IN THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI
I.A. NO.   OF 2022
IN
ORIGINAL APPLICATION NO. 230 OF 2022

IN THE MATTER OF :

JUNAID AYUBI   .....   Applicant

Versus

STATE OF UTTAR PRADESH & ORS.   ......   Respondents

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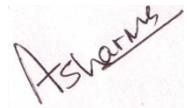
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TEL.: 9910940004

Place: New Delhi
Dated: 16.08.2022

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OBJECTIONS OF THE APPLICANT TO THE REPORT OF THE JOINT COMMITTEE DT. 22.07.2022 CONSTITUTED BY THIS HON'BLE TRIBUNAL VIDE ITS ORDER DT. 08.04.2022.

To,
The Hon'ble Chairperson and his Companion Members
of the National Green Tribunal

The humble application of the Applicant above named

MOST RESPECTFULLY SHOWETH

A. That the Applicant has preferred the above-mentioned original Application, inter alia, praying for enforcement of the UP-PCB Guidelines, 2010, which prohibit any stone crusher or screening plant unit to operate within 500 meters of the River Floodzone Area.

B. That this Hon'ble Tribunal vide order dt. 08.04.2022 appointed a joint committee comprising of the District Magistrate, Saharanpur

and the State Pollution Control Board to furnish a factual and action taken report. That the committee has since filed its report dt. 22.07.2022.

C. It is most unfortunate that the Committee has in its report failed to verify the distance of the Aakash Ganga Stone Crusher from the River Yamuna Floodzone Area and instead delegated this task to the Irrigation Department, which has dutifully held that the said distance is more than 500 meters. Hence the Applicant is compelled to file the following objections to the Report of the Committee:

    i. Joint Committee comprising of the DM, Saharanpur and UP PCB was to verify the distance between stone crusher and floodzone of River Yamuna. Instead the Joint Committee delegated this task to the Irrigation Department official and blindly relied upon the report of the Irrigation Dept. without making any inquiries whatsoever.

    ii. **<u>Objections to the Report of the Irrigation Department dt. 04.06.2022</u>**.

        1. The said report is a one paragraph report, which gives no reasons and shows no

application of mind. The Irrigation Dept. simply holds that the distance between the stone crusher and River Yamuna Floodzone is over 500 meters. It neither gives the actual distance nor gives any information as to how this distance was calculated, i.e. the GPS coordinates from which distance measurements were taken. Further, it neither states where the Floodzone Area of River Yamuna starts nor gives its GPS coordinates.

2. The report clearly indicates the connivance between officials of the Irrigation Dept. and the stone crusher. This fact of connivance of government officials in Saharanpur with stone crushers and mining mafia was also adverted to by the Hon'ble Supreme Court of India in its judgment dt. 16.01.2012 passed in Deepak Kumar vs. State of Haryana & Ors. [(2014) 16 SCC 698] at pages 78, relevant at page 82, of the Original Application.

3. The collusive report of the Irrigation Dept. is liable to be rejected and a fresh survey be carried out by an independent central agency such as the Geological Survey of India or the Central Water Commission.

iii. The UP PCB has also not carried out any independent survey on its own to verify the distance between the stone crusher and the River Floodzone area. This is a requirement under the UP PCB Guidelines, 2010 and as such it is incumbent upon the UP PCB to carry out this survey irrespective of any report from the Irrigation Department. The primary responsibility to protect the environment and to ensure stict compliance with the 2010 Guidelines is that of the UP PCB and this responsibility cannot be delegated or shirked away with by simply relying upon the report of the Irrigation Department. This is specially so for District Saharanpur where the Hon'ble Apex Court itself has noted the connivance and collusion between state officers and mining mafia. Despite the judgment of the Hon'ble Supreme Court, for UP PCB

to still rely upon the report of local officers on ground without undertaking any verification exercise on its own, is an attempt to close its eyes to environmental violations.

iv. **<u>Objections to the Report of the SDM, Behat dt. 05.07.2022</u>**:

1. This report is another instance, which shows collusion between the mining mafia and district revenue authorities. The said report, which clearly exonerates the stone crusher by saying that its distance from the village Said Mohammedpur is 748 meters, ignores the important fact that UP PCB Guidelines, 2010, as applicable on the date of grant of CTE & CTO, stated that the distance between village and stone crusher should be 1 kms. Thus, by its own admission, the CTE and CTO are on the face of it erroneous and in violations of the UP PCB Guidelines, 2010 as were in operation at time of issuance of CTE & CTO.

2. Secondly, the UP-PCB Guidelines were amended on 10.02.2022 and reduced the distance between crusher and villages to 500 meters. These amendments are however prospective and cannot be applied retrospectively to the benefit of the stone crushers. How the local administration applies 2022 amendments to benefit the stone crusher is an issue which merits an independent investigation.

3. Thirdly, distance from villages Shahzadpur, Nagli and Kothra has not been computed by the revenue department in its report despite the Applicant clearly mentioning the same in its Original Application.

4. The report of the SDM, Behat therefore can be relied upon to quash the CTE and CTO issued to the Applicant on the sole ground that the stone crusher is located within 1 kms from Vill. Said Mohammedpur as per their own admission.

v. **Objections to the Report of IIT Roorkee dt. 10.05.2022**.

1. The Joint Committee in its report has also adverted to and annexed a report of IIT Roorkee, which states that the stone crusher is located at a distance of 616.52 meters from the High Flood Level of River Yamuna. Disappointingly, the Report of IIT Roorkee merits rejection due to obvious technical and legal flaws as enumerated herein.

2. Firstly, the IIT Report assumes the High Flood Level of River Yamuna at 207.49 meters (*see internal page 31 of Jt. Committee's Report*) and cites three references in support. A bare perusal of these three references reveals that High Flood Level at Delhi is 207.49 meters while that at Yamuna Nagar/ Saharannpur is much higher.

3. The IIT Report relies firstly upon a study titled "Floods and Flood Monitoring in Yamuna: July 2018" available at

https://sandrp.in/2018/07/28/floods-flood-monitoring-in-yamuna-july-2018/. A copy of this Report is annexed as **Annexure 1**. A bare perusal of this report itself reveals that High Flood Level varies from place to place and was computed at 207.49 meters at downstream level of River Yamuna at Delhi while the HFL upstream, i.e. at Karnal city in Haryana, is much higher at 250.07 while at Paonta, HP is 384.6 meters. The HFL altitude at different places on River Yamuna, as per the same study, is as follows:

SN	River	Site	District/State	WL	DL	HFL (M)	HFL Date
1	Yamuna	Paonta	Sirmaur, HP	383.5 M	384.5 M	384.6 M	05-09-1995
2	Yamuna	**Karnal**	Karnal, Haryana	248.8 M	249.5 M	**250.07 M**	17-06-2013
3	Yamuna	Mawi	Muzzafar Nagar, UP	230.0 M	230.85 M	232.75 M	18-06-2013

4	Sahibi	Dhansa	South West, Delhi	211.44 M	212.44 M	213.58 M	06-08-1977
5	**Yamuna**	**Delhi Railway Bridge**	**North, Delhi**	204.0 M	204.83 M	**207.49 M**	**06-09-1978**
6	Yamuna	Mathura (Prayag Ghat)	Mathura	165.2 M	166.0 M	169.73 M	08-09-1978
7	Yamuna	Agra (J.B.)	Agra, UP	151.4 M	152.4 M	154.76 M	09-09-1978
8	Betwa	MOHANA	Jalaun, UP	121.66 M	122.66 M	133.35 M	11-09-1983
9	Yamuna	Etawah	Etawah, UP	120.92 M	121.92 M	126.13 M	11-09-1978
10	Yamuna	Auraiya	Auraiya, UP	112.0 M	113.0 M	118.19 M	25-08-1996
11	Yamuna	KALPI	Jalaun, UP	107.0 M	108.0 M	112.98 M	25-08-1996
12	Yamuna	SHAHIJINA	Hamirpur, UP	103.54 M	104.54 M	108.67 M	NA
13	Ken	BANDA	Banda, UP	103.0 M	104.0 M	113.29 M	07-07-2005
14	Yamuna	HAMIRPUR	Hamirpur, UP	102.63 M	103.63 M	108.59 M	12-09-1983
15	Yamuna	CHILLAGHAT	Banda, UP	99.0 M	100.0 M	105.16 M	06-09-1978

16	Yamuna	NAINI	Allahabad, UP	83.74 M	84.73 M	87.99 M	08-09-1978

4. Secondly, the IIT Report also relies upon two other studies, which are both inconsequential to the assessment of HFL of River Yamuna. A true copy of both report relied upon by IIT Roorkee in its report are annexed herewith as **Annexure 2**.

5. Thus, what the IIT ought to have done is to measure the HFL level at the site where measurements were being carried out. IIT however conveniently assumes HFL at 207.49 meters to be the HFL for District Saharanpur site also, which is wholly and grossly misleading. The Report of IIT thus gives a misleading impression that the stone crusher is located beyond 500 meters of Yamuna River's HFL by assuming HFL to be 207.49 meters.

6. Thirdly, the Report of the IIT was perhaps not provided with a copy of the Original Application

filed by the Applicant herein as the photos annexed with the Application reveal that River Yamuna flowed adjacent to the stone crusher site in the year 2011 as is evident from Google images.

7. Fourthly, IIT Roorkee report was prepared at the behest of the private stone crusher and has been prepared for his benefit. Despite its reputation, the report is clearly misleading and it is most unfortunate that experts from one of India's leading institutes would permit such a report to be prepared at the behest of a private stone crusher unit.

8. It is therefore prayed that the Report of the IIT Roorkee be rejected by this Hon'ble Tribunal and a fresh survey be ordered to. Be conducted by Geological Survey of India or the Central Water Commission. Further, it is prayed that an explanation be called for from IIT Roorkee with respect to the calculation of HFL at District

Saharanpur site where the stone crusher is located.

9. Fifthly, the report of the IIT measures the HFL on an island within the River stream ignoring the fact that during floods the river stream would flow on either side of the island and adjacent to the stone crusher site. This is evident from a bare perusal of the site pictures, which show clearly that the floodplain of River Yamuna begins from the edge of the stone crusher site and that there is also a steep slope at the edge of the crusher site. These obvious geological features have been deliberately ignored by IIT Roorkee officials preparing the report so as to unduly benefit the stone crusher.

CWC Data establishes that High Flood Level in Saharanpur is not 207.49 meters. The IIT Roorkee is liable to be disbelieved on this ground alone.

D. It is also submitted that data prepared by Central Water Commission and available on website https://ffs.india-water.gov.in/ clearly shows the High Flood Level (HFL) of River Yamuna at different points. HFL level at Delhi is 207.49 meters while on moving upstream the HFL level increases to 25.07 mtrs at Karnal and to 268.66 mtrs at Kalanur, Dst. Saharanpur. At Panchkuan in Dst. Saharanpur the present water level is 274.94 meters. At Hathnikund Barrage the Full Reservoir Level is 334 meters and it is pertinent to note that the site in question in present application is located just downstream of Hathnikund barrage. A true copy of snapshots taken from the CWC Website showing HFL level of River Yamuna at various places from Delhi to Hathnikund barrage is annexed herewith as **Annexure 3**.

E. Further, a perusal of the Google Earth image dt. 03.07.2009 clearly shows stream of River Yamuna flowing adjacent to the stone crushers site is annexed herewith as **Annexure 4**.

F. That the elevation chart of the stone crusher site also reveals the following:

   i. The level of River Yamuna is approx. 299 meters near the stone crusher site. Thus, by no stretch of imagination could the IIT Roorkee team have

assumed a HFL of 207.49 meters. A true copy of the elevation chart of the site where stone crusher is located is annexed herewith as **Annexure 5**.

ii. Secondly, there is a steep decline in altitude of about 10 meters from the stone crusher site and onwards to Yamuna Floodplains. This is also clearly visible from the pictures, which show the natural boundary of the flood plains. The elevation chart also shows that the elevation until the main river stream fluctuates due to the presence of several riverine islands.

This Hon'ble Tribunal has already noted connivance of officials in District Saharanpur with the mining mafia, which operates the stone crusher in question in the present application also.

G. It is also pertinent to mention herein that this Hon'ble Tribunal vide order dt. 12.08.2022 in O.A. No. 268/ 2021 has already directed the Chief Secretaries of Uttar Pradesh and Haryana to control illegal mining activities being conducted in Districts Saharanpur and Yamuna Nagar by M/s Star Mines,

Saharanpur. It is submitted that the stone crusher in question in the present O.A., i.e M/s Aakash Ganga, is also operated by the same persons who operate the mining lease Vill. Bartha Korsi near Belgarh. Thus, the same state authorities have been held to be conniving with the mining mafia in District Saharanpur as are involved in the present case. A true copy of the order dt. 12.08.2022 passed in O.A. No. 268/ 2021 is annexed herewith as **Annexure 6**.

Concealment that NOC rejected thrice earlier for extracting ground water.

H.   The extent to which the Jt. Committee has favored the private stone crusher is simply shocking. While the Jt. Committee notes that the private stone crusher has applied for NOC for extracting ground water, it deliberately conceals to state that NOC for the site in question has been rejected thrice earlier. Instead of directing the crusher to stop operations immediately given that the Ground Water Department had rejected the NOC thrice earlier on 05.02.2021, 19.11.2021, and 06.04.2022, the Jt. Committee simply opted to give details of the fourth application preferred by the stone crusher. A true

copy of the NOC Rejections dt. 05.02.2021, 19.11.2021, and 06.04.2022 by the Ground Water Department, Ministry of Jal Shakti, Govt. of Uttar Pradesh is annexed herewith as **Annexure 7**.

## Stone crusher still operating despite the fact that CTO has expired on 31.07.2022.

I.   The CTO issued by the UP-PCB to the private stone crusher is admittedly valid only until 31.07.2022 (*see internal page 24 of the Jt. Committee report for CTO*). However, despite expiry of the CTO, the stone crusher continues to function and operate in abject violation of the applicable consent norms and provisions of the Water (Prevention and control of Pollution) Act, 1974. Thus, the quantity of stone crushed after 31.07.2022 is patently illegal and a penalty as well environmental compensation is liable to be paid by the stone crusher unit for operating the same without PCB consent to operate. A true copy of the e-Ravanna's dt. 01.08.2022 and 16.08.2022 generated by private stone crusher are annexed herewith as **Annexure 8**.

Earlier Stone Crusher on same site was dismantled pursuant to orders of the Hon'ble Supreme Court of India dt. 16.01.2012 passed in Deepak Kumar (supra).

J.   Lastly, the Jt. Committee in its report observes that the earlier stone crusher operating on the same site was dismantled due to not obtaining NOC. This is correct since NOC was obviously was not issued to any stone crusher on the site in question since it was located on the floodplains of River Yamuna. Further, the jt. Committee reports notes that revenue record was not available for the site in question however the applicant has obtained the same, which clearly shows that one Jagdish Madan Raj was in possession of Khasra No. 27/1, i.e. the same Khasra number on which private Respondent operates the stone crusher. Secondly, the state government can verify this fact that this Jagdish Madan Raj was the proprietor of the earlier stone crusher, which was dismantled on orders of the Hon'ble Supreme Court of India as explained in the Original Application in detail. A true copy of the Revenue Record is annexed herewith as **Annexure 9**.

K. It is therefore most respectfully prayed that this Hon'ble Tribunal may be pleased to reject the report of the Jt. Committee dt. 22.07.2022 as well as take suo moto cognizance of the connivance of state officers and officers/ staff of IIT Roorkee who have prepared such a report only to benefit the private stone crusher concerned.
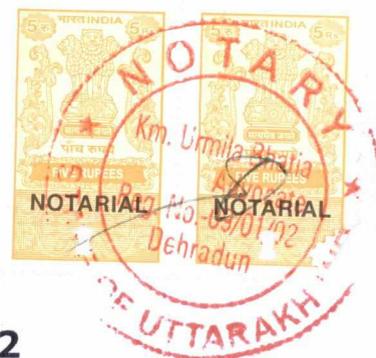
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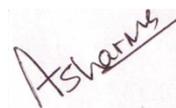
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AFFIDAVIT

I, Junaid Ayubi, S/o Tariq Ayubi, R/o B-204 Hill View Apartments, Sahastradhara Road, Dehradun, Uttarakhand and khatedar of land located at Khasra number 27 at Village Said Mohammadpur, Tehsil Behat, Saharanpur, Uttar Pradesh do hereby solemnly affirm and state as under:-

1. That I am the Applicant in the accompanying Application/ Objections to the Report of the Joint Committee dt. 22.07.2022 and as such I am fully acquainted with the facts and circumstances of the instant case and as thus competent to sweat this affidavit.

2. That I further state that the contents of the accompanying application have been thoroughly read and understood by me
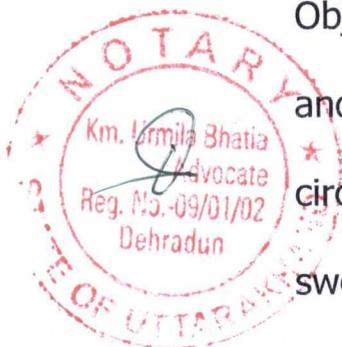
and I declare that the Application has been prepared on my instructions.

3. That the contents of the accompanying application are all true to my knowledge. The same has been read over to me and understood by me to be true.

4. That the annexures to the accompanying application are true copies of their respective originals.

DEPONENT

Verification:-

I, the deponent above named, do hereby verify and state that the contents of the foregoing paragraphs of the above affidavit are true to the best of my knowledge and belief and that no part of it is false and nothing material has been concealed therefrom. Verified by me at DEHRADUN on this 16TH day of August 2022.

Identified By:

Bob Chetan Masih
Advocate
UK-94/2015

DEPONENT

This affidavit is sworn before me by
Shri....................................
who is....................................
at Dehra....

KM. URMILA BHATIA
Advocate & NOTARY, Dehradun

DAMS · YAMUNA RIVER

Floods & Flood Monitoring in Yamuna: July 2018

July 28, 2018July 30, 2018   ·   SANDRP

The release of around 1.31 lakh cusecs of water in Yamuna from Hathnikund barrage at 09:00 hours on July 26, 2018, was certainly first surge of flood this monsoon in the river. But no one expected, most are still in the dark that the release would multiply by over five times in just two days! It is almost a month after the Southwest monsoon arrived. By this time the river usually floods couples of times.

