

# **Report of the Joint Committee**

*In Compliance with the*

**Hon'ble NGT Order dated 04.11.2024**

*in the matter of*

**Ranjan Singh Vs. State of Bihar**

**In**

**O.A. No. 1015 of 2024 (Principal Bench)**

**-Submitted by-**

**DM Rohtas, BSPCB and CPCB**

**December, 2024**

**Factual Report in compliance to the Hon'ble NGT Principal Bench matter of O.A. No. 1015 / 2024 (Ranjan Singh Vs. State of Bihar)**

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## **1. Background**

This Report is submitted in compliance with the Hon'ble National Green Tribunal (NGT) Order dated 04.11.2024 in the suo moto matter of Ranjan Singh Vs. State of Bihar in O.A. No. 1015 of 2024 (Principal Bench) based on a letter petition dated 15.12.2023 by Shri Ranjan Singh. As per the letter petition illegal sand mining activities are being carried out at Son River by constructing Dams (Bandhas) from Nasriganj (Amiyavar) to Tilouthu in Rohtas District of Bihar.

In the aforementioned Order, a Joint Committee was constituted comprising of District Magistrate, Rohtas; Bihar State Pollution Control Board (BSPCB) and Central Pollution Control Board (CPCB).

In compliance of the above, a meeting through video conferencing prior to the field visit was held on 25.11.2024 wherein the date for the site visit was decided as 05.12.2024 and accordingly, a joint visit of the impugned site was carried out on 05.12.2024 by the appointed joint committee comprising of the following members:

1. Sh. Triloki Nath Singh; Sub-Divisional Public Grievance Redressal Officer, Bikramganj, Bihar
2. Sh. Ashish Kumar Gupta; Regional Officer, BSPCB, Patna
3. Sh. Toufic Aslam; Scientist 'C', CPCB Regional Directorate, Kolkata

During site visit, following officials were also present along with committee members:

1. Sh. Rahul Kumar Mahto; Mining Inspector, Rohtas, Bihar
2. Sh. Sudhanshu Charan Mohapatra; RA-III, CPCB Regional Directorate, Kolkata

The River Son and its tributaries form the major drainage system in the Rohtas district. The River Son originates from the Makalu range in Madhya Pradesh. The river enters in the district at the tri-junction of Palamu, Sonbhadra and Rohtas districts. The river flows eastward along the south and eastern boundaries of the district and finally joins with River Ganges. The River Son forms the southern and eastern geographical boundary of the district.

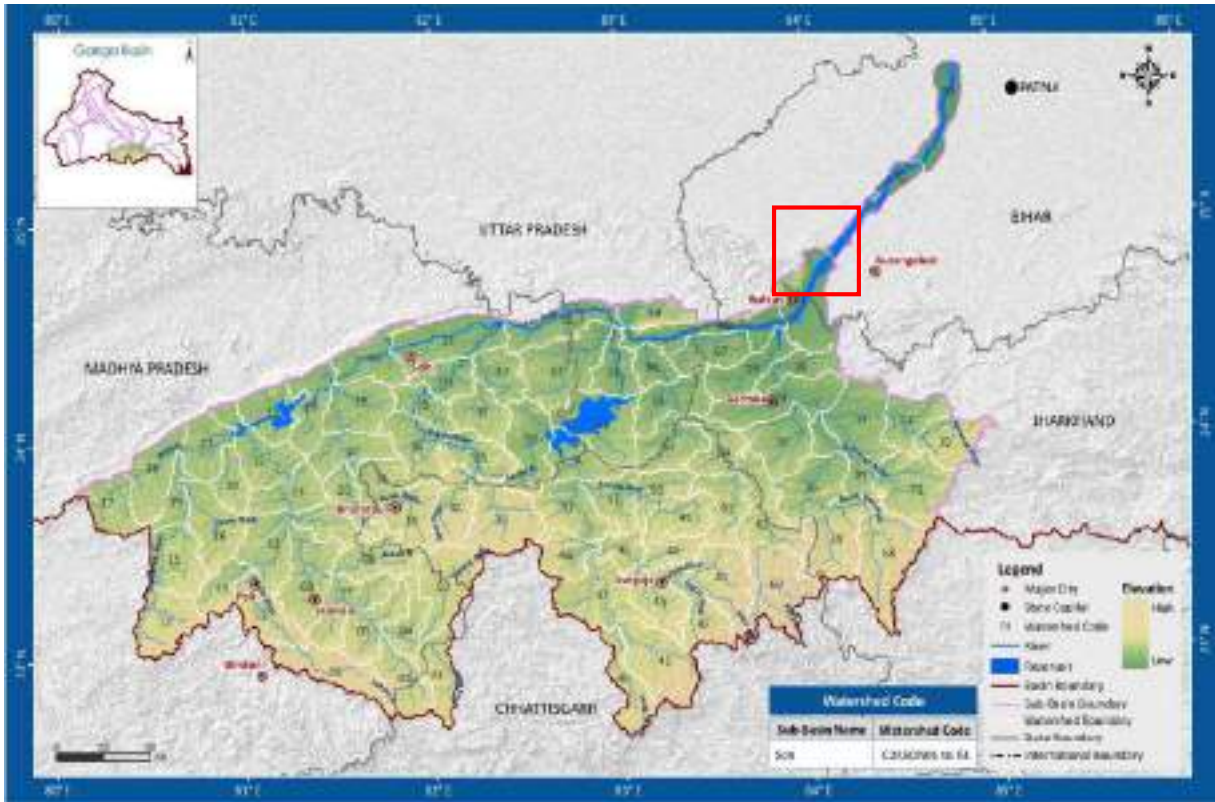


Fig 1: River Son sub-basin and watersheds (National Remote Sensing Centre)

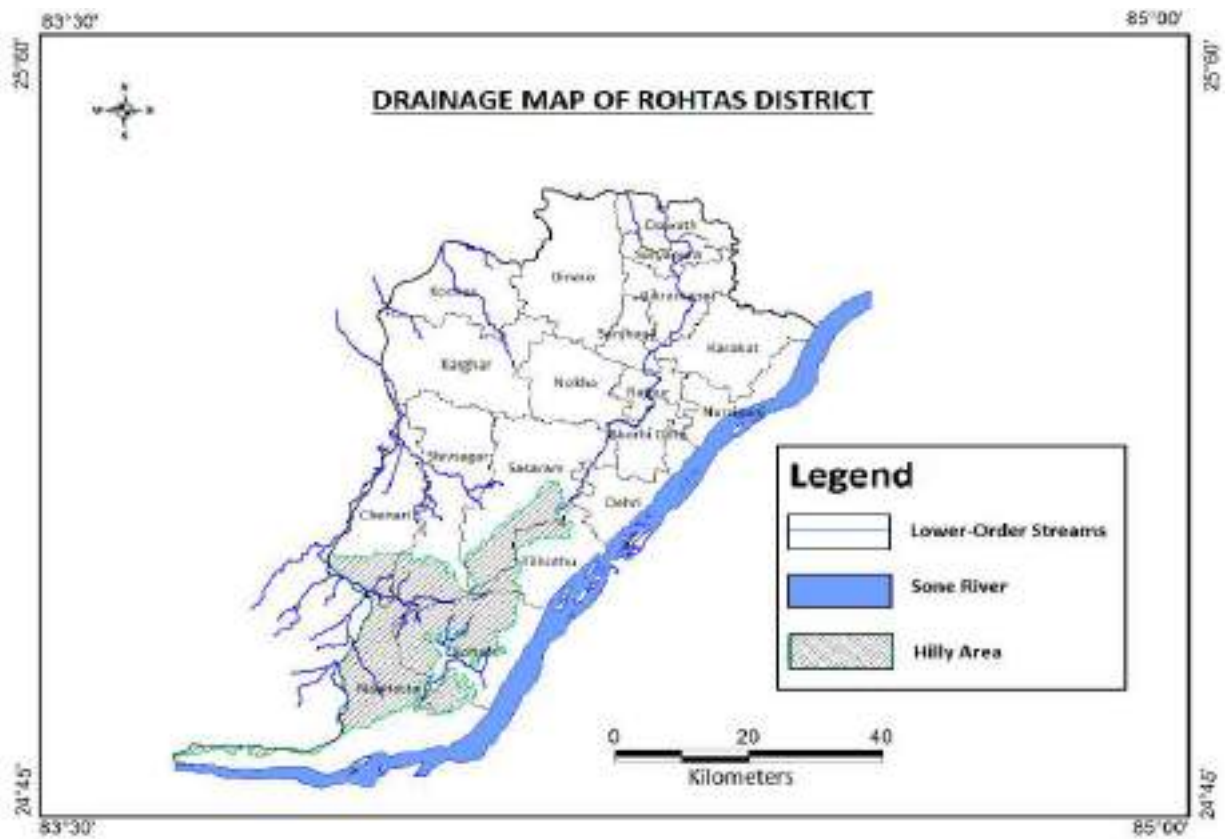


Fig 2: Drainage Map of Rohtas District, Bihar (Central Ground Water Board)

## 2. Environmental & Other Statutory Clearances

The District Survey Report (DSR) in the district Rohtas was approved by the SEIAA, Bihar on 23.05.2022 and modified DSR was approved on 03.11.2023. Copy of the DSR alongwith letter issued from the competent authority with regard to approval of the DSR are annexed as **Annexure I** and **Annexure II** respectively.

As informed by the Mining Inspector, a total of 20 sand mining blocks have been auctioned by the District Administration for sand mining at the impugned site. List of sand mining blocks containing names of Lease Holders alongwith respective auctioned Sand Ghat/Clusters is provided in **Annexure III**. Also, details about Environmental Clearances (EC) issued by State Environmental Impact Assessment Authority Bihar, Consent to Operate issued by Bihar State Pollution Control Board, Letter of Intent issued by the District Administration and Mining Lease granted by District Mining Office, Rohtas of the respective Lease Holders are summarized in the tables given in **Annexure IV**.

## 3. Site Visit

During the site visit on 05.12.2024, 9 mining blocks (1, 2, 3A, 3B, 4, 5, 6, 7 and 17) located in a stretch of approx. 40 kilometres along the River Son, extending from Nasriganj (Panchayat) to Tilouthu (Panchayat) in District Rohtas, were visited to assess the onsite conditions. Copy of Environmental Clearances (EC) of the visited sites attached in **Annexure V**.

### 3.1 Findings of the Committee during the site visit

- (i) As informed by the Mining Inspector, a total of 20 sand blocks have been auctioned by the District Administration within this stretch; out of which 08 sand blocks (1, 3A, 3B, 5, 6, 7, 12 and 17) were operational (including extraction path under construction for 2 blocks) while the remaining 12 sand blocks were non-operational on date of the visit. Extraction Path to sand blocks no. 3B and 12 were under construction.
- (ii) The sand blocks were found to be marked and demarcated with RCC pillars; display boards containing site information such as the name of the block, the lease area and the name of the leaseholder were found installed at all the sand blocks visited.
- (iii) All sand blocks visited were equipped with essential infrastructure such as weighbridges to monitor the quantity of sand transported and check for overloading of sand. Additionally, CCTV cameras have been installed for monitoring purposes and

access to the cameras are also being shared with Command Control Room of Mining Department Office (Patna, Govt. of Bihar).

- (iv) Under ‘Special Conditions’ in Environmental Clearance dated 11.08.2024 granted to one of the 9 sand blocks visited - No. 3B (**Annexure V**), it is mentioned that “*Temporary Extraction path (Iron bridge/Hume pipe) constructed for local transport from the mining site should be compulsorily dismantled before onset of rainy season (1<sup>st</sup> July). So that natural flow of water through the active river channel may not get disturbed*”. In Environmental Clearances of other sand blocks visited such special condition/permission is not given. However, on the day of visit it was observed that cross sectional and enclosing structures have been created by the miners for transport as well to prevent ingress of river water into their allotted lease areas (*Pic 2, 4, 6 and 8*). As informed by the miners, these structures are of temporary nature. Structures built for transport (extraction paths) are made out of brick bats, twigs alongwith river sand (*Pic 3 and 5*) and for enclosing are made out of river sand (*Pic 7*). It was also observed that most of these extraction paths were part iron bridge (approx. one third of total length) and the remaining part made of sand, bricks and twigs (*Pic 2, 4 and 8*).
- (v) River water had little to no obstruction in flowing under these iron bridges (*Pic 4 and 8*). Part of the extraction paths made out of sand, bricks and twigs were found to restrict the flow of river water (*Pic 6 and 8*). Hume pipes have been provided at these parts of extraction paths; however, their quantity/frequency (nos. in a specified stretch) may not be adequate to maintain natural flow of the river. Enclosing structures of river sand in order to prevent ingress of river water into lease areas were observed at sand blocks no. 1, 3A, 5, 6, 7 and 17. Temporary extraction paths of aforementioned nature (part iron bridge and part sand etc.) were observed at sand blocks no. 2, 3A, 5, 6, 7 and 17.
- (vi) During site visit, no mining activity was being carried out in any of the visited 9 sand blocks. However, excavators were found in four sand blocks i.e. Nos. 1, 3A, 6, 7 and excavator tread marks were observed at two sand blocks i.e. Nos. 5, 17 indicating use of heavy machinery for mechanized mining.

#### **4. Actions Taken by District Mining Office**

Following actions were taken during the year 2024, against illegal/unauthorized sand mining in Rohtas as reported by District Officials –

Table 1: Illegal sand stock seized in the year 2024 at Rohtas, Bihar

| Illegal sand stock seized location             | Quantity of sand seized (cft) | Coordinates   |
|--|-------------------------------|---|
| Jatan Bigha, PS-Akodhigola,<br>District-Rohtas | 21700                         | Lat-24°58'10" N<br>Long-84°10'53" E; and<br>Lat-24°58'12" N<br>Long-84°10'53" E |
| Sita Bigha, PS-Indrapuri,<br>Distict-Rohtas    | 2430                          | Lat-24°52'23 N<br>Long-84°8'11" E   |

FIRs have been lodged in both cases with Akodhigola case no. 193/24 dated 07.08.2024 and Indrapuri case no. 04/24 dated 27.08.2024.

