

**No. CWC/UGBO/EF/SOP1**



**MoJS  
DoWR, RD&GR  
Central Water Commission  
Upper Ganga Basin Organization**

**IMPLEMENTATION OF MINIMUM ENVIRONMENTAL FLOWS IN RIVER  
GANGA (Up to UNNAO)**



**Suggested Standard Operating Procedures**

**October, 2019**

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## 1.0 BACKGROUND

Ecological needs of the river have been recognized as one of the uses of water in the National Water Policy (2012). In the Preamble of the policy, it is mentioned that '*water is essential for sustenance of eco-system, and therefore, minimum ecological needs should be given due consideration*'. Clause 3.3 specifies that "*A portion of river flows should be kept aside to meet ecological needs ensuring that the low and high releases are proportional to the natural flow regime, including base flow contribution in the low flow season through regulated ground water uses*".

Vide Gazette Notification dated 9<sup>th</sup> October, 2018, the Government of India has notified the minimum environmental flows for River Ganga that has to be maintained at various locations on the river. Environmental flows are the acceptable flow regimes that are required to maintain a river in the desired environmental state or predetermined state. The maintenance of minimum e-flow in the river would not only ensure sustenance of aquatic life but also go a long way in ensuring its *Aviralta* or continuous flow in the river. It will ensure that the river has at least the minimum required environmental flow of water even after the river flow gets diverted by projects and structures for purposes like irrigation, hydropower, domestic and industrial use etc.

The above order will apply to the upper Ganga River Basin starting from originating glaciers and through respective confluences of its head tributaries finally meeting at Devaprayag up to Haridwar and the main stem of River Ganga up to Unnao district of Uttar Pradesh. The compliance of minimum environmental flow is applicable to all existing, under-construction and future projects. The existing projects which currently do not meet the norms will have to ensure that the desired environmental flow norms are complied with within a period of three years. The mini and micro projects which do not alter the flow characteristics of the river or stream significantly are exempted from these environmental flows.

The flow conditions in these river reaches shall be monitored at hourly intervals from time to time. The Central Water Commission has been entrusted the responsibility for supervision, monitoring, regulation of flows and reporting of necessary information to the

appropriate authority as and when required and also take emergent decisions about the water storage norms in case of any emergency.

The concerned project developers or authorities will have to install automatic data acquisition and data transmission facilities at appropriate locations at project sites within six months. The Central Government through National Mission for Clean Ganga may direct release of additional water in the River Ganga to meet special demand as and when required.

## **2.0 GANGA PHYSIOGRAPHY**

The Ganga river basin is the largest river basin in India in terms of catchment area, constituting 26% of the country's land mass (861,404 sq. km) and supporting about half a billion population. The drainage area of the basin lies in 9 states covering Uttarakhand, Uttar Pradesh, Madhya Pradesh, Bihar, Rajasthan, West Bengal, Haryana, Himachal Pradesh and the Union Territory of Delhi. It traverses a course of 2525 km before flowing into the Bay of Bengal. It has a large number of tributaries joining it during this journey.

In the monitoring reach of river Ganga upto Unnao, there are many manmade interventions utilising the water for various developmental needs such as drinking water, irrigation, hydro power etc. These projects impact the natural flows in the river. In upper Ganga basin upto Haridwar, there are a number of hydro-electric projects. The most of the projects are run-of-the river (ROR) projects with Tehri being a major storage project having gross storage of 3.54 BCM, live storage 2.615 BCM. At Haridwar, Ganga opens to the Gangetic Plains, where Bhimgoda barrage diverts a large quantity of its waters into the Upper Ganga Canal, to provide water for irrigation and other consumptive uses. Further, about 76 km downstream of Haridwar, at Bijnore, another barrage diverts water into the Madhya Ganga Canal but only during monsoon months. At Narora, there is further diversion of water into the Lower Ganga Canal from Narora barrage. Narora barrage is about 155 km downstream of Bijnor barrage. From the barrage at Kanpur, Ganga water is being diverted to meet the drinking water requirements.

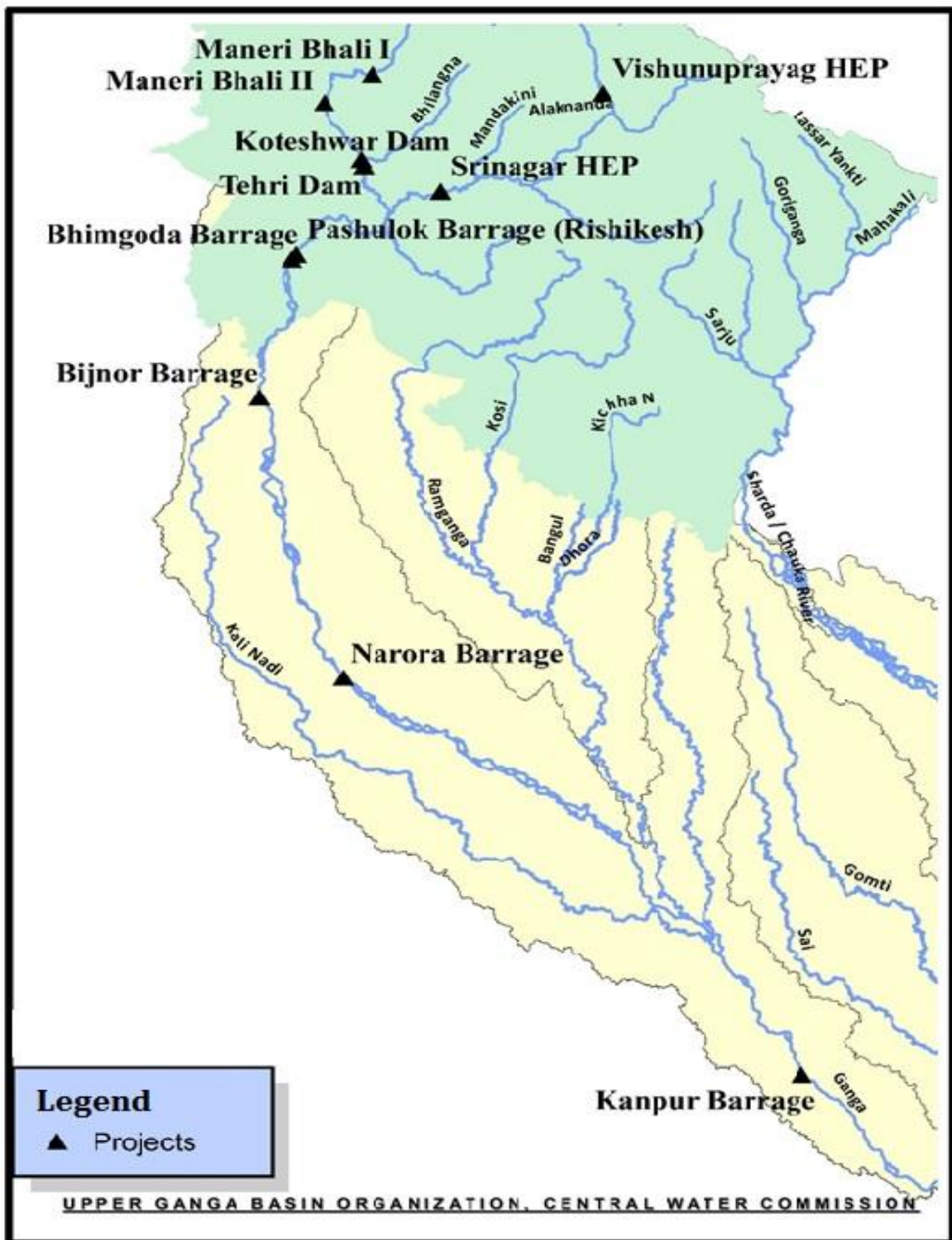
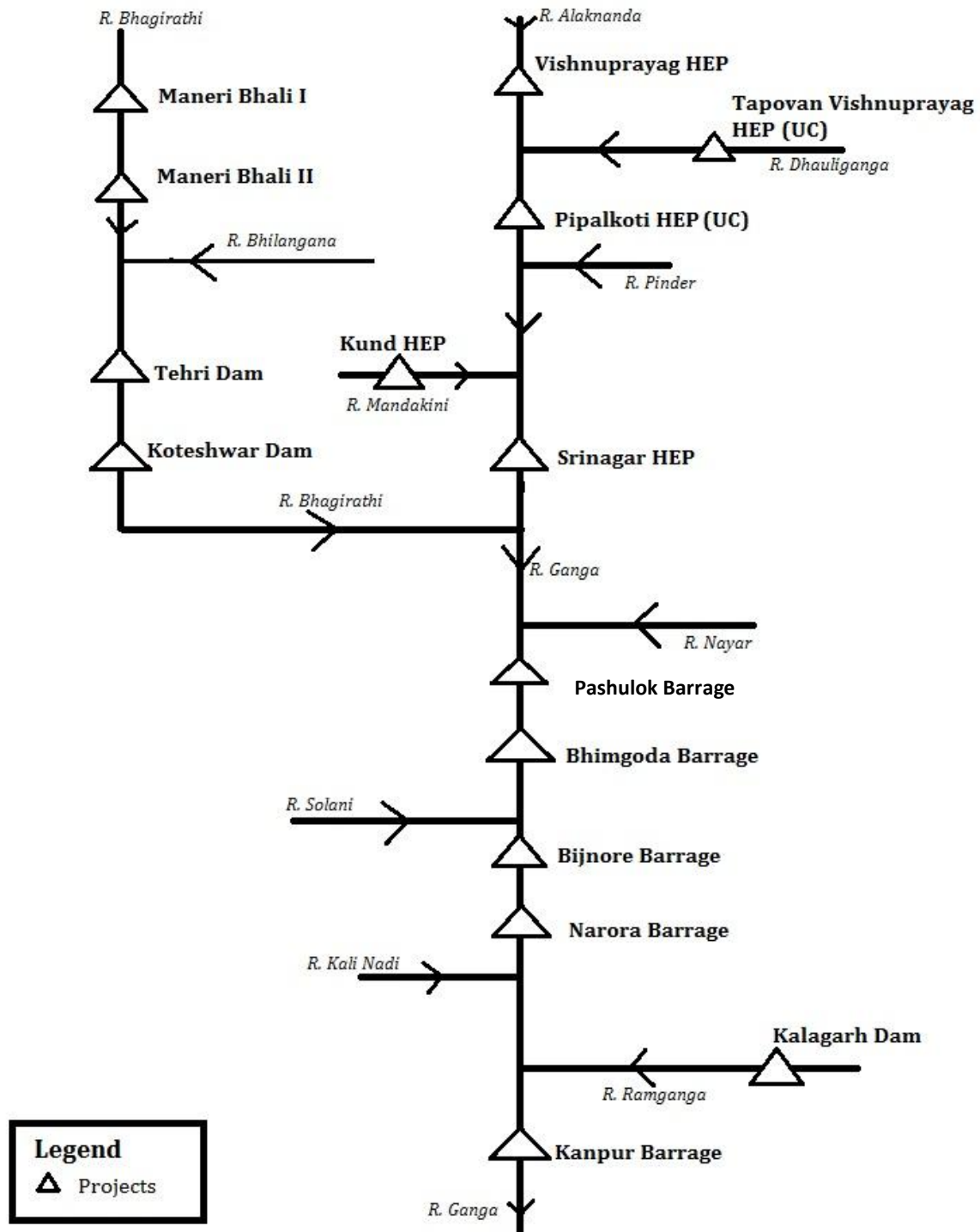


Figure 1. Map Showing key Projects in Ganga Basin Up to Unnao

The line diagram showing Ganga river and its tributaries and locations of various projects is given below in **Figure 2**.



