum value of this parameter was 617 Micro siemen/cm and Minimum 327 Micro siemen/cm was observed in summer season of 2007 & 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.

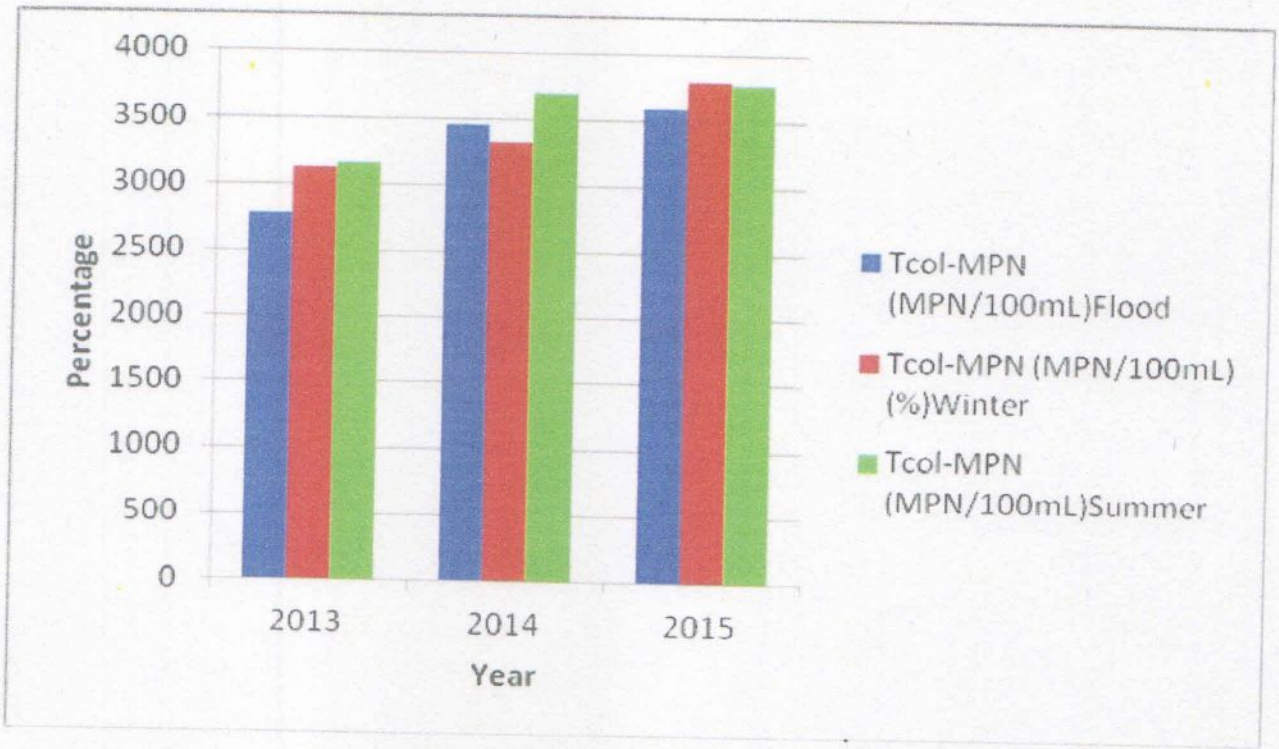
3.4.6 Trends in the variation of Total Coliform Concentration

The bar chart figure No. 10 is self explanatory, it is observed that the Total Coli form at the site was always below 5000 MPN/100 ml since the commencement 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 2016.

In the year 2006 for all water samples the value was observed between 500 to 5000 MPN/100 ml showing gradual decrease in Summer and gradual increase in Flood & Winter season from 2006 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)



3.5 Gomti at Maighat

The variation of average concentration of all the 34 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 2006 where it is found to be 8.9. In the winter season 8.6 of the year 2006-07. In the summer season of 2007 & 2008 pH value are 8.7 respectively.

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 2007 & 2009 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 2006-07 & 2007-08 to maximum 8.3 ppm in the year 2010-11. Minimum value of average D.O. content during summer season was observed 6.2 ppm in 2009 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)

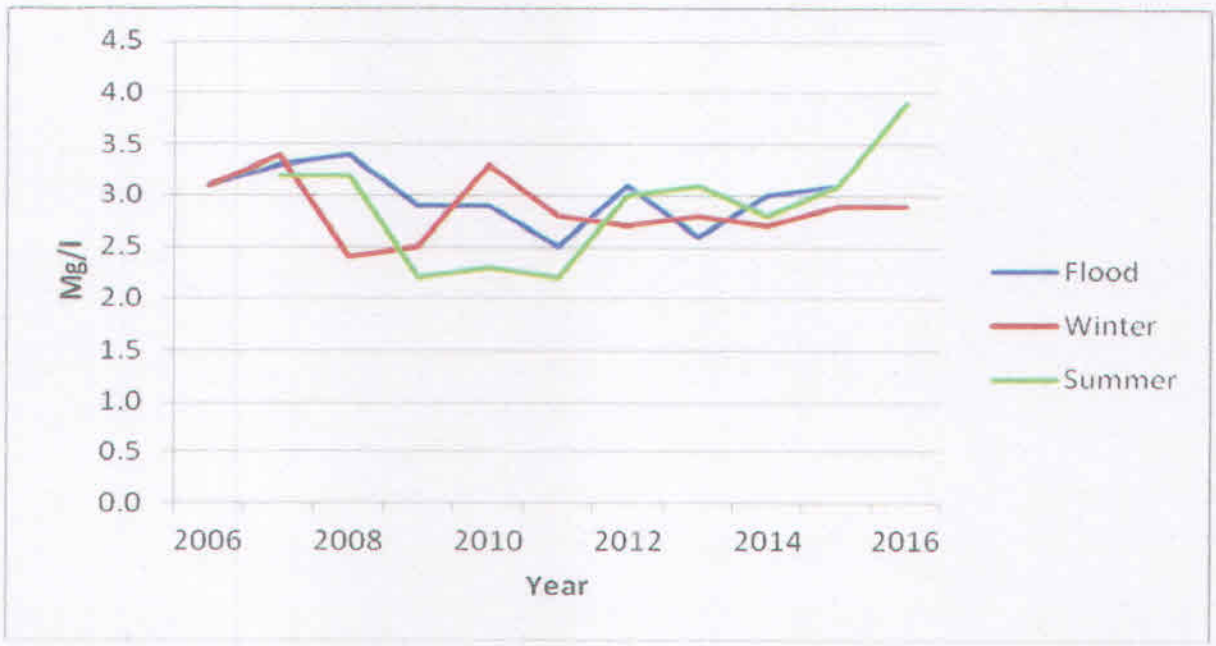
3.5.2 Trends in the variation of Bio-Chemical Oxygen Demand

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 & 2005-06. 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 2006 to 2016 has been depicted in figure -12

Figure-12

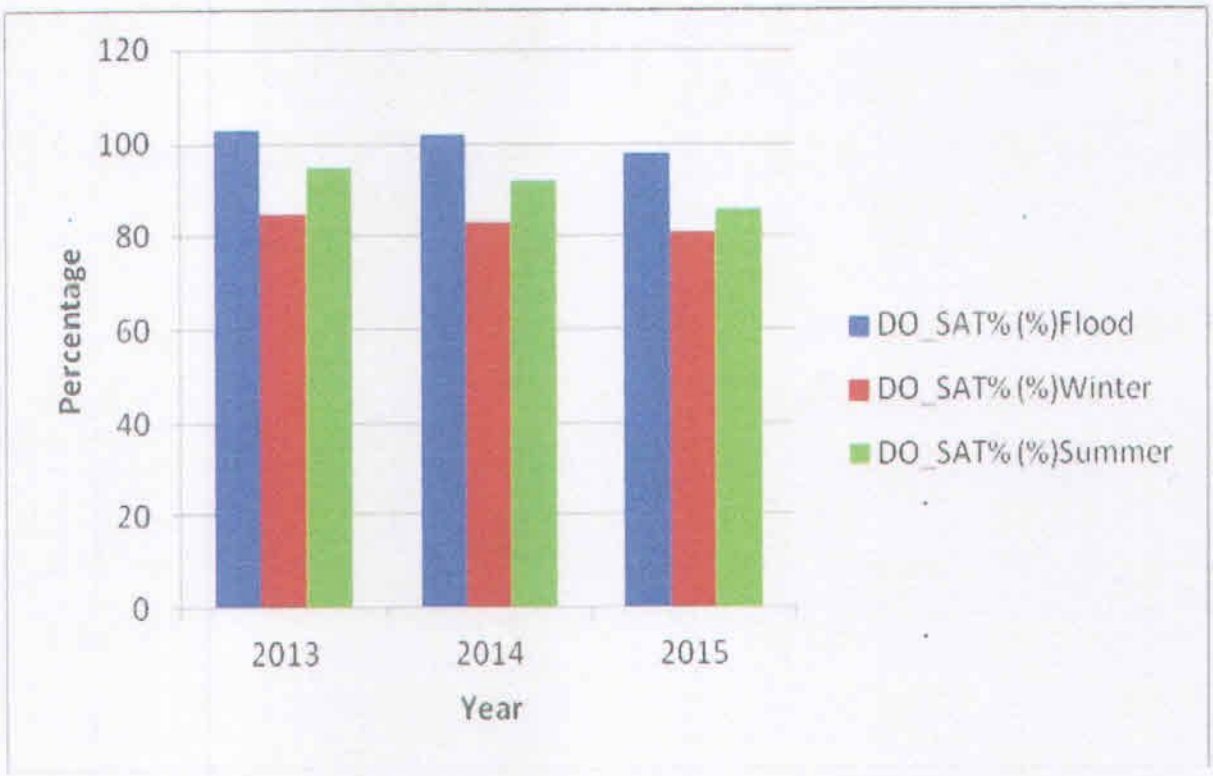
AVERAGE B.O.D TREND AT MAIGHAT (SEASON WISE)



Yearly trend of this parameter starting from year 2013 to 2015 has also been depicted in the figure no. 13.