## 5. Recommendations of the Committee

The construction of temporary extraction paths across the river has arisen due to most of mining areas of lessee are situated across the river. The matter of construction of temporary bridges for sand mining is also under scrutiny in OA 581 of 2022 in Hon'ble NGT, Principal Bench.

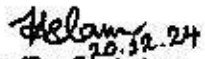
Based on field observations the following are recommended by the committee members –

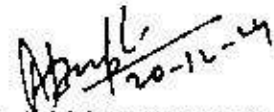
- (i) District Officials should vigil to take appropriate and suitable action against instances of unnecessary construction of temporary extraction path and any sand bunds to prevent ingress of river water into their allotted lease area.
- (ii) Heavy machinery and boats which can be used for in-stream mining should not be allowed to be kept in areas near the river.
- (iii) Monitoring of sand mining at the sand blocks should be carried out according to the 'Enforcement & Monitoring Guidelines for Sand Mining, 2020'. District Administration may also carry out monitoring of the sand ghats/blocks through Unmanned Artificial Vehicles (UAVs)/Drone surveys.
- (iv) Mining to be strictly carried out according to the 'Sustainable Sand Mining Guidelines, 2016'. All sand ghat-miners should submit the annual replenishment report certified by an authorized agency. All sand ghat-miners should also submit their six monthly compliance reports within stipulated timeline.

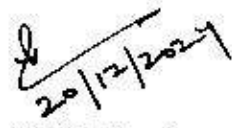
(v) No. of hume pipes in the extraction paths may be increased to maintain/improve natural flow of the river.

Date: 20.12.2024

Signature of the Committee Members:

  
Sh. Toufic Aslam  
Scientist 'C',  
CPCB RD, Kolkata

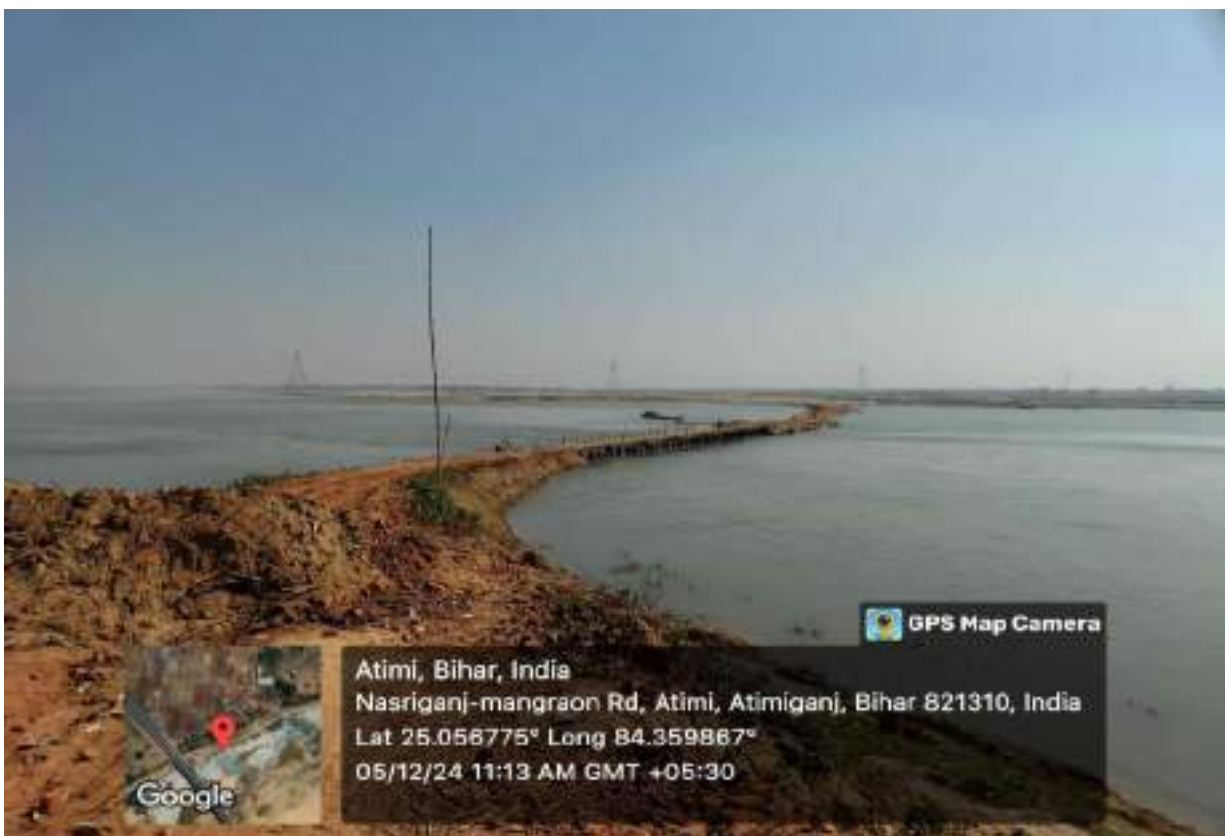
  
Sh. Ashish Kumar Gupta  
Regional Officer,  
BSPCB, Patna

  
Sh. Triloki Nath Singh  
SDPGRO, Bikramganj,  
Bihar

**Photographs taken during site visit on 05.12.2024**



Pic 1: Excavator at Sand Block No. 1



Pic 2: Extraction Path to Sand Block No. 2 (Closed)



Pic 3: Brick bats and twigs used for extraction path making at Sand Block No. 3A



Pic 4: Extraction path at Sand Block No. 3A



Pic 5: Excavator tread marks at Sand Block No. 5



Pic 6: Extraction Path restricting and diverting the flow of river at Block No. 5



Pic 7: Enclosure of lease area with structure made of river sand at Block No. 6



Pic 8: Restricted flow at sand structure and unrestricted flow under iron bridge at Block No. 5

**Satellite Images of the impugned site**



Pic 9: Sand Blocks in River Son at Rohtas, Bihar



Pic 10: Linear and Cross-sectional Structures (June, 2023)



Pic 11: Cross-sectional Extraction Paths (10<sup>th</sup> December, 2024)



Pic 12: Cross-sectional Extraction Paths (10<sup>th</sup> December, 2024)

# DISTRICT SURVEY REPORT FOR SAND MINERALS OF ROHTAS DISTRICT, BIHAR

## Government of Bihar

(For Sand)

As per Notification No. S.O.141 (E) New Delhi Dated 15<sup>th</sup> of January 2016, S.O.3611 (E) New Delhi Dated 25<sup>th</sup> of July 2018, Sustainable Sand Mining Guidelines, 2016 and Enforcement & Monitoring Guidelines for Sand Mining (EMGSM) January 2020, Issued by Ministry of Environment, Forest and Climate Change (MoEF & CC)



**June, 2022**

Prepared in compliance of the interim order passed by the Hon'ble Supreme Court on 10-11-21 in the case of Civil Appeal No. 3661-3662/2020, State of Bihar & Others vs. pawan Kumar & Others



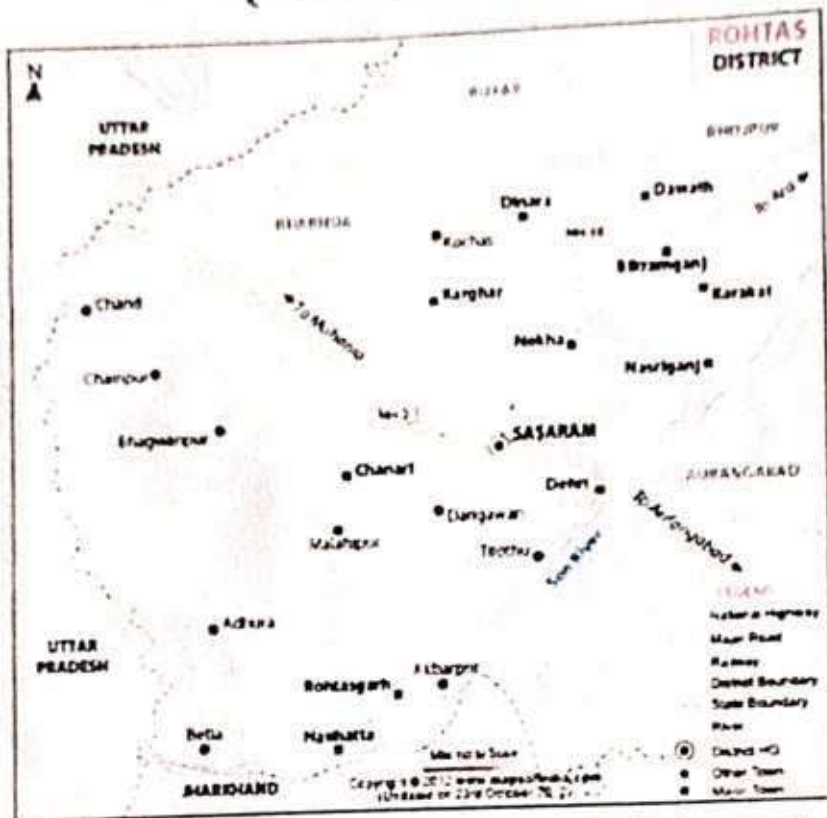
बिहार साकार

# DISTRICT SURVEY REPORT

## रोहतास जिला, बिहार

### Sand Minerals

(REVISED UPTO 21-26)



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As per "Enforcement and Monitoring Sand Mining Guidelines, 2020  
Ministry of Environment Forest and Climate change, Government of India

Submitted to  
Under Secretary  
Mines & Geology Department, Government of Bihar

Handwritten signature and date: 21/09/22

Prepared By  
District Mining Office  
Sasaram, Rohtas

Handwritten notes and dates: Keshu 22/2/22, 21/9/22, 21/3/22

Handwritten signature and date: 21/9/22, अजय कुमार यादव, बिहार

Handwritten notes and dates: 31-07-2022, 21/3, 21/3



समाहरणालय, रोहतास, सासाराम।  
(1001 2050)

पत्रांक - 1148 / जन्य सासाराम।

दिनांक - 28/02 / 2022

ई-मेल - munimpranita@gmail.com

प्रेषक,

जिला पदाधिकारी,  
रोहतास, सासाराम।

सेवा में

सदस्य समिति,  
State Environment Impact Assessment Authority (SEIAA), Bihar,  
2<sup>nd</sup> Floor, BELTRON Bhawan, Shastri Nagar, Patna, Bihar-800023

विषय- रोहतास जिला का सर्वेक्षण प्रतिवेदन (DSR) प्रारूप भेजने के संबंध में।

महोदय,

उपर्युक्त विषय के संबंध में यह कहना है कि माननीय उच्चतम न्यायालय द्वारा पारित आदेश तथा सान एन मूल्य विभाग, पटना से प्राप्त निर्देश के अन्तर्गत में गठित अनुमण्डल स्तरीय समिति द्वारा आपत्तियों का निराकरण कर सर्वेक्षण प्रतिवेदन (प्रारूप) तैयार कर अयोधस्तादारी को समर्पित किया गया। जिस पर आपत्तियों के साथ संलग्न कर समीक्षा एवं मूल्यांकन हेतु भेजा जा रहा है।

अनुलग्नक-यथोक्त।

प्रतिमानाजन  
28/02/22  
जिला पदाधिकारी,  
रोहतास, सासाराम।

BHAR  
-Nimit (129)  
25 APR 2022  
क्या





**STATE LEVEL EXPERT APPRAISAL COMMITTEE (SEAC), BIHAR**  
2<sup>nd</sup> Floor, BELTRON Bhawan, Shastri Nagar, Patna – 800023.

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Ref. No.- 132

Patna, Dated: - 07/04/2022

**MINUTES OF 08<sup>th</sup> MEETING OF STATE LEVEL EXPERT APPRAISAL  
COMMITTEE (SEAC). BIHAR CONSTITUTED ON 12.08.2021**

VENUE: SEIAA Office

DATE: 25<sup>th</sup> March, 2022

**Minutes/Proceeding of the Meeting**

1. **Opening Remarks of the Chairman:** The Chairman extended warm welcome to all the participants of the meeting. Thereafter, the meeting was opened for the proceeding as per the agenda adopted for this meeting.
2. **Confirmation of Minutes of 07<sup>th</sup> Meeting (07/2022)** vide ref.no.100 dated 11.03.2022 of State Expert Appraisal Committee held on 04<sup>th</sup> & 05<sup>th</sup> March, 2022. The State Expert Appraisal Committee, hereinafter called the SEAC, was informed that no representation has been received regarding projects considered in meeting held on 04<sup>th</sup> & 05<sup>th</sup> March, 2022. Minutes of the meeting of SEAC were confirmed.
3. **Consideration of Proposals:** The SEAC considered proposals as per the agenda adopted for the 08<sup>th</sup> meeting (08/2022) circulated vide Ref. No.-114, dated- 21.03.2022 and Ref. No.- 116, dated - 24.03.2022. The key points of deliberations held were as follows.
4. With regard to the proposals submitted for the District Survey Report (DSR) the Committee members considered and deliberated extensively on the District Survey Report (DSR), received for various districts, in the light of the Hon'ble Supreme Court's Order dated 10.11.2021 in Civil Appeal No. 3661-3662 of 2020 [Procedure and parameters laid down in the policy of Sustainable Sand Mining Management



- ix. Revise the table of estimation of sand resources in Pre-monsoon and post-monsoon period in sand bars.
- x. All the primary and secondary data should be supported by proper references and documentary support along with the page no mentioned in compliance report of revised DSR.