### 3.0 MINIMUM E-FLOWS NOTIFICATION

The e-flows notified by the Government of India vide Gazette Notification dated 9<sup>th</sup> October, 2018 are as follows:

#### 3.1 Upper Ganga River Basin Stretch starting from originating glaciers and through respective confluences finally meeting at Devaprayag up to Haridwar:

**Table 1- E-flow Norms for Projects in Upper Ganga Basin up to Haridwar**

Sl No	Season	Months	(%) Percentage of Monthly Average Flow observed during each of preceding 10-daily period
1	Dry	November to March	20
2	Lean	October, April and May	25
3	High Flow	June to September	30*#

\*# 30% of monthly flow of High flow season.

#### 3.2 Stretch of main stem of River Ganga from Haridwar, Uttarakhand to Unnao, Uttar Pradesh

**Table 2- E-flow Norms for Projects in Main Ganga Stem from Haridwar to Unnao**

Sl No	Location of Barrage	Minimum flow releases Immediately downstream of barrages (In Cumecs) Non-Monsoon (October to May )	Minimum flow releases immediately downstream of barrages (In Cumecs) Monsoon (June to September)
1	Bhimgoda (Haridwar)	36	57
2	Bijnor	24	48
3	Narora	24	48
4	Kanpur	24	48

The copy of the Gazette Notification dated 9<sup>th</sup> October, 2018 is enclosed at **Annex-I**

#### 4.0 PROTOCOL FOR E-FLOW MONITORING AND COMPLIANCE

The protocol for environmental flow monitoring and compliance was discussed during the review meeting taken by Secretary, DoMoWR, RD&GR on 27<sup>th</sup> November, 2018.

- i. The data of inflows, diversions, downstream releases and changes in storage shall be monitored on hourly basis.
- ii. Till installation of automatic data acquisition and transmission, the data shall be transmitted by project authorities to CWC on daily basis by 11am.
- iii. The average environmental release target for the project in the current 10 daily period shall be decided based on average inflows in the preceding 10 daily period.
- iv. The flow release rate (discharge) during the day may vary within 20 percent range of target flow rate. However, the flow volume released during day shall not be less than the targeted daily volume of release. Any shortfall in preceding day shall be compensated in the next day.
- v. Any shortfall in the releases shall be reported to project authorities on the same day. If project authorities fail to meet the release target in the next day also, a warning shall be issued to project authorities by CWC with a copy to NMCG and state authorities. **Influence of any exceptional high flood in the preceding 10 daily period on the target releases in the current 10 daily period shall be duly accounted during flood period.**
- vi. If non-compliance continued for more than 5 days without any compelling circumstances, a penalty may be imposed on project authorities by NMCG under section 3 of Env (Protection) Act 1986
- vii. The framework for appropriate penalty shall be decided by NMCG in consultation with state authorities.

The issue was discussed again in the review meeting taken by Secretary, DoWR on 10<sup>th</sup> May, 2019. It was opined that stipulation of average environmental release target for the current 10 daily period based on average inflows in the preceding 10 daily period appears to be in order for the dry and lean period when variability in the flows is relatively low. However, during flood season when variability in flows is relatively high, the criteria needs to be

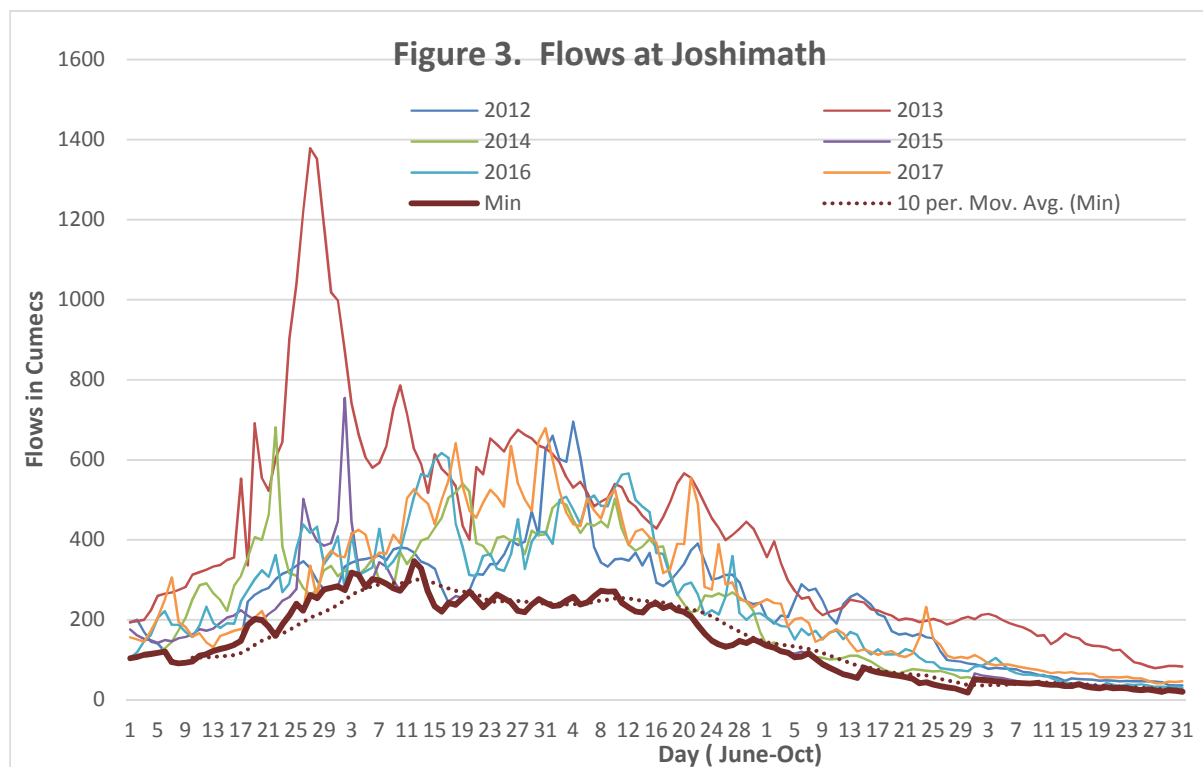
reviewed as raised by the representative of UJVNL, Uttarakhand. The Secretary, DoWR, RD&GR also desired to look into the issue and arrive at appropriate provisions.