Looking at the lack of significant rainfall in the catchment area over past weeks, the flood is unexpected and has taken many by surprise. The Irrigation and Flood Control Department, Delhi Government has issued warning for flood plain farmers and human settlements close to river banks, but the warning does not seem to commensurate with the flood peak that is likely to hit the capital in ay or two.
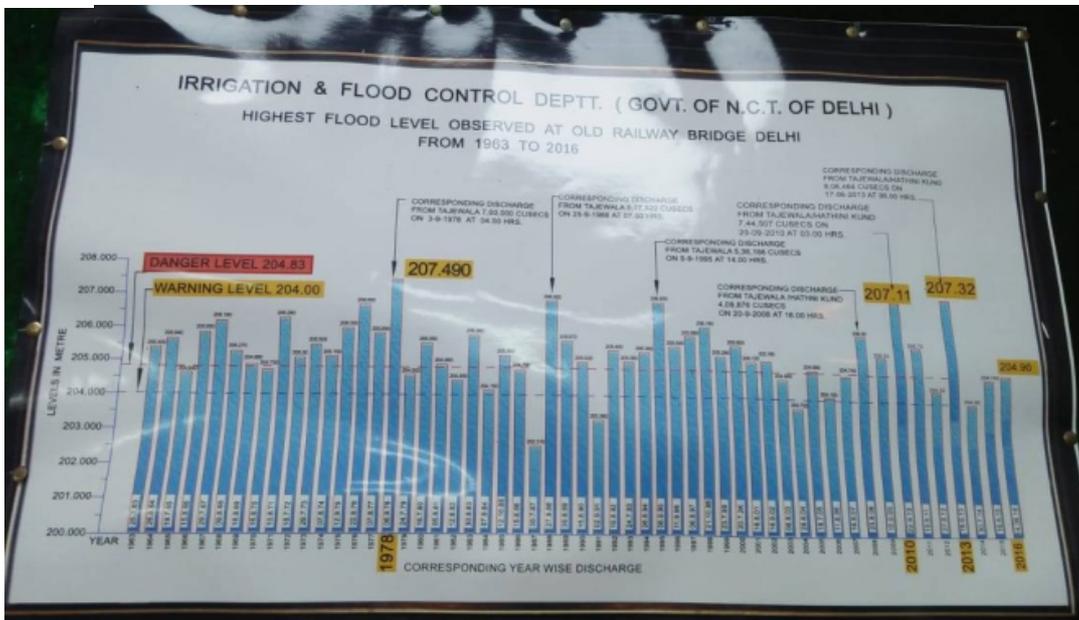
Bar chart by Irrigation & Flood Control Dept, Delhi showing history of floods in Yamuna river since 1963.

Yamuna has already crossed warning (204 m) and danger level (204.83) at Old Delhi Railway Bridge (ORB), Delhi. The High Flood Level is 207.49 meters, reached on Sept 6,1978 after around 7 lakh cusecs (cubic feet per second) water was released in Yamuna on 3rd Sept 1978 at 04:00 hrs from Tajewala barrage, that was decommissioned and replaced by Hathnikund barrage in early 1990s. The flood monitoring of River Yamuna began in 1963.

Since then, the river has seen high floods in 1988, 1995, 2010 and 2013. The 2010 and 2013 floods also crossed 207 metres mark but fell short of 1978 level.

However, for the last three days, there has been significant rain in the Yamuna catchment in Himachal, Uttrakhand, Haryana and Uttar Pradesh. The river has started swelling and what first was believed to be a mild flood spell is turning out to be big flood event.

Floods in Yamuna River, Naugaon Uttarkashi, 28 July 2018 (Image source, Tilak Ramola)

The discharge of about 2 lakh cusecs flood can cause a low level flood in Delhi. Discharges between 3 to 5 lakh cusecs can result in medium scale flood in the capital. And the discharge beyond 5 lakh cusec from Hathnikund can bring a big flood in Delhi submerging floodplains and threatening the embankments.

Usually the first flood spell reaches Delhi in about 72 hours. Once river bed and adjoining area are saturated by rain and river discharges, the flood water takes about 60 hours to reach the threshold of Delhi. As per CWC forecast, the discharges mentioned in the table below will be taking about 62 hour's time to reach Delhi.
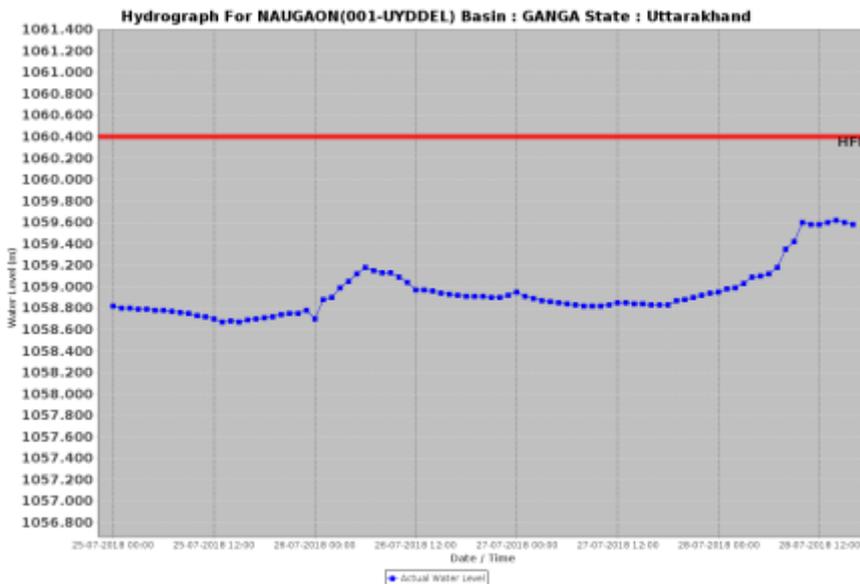
Discharge from Hathini Kund Barrage on 28 July 2018

SN	Time	Discharge (In lakh cusecs)
1	0700 hrs	1,80,000
2	0800 hrs	1,93,607
3	0900 hrs	2,11,874
4	1000 hrs	2,55,137
5	1100 hrs	3,11,190
6	1200 hrs	3,56,717
7	1300 hrs	4,24,763
8	1400 hrs	4,80,557

9	1500 hrs	5,03,925
10	1600 hrs	5,03,925
11	1700 hrs	5,27,362
12	1800 hrs	6,05,949
13	1900 hrs	5,63,186
14	2000 hrs	5,63,186

Flood situation at different locations along Yamuna:

Badkot, Uttarkashi The river has reportedly engulfed several adjoining farmlands at Tiladi ghat. An electric poll has been washed away at Kharadi and retaining wall of an under construction bridge has also been damaged at Than village. The bridge, incidentally was washed away in 2010 floods and has not been rebuilt since then.

(https://sandrp.in/2018/07/28/floods-flood-monitoring-in-yamuna-july-2018/2-naugaon-28-july-2018-17-hours/)

(https://sandrp.in/2018/07/28/floods-flood-monitoring-in-yamuna-july-2018/19-yamuna-river-mungra-bridge-naugaon-uttar-kashi-28-july-2018/)

Yamuna River water level at Mungra Bridge Naugaon, 28 July 2018 (Map source; CWC & Image by Tilak Ramola)

At Naugaon, the river has touched 1059.60 metres mark on 28 July 2018 around 12 hours at Centre Water Commission (CWC) level monitoring site located downstream of Mungra bridge. The highest flood level was marked 1060.40 at this location in 2010. So this seems to be a huge flood after 2010. The water level has stabilised and started showing downward trend but ongoing rain could swell the river dangerously.

Katapathar, Vikas Nagar, Dehradun The river channel is full. At 15 hours on 28 July 2018 it was reported to be rising further. Local people say that the river reminds them of 2010 flood when a long patch of Khair forest on a river island was swept away like dry twigs.

Yamuna River flooding at Vyasi Hydro Power Project, Juddo, Dehradun

Video showing flooded Yamuna river at Vyasi Hydro Power Project, Juddo, Dehrudun (Video by Parveen Tomar, Katapathar, 28 July 2018)

The floods then had also damaged the Bausan flood monitoring site. It was later buried under the debris of Vyasi Hydro Power Construction. The CWC seems to have not rebuilt the flood monitoring site. The normal life has been affected and people are staying indoors fearing landslide or other flood disaster. The Ponta level monitoring site is rising constantly and has touched 382.500 metres mark at 17 hours on 28 July 2018.
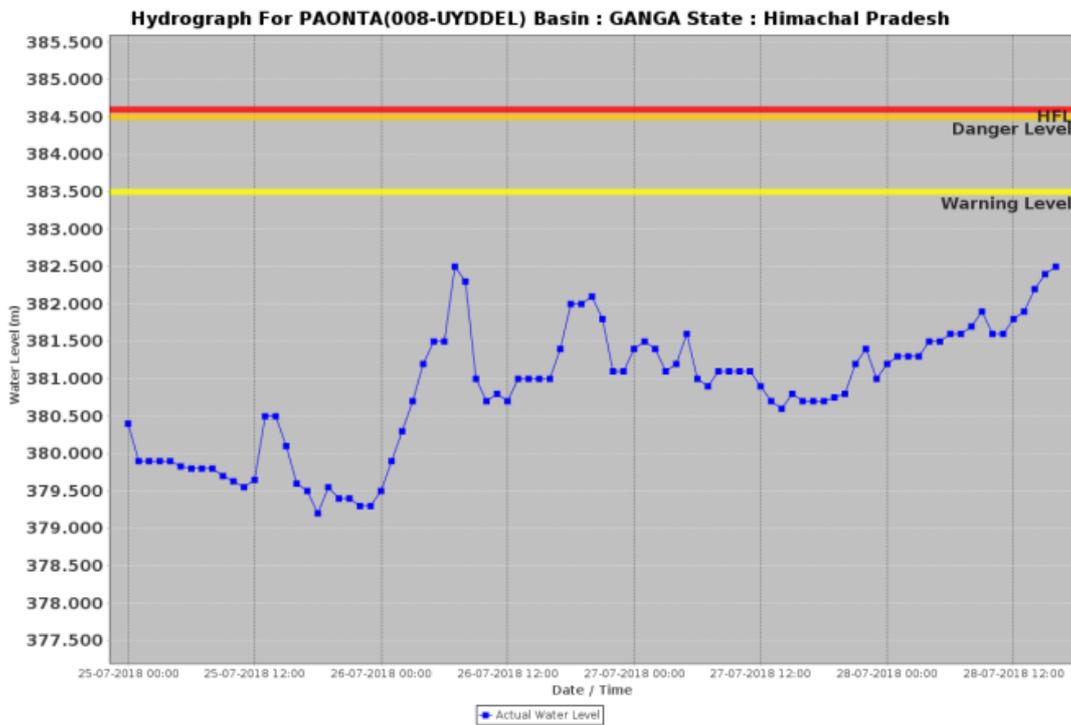
CWC Hydrograph for Yamuna River water level at Poanta, Himachal Pradesh 28 July 2018

Kanalsi – Yamuna Nagar 1.81 lakh cusecs water was released in River Yamuna on 26 July 2018 at 19:00 hours. Since then on an average 1 lakh cusec plus water is flowing in the river. As per villagers the river started eroding banks downstream Kanalsi village in Yamuna Nagar, Haryana. The villages located close to river banks have been alerted about rising water level.


(Kiran Pal Rana, Yamuna Sewa Samiti Kanalsi showing flood spread at Yamuna Somb Confluence in Yamuna Nagar on 28 July 2018)

The rain has stopped there, but given the water level and discharge rise at Poanta and Hathini Kund Barrage, Yamuna Nagar, there would be more and bigger discharges in the river which may cause bank erosion and threat to embankments in Karnal and Paipat. The water level is rising at Kalanaur (UP), Karnal (Haryana) and Mawi (UP) level forecasting site.
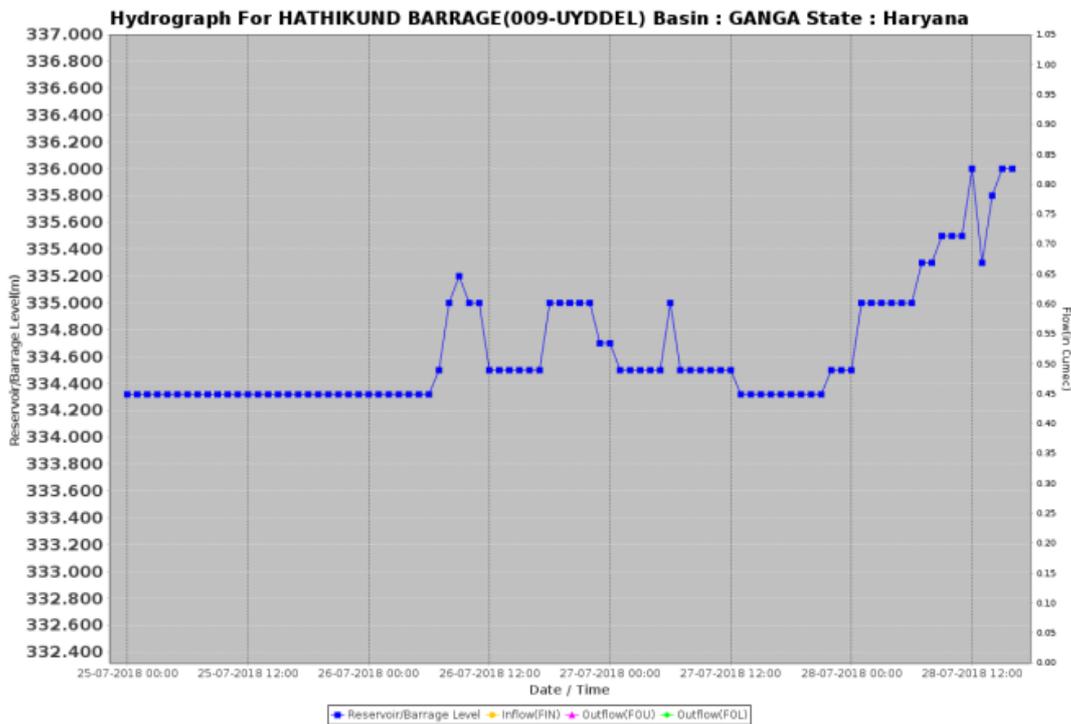
Hathini Kund Barrage Hydrograph by CWC, 28 July 2018
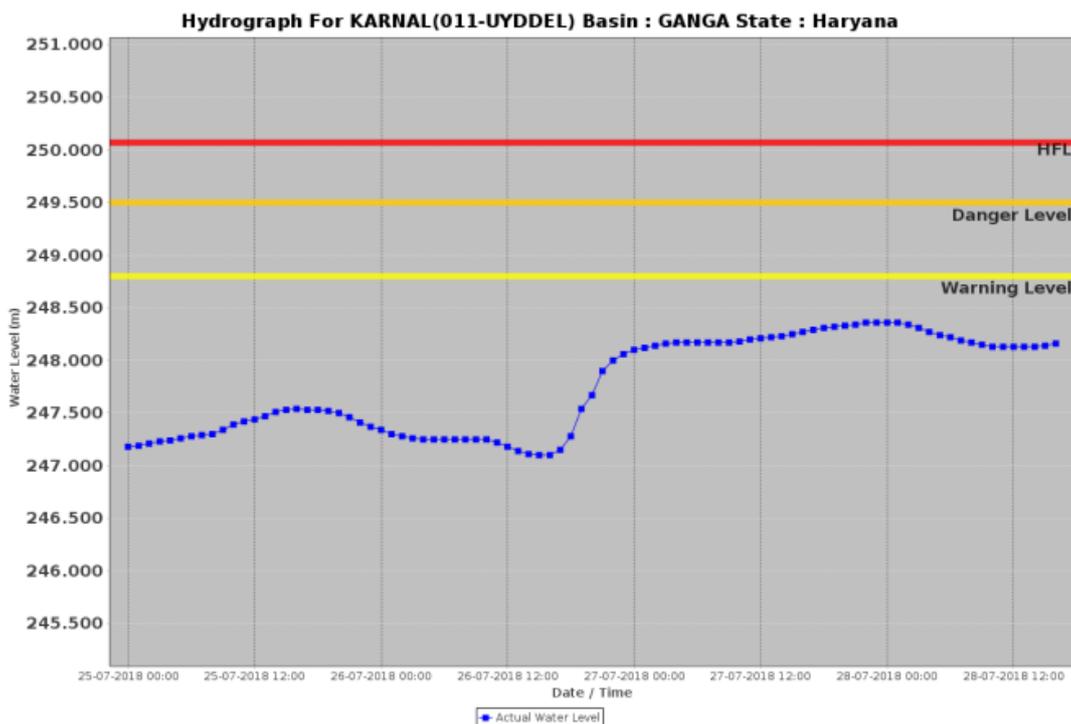
Karnal site Hydrograph date 28 July 2018 shows slightly falling trend, where as the hydrographs (shown below) for Kalanaur, Saharanpur & Mawi Muzaffarnagar located up and downstream Karnal show rising trend. Either the water may be spreading in floodplains at Karnal or there may be embankment breach incident for which there is no information available so far.
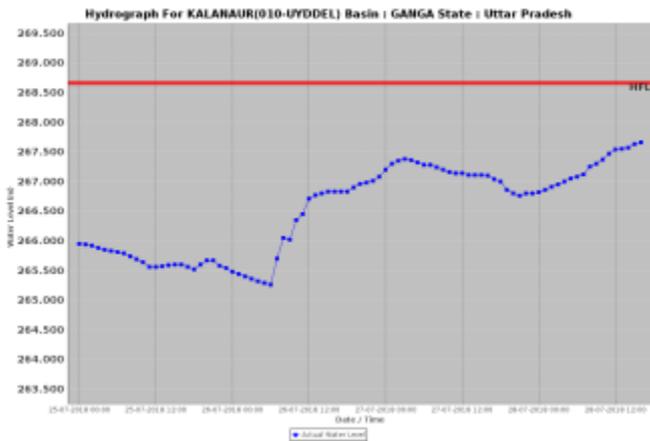
(https://sandrp.in/2018/07/28/floods-flood-

monitoring-in-yamuna-july-2018/5-kalanaur-28-july-2018/)
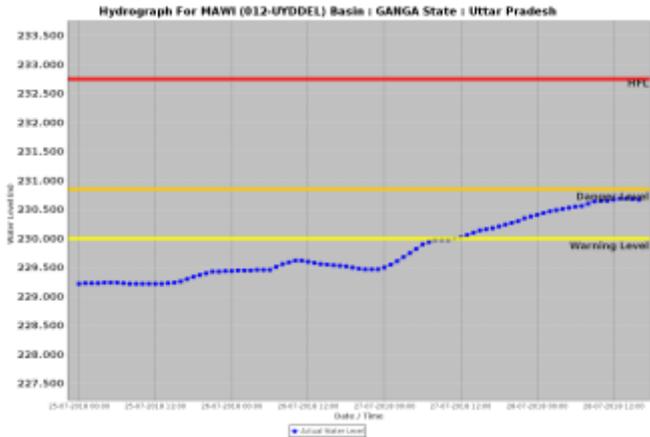
(https://sandrp.in/2018/07/28/floods-flood-

monitoring-in-yamuna-july-2018/6-mawi-28-july-2018-17-hours/)