#### AGENDA ITEM NO. 25

Revised District Survey Report for Rohtas district (E-mail dated:-24.03.2022 and Hardcopy Received date:- 24.03.2022)

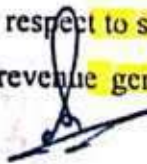
Application along with letter from the District Magistrate vide letter No. 822, dated 23.03.2022 was submitted to SEAC, Bihar on 24<sup>th</sup> March, 2022 for the evaluation of the District Survey Report (DSR), revised as per the comments made by the SEAC.

Earlier in the meeting dated 06<sup>th</sup>, 07<sup>th</sup>, & 08<sup>th</sup> January 2022, the Committee had directed to submit the revised District Survey Report (DSR) as mentioned in the proceeding of that meeting. The compliance was submitted by concerned District in the light of the above said meeting, the same was placed before the committee and the concerned district representative made a presentation. The Committee observed infirmities and found not satisfactory. As such concerned district representative was directed to correct the DSR as follows :-

- i. Clear and high resolution color images of the proposed ghats should be submitted with DSR including the date of photographs/ GPS location for identification of potential sand mining area.
- ii. The specific gravity of the material also needs to be ascertained by analyzing the sample from a NABL accredited lab.
- iii. The permanent boundary pillars need to be erected after identification of an area of aggradations and deposition outside the bank of the river at a safe location for future surveying. The distance between boundary pillars on each side of the bank shall not be more than 100 meters.
- iv. Demand and supply of the Riverbed Material through market survey needs to be carried out. In addition to this, future demand for the next 5 years also needs to be considered, to justify the number and area of the sand ghats included in the DSR.



- v. Mining area may be so selected as to cover the entire deposition area. Dividing a large area of deposition/aggradations into smaller mining leases should be avoided as it leads to loss of mineral and indirectly promotes illegal mining.
- vi. The DSRs should be placed in the public domain for at least one month from the date of publication of the advertisement for obtaining comments of the general public. The comments so received shall be placed before the concerned sub-divisional committee for active consideration for necessary corrections, if any. Only after such consultations, the DSR should be submitted before the SEAC.
- vii. The Committee observed that sand ghats have been proposed on the confluence/meanders/concavities/active Channels which require to be excluded from the DSR. No mining area should be proposed at any bank concavities to avoid bank erosion and river instability.
- viii. The Committee was not shown any such map where 1/4th part of the area has been separated from central 3/4th part of the river as a minable and non-minable zone.
- ix. In case sand ghat is located near by the Forest/ Wildlife Protected Area, (Bird Sanctuary / Wildlife Sanctuary / National Park / Tiger Reserve) a certificate regarding distance of such ghat from the boundary of Forest/ Protect Area as well as the notification status and extent of the Eco-Sensitive Zone issued by the Ministry of Environment, Forest and Climate Change, Govt. of India should be enclosed with the DSR.
- x. If the proposed mining area has overlapping areas with previously allotted existing lease or already working or worked out mining lease then the same should be clearly depicted in the proposed mining area with different colour. Details about the quantity of Sand extracted from the overlapped area should be furnished duly certified from the concerned Department.
- xi. Provide different colour map for proposed and existing sand mining area and also submit State, District Wildlife Sanctuary, Eco-Sensitive Zone boundary in different colour map and KML file to check the suitability of the mining site.
- xii. Submit a map and KML file regarding aquatic animal found in river.
- xiii. Calculate the Movable Mineral potential for each sand ghat in the prescribed format (SSMG 2016, as prescribed in page no. 25 and 26) for each river separately.
- xiv. It should be for each mine area with respect to sand mining done. [Ghats wise details of quantity of sand extracted and revenue generated (annually) for the past three




- years]. Only Sand mining revenue should be included in DSR not brick kiln/other minerals revenue.
- xv. All the Annexures as prescribed in the EMGSM, 2020 should be duly filled and complete.
  - xvi. Old and new proposed Ghats must be mentioned in the DSR. (List, Map & KML file).
  - xvii. District Border line (Bold mark) should be mentioned in the maps/images/KML file in DSR.
  - xviii. All the primary and secondary data should be supported by proper references and documentary support along with the page number in the compliance report of revised DSR.
  - xix. The replenishment study is not conducted by the concerned district. Whenever replenishment study conducted, submit the table of estimation of sand resources in Pre-monsoon and post-monsoon period for the sand deposit, with respect to the Reduced Level.
  - xx. FMISC (Flood Management Improvement Support Center), a R&D unit under WRD (Water Resource Department) at Anishabad has high resolution satellite maps of river systems of Bihar. District Authorities may contact the office of FMISC for procurement of geo-referenced maps of the river to support the DSR.

#### AGENDA ITEM NO. 26

Revised District Survey Report for Saran district (E-mail dated:-23.03.2022 and Hardcopy Received date:- 23.03.2022)



Application along with letter from the District Magistrate vide letter No. 750, dated 23.03.2022 was submitted to SEAC, Bihar on 23<sup>rd</sup> March, 2022 for the evaluation of the District Survey Report (DSR), revised as per the comments made by the SEAC.

Earlier in the meeting dated 06<sup>th</sup>, 07<sup>th</sup>, & 08<sup>th</sup> January 2022, the Committee had directed to submit the revised District Survey Report (DSR) as mentioned in the proceeding of that meeting. The compliance was submitted by concerned District in the light of the above said meeting, the same was placed before the committee and the concerned district representative made a presentation. The Committee observed infirmities and found not satisfactory. As such concerned district representative was directed to correct the DSR as follows :-

**Resolution of the Committee:-**

The final DSR should be prepared in a book format (may be spiral binded) with an index page referring the page numbers where the corrections / amendments were made, for quick reference, in a tabular format.

SEAC has unanimously decided to forward the above referred DSR, of the concerned districts with the aforementioned observations for the consideration of SEIAA.

**LIST OF PARTICIPANTS IN 08<sup>th</sup> MEETING OF SEAC, BIHAR HELD ON 25<sup>th</sup> MARCH 2022**

| S. No. | Name                 | Designation      | Attended on 25.03.2022     |
|--------|----------------------|------------------|----------------------------|
| 1.     | Dr. Gopal Sharma     | Chairman         | Present                    |
| 2.     | Dr. Ramakar Jha      | Member           | Present                    |
| 3.     | Dr. Bibha Kumari     | Member           | Present                    |
| 4.     | Dr. Anshumali        | Member           | Present through video link |
| 5.     | Dr. Aditya Mohanty   | Member           | Present through video link |
| 6.     | Shri Mokhtarul Haque | Member           | Present                    |
| 7.     | Shri Ajit Samaiyar   | Member           | Absent.                    |
| 8.     | Shri Ranjan Kumar    | Member           | Present.                   |
| 9.     | Shri S. Chandrasekar | Member Secretary | Present                    |

**Signature(s) of Members Present**

Sd/  
(Dr. Ramakar Jha)  
Member, SEAC

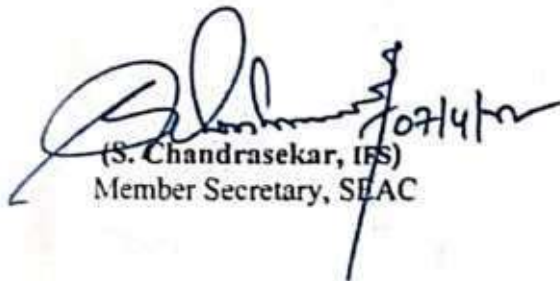
Sd/  
(Dr. Bibha Kumari)  
Member, SEAC

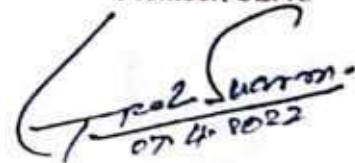
Sd/  
(Mokhtarul Haque)  
Member, SEAC

Sd/  
(Ranjan Kumar)  
Member, SEAC

Sd/  
(Dr. Anshumali)  
Member, SEAC


Sd/  
(Dr. Aditya Mohanty)  
Member, SEAC

  
(S. Chandrasekar, IFS)  
Member Secretary, SEAC

  
07/4/2022  
(Dr. Gopal Sharma)  
Chairman, SEAC



**COMPLIANCE TO THE MINUTES HELD ON 25.03.2022 OF THE EIGHTH MEETING OF THE STATE LEVEL EXPERT APPRAISAL COMMITTEE (SEAC), BIHAR VIDE LETTER NO REF NO. 132, PATNA, DATED 07.04.2022**

| SL.NO. | OBSERVATION   | COMPLIANCE  |
|--------|---|---|
| 1      | Clear and High resolution Color Image of the proposed ghat should be submitted with DSR including the date of photographs and GPS location for identification of potential sand mining area.  | We have provided ESRI BASE MAP (Pre-Monsoon) having resolution 5 M & FCC-USGS LANDSET 8 (Post-Monsoon) having resolution 30 M in the DSR. All Satellite Imageries are furnished as <b>Annexure XII</b>        |
| 2      | The specific gravity of the material also needs to be ascertained by analyzing the sample from a NABL accredited lab.   | Sp. Gravity and bulk density of sand is analyzed from NABL lab The report of the same is attached as <b>Annexure V</b>  |
| 3      | The permanent boundary pillars need to be erected after identification of an area of aggradation and deposition outside the bank of the at a safe location for future surveying. The distance between boundary pillar on each side of the bank shall not be more than 100 meters.   | Noted, Permanent boundary pillars will be fixed after Approval of Mining Plan.  |
| 4      | Demand and supply of the Riverbed Material through market survey needs to be carried out. In addition to this future demand for the next 5 years also needs to be considered, to justify the number and area of the sand ghats.   | Complied with. Please refer 2.3 Demand and Supply of Sand.  |
| 5      | Mining area may be so selected as to cover the entire deposition area' Dividing a large area of deposition/aggradation into smaller mining leases should be avoided as it leads to loss of mineral and indirectly promotes illegal mining.  | Complied with.  |
| 6      | The DSRs should be placed in the public domain for at least one month from the date of publication of the advertisement for obtaining comments of the general public. The comments so received shall be placed before the sub-divisional committee for active consideration. Only after such consultation of the DSR should be submitted before the SEAC' | Complied with. Already uploaded in the District Portal. Upload on Dated 24.02.2022.<br><br>No complain/Comments received. |
| 7      | The committee observed that sand ghats have been proposed on the  | No mining lease has been proposed on the confluence/active Channels of the Rivers.  |



**COMPLIANCE TO THE MINUTES HELD ON 25.03.2022 OF THE EIGHTH MEETING OF THE STATE LEVEL EXPERT APPRAISAL COMMITTEE (SEAC), BIHAR VIDE LETTER NO REF NO. 132, PATNA, DATED 07.04.2022**

|    |  |   |
|----|--|---|
|    | confluence/meanders/concavities/active channels which require to be excluded from the DSR. No mining area should be proposed at any bank concavities to avoid bank erosion and river stability'  | While the few lease which are proposed on the concave side of the river will be strictly mined at the depth 3 m or above ground water level. The replenishment study also proved 100 % replenishment rate of sand. Please refer Table no. 7.10, Table no. 7.11, Table no. 7.12 & Table no. 7.13.                        |
| 8  | The Committee was not shown any such map where 1/4th part of the area has been separated from central 3/4th part of the river as a minable and non-minable zone.   | Complied with. Please refer to Plates.  |
| 9  | In case sand ghat is located near by the forest/wildlife protected area (Bird Sanctuary/Wildlife Sanctuary/ National Park/ Tiger reserve) a certificate regarding distance of such ghat from the boundary of the forest/ protected area as well as the notification status and extent of the Eco sensitive zone issued by the ministry of Environment, forest and climate change, govt of India should be enclosed with the DSR. | No sand mining is proposed within Forest / Wildlife Protected Area, (Bird/Wildlife Sanctuary / National Park/ Tiger Reserve). The ENVIS data showing Forest/Wildlife Protected Area, (Bird/ Wildlife Sanctuary/ National Park / Tiger Reserve) is reconfirmed through the GIS. A certificate is furnished as Annexure X |
| 10 | If the proposed mining area has overlapping areas with previously allotted existing lease or already working or worked out mining lease then the same should be clearly depicted in the proposed mining area with different colour. Details about the quantity of Sand extracted from the overlapped area should be furnished duly certified from the concerned Department.  | Complied with. Please refer Plate attached.   |
| 11 | Provide different colour map for proposed and existing sand mining area and also submit State, District Wildlife Sanctuary, Eco-Sensitive Zone boundary in different colour map and KML file to check the suitability of the mining site.  | Complied with.  |
| 12 | Submit a map and KML file regarding aquatic animal found in river.   | Complied with.  |