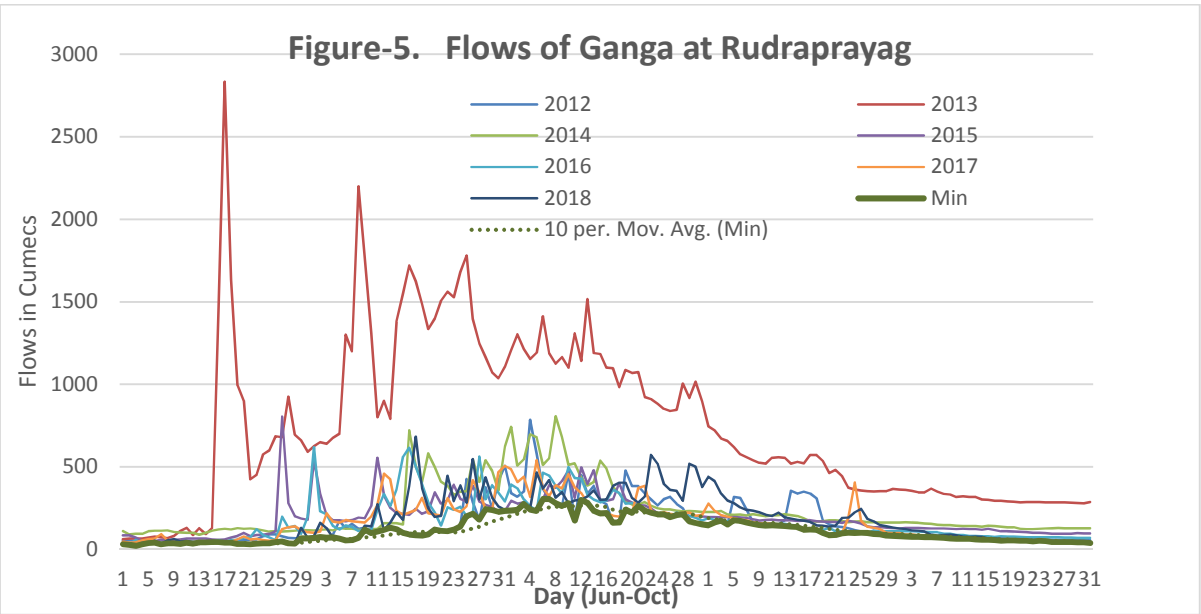
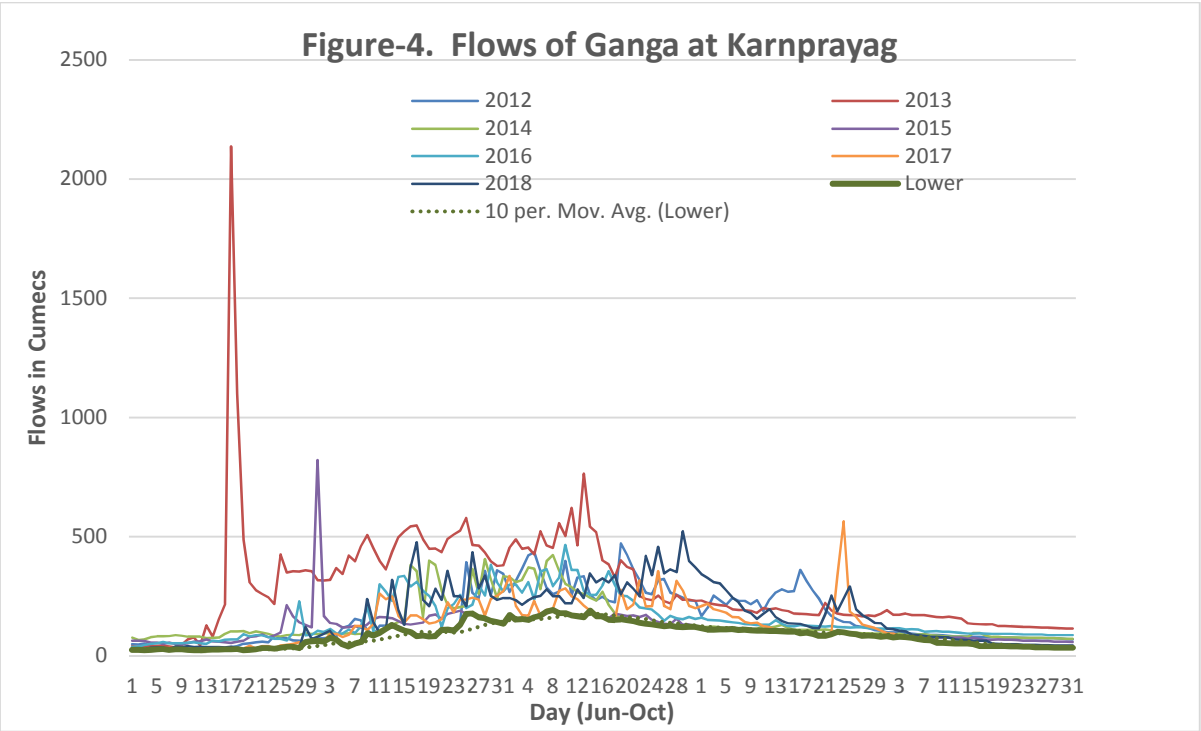
Accordingly, the issue was reviewed and draft SOPs were framed for the implementation of E-flows in various seasons. The draft SOPs were circulated amongst concerned offices and implementing agencies in August, 2019. The draft SOPs were also discussed during the meeting of officials from CWC, NMCG and NIH on 23<sup>rd</sup> September, 2019 in Sewa Bhawan, R. K. Puram, New Delhi. The draft SOPs have been finalized incorporating the suggestions emerged during consultations and are discussed below:

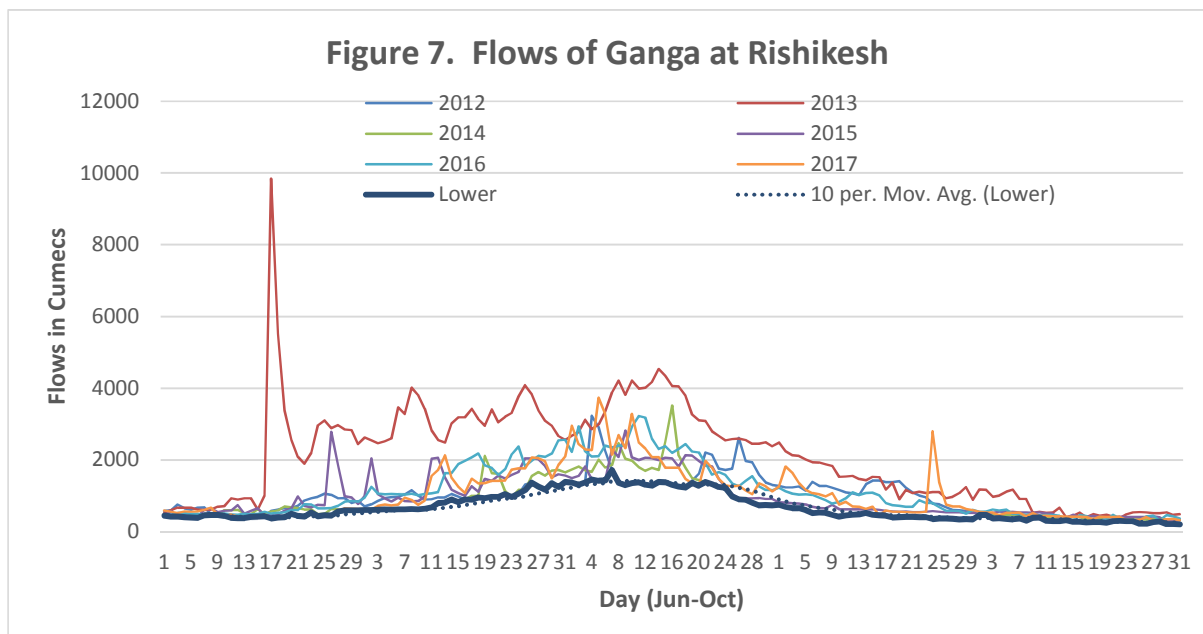
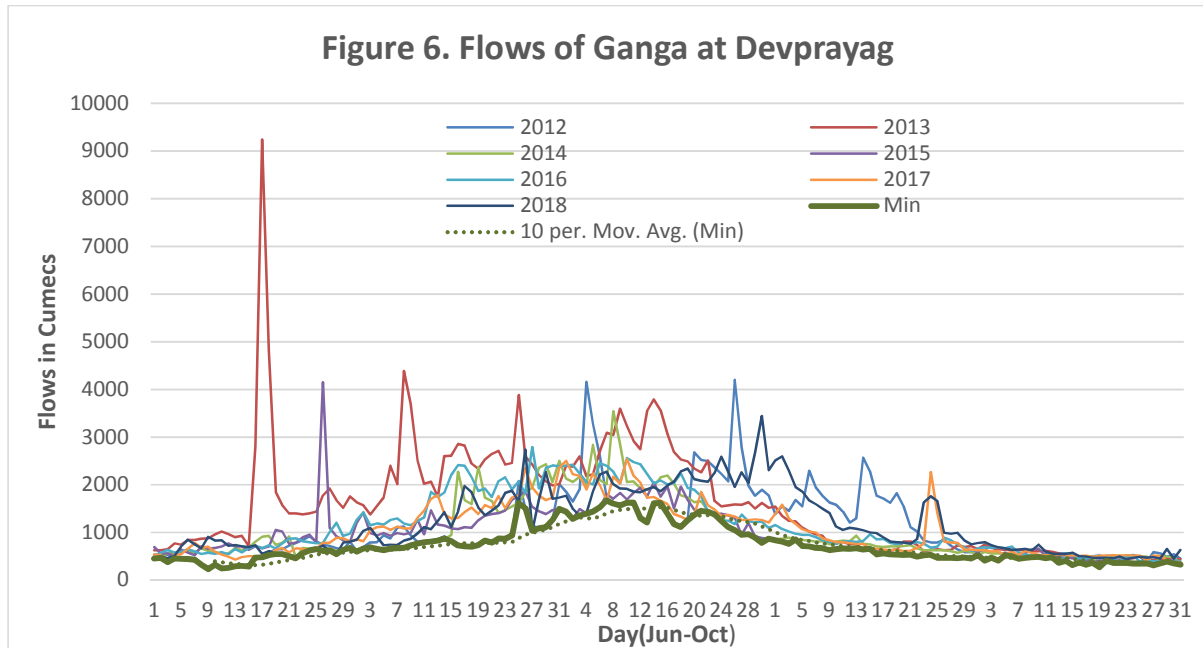
## 5.0 ANALYSIS OF e-FLOWS FOR MONSOON SEASON (FROM JUNE TO SEPTEMBER)

### 5.1 Flow Characteristics During Flood Period

The observed daily flow data of few gauging sites maintained by CWC in Ganga basin has been analyzed with respect the variability in the flows during monsoon period. The plots of daily flows of the sites are given below:







As seen from the flow characteristics, it can be seen that flows at any location can be split into two parts:

- **Baseline flows**, Baseline flows may be defined as the lower envelope of flows observed during past years say last 10 years. These baseline flows normally follow the seasonal trend, being highest in the month July or August. This component of

flows is normally stable and predictable. These flows would be available at the site with high probability of dependability.

- **Flood fluxes** which is the component of variable flows resulted from high rainfall in the catchment. The flood fluxes last for few days and are stochastic in nature. Their occurrence is random and is difficult to predict.