Figure-13

Water Quality trend of D.O.(Percentage)



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. The value of this parameter is satisfactory.

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

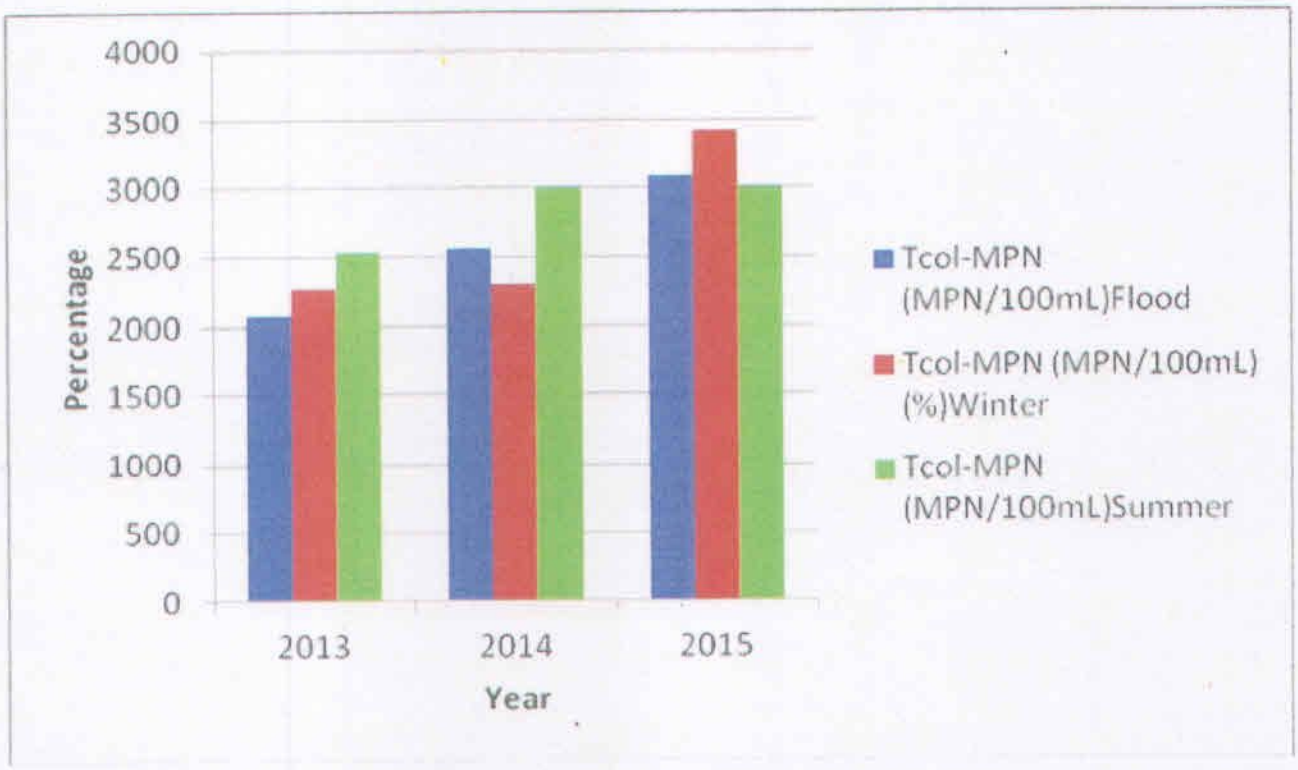
Perusal of table No.15, 16 & 17 indicates that the concentration of all 6 trace and toxic metals in the river at this site is found well within Tolerance limit.

3.5.6 Trends in the variation of Total Coliform Concentration

It is evident from the bar chart figure No- 14 that the Total Coli form at the site is below 5000 MPN/100 ml since the commencement 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 2014-15 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)



3.6 Sai at Rai Bareilly

The variation of average concentration of all the 23 parameters during flood, winter and summer season has been shown in the Table No. 18,19 & 20 respectively.

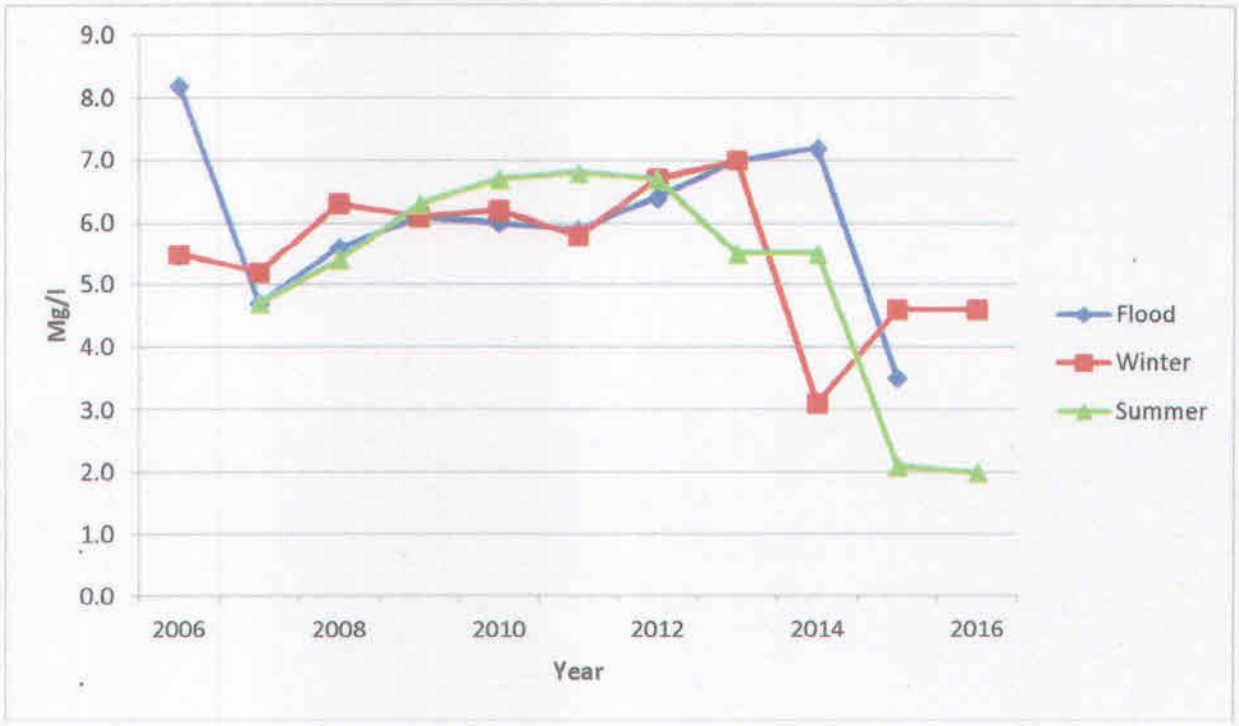
3.6.1 Trends in the variation of Dissolved Oxygen

Table no. 18,19 & 20 demonstrate the average value of Dissolved Oxygen, which is ranged from minimum 3.5 ppm in 2015 to maximum concentration of 8.2 ppm in 2006, during flood season. In winter season the average value of D.O. ranged from minimum 3.1 ppm in the year 2014-15 to maximum 7.0 ppm in the year 2012-13. Minimum value of average D.O. content during summer season was observed 2.0 ppm in 2016 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)



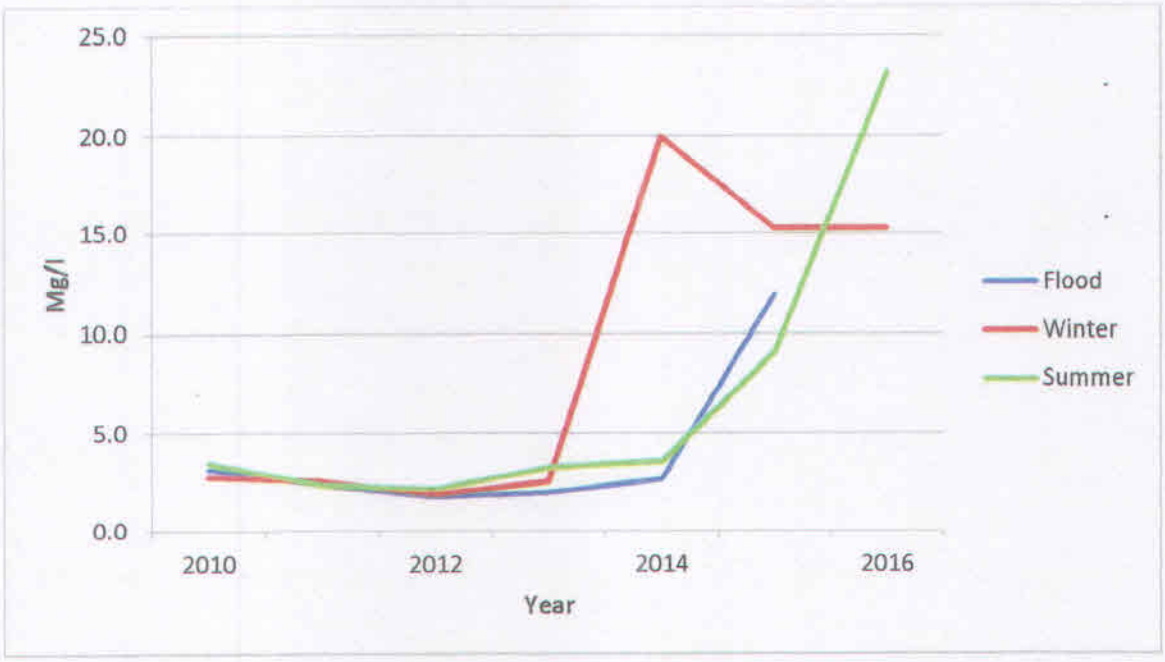
3.6.2 Trends in the variation of Bio-Chemical Oxygen Demand