(Hydrographs for Kalanaur and Mawi sites show rising trend on 28 July 2018)

Delhi The flood level in Delhi is on constant rise. There are three flood monitoring site in Delhi which are Palla, Jhangola and Old Railway bridge. The river has already crossed warning and danger level.
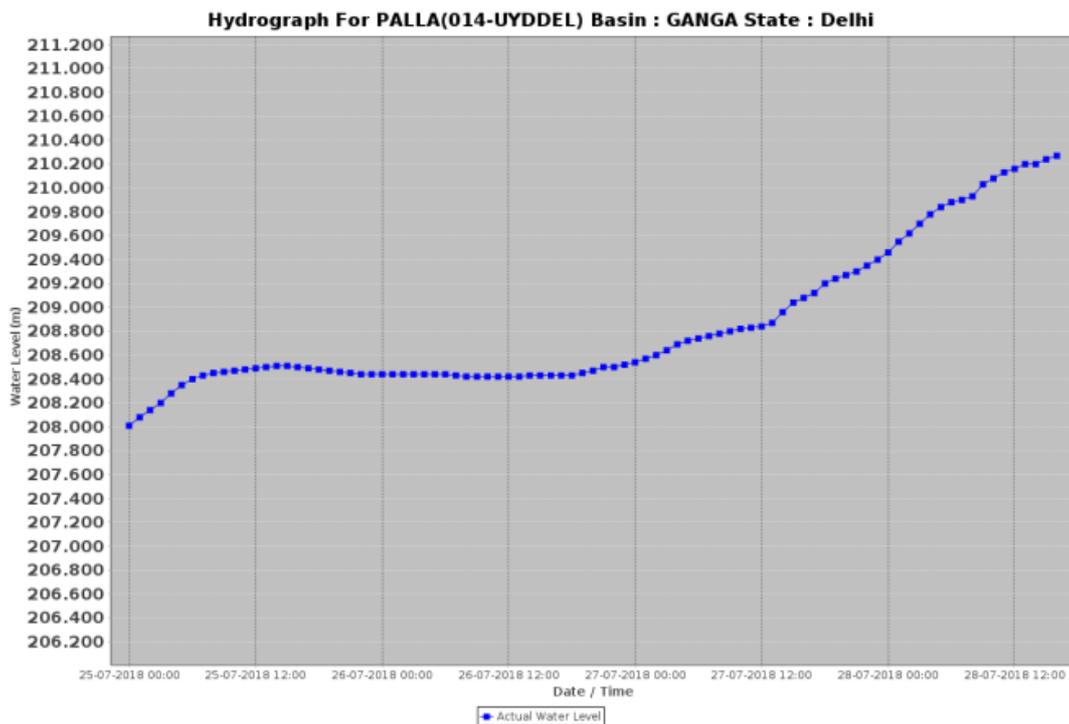
Rising trend at Palla, the entry point of river in Delhi, 28 July 2018

The present water level at Palla is at 210.3 metres. It is rising up and will cross the warning level of 210.6 metres and may touch the danger level of 211.8 metres. Flood water has started spreading in floodplains. The floodplain farmers have been put on alert. If it rains more, Delhi may well see a bigger flood spell.

Yamuna river has crossed warning and danger level and still rising. It could be rising up all through 29 July 2018.

About CWC Flood forecasting and level monitoring sites.

List flood forecasting and level monitoring sites in Yamuna Basin

List Flood Forecasting Sites

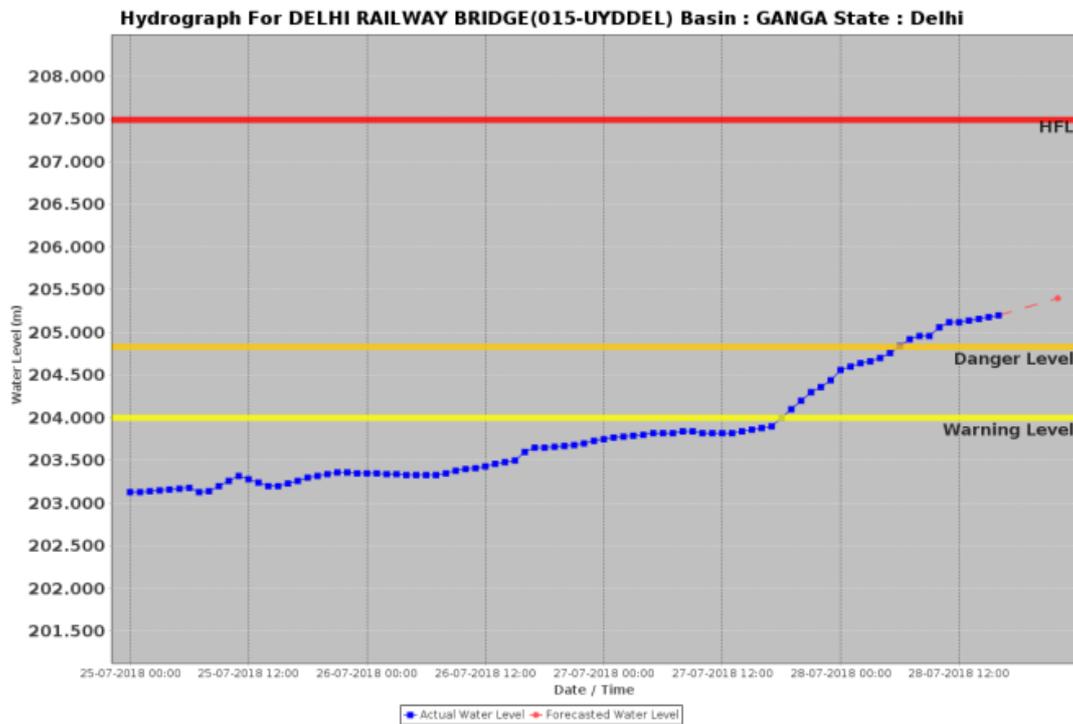| SN	River	Site	District/State	WL	DL	HFL (M)	HFL Date
1	Yamuna	Paonta	Sirmaur, HP	383.5 M	384.5 M	384.6 M	05-09-1995
2	Yamuna	Karnal	Karnal, Haryana	248.8 M	249.5 M	250.07 M	17-06-2013
3	Yamuna	Mawi	Muzzafar Nagar, UP	230.0 M	230.85 M	232.75 M	18-06-2013
4	Sahibi	Dhansa	South West, Delhi	211.44 M	212.44 M	213.58 M	06-08-1977
5	Yamuna	Delhi Railway Bridge	North, Delhi	204.0 M	204.83 M	207.49 M	06-09-1978
6	Yamuna	Mathura (Prayag Ghat)	Mathura	165.2 M	166.0 M	169.73 M	08-09-1978
7	Yamuna	Agra (J.B.)	Agra, UP	151.4 M	152.4 M	154.76 M	09-09-1978

8	Betwa	MOHANA	Jalaun, UP	121.66 M	122.66 M	133.35 M	11-09-1983
9	Yamuna	Etawah	Etawah, UP	120.92 M	121.92 M	126.13 M	11-09-1978
10	Yamuna	Auraiya	Auraiya, UP	112.0 M	113.0 M	118.19 M	25-08-1996
11	Yamuna	KALPI	Jalaun, UP	107.0 M	108.0 M	112.98 M	**25-08-1996**
12	Yamuna	SHAHIJINA	Hamirpur, UP	103.54 M	104.54 M	108.67 M	**NA**
13	Ken	BANDA	Banda, UP	103.0 M	104.0 M	113.29 M	07-07-2005
14	Yamuna	HAMIRPUR	Hamirpur, UP	102.63 M	103.63 M	108.59 M	12-09-1983
15	Yamuna	CHILLAGHAT	Banda, UP	99.0 M	100.0 M	105.16 M	06-09-1978
16	Yamuna	NAINI	Allahabad, UP	83.74 M	84.73 M	87.99 M	08-09-1978

List of Level Monitoring Sites

SN	River	Site	District	State	HFL (M)	HFL Date	
1	Yamuna	Hanuman Chetty	Chamba	Himachal Pradesh*	NA	NA	
2	Yamuna	Naugaon	Uttarkashi	Uttrakhand	1060.4 m	11-09-2010	
3	Pabar	Tuini (Pabar)	Dehradun	Uttrakhand	931.88 M	25-09-1988	
4	Tons	Tuini (Tons)	Dehradun	Uttrakhand	904.0 M	24-09-1988	
5	Tons South	Haripur	Dehradun	Uttrakhand	482.48 M	25-09-1988	
6	Yamuna	Kalanaur	Saharanpur	UP	268.66 M	08-09-2010	
7	Yamuna	Masani	Rewari	Haryana	242.58 M	NA	
8	Hindon	Galeta	Baghpat	UP	217.72 M	04-09-1978	
9	Yamuna	Baghpat	Baghpat	UP	217.18 M	27-08-1988	
10	Sahibi	Dadri	Jhajjar	Haryana	214.98 M	26-08-2008	
11	Yamuna	Palla	North West	Delhi	**213.275**	**1988**	
12	Betwa	NAUTGHAT	Jhansi	UP	207.99 M	01-09-1983	
13	Yamuna	Mohna	Faridabad	Haryana	193.13 M	06-09-1978	
14	Yamuna	Mathura (Gokul Barrage)	Mathura	UP	166.17	26-09-2010	
15	Chambal	UDI	Etawah	UP	128.4 M	24-08-1996	

16	Yamuna	RAJAPUR	Chitrakoot	UP	96.37 M	07-09-1978	
17	Yamuna	PRATAPPUR	Allahabad	UP	90.1 M	08-09-1978	
18	Betwa	Matatila	Lalitpur	UP	NA	NA	

List of Inflow Monitoring sites

SN	River	Sites	District	State	FRL	MWL
1	Yamuna	Hathinikund Barrage	Yamuna Nagar,	Haryana	NA	NA
2	Yamuna	Tajewala Weir (Hathinikund)	Yamuna Nagar,	Haryana	NA	NA

Overall there are 36 flood forecasting, level monitoring and inflow monitoring stations comprising of 16 Flood forecasting, 18 Level monitoring and 2 Inflow monitoring station on River Yamuna and its tributaries in Uttrakhand, Himachal Pradesh, Haryana, Delhi and Uttar Pradesh states.


Conventional level gauge and newly installed computerised gauge reading system at Shank no. 4 Palla, Delhi. There are 3 computerised gauge reading installed in Delhi but they are not working and staff has to rely on conventional system (Image by Bhim, 26 July 2018)

Serious lacunae in CWC flood forecasting in Yamuna basin As we see, there are several problems with the CWC flood monitoring system[i]. A few are mentioned here.

1. The Hanuman Chuttey site is in Uttarkashi, Uttrakhand but CWC website shows this in Himachal Pradesh. It is the first level monitoring site on River Yamuna close to its origin downstream the confluence of Hanuman Ganga. But the site is inactive, hence there is no information about river water levels from this site.
2. The Bausan site at Katapathar, Dehradun has been damaged in 2010 and currently is non-functional and buried under the debris of Vyasi Hydro Power Project. Hence there is no

forecasting or monitoring station when river Yamuna enters the plains from mountain area.

3. The sites shown with red colour are lying inactive. These sites should have been active or removed from CWC flood forecasting list.

4. The sites in the table with green colour has no information about high flood levels and date but the hydrograph for these site is active. CWC should provide complete information about these site.

5. Similarly the Full Reservoir levels and Maximum Water Level is not mentioned for the two inflow monitoring sites.

6. The Tajewala Weir is completely destroyed by 2010 floods but it is still shown on the website, though without any information. The location of the site is also wrongly shown far away from its location on Yamuna river, in Yamuna Nagar to South Haryana, along Sahibi river.
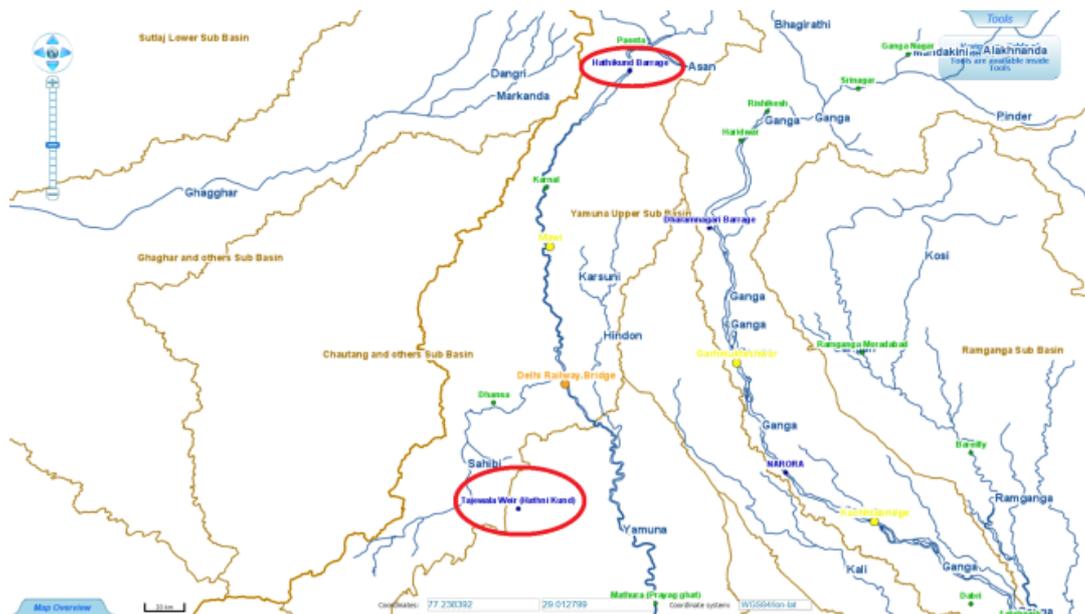
There are two sites with the name of Hithini Kund both, CWC website shows wrong position of Hathini Kund Tajewala site.

The coming floods will further test the Delhi govt, CWC and the disaster management systems and of course the people all along Yamuna as the flood travels further downstream of Delhi.
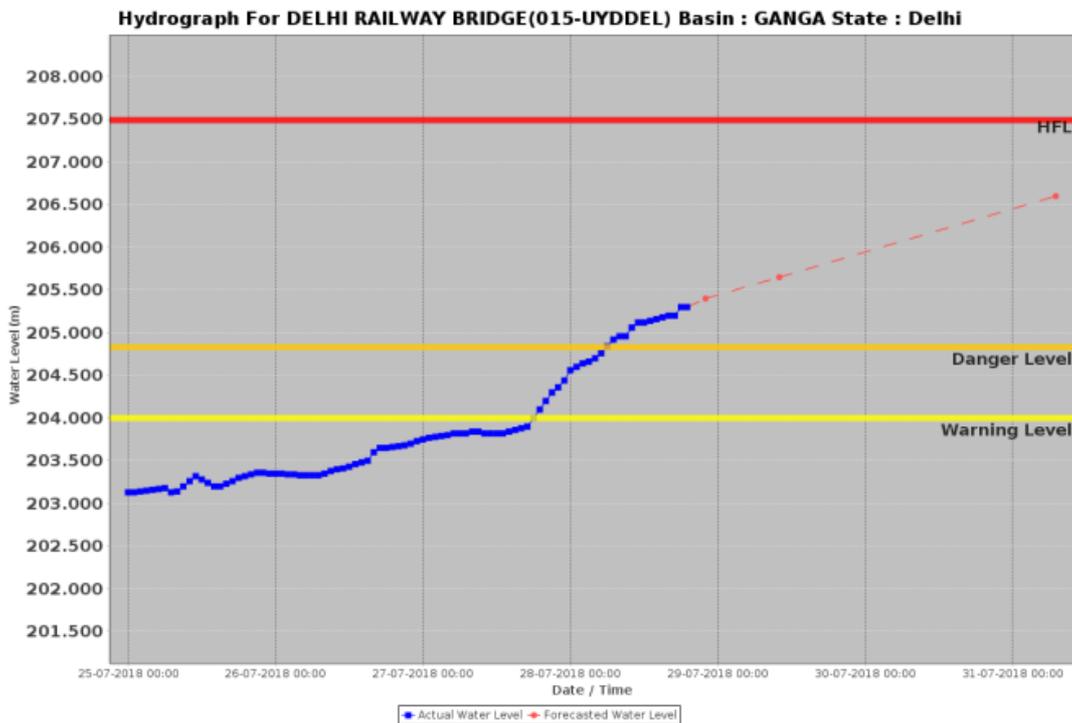
CWC Hydrograph forecasts Yamuna River flood water level rising upto 206.65 metres on 31 July 2018.

Bhim Singh Rawat, SANDRP (bhim.sandrp@gmail.com)

END NOTES:

[i]   http://www.india-water.gov.in/ffs/current-flood-forecast/   (http://www.india-water.gov.in/ffs/current-flood-forecast/)

Post Script:-

As latest CWC hydrograph Yamuna river level has reached 205.50 metres and about 1500 people have been evacuated from floodplains in Delhi. https://www.news18.com/news/india/as-yamuna-flows-above-danger-mark-1500-delhiites-evacuated-from-low-lying-areas-1826995.html (https://www.news18.com/news/india/as-yamuna-flows-above-danger-mark-1500-delhiites-evacuated-from-low-lying-areas-1826995.html) (29 July 2018)

A view of Yamuna river, in New Delhi on 28 July 2018. (PTI Photo)

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> KALANAUR > KANALSI > KARNAL > KATAPATHAR > MAWI > NAUGAON
> OLD RAILWAY BRIDGE > PALLA > PEOPLE > POANTA > RIVER
> UTTARKASHI > VYASI HYDRO POWER PROJECT > YAMUNA > YAMUNA NAGAR

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1.   ***manoj misra***
   says:
   JULY 28, 2018 AT 10:54 PM
   Very good and timely report.