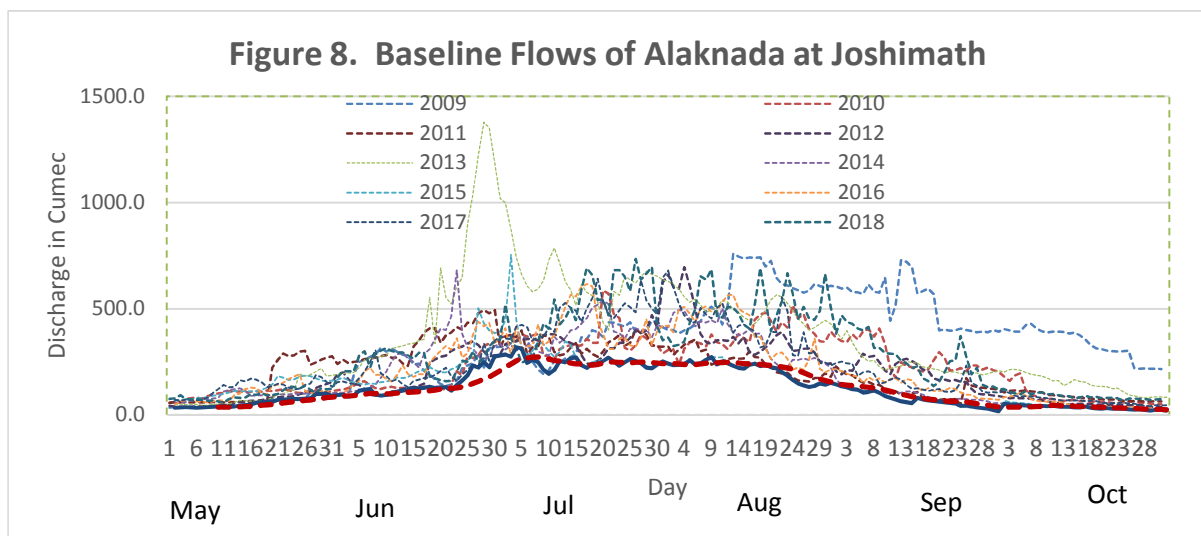
## 5.2 Suggested E-flow Norms for Monsoon Season (from June to September)

Looking at the characteristics of flows during monsoon period, the E-flows may constitute of two components, one based on baseline flows and other based on flood fluxes.

### (a) E-flow Component based on Baseline Flows

Stipulated E-flows during June to September are 30 percent of inflows during the month. As baseline flows would be available in a given 10 daily period with high degree of dependability, 30 percent of baselines flows in a given 10 daily period of the month would be made be available to e-flows. As discussed above, the baseline flows may be derived based on lower envelope of flows observed during last 10 years. For smoothening of the lower envelope of flows, a 10 per moving average trend line may be fitted. Then average of each 10 daily flows assessed from the fitted trend line. 30 percent of 10 daily average shall be reserved for baseline e-flows. The computations of baseline e-flows are discussed in brief for two sites as under:

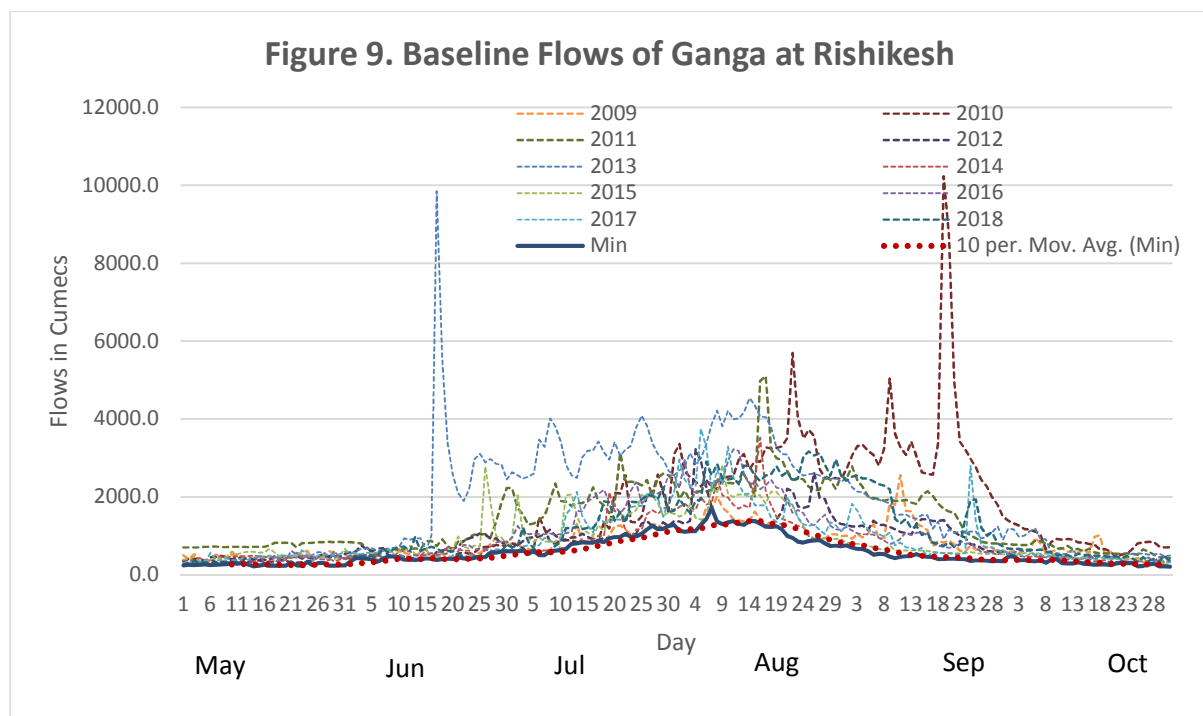
#### (i) Baseline E-flows at Joshimath



Considering the trend line of lower envelope of flows at the site, the 10 daily average of moving average trend line are assessed as below in the table for each 10 daily during June to September. 30 percent of the 10 daily average of baseline flows are considered as baseline e-flows for corresponding 10 daily period.

10 daily Period	10 Daily Average of Moving average of Baseline flows (Cumecs)	Baseline E-flows (Cumecs)
Jun-I (Jun 1-10)	96	29
Jun-II (Jun11-20)	112	34
Jun-III(Jun21-30)	158	47
Jul-I(Jul1-10)	259	78
Jul-II(Jul11-20)	243	73
Jul-III(Jul21-31)	247	74
Aug-I (Aug1-10)	242	73
Aug-II (Aug11-20)	240	72
Aug-III (Aug21-31)	192	58
Sep-I(Sep1-10)	130	39
Sep-II (Sep 11-20)	83	25
Sep-III (Sep21-30)	56	17

(ii) **Baseline E-flows at Rishikesh**



Considering the trend line of lower envelope of flows at the site, the 10 daily average of moving average trendline are assessed as below in the table for each 10 daily during June to September. 30 percent of the 10 daily average of baseline flows are considered as baseline e-flows for corresponding 10 daily period.

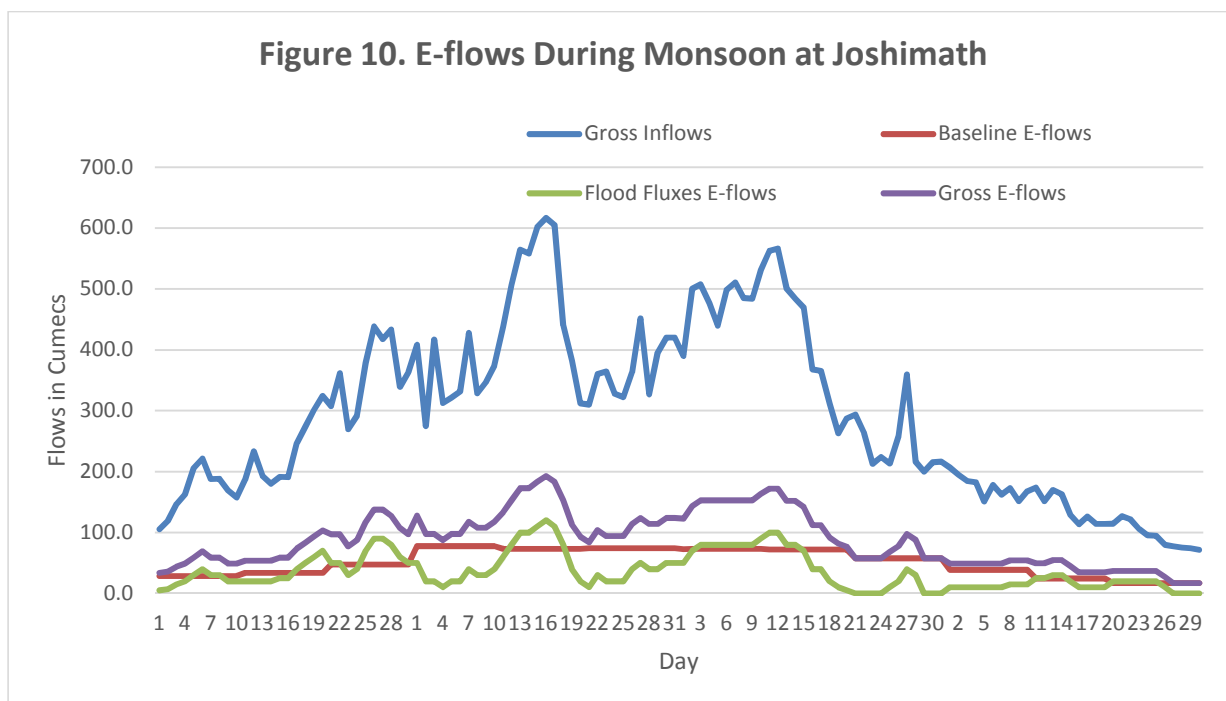
10 daily Period	<b>10 Daily Average of Moving average of Baseline flows (Cumecs)</b>	Baseline E-flows (Cumecs)
Jun-I (Jun 1-10)	332	100
Jun-II (Jun11-20)	405	121
Jun-III(Jun21-30)	430	129
Jul-I(Jul1-10)	560	168
Jul-II(Jul11-20)	678	203
Jul-III(Jul21-31)	991	297
Aug-I (Aug1-10)	1217	365
Aug-II (Aug11-20)	1339	402
Aug-III (Aug21-31)	1033	310
Sep-I(Sep1-10)	704	211
Sep-II (Sep 11-20)	503	151
Sep-III (Sep21-30)	405	122

Thus considering the daily inflows at any project, baseline E-flows may be assessed as above for that project. The assessed baseline flows and corresponding baseline E-flows may be reviewed for each project/reach every five years.