**COMPLIANCE TO THE MINUTES HELD ON 25.03.2022 OF THE EIGHTH MEETING OF THE STATE LEVEL EXPERT APPRAISAL COMMITTEE (SEAC), BIHAR VIDE LETTER NO. REF NO. 13, P.A.M.A. DATED 02.04.2022**

|    |   |   |
|----|---|---|
| 13 | Calculate the Mineable Mineral potential for each sand ghats in the prescribed format (SSMG 2018 as prescribed in page no. 25 and 26)   | Complied with.  |
| 14 | It should be for each mine area with respect to sand mining done. [Ghats wise details of quantity of sand extracted and revenue generated (annually) for the past three years]. Only Sand mining revenue should be included in DSR not brick kiln/other minerals revenue. | Complied with. Please refer Table 9.1.  |
| 15 | All the Annexures as prescribed in the EMGSM 2020 should be duly filled and complete.   | All the annexures has been attached as per EMGSM 2020.  |
| 16 | Old and new proposed Ghats must be mentioned in all the DSR. (List, Map & KML file).  | Complied with.  |
| 17 | District Border line (Bold mark) should be mentioned in the maps/images KML file in all DSR.  | Complied with.  |
| 18 | All the primary and secondary data should be supported by proper references and documentary support.  | The DSR hence prepared by considering proper references and documentary support.  |
| 19 | The replenishment study is not conducted by the concerned district. Whenever replenishment study conducted submit the table of estimation of sand resource in pre monsoon and post monsoon period for the sand deposit, with respect to the reduced level                 | The entire potential zone is demarcated on the basis of replenishment study report in last 4 years. Replenishment study data is attached in Page No 66-67 of DSR. |
| 20 | FMISC (Flood Management Improvement Support Center), a R&D unit under WRD (Water Resource Department) at Anishabad, has high resolution satellite maps of river   | We have provided ESRI BASE MAP (Pre-Monsoon) having resolution 5 M & FCC-USGS LANDSET 8 (Post-Monsoon) having resolution 30 M in the DSR. These Maps have high    |



**COMPLIANCE TO THE MINUTES HELD ON 25.03.2022 OF THE EIGHTH MEETING OF THE STATE LEVEL EXPERT APPRAISAL COMMITTEE (SEAC), BIHAR VIDE LETTER NO REF NO. 132, PATNA, DATED 07.04.2022**

|  |  |
|--|--|
| <p>systems of Bihar. These comprise of recent as well as of past years. District Authorities may contact the office of FMISC for procurement of geo-referenced maps of the river to support the DSR.</p> | <p>resolution and used in place of FMISC Maps.<br/>Furnished as Annexure XIV</p> |
|--|--|



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|                       |  |
|-----------------------|--|
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**1. Preface**

The present District Survey Report is prepared in compliance of interim order passed by the Hon'ble Supreme Court on 10-11-21 in the case of Civil Appeal No. 3661-3662/2020, State of Bihar & Others vs. Pawan Kumar & Others. The District Collector through its vide letter no. 2849/Khanan, Rohtas, dated 13.11.2021 had constituted the sub-divisional committee to prepare the District Survey Report.

The need for District Survey Report (DSR) have been necessitated by Ministry of Environment, Forest and Climate Change (MoEF & CC) vide their Notification No. 125 (Extraordinary, Part II Section 3, Sub-section ii), S.O. 141 (E), dated 15<sup>th</sup> January 2016. The notification was addressed to bring certain amendments with respect to the EIA notification 2006 and in order to have a better control over the legislation. District level committees have been introduced in the system. As a part of this notification, preparation of District Survey Reports has been introduced. Subsequently, Ministry of Environment, Forest and Climate Change has published Notification No. 3611 (E), dt. 25<sup>th</sup> July, 2018 regarding inclusion of the "Minerals Other than Sand" and format for preparation of the DSR has been specified. Enforcement & Monitoring Guidelines for Sand Mining (EMGSM) January 2020, Issued by Ministry of Environment, Forest and Climate Change is prepared in consideration of various orders/directions issued by Hon'ble NGT in matters pertaining to illegal sand mining and also based on the reports submitted by expert committees and investigation teams. This DSR has been prepared in conformity with the S O 141 (E), S O 3611 (E) and other sand mining guidelines published by MOEF & CC time to time as well as the requirement specified in Bihar Minerals (Concession, Prevention of Illegal Mining, Transportation and Storage) Rules, 2019.

The DSR of Rohtas District also describes the general geographical profile of the district, distribution of natural resources, livelihood, climatic condition and sources of revenue generation.



## **2. Introduction**

The District Survey Report of Rohtas District has been prepared in compliance of interim order passed by the Hon'ble Supreme Court on 10-11-21 in the case of Civil Appeal No. 3661-3662/2020, State of Bihar & Others vs. Pawan Kumar & Others and as per the guide line of Ministry of Environment, Forests & Climate Change (MoEF & CC), Government of India vide Notification S.O.-1533(E) dated 14th Sept, 2006 and subsequent MoEF & CC Notification S.O. 141(E) dated 15th Jan, 2016. This report shall guide systematic and scientific utilization of natural resources, so that present and future generation may be benefitted at large. Further, MoEF & CC published a notification S.O. 3611(E) Dated 25th July, 2018 and recommended the format for District Survey Report.

The main objective of DSR is to identify the areas of aggradations or deposition where mining can be allowed; and identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited and estimation of annual rate of replenishment and allowing time for replenishment after mining in that area. The DSR would also help to calculate the annual rate of replenishment wherever applicable and allow time for replenishment. Besides the sand mining, the DSR also include the potential development scope of in-situ minor minerals.

The objectives of the District Survey Report are as following:

1. Identification and Quantification of Mineral Resource and its optimal utilization.
2. To regulate the Sand Mining in the district Rohtas, identification of site-specific end-use consumers and reduction in demand & supply gaps.
3. Use of information technology (IT) & latest scientific method of mining for surveillance of the sand mining at each step.
4. District Survey report shall enable Environmental Clearance for cluster of Sand Mines. It shall assist concern Department during post Environmental Clearance Monitoring.
5. To control the instance of illegal mining.
6. To control the flood in the area.
7. To maintain the livelihood of aquatic habitat.
8. To protect the incursion of ground water in the area. Limiting extraction of material in floodplains to an elevation above the water table generally disturbs more surface area than allowing extraction of material below the water table.
9. To keep accumulated data records viz. details of Mineral Resource, potential area, lease, approved mining plan, co-ordinates of a district at one place.



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10. To maintain the records of revenue generation.
11. Excavating sand from a small straight channel with a narrow floodplain generally will have a greater impact on the natural hydrologic processes than excavations on a braided channel with a wide floodplain.
12. Extracting sand from a large river or stream will generally create less impact than extracting the same amount of material from a smaller river or stream.
13. A concise guide line can be framed considering the point discussed in the DSR for sand mining in the district.

The District Survey report (DSR) is comprised of secondary data published and endorsed by various departments and websites about geology of the area, mineral resources, climate, topography, land form, forest, rivers, soil, agriculture, road, transportation, irrigation etc. Data on lease and mining activities in the district, revenue etc. are collected and collated from concern district Head Quarter.

The District Collector though its vide letter no. 2849/Khanan, Rohtas, dated 13.11.2021 had constituted the sub-divisional committee to prepare the District Survey Report. List of the members of the sub-divisional Committee is shown below:

**Structure of the Sub divisional Committee Constituted for preparation of the District Survey Report for Sand minerals of District Rohtas.**

**सामान्य अनुसन्धान,**

| सं० | पद का नाम  |
|-----|--|
| 1.  | अनुसन्धान सहायिका, सामाराम । मो०- 9473191223.  |
| 2.  | संजीव कुमार, कार्यपालक अभियंता लघु मिन्ट्राई प्रमण्डल, सामाराम । मो०- 9523056425.                      |
| 3.  | सत्येंद्र कुमार शर्मा, डेप्युटी ऑफिसर सामाराम-पर्यावरण वन एवं जलवायु परिवर्तन सामाराम ।                |
| 4.  | संजय कुमार, खान निरीक्षक- खान एवं भूतन्त्र विभाग, रोहतास । मो०- 8102044258.                            |
| 5.  | अनिल कुमार, क्षेत्रीय पदाधिकारी, बिहार राज्य प्रदूषण नियंत्रण बोर्ड रोहतास, सामाराम । मो०- 9430511414. |

**विकल्प अनुसन्धान विकल्पन,**

| सं० | पद का नाम   |
|-----|---|
| 1.  | अनुसन्धान सहायिका, विकल्पन । मो०- 9473191224.   |
| 2.  | सत्येंद्र कुमार मिश्र, कार्यपालक अभियंता मीन महर प्रमण्डल, विकल्पन । मो०- 7786054270.                 |
| 3.  | सहायक निदेशक खान एवं भूतन्त्र विभाग, रोहतास । मो०- 8544412380.  |
| 4.  | निगु मण्डल, डेप्युटी ऑफिसर पर्यावरण वन एवं जलवायु परिवर्तन सामाराम ।                                  |
| 5.  | अनिल कुमार, क्षेत्रीय पदाधिकारी, बिहार राज्य प्रदूषण नियंत्रण बोर्ड रोहतास, सामाराम । मो०-9430511414. |

**डिहरी अनुसन्धान,**

| सं० | पद का नाम  |
|-----|--|
| 1.  | अनुसन्धान सहायिका, डिहरी । मो०- 9473191225.  |
| 2.  | सुजीत कुमार, कार्यपालक अभियंता रूपांकण (Design), डिहरी । मो०- 7858072867.                              |
| 3.  | सत्येंद्र कुमार शर्मा, डेप्युटी ऑफिसर सामाराम-पर्यावरण वन एवं जलवायु परिवर्तन सामाराम ।                |
| 4.  | संजीव रंजन, खान निरीक्षक- खान एवं भूतन्त्र विभाग, रोहतास । मो०- 9430575620.                            |
| 5.  | अनिल कुमार, क्षेत्रीय पदाधिकारी, बिहार राज्य प्रदूषण नियंत्रण बोर्ड रोहतास, सामाराम । मो०- 9430511414. |



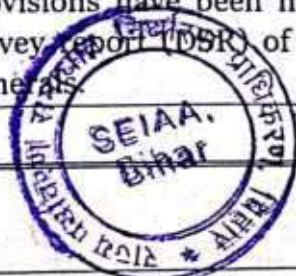
## 2.1 Statutory Framework:

### a. Evolution of the Environmental Regulatory Framework:

Requirement of District Survey Report & its year wise modification of Guidelines are furnished in Table No 2.1.

**Table No. 2.1: Requirement of District Survey Report & its year wise modification of Guidelines**

| Year | Particulars   |
|------|---|
| 1994 | The Ministry of Environment, Forest & Climate Change (MoEF & CC) published Environmental Impact Assessment Notification 1994 which is only applicable for the Major Minerals more than 5 ha.  |
| 2006 | In order to cover the minor minerals also into the preview of EIA, the MoEF & CC issued EIA Notification SO 1533 (E), dated 14th September 2006, made mandatory to obtain environmental clearance for both Major & Minor Mineral more than 5 Ha.  |
| 2012 | Further, Hon'ble Supreme Court wide order dated the 27th February, 2012 in I.A. No.12- 13 of 2011 in Special Leave Petition (C) No.19628-19629 of 2009, in the matter of Deepak Kumar etc. Vs. State of Haryana and Others etc., ordered that "leases of minor minerals including their renewal for an area of less than five hectares be granted by the States/Union Territories only after getting environmental clearance from MoEF"; and Hon'ble National Green Tribunal, order dated the 13th January, 2015 in the matter regarding sand mining has directed for making a policy on environmental clearance for mining leases in cluster for minor Minerals.                               |
| 2016 | The MoEF & CC in compliance of above Hon'ble Supreme Court's and NGT'S order has prepared "Sustainable Sand Mining Guidelines (SSMG), 2016" in consultation with State governments, detailing the provisions on environmental clearance (EC) for cluster, creation of District Environment Impact Assessment Authority, preparation of District survey report and proper monitoring of minor mineral. There by issued Notification dated 15.01.2016 for making certain amendments in the EIA Notification, 2006, and made mandatory to obtain EC for all minor minerals. Provisions have been made for the preparation of District survey report (DSR) of River bed mining and other minor mine |



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| Year | Particulars  |
|------|--|
| 2018 | MoEF & CC published a notification S.O. 3611(E) Dated 25th July, 2018 and recommended the format for District Survey Report. The notification stated about the objective of DSR i.e. "Identification of areas of aggradations or deposition where mining can be allowed; and identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited and calculation of annual rate of replenishment and allowing time for replenishment after mining in that area".  |
| 2019 | The main objective of Sand Mining Policy, 2019 to ensure that sand mining is done in an environmentally sustainable manner, to ensure availability of adequate quantity of sand, to increase the number of settles to ensure generation of employment.   |
| 2020 | Enforcement & Monitoring Guidelines for Sand Mining (EMGSM) 2020 has been published modifying Sustainable sand Mining Guidelines, 2016 by MoEF & CC for effective enforcement of regulatory provisions and their monitoring. The EMGSM 2020 directed the states to carry out river audits, put detailed survey reports of all mining areas online and in the public domain, conduct replenishment studies of river beds, constantly monitor mining with drones, aerial surveys, ground surveys and set up dedicated task forces at district levels. The guidelines also push for online sales and purchase of sand and other riverbed materials to make the process transparent. They propose night surveillance of mining activity through night-vision drones. |
| 2021 | Bihar Minerals (Concession, Prevention of Illegal Mining, Transportation and Storage) Rules, 2021. The notification stated about the prevention of Illegal mining, transportation and storage of sand and guidelines for mining activity, safety barriers, mining depth and lease.   |



## 2.2 Methodology of DSR Preparation

The data related to district profile, geology, mineralization, and mining activity are sketchy and disjointed. There are multiple data sources, which are in the public domain, as well as in Government website. To prepare District Survey Report, need to collate all the available databases on these iron regards. A comprehensive and a meaningful interpretable database created, which would be necessary to demonstrate the district overview. Workflow for the DSR job is as follows.