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IRRIGATION & FLOOD CONTROL DEPARTMENT

MANUAL-I

PARTICULARS OF ORGANISATION, FUNCTIONS AND DUTIES
{Section -4(1) (b) (i)}

1.   AIMS AND OBJECTIVES OF THE ORGANISATION

The main objective of the department is to provide protection to the city of Delhi against floods in river Yamuna and river Sahibi, prevention of water logging and drainage congestion in rural areas during monsoons and providing Irrigation facilities to the farmers in Delhi.

2.   MISSION/VISION

The Mission of the I&FC Department is to protect the city of Delhi from floods in River Yamuna and of River Sahibi entering in Delhi through Najafgarh Drain. The Department also constructs and maintains the major outfall drains exceeding 1000 cusecs capacity in the city, alongwith looking after the drainage of rural areas of Delhi, and to provide irrigation facilities to the farmer through state tubewell and effluent irrigation.

3.   BRIEF HISTROY AND BACKGROUND FOR ITS ESTABLISHMENT

After the unprecedented floods experienced in Delhi in the year 1964, Moti Ram Committee was constituted by the Govt.of India, Ministry of Irrigation & Power to make a scientific assessment of the problems of floods in Delhi and its neighboring areas. The post of Chief Engineer (Floods) in Delhi Administration was thus created. Director (UT), Central Water Commission was nominated to work as Chief Engineer (Floods) and to serve as Member Secretary to this Committee. After the report of the Committee, the I&FC Department was formally constituted with about three divisions.

Thereafter, due to floods in 1973, two additional circles were created to formulate a comprehensive 'Master Plan for Drainage' in respect of U.T. of Delhi.

Thus, the expansion of the department took place slowly & slowly as the problems of floods and drainage congestion became more prominent in U.T.of Delhi. Further expansion of the department took place after the unprecedented floods were experienced in the year, 1977 by the flood flows from River Sahibi, which entered Delhi through N.G.Drain. As a consequence, the N.G. Drain was remodelled, widened and lined to increase its cpacity; for which Najagarh drainage circle was created. A new drain called supplementary drain was also envisaged and staff of Master Plan of drainage was transferred for implementation of these projects.

In addition to the food related works, the department was also assigned the duty of providing irrigation facilities to the farmers of Delhi, by utilizing treated effluents available from treatment plants in Delhi and through state tubewells.

4.   ORGANIZATIONAL CHART

SECRETARY (I&F)

HEAD OFFICE	ZONE - I		ZONE - II	
CE - I	Flood Circle - I	Flood Circle - IV	Flood Circle - II	Flood Circle -III
CE - II	CD - III	CD - V	CD - VI	CD - II
SSW	CD - IV	CD - XIII	CD - VII	CD - IX
FA	CD - X	CD - I	CD - VIII	CD - XI
AO	CD - XIV		CD - XII	
EO				
P&D	MD - II	MD - IV	MD - I	MD - III

5. <u>Allocation of Business</u>

The I&FC department is mainly responsible for providing protection to the city of Delhi against floods from river Yamuna, and from Sahibi River through N.G. Drain, by way of constructing & maintaining embankments/banks of river Yamuna and major drains, providing Irrigation facilities through Minor Irrigation System to the farmers of Delhi. In addition to this, the Deptt., has been entrusted with the Development works in rural areas, works of SC/ST basties, Panchayat works, works of Animal Husbandry Deptt., works of Forest Deptt., works of Urban Development Deptt. R.D.B. Works.

6. <u>DUTIES TO BE PERFORMED TO ACHIEVE THE MISSION</u>

To achieve the mission, the flood protection works are carried out along the banks of river yamuna, including their maintenance. Effective, pumping arrangements are made to avoid drainage congestion in the jurisdiction of the Deptt. To provide irrigation facilities, the treated sewage effluents available from various sewage treatment plants of Delhi Jal Board, are supplied to the farmers, besides providing irrigation water through state tubewells.

7. <u>DETAILS OF SERVICES RENDERED</u>

The I&FC department is not a public dealing department. The Deptt., mainly provides irrigation facilities to the farmers of Delhi in Alipur, Kanjhawala, Najafgarh Blocks. Besides this, during the monsoon season, the operation for pumping out the stagnated rain water from the fields is also taken up by the department, wherever required.

8.   **CTIZENS INTERACTION**

The Deptt is not a public dealing Deptt., and, as such, there is not much interaction with the citizens. However, to keep the public informed of the activities being carried out by the Deptt., the details regarding the works being carried out by the Department are displayed at the work sites, by erecting Display Boards, indicating the name of the scheme /work, cost of work, date of start and completion of works, names of the executing agencies and the details of office, telephone no. of Executive Engineer in-charge of the work etc.. The intimations regarding award/start of works are also being sent to the area MLAs, indicating all the above details, with the request to inspect the works as and when desired and to inform the department about any short comings and draw-back, if noticed during inspections.

9. POSTAL ADDRESS OF THE MAIN OFFICE, ATTACHED/SUBORDINATE OFFICE/FIELD UNITSETC.

The postal addresses of main and other offices are given below:

1.	Main Office :	(1) Office of the Chief Engineer(I&F), Zone-I, L.M. Bund Office Complex, Shastri Nagar, Delhi-110031. (2) Office of the Chief Engineer(I&F), Zone-II, L.M. Bund Office Complex, Shastri Nagar, Delhi-110031.
2.	Subordinate Offices :	1. O/o The Superintending Engineer, Flood Circle-I, Irrigation and Flood Control Department, L.M. Bund Office Complex, Shastri Nagar, Delhi. 2. O/o The Superintending Engineer, Flood Circle-II, Irrigation and Flood Control Department, Sector- 15, Rohini Office Complex, Rohini, Delhi-110089 3. O/o The Superintending Engineer, Flood Circle-III, Irrigation and Flood Control Department, Sector- 15, Rohini Office Complex, Rohini, Delhi-110089 4. O/o The Superintending Engineer, Flood Circle-IV, Irrigation and Flood Control Department, Basai Dara Pur Office Complex, Opp. ESI Hospital, Basai Dara Pur, New Delhi.
3.	Field offices of Executive Engineers under Superintending Engineer, FC-I.	1. O/o The Executive Engineer, Civil Division-III, L.M. Bund Office Complex, Shastri Nagar, Delhi. 2. O/o The Executive Engineer, Civil Division-IV, L.M. Bund Office Complex, Shastri Nagar, Delhi. 3. O/o The Executive Engineer, Civil Division-X, L.M. Bund Office Complex, Shastri Nagar, Delhi. 4. O/o The Executive Engineer, Civil Division-XIV, L.M. Bund Office Complex, Shastri Nagar, Delhi-110031 5. O/o The Executive Engineer, Mech. Div-II, Vikas Bhawan-II, Near Matcalf House, Delhi-110054
4.	Field offices of Executive Engineers under Superintending Engineer, FC-II.	1. O/o The Executive Engineer, Civil Division-VI, Bharat Nagar,Near Neemri Colony,Delhi-110052 2. O/o The Executive Engineer, Civil Division-VII, Irrigation and Flood Control Department, Sector-15, Rohini Office Complex, Rohini, Delhi.

		3. O/o The Executive Engineer, Civil Division-VIII, Irrigation and Flood Control Department, Sector-15, Rohini Office Complex, Rohini, Delhi-0110089
		4. O/o The Executive Engineer, Civil Division-XII, Irrigation and Flood Control Department, , Basai Dara Pur Office Complex, Opp. ESI Hospital, Basai Dara Pur, New Delhi.
		5. O/o The Executive Engineer, Mech. Div-I, Nangloi (Near DTC Deport) Delhi.
5.	Field offices of Executive Engineers under Superintending Engineer, FC-III.	1. O/o The Executive Engineer, Civil Division-II, Irrigation and Flood Control Department, Manohar Park, East Punjabi Bagh, Delhi-110026
		2. O/o The Executive Engineer, Civil Division-IX, Irrigation and Flood Control Department, Sector-15, Rohini Office Complex, Rohini, Delhi-110089
		3. O/o The Executive Engineer, Civil Division-XI, Irrigation and Flood Control Department, Sector-15, Rohini Office Complex, Rohini, Delhi-110089
		4. O/o The Executive Engineer, Mech. Div-III L.M. Bund office complex, Delhi.
6.	Field offices of Executive Engineers under Superintending Engineer, FC-IV.	1. O/o The Executive Engineer, Civil Division-I, Irrigation and Flood Control Department, , Basai Dara Pur Office Complex, Opp. ESI Hospital, Basai Dara Pur, New Delhi.
		2. O/o The Executive Engineer, Civil Division-V, Irrigation and Flood Control Department, Paryavaran Bhawan, Saidullajab Village, Saket, New Delhi.
		3. O/o The Executive Engineer, Civil Division-XIII, Irrigation and Flood Control Department, , Basai Dara Pur Office Complex, Opp. ESI Hospital, Basai Dara Pur, New Delhi.
		4. O/o The Executive Engineer, Mech. Div-IV Vikas Bhawan-II, Near Matcalf House, Delhi- 110054.

10. **WORKING HOURS BOTH FOR OFFICE AND PUBLIC**

In respect of Head office & Circle offices of the department, the working hours both for office and public are 9.30 AM to 6.00 PM Monday to Friday with Saturday & Sunday being the holidays. For the divisions entrusted with the responsibility of execution of various schemes, the working hours are from 10.00 AM to 5.00 PM Monday to Saturday with IInd Saturday, Sunday as a holiday.

11. **PUBLIC INTERACTION, IF ANY**

The Irrigation and Flood Control Department is not a public dealing department like MCD, DDA, Transport Department, Sales Tax Deptt. etc.; and as such, there is no direct interaction with the public except in case of problems related to irrigation facilities and flooding of agricultural lands. However, the public is kept informed of the works/schemes being executed by the Deptt., as brought out under para 8 above.

12. GRIEVANCE REDRESSAL MECHANISM

As brought out above, the I&FC Department is not a public dealing Department. However, the grievances connected with irrigation facilities provided during summer season, and water logging caused during monsoons are attended to on top priority, in the following manner:

In case of draught like situation and shortage of irrigation water, the irrigation facilities are augmented by supplying water from trunk drains, by installing additional pumps on these drains, to provide irrigation supplies through the existing irrigation channels.

Prior to monsoon season, all the major drains of the NCT of Delhi, falling in the jurisdiction of the I&FC Department, are desilted and made fully functional to carry the drainage discharge from the internal link drains of the city, which are

being managed by the local agencies like M.C.D., N.D.M.C., etc. The I&FC Department also establishes Central Rooms at the Office of the Dy. Commissioner (East) at Geeta Colony Office, and one in the office of Chief Engineer (I&F) at ISBT Building. The complaint of water-logging can be lodged by the public at these Control Rooms, the control rooms are supplemented by several field posts, equipped with wireless sets. All the senior officers of the department are also equipped with wireless sets to communicate the complaint at a fast speed. The complaints are looked into immediately for removal of the grievance, if the problem falls within the ambit of the jurisdiction of the department; otherwise the complaints are referred to the concerned agencies.

A flood control order is also issued by the Department every year elaborating the responsibilities of various departments, and the procedures to be followed to face any emergent situations likely to arise due to any likely high flood flows in river Yamuna, for which an advance warning is received by the department (about 40 hours in advance) from the flood forecasting unit of Central Water Commission, Government of India.

Flood estimation at Hathnikund Barrage, River Yamuna, India using the Peak-Over-Threshold method

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Flood estimation at Hathnikund Barrage, River Yamuna, India using the Peak-Over-Threshold method

Mukesh Kumar, Mohammed Sharif and Sirajuddin Ahmed

Department of Civil Engineering, Jamia Millia Islamia, New Delhi, India

ABSTRACT
The paper presents a methodology for the estimation of flood magnitude using the peaks-over-threshold (POT) data. A semi-automatic approach for the determination of POT values has been presented. Two frequency analysis methods, namely Gumbel's method and Log-Pearson type III distribution, have been used. Two major issues in implementing a POT approach are: (i) determining an appropriate threshold and (ii) ensuring the independence of events. The present paper addresses these issues simultaneously. Using the daily discharge data, various return-level flood magnitudes have been estimated. A comparison of flood magnitudes obtained using the annual maxima (AM) approach and POT approach clearly indicates that the flood magnitudes in general are higher when Log-Pearson method is used as compared to when Gumbel's method is used. The result of the research conducted clearly indicates that the flood magnitudes estimated on the basis of POT sample are more reliable, particularly when the data length is short.

AQ1

1. Introduction

Flood Frequency Analysis (FFA) is required for flood disaster risk assessment, water resource management, and design of hydraulic structures. Flood magnitude estimation for a particular risk of flooding is an essential part of engineering practice (Khaliq et al. 2006). Effective FFA and reliable discharge data are essential for the determination of design discharge (Bonacci and Ljubenkov 2008). Estimation of design flood is critically important as its underestimation may lead to heavy economic, environmental, and even loss of life, whereas overestimation will result in excessive expenditure on hydraulic structures (Mikoš et al. 2004; Brilly and Polic 2005). The frequency associated with a given magnitude flood is conventionally expressed by return period. Kumar et al. (2017) described several flood risk management strategies for the national capital territory of Delhi. Several studies have described the application of modelling tools to floodplain mapping under different return-level floods (Khattak et al. 2016; Ouma and Tateishi 2014).

The return period of an event can be expressed as the average number of events made to obtain one event equal or exceeding the magnitude of that event (Beguería 2005). There is a unique relationship between return period and discharge for every gauge station. Traditionally, annual maximum (AM) approach is used to determine flood magnitude with different return levels. In the AM series, highest magnitude event of each year is considered, so that numbers of events are equal to the number of recording years. AM is a straightforward technique for FFA, and it contains a very useful information of annual peak flows with the possible limitations of short length and interrupted time series (Claps and Laio 2003). The AM approach has been used in a large number of works (Ruiz et al. 2000; Bobée and Ashkar 1991). Bačová-Mitková and Onderka (2010) fitted LP3 distribution of the annual peak data for Danube River in Europe obtained using the classical AM approach. Guru

and Jha (2015), while making FFA of Tel Basin of Mahanadi River by AM series, found that the Generalized Pareto Distribution gives best results. However, certain drawbacks are associated with the AM approach. For example, some relatively high peaks may not form part of the AM series, whereas some low values may become part of AM sample. Another disadvantage of AM series is its small sample size.

A considerable alternative to the AM approach is the Peaks-Over-Threshold (POT) approach. In POT analysis, all the events having value more than a predetermined threshold value are considered (Lang et al. 1999). Despite the advantage of considering more events in the analysis, POT method is still not widely used due to the lack of a commonly accepted methodology in selecting an appropriate threshold value. Threshold values can even affect the multimodal or the unimodal character of the distribution of events and may hide the existence of various generating processes at various frequencies (Adamowski 2000). Önöz and Bayazit (2001) found different frequency estimations based on selected thresholds, stressing the need for more studies on adopting threshold values. Bačová-Mitková and Onderka (2010), while comparing the AM and POT series, found that higher estimated discharge value depends on data properties and not just to the method of FFA. While studying the effect of threshold value on POT series assumptions, Beguería (2005) concluded that a unique optimum value of threshold cannot be found. Herath et al. (2015) compared the AM and POT approaches for FFA of Fitzroy River in Western Australia and found that AM results are within 95% confidence interval of POT results. POT method had a lower estimation than AM for an asymptotic variance sample, considering on an average two peaks per year (Tavares and Silva 1983). Cunnane (1973) had found that for better POT results, at least 1.65 peaks per year should be selected. Bhunya et al. (2012) compared various combinations of AM and POT series

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methods and found that the method that gives higher estimated value depends upon the statistical characteristics of the data, in addition to the method of frequency analysis used. Selection of best model can be difficult considering the fact that more than one distribution can fit the data (Salas et al. 2012). The distribution parameters may be determined by various methods, with performance depending on skewness and size of data (Ahilan et al. 2012). There are two major difficulties that exist in implementing a POT approach. These are (i) determining an appropriate threshold and (ii) ensuring the independence of flooding events above the chosen threshold. The major objective of the present research is to address these issues comprehensively and develop a generic methodology for implementing a POT approach.

POT method considers all values exceeding a particular predefined base value called the threshold. Lang et al. (1999) discussed the threshold selection, models for peak occurrence process, and magnitude distribution issues. Threshold selection and occurrence process are the major difficulties of the POT approach. Elaborated analysis of methods for determining N-years flow is made by various authors (Kohnová and Szolgay 2000). Bača and Mitková (2007) found variation in occurrence frequency of extreme events by using POT, for a small agriculture basin. In the United Kingdom, POT data base of seasonality and summary statistics was carried out at 870 gauge stations, and over 77,000 peaks were extracted from the available record of around 20 years (Bayliss and Jones 1993). Guru and Jha (2015) adopted the flood series having probability of exceedance less than 5% as the POT value for Mahanadi basin with promising results. Li et al. (2016) studied the discharge series of Danjiangkou Reservoir, China, and found that the flood estimates of POT model were more reliable in comparison to the AM model.

2. Study area

The River Yamuna originates from Yamnotri Glacier at an elevation of 6320 m above mean sea level. It is a major tributary of River Ganga. It has a total length of about 1376 km and a catchment area of 366,000 km^2 at Allahabad. After travelling through the Himalayas, Yamuna enters the Doon valley. Many tributaries join the river on its way to Tajewala Headworks in Haryana where a headwork exists for eastern and western Yamuna Canal, which feed the states of Uttar Pradesh and Haryana, respectively. A new barrage named Hathnikund has been constructed 3 km upstream of the Tajewala barrage. The Yamuna enters in the National Capital Territory (NCT) of Delhi, approximately 1.65 km north of Palla Village. It runs for about 48 kms in the southeast direction before leaving NCT of Delhi at a point to the east of Jaitpur village downstream of Kalindi Barrage. The River Yamuna passes through Uttrakhand, Himachal, Haryana, and Uttar Pradesh before reaching Delhi (Gawade et al. 2015; Kumar et al. 2017).