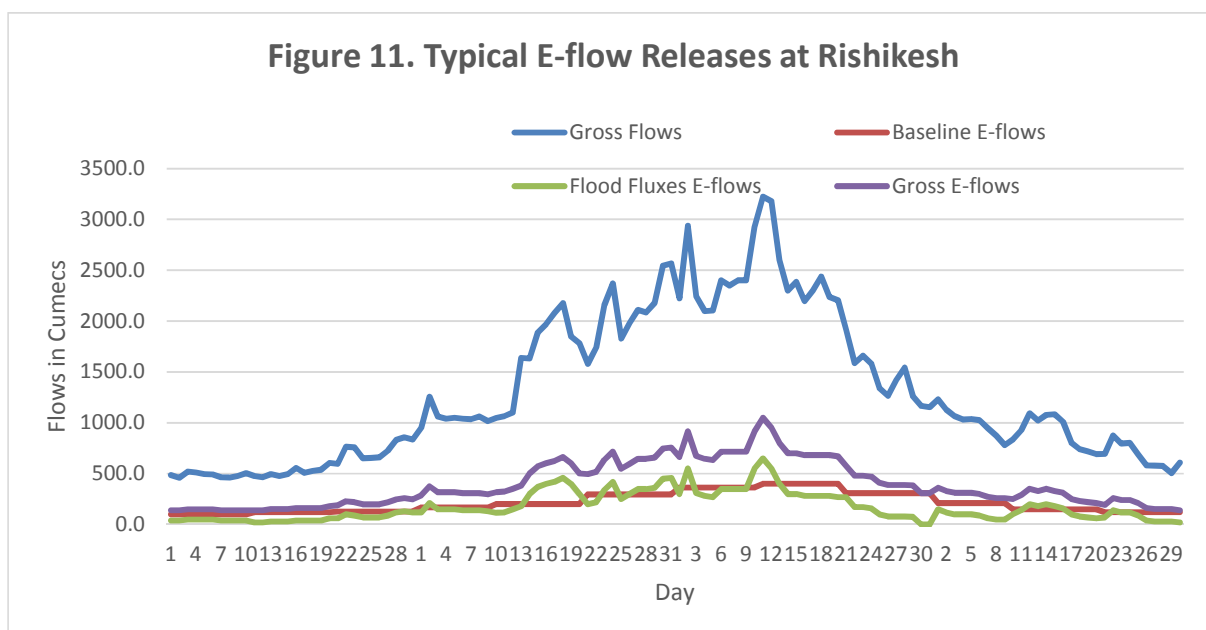
(b) **Flood Fluxes E-flows**

As flood fluxes are stochastic in nature, e-flows corresponding to flood fluxes may be released any time during the month preferably at the time of high flood wave(s).

**The project authorities shall be at liberty to release the E-flows corresponding to flood fluxes at any time during the month. However, the quantum of flood fluxes e-flow component should be adequate so as to meet overall target of e-flows ( 30 percent of gross inflows during the month including baseline e-flows).** The typical scenario for a year (say 2016) for the release of E-flows at Joshimath is depicted below in the graph:



Similarly, the typical scenario for a year (say 2016) for the release of E-flows at Rishikesh is depicted below in the graph:



## 6.0 SUGGESTED ENVIRONMENTAL FLOW NORMS

Considering all above, the protocol for environmental flow monitoring and compliance is proposed as under:

## 6.1 Monitoring Interval

- i. The data of inflows, diversions, downstream releases and changes in storage shall be monitored on hourly basis.
- ii. The flow data of each project shall be transmitted to E-flow Web Portal/ CWC on real time basis (preferably on hourly basis).
- iii. Till installation of automatic data acquisition and transmission, the hourly flow data for the entire previous day shall be transmitted by project authorities to CWC on daily basis by 11am. Day shall be considered as calendar day i.e. from 00 hrs mid night to 24 hrs mid night. The data format for providing the flow data of each project to CWC is enclosed at **Annex-II**

## 6.2 E-flow Norms for Projects in Upper Ganga River Basin Stretch starting from originating glaciers and through respective confluences finally meeting at Devaprayag up to Haridwar:

### During October to May (Dry and Lean Period)

Flows during lean and dry periods are mainly contributed by base flows and snow melt and are quite steady. As there is not much day to day variations in inflows during this period, e-flow targets may be defined on 10 daily period. For the ease of monitoring and compliance, the e-flow targets for given ten daily period may be assessed based on the inflows during previous ten daily period. According, the E-flows norms for lean and dry period are proposed as under:

SI No	Season	Months	Mandated E-flows
1	Dry	November to March	<b>20 percent of average inflows observed during each of preceding 10-daily period</b> For example, required E-flows during December 11-20 ten daily period shall be 20 percent of average inflows observed during 1-10 December ten daily period.
2	Lean	October, April and May	<b>25 percent of average inflows observed during each of preceding 10-daily period</b> For example, required E-flows during March 11-20 ten daily period shall be 25 percent of average inflows observed during 1-10 March ten daily period.

To account the diurnal variability in the inflows, the e-flow release rate (discharge) during the day may vary within 20 percent range of target e-flow rate for the day. However, the flow volume released during day shall not be less than the targeted daily volume of e-flow release.

(b) **During June to September (Monsoon Period)**

Looking the high variability in the flows during monsoon period, the mandated e-flows for this period shall comprise of two components:

(i) **E-flows Corresponding to Baseline Inflows**

**30 percent of the 10 daily average of baseline inflows are considered as baseline e-flows for corresponding 10 daily period.** The baseline inflows at a given project location may be assessed based on fitted trend line (10 per moving average) on lower envelope of past 10 years inflows at the project location. As baseline inflows shall be available with degree of reliability, the e-flows corresponding to baseline inflows would be mandatory be released daily as per target in each ten-daily period.

(ii) **E-flows Corresponding Flood Fluxes**

As flood fluxes are stochastic in nature, e-flows corresponding to flood fluxes may be released any time during the month preferably at the time of high flood wave(s). **The project authorities shall be at liberty to release the E-flows corresponding to flood fluxes at any time during the month. However, the quantum of flood fluxes e-flow component should be adequate so as to meet overall target of e-flows (30 percent of gross inflows during the month including baseline e-flows).**

**6.3 Stretch of main stem of River Ganga from Haridwar, Uttarakhand to Unnao, Uttar Pradesh**

The mandated E-flows for the projects in this reach are as follows:

<b>Sl No</b>	<b>Location of Barrage</b>	<b>Minimum flow releases Immediately downstream of barrages (In Cumecs) Non-Monsoon (October to May )</b>	<b>Minimum flow releases immediately downstream of barrages (In Cumecs) Monsoon (June to September)</b>
1	Bhimgoda (Haridwar)	36	57
2	Bijnor	24	48
3	Narora	24	48
4	Kanpur	24	48

To account the diurnal variability in the inflows, the e-flow release rate (discharge) during the day may vary within 20 percent range of target e-flow rate for the day. However, the flow volume released during day shall not be less than the targeted daily volume of e-flow release.



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असाधारण

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(राष्ट्रीय स्वच्छ गंगा मिशन)

आदेश

नई दिल्ली, 9 अक्टूबर, 2018

**का.आ. 5195(अ).**—गंगा नदी अत्यधिक पवित्र और इस देश के लोगों द्वारा अत्यंत पूजनीय है तथा गंगा नदी बेसिन जल ग्रहण क्षेत्र के निबंधनानुसार भारत में वृहत्तम नदी बेसिन है, जिसमें संपूर्ण देश की छब्बीस प्रतिशत भूमि सम्मिलित है तथा जो लगभग पचास करोड़ जनसंख्या के लिए पोषणीय है;

और गंगा नदी विशेष गुणों, विशिष्टताओं तथा महत्व के रूप में अद्वितीय है जिसका महत्वपूर्ण लौकिक और स्थानिक प्रभाव भिन्नता के साथ जल-विज्ञान, भू-आकृतिविज्ञान, ऐतिहासिक, सामाजिक-सांस्कृतिक और आर्थिक कारण हैं;

और गंगा नदी को राष्ट्रीय नदी का दर्जा दिया गया है तथा नदी-प्रणाली में सिंचाई, घरेलू, औद्योगिक और अन्य प्रयोजनों के लिए बेसिन में सदैव पानी की बढ़ती मांग के साथ घरेलू अपशिष्ट और आद्योगिक अपशिष्ट सहित विभिन्न स्रोतों से प्रदूषण प्रवेश कर रहा है, जो नदी के स्वास्थ्य को लंबे समय से प्रभावित कर रहा है;

और भारत सरकार समुचित पर्यावरण प्रवाह तथा साथ ही नदी में प्रदूषण के प्रवेश के निवारण को सुनिश्चित करने के लिए नदियों की पौष्टिकता की बहाली करने और उसे बनाए रखने के लिए वचनबद्ध है;

और यह सुनिश्चित करना आवश्यक है कि गंगा नदी में हर समय पानी के निर्बाध प्रवाह को पूरी तरह से बनाए रखा जाए, जिससे मौसमी भिन्नताओं को बदले बिना नदी में प्रवाह की निरंतरता सुनिश्चित हो सके;

केंद्रीय सरकार ने पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) के अधीन अधिसूचना का.आ. 3187 (अ), तारीख 7 अक्टूबर, 2016 द्वारा गंगा नदी जलक्षेत्र के संरक्षण, संरक्षा और प्रबंध तथा निम्नलिखित प्रयोजनों के लिए एक प्राधिकरण अर्थात् राष्ट्रीय स्वच्छ गंगा मिशन का गठन किया था, अर्थात्:-

(क) गंगा नदी और उसकी सहायक नदियों के जल की गुणवत्ता और पर्यावरणीय वहनीय संरक्षण, संरक्षा और प्रबंध को सुनिश्चित करने के उद्देश्य से सदैव विभिन्न क्षेत्रों में विभिन्न बिंदुओं पर बनाए रखने के लिए अपेक्षित गंगा नदी और उसकी सहायक नदियों में पारिस्थितिक

प्रवाह के परिमाण को अवधारित करवाने तथा उसे अधिसूचित करवाने और पर्याप्त पारिस्थितिक प्रवाह को बनाए रखने के लिए ऐसे सभी आवश्यक कदम उठाना या निदेशित करना;

(ख) गंगा नदी के जलीय प्रेक्षण स्टेशनों के माध्यम से विनिर्दिष्ट बिंदुओं पर पानी के औसत प्रवाह को विनिर्दिष्ट करना;

(ग) गंगा नदी तथा उसकी सहायक नदियों में जल के प्रवाह की निरंतर मानीटरी के लिए तंत्र विकसित करना;

और केंद्रीय सरकार ने गंगा नदी और उसकी सहायक नदियों में कतिपय प्रवाहों को निर्धारित करने का विनिश्चय किया है।