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 2016 and minimum of 2.2 ppm in 2012. During Flood season, the average value of this parameter ranged from minimum 1.8 ppm 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 2016 has been depicted in figure -16

Figure-16

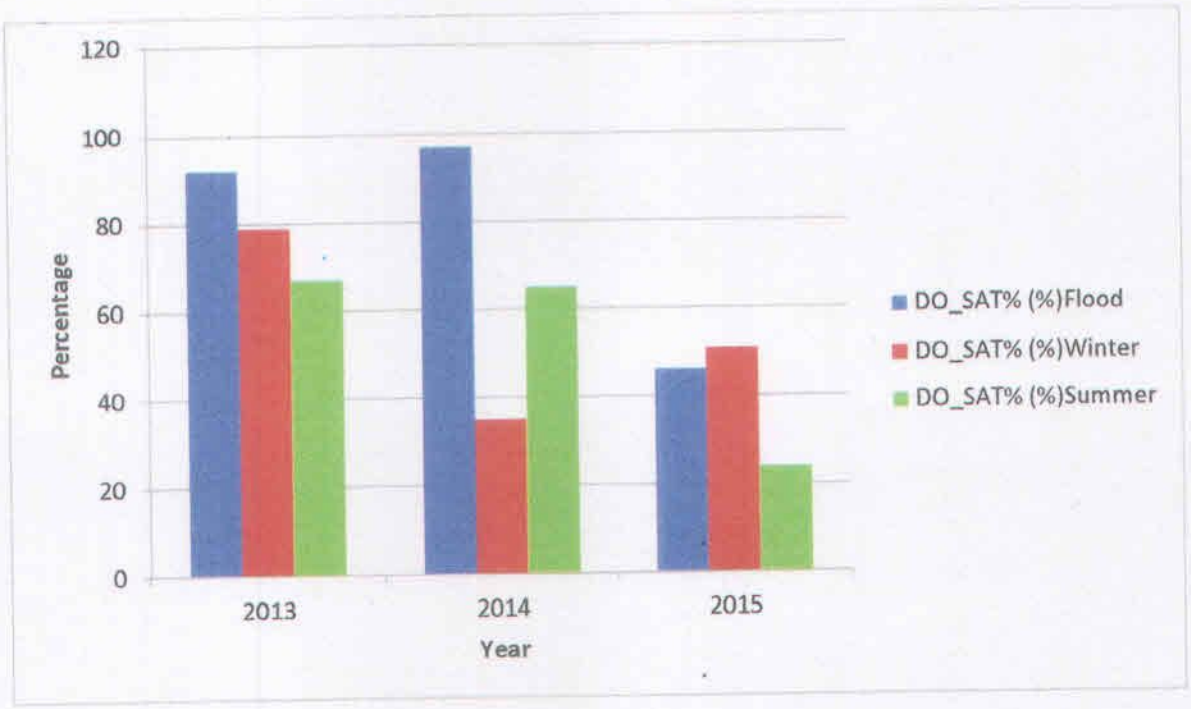
AVERAGE B.O.D TREND AT RAI BAREILLY (SEASON WISE)



Yearly trend of this parameter starting from year 2013 to 2015 has also been depicted in the figure No.17

Figure-17

Water Quality Trend of D.O (Percentage)



3.6.3 Trends in the variation of chloride

Perusal of table No.18,19 & 20 shows that the average value of this parameter ranged from minimum 14.3 ppm in 2012 to maximum concentration of 43.9 ppm in 2015 during flood season. For winter season 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 64.5 ppm in 2015 and minimum was 18.7 ppm in 2012. The value of this parameter is satisfactory.

3.6.4 Trends in the variation of specific conductance

Perusal of table No. 18, 19 & 20 shows 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 of 2016 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: 2006-2016

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
	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
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
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
5	TDS (mg/L)			173	200	115	135	235	115	150	215
6	Temp (deg C)	29.5	30.0	30.0	32.0	30.8	32.0	30.0	31.0	32.0	31.0
7	Turb (NTU)				14.7	5.7	2.6	2.8	4.4	3.0	
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	4.0	0.0	0.0		0.0		23.9	0.0	0.0	8.0
2	ALK-TOT (mgCaCO3/L)	284	248	126		76		124	100	140	68
3	B (mg/L)	0.00	0.00	0.02							
4	Ca (mg/L)	34	37	29	26	19	17	22	26	33	34
5	Cl (mg/L)	14.7	13.4	28.8	32.1	22.0	12.1	13.8	12.1	16.0	25.9
6	CO3 (mg/L)	3.2	3.2	0.0	0.0	0.0	0.0	28.8	0.0	0.0	9.6
7	F (mg/L)	0.13	0.24	0.26	0.47	0.15	0.17	0.17	0.13	0.17	0.89
8	Fe (mg/L)	0.1	0.0	0.2	0.0	0.0					
9	HCO3 (mg/L)	161	155	172	134	93	93	93	122	171	63
10	K (mg/L)	4.8	5.7	3.8	4.7	5.9	3.1	2.0	2.0	3.5	4.7
11	Mg (mg/L)	15.8	18.5	15.1	13.4	6.2	8.3	15.4	14.5	17.5	18.6
12	Na (mg/L)	16.5	15.2	20.8	23.0	15.4	7.1	9.7	8.3	11.0	18.2
13	NH3-N (mg N/L)				0.15	0.07	0.10	0.10	0.10	0.20	0.32
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
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
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
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
18	P-Tot (mgP/L)										
19	SiO2 (mg/L)	4.9	4.6	4.6							
20	SO4 (mg/L)	20.2	21.1	10.7	13.0	6.2	4.3	3.8	5.8	10.1	61.4

Water Quality Seasonal Average for the period: 2006-2016

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
	BIOLOGICAL/BACTERIOLOGICAL										
1	BOD3-27 (mg/L)					2.0	1.4	0.8	1.6	2.2	2.7
2	COD (mg/L)						6.0	6.0	5.0	9.0	7.0
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	DO_SAT% (%)	85	87	98	93	91	94	91	88	89	84
5	FCol-MPN (MPN/100mL)										
6	Tcol-MPN (MPN/100mL)										
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	85	92	73	65	48	43	56	65	82	86
2	HAR_Total (mgCaCO3/L)	150	169	136	120	73	77	120	125	154	163
3	Na% (%)	19	15	25	29	29	16	15	12	13	19
4	RSC (-)	0.0	0.0	0.2	0.0	0.1	0.0	0.1	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
	PESTICIDES										

Water Quality Seasonal Average for the period: 2006-2016

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
	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
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
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
5	TDS (mg/L)			265	188	235	233	245	198	245	262
6	Temp (deg C)	19.8	18.5	22.5	22.5	22.5	21.5	21.5	22.0	23.0	23.0
7	Turb (NTU)				1.5	1.3	1.5	2.6	2.0		
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	10.0		0.0	0.0	0.0	15.9	47.8	8.0
2	ALK-TOT (mgCaCO3/L)	264	248	168		114	152	124	132	204	70
3	B (mg/L)	0.00	0.02	0.08			0.06	0.06	0.06	0.85	0.17
4	Ca (mg/L)	36	37	30	21	23	34	33	41	46	37
5	Cl (mg/L)	16.9	13.0	30.2	25.0	27.0	14.9	14.0	19.0	39.1	27.0
6	CO3 (mg/L)	0.0	0.0	12.0	21.6	0.0	0.0	0.0	19.2	48.0	9.6
7	F (mg/L)	0.15	0.25	0.44	0.31	0.18	0.23	0.19	0.29	0.30	0.39
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
10	K (mg/L)	5.5	4.9	4.3	9.0	5.9	3.7	2.2	3.1	6.1	4.7
11	Mg (mg/L)	19.6	18.0	15.4	10.3	10.8	18.5	18.0	23.2	28.4	19.6
12	Na (mg/L)	14.0	18.2	22.9	15.8	16.4	10.1	9.7	11.6	19.4	16.8
13	NH3-N (mg N/L)				0.11	0.04	0.05	0.15	0.34	0.31	0.48
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
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
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
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
18	P-Tot (mgP/L)										
19	SiO2 (mg/L)	3.8	4.3	5.1							
20	SO4 (mg/L)	18.2	18.7	11.0	9.1	7.7	6.0	10.6	19.2	13.0	69.8