A major barrage called Hathnikund is located on River Yamuna, about 220 km upstream of the Wazirabad Barrage in Delhi. The Upper Segment and the Delhi segment of the Yamuna spanning from Hathnikund to Okhla/Kalindi Barrage are important for the assessment of vulnerability of Delhi to floods. The Hathnikund Barrage, situated in Haryana, is around 200 km upstream of Delhi. The release of relatively high discharges from Hathnikund Barrage,
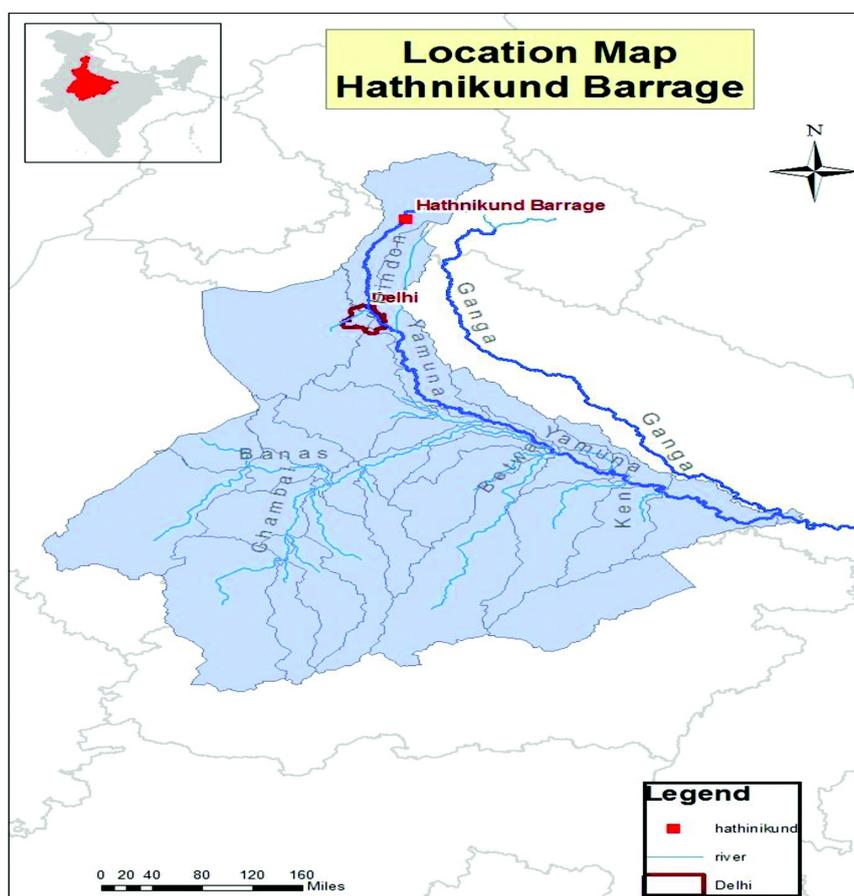

Figure 1. Location map of Hathnikund Barrage and Maga-City Delhi in Yamuna Basin.

combined with monsoonal rainfall in Delhi and surrounding areas, leads to risk of flooding in the NCT of Delhi (Figure 1).

Delhi is prone to urban drainage congestion as well as reverine flooding (Kumar et al. 2016). There are three major barrages in the Delhi segment of the River Yamuna, namely Wazirabad, Indraprastha, and Kalindi Barrages. The distance between Hathnikund and Kalindi Barrages is around 245 km. Forecasts based on the discharge released from the Hathnikund Barrage are significant for the assessment of flood scenario in Delhi. During times of high flows, excessive water is discharged from the barrage causing floods in the downstream (Sharif et al. 2016). The travel time for flood water from Hathnikund Barrage to Delhi varies from 36 to 72 h depending on the river flow conditions IFCD. (2016).

3. Data used

The monsoon season in Delhi normally begins from 15 June and lasts till 15 October. During the monsoon season, the Irrigation and Flood Control (I&FC) Department of the Government of National Capital Territory (NCT) of Delhi sets up a control room for the monitoring of the flood situation. The control room functions round the clock till 15 October or till the withdrawal of monsoon, whichever is later. The control room maintains a record of discharge released from Hathnikund Barrage on an hourly basis. The records maintained in the control room were utilized to generate daily discharge data at Hathnikund (earlier known as Tajewala). Thus, the daily discharge data observed at the older Tajewala Barrage for the period prior to 2010 and the daily discharge observed at Hathnikund for the period 2010 to 2015 was prepared using the records available in the control room of the I&FC.

According to Rao (1975), the average annual flow of River Yamuna at its Tajewala Headworks was only 10,750 million cubic meters (MCM). However, it is noteworthy that the total discharge at Hathnikund often exceeds 500,000 cusec during the monsoon peak flows, and the Hathnikund Barrage itself has been designed for a 100-year peak discharge of 776,900 cusec (22,000 cumec). The flow during the summer decreases to only a few thousand cusec.

4. Methodology

Daily discharge data at Hathnikund spanning 37 years was used to conduct flood frequency analysis. The first step in the methodology involved in the estimation of flood magnitudes of different return levels at Hathnikund was to extract annual peaks using the traditional annual maxima approach. Using the POT approach, a data set of peaks over a chosen threshold was created. For conducting the POT
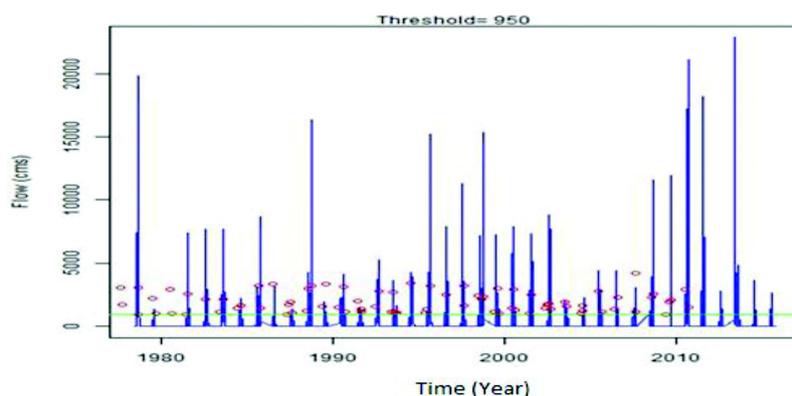

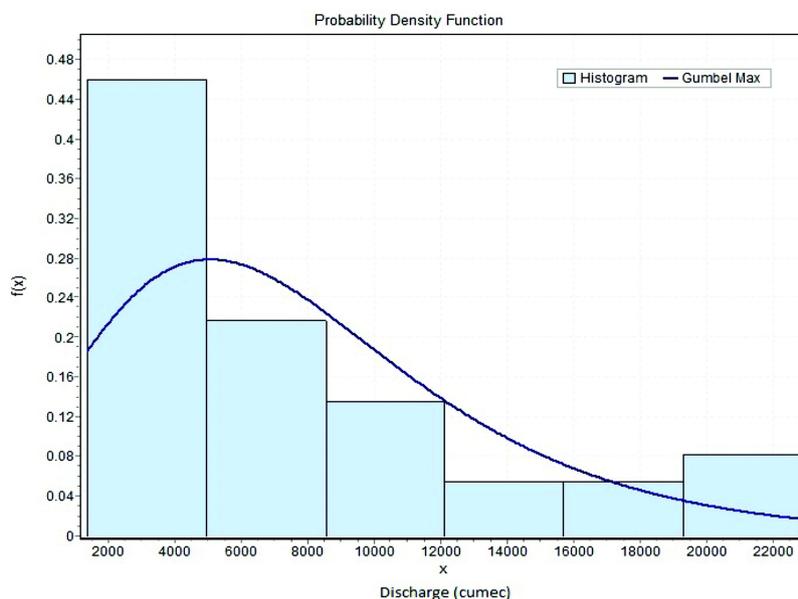**Figure 2.** Peaks over threshold of 950 cumec (No. of peaks 80, Min 962, Max 22,859).

Figure 3. Plot of Gumbel's Type 1 probability distribution function for the annual maxima flood peaks.

AQ2　analysis, R Package version 3.2.2 — a language and environment for statistical computing and graphics — has been used (R Core Team 2014). A package called POT is available in R Package to perform POT analysis. For the identification of an appropriate threshold, a number of different threshold levels were applied to the daily flow data. Statistical tests in form of p-p plots, q-q plots, probability density plots and return level plots were then used to determine the value of the threshold that resulted in the best fit to the data. The POT packages produce four plots: (1) Probability plot, (2) q-q plot, (3) probability density plot, and (4) return-level plot. A 45-degree reference line is also plotted. The quantile-quantile (q-q) plot is a graphical technique for determining if two data sets come from populations with a common distribution. By a quantile, we mean the fraction (or percent) of points below the given value. In POT package, a q-q plot is a plot of the quantiles of the observed (empirical) data against the quantiles of the theoretical (model) data set. Similarly, a probability plot is produced by the POT package.

A Generalized Pareto Distribution (GPD) is used in the POT package for fitting the extreme values. If the two data sets come from a population with the same distribution, the points should fall approximately along this reference line. The greater the departure from this reference line, the greater the evidence for the conclusion that the two data sets have come from populations with different distributions. Using a semi-automatic approach, an appropriate threshold is determined.

The various steps involved in applying POT software available in R Package for the threshold analysis are as follows:

1. Prepare .csv file containing flood discharges of the station selected in the catchment.
2. Choose some initial threshold in order to generate the graphs needed to select the thresholds.
3. To automate the process, select thresholds based on 50, 65, and 80 percentiles.
4. Record the assumed values of the thresholds in m3/s in a csv file, such as "ThresholdsB.csv."

5. Run the R scripts for different values of the thresholds and examine the plots created by the script to determine if the threshold is valid.
6. Finally, select the threshold for which the best fit between the empirical data and the model is obtained.

The trial values of thresholds are based on 50, 65, and 80 percentiles. The final threshold values are based on the p-p plots, q-q plots, probability density plots, and return-level plots produced by the R Package. An appropriate threshold is identified using the approach presented in steps 1 to 6.

Once an appropriate threshold was identified, the total number of peaks above the chosen threshold was determined. For the threshold value of 950 cumec, there are 80 peaks above the threshold value, whereas the peaks based on the annual maxima approach were 37 only (Figure 2). The minimum magnitude of flood peak selected is 962.20 cumec in 1994, whereas the maximum value is 22,859 cumec observed during the 2013 flood. Five peaks were selected from the 1998 flood, while four each from 2003, 2008, and 2010 were selected.

All values in the observed discharge series above the selected threshold are extracted to obtain the driving data set for the POT approach. The driving data set for the annual maxima approach is obtained by extracting the maximum value in each year of the available daily discharge data. The FFA was then carried out by using the AM and the POT approach. For each of the two approaches, the design flood for different return level floods at Hathnikund has been carried out using the Gumbel's method and the Log-Pearson method. For each return period and each frequency analysis method, the results obtained by the classical AM approach have been compared with those obtained using the POT approach.

5. Probability distribution fitting

In frequency analysis, it is important to fit a probability distribution to the series of the flood peaks, which may be obtained either using the AM or the POT approach. The aim of the probability distribution fitting is to select a distribution that suits the data well. Two distributions,
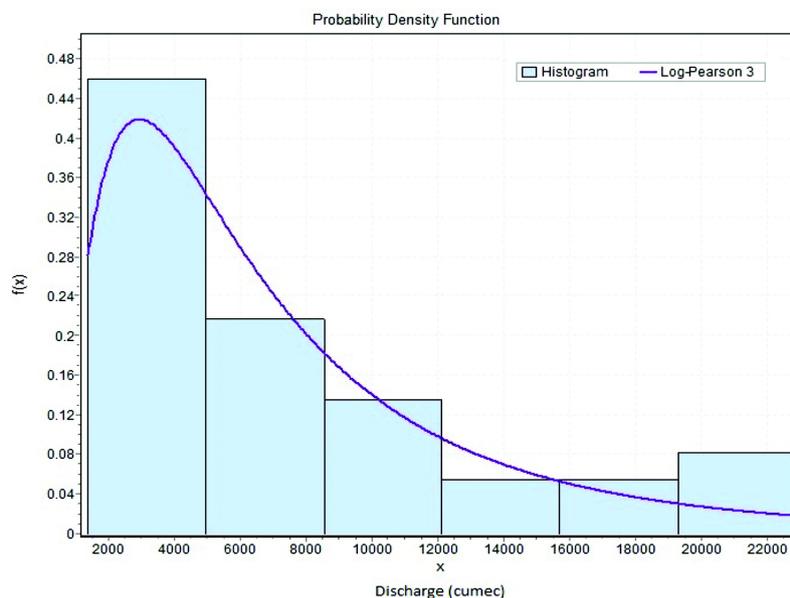
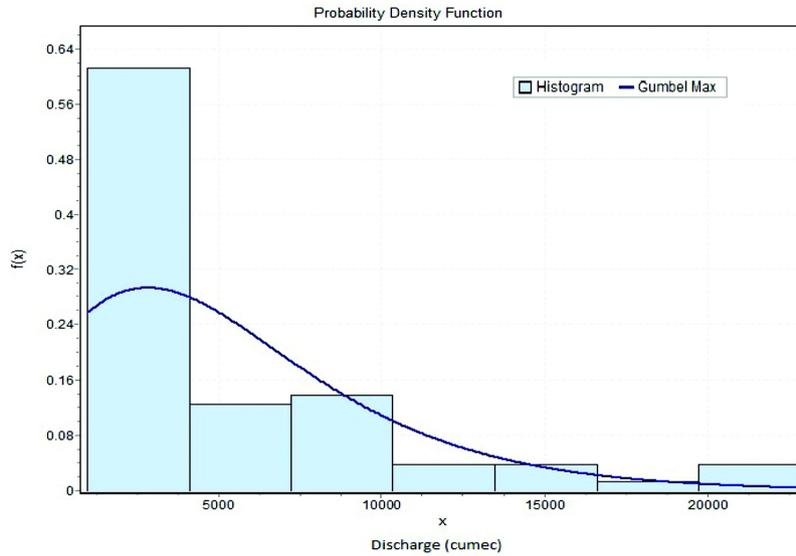**Figure 4.** Plot of Log-Pearson Type III probability distribution function for the annual maxima flood peaks.

Figure 5. Plot of Gumbel's Type 1 probability distribution function for the peaks over threshold data.

namely Log-Pearson Type III and Gumbel's Type I distributions, have been fitted to the series of flood peaks data obtained using the AM and the POT approach. According to Gumbel's theory, the probability of occurrence of an event equal to or larger than a value x_0 is

$$P(X \geq x_0) = 1 - e^{-e^{-y}} \tag{1}$$

where P is probability and the relation between probability and return period is

$$P = \frac{1}{T_r} \tag{2}$$

where T_r = return period

y = reduced variate which is dimensionless and can be determined by the following expression

$$y = \alpha(x - a) \tag{3}$$

where a and α are the parameters of the distribution which can be obtained by the following expressions.

$$a = \bar{x} - 0.45005\sigma_x \tag{4}$$

$$\alpha = \frac{1.28255}{\sigma_x} \tag{5}$$

where $\bar{x}$ = mean of the data series

σ_x = standard deviation of the data series

The Log-Pearson Type III distribution is being widely used in the USA for US government-sponsored projects for prediction of the future flood events. If X is the variate of a random hydrologic series, then the series of Z variates is first obtained through logarithmic transformation

$$Z = \log_{10} X \tag{6}$$

For the given recurrence interval T,

$$Z_T = \bar{Z} + K_z \sigma_Z \tag{7}$$

where K_z = a frequency factor that is a function of recurrence interval T and the coefficient of skewness C_S

$$\text{where } C_s = \frac{N \sum (z - \bar{z})^3}{(N - 1)(N - 2)(\sigma_z)^3} \tag{8}$$

$\bar{Z}$ = mean of the z values; N = sample size

The goodness-of-fit tests were executed in the downloadable software EasyFit, available at http://www.mathwave. com/easyfit-distribution-fitting.html. All test values and statistics were produced from EasyFit. The plots of probability density function for Gumbel's and Log-Pearson Type III
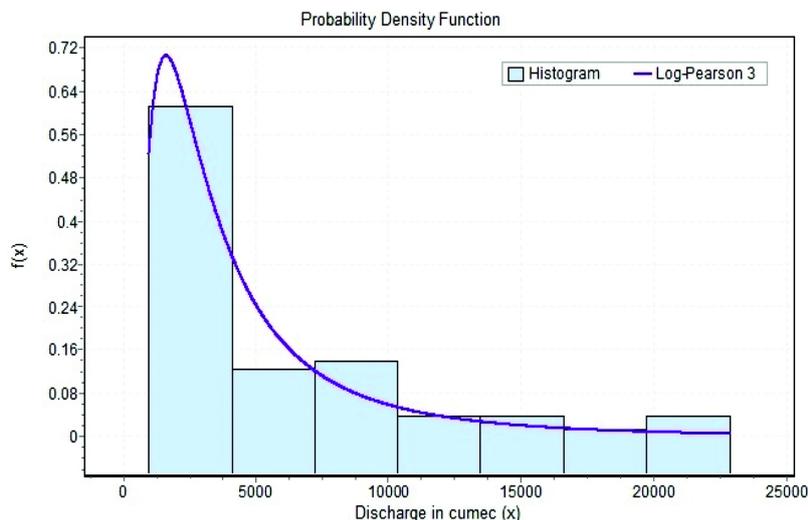

Figure 6. Plot of Log-Pearson Type III probability distribution function for the peaks over threshold data.
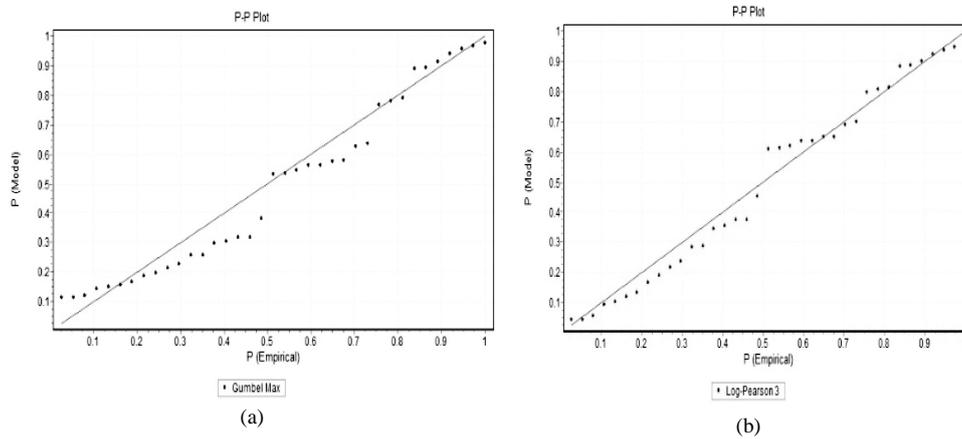
Figure 7. Probability plots for the Annual Maxima Data (a) Gumbel's distribution, and (b) LP3 distribution.
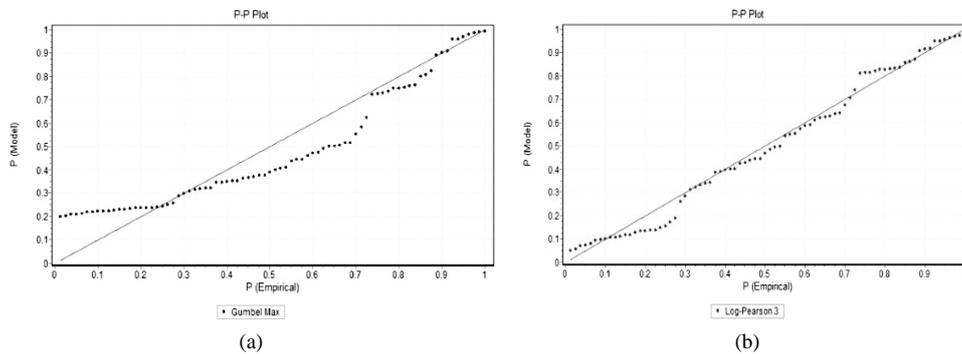

Figure 8. Probability plots for the POT Data (a) Gumbel's distribution, and (b) LP3 distribution.

distributions for both AM and POT data prepared and value of density function is maximum for Log-Pearson Type III distribution with POT data and AM data (Figures 3–6).