2. अतः केंद्रीय सरकार, गंगा नदी (संरक्षण, सुरक्षा एवं प्रबंधन) प्राधिकरण आदेश, 2016 के पैरा 39 के उपपैरा (3) और पैरा 41 के उपपैरा (2) की मद (ज) के साथ पठित पर्यावरण संरक्षण अधिनियम, 1986 की धारा 3 की उपधारा (3) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, सिंचाई, जल विद्युत्, घरेलू और औद्योगिक प्रयोजनों तथा अन्य अपेक्षाओं के लिए नदी प्रवाह को परिवर्तित करने के लिए संरचनाओं या परियोजनाओं के निम्न प्रवाह अवस्थानों पर न्यूनतम पर्यावरणीय प्रवाहों को बनाए रखने के लिए अधिसूचित करती है, अर्थात्:-

I. देवप्रयाग से हरिद्वार तक अंत में मिलने वाले क्रमवर्तीय सम्मिलनों के माध्यम से और उद्भव वाले ग्लेशियरों से आरंभ होने वाला **उपरी गंगा नदी बेसिन विस्तार:**

क्रम सं.	ऋतु	मास	प्रत्येक पूर्ववर्ती 10 दैनिक अवधि के दौरान प्रेक्षित मासिक औसत प्रवाह का प्रतिशत(%)
1.	शुष्क	नवंबर से मार्च	20
2.	क्षीण	अक्तूबर, अप्रैल और मई	25
3.	उच्च प्रवाह ऋतु	जून से सितंबर	30*#

\*#उच्च प्रवाह ऋतु के मासिक प्रवाह का 30%

II. **हरिद्वार, उत्तराखंड से उन्नाव, उत्तर प्रदेश तक गंगा नदी के मुख्य मार्ग का विस्तार:**

क्रम सं.	बैराज की अवस्थिति	बैराजों के सन्निकट निम्न धारा को निर्मुक्त करने वाला न्यूनतम प्रवाह (क्यूमैक्स में) (अक्तूबर से मई)	बैराजों के सन्निकट निम्न धारा को निर्मुक्त करने वाला न्यूनतम प्रवाह (क्यूमैक्स में) (जून से सितंबर)
(1)	भीमगौड़ा (हरिद्वार)	36	57
(2)	विजनौर	24	48
(3)	नरौरा	24	48
(4)	कानपुर	24	48

क्यूमैक्स-घनमीटर प्रतिसेकंड।

III. उपरोक्त उक्त पारिस्थितिकी प्रवाह निम्न के अध्यधीन हैं, अर्थात्:-

(i) न्यूनतम पर्यावरणीय प्रवाह का अनुपालन सभी विद्यमान, निर्माणाधीन और भविष्य की परियोजनाओं को लागू होता है;

(ii) विद्यमान परियोजनाएं जो वर्तमान में इन पर्यावरणीय प्रवाहों के मानदंडों के अनुरूप नहीं हैं, इनका पालन करेंगी और यह सुनिश्चित करेंगी कि वांछित पर्यावरणीय प्रवाह मानदंडों का पालन इस अधिसूचना के जारी करने की तारीख से तीन वर्ष की अवधि के भीतर किया जाए;

(iii) परियोजना जो सन्निर्माण की विभिन्न प्रक्रम पर हैं, जहां जमीनी भौतिक प्रगति आरंभ हो चुकी है और समुचित प्राधिकारी को रिपोर्ट की गई है, परियोजना को आरंभ करने के पूर्व और उसके पश्चात् अनुबद्ध पर्यावरणीय प्रवाह को बनाए रखने के लिए भी आवश्यक उपबंध करेगी;

(iv) लघु और सूक्ष्म परियोजनाएं जो सारवान रूप से नदी या धारा की प्रवाही विशेषताओं को परिवर्तित नहीं करती हैं, इन पर्यावरणीय प्रवाहों से छूट प्राप्त हैं;

(v) परियावरणीय प्रवाहों को बनाए रखने के लिए जल की बांछनीय मात्राओं की निर्मुक्ति को सुनिश्चित करने के लिए, इन नदी आगमों में प्रवाह की दशाएं समय-समय पर कालिक अंतरालों पर मानीटर की जाएंगी;

(vi) केंद्रीय जल आयोग अभिहित प्राधिकारी तथा डाटा का संरक्षक होगा तथा प्रवाहों के पर्यवेक्षण, मानीटरिंग, विनियमन तथा जब कभी अपेक्षित हो, समुचित प्राधिकारी को आवश्यक जानकारी रिपोर्ट करने के लिए उत्तरदायी होगा। यह किसी आपात स्थिति की दशा में जल भंडारण मानदंडों के बारे में तत्काल निर्णय लेने के लिए भी प्राधिकृत है। केंद्रीय जल आयोग त्रैमासिक आधार पर राष्ट्रीय स्वच्छ गंगा मिशन को प्रवाह मानीटरी-सह-अनुपालन रिपोर्ट प्रस्तुत करेगा;

(vii) संबंधित परियोजना विकासकर्ता या प्राधिकारी इस अधिसूचना की तारीख से छह मास के भीतर केंद्रीय जल आयोग विनिर्दिष्ट उचित अवस्थानों पर परियोजना स्थलों पर स्वचालित डाटा अर्जन और डाटा प्रेषण प्रसुविधाएं या अपेक्षित आवश्यक अवसंरचना लगाएगा। प्रवाह मानीटरी प्रसुविधा को लगाने, अंशांकन करने, उसे बनाए रखने का उत्तरदायित्व परियोजना विकासकर्ताओं या प्राधिकारियों का होगा और वे समय-समय पर केंद्रीय जल आयोग को डाटा प्रस्तुत करेंगे;

(viii) केंद्रीय सरकार, राष्ट्रीय स्वच्छ गंगा मिशन के माध्यम से, जब कभी अपेक्षित हो, गंगा नदी में विशेष मांग को पूरा करने के लिए अतिरिक्त जल को निर्मुक्त करने का निदेश दे सकेगी।

IV. संबंधित केंद्रीय और राज्य प्राधिकरण, सिंचाई का प्रभावी ढंग, जल का पुनः उपयोग और पुनः चक्रण, जिसके अंतर्गत विभिन्न प्रयोजनों के लिए भूजल निकालने की मानीटरिंग और विनियमन भी है, जैसे अच्छे और वैज्ञानिक व्यवहारों को अपना कर गंगा नदी के जल निकालने में कमी करने के लिए मांग पक्ष प्रबंध योजना कार्यान्वित करेंगे।

3. यह आदेश इसके राजपत्र में प्रकाशन की तारीख से प्रवृत्त होगा।

4. यह आदेश उद्भव वाले ग्लेशियरों से आरंभ होने वाले उपरी गंगा नदी बेसिन तथा देवप्रयाग से हरिद्वार तक और उत्तर प्रदेश के उन्नाव जिले तक गंगा नदी की मुख्य धारा को तथा अंत में मिलने वाली इसकी मुख्य सहायक नदियों के क्रमवर्ती सम्मिलनों पर लागू होगा।

[फा. सं. - Estt.01/2016-17/111/NMCG (Vol III)]

राजीव किशोर, कार्यकारी निदेशक (प्रशा.)

**MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT AND GANGA REJUVENATION  
(NATIONAL MISSION FOR CLEAN GANGA)**

**ORDER**

New Delhi, the 9th October, 2018

**S.O.5195(E).**—Whereas, the River Ganga is the most sacred and deeply revered by the people of this country and the Ganga river basin is the largest river basin in India in terms of catchment area, constituting twenty six per cent of the country's land mass and supporting about half a billion population;

And whereas, River Ganga is unique as having special properties, features and importance, holding reasons that are hydrological, geomorphological, historical, socio-cultural and economical with significant temporal and spatial flow variation;

And whereas, River Ganga has been given status of a National river and the ever increasing demand for water in the basin for irrigation, domestic, industrial and other purposes coupled with pollution ingress from different sources including domestic waste, industrial waste, into river system is affecting the health of the said river for long;

And whereas, the Central Government is committed to restore and maintain the wholesomeness of the rivers ensuring appropriate environment flows and simultaneously preventing the pollution ingress into the said river;

And whereas, it is considered necessary to ensure that uninterrupted flows of water are maintained throughout its length at all times in River Ganga to ensure continuity of flows in the river without altering the seasonal variations;

And whereas the Central Government *vide* notification S.O. 3187(E), dated the 7<sup>th</sup> October, 2016 under the Environment (Protection) Act, 1986 (29 of 1986) has constituted an authority, namely, the National Mission for Clean Ganga for Rejuvenation, Protection and Management of River Ganga basin for the following purposes, namely:-

(a) to determine the magnitude of ecological flow in the River Ganga and its tributaries required to be maintained at different points in different areas at all times with the aim of ensuring water quality and environmentally

sustainable rejuvenation, protection and management of River Ganga and its tributaries and notifying the same and take or direct all such measures necessary to maintain adequate ecological flows;

- (b) to specify the average flow of water at specified points through Hydrological Observation Stations of the River Ganga;
- (c) to devise a system for continuous monitoring of flow of water in the River Ganga and its tributaries;

And whereas the Central Government has decided to determine certain flows in the River Ganga and its tributaries;

2. Now, therefore, in exercise of the powers conferred by sub-section (3) of section 3 of the Environment (Protection) Act 1986 and read with sub paragraph (3) of paragraph 39 and item(h) of sub-paragraph(2) of paragraph 41 of the River Ganga (Rejuvenation, Protection and Management) Authorities Order, 2016, the Central Government hereby notifies the following minimum environmental flows to be maintained at locations downstream of structures or projects meant for diversion of river flows for purposes like irrigation, hydropower, domestic and industrial and other requirements, namely:-

- I. **Upper Ganga River Basin Stretch** starting from originating glaciers and through respective confluences finally meeting at Devaprayag up to Haridwar:

Sl. No.	Season	Months	(%) Percentage of Monthly Average Flow observed during each of preceding 10-daily period
1	Dry	November to March	20
2	Lean	October, April and May	25
3	High Flow season	June to September	30 <sup>*#</sup>

<sup>\*#</sup> 30% of monthly flow of High flow season.