Water Quality Seasonal Average for the period: 2006-2016

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

Water Quality Seasonal Average for the period: 2006-2016

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
	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
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
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
5	TDS (mg/L)			310	295	265	235	290	290	300	209
6	Temp (deg C)	27.0	26.0	26.0	30.0	27.0	28.0	30.0	30.0	22.0	28.0
7	Turb (NTU)				4.4	1.0	3.2	2.2	3.8		
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	0.0		0.0		12.0			19.9	15.9	0.4
2	ALK-TOT (mgCaCO3/L)	328		168		144			192	156	89
3	B (mg/L)	0.00	0.05	0.12	0.20	0.08	0.04	0.08	0.10	0.20	0.20
4	Ca (mg/L)	40	43	33	26	26	29	40	55	29	28
5	Cl (mg/L)	18.1	19.9	34.1	28.0	30.2	18.1	18.1	24.1	35.9	14.0
6	CO3 (mg/L)	0.0	0.0	0.0	14.4	14.4	14.4	7.2	24.0	19.2	0.5
7	F (mg/L)	0.21	0.38	0.55	0.40	0.21	0.23	0.23	0.51	0.59	0.42
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
10	K (mg/L)	7.8	6.3	5.5	9.8	9.0	3.9	2.7	3.9	5.9	4.4
11	Mg (mg/L)	21.6	21.6	17.5	13.4	11.3	19.6	20.7	27.8	24.8	22.5
12	Na (mg/L)	21.6	26.7	24.6	17.3	19.5	10.4	12.6	16.1	23.5	10.4
13	NH3-N (mg N/L)				0.17	0.08	0.20	0.15	0.51	0.35	0.42
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
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
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
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	
18	P-Tot (mgP/L)										0.780
19	SiO2 (mg/L)	3.8	6.5	5.8							
20	SO4 (mg/L)	24.0	20.2	14.4	11.5	8.6	6.2	13.9	22.1	7.7	35.5

Water Quality Seasonal Average for the period: 2006-2016

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
	BIOLOGICAL/BACTERIOLOGICAL										
1	BOD3-27 (mg/L)				2.0	1.6	1.6	1.2	3.5	31.3	11.0
2	COD (mg/L)					14.0	3.0	7.0	10.0	32.0	20.0
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	DO_SAT% (%)	93	97	91	93	93	90	96	93	13	35
5	FCol-MPN (MPN/100mL)										
6	Tcol-MPN (MPN/100mL)										
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	99	108	82	65	65	73	99	138	73	71
2	HAR_Total (mgCaCO3/L)	189	198	154	120	112	155	185	253	176	164
3	Na% (%)	19	22	25	22	26	12	13	12	22	12
4	RSC (-)	0.0	0.0	0.3	0.5	0.7	0.4	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
	PESTICIDES										

Water Quality Seasonal Average for the period: 2006-2016

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
	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
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
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
5	TDS (mg/L)			192	212	251	183	246	221	281	286
6	Temp (deg C)	29.5	29.5	30.0	25.3	30.7	29.4	31.1	28.8	30.6	30.1
7	Turb (NTU)				6.8	5.6	3.1	6.2	7.9	4.7	
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	2.4		0.0		0.0	2.4	13.9	0.0	15.1	11.0
2	ALK-TOT (mgCaCO3/L)	237		121		94	158	142	151	155	92
3	B (mg/L)	0.00	0.06	0.08							
4	Ca (mg/L)	38	38	33	25	26	33	30	47	53	33
5	Cl (mg/L)	11.9	16.8	17.6	28.5	31.7	18.8	15.5	19.2	26.1	28.4
6	CO3 (mg/L)	2.9	0.0	0.0	4.8	7.7	2.9	16.8	0.0	18.2	13.3
7	F (mg/L)	0.31	0.32	0.51	0.61	0.41	0.33	0.33	0.32	0.46	0.59
8	Fe (mg/L)	0.3	0.1	0.2	0.2						
9	HCO3 (mg/L)	162	183	147	166	153	187	140	190	152	85
10	K (mg/L)	6.8	5.6	11.9	12.5	8.4	4.1	2.4	3.1	6.9	6.8
11	Mg (mg/L)	19.8	23.1	18.1	19.2	14.2	18.3	19.0	24.2	22.9	24.3
12	Na (mg/L)	18.4	19.6	16.3	19.1	20.8	12.1	11.2	12.6	17.7	19.7
13	NH3-N (mg N/L)				0.47	0.24	0.12	0.16	0.34	0.44	1.07
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
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
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
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
18	P-Tot (mgP/L)										

Water Quality Seasonal Average for the period: 2006-2016

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
19	SiO2 (mg/L)	9.7	7.1	5.2							
20	SO4 (mg/L)	21.5	23.0	18.4	15.2	9.6	3.6	6.1	14.1	19.0	28.4
	BIOLOGICAL/BACTERIOLOGICAL										
1	BOD3-27 (mg/L)	7.8				8.9	6.3	5.0	13.9	13.3	19.5
2	COD (mg/L)					26.0	11.4	20.0	52.2	47.0	22.6
3	DO (mg/L)	3.2	4.5	5.5	3.5	3.4	2.7	4.2	4.0	0.8	1.0
4	DO_SAT% (%)	42	58	73	46	45	35	57	51	11	13
5	FCol-MPN (MPN/100mL)										
6	Tcol-MPN (MPN/100mL)										
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	96	95	83	62	64	83	76	119	132	83
2	HAR_Total (mgCaCO3/L)	178	191	158	142	124	159	155	219	228	185
3	Na% (%)	18	18	17	21	25	13	13	11	14	18
4	RSC (-)	0.0	0.0	0.0	0.2	0.3	0.1	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
	PESTICIDES										

Water Quality Seasonal Average for the period: 2006-2016

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
	PHYSICAL										
1	Q (cumec)	31.44	30.27	63.68	147.6	29.31	40.10	60.92	38.78	34.83	18.90
2	EC_GEN (µmho/cm)	490	468	373	358	423	405	413	443	483	455
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
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
5	TDS (mg/L)			228	218	257	247	249	266	268	277
6	Temp (deg C)	18.9	17.8	19.5	12.9	17.0	18.6	17.4	15.0	19.0	22.1
7	Turb (NTU)				2.4	1.2	1.7	6.2	1.5		
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	3.0	0.0	0.0			5.3	0.0	0.0	27.9	3.0
2	ALK-TOT (mgCaCO3/L)	318	320	119			171	143	191	203	119
3	B (mg/L)	0.26	0.10	0.07			0.06	0.08	0.08	0.26	0.22
4	Ca (mg/L)	46	49	25	26	34	34	37	53	44	43
5	Cl (mg/L)	22.0	20.0	17.0	36.1	29.1	13.9	13.5	20.0	40.9	22.5
6	CO3 (mg/L)	3.6	0.0	0.0	0.0	4.8	9.6	0.0	6.0	33.6	3.6
7	F (mg/L)	0.35	0.48	0.49	0.57	0.31	0.30	0.22	0.35	0.27	0.68
8	Fe (mg/L)	0.3	0.2	0.1	0.2			0.0			
9	HCO3 (mg/L)	217	192	145	161	184	182	174	213	179	138
10	K (mg/L)	7.8	10.0	11.5	10.1	6.3	3.1	1.6	4.2	5.8	6.0
11	Mg (mg/L)	25.0	27.3	14.9	18.3	15.5	20.1	21.4	26.3	30.4	25.3
12	Na (mg/L)	19.6	22.1	15.5	21.7	18.2	9.7	9.5	13.6	27.1	14.2
13	NH3-N (mg N/L)				0.42	0.30	0.18	0.15	0.32	0.32	0.90
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
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
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
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
18	P-Tot (mgP/L)										

Water Quality Seasonal Average for the period: 2006-2016

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
19	SiO2 (mg/L)	10.2	6.9	4.8							
20	SO4 (mg/L)	24.6	23.2	15.7	13.1	6.4	5.5	10.3	15.5	21.1	39.5
	BIOLOGICAL/BACTERIOLOG										
1	BOD3-27 (mg/L)	10.0			8.6	4.6	3.2	4.2	10.6	25.4	25.5
2	COD (mg/L)						13.6	15.8	27.5	27.8	27.8
3	DO (mg/L)	1.7	3.5	7.1	3.5	4.4	3.9	5.2	3.6	1.5	0.7
4	DO_SAT% (%)	18	38	77	36	53	42	54	36	15	8
5	FCol-MPN (MPN/100mL)										
6	Tcol-MPN (MPN/100mL)										
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	116	123	62	66	86	86	94	133	111	108
2	HAR_Total (mgCaCO3/L)	220	237	125	142	150	170	183	243	238	213
3	Na% (%)	16	16	19	24	20	11	10	11	20	12
4	RSC (-)	0.0	0.0	0.0	0.0	0.2	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
	PESTICIDES										

Water Quality Seasonal Average for the period: 2006-2016

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
	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
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
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
5	TDS (mg/L)			337	367	310	340	312	330	303	362
6	Temp (deg C)	25.2	24.7	24.7	26.3	21.1	24.3	24.8	23.3	21.3	27.3
7	Turb (NTU)				1.9	1.2	2.3	3.4	1.2		
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	5.3	0.0	0.0		0.0	15.9	8.0	17.3	25.9	5.3
2	ALK-TOT (mgCaCO3/L)	406	336	144		195	188	170	203	212	137
3	B (mg/L)	0.23	0.10	0.14	0.20	0.10	0.10	0.12	0.10	0.34	0.36
4	Ca (mg/L)	49	57	30	31	42	42	54	64	40	42
5	Cl (mg/L)	18.7	29.9	28.8	43.4	34.1	20.6	22.7	27.3	36.0	35.9
6	CO3 (mg/L)	6.4	0.0	0.0	16.0	0.0	22.4	6.4	20.8	20.8	6.4
7	F (mg/L)	0.38	0.77	0.70	0.72	0.49	0.38	0.35	0.42	0.51	0.74
8	Fe (mg/L)	0.2	0.3	0.3	0.2						
9	HCO3 (mg/L)	241	207	181	195	226	190	205	205	190	155
10	K (mg/L)	8.5	11.5	14.1	12.5	8.1	3.5	3.3	5.6	16.9	10.3
11	Mg (mg/L)	27.5	32.7	21.3	21.3	18.2	22.4	29.6	28.6	30.6	31.1
12	Na (mg/L)	26.8	26.6	20.0	29.1	21.1	13.3	15.9	18.1	27.6	21.7
13	NH3-N (mg N/L)			0.62	0.53	0.34	0.22	0.40	0.43	0.54	1.06
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
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
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
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	3.861
18	P-Tot (mgP/L)										