Probability plots, which is a graphical method of determining whether a data set follows a given distribution of AM and POT data for both Gumbel's and Log-Pearson distribution, were also prepared and are shown in Figures 7 and 8. POT data closely follow the LP3 distribution as compared to the AM data.

The goodness-of-fit tests was conducted using the Kolmogorov-Smirnov (K-S) Test. The K-S test is a non-parametric test used to compare a sample with a reference probability distribution based on the greatest vertical distance from the empirical and theoretical cumulative distribution functions (CDFs). The test statistic "D" is calculated under the null hypothesis that the sample is drawn from the reference distribution. The hypothesis is rejected if the calculated test statistic is greater than the critical value of a chosen significance level. Two different probability distributions were tested for goodness of fit of the AM and POT series. In the first case, the null-hypothesis was that the sample is drawn from Gumbel's extreme value Type 1 distribution. For the significance level of $\alpha = 0.05$, the tabulated critical value for the sample size of 37 (AM series) D0 = 0.22, whereas the computed values obtained through EASYFIT was D = 0.14085. Since D < D0, the null hypothesis cannot be rejected at the 5% significance level. In the second case, the null-hypothesis was that the sample is drawn from Log-Pearson Type III distribution. From the results of the K-S test, the value of D was 0.12202, which is less than D0 in this case too. The results of the K-S test clearly indicate that the Gumbel's distribution fits the observed annual maxima data well. In the third case, the null hypothesis was that the peaks over threshold data follow Gumbel's distribution. Application of the K-S test to the POT data yielded the value of the test statistic D about 0.2004, which is greater than the tabulated critical value of 0.152 for a sample size of 80. Hence, for the third case, the null hypothesis is rejected at the 5% significance level. Finally, the K-S test was conducted on the POT data under the null-hypothesis that the data is drawn from LP3

Table 1. Characteristics of AM and POT samples.

Characteristics	AM Samples	POT Samples
Sample Period (Years)	1978–2015	1978–2015
Sample Size (Nos)	37	80
Min. Value (cumec)	1385	962
Max. Value (cumec)	22859	22859
Mean (cumec)	7798.23	5075.30
Standard Deviation (cumec)	6064.01	5015.24
Coefficient of Skewness	1.049911	1.891139

Table 2. Flood magnitudes by Gumbel's and Log-Pearson methods for the AM and POT data.

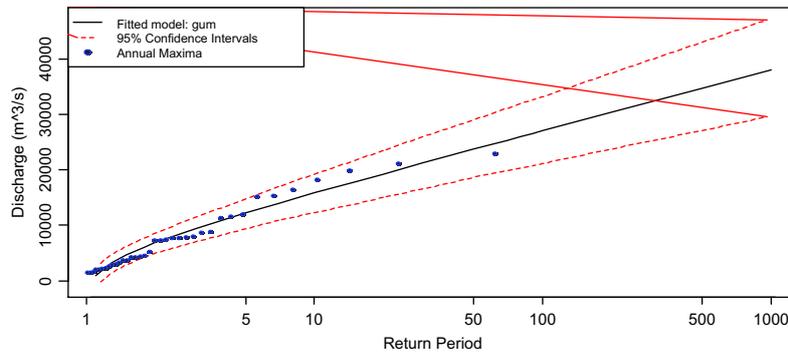| Return Period (Years)	Flood Magnitude (cumec)			
	Annual Maxima Approach		POT Approach	
	Gumbel's Method	Log-Pearson Method	Gumbel's Method	Log-Pearson Method
10	15709	16351	11618	10683
25	20193	23818	15326	17391
50	23519	30322	18077	24211
100	26820	37618	20807	32947
200	30109	45835	23528	44077
500	34449	53339	27117	55833
1000	37729	68675	29829	82797

Figure 9. Discharge at different return periods using the Gumbel's distribution for the AM data.
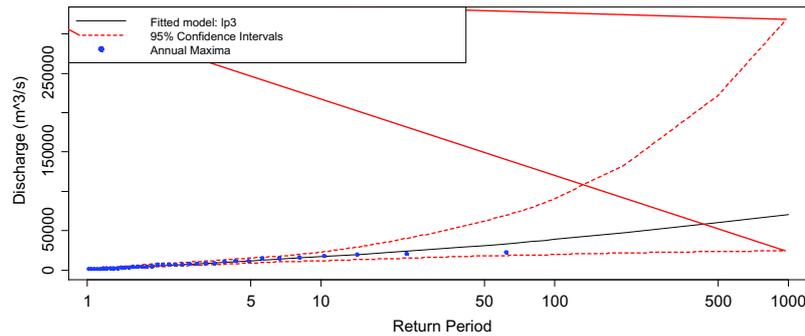

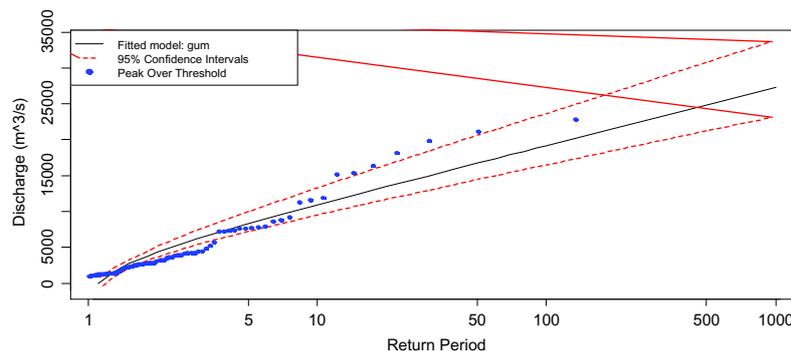**Figure 10.** Discharge at different return periods using the LP3 distribution for the AM data.

Figure 11. Discharge at different return periods using the Gumbel's distribution for the POT data.

distribution. The value of D was found to be 0.093, which is less than the tabulated value of 0.152, thus indicating that the POT data fits the LP3 well, whereas the Gumbel's distribution is not a reasonable fit to the POT data.

6. Results

The statistical characteristics of the AM and POT series are shown in Table 1. The standard deviation of AM series was 6064 cumec, indicating that there is large variability in the series. The coefficient of skewness of the AM series data was 1.0499, which indicates that the data is non-normally distributed. The coefficient of skewness of the original POT series was 1.8911. However, the coefficient of skewness reduced to 0.4336 after converting the values to logarithms. An analysis of trends in AM series was carried out using the Mann-Kendall non-parametric test. It was observed that the trend is not statistically significant (p-value = 0.283). Several different threshold levels were applied to the daily flow data to obtain an appropriate threshold for further processing. Based upon the visual inspection of the plots (probability

plot, q-q plot, probability density plot, return level plot) produced by the R-package, the threshold of 950 cumec was adopted. It can be seen from Table 1 that the sample size in the annual maxima approach is 37, whereas it is 80 in the case of POT approach. The minimum and maximum values in the POT series were 962 and 22,859, respectively.

Because both the distributions fit the AM and POT data well, the frequency analysis was carried using Gumbel's as well as Log-Pearson type III distribution. Flood magnitudes corresponding to different levels were estimated using annual maxima approach and the POT approach. From a designer's point of view, it is important to understand how good the estimate of the flood magnitude is using different methods. It is, therefore, important to determine bounds that represent an interval of plausible values for flood magnitude. This is because a relatively small population from the sample is used to compute the point estimate of the flood magnitude. Therefore, it was decided to construct interval so that there is high confidence that the interval contain the point estimate. To estimate 95% confidence limits, 1000 bootstrap samples were taken.

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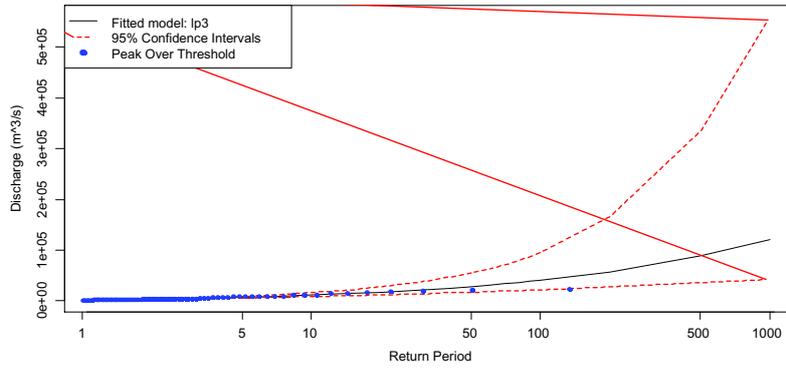
Figure 12. Discharge at different return periods using the LP3 distribution for the POT data.
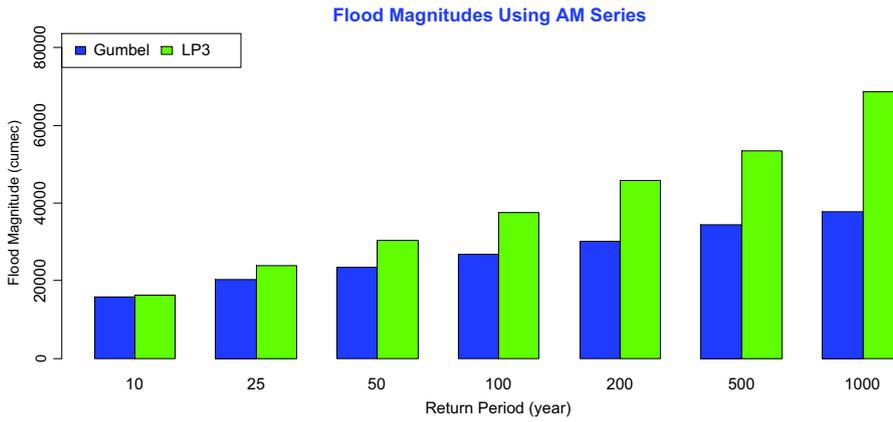
Figure 13. Comparison of flood magnitudes using Gumbel's and Log-Pearson method for the AM time series.
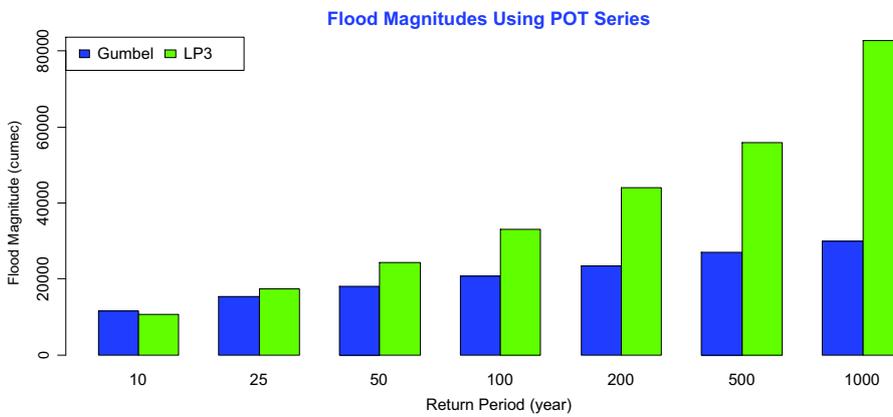
Figure 14. Comparison of flood magnitudes using Gumbel's and Log-Pearson method for the POT time series.
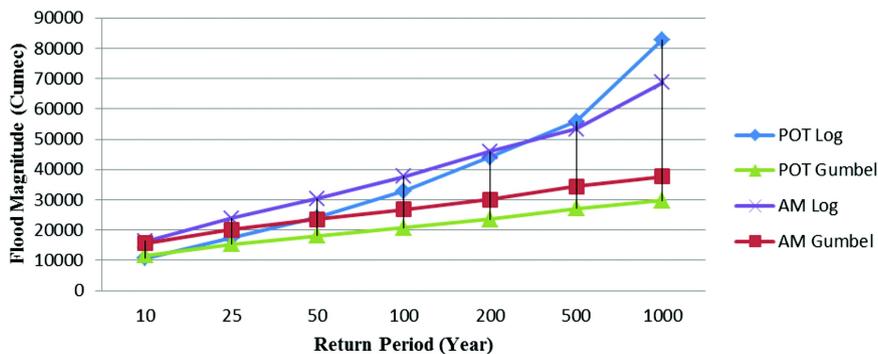
Figure 15. Comparison of flood magnitudes using Gumbel's and Pearson method for AM and POT series.

Figures 9–15 show flood magnitudes obtained using the Log-Pearson and Gumbel's method. With the AM approach, Log-Pearson method produced higher values

than the Gumbel's method. The confidence band (interval between upper and lower bound) at 95% confidence level is very narrow for lower values of return period in case of LP3

distribution compared with Gumbel's distribution. The confidence band, however, widens for higher return periods. The frequency factor (K_z) is a function of skewness and return period (T), and its value increase with the increase in the value of coefficient of skewness (C_s). For the 10-year return period, the value of K_z was found to increase when the C_s varied from 0 to 1.0. For values of C_s greater than 1.0, the value of K_z was found to decrease. When C_s is zero, LP3 converges to the Log normal distribution.

It can be seen from Figures 9 and 10 that for the AM data series, the peak values obtained by LP3 method are greater than those determined by Gumbel method. In each case, the peak value was well within the 95% confidence interval. For the POT data series, the values of peak discharge obtained by the Gumbel method are low compared to those obtained by LP3 method. The values derived by the Gumbel method are outside the upper and lower bounds of 95% confidence interval. The values obtained by LP3 method are not only within the upper and lower bound of 95% confidence interval but are very close to the fitted model (Figures 11 and 12). It can be seen from Figure 15 that the difference between the values obtained by Gumbel's and LP3 method increases with the increase in the return period. A comparison of the flood magnitudes obtained using the AM series and the POT series is presented in Table 2. It can be seen from Table that the Log-Pearson Type III distribution method results in higher values than produced by the Gumbel's Extreme Value method. This can be partially attributed to the skewness of the sample data. For the POT time series, the LP3 produced higher values of flood peaks when compared to Gumbel's method for most of the return period. However, the 10-year return period peak was higher with Gumbel's method than with the LP3 method.

Using the AM series, the 100-year return period flood peak at Hathnikund was 37,618 cumec for the LP3 method. For the POT series, the peak under the 500-year return period for LP3 method was found to be 55,833 cumec. It can be concluded that the flood magnitudes obtained using POT method are higher than those obtained using the annual maxima method. For the POT series, the flood magnitudes obtained using Log-Pearson method are significantly higher than those obtained by using Gumbel's method, particularly for higher return period floods. The flood magnitudes for up to 200-year return period obtained using the LP3 method were found to be higher in the AM sample compared to the POT sample. Hence, for the return periods not exceeding 200 years, the water resource systems may be designed for the flood magnitudes obtained using the LP3 approach and AM sample. For designing water systems such as dams, higher return period floods need to be used. The results of the analysis presented herein indicate that for return periods exceeding 200 years, the LP3 method when applied to the POT sample produced significantly higher flood magnitudes compared to those obtained with AM approach.

7. Conclusions

The occurrence of flood is a universal and an inevitable phenomenon. However, the magnitude and frequency of flood vary with the geophysical and hydrological characteristic of the region. Reliable estimation of design flood for any water resource system is critical for its safety. The need to make a reliable estimate of different return-level floods at Hathnikund Barrage is particularly important as the city of Delhi lies downstream of the barrage. Delhi has several pockets of thickly populated areas along the banks of River Yamuna, which makes it highly vulnerable to riverine flooding. Any breach of embankments downstream of Hathnikund Barrage could create havoc in the city and could lead to heavy loss of property and life.