- II. **Stretch of main stem of River Ganga from Haridwar, Uttarakhand to Unnao, Uttar Pradesh**

S. No.	Location of Barrage	Minimum flow releases immediately downstream of barrages (In Cumecs) Non-Monsoon (October to May )	Minimum flow releases immediately downstream of barrages (In Cumecs) Monsoon (June to September)
(1)	Bhimgoda (Haridwar)	36	57
(2)	Bijnor	24	48
(3)	Narora	24	48
(4)	Kanpur	24	48

Cumec – Cubic Meter per second.

- III. The above said ecological flows are subject to the following, namely:-

- (i) the compliance of minimum environmental flow is applicable to all existing, under-construction and future projects;
- (ii) the existing projects, which currently do not meet the norms of these environmental flows, shall comply and ensure that the desired environmental flow norms are complied within a period of three years from the date of issue of this order;

- (iii) the project which is at different stages of construction, where physical progress on ground has been initiated and made and reported to appropriate authority shall also make necessary provisions to maintain the stipulated environmental flow before and after commissioning of the project;
  - (iv) the mini and micro projects which do not alter the flow characteristics of the river or stream significantly are exempted from these environmental flows;
  - (v) to ensure the release of desired quantities of water to maintain environmental flows, flow conditions in these river reaches shall be monitored at hourly intervals from time to time;
  - (vi) the Central Water Commission shall be the designated authority and the custodian of the data and shall be responsible for supervision, monitoring, regulation of flows and reporting of necessary information to the appropriate authority as and when required and also authorised to take emergent decisions about the water storage norms in case of any emergency. The Central Water Commission shall submit flow monitoring-cum-compliance report on quarterly basis to National Mission for Clean Ganga;
  - (vii) the concerned project developers or authorities shall install automatic data acquisition and data transmission facilities or required necessary infrastructure at project sites at appropriate locations specified by the Central Water Commission within six months from the date of this order. The installation, calibration, maintenance of flow monitoring facility shall be the responsibility of the project developers or authorities and they shall submit the data to the Central Water Commission from time to time;
  - (viii) the Central Government through National Mission for Clean Ganga may direct release of additional water in the River Ganga to meet special demand as and when required.
- IV. The concerned Central and State authorities shall implement demand side management plans to reduce water withdrawal from River Ganga by adopting good and scientific practices such as efficient method of irrigation, reuse and recycle of water including monitoring and regulation of ground water withdrawals for various purposes.
3. This Order shall come into force on the date of its publication in the Official Gazette.
4. This Order shall apply to the upper Ganga River Basin starting from originating glaciers and through respective confluences of its head tributaries finally meeting at Devaprayag up to Haridwar and the main stem of River Ganga up to Unnao district of Uttar Pradesh

[F. No.- Estt.01/2016-17/111/NMCG(Vol III)]

RAJIV KISHORE, Executive Director(Admn)



# भारत का राजपत्र The Gazette of India

असाधारण

EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)

PART II—Section 3—Sub-section (ii)

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(जल संसाधन, नदी विकास और गंगा संरक्षण विभाग)

(राष्ट्रीय स्वच्छ गंगा मिशन)

आदेश

नई दिल्ली, 14 सितम्बर, 2019

**का.आ. 3286(अ).**—गंगा नदी अत्यधिक पवित्र और इस देश के लोगों द्वारा अंत्यन्त पूजनीय है तथा उसकी बेसिन जल ग्रहण क्षेत्र के निबंधनानुसार भारत में बृहत्तम नदी बेसिन है तथा नदी प्रणाली में सिंचाई, घरेलू, औद्योगिकी और अन्य प्रयोजनों के लिए बेसिन में सदैव पानी की बढ़ती मांग के साथ घरेलू अपशिष्ट और औद्योगिक अपशिष्ट सहित विभिन्न स्रोतों से प्रदूषण प्रवेश कर रहा है, जो नदी की स्वच्छता को लंबे समय से प्रभावित कर रहा है;

और, केंद्रीय सरकार को यह सुनिश्चित करना आवश्यक है कि गंगा नदी में हर समय पानी के निर्बाध प्रवाह को पूरी तरह से बनाए रखा जाए, जिससे मौसमी विभिन्नताओं के बदले बिना नदी में प्रवाह की निरंतरता सुनिश्चित हो सके;

और, भारत सरकार के तत्कालीन जल संसाधन, नदी विकास और गंगा संरक्षण मंत्रालय ने भारत के राजपत्र में प्रकाशित अधिसूचना सं. का.आ. 3187(अ) तारीख 7 अक्तूबर 2016 के भाग II, खंड 3, उप-खंड (ii) द्वारा गंगा नदी (संरक्षण, सुरक्षा एवं प्रबंधन) प्राधिकरण आदेश, 2016 जारी करने के साथ-साथ एक प्राधिकरण अर्थात् उक्त अधिसूचना में विनिर्दिष्ट विभिन्न प्रयोजनों के लिए गंगा नदी बेसिन के संरक्षण, सुरक्षा एवं प्रबंधन के लिए राष्ट्रीय स्वच्छ गंगा मिशन गठित किया है;

और, केंद्रीय सरकार ने गंगा नदी में उसके चिन्हित हिस्सों को सुरक्षित रखने के लिए न्यूनतम पर्यावरणीय प्रवाह विनिर्दिष्ट करते हुए अधिसूचना सं. का. आ. 5195 (अ) तारीख 9 अक्तूबर, 2018 को एक आदेश (उक्त आदेश) जारी किया था;

और, केंद्रीय जल आयोग ने प्रवाह के पर्यवेक्षण, विनियम और तिमाही रिपोर्ट के आधार पर राष्ट्रीय स्वच्छ गंगा मिशन के लिए नामनिर्दिष्ट प्राधिकरण के रूप में अपनी क्षमता के आधार पर 11 जुलाई, 2019 को अपनी रिपोर्ट प्रस्तुत की थी, जिसमें सिफारिश की गयी थी कि सभी विद्यमान परियोजनाओं में नियंत्रित गेट लगे स्पिलवे या जल मार्गों के माध्यम से निर्धारित ई-प्रवाह छोड़ने की व्यवस्था है और इसके लिए परियोजना के ढांचे में ढांचागत परिवर्तन की आवश्यकता नहीं है;

और केंद्रीय सरकार ने केंद्रीय जल आयोग की उक्त सिफारिशों पर विचार कर लिया है;

और केंद्रीय सरकार का यह विचार है कि विद्यमान परियोजनाओं को उक्त आदेश में विनिर्दिष्ट अनिवार्य पर्यावरणीय प्रवाह का समुचित अनुपालन सुनिश्चित करने के लिए विद्यमान परियोजनाओं को तीन वर्ष की अवधि की अनुमति अत्यधिक है और आवश्यक नहीं है।

अतः अब, गंगा नदी (संरक्षण, सुरक्षा एवं प्रबंधन) प्राधिकरण आदेश, 2016 के पैरा 39 के उप-पैरा (3) और पैरा 41 के उप-पैरा (2) की मद (ज) के साथ पठित पर्यावरण (संरक्षण) अधिनियम, 1986 की धारा 3 की उपधारा (3) द्वारा शक्तियों का प्रयोग करते हुए केंद्रीय सरकार उक्त आदेश संख्या का. आ. 5195 (अ) तारीख 09 अक्तूबर 2018 में निम्नलिखित संशोधन करती है अर्थात् –

उक्त आदेश के पैरा 2 में, उप-पैरा III में, मद (ii) में “तीन वर्ष की अवधि के भीतर” शब्दों के स्थान पर “15 दिसंबर 2019 से पहले” शब्द और अंक रखे जाएंगे।

[फा. सं. 05/46/2017-हाईड(एनई)]

राजीव किशोर, कार्यकारी निदेशक (प्रशासन)

**टिप्पणः** मूल आदेश, भारत के राजपत्र, असाधारण, भाग II, खंड 3, उप-खंड (ii), तारीख 10 अक्तूबर, 2018 में अधिसूचना सं. का.आ. 5195(अ), तारीख 9 अक्तूबर, 2018 द्वारा प्रकाशित किया गया था।

## MINISTRY OF JAL SHAKTI

(Department of Water Resources, River Development and Ganga Rejuvenation)

(NATIONAL MISSION FOR CLEAN GANGA)

### ORDER

New Delhi, the 14th September, 2019

**S.O. 3286(E).**—Whereas, the river Ganga is the most sacred and deeply revered by the people of this country and its river basin is the largest river basin in India in terms of catchment area and the ever increasing demand for water in the basin for irrigation, domestic, industrial and other purposes coupled with pollution ingress from different sources including domestic waste, industrial waste, into river system is affecting the health of the said river for long;

And whereas, the Central Government is considered necessary to ensure that uninterrupted flows of water are maintained throughout its length at all times in river Ganga to ensure continuity of flows in the river without altering the seasonal variations;

And whereas, *vide* notification number S.O. 3187(E), dated the 7<sup>th</sup> October, 2016 published in the Gazette of India, Part II, Section 3, Sub-section (ii), the Government of India in the erstwhile Ministry of Water Resources, River Development and Ganga Rejuvenation made the River Ganga (Rejuvenation, Protection and Management) Authorities Order, 2016, *inter alia*, constituting an authority, namely, the National Mission for Clean Ganga for Rejuvenation, Protection and Management of River Ganga basin for various purposes specified therein in the said notification;

And whereas the Central Government issued an Order *vide* notification number S.O. 5195(E), dated the 9<sup>th</sup> October, 2018 (the said Order) specifying the minimum environmental flows to be maintained in river Ganga in the identified stretches;

And whereas, the Central Water Commission in its capacity as the designated Authority for supervision, regulation of flows and reporting on quarterly basis to the National Mission for Clean Ganga, submitted a report dated 11<sup>th</sup> July, 2019 recommending that all the existing projects have provision for releasing the mandated e-flow through controlled gated spillways or water ways, and structural modifications in the body of the project may not be required for the same;

And whereas, the said recommendations of the Central Water Commission have been considered by the Central Government;

And whereas, the Central Government is of the view that the time period of three years allowed to the existing projects to ensure proper compliance of the mandated environmental flows specified in the said Order, is excessive and not necessary;

Now, therefore, in exercise of the powers conferred by sub-section (3) of section 3 of the Environment (Protection) Act, 1986 read with sub-paragraph (3) of paragraph 39 and item (h) of sub-paragraph (2) of paragraph 41 of the River Ganga (Rejuvenation, Protection and Management)

Authorities Order, 2016, the Central Government hereby makes the following amendments in the said Order number S.O. 5195(E), dated the 9<sup>th</sup> October, 2018, namely:—

2. In the said Order, in paragraph 2, in sub-paragraph III, in item (ii), for the words “within a period of three years from the date of issue of this Order”, the words, letters and figures “before 15<sup>th</sup> December, 2019” shall be substituted.