Water Quality Seasonal Average for the period: 2006-2016

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
19	SiO2 (mg/L)	10.3	8.1	4.1							
20	SO4 (mg/L)	27.0	26.7	18.4	19.0	7.7	8.8	16.6	20.8	17.6	47.7
	BIOLOGICAL/BACTERIOLOG										
1	BOD3-27 (mg/L)				10.2	8.6	4.9	6.1	10.0	18.9	18.7
2	COD (mg/L)					64.0	13.7	21.7	27.3	27.0	26.0
3	DO (mg/L)	1.0	0.9	3.7	2.0	2.0	4.9	2.7	2.6	0.8	0.7
4	DO_SAT% (%)	13	11	44	24	23	59	32	31	9	9
5	FCol-MPN (MPN/100mL)										
6	Tcol-MPN (MPN/100mL)										
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	122	142	76	77	106	105	136	161	101	106
2	HAR_Total (mgCaC03/L)	236	278	165	166	182	198	259	279	228	235
3	Na% (%)	19	17	19	26	19	13	12	12	20	16
4	RSC (-)	0.0	0.0	0.0	0.5	0.1	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.8	0.7	0.7	1.0	0.7	0.4	0.4	0.5	0.8	0.6
	PESTICIDES										

Water Quality Seasonal Average for the period: 2006-2016

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									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
	PHYSICAL										
1	Q (cumec)	153.1	112.3	662.7	146.3	189.3	200.8	156.1	224.7	50.59	68.28
2	EC_FLD (µmho/cm)	285	309	305	413	277	335	325	300	434	466
3	EC_GEN (µmho/cm)	281	311	291	424	281	326	313	294	427	430
4	pH_FLD (pH units)	8.7	8.5	8.4	8.2	8.4	8.2	7.7	8.0	7.9	7.6
5	pH_GEN (pH units)	8.7	8.5	9.0	8.4	8.3	8.6	7.9	8.2	7.9	7.8
6	TDS (mg/L)				314	150	203	199	200	256	258
7	Temp (deg C)	33.5	32.6	30.2	32.5	32.8	28.7	29.5	28.3	28.8	24.7
8	Turb (NTU)				0.7	0.2	0.1			3.1	0.5
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	15.9	29.1	6.0	5.6	23.9	19.9	8.0	5.3	4.0	0.0
2	ALK-TOT (mgCaCO3/L)	180	151	106	212	221	170	152	142	141	142
3	B (mg/L)	0.00	0.04	0.00	0.06	0.04	0.00	0.10	0.03	0.02	0.06
4	Ca (mg/L)	13	48	26	31	38	45	49	47	44	35
5	Cl (mg/L)	25.6	31.6	25.6	86.7	22.8	37.6	27.6	29.0	28.4	25.6
6	CO3 (mg/L)	19.2	35.0	7.2	6.7	28.8	24.0	9.6	6.4	4.8	0.0
7	F (mg/L)	0.13	0.12	0.16	0.40	0.66	0.22	0.53	0.41	0.32	0.30
8	Fe (mg/L)	0.0	0.1	0.1	0.1	0.3	0.1	0.2	0.2	0.2	0.2
9	HCO3 (mg/L)	180	113	115	245	211	159	166	160	162	173
10	K (mg/L)	2.7	5.8	9.0	6.5	7.0	6.8	7.8	8.2	7.4	6.2
11	Mg (mg/L)	11.9	14.6	15.0	28.1	16.5	20.6	17.1	17.0	15.0	14.4
12	Na (mg/L)	15.0	26.8	35.4	70.7	25.0	22.8	21.2	19.6	21.4	17.6
13	NH3-N (mg N/L)	0.05	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.01
14	NO2+NO3 (mg N/L)	0.28	0.02	0.07	0.86	0.18	0.30	0.39	0.33	0.30	0.30
15	NO2-N (mgN/L)	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00
16	NO3-N (mgN/L)	0.27	0.01	0.07	0.84	0.18	0.30	0.38	0.33	0.30	0.30
17	P-Tot (mgP/L)	0.024	0.050	0.036	0.252	0.028	0.045	0.001	0.001	0.092	0.139
18	SiO2 (mg/L)	9.1	5.9	5.4	7.8	8.5	8.0	8.6	8.5	8.2	7.6
19	SO4 (mg/L)	21.4	26.4	26.6	19.7	12.8	29.6	28.8	25.0	24.2	23.0

Water Quality Seasonal Average for the period: 2006-2016

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	Flood									
		Jun - Oct									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
	BIOLOGICAL/BACTERIOLOGICAL										
1	BOD3-27 (mg/L)	2.8	3.3	3.3	3.0	2.9	2.8	2.9	3.1	3.0	3.2
2	COD (mg/L)		11.5	5.7	8.8	12.8	12.9	12.9	11.4	17.7	12.5
3	DO (mg/L)	5.6	6.7	8.0	7.5	7.2	7.7	7.1	7.2	7.2	6.2
4	DO_SAT% (%)	78	92	106	103	100	99	92	93	93	74
5	FCol-MPN (MPN/100mL)	580	1140	1000	1640	1320	1380	1340	1480	1840	1960
6	Tcol-MPN (MPN/100mL)	940	2500	2200	4940	2880	3020	2960	2780	3460	3600
	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)	31	121	64	77	95	113	123	117	111	87
2	HAR_Total (mgCaCO3/L)	81	182	127	194	164	199	194	187	173	148
3	Na% (%)	27	24	36	43	23	20	18	18	20	20
4	RSC (-)	2.0	0.0	0.0	0.4	1.2	0.1	0.0	0.0	0.0	0.0
5	SAR (-)	0.7	0.9	1.4	2.2	0.8	0.7	0.7	0.6	0.7	0.6
	PESTICIDES										

Water Quality Seasonal Average for the period: 2006-2016

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									
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
	PHYSICAL										
1	Q (cumec)	44.62	49.63	94.95	81.28	69.82	79.32	57.16	71.45	47.53	52.88
2	EC_FLD (µmho/cm)	404	499	364	390	323	324	334	333	413	555
3	EC_GEN (µmho/cm)	399	497	350	489	329	316	323	329	406	550
4	pH_FLD (pH units)	8.7	8.5	8.1	8.3	8.5	8.2	8.0	8.1	7.9	7.7
5	pH_GEN (pH units)	8.8	8.6	8.7	8.3	8.4	8.5	8.3	8.3	8.0	7.9
6	TDS (mg/L)				276	166	224	187	206	247	331
7	Temp (deg C)	22.0	23.1	22.8	20.3	20.4	19.8	15.1	18.9	13.1	10.4
8	Turb (NTU)				0.1	0.1				3.6	1.8
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	41.8	24.9	12.4	4.0	19.9	19.9	10.0	3.3	5.0	0.0
2	ALK-TOT (mgCaCO3/L)	212	271	155	185	214	160	146	133	144	211
3	B (mg/L)	0.04	0.05	0.05	0.03	0.03	0.02	0.03	0.03	0.03	0.03
4	Ca (mg/L)	20	46	34	30	39	37	48	47	44	50
5	Cl (mg/L)	42.0	41.7	67.1	72.3	29.0	31.3	30.0	27.5	32.0	37.5
6	CO3 (mg/L)	50.4	30.0	15.0	4.8	24.0	24.0	12.0	4.0	6.0	0.0
7	F (mg/L)	0.08	0.10	0.22	0.19	0.33	0.30	0.35	0.36	0.30	0.41
8	Fe (mg/L)	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
9	HCO3 (mg/L)	157	244	159	215	212	146	154	154	163	257
10	K (mg/L)	7.3	8.5	9.5	5.9	6.8	7.0	6.5	8.0	7.0	9.5
11	Mg (mg/L)	22.9	30.6	23.9	24.6	20.2	19.5	15.1	14.5	16.2	20.7
12	Na (mg/L)	30.0	57.2	57.4	59.3	20.8	21.5	21.0	21.3	20.5	26.5
13	NH3-N (mg N/L)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.01
14	NO2+NO3 (mg N/L)	0.22	0.44	0.22	0.42	0.42	0.33	0.30	0.31	0.28	0.33
15	NO2-N (mgN/L)	0.06	0.01	0.00	0.01	0.02	0.01	0.00	0.00	0.00	0.00
16	NO3-N (mgN/L)	0.16	0.43	0.22	0.41	0.41	0.32	0.30	0.31	0.28	0.33
17	P-Tot (mgP/L)	0.031	0.008	0.009	0.032	0.198	0.182	0.125	0.001	0.109	0.159
18	SiO2 (mg/L)	9.0	7.4	7.0	8.2	8.0	8.3	8.4	8.6	7.8	7.9
19	SO4 (mg/L)	33.5	41.0	25.5	15.0	16.5	17.0	20.0	25.0	21.5	26.0