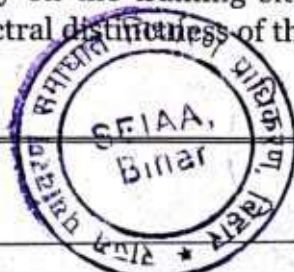


**2.2.1 Data source Identification:** District Survey Report has been prepared based on the Primary data base and secondary data base collated from different sources. This is very critical to identify authentic data sources before collating the data set. The secondary data sources which are used in DSR are mostly Government published data based or the published report in reputed journal. District profile has been prepared based on the District Statistical handbook published by Bihar Government as well as District Census 2011. Potential mineral resources have been described based on GSI or any other govt. agencies work done. Mining lease details and the revenue generated from minor minerals has been prepared based on available data from DL & LRO offices of the district. Satellite image has been used for map preparation related to physiography and land utilization pattern of the district.

**2.2.2 Data Analysis and Map preparation:** Dataset which are captured during the report preparation, are gone through detail analysis work. District Survey Report involves the analytical implication of captured dataset to prepare relevant maps. Methodology adopted for preparation of relevant maps is explained below.


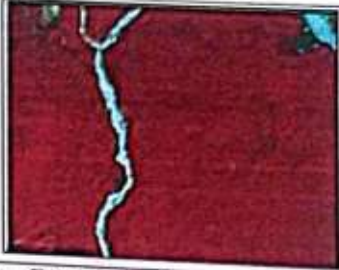



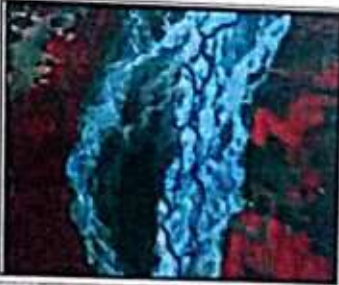
**Land Use and Land Cover Map:** Land Use and Land Cover classification is a complex process and requires consideration of many factors. The major steps of image classification may include determination of a suitable classification system via Visual Image Interpretation, selection of training samples, Satellite image (FCC-False Colour Composition) pre-processing, selection of suitable classification approaches, post-classification processing, and accuracy assessment.

Here LISS-III satellite Imagery has been taken for Supervised Classification as supervised classification can be much more accurate than unsupervised classification, but depends heavily on the training sites, the skill of the individual processing the image, and the spectral distinctness of the classes in broader scale.



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According to the Visual Image Interpretation (Tone, Texture, Colour etc.) training set of the pixel has been taken.

|  |   |
|--|---|
|   |    |
| <p><b>Agricultural Land</b> - Based on their Geometrical shape, Red and Pink colour tone, Agricultural Land has been identified.</p>                               | <p><b>Vegetation Covered Area</b> - Based on their continuous Red colour tone, Vegetation Covered Area has been identified.</p> |
|    |   |
| <p><b>Agricultural Fallow Land</b> - Based on their Geometrical shape, Light and dark cyan with light pink colour tone, Agricultural Land has been identified.</p> | <p><b>Bad Land Topography</b>- Light Yellowish mixed with cyan colour has been identified as Bad Land Topography.</p>           |
|   |   |
| <p><b>Settlement</b> - Area with Cyan Colour including geometrical shape has been recognised as Settlement Area.</p>   | <p><b>Water Bodies</b> - Dark blue colour has been classified as Water Bodies.</p>  |

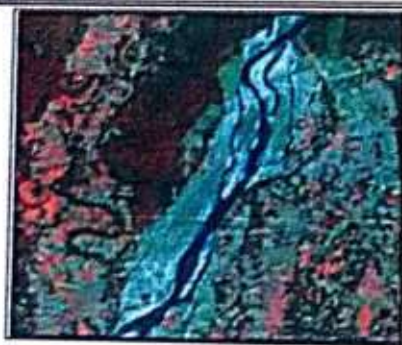
**Figure No.2.1: Pictorial description of Land Use Classification methods**

Geomorphological Map:

The major steps of preparing Geomorphological Map is identifying features like - Alluvial Fan, Alluvial Plain, Hilly Region etc. from Satellite Imagery (FCC- False Colour Composition) via Visual Image Interpretation and then digitization has been taken into the consideration to prepare map including all the Geomorphological features according to their location.



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**Alluvial Plain-** In satellite Imagery the flat land has been identified as Alluvial Plain just below the Alluvial Fan.



**Alluvial Fan –** A fan-based deposition formed by stream where the velocity is abruptly decreased. In satellite Imagery this has been identified just below the hilly region.

**Figure No.2.2: Pictorial description of Geomorphological Units  
Classification methods**

Physiographical Map:

The major step of preparing Physiographical Map is generating contour at a specific interval to show the elevation of the area using Cartosat DEM.

Block Map:

- Raw Data collected from **National Informatics Centre (NIC Website)**.
- Data has been geo-referenced using GIS software.
- Digitization of block boundary, district boundary, state boundary and district headquarter, sub –district headquarter, places, road, railway, river, nala etc.
- Road name, River name, Railway name has been filled in attribute table of the Layers
- Final layout has been prepared by giving scale, legend, north arrow, etc.

Transportation Map:

- Raw Data collected from **National Informatics Centre (NIC Website)**.
- Data has been geo-referenced using GIS software.
- Digitization of block boundary, district boundary, state boundary and district headquarter, sub –district headquarter, places, road, railway, river, nala etc.
- Road name, River name, Railway name has been filled in attribute table of the Layers
- Final layout has been prepared by giving scale, legend, north arrow, etc.

Drainage Map:

- Raw Data collected from **National Informatics Centre (NIC Website)**.
- Data has been geo-referenced using GIS software.
- Digitization of block boundary, district boundary, state boundary and district headquarter, sub –district headquarter, places, road, railway, river, nala etc.
- Road name, River name, Railway name has been filled in attribute table of the Layers
- Final layout has been prepared by giving scale, legend, north arrow, etc.

Seismic Map:

- Raw data collected from **Ministry of Earth Science**.
- Data has been geo-referenced using GIS software.



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- Digitization of Earthquake zone and superimposed it over Block Boundary.
- Zone name has been filled in attribute table of the Layers
- Final layout has been prepared by giving scale, legend, north arrow, etc.

Soil Map:

- Raw data collected from **National bureau of soil survey and land use planning.**
- Data has been geo-referenced using GIS software.
- Digitization of Soil classification zone and superimposed it over District Boundary.
- Soil classification has been filled in attribute table of the Layers.
- Final layout has been prepared by giving scale, legend, north arrow, etc.

Wildlife Sanctuary and National Park location Map:

- Raw data collected from **ENVIS Centre on Wildlife & Protected Areas.**
- Data has been geo-referenced using GIS software.
- Digitization of Wildlife Sanctuary & National Park and superimposed it over Block Boundary.
- Wildlife Sanctuary & National Park name has been filled in attribute table of the Layers.
- Final layout has been prepared by giving scale, legend, north arrow, etc.

**2.2.3 Primary Data Collection:** To prepare DSR, capturing primary data or field data has also been carried out in the district. Field study involves assessment of the mineral resources of the district by means of pitting / trenching in specific interval. This provides clear picture of mineral matters characterization and their distribution over the area.

**2.2.4 Replenishment study:** One of the principal causes of environmental impacts from in-stream mining is the removal of more sediment than the system can replenish. It is therefore need for replenishment study for river bed sand in order to nullify the adverse impacts arising due to excess sand extraction. The annual rate of replenishment carried out on every river of the district to have proper assessment of the sand reserve for mining purposes.

Physical survey has been carried out by GPS/DGPS/Total Station to define the topography, contours and offsets of the riverbed. The surveys clearly depict the important attributes of the stretch of the river and its nearby important civil and other feature of importance. This information will provide the eligible spatial area for mining.

**2.2.5 Report Preparation:** District Survey Report has been prepared to fulfill the purpose of identification of potential mineralized zones with respect to Minor Mineral including River Sand (Other than Stowing Purpose), their mineability and environmental impacts. Report provides details of the major and mineral potential zones. Assessing mining prospect with respect to minor minerals. Replenishment study details includes in the report. Report also provides the socio environmental study for establishing minor minerals in the district.



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### **2.3 Demand and Supply of Sand**

Sand is a multi-purpose topographical material. It is known as one of the three fundamental ingredients in concrete. The composition of sand is diverse.

The robustness of sand has played a significant role in everyday life. We use sand practically every other day.

Sand extraction from river beds are the main mining activities in the district. With a spurt in construction of real estate sectors and various govt. sponsored projects, the demand for sand has increased manifold.

In the real world, there are a lot of situations where we can find uses/demand of sand. Followings are the common sand uses.

1. While bunging metal, we can mix sand with clay binder for frameworks used in the foundries.
2. Sand can be used for cleaning up oil leak or any spill by dredging sand on that spill. The material will form clumps by soaking up, and we can quickly clean the mess.
3. Sand can be used as a road base which is a protective layer underneath all roads
4. Industrial sand is used to make glass, as foundry sand and as abrasive sand.
5. One creative usage of sand is serving as a candle holder. We can try putting some sand before pouring tea light or any candle in a glass. It holds the candle still and refrain the candle from rolling by giving it an excellent decoration.
6. Adds texture and aesthetic appeal to space.
7. Sand is mostly pure to handle, promptly available and economically wise.
8. We use sand in aquariums, fabricating artificial fringing reefs, and in human-made beaches
9. Sandy soils are ideal for growing crops, fruits and vegetables like watermelon, peaches, peanuts, etc.
10. Sand can light a path by filling mason jars with sand and tea light which is another inexpensive way to make a walkway glow.
11. Sand helps to improve resistance (and thus traffic safety) in icy or snowy conditions.
12. We need sand in the beaches where tides, storms or any form of preconceived changes to the shoreline crumble the first sand.
13. Sand containing silica is used for making glass in the automobile and food industry- even household products for the kitchen.
14. Sand is a strong strand which is used for plaster, mortar, concrete, and asphalt.



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Sand extracted from Rohtas district is used extensively in construction works ranging from individuals to organized corporate and government sectors.

Details of production of last five years are provided below:

| Sl. No. | Year    | Total Production in CFT/MT |
|---------|---------|----------------------------|
| 1       | 2017-18 | 15642500                   |
| 2       | 2018-19 | 188032556                  |
| 3       | 2019-20 | 193697957                  |
| 4       | 2020-21 | 100481850                  |
| 5       | 2021-22 | 2652734                    |

The demand is increasing gradually year by year which is also justified by the production/dispatch details of last years.



### **3. General Profile of the district**

#### **a) General Information**

Rohtas district is one of the thirty-eight districts of Bihar state, India. It came into existence when Shahabad District was bifurcated into Bhojpur & Rohtas in 1972.

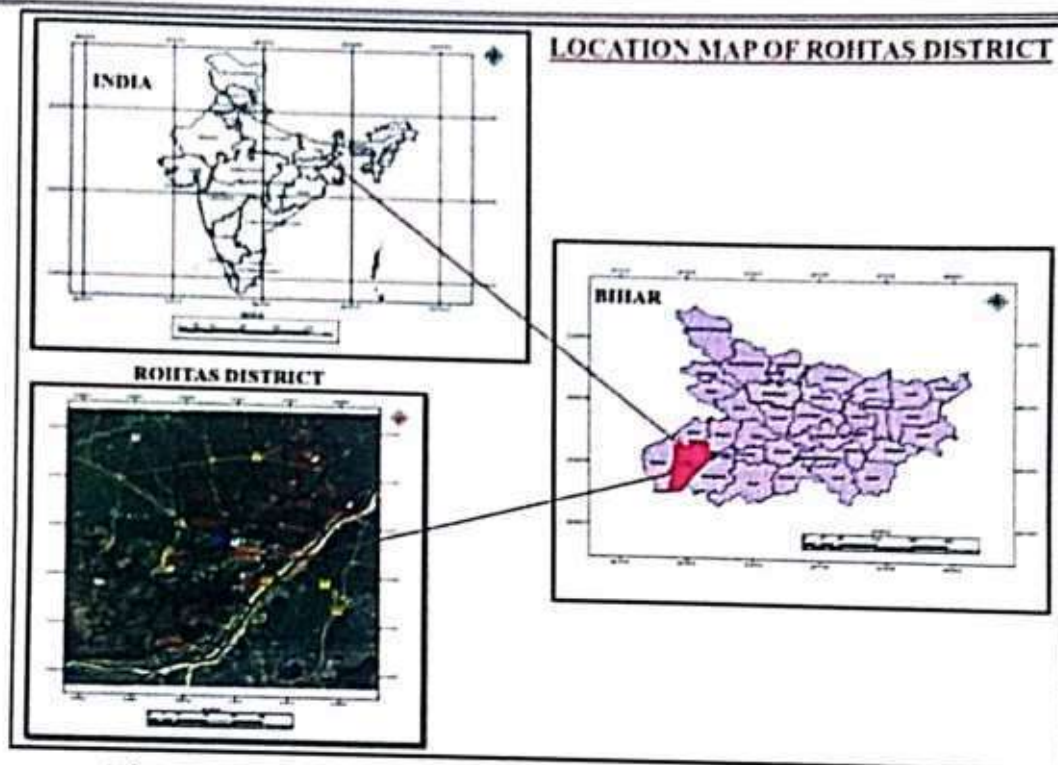
The Rohtas district is a part of Patna Division, and it has an area of 3850 km<sup>2</sup> (square kilometers), a population of 2,448,762 (2001 census), and a population density of 636 persons per km<sup>2</sup>. The languages spoken in this area are Bhojpuri and Hindi.

Rohtas district occupies an area of 3,851 square kilometers (1,487 sq mi). The district has a variety of landscapes within a small area, with flat plains running alongside the Kaimur Range and Rohtas Plateau. The majority of the land is a fertile floodplain of the Son River which is a tributary of the Ganges originating in Madhya Pradesh. The mountains of the Kaimur Range, which is an extension of the Vindhyan Range, were heavily forested in recent history, however mass deforestation has occurred due to firewood being used as fuel. The area is highly fertile and due to this is densely populated.