[F. No. 05/46/2017-Hyd (NE)]

RAJIV KISHORE, Executive Director (Admn.)

**Note :** The principal Order was published *vide* notification number S.O. 5195(E), dated the 9<sup>th</sup> October, 2018 in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii), dated 10<sup>th</sup> October, 2018.



# भारत का राजपत्र The Gazette of India

असाधारण

EXTRAORDINARY

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जल शक्ति मंत्रालय

(जल संसाधन, नदी विकास और गंगा संरक्षण विभाग)

(राष्ट्रीय स्वच्छ गंगा मिशन)

आदेश

नई दिल्ली, 14 सितम्बर, 2019

**का.आ. 3286(अ).**—गंगा नदी अत्यधिक पवित्र और इस देश के लोगों द्वारा अंत्यन्त पूजनीय है तथा उसकी बेसिन जल ग्रहण क्षेत्र के निबंधनानुसार भारत में बृहत्तम नदी बेसिन है तथा नदी प्रणाली में सिंचाई, घरेलू, औद्योगिकी और अन्य प्रयोजनों के लिए बेसिन में सदैव पानी की बढ़ती मांग के साथ घरेलू अपशिष्ट और औद्योगिक अपशिष्ट सहित विभिन्न स्रोतों से प्रदूषण प्रवेश कर रहा है, जो नदी की स्वच्छता को लंबे समय से प्रभावित कर रहा है;

और, केंद्रीय सरकार को यह सुनिश्चित करना आवश्यक है कि गंगा नदी में हर समय पानी के निर्बाध प्रवाह को पूरी तरह से बनाए रखा जाए, जिससे मौसमी विभिन्नताओं के बदले बिना नदी में प्रवाह की निरंतरता सुनिश्चित हो सके;

और, भारत सरकार के तत्कालीन जल संसाधन, नदी विकास और गंगा संरक्षण मंत्रालय ने भारत के राजपत्र में प्रकाशित अधिसूचना सं. का.आ. 3187(अ) तारीख 7 अक्तूबर 2016 के भाग II, खंड 3, उप-खंड (ii) द्वारा गंगा नदी (संरक्षण, सुरक्षा एवं प्रबंधन) प्राधिकरण आदेश, 2016 जारी करने के साथ-साथ एक प्राधिकरण अर्थात् उक्त अधिसूचना में विनिर्दिष्ट विभिन्न प्रयोजनों के लिए गंगा नदी बेसिन के संरक्षण, सुरक्षा एवं प्रबंधन के लिए राष्ट्रीय स्वच्छ गंगा मिशन गठित किया है;

और, केंद्रीय सरकार ने गंगा नदी में उसके चिन्हित हिस्सों को सुरक्षित रखने के लिए न्यूनतम पर्यावरणीय प्रवाह विनिर्दिष्ट करते हुए अधिसूचना सं. का. आ. 5195 (अ) तारीख 9 अक्तूबर, 2018 को एक आदेश (उक्त आदेश) जारी किया था;

और, केंद्रीय जल आयोग ने प्रवाह के पर्यवेक्षण, विनियम और तिमाही रिपोर्ट के आधार पर राष्ट्रीय स्वच्छ गंगा मिशन के लिए नामनिर्दिष्ट प्राधिकरण के रूप में अपनी क्षमता के आधार पर 11 जुलाई, 2019 को अपनी रिपोर्ट प्रस्तुत की थी, जिसमें सिफारिश की गयी थी कि सभी विद्यमान परियोजनाओं में नियंत्रित गेट लगे स्पिलवे या जल मार्गों के माध्यम से निर्धारित ई-प्रवाह छोड़ने की व्यवस्था है और इसके लिए परियोजना के ढांचे में ढांचागत परिवर्तन की आवश्यकता नहीं है;

और केंद्रीय सरकार ने केंद्रीय जल आयोग की उक्त सिफारिशों पर विचार कर लिया है;

और केंद्रीय सरकार का यह विचार है कि विद्यमान परियोजनाओं को उक्त आदेश में विनिर्दिष्ट अनिवार्य पर्यावरणीय प्रवाह का समुचित अनुपालन सुनिश्चित करने के लिए विद्यमान परियोजनाओं को तीन वर्ष की अवधि की अनुमति अत्यधिक है और आवश्यक नहीं है।

अतः अब, गंगा नदी (संरक्षण, सुरक्षा एवं प्रबंधन) प्राधिकरण आदेश, 2016 के पैरा 39 के उप-पैरा (3) और पैरा 41 के उप-पैरा (2) की मद (ज) के साथ पठित पर्यावरण (संरक्षण) अधिनियम, 1986 की धारा 3 की उपधारा (3) द्वारा शक्तियों का प्रयोग करते हुए केंद्रीय सरकार उक्त आदेश संख्या का. आ. 5195 (अ) तारीख 09 अक्तूबर 2018 में निम्नलिखित संशोधन करती है अर्थात् –

उक्त आदेश के पैरा 2 में, उप-पैरा III में, मद (ii) में “तीन वर्ष की अवधि के भीतर” शब्दों के स्थान पर “15 दिसंबर 2019 से पहले” शब्द और अंक रखे जाएंगे।

[फा. सं. 05/46/2017-हाईड(एनई)]

राजीव किशोर, कार्यकारी निदेशक (प्रशासन)

**टिप्पणः** मूल आदेश, भारत के राजपत्र, असाधारण, भाग II, खंड 3, उप-खंड (ii), तारीख 10 अक्तूबर, 2018 में अधिसूचना सं. का.आ. 5195(अ), तारीख 9 अक्तूबर, 2018 द्वारा प्रकाशित किया गया था।

## MINISTRY OF JAL SHAKTI

(Department of Water Resources, River Development and Ganga Rejuvenation)

(NATIONAL MISSION FOR CLEAN GANGA)

### ORDER

New Delhi, the 14th September, 2019

**S.O. 3286(E).**—Whereas, the river Ganga is the most sacred and deeply revered by the people of this country and its river basin is the largest river basin in India in terms of catchment area and the ever increasing demand for water in the basin for irrigation, domestic, industrial and other purposes coupled with pollution ingress from different sources including domestic waste, industrial waste, into river system is affecting the health of the said river for long;

And whereas, the Central Government is considered necessary to ensure that uninterrupted flows of water are maintained throughout its length at all times in river Ganga to ensure continuity of flows in the river without altering the seasonal variations;

And whereas, *vide* notification number S.O. 3187(E), dated the 7<sup>th</sup> October, 2016 published in the Gazette of India, Part II, Section 3, Sub-section (ii), the Government of India in the erstwhile Ministry of Water Resources, River Development and Ganga Rejuvenation made the River Ganga (Rejuvenation, Protection and Management) Authorities Order, 2016, *inter alia*, constituting an authority, namely, the National Mission for Clean Ganga for Rejuvenation, Protection and Management of River Ganga basin for various purposes specified therein in the said notification;

And whereas the Central Government issued an Order *vide* notification number S.O. 5195(E), dated the 9<sup>th</sup> October, 2018 (the said Order) specifying the minimum environmental flows to be maintained in river Ganga in the identified stretches;

And whereas, the Central Water Commission in its capacity as the designated Authority for supervision, regulation of flows and reporting on quarterly basis to the National Mission for Clean Ganga, submitted a report dated 11<sup>th</sup> July, 2019 recommending that all the existing projects have provision for releasing the mandated e-flow through controlled gated spillways or water ways, and structural modifications in the body of the project may not be required for the same;

And whereas, the said recommendations of the Central Water Commission have been considered by the Central Government;

And whereas, the Central Government is of the view that the time period of three years allowed to the existing projects to ensure proper compliance of the mandated environmental flows specified in the said Order, is excessive and not necessary;

Now, therefore, in exercise of the powers conferred by sub-section (3) of section 3 of the Environment (Protection) Act, 1986 read with sub-paragraph (3) of paragraph 39 and item (h) of sub-paragraph (2) of paragraph 41 of the River Ganga (Rejuvenation, Protection and Management)

Authorities Order, 2016, the Central Government hereby makes the following amendments in the said Order number S.O. 5195(E), dated the 9<sup>th</sup> October, 2018, namely:—

2. In the said Order, in paragraph 2, in sub-paragraph III, in item (ii), for the words “within a period of three years from the date of issue of this Order”, the words, letters and figures “before 15<sup>th</sup> December, 2019” shall be substituted.

[F. No. 05/46/2017-Hyd (NE)]

RAJIV KISHORE, Executive Director (Admn.)

**Note :** The principal Order was published *vide* notification number S.O. 5195(E), dated the 9<sup>th</sup> October, 2018 in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii), dated 10<sup>th</sup> October, 2018.

Project Name:..... Month:.....											
SLNo.	Date	Time	Reservoir Water Level (m)	Downstream level (m)	Outflow rate (including both from spillway & undersluices) in cumecs	Diversion rate (Diversion 1) in cumecs	Diversion rate (Diversion 2) in cumecs	Diversion rate (Diversion 3) in cumecs	Storage of reservoir (MCM)	Change in Storage (MCM)	Total inflows (in cumecs)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1	1.12.2018	00:00									0
		01:00									
		02:00									
		03:00									
		04:00									
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		21:00									
		22:00									
		23:00									
		00:00									
Daywise Total			Total inflows in 24 hr (MCM)								
			Total Diversion in 24 hr (MCM)								
			Total outflows in 24 hr (MCM)								

Note: Total Inflow (Col. 12) = Col.(6)+Col.(7)+Col.(8)+Col.(9)+[Col.(11)\*277.78]