Water Quality Seasonal Average for the period: 2006-2016

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									
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
	BIOLOGICAL/BACTERIOLOGICAL										
1	BOD3-27 (mg/L)	3.2	3.2	2.4	3.0	2.8	2.8	2.9	2.8	2.9	3.5
2	COD (mg/L)	18.4	8.2	4.3	10.9	11.7	11.7	16.0	11.5	19.8	19.0
3	DO (mg/L)	6.4	6.7	8.1	7.5	8.1	7.9	7.9	7.8	7.6	5.9
4	DO_SAT% (%)	73	76	94	83	90	86	79	83	72	53
5	FCol-MPN (MPN/100mL)	875	825	1125	1900	1275	1325	1400	2025	1500	1975
6	Tcol-MPN (MPN/100mL)	1550	2400	2875	13500	2925	2975	3150	3125	3325	3800
	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)	51	116	86	75	98	92	121	117	111	125
2	HAR_Total (mgCaCO3/L)	146	244	185	178	182	174	184	178	179	211
3	Na% (%)	30	29	38	41	19	20	19	20	19	20
4	RSC (-)	1.4	0.3	0.1	0.3	0.9	0.0	0.0	0.0	0.0	0.1
5	SAR (-)	1.1	1.5	1.8	1.9	0.7	0.7	0.7	0.7	0.7	0.8
	PESTICIDES										

Water Quality Seasonal Average for the period: 2006-2016

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									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL										
1	Q (cumec)	44.58	29.15	52.19	45.23	38.10	53.65	48.61	64.19	45.91	29.49
2	EC_FLD (µmho/cm)	333	467	572	524	389	335	366	349	513	623
3	EC_GEN (µmho/cm)	327	460	559	512	387	327	363	343	505	617
4	pH_FLD (pH units)	8.6	8.7	7.7	8.6	8.7	8.2	8.4	8.2	8.0	7.8
5	pH_GEN (pH units)	8.6	9.3	8.7	8.7	8.7	8.6	8.5	8.5	8.0	7.9
6	TDS (mg/L)				264	202	230	222	210	301	371
7	Temp (deg C)	28.3	27.5	27.2	26.2	23.0	24.2	20.7	22.7	16.8	22.3
8	Turb (NTU)				0.1	0.1				1.2	1.4
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	31.2	33.2	19.9	22.6	19.9	19.9	19.9	7.7	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	378	234	208	181	131	162	164	140	148	212
3	B (mg/L)	0.01		0.01	0.03	0.02	0.03	0.16	0.03	0.03	0.03
4	Ca (mg/L)	31	32	36	39	64	40	44	46	46	52
5	Cl (mg/L)	31.3	30.7	207.4	50.1	24.7	32.0	32.7	24.0	35.3	38.7
6	CO3 (mg/L)	37.6	40.0	24.0	27.2	24.0	24.0	24.0	9.3	0.0	0.0
7	F (mg/L)	0.09		0.18	0.30	1.30	0.29	0.31	0.36	0.38	0.42
8	Fe (mg/L)	0.0		0.1	0.2	0.3	0.2	0.2	0.2	0.3	0.2
9	HCO3 (mg/L)	192	102	205	165	111	149	151	151	181	259
10	K (mg/L)	6.0	7.7	8.7	5.3	8.0	8.0	8.7	8.0	8.7	9.3
11	Mg (mg/L)	24.2	20.6	34.4	29.5	14.6	20.0	16.0	14.7	17.4	22.4
12	Na (mg/L)	27.7	34.0	141.2	38.2	24.0	23.0	24.0	20.0	23.0	28.0
13	NH3-N (mg N/L)	0.05		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00
14	NO2+NO3 (mg N/L)	0.02		0.08	0.06	0.85	0.46	0.38	0.32	0.33	0.34
15	NO2-N (mgN/L)	0.01		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	NO3-N (mgN/L)	0.01		0.08	0.06	0.85	0.46	0.38	0.32	0.33	0.34
17	P-Tot (mgP/L)	0.013		0.001	0.014	0.207	0.191	0.194	0.001	0.157	0.171
18	SiO2 (mg/L)	7.4		8.4	8.8	8.1	8.4	8.4	8.7	8.7	7.7
19	SO4 (mg/L)	30.3	35.3	21.7	22.0	19.0	20.3	20.0	22.0	27.3	28.7

Water Quality Seasonal Average for the period: 2006-2016

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									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	BIOLOGICAL/BACTERIOLOGICAL										
1	BOD3-27 (mg/L)	3.4	2.9	2.9	2.5	2.8	2.7	3.0	2.9	3.0	3.9
2	COD (mg/L)	11.2	5.2	4.4	20.5	10.0	13.5	14.4	13.7	21.4	18.2
3	DO (mg/L)	6.8	9.6	8.0	7.6	7.8	7.2	7.6	7.8	7.2	6.1
4	DO_SAT% (%)	87	121	100	94	91	85	84	90	74	70
5	FCol-MPN (MPN/100mL)	1167	867	1067	1467	1667	1533	1567	2367	2033	2667
6	Tcol-MPN (MPN/100mL)	2300	2067	2933	6333	3133	3133	3167	3700	3767	5667
	TRACE & TOXIC										
1	As (µg/L)					9.0	2.0	2.0	2.0	3.0	1.5
2	Cd (µg/L)					6.0	3.0	3.0	2.5	2.0	2.5
3	Cr (µg/L)					67.0	2.0	3.0	5.0	6.0	4.5
4	Ni (µg/L)					20.0	6.0	5.0	5.0	7.0	6.0
5	Pb (µg/L)						2.0	2.0	2.0	3.0	2.5
6	Zn (µg/L)						1.2	2.0	3.0	5.0	4.0
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	77	79	89	97	161	99	111	116	115	129
2	HAR_Total (mgCaCO3/L)	178	165	233	220	222	183	177	178	188	222
3	Na% (%)	24	30	56	27	18	21	22	19	20	21
4	RSC (-)	0.9	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.9	1.2	4.0	1.1	0.7	0.7	0.8	0.7	0.7	0.8
	PESTICIDES										

Water Quality Seasonal Average for the period: 2006-2016

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									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
	PHYSICAL										
1	Q (cumec)	276.1	168.7	686.0	263.9	327.3	339.7	215.5	424.2	124.6	148.3
2	EC_FLD (µmho/cm)	518	326	305	510	334	351	326	310	352	440
3	EC_GEN (µmho/cm)	296	307	293	505	330	339	324	303	348	435
4	pH_FLD (pH units)	8.8	7.3	8.1	8.0	8.2	8.3	7.9	8.0	8.0	7.8
5	pH_GEN (pH units)	8.9	7.8	8.9	8.1	8.6	8.6	8.1	8.2	8.2	8.0
6	TDS (mg/L)				114	180	204	200	200	209	261
7	Temp (deg C)	30.5	30.7	30.2	31.5	30.0	31.1	30.0	32.5	33.3	32.9
8	Turb (NTU)				0.4	0.4	0.1			4.0	0.3
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	23.2	24.8	5.5	0.0	31.9	0.0	0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	223	184	81	167	238	178	175	166	164	184
3	B (mg/L)	0.00	0.17	0.00	0.06	0.01	0.01	0.04	0.03	0.01	0.00
4	Ca (mg/L)	15	39	26	24	35	35	34	32	32	36
5	Cl (mg/L)	30.8	29.2	57.0	98.6	30.6	41.8	48.8	46.8	36.4	32.0
6	CO3 (mg/L)	27.9	29.9	6.6	0.0	38.4	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.05	0.17	0.23	0.59	0.72	0.26	0.50	0.43	0.33	0.39
8	Fe (mg/L)	0.0	0.1	0.0	0.1	0.2	0.0	0.2	0.1	0.1	0.2
9	HCO3 (mg/L)	138	103	86	204	212	218	214	203	200	224
10	K (mg/L)	4.6	5.6	8.7	8.0	5.8	7.0	8.2	8.2	7.8	7.6
11	Mg (mg/L)	17.7	17.3	10.2	22.5	20.7	23.0	22.6	19.6	22.2	20.1
12	Na (mg/L)	29.4	26.2	37.4	87.4	28.8	29.8	33.6	33.4	30.4	22.6
13	NH3-N (mg N/L)	0.05	0.05	0.05	0.52	0.05	0.05	0.05	0.05	0.00	0.00
14	NO2+NO3 (mg N/L)	0.82	0.06	0.21	0.33	0.02	0.18	0.18	0.18	0.17	0.15
15	NO2-N (mgN/L)	0.04	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
16	NO3-N (mgN/L)	0.77	0.05	0.20	0.32	0.02	0.18	0.18	0.18	0.17	0.15
17	P-Tot (mgP/L)	0.001	0.055	0.032	0.317	0.085	0.030	0.097	0.080	0.077	0.141
18	SiO2 (mg/L)	8.9	8.3	7.7	6.8	9.2	7.8	9.4	9.3	9.1	8.4
19	SO4 (mg/L)	27.4	27.0	46.8	30.2	17.0	24.7	29.4	32.0	27.2	25.6