A location map of Rohtas District is furnished as Figure No. 3.1.



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**Figure No. 3.1: Location map of Rohtas district, Bihar**

Rohtas district comprises 3 Sub-divisions:

- Sasaram
- Bikramganj khaira bhudhar
- Dehri-on-sona

A Block map of Rohtas District is furnished as Figure No.3.2.



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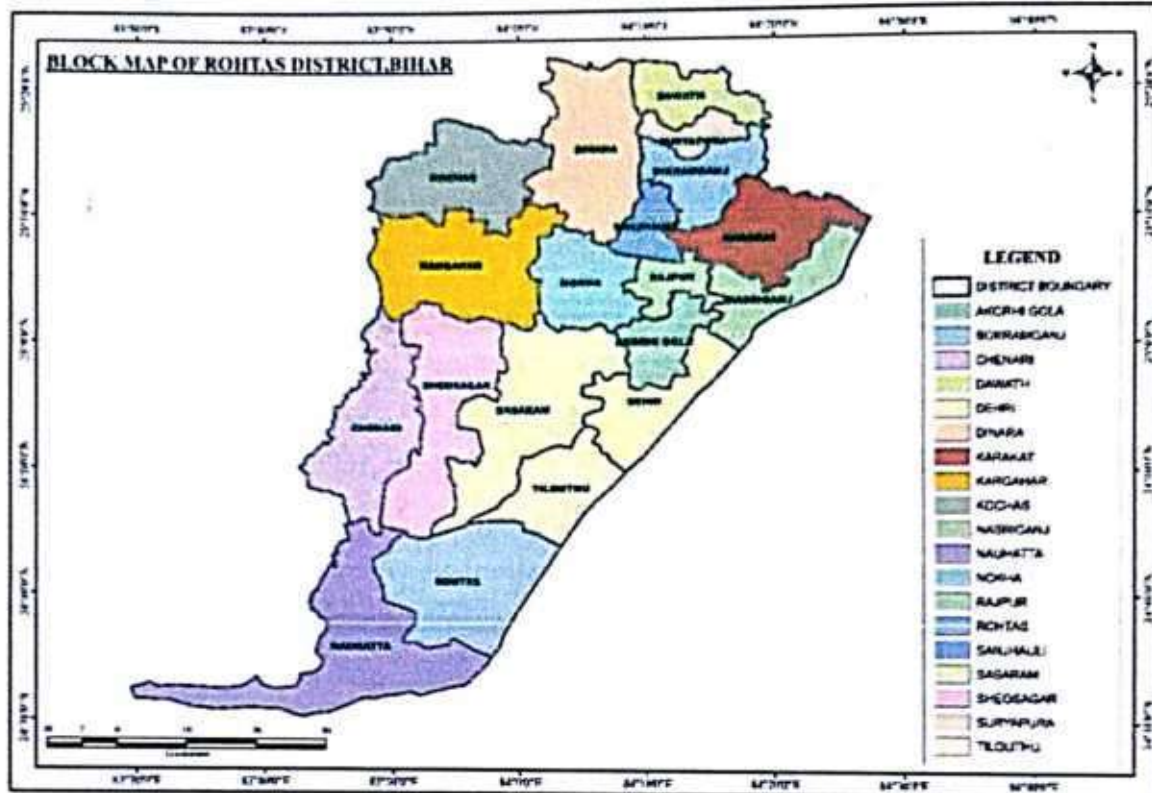


Figure No. 3.2: Block map of Rohtas District, Bihar

Detail of Blocks of Rohtas District is furnished in Table No.3.1.

Table No. 3.1: Details of Block of Rohtas District

| Sub Division Name | Block Name |
|-------------------|------------|
| Sasaram           | Sasaram    |
|                   | Shivsagar  |
|                   | Chenari    |
|                   | Kargahar   |
|                   | Kochas     |
|                   | Nokha      |
| Dehri             | Dehri      |
|                   | Akodhigola |
|                   | Nauhatta   |
|                   | Rohtas     |
|                   | Tilouthu   |
| Bikramganj        | Bikramganj |
|                   | Karakat    |
|                   | Nasriganj  |
|                   | Dawath     |
|                   | Rajpur     |
|                   | Sanjhauli  |



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| Sub Division Name | Block Name |
|-------------------|------------|
|                   | Suryapura  |
|                   | Dinara     |

### b) Climate Condition

The climate of the district is sub-tropical monsoonic, characterized by hot summer, high humidity and dry winter. January is the coldest month when the minimum temperature comes down to approximately 4°C. Winter season starts from the month of November and lasts till February. The temperature begins to rise in the March and it reaches the peak in the month of May when the mercury touches about 45°C. Rains sets sometimes in June also and lasts till middle of September. The district gets easterly wind from June to September, whereas westerly wind blows from October till May. The district gets maximum rainfall during the months of July and August. Some winter rains occur in January and February. About 90 % of rainfall is received during the monsoon months between June to September. The average annual rainfall is 1144.2 mm. The monthly distribution of normal rainfall in Rohtas district is given in Figure.

With an average of 34.8 °C, May is the warmest month. In January, the average temperature is 17.6 °C. It is the lowest average temperature of the whole year.

The precipitation varies 318 mm between the driest month and the wettest month. The average temperatures vary during the year by 17.2 °C.

Details of rainfall data of five years (from 2016 to 2020) is furnished in Table No.3.2.

**Table No. 3.2: Details of rainfall data of five years (from 2016 to 2020)**

| YEAR | JAN  |      | FEB  |      | MAR  |      | APR |      |
|------|------|------|------|------|------|------|-----|------|
|      | R/F  | %DEP | R/F  | %DEP | R/F  | %DEP | R/F | %DEP |
| 2016 | 25.5 | 96   | 1.7  | -87  | 32.3 | 255  | 0   | -100 |
| 2017 | 0.5  | -96  | 0    | -100 | 2.9  | -68  | 0.8 | -86  |
| 2018 | 0    | -100 | 2.2  | -83  | 0    | -100 | 0.2 | -97  |
| 2019 | 4.9  | -55  | 6.5  | -58  | 7    | 18   | 2.4 | -56  |
| 2020 | 7.1  | -35  | 43.5 | 182  | 56.8 | 862  | 3.7 | -33  |
| YEAR | MAY  |      | JUN  |      | JUL  |      | AUG |      |
|      | R/F  | %DEP | R/F  | %DEP | R/F  | %DEP | R/F | %DEP |



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|             |             |             |            |             |            |             |            |             |
|-------------|-------------|-------------|------------|-------------|------------|-------------|------------|-------------|
| 2016        | 15.1        | 9           | 54         | -40         | 489.3      | 78          | 245.2      | -12         |
| 2017        | 22          | 59          | 49.6       | -45         | 474.5      | 72          | 266.4      | -4          |
| 2018        | 3.8         | -73         | 73.3       | -19         | 221.8      | -19         | 219.7      | -21         |
| 2019        | 7.2         | -62         | 18.2       | -84         | 213.9      | -27         | 189.6      | -29         |
| 2020        | 74.1        | 296         | 243.7      | 120         | 216.7      | -26         | 214.8      | -20         |
| <b>YEAR</b> | <b>SEPT</b> |             | <b>OCT</b> |             | <b>NOV</b> |             | <b>DEC</b> |             |
|             | <b>R/F</b>  | <b>%DEP</b> | <b>R/F</b> | <b>%DEP</b> | <b>R/F</b> | <b>%DEP</b> | <b>R/F</b> | <b>%DEP</b> |
| 2016        | 261.1       | 37          | 57.2       | 33          | 0          | -100        | 0          | -100        |
| 2017        | 35.9        | -81         | 6.3        | -85         | 0.4        | -97         | 0          | -100        |
| 2018        | 147.9       | -23         | 3.4        | -92         | 0          | -100        | 4          | -17         |
| 2019        | 360.3       | 87          | 26         | -32         | 0          | -100        | 16.4       | 235         |
| 2020        | 115.8       | -40         | 24.7       | -35         | 1          | -85         | 0.9        | -82         |

### c) Demography

According to the 2011 census Rohtas district has a population of 2,962,593, roughly equal to the nation of Armenia or the US state of Mississippi. This gives it a ranking of 127 th in India (out of a total of 640). The district has a population density of 763 inhabitants per square kilometre (1,980/sq mi). Its population growth rate over the decade 2001–2011 was 20.22%. Rohtas has a sex ratio of 914 females for every 1000 males, and a literacy rate of 76.59%, which is highest in Bihar.

### d) Cropping pattern

The Rohtas district falls under Sone basin. Rohtas district is quite suitable cultivation of cereals, oil seeds, pulses and vegetables under rice-wheat production system. The productivity enhancements of the field and horticultural crops with the concept of integrated farming system module are the major arena of thrust for development of agriculture in the district.

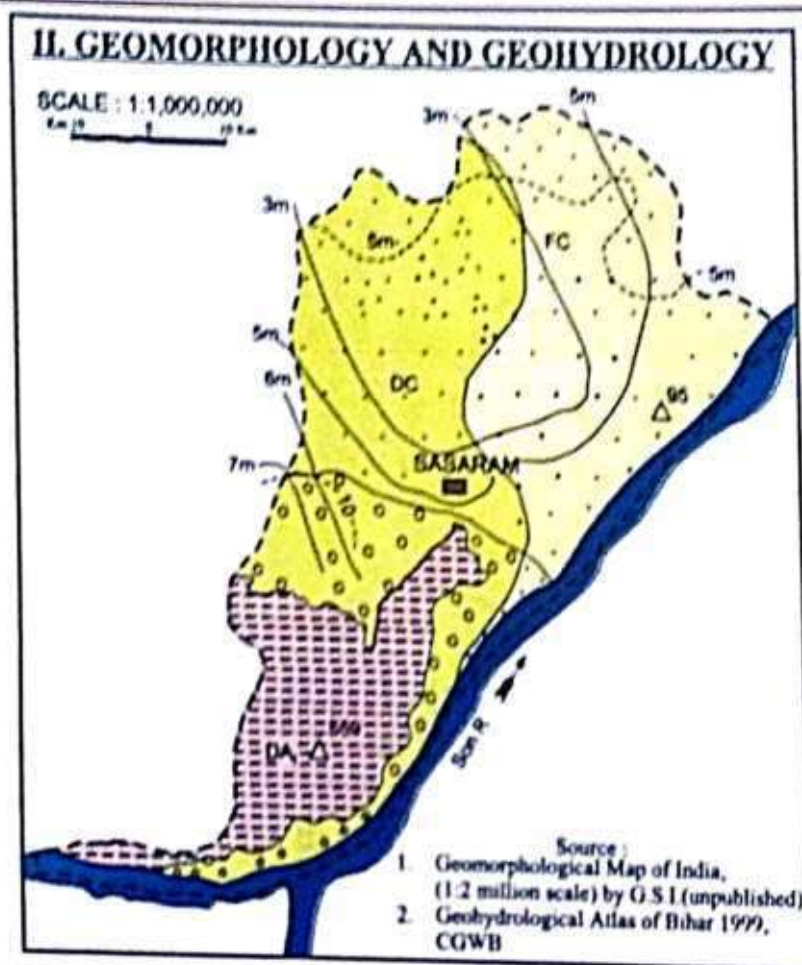
### e) Topography & Terrain

Rohtas district is characterized by flat quaternary alluvial plain with average surface elevation of 100 meter about mean sea level.

### f) Hydrogeology of Rohtas

Geomorphological & Geohydrological map of Rohtas District is furnished below.





| GEOMORPHOLOGY |  |
|---------------|--|
| FC            | Terraced alluvial plain                    |
| DC            | Pediplain                                  |
| DA            | Dissected plateau (plateau hills & valley) |
|               | Triangulation station (m) above m.s.l.     |

| GEOHYDROLOGY |  |
|--------------|--|
|              | Aquifers with primary porosity (yield prospects 28-55 litres/sec)  |
|              | Aquifers with secondary porosity (yield prospects 6-22 litres/sec) |
|              | Aquifers with secondary porosity (yield prospects <5 litres/sec)   |
|              | Pre monsoon depth to water in m. b.g.l.                            |
|              | Post monsoon depth   |

**Figure No. 3.5: Geomorphological & Geo-Hydrological map of Rohtas District** (Source: District Resource Map, Geological Survey of India, 2002)

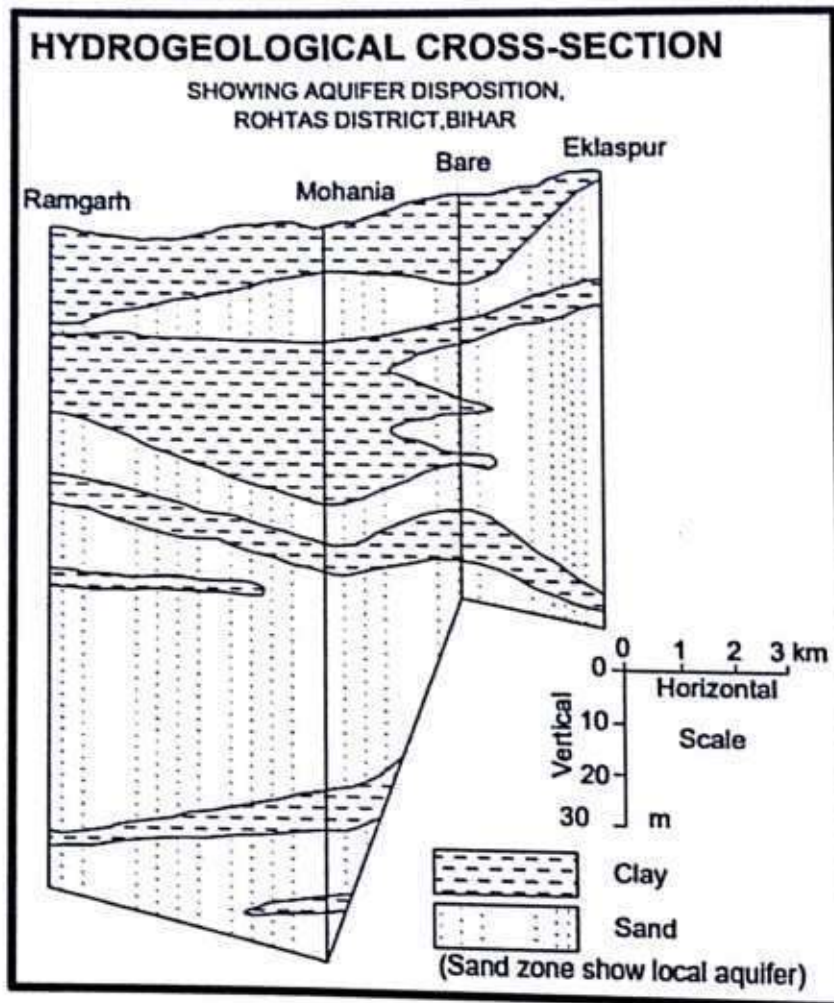
**g) Ground Water:**

Based on the behavior and occurrence of ground water in alluvium in the district can be described under these two distinct categories:

(a) Shallow Aquifer: Occurring within the depth of 50 m

(b) Deeper Aquifer: Beyond the depth of 50 m bgl down to 300 m bgl





**Figure No. 3.6: Cross section showing aquifer disposition, Rohtas District, Bihar** (Ground Water Information Booklet Rohtas District, Bihar State Sep, 2013)

**Table No. 3.5: Details of parameters of Ground Water and their results**

| Dynamic Ground Water Resources             |   |
|--|---|
| Annual Replenishable Ground Water Resource | 29.19 BCM   |
| Net Annual Ground Water Availability       | 27.42 BCM   |
| Annual Ground Water Draft                  | 10.77 BCM   |
| Stage of Ground Water Development          | 39 %  |
| Ground Water Development & Management      |   |
| Over Exploited                             | NIL   |
| Critical                                   | NIL   |
| Semi- critical                             | NIL   |
| Ground Water User Maps                     | 38 districts  |
| Artificial Recharge to Ground Water (AR)   | <ul style="list-style-type: none"> <li>• Area identified for AR- 1650 sq. km.</li> <li>• Quantity of Surface Water to be</li> </ul> |



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|                                      |   |
|--------------------------------------|---|
|                                      | Recharged: 574 MCM<br>• Feasible AR structures: 891 Percolation Tanks, 2260 Check Dams, 1630 Recharge Shaft, 1303 Contour Bunding, RWH in Urban Areas   |
| <b>Ground Water Quality Problems</b> |   |
| <b>Contaminants</b>                  | <b>Districts affected (in part)</b>   |
| Fluoride (>1.5 mg/l)                 | Aurangabad, Banka, Buxar, Bhabua(Kaimur), Jamui, Munger, Nawada, Rohtas, Supaul   |
| Iron (>1.0 mg/l)                     | Aurangabad, Begusarai, Bhojpur, Buxar, Bhabua(Kaimur), East Champaran, Gopalganj, Katihar, Khagaria, Kishanganj, Lakhiserai, Madhepura, Muzafferpur, Nawada, Rohtas, Saharsa, Samastipur, Siwan, Supaul, West Champaran |
| Nitrate (>45 mg/l)                   | Aurangabad, Banka, Bhagalpur, Bhojpur, Bhabua, Arwal, Rohtas, Saran, Siwan  |
| Arsenic (>0.05 mg/l)                 | Begusarai, Bhagalpur, Bhojpur, Buxar, Darbhanga, Katihar, Khagaria, Kishanganj, Lakhiserai, Munger, Arwal, Purnea, Samastipur, Saran, Vaishali  |

### h) Drainage System

A Drainage map of Rohtas District is furnished as Figure No.3.7.

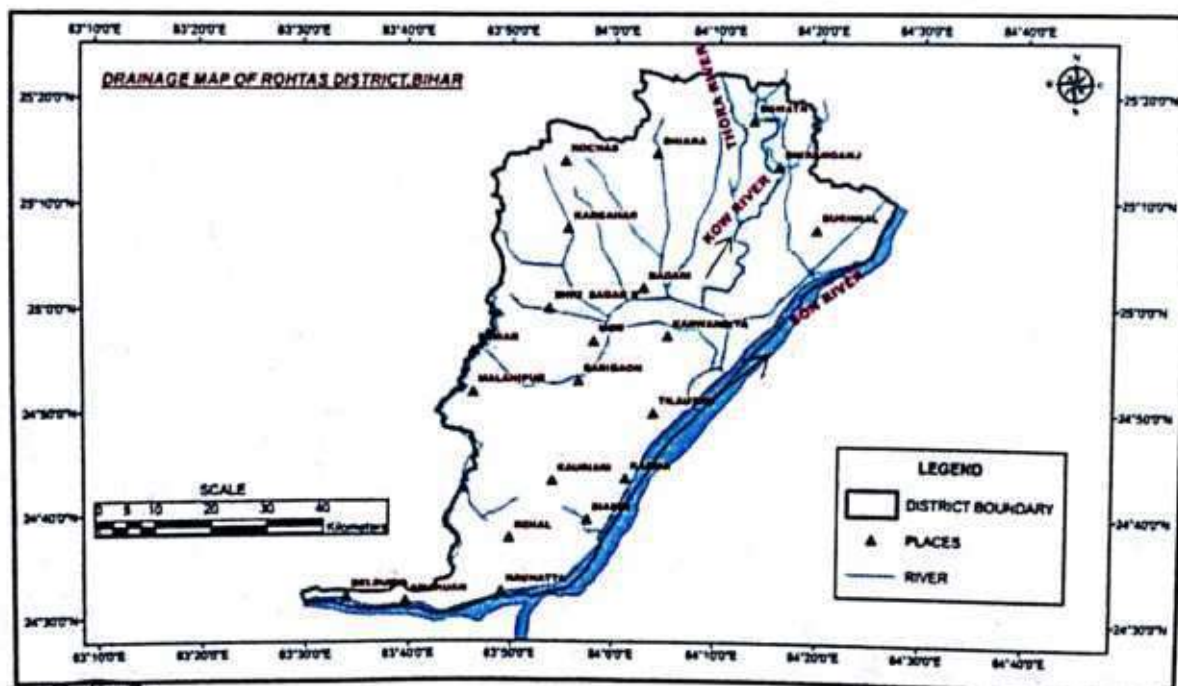


Figure No. 3.7: Drainage map of Rohtas district



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Table No. 3.5: Details of major rivers of Rohtas District

| Name of the River | Length with in district (m) | Width (m) | Colour of Sand       | Type          |
|-------------------|-----------------------------|-----------|----------------------|---------------|
| SONE              | 121800.819                  | 800       | Yellowish            | Perennial     |
| KOW               | 69618.189                   | 25        | Whitish to yellowish | Non-Perennial |
| THORA             | 22728.23                    | 30        | Whitish to yellowish | Non-Perennial |

• **Floods in districts of Bihar:**

Bihar on account of its location coupled with *hydrometeorology, hydrology, geomorphology and topography* is one of the worst floods affected region in the world. It lies in the tropical to sub-tropical region and has a monsoon climate with an average annual rainfall of 1028 mm. The river Ganga is considered the lifeline of Bihar, which enters the State from the west and flows towards the east. The below map shows Rohtas District of Bihar lies on no flood prone zone.

Distribution of the vulnerable and less vulnerable flood prone districts of Bihar are shown in the below figure no. 6A & 6B.

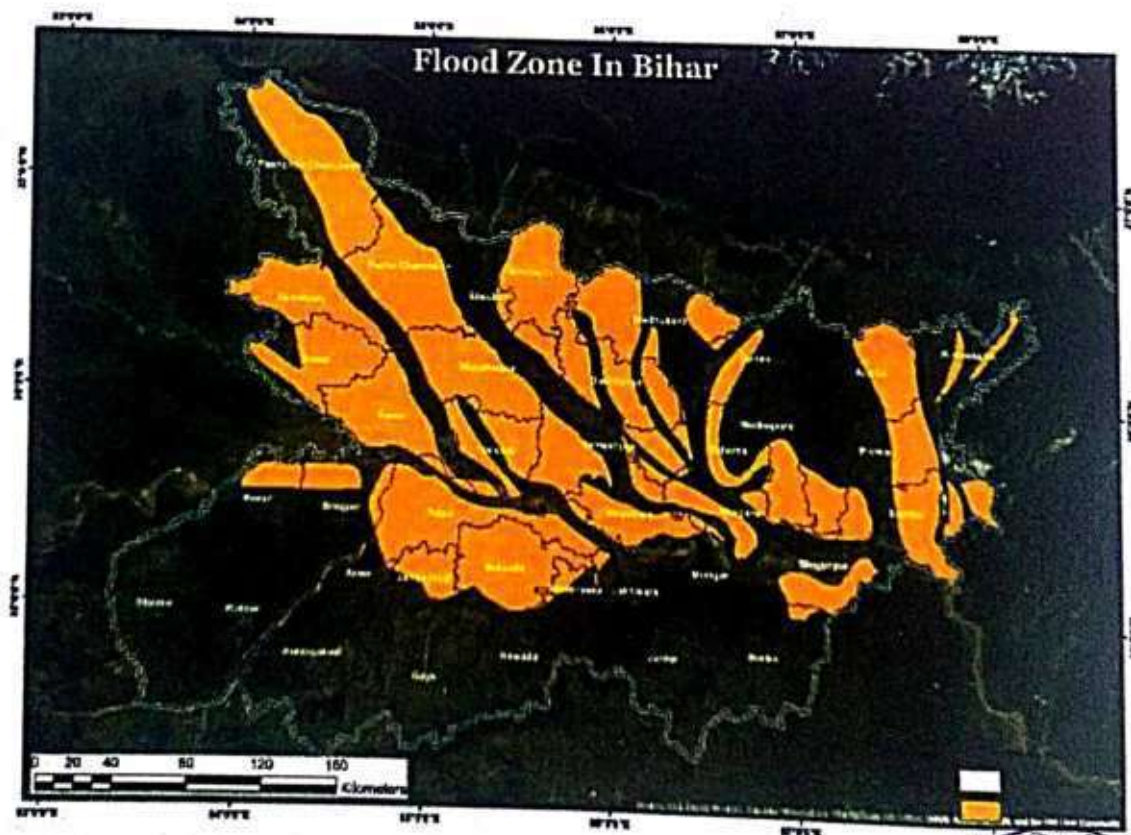


Figure No. 6A: Flood Prone districts of Bihar



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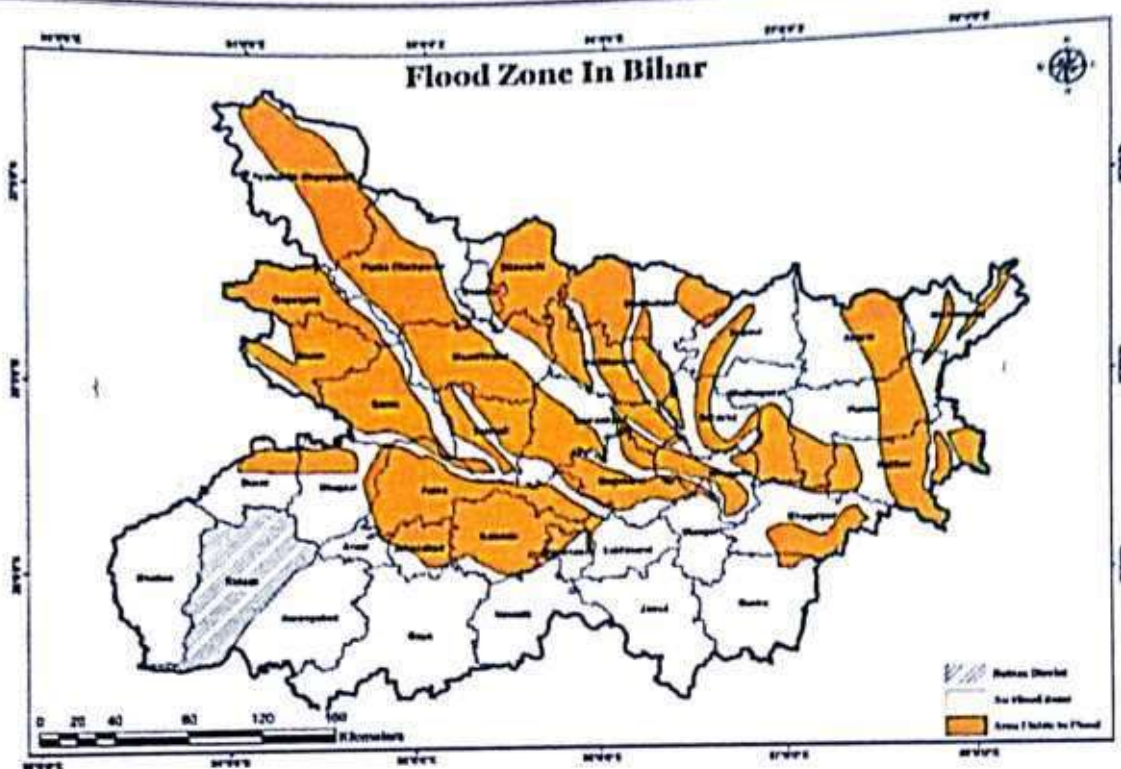


Figure No. 6B: Flood Prone districts of Bihar.