The traditional method for the estimation of floods is the AM approach. However, it suffers from a number of drawbacks and can lead to underestimation of design floods as shown in this research, particularly for return periods higher than 200 years. The POT method contains more information about flood peaks than the AM series, because the sample size is large. In Gumbel distribution, the reduced mean and the reduced standard deviations are the functions of sample size. Hence, sample size affects the peak values determined for various return periods. Coefficient of skewness is also sensitive to the length of recorded data. Its value is lower for data with relatively short length. In LP3 distribution, the frequency factor is a function of coefficient of skewness and return period. Frequency factor increases with the increase in skewness of data and return period. Although the POT approach has several advantages over the AM approach, the determination of an appropriate threshold is not straightforward. POT package available in R Package has been used for the determination of an appropriate threshold. The methodology presented in this research is generic in nature and could be easily applied to other gauging sites. With the POT methodology presented here, the estimation of flood magnitudes would be more reliable than the AM approach. The POT is particularly useful for sites with limited data availability as multiple peaks above threshold are often identified in a year. Because the threshold selection is a subjective process, some judgment and intuition are required on the part of the user. Therefore, due care must be exercised in determining an appropriate threshold level.

Disclosure statement

No potential conflict of interest was reported by the authors. AQ3

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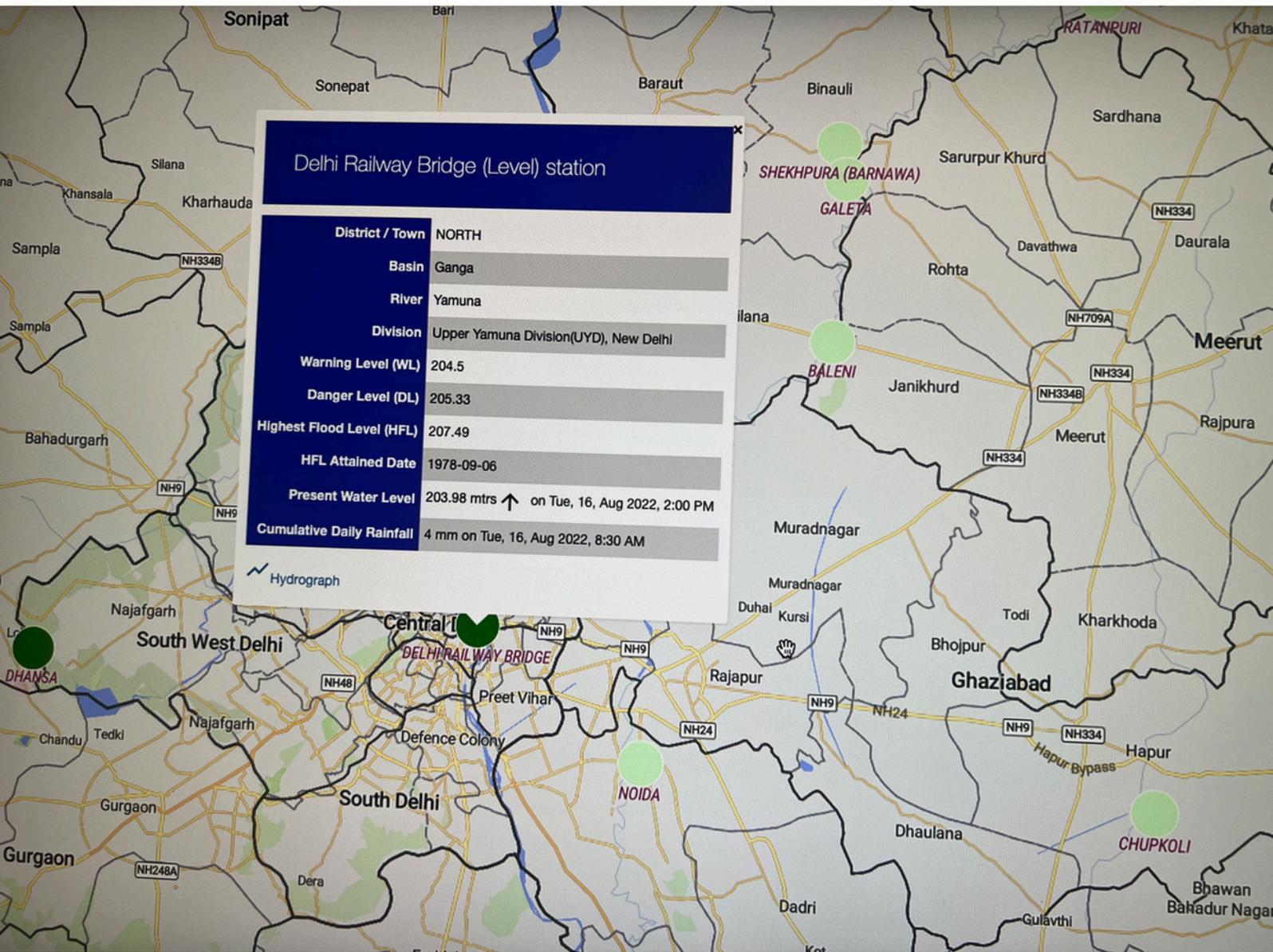Kumar, M., Sharif, M., and Ahmed, S. (2017). "Flood risk management strategies for national capital territory of Delhi,India." *ISH J. Hydraulic Eng.* ISSN: 0971-5010(Print) 2164-3040(Online). doi:10.1080/09715010.2017.1408434

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Panchkuan (Base) station

District / Town	SAHARANPUR
Basin	Ganga
River	Budi Yamuna
Division	Upper Yamuna Division(UYD), New Delhi
Warning Level (WL)	
Danger Level (DL)	
Highest Flood Level (HFL)	
HFL Attained Date	2019-08-02
Present Water Level	274.94 mtrs on Tue, 16, Aug 2022, 2:00 PM
Cumulative Daily Rainfall	0 mm on Tue, 16, Aug 2022, 8:30 AM

Hydrograph

Hathnikund Barrage (Inflow) station

District / Town	YAMUNANAGAR
Basin	Ganga
River	Yamuna
Division	Upper Yamuna Division(UYD), New Delhi
Full Reservoir Level (FRL) / Pond Level (PL)	334
Maximum Water Level (MWL)	
Highest Flood Level (HFL)	
HFL Attained Date	
Present Water Level	334.32 mtrs on Tue, 16, Aug 2022, 2:00 PM
Cumulative Daily Rainfall	0 mm on Tue, 16, Aug 2022, 8:30 AM

〰 Hydrograph

Karnal (Level) station

District / Town	KARNAL
Basin	Ganga
River	Yamuna
Division	Upper Yamuna Division(UYD), New Delhi
Warning Level (WL)	248.8
Danger Level (DL)	249.5
Highest Flood Level (HFL)	250.07
HFL Attained Date	2013-06-17
Present Water Level	247.37 mtrs on Tue, 16, Aug 2022, 2:00 PM
Cumulative Daily Rainfall	0 mm on Tue, 16, Aug 2022, 8:30 AM

Hydrograph

Delhi Railway Bridge (Level) station

District / Town	NORTH
Basin	Ganga
River	Yamuna
Division	Upper Yamuna Division(UYD), New Delhi
Warning Level (WL)	204.5
Danger Level (DL)	205.33
Highest Flood Level (HFL)	207.49
HFL Attained Date	1978-09-06
Present Water Level	203.98 mtrs ↑ on Tue, 16, Aug 2022, 2:00 PM
Cumulative Daily Rainfall	4 mm on Tue, 16, Aug 2022, 8:30 AM

Hydrograph

Item No. 03 (Court No. 1)

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI**

(By Video Conferencing)

Original Application No. 268/2021

Jahangir   Applicant

Versus

State of Haryana   Respondent

Date of hearing: 12.08.2022

**CORAM: HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE PROF. A. SENTHIL VEL, EXPERT MEMBER**

Respondent: Mr. Pradeep Misra & Mr. Daleep Dhyani, Advocates for UPPCB
Mr. Rahul Khurana, Advocate for HSPCB
Ms. Priyanka Swami, Advocate for SEIAA, UP

ORDER

1.   Grievance in this application is against unscientific and illegal mining obstructing the flow of Yamuna River in Village Belgarh, U.P. Fifteen Pokland machines are working day and night causing huge air pollution. Mining is done by a contractor who has been given the lease for the area falling in Saharanpur district but the lessee is also undertaking illegal mining in Village Belgarh.

2.   This Tribunal decided to obtain a factual report and for the purpose, constituted a joint Committee comprising Haryana State PCB, UPPCB, SEIAA, UP, SEIAA, Haryana, District Magistrate, Yamuna Nagar and District Magistrate, Saharanpur, U.P.

3.   The joint Committee report has been filed before us along with the letter dated 26.05.2022. The report shows that following members inspected the site on 10.01.2022:-

     a.   Sh. B B Awasthi, Member SEAC-1, UP.

     b.   Sh. R. K Mishr, ADM (FIR), Saharanpur, UP.

     c.   Sh. Naveen Kumar Das, Mining Officer, Saharanpur, UP.

     d.   Dr. D.C. Pandey, RO, Pollution Control Board, Saharanpur, UP.

     e.   Sh. Mahendra Singh, JE, Pollution Control Board, Saharanpur, UP.

     f.   Sh. Anil Kumar Mehta, Member SEAC (representative of SEIAA), Haryana.

     g.   Sh. R K Sapra, Member SEAC (representative of SEIAA), Haryana.

     h.   Sh. Gurjeet Singh, Mining Officer, Yamuna Nagar, Haryana.

     i.   Sh. Tarun Sahota, Tehsildar, Chhachhrauli, Haryana.

     j.   Sh. Kuldeep Singh, AEE, HSPCB, Haryana.

4.   The aforesaid team made observations as under:-

"At the time of inspection water table of the river was very high. The area of verification was boundary of State of Haryana and State of Uttar Pradesh and part area adjacent to the boundary of States. The boundary of the States was not clearly demarcated and so it was decided that Revenue Authority and Mining Authority of both the States will first inspect the site and will provide the clarity about the mining/illegal mining in the adjacent area of boundary of both the States."

5.   Thereafter, the report says that on 02.04.2022, Revenue Authorities and Mining Authorities of both the States jointly inspected the site and submitted their individual report filed as Annexure R2 and R3. The report R3 submitted by the Mining Officer, Yamuna Nagar and Tehsildar Chhachhrauli, Yamuna Nagar, besides other, said as under:-

"नदी के बहाव का बदला हरियाणा प्रदेश की सीमा में हुआ अवैध खाना के करन हुआ है, परंतु नदी में बहाव अधिक होने के करन ये और अंदाज नहीं लगा जा सकता है कि कितना खाना हुआ।"

6. The observations of the Revenue and Mining Authorities who jointly inspected on 02.04.2022 are given as under:-

> *"As per the report submitted by the team of Uttar Pradesh, no illegal mining carried out by M/s Star Mines in village Bailgarh in the area of State of Haryana.*
>
> *As per the report submitted by the team from Haryana, the area of dispute i.e. Khasra No. 19//20 and 20//13 of village Bailgarh falls on the boundary of both the States and further submitted that the River Yamuna at the disputed area mostly flowing in the area of Uttar Pradesh and at Khasra No. 20//13 River Yamuna enters in the State of Haryana. The team has given observations that the flow of River changed due to illegal mining but due to flow of River, the quantum of mining could not be ascertained."*

7. Further, another inspection was made on 12.05.2022 by a team comprising of:

1. Sh. Rajnish Kumar Mishr, U.P. PCS, ADM (F/R). Saharanpur, U.P.
2. Sh. Jaspal Singh, HCS, SDM, Bilaspur, Yamuna Nagar, H.R.
3. Dr. B B Awasthi. Member SEAC, U.P.
4. Sh. Prabhakar Kumar Verma, Member, SEAC. Haryana.
5. Sh. Nirmal Kumar, RO. HSPCB, Yamuna Nagar, H.R.
6. Dr. N.K. Das, Joint Director, Mines & Geology Deptt., Saharanpur. U.P.
7. Dr. D.C. Pandey, RO, U.P Pollution Control Board. Saharanpur, U.P.
8. Sh. Gurjeet Singh, Mining Officer, Mines & Geology Deptt. Yamuna Nagar. H.R.
9. Sh. Tarun Sahota, Tehsildar, Chhachhrauli, Yamuna Nagar, H.R.
10. Sh. Naresh Kumar, AEE, HSPCB. Yamuna Nagar, H.R.
11. Sh. Mahendra Singh, J.E, U.P Pollution Control Board, Saharanpur.
12. Sh. Aman, Mining Inspector, Mines & Geology Deptt, Yamuna Nagar. H.R.
13. Sh. Rohit Rana, Mining Inspector, Mines & Geology Deptt, Yamuna Nagar. H.R.

14.   Sh. Parkash Singh, Kanungo, Revenue Deptt, Yamuna Nagar, H.R.

8.   The observations made by the aforesaid team are as under:-

"During inspection, no illegal mining observed at the border of U.P and Haryana and in the adjacent area of Haryana i.e. village Bailgarh (Haryana) Revenue in the River Yamuna. As per the site observations the machinery of M/s Star Mines was operating substantially away from the border area and within the jurisdiction of State of U.P. and even no foot prints of mining vehicles observed approaching the border area for mining in the area of Bailgarh. Further, the question raised by the complainant Sh. Jahangir regarding diversion of flow of River Yamuna, no such foot prints observed at site that flow of the River Yamuna diverted in the area of dispute."

9.   We find that an attempt has been made in the above report to show that no illegal mining has been carried out, though it is admitted that there is diversion of flow of river Yamuna due to illegal mining conducted in the area falling in the territory of State of Haryana but that has sought to be mellowed down/diluted by observing that the quantity of illegal mining could not be ascertained, no footprints were found at the site and therefore, no further action on this aspect was taken.

10.   We find it surprising that once the complaint of illegal mining is found correct which resulted in diversion of river flow, still, the Authorities have tried to belittle this aspect on shallow pretexts without taking any effective appropriate action including, criminal proceedings against the guilty persons. Since the mining was allowed in the present case to a particular person, in the absence of anybody else's involvement, apparently such person's involvement in illegal mining ought to have been proceeded unless proved otherwise. But in the present case, an attempt has been made to save the proponent in one or the other way despite the fact that there was illegal mining which resulted in diversion of river flow. *Prima facie* we are satisfied that the officers of Revenue and Mining Department

of States as also Pollution Control Board of both the States are guilty of suppressing information and also for not taking appropriate action against the persons who have attempted illegal mining. In such circumstances, the Chief Secretaries of State of Haryana and Uttar Pradesh ought to have taken stringent action against the erring officers but nothing has been placed on record to show that such action has been taken.

11.   Sh. Pradeep Misra, learned counsel appearing for UPPCB and Sh. Rahul Khurana appearing for Haryana PCB stated that the Authorities may be given one more opportunity but the reason for giving this opportunity or for what purpose this opportunity may be given could not be explained.

12.   We therefore, direct the Chief Secretaries of both the States to take appropriate criminal, civil as well as other action for illegal mining conducted in this case and submit action taken reports before the next date by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF. They may also take appropriate action against the concerned erring officials who have tried to cover up the act of illegal mining resulting in diversion of river flow by not taking appropriate action against the erring and guilty persons.

13.   The documents appended to the joint Committee report shows that mining in the questioned area was allocated to M/s Star Mines, Saharanpur. Notice shall be issued to M/s Star Mines, Saharanpur to submit its response as also objections, if any to the joint Committee report, by the next date.

List for further consideration on 14.09.2022.

A copy of this order be forwarded to the Chief Secretaries of States of Uttar Pradesh and Haryana.

Sudhir Agarwal, JM

Prof. A. Senthil Vel, EM

August 12, 2022
Original Application No. 268/2021
AB

Ground Water Department
(Namami Gange & Rural Water Supply Department)
Ministry of Jal Shakti (Government of Uttar Pradesh)

9th Floor, Indira Bhawan, Ashok Marg, Lucknow - 226001

Issuance of NOC & Registration for Well

List of Rejected Applications (for Issuance of NOC - Commercial/Industrial/Infrastructural/Bulk User)

Report Code : UPGWD011

District Council : SAHARANPUR

Block Commitee : ALL

Report Period : 02/10/2019 To 16/08/2022

Report Printed on : 16/08/2022

S.No.	Application Number	Date of Submission	Applicant's Name	Applicant's Address	Registration Fee	Payment Date	Block Name	Area Type	Application Status
1	SRNP0622RCO0003	09/06/2022	MAHAVIR SINGH	VILLAGE GULAB GARH POST MALIKPUR KHADER,	5,000.00	09/06/2022	SADHULI KADEEM	Notified	Rejected
2	SRNP0622NIN0062	03/06/2022	SHRIDEEPAK CHAUDHARI	GATA NO 01, BARTHA KORSI, BEHAT, SAHARANPUR	5,000.00	03/06/2022	SADHULI KADEEM	Notified	Rejected
3	SRNP0522RIN0101	24/05/2022	MAJENDRA KUMAR	97, UVTI SHIKOHABAD, FIROZABAD	5,000.00	24/05/2022	SADHULI KADEEM	Notified	Rejected
4	SRNP0522RIN0100	20/05/2022	VISHAMBHAR GOYAL	CHATTA MOHALLA KAMAN	5,000.00	20/05/2022	NAKUR	Notified	Rejected
5	SRNP0522RBU0001	13/05/2022	VIJAY SHUKLA	VILLAGE DEEPAKHERI TEHSIL RAMPUR MANIHARAN OPP UNITECH MACHINE LTD DELHI ROAD	5,000.00	13/05/2022	RAMPUR MANIHARAN	Non-Notified	Rejected
6	SRNP0522RIN0099	06/05/2022	ASHOK KUMAR	KHASRA NO 222, 223/1, 224/1, 224/2, 174M/1, VILLAGE MAYAPUR ROOPUR, PARGANAN FAIZABAD, TEHSIL BEHAT, SAHARANPUR, U.P.	5,000.00	06/05/2022	SADHULI KADEEM	Notified	Rejected
7	SRNP0422NIN0059	26/04/2022	MOHIT BAJAJ	HORIZON RECYCLING PVT LTD, KHASRA NO 65,KUMHAR HERA GREEN LAND, INDUSTRIAL COMPLEX, DEHRADOON ROAD, SAHARANPUR, U.P.	5,000.00	26/04/2022	PUNWARKA	Non-Notified	Rejected

Ground Water Department
(Namami Gange & Rural Water Supply Department)

Ministry of Jal Shakti (Government of Uttar Pradesh)
9th Floor, Indira Bhawan, Ashok Marg, Lucknow - 226001

Issuance of NOC & Registration for Well

List of Rejected Applications (for Issuance of NOC - Commercial/Industrial/Infrastructural/Bulk User)