Water Quality Seasonal Average for the period: 2006-2016

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									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
	BIOLOGICAL/BACTERIOLOGICAL										
1	BOD3-27 (mg/L)	3.1	3.3	3.4	2.9	2.9	2.5	3.1	2.6	3.0	3.1
2	COD (mg/L)		10.7	10.5	6.7	10.5	10.3	12.3	9.4	16.6	13.5
3	DO (mg/L)	6.7	6.6	7.9	6.6	7.4	7.9	7.7	7.5	7.3	7.1
4	DO_SAT% (%)	90	88	104	89	98	106	101	103	102	98
5	FCol-MPN (MPN/100mL)		240	325	1800	820	960	1080	920	1340	1620
6	Tcol-MPN (MPN/100mL)		640	850	3080	1560	2020	2160	2080	2560	3080
	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)	39	97	66	61	88	86	84	80	79	90
2	HAR_Total (mgCaCO3/L)	113	169	108	155	175	182	178	162	172	174
3	Na% (%)	41	25	42	54	24	25	28	30	27	20
4	RSC (-)	1.0	0.0	0.0	0.3	1.3	0.1	0.0	0.2	0.0	0.2
5	SAR (-)	1.4	0.9	1.6	3.1	0.9	1.0	1.1	1.1	1.0	0.7
	PESTICIDES										

Water Quality Seasonal Average for the period: 2006-2016

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									
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
	PHYSICAL										
1	Q (cumec)	63.23	80.02	153.1	142.9	99.76	100.4	75.27	117.0	89.82	57.58
2	EC_FLD (µmho/cm)	399	289	320	331	318	355	340	300	353	525
3	EC_GEN (µmho/cm)	390	287	306	329	314	342	335	292	347	519
4	pH_FLD (pH units)	8.6	7.6	8.3	8.1	8.3	8.4	8.0	7.7	7.9	8.0
5	pH_GEN (pH units)	8.7	7.9	9.0	8.2	8.5	8.6	8.2	8.0	8.0	8.1
6	TDS (mg/L)				130	163	171	186	172	207	312
7	Temp (deg C)	20.8	22.1	22.0	19.5	22.5	21.0	22.1	20.6	20.0	21.5
8	Turb (NTU)				0.1	0.1	0.1			4.3	1.1
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	32.7	19.0	10.0	3.0	18.3	0.9	0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	277	150	123	159	206	166	163	164	174	203
3	B (mg/L)	0.01	0.18	0.05	0.00	0.04	0.03	0.03	0.04	0.00	0.00
4	Ca (mg/L)	30	34	33	26	32	34	35	32	34	41
5	Cl (mg/L)	44.0	26.8	81.7	86.4	32.5	39.5	42.5	41.5	45.0	37.5
6	CO3 (mg/L)	39.4	22.9	12.0	3.6	22.0	1.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.23	0.11	0.21	0.28	0.47	0.22	0.30	0.43	0.23	0.41
8	Fe (mg/L)	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
9	HCO3 (mg/L)	193	99	126	187	206	200	199	200	212	248
10	K (mg/L)	7.5	6.5	8.4	5.0	6.0	7.3	7.5	8.3	8.5	8.5
11	Mg (mg/L)	27.0	19.8	13.9	18.6	25.8	24.7	22.9	19.4	23.0	22.7
12	Na (mg/L)	39.3	27.8	51.4	76.5	17.3	28.0	30.0	30.0	30.5	28.0
13	NH3-N (mg N/L)	0.09	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00
14	NO2+NO3 (mg N/L)	0.51	0.11	0.22	1.68	0.08	0.05	0.08	0.09	0.11	0.17
15	NO2-N (mgN/L)	0.09	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	NO3-N (mgN/L)	0.42	0.10	0.22	1.68	0.08	0.05	0.08	0.09	0.11	0.17
17	P-Tot (mgP/L)	0.015	0.059	0.023	0.052	0.102	0.090	0.106	0.127	0.107	0.161
18	SiO2 (mg/L)	7.7	7.3	8.2	9.4	7.9	8.0	8.2	10.3	7.8	9.2
19	SO4 (mg/L)	37.1	30.8	16.6	18.4	23.0	19.8	29.5	27.0	33.5	27.8

Water Quality Seasonal Average for the period: 2006-2016

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									
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
	BIOLOGICAL/BACTERIOLOGI										
1	BOD3-27 (mg/L)	3.1	3.4	2.4	2.5	3.3	2.8	2.7	2.8	2.7	2.9
2	COD (mg/L)	9.6	8.0	8.6	5.5	10.5	10.2	15.8	10.5	16.3	18.5
3	DO (mg/L)	6.7	6.7	7.2	7.5	8.3	7.9	8.0	7.7	7.6	7.2
4	DO_SAT% (%)	75	77	83	82	96	88	91	85	83	81
5	FCol-MPN (MPN/100mL)	100	125	700	3025	750	825	1325	1200	1175	1825
6	Tcol-MPN (MPN/100mL)	300	775	1375	8250	1875	2000	2350	2275	2300	3425
	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)	75	85	82	66	79	84	88	80	85	102
2	HAR_Total (mgCaCO3/L)	187	168	140	143	187	187	184	160	181	197
3	Na% (%)	31	26	42	53	16	24	25	28	26	22
4	RSC (-)	0.9	0.0	0.0	0.4	0.5	0.0	0.0	0.1	0.1	0.2
5	SAR (-)	1.3	0.9	1.9	2.8	0.6	0.9	1.0	1.0	1.0	0.9
	PESTICIDES										

Water Quality Seasonal Average for the period: 2006-2016

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									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL										
1	Q (cumec)	87.62	38.27	60.90	59.48	53.30	50.73	82.05	93.26	69.49	25.09
2	EC_FLD (µmho/cm)	388	393	522	493	310	363	392	320	490	615
3	EC_GEN (µmho/cm)	377	390	511	486	306	346	385	311	485	608
4	pH_FLD (pH units)	8.7	8.7	7.8	8.5	8.4	8.3	8.3	8.1	8.0	8.2
5	pH_GEN (pH units)	8.8	9.1	8.2	8.6	8.5	8.6	8.3	8.3	8.1	8.2
6	TDS (mg/L)				265	158	189	210	163	291	365
7	Temp (deg C)	23.8	25.0	27.2	28.0	26.8	26.3	26.3	23.8	26.7	27.0
8	Turb (NTU)				0.1	0.1	0.1			0.9	1.6
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	25.9	13.3	33.2	4.2	19.9	6.6	0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	159	117	187	131	192	166	220	155	201	213
3	B (mg/L)	0.03	0.21	0.05	0.00	0.04	0.03	0.04	0.04	0.00	0.00
4	Ca (mg/L)	26	34	36	40	29	34	34	33	36	43
5	Cl (mg/L)	35.0	26.7	127.1	89.2	36.7	50.7	41.3	37.3	49.3	46.0
6	CO3 (mg/L)	31.2	16.0	40.0	5.1	24.0	8.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.15	0.12	0.21	0.79	0.38	0.26	0.43	0.43	0.45	0.49
8	Fe (mg/L)	0.0	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.2	0.2
9	HCO3 (mg/L)	130	111	146	150	185	186	268	189	246	260
10	K (mg/L)	7.7	6.3	10.8	5.3	7.3	9.0	9.0	8.0	9.3	10.0
11	Mg (mg/L)	23.6	20.5	25.3	22.2	27.9	23.7	23.8	20.1	24.7	26.4
12	Na (mg/L)	29.7	34.7	88.6	65.4	25.3	33.0	33.3	31.0	34.0	31.0
13	NH3-N (mg N/L)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00
14	NO2+NO3 (mg N/L)	0.06	0.11	0.23	0.01	0.11	0.18	0.18	0.09	0.16	0.18
15	NO2-N (mgN/L)	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	NO3-N (mgN/L)	0.01	0.10	0.23	0.01	0.11	0.18	0.18	0.09	0.16	0.18
17	P-Tot (mgP/L)	0.005	0.049	0.015	0.042	0.068	0.129	0.133	0.132	0.144	0.178
18	SiO2 (mg/L)	9.5	8.2	8.8	10.8	8.0	8.3	8.3	10.9	9.1	9.6
19	SO4 (mg/L)	34.0	31.0	22.1	24.2	21.3	23.7	28.0	24.7	35.3	34.7

Water Quality Seasonal Average for the period: 2006-2016

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									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	BIOLOGICAL/BACTERIOLOGI										
1	BOD3-27 (mg/L)	3.2	3.2	2.2	2.3	2.2	3.0	3.1	2.8	3.1	3.9
2	COD (mg/L)	11.1	10.3	4.9	11.3	10.4	11.4	15.6	12.9	18.3	19.9
3	DO (mg/L)	6.6	10.6	6.2	7.1	7.8	7.8	7.7	7.8	6.9	6.6
4	DO_SAT% (%)	78	128	78	91	97	96	95	92	86	82
5	FCol-MPN (MPN/100mL)	200	133	667	717	1033	1000	1233	1600	1600	2200
6	Tcol-MPN (MPN/100mL)	567	533	1333	2200	2167	2233	2533	3000	3000	4000
	TRACE & TOXIC										
1	As (µg/L)					7.0	16.0	14.0	16.0	14.0	7.0
2	Cd (µg/L)					3.8	26.0	12.0	9.0	6.0	2.5
3	Cr (µg/L)					30.8	13.0	7.0	12.0	11.0	9.0
4	Ni (µg/L)					8.3	3.0	5.0	6.2	8.0	7.0
5	Pb (µg/L)					6.8	9.5	8.0	10.4	11.0	7.8
6	Zn (µg/L)					160.0	60.0	10.5	32.0	30.0	10.5
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	64	85	90	99	73	86	86	83	90	108
2	HAR_Total (mgCaCO3/L)	162	171	196	192	190	184	185	166	193	218
3	Na% (%)	27	30	48	42	22	27	27	28	27	23
4	RSC (-)	0.1	0.0	0.0	0.0	0.1	0.0	0.8	0.0	0.2	0.0
5	SAR (-)	1.0	1.2	2.8	2.1	0.8	1.1	1.1	1.0	1.1	0.9
	PESTICIDES										