District Council : SAHARANPUR
Report Period : 02/10/2019 To 16/08/2022

Report Code : UPGWD011
Block Commitee : ALL
Report Printed on : 16/08/2022

S.No.	Application Number	Date of Submission	Applicant's Name	Applicant's Address	Registration Fee	Payment Date	Block Name	Area Type	Application Status
8	SRNP0422RIN0098	06/04/2022	DEVENDAR SINGH	KHASRA NO. 27/1, 35 M VILLAGE SAID MOHAMADPUR GARH, TEHSIL BEHAT	5,000.00	06/04/2022	SADHULI KADEEM	Notified	Rejected
9	SRNP0422NIN0058	06/04/2022	VIPUL JAIN	OPPOSITE VILLAGE MAHIPURA, JANTA ROAD, SAHARANPUR, UTTAR PRADESH	5,000.00	06/04/2022	Municipal Corporation/N	Notified	Rejected
10	SRNP0322RIN0093	25/03/2022	VIJAYPRAKSH PANDEY	VILLAGE- SALEMPUR, P.O.- SARSAWA	5,000.00	25/03/2022	SARSAWA	Notified	Rejected
11	SRNP0322RIN0092	12/03/2022	LALIT KUMAR	NANAUTA DEHAT, NANAUTA, SAHARANPUR, UTTAR PRADESH	5,000.00	12/03/2022	NANAUTA	Non-Notified	Rejected
12	SRNP0322RIN0091	12/03/2022	LALIT KUMAR	NANAUTA DEHAT, NANAUTA, SAHARANPUR, UTTAR PRADESH	5,000.00	12/03/2022	NANAUTA	Non-Notified	Rejected
13	SRNP0322RIN0090	10/03/2022	MOHDSHAFIQUE KHAN	62, PREETI ENCLAVE, MAJRA DEHRADUN.	5,000.00	10/03/2022	SADHULI KADEEM	Notified	Rejected
14	SRNP0322RIN0089	04/03/2022	PRAMOD SINGH	KHASRA NO. 209/1,209/2,209/3 AND 138, VILLAGE RAMPUR, TEHSIL BEHAT, SAHARANPUR	5,000.00	04/03/2022	SADHULI KADEEM	Notified	Rejected

Ground Water Department
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Ministry of Jal Shakti (Government of Uttar Pradesh)
9th Floor, Indira Bhawan, Ashok Marg, Lucknow - 226001
Issuance of NOC & Registration for Well

List of Rejected Applications (for Issuance of NOC - Commercial/Industrial/Infrastructural/Bulk User)

Report Code : UPGWD011

District Council : SAHARANPUR

Block Commitee : ALL

Report Period : 02/10/2019 To 16/08/2022

Report Printed on : 16/08/2022

S.No.	Application Number	Date of Submission	Applicant's Name	Applicant's Address	Registration Fee	Payment Date	Block Name	Area Type	Application Status
22	SRNP1221RIN0060	01/12/2021	NASRAT ALI	KHASRA NO. 9 AND 10/1, VILLAGE MASOODPUR GARH, PARGANA FAIZABAD, TEHSIL BEHAT	5,000.00	01/12/2021	SADHULI KADEEM	Notified	Rejected
23	SRNP1121NIN0049	24/11/2021	FAHAD FOODS	GANGOH	5,000.00	24/11/2021	NAKUR	Notified	Rejected
24	SRNP1121RIN0055	22/11/2021	REKHA MITTAL	HOUSE NO.202,HUDA SECTOR 17,JAGADHRI,HARYANA	5,000.00	22/11/2021	SADHULI KADEEM	Notified	Rejected
25	SRNP1121RIN0054	19/11/2021	SACTION PAL	VILLAGE DEVDHAR YAMUNANARAR	5,000.00	19/11/2021	SADHULI KADEEM	Notified	Rejected
26	SRNP1121RIN0053	19/11/2021	DEVENDAR SINGH	KHASRA NO. 27/1, 35 M VILLAGE SAID MOHAMADPUR GARH AHATMAL, TEHSIL BEHAT	5,000.00	19/11/2021	SADHULI KADEEM	Notified	Rejected
27	SRNP1121RIN0052	01/12/2021	IJ SINGH	STAR PAPER MILLS LTD. SAHARANPUR	5,000.00	01/12/2021	BALLIA KHERI	Non-Notified	Rejected
28	SRNP1121RIN0051	01/12/2021	IJ SINGH	STAR PAPER MILLS LTD. SAHARANPUR	5,000.00	01/12/2021	BALLIA KHERI	Non-Notified	Rejected
29	SRNP1121RIN0050	01/12/2021	IJ SINGH	STAR PAPER MILLS LTD. SAHARANPUR	5,000.00	01/12/2021	BALLIA KHERI	Non-Notified	Rejected
30	SRNP1121RIN0049	01/12/2021	IJ SINGH	STAR PAPER MILLS LTD. SAHARANPUR	5,000.00	01/12/2021	BALLIA KHERI	Non-Notified	Rejected
31	SRNP1121RIN0048	01/12/2021	IJ SINGH	STAR PAPER MILLS LTD. SAHARANPUR	5,000.00	01/12/2021	BALLIA KHERI	Non-Notified	Rejected

Ground Water Department
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Ministry of Jal Shakti (Government of Uttar Pradesh)
9th Floor, Indira Bhawan, Ashok Marg, Lucknow - 226001
Issuance of NOC & Registration for Well

List of Rejected Applications (for Issuance of NOC - Commercial/Industrial/Infrastructural/Bulk User)

District Council : SAHARANPUR
Report Period : 02/10/2019 To 16/08/2022

Report Code : UPGWD011
Block Commitee : ALL
Report Printed on : 16/08/2022

S.No.	Application Number	Date of Submission	Applicant's Name	Applicant's Address	Registration Fee	Payment Date	Block Name	Area Type	Application Status
68	SRNP0221NIN0030	11/02/2021	SUNIT JAJU	6/5534 RAVIDAD MARG MADHO NAGAR SAHARANPUR	5,000.00	11/02/2021	PUNWARKA	Non-Notified	Rejected
69	SRNP0221NIN0029	11/02/2021	RAMANAND SHARMA	SHAKUMBRI VIHAR BEHAT ROAD SAHARANPUR	5,000.00	11/02/2021	PUNWARKA	Non-Notified	Rejected
70	SRNP0221NIN0028	10/02/2021	NARESHKUMAR SINGHAL	VILLAGE FAIZABAD, TEHSIL BEHAT, DISTT. SAHARANPUR	5,000.00	10/02/2021	SADHULI KADEEM	Notified	Rejected
71	SRNP0221NIN0026	05/02/2021	AMIT TOMAR	HOUSE NO. 1090 HARI NAGAR, PANIPAT	5,000.00	05/02/2021	SADHULI KADEEM	Notified	Rejected
72	SRNP0221NIN0025	05/02/2021	DEVENDAR SINGH	KHASRA NO. 27/1 M VILLAGE SAID MOHAMADPUR GARH AHATMAL, TEHSIL BEHAT,	5,000.00	05/02/2021	SADHULI KADEEM	Notified	Rejected
73	SRNP0221NIN0024	05/02/2021	RAONAFIS AHMAD	VILLAGE RAIPUR, TEHSIL BEHAT SAHARANPUR	5,000.00	05/02/2021	SADHULI KADEEM	Notified	Rejected
74	SRNP0221NIN0023	05/02/2021	RAJ KUMAR	VILLAGE TAJEWALA SHAHPUR BANS MUST. TEHSIL BEHAT, DISTRICT SAHARANPUR	5,000.00	05/02/2021	SADHULI KADEEM	Notified	Rejected
75	SRNP0221NIN0027	05/02/2021	SAJID SYED	D-43, 2ND FLOOR, JANPATH ROAD, SHYAM NAGAR	5,000.00	05/02/2021	MUZAFFARABAD	Non-Notified	Rejected
76	SRNP0221NIN0022	02/02/2021	ROHAN AGGARWAL	MOZA KALU WALA, JAHANPUR, SNDERPUR	5,000.00	02/02/2021	SADHULI KADEEM	Notified	Rejected

Ground Water Department
(Namami Gange & Rural Water Supply Department)
Ministry of Jal Shakti (Government of Uttar Pradesh)
9th Floor, Indira Bhawan, Ashok Marg, Lucknow - 226001
Issuance of NOC & Registration for Well

List of Applications for which Registration Fee has been Paid (for Issuance of NOC - Commercial/Industrial/Infrastructural/Bulk User)

District Council : SAHARANPUR
Report Period : 02/10/2019 To 16/08/2022

Report Code : UPGWD009
Block Commitee : ALL
Report Printed on : 16/08/2022

S.No.	Application Number	Date of Submission	Applicant's Name	Applicant's Address	Registration Fee	Payment Date	Block Name	Area Type	Application Status
1	SRNP0822RIN0121	14/08/2022	MOHDSHAFIQUE KHAN	62, PREETI ENCLAVE, MAJRA DEHRADUN.	5,000.00	14/08/2022	SADHULI KADEEM	Notified	Pending
2	SRNP0822RIN0119	11/08/2022	SANJAY ARORA	K.G.FOODS GRAMUDYOG SANSTHAN, KH.NO-20,21, KUMHARHERA, DEHRADUN ROAD, SAHARANPUR	5,000.00	11/08/2022	PUNWARKA	Non-Notified	Pending
3	SRNP0822RIN0116	11/08/2022	SANJAY ARORA	K.G.FOODS GRAMUDYOG SANSTHAN, KH.NO-20,21, KUMHARHERA, DEHRADUN ROAD, SAHARANPUR	5,000.00	11/08/2022	PUNWARKA	Non-Notified	Pending
4	SRNP0822RIN0120	09/08/2022	SANDEEP SEHRAWAT	VILLAGE KHARI AHATMAL, TEHSIL BEHAT	5,000.00	09/08/2022	SADHULI KADEEM	Notified	Pending
5	SRNP0822RIN0118	09/08/2022	RAMKUMAR GUPTA	VILLAGE KALUWALA PAHADIPUR AND VILLAGE MADANPURA PARGANA MUZAFFARABAD, TEHSIL BEHAT,SAHARANPUR	5,000.00	09/08/2022	MUZAFFARABAD	Non-Notified	Pending
6	SRNP0722RIN0115	31/07/2022	SATENDRA SOLANKI	HOUSE NO. 47, PHASE 1DEHI ROAD, NEAR SHIV MANDIR, PANT VIHAR, SAHARANPUR 247001	5,000.00	31/07/2022	MUZAFFARABAD	Non-Notified	Pending
7	SRNP0722RIN0114	30/07/2022	RAJEEV CHOUDHARY	MIRAGPUR PANJUWAL, SHAKUMBRI ROAD, DISTT. SAHARANPUR	5,000.00	30/07/2022	MUZAFFARABAD	Non-Notified	Pending

Ground Water Department

(Namami Gange & Rural Water Supply Department)

Ministry of Jal Shakti (Government of Uttar Pradesh)

9th Floor, Indira Bhawan, Ashok Marg, Lucknow - 226001

Issuance of NOC & Registration for Well

List of Applications for which Registration Fee has been Paid (for Issuance of NOC - Commercial/Industrial/Infrastructural/Bulk User)

District Council : SAHARANPUR
Report Period : 02/10/2019 To 16/08/2022

Report Code : UPGWD009
Block Commitee : ALL
Report Printed on : 16/08/2022

S.No.	Application Number	Date of Submission	Applicant's Name	Applicant's Address	Registration Fee	Payment Date	Block Name	Area Type	Application Status
19	SRNP0622RIN0103	17/06/2022	DEVENDAR SINGH	KHASRA NO. 27/1, 35 M VILLAGE SAID MOHAMADPUR GARH, TEHSIL BEHAT	5,000.00	17/06/2022	SADHULI KADEEM	Notified	Pending
20	SRNP0622RCO0003	09/06/2022	MAHAVIR SINGH	VILLAGE GULAB GARH POST MALIKPUR KHADER,	5,000.00	09/06/2022	SADHULI KADEEM	Notified	Rejected
21	SRNP0622NIN0065	06/06/2022	SHRIDEEPAK CHAUDHARI	GATA NO 01, BARTHA KORSI, BEHAT, SAHARANPUR	5,000.00	06/06/2022	SADHULI KADEEM	Notified	Approved
22	SRNP0622NBU0005	06/06/2022	DBANS COMPANY	VILLAGE DEEPAKHERI, TEHSIL RAMPUR MANIHARAN, OPP UNITECH,DISTRIC SAHARANPUR	5,000.00	06/06/2022	RAMPUR MANIHARAN	Non-Notified	Approved
23	SRNP0622NIN0064	04/06/2022	MOHIT BAJAJ	HORIZON RECYCLING PVT LTD, KHASRA NO 65,KUMHAR HERA GREEN LAND, INDUSTRIAL COMPLEX, DEHRADOON ROAD, SAHARANPUR, U.P.	5,000.00	04/06/2022	PUNWARKA	Non-Notified	Approved
24	SRNP0622RIN0102	04/06/2022	ASHOK KUMAR	KHASRA NO. 222, 223/1, 224/1 VILLAGE MAYAPUR ROOPPUR AND KHASRA NO 174 VILLAGE MOHD SHAFIPUR, PARGANA FAIZABAD, TEHSIL BEHAT, SAHARANPUR, U.P.	5,000.00	04/06/2022	SADHULI KADEEM	Notified	Approved

भूतत्व एवं खनिकर्म निदेशालय उत्तर प्रदेश
DIRECTORATE OF GEOLOGY AND MINING UTTAR PRADESH

Search and View eForm-C

◉ eForm-C Number	○ Vehicle No.

3112212399014607217

24755 ↻

36392

Search

eForm-C

Licensee Details & Mineral QTY to be Transported

1. eForm-C.	3112212399014607217	2. Name Of Licensee / Permit Holder:	AKASH GANGA STONE CRUSHER PART DEVENDER SINGH
3. Mobile Number Of Lessee:	7505495757	4. Tin Number:	
5. Licensee Id:	31122123990146	6. Licensee Details [Address,Village, (Gata/Khand),Area]:	24 GATE NO1 RAAJ VEEHAR COLONY SAHARANPUR , SAED MOHMADPUR GAR , (27/1,35 M) , 2.471 acre
7. Tehsil Of Licensee:	BEHAT	8. District Of Licensee:	SAHARANPUR
9. QTY Transported in (Cubic Meter/Ton for Silica sand):	18 m3	10. Name Of Mineral:	STONE DUST
11. Loading From:	SAHARANPUR	12. Destination (Delivery Address):	MEERUT
13. Distance(Approx in K.M.):	290 K.M.	14. eForm-C Generated On:	01/08/2022 00:05:25
15. eForm-C Valid Upto:	01/08/2022 16:10:26	16. Traveling Duration :	14.5 Hr (Approx)
17. Destination District :	MEERUT		

Details Of Registered Vehicle

1. Registration Number :	UP15FT6173	2. Type Of Vehicle:	22 TYRE TRUCK
3. Name Of Driver :	TIPU	4. Mobile Number Of Driver:	8449824292
5. DL Number Of Driver:			

भूतत्व एवं खनिकर्म निदेशालय उत्तर प्रदेश
DIRECTORATE OF GEOLOGY AND MINING UTTAR PRADESH

Search and View eForm-C

◉ eForm-C Number   ○ Vehicle No.

3112212399014607619

95494 ↻

46442

Search

eForm-C

Licensee Details & Mineral QTY to be Transported

1. eForm-C.	3112212399014607619	2. Name Of Licensee / Permit Holder:	AKASH GANGA STONE CRUSHER PART DEVENDER SINGH
3. Mobile Number Of Lessee:	7505495757	4. Tin Number:	
5. Licensee Id:	31122123990146	6. Licensee Details [Address,Village, (Gata/Khand),Area]:	24 GATE NO1 RAAJ VEEHAR COLONY SAHARANPUR , SAED MOHMADPUR GAR , (27/1,35 M) , 2.471 acre
7. Tehsil Of Licensee:	BEHAT	8. District Of Licensee:	SAHARANPUR
9. QTY Transported in (Cubic Meter/Ton for Silica sand):	18 m3	10. Name Of Mineral:	SAND STONE/QUARTIZITE BALLAST (GITTI)
11. Loading From:	SAHARANPUR	12. Destination (Delivery Address):	MEERUT
13. Distance(Approx in K.M.):	300 K.M.	14. eForm-C Generated On:	16/08/2022 17:09:39
15. eForm-C Valid Upto:	17/08/2022 10:24:41	16. Traveling Duration :	15 Hr (Approx)
17. Destination District :	MEERUT		

Details Of Registered Vehicle

1. Registration Number :	UP11BT2348	2. Type Of Vehicle:	22 TYRE TRUCK
3. Name Of Driver :	ISLAM	4. Mobile Number Of Driver:	8218116731
5. DL Number Of Driver:			

नकल खसरा ग्राम सेंद मौ॰पुर गढ़ 30 परगना फैजाबाद तहसील बेहट जिला सहारनपुर साल 1422न सन् फसल सम्बन्धे

खेत की संख्या	क्षेत्रफल हेक्टेअर में	न॰ खाता खतौनी	खतौनी के भाग 1 के वर्गीकरण के अनुसार खातेदार का नाम	खतौनी के भाग 2 के वर्गीकरण के अनुसार खातेदार का नाम यदि कोई हो।	सिंचाई का साधन	क्षेत्रफल									फसली क्षेत्रफल दो		आकर्षित भूमि		खेत के परे बड़े हुए पेड़ों की संख्या	विवरण
						खरीफ			रबी			जायद								
						फसल	सिंचित	अर्सिंचित	फसल	सिंचित	अर्सिंचित	फसल	सिंचित	अर्सिंचित	सिंचित	अर्सिंचित	वार	क्षेत्रफल		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
27/1	1.680	10	जगदीश मदन राजकु॰ पदम नील कु॰ अमित शि॰ कु॰ रजेन्द्र जयपाल शरद दुह्वी राधा संजय आदि		—	—	—	—	—	—	—	—	—	—	—	—	रोन 1.680 आदि	—		
35/1	1.283	36	राजकु॰ जयपाल शरद राधा जगदीश संजय		—	धान 0.600 बी.क. 0.35 जव 0.202	—	गेहूं 0.70	—	—	—	—	—	—	गन्ना 0.202	राह 0.131 धं0 पूजल		

(हस्ताक्षर) 25/08/2020