Water Quality Seasonal Average for the period: 2006-2016

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
	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
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
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
6	TDS (mg/L)			214	261	267	236	254	254	349	214
7	Temp (deg C)	30.7	30.1	28.8	30.1	30.4	29.8	31.2	30.0	31.4	29.6
8	Turb (NTU)				18.3	3.5	41.5	6.5	12.4	3.6	
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	0.0		0.0		8.0	0.0	15.4	0.0	14.3	7.2
2	ALK-TOT (mgCaCO3/L)	347		147		148	151	123	199	191	86
3	B (mg/L)	0.07	0.09	0.02							3.46
4	Ca (mg/L)	40	41	33	44	34	33	26	59	62	28
5	Cl (mg/L)	22.8	18.4	17.2	24.4	32.9	25.3	14.3	23.9	41.7	43.9
6	CO3 (mg/L)	0.0	1.0	0.0	3.8	10.6	3.8	14.9	0.0	17.3	8.6
7	F (mg/L)	0.36	0.32	0.31	0.54	0.47	0.32	0.26	0.45	0.52	0.49
8	Fe (mg/L)	0.2	0.2	0.1	0.3						
9	HCO3 (mg/L)	225	181	180	190	186	209	121	243	198	88
10	K (mg/L)	7.2	8.1	6.9	9.5	9.1	4.8	3.3	3.8	7.3	5.7
11	Mg (mg/L)	21.0	21.9	18.0	17.3	16.3	21.0	16.5	31.8	29.3	16.7
12	Na (mg/L)	21.9	20.7	12.5	16.7	21.3	16.0	9.9	16.1	27.7	30.1
13	NH3-N (mg N/L)				0.10	0.14	0.17	0.15	0.38	0.56	0.60
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
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
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
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)										
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

Water Quality Seasonal Average for the period: 2006-2016

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
	BIOLOGICAL/BACTERIOLOGICAL										
1	BOD3-27 (mg/L)					3.2	2.4	1.8	2.0	2.7	12.0
2	COD (mg/L)					28.0	9.8	11.2	11.0	13.6	15.2
3	DO (mg/L)	8.2	4.7	5.6	6.1	6.0	5.9	6.4	7.0	7.2	3.5
4	DO_SAT% (%)	109	62	73	81	80	78	86	92	97	46
5	FCol-MPN (MPN/100mL)										
6	Tcol-MPN (MPN/100mL)										
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	99	102	83	110	86	83	65	147	155	71
2	HAR_Total (mgCaCO3/L)	187	193	157	182	154	170	133	279	277	140
3	Na% (%)	20	18	14	16	22	16	13	11	18	30
4	RSC (-)	0.3	0.0	0.0	0.1	0.4	0.2	0.0	0.0	0.0	0.0
5	SAR (-)	0.7	0.6	0.4	0.5	0.7	0.5	0.4	0.4	0.7	1.1
	PESTICIDES										

Water Quality Seasonal Average for the period: 2006-2016

Station Name : RAEBARELI (GGX10M2) | **Division : M Ganga Div. II, Lucknow**

Local River : SAI | **River Water** | **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
	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
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
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
6	TDS (mg/L)			255	190	236	290	254	284	338	310
7	Temp (deg C)	19.3	18.3	20.5	18.5	20.3	20.0	19.0	20.8	20.0	21.1
8	Turb (NTU)				2.5	1.2	1.7	5.7	2.6		
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	7.0		4.0		0.0	12.0	7.5	18.9	22.9	9.0
2	ALK-TOT (mgCaCO3/L)	358		175		148	149	154	230	187	104
3	B (mg/L)	0.10	0.08	0.08			0.08	0.04	0.08	0.90	0.16
4	Ca (mg/L)	46	39	42	34	33	28	40	68	49	42
5	Cl (mg/L)	24.9	18.0	20.5	17.9	34.1	20.0	17.0	31.1	54.7	29.6
6	CO3 (mg/L)	8.4	0.0	4.8	15.6	10.8	10.8	9.0	22.8	27.6	10.8
7	F (mg/L)	0.43	0.47	0.42	0.47	0.34	0.28	0.31	0.46	0.53	0.49
8	Fe (mg/L)	0.3	0.3	0.3	0.1						
9	HCO3 (mg/L)	210	200	204	199	187	163	170	234	172	105
10	K (mg/L)	11.9	10.4	8.8	9.1	8.8	2.9	3.4	4.4	4.3	5.2
11	Mg (mg/L)	24.5	21.4	21.1	13.6	16.2	19.9	25.0	36.1	26.3	19.0
12	Na (mg/L)	19.7	24.2	14.4	14.0	21.8	13.0	11.6	20.5	41.3	18.9
13	NH3-N (mg N/L)				0.08	0.06	0.22	0.30	0.47	0.35	0.94
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
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
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
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)										
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

Water Quality Seasonal Average for the period: 2006-2016

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
	BIOLOGICAL/BACTERIOLOG										
1	BOD3-27 (mg/L)				5.9	2.8	2.6	1.9	2.6	20.0	15.3
2	COD (mg/L)						10.8	10.8	10.3	21.3	20.8
3	DO (mg/L)	5.5	5.2	6.3	6.1	6.2	5.8	6.7	7.0	3.1	4.6
4	DO_SAT% (%)	59	54	70	66	69	64	72	79	35	51
5	FCol-MPN (MPN/100mL)										
6	Tcol-MPN (MPN/100mL)										
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	114	97	106	85	82	71	100	171	124	105
2	HAR_Total (mgCaCO3/L)	216	186	194	142	149	154	204	321	233	184
3	Na% (%)	16	21	13	17	23	15	11	12	28	18
4	RSC (-)	0.1	0.0	0.1	1.0	0.5	0.1	0.0	0.0	0.1	0.0
5	SAR (-)	0.6	0.8	0.5	0.5	0.8	0.5	0.4	0.5	1.2	0.6
	PESTICIDES										

Water Quality Seasonal Average for the period: 2006-2016

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
	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
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
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
6	TDS (mg/L)			387	337	258	310	329	428	351	466
7	Temp (deg C)	26.7	25.0	25.5	24.7	24.3	25.7	25.3	24.0	23.7	28.0
8	Turb (NTU)				2.4	1.4	3.6	3.7	1.5		
	CHEMICAL										
1	Alk-Phen (mgCaCO3/L)	0.0		0.0		8.0	17.3	7.0	12.0	22.6	25.9
2	ALK-TOT (mgCaCO3/L)	317		192		190	157	138	244	155	188
3	B (mg/L)	0.13	0.09	0.20	0.20	0.12	0.06	0.10	0.14	0.36	0.44
4	Ca (mg/L)	44	45	52	41	40	30	49	77	39	51
5	Cl (mg/L)	23.3	25.4	33.4	28.0	33.4	18.7	24.0	52.1	64.5	41.9
6	CO3 (mg/L)	0.0	0.0	9.6	12.8	6.4	20.8	8.8	14.4	27.2	20.8
7	F (mg/L)	0.46	0.70	0.66	0.67	0.36	0.29	0.42	0.53	0.41	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
10	K (mg/L)	8.7	11.9	12.4	10.8	8.1	3.5	4.4	8.3	7.4	8.1
11	Mg (mg/L)	24.7	25.1	24.1	17.9	18.5	19.9	27.5	39.5	25.8	26.7
12	Na (mg/L)	23.3	26.0	22.6	18.8	20.5	12.0	16.6	34.5	45.5	17.7
13	NH3-N (mg N/L)			0.21	0.21	0.13	0.23	0.40	0.60	0.62	1.05
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
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
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
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
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

Water Quality Seasonal Average for the period: 2006-2016

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
	BIOLOGICAL/BACTERIOLOG										
1	BOD3-27 (mg/L)				3.5	2.4	2.2	3.3	3.6	9.1	23.2
2	COD (mg/L)					7.5	9.7	13.0	23.0	27.7	33.3
3	DO (mg/L)	4.7	5.4	6.3	6.7	6.8	6.7	5.5	5.5	2.1	2.0
4	DO_SAT% (%)	58	65	76	80	81	82	67	65	24	26
5	FCol-MPN (MPN/100mL)										
6	Tcol-MPN (MPN/100mL)										
	TRACE & TOXIC										
	CHEMICAL INDICES										
1	HAR_Ca (mgCaCO3/L)	110	113	131	103	99	76	123	192	98	129
2	HAR_Total (mgCaCO3/L)	213	218	231	178	176	159	238	357	205	240
3	Na% (%)	19	20	17	18	19	14	13	17	31	13
4	RSC (-)	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.7	0.8	0.6	0.6	0.7	0.4	0.5	0.8	1.4	0.5
	PESTICIDES										

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 एडजोर्पशन अनुपात)
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
कम 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
जनपर्द	:	District
व्यवस्थित ढंग 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
प्रस्तुतीकरण विधि	:	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
संक्रमण हटाना	:	Disaffection
संचरण	:	propagation
श्रेणी 'अ'	:	Class 'A'
श्रेणी 'ब'	:	Class 'B'
श्रेणी 'स'	:	Class 'C'
श्रेणी 'द'	:	Class 'D'