**i) Seismicity**

As per Seismicity Zonation map, 3 types of Zones have been observed in Bihar. Rohtas comes under India's seismic zone-III, indicating its vulnerability to major earthquakes and also witnessed the earthquake in the year 2015.

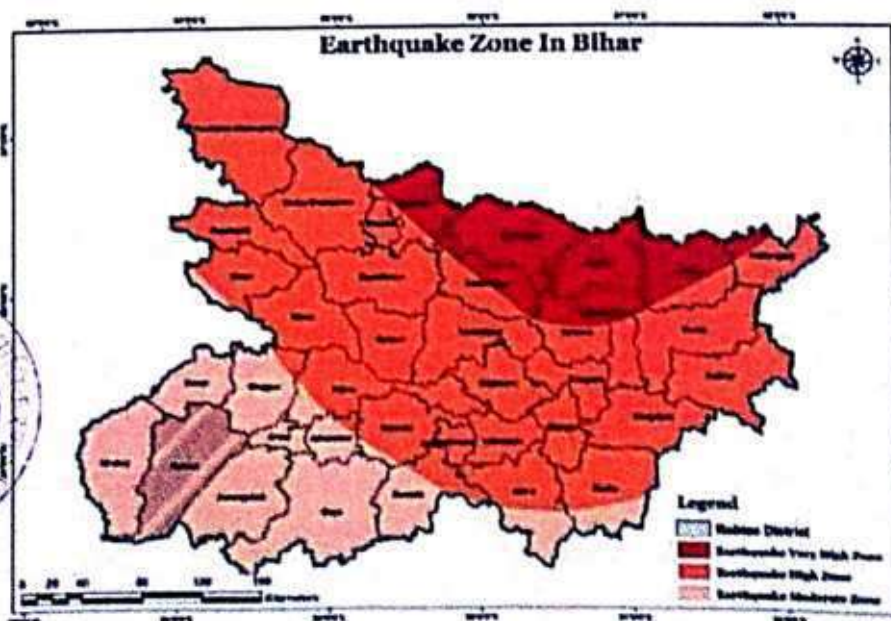


Figure No. 3.10: Bihar Earthquake Map



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j) Flora

Common trees include Neem, Sisam, Yellow Kanel, Ashoka, Sagwan, Bel, Jungle jalebi, Gulmohar, Mango, and Guava etc.

k) Fauna

A map showing Wildlife Protected areas in Bihar District is furnished.



Figure No. 3.10: Wildlife Protected areas in Bihar State



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#### **4. Physiography of the district**

##### **a) General Landforms**

The district has complex features having alluvium in the northern part to the sub-hilly region in the south. The district has a general slop towards the north but the eastern narrow part of the district, along the river Sone, towards Sone (East). The major (northern) part of the district is a characteristically flat terrain without any undulation and rocky isolated patches in between. The general elevation of the flat terrain with respect to mean sea level is 80-90 m and the gradient is 0.60 m/km from south to north.

##### **b) Soil and rock pattern**

Rohtas district which treasures various geological formation ranging from Vindhyan to Recent have diversified paedogenesis depending upon the composition of the parents materials, palaeogeographical and climatic conditions to which it was subjected. The major soil group which have got strategic significance in present day land utilisation are described below (a) The forest and hilly area in the south of the GT road with yellowish brown to reddish brown soil. (b) Alluvial soils, light grey to dark grey in colour of recent age occurs in the north of GT road (NH-2) in Gangetic plain. (c) Marginal alluvial soils, (Colluvial deposits) greyish yellow in colour to the south of GT road upto the foothill of Kaimur plateau. The hilly soil is characterised by low nitrogen, medium to high potash, acidic and light to medium textured. The alluvial soils in the northern part of the district are neutral to slightly alkaline, heavy textured. The alluvial plain soil is practically unaltered alluvium representing a broad spectrum of sand, silt and humus bog clay depending on landform component. The marginal alluvial soils are heavy textured, calcareous, with more than 10% of  $\text{CaCO}_3$ .



## **5. Land use pattern of the district:**

### **a) Forest -detail of the area**

Wildlife Sanctuary, Reserve Forest, National Park are not available in Rohtas district.

Area in Rohtas district is spraed over 144981.93 Acres which is 15% of the total Geographical areas of the district. The kind of trees found in the Brief Industrial Profile of Rohtas District 4 forest areas are like Karan, Chandan, Teak, Gamahar, Khair, Asan, Tendu, Mahua, Sism, Bahera, Kathal and Bamboo. Based on the forest resource available in the district, Micro & Small Enterprises relating to manufacturing of Katha, wooden furniture, Biri, Bamboo-Tokri and leaf plates.

### **b) Agriculture & Irrigation**

Agriculture is the main livelihood of the population. The agriculture calendar starts from the month of July and continued to the month of June of the succeeding year before the onset of monsoon every year. Thus, a calendar year is divided into four agriculture season viz., Bhadai, Aghani Rabi and Garma.

Irrigation plays a vital role in the agriculture in this district and irrigation is practiced from both surface and groundwater. The surface water is the major source of irrigation in the district. Total 192365 hactare areas of the district are irrigated out of which, 163686 hactare area is irrigated by the canals. The Sone River is the main source of canal system. The groundwater is used for agriculture purpose by boring and about 22069 hactare area is irrigated by the tubewells and only 6610 hactare area is irrigated by the other sources. As per the record of Department of Agriculture, Government of Bihar (2010-11) the total production of rice, wheat & barley and Maize is 286533, 1312, and 289 M.T. respectively.

### **c) Horticulture**

Rohtas district is under Medium Level of Production in Horticultural Crops - Horticulture level of horticultural development has found in the district. These districts come under the periphery areas where there is a lack of infrastructure regarding, horticultural crops. Floriculture in the district is now developing in the same fashion as compared to other crops. So, there is need to emphasis on these crops. Horticulture cultivation is always advantageous. It paves the ways and means of development. It has been observed that it could be developed in the state if the government provides protection and subsidies to the farmers. There is a great need to emphasis on marketing management and boosting the irrigation resource of the state along with that there is need of awareness on profitability and techno managerial skill among farmers to promote the horticultural cultivation in the state.

### **d) Mining**



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River sand mining is a common practice as habitation concentrates along the rivers and the mining locations are preferred near the markets or along the transportation route, for reducing the transportation cost.

**6. Geology:**

The district is broadly expressed in two distinct geological domains viz. (i) Middle Proterozoic sedimentary sequence of Vindhyan Supergroup and (ii) unconsolidated to semi consolidated alluvial sequence of late Pleistocene to late Holocene age.

**Table No. 6.1: Geological Unit of Rohtas District**  
(Source: District Resource Map, Geological Survey of India, 2002)

| GEOLOGICAL UNIT     | AGE                | NATURE AND CHARACTERISTICS  |
|---------------------|--------------------|---|
| Durgauti formation  | Late Holocene      | Present day channel deposit   |
| Ramgarh formation   | Holocene           | Linear deposit of unconsolidated sediments developed along prominent river channels |
| Bare formation      | Holocene           | Linear deposit of unconsolidated sediments forming major flat terrain               |
| Mohanpur formation  | Late Pleistocene   | Semiconsolidated to consolidated sediments occurring in the proximity of hills      |
| Bijaigarh Formation | Middle Proterozoic | Soft to medium hard rocks, conspicuously form escarpment of the plateau landform    |
| Rohtas Formation    |                    |   |
| Khenjua Formation   |                    |   |

Kaimur Group  
 Vindhyan Supergroup  
 Semri Group



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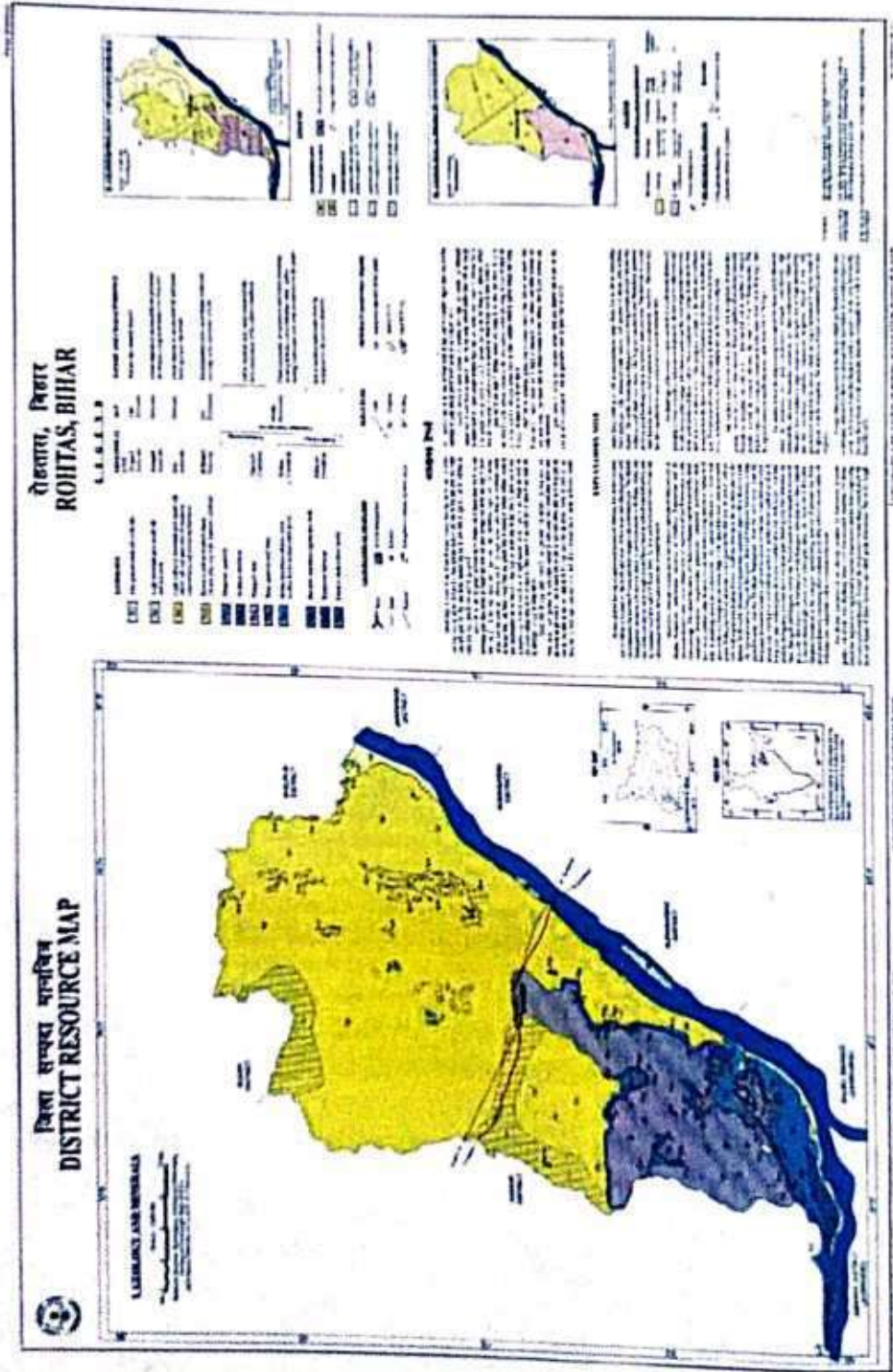


Figure No. 6.1: District Resource Map of Rohtas District (Source: District Resource Map, Geological Survey of India, 2002)

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7. Mineral wealth

7.1 Overview of mineral resources

The geological formation of Rohtas District indicates the presence of quite a number of minor minerals.

7.2 Details of Resources

A) Sand and other riverbed minerals:

a) Drainage System (Description of main rivers/streams, Salient features of important rivers and streams, list of villages, which the river pass through)

Sone, Kow & Thora are major sand producing rivers in Rohtas district. Besides the river there are many ephemeral streams. Apart from these sources there are many Tals. During the process of shifting of course these rivers leave behind cut off, meanders, abandoned channels and a number of marshes locally known as chauras. The chauras are also responsible for water logging in the area with the onset of monsoon and contract to become localised during summer. Apart from this drainage system there is a very good network of canal system also in this district. Description of some major rivers of the district is described below.

**River Sone:** The Sone originates near Amarkantak in Anuppur district of Madhya Pradesh, just east of the headwater of the Narmada River.

The Sone River which is 784 kilometers long is one of the longest Indian rivers. The length of the sone in Rohtas district is 121.80 km while the width of the river 0.80 km in the district.

Kow and Thora Rivers are tributaries of Sone River.

a) Drainage System with description of main rivers

Table No. 7.1: Drainage system with description of main rivers

| Sl No. | Name of the River | Area drained (Sq.m) | Length with in district (m) | Width (m) |
|--------|-------------------|---------------------|-----------------------------|-----------|
| 1      | SONE              | 135409000           | 121800.819                  | 800       |
| 2      | KOW               | 1550640             | 69618.189                   | 25        |
| 3      | THORA             | 295069              | 22728.23                    | 30        |

b) Salient Features of important rivers and streams

Table No. 7.2: Salient Features of important rivers and streams

| Name of the River | Length with in district (m) | Width (m) | Colour of Sand       | Type          |
|-------------------|-----------------------------|-----------|----------------------|---------------|
| SONE              | 121800.819                  | 800       | Yellowish            | Perennial     |
| KOW               | 69618.189                   | 25        | Whitish to yellowish | Non-Perennial |
|                   | 22728.23                    | 30        | Whitish to yellowish | Non-Perennial |



**ii) Annual deposition of riverbed minerals**

Annual deposition of riverbed minerals is dependent on various factors which are explained below.

**A. Geomorphological studies**

Geomorphological characteristic of a river is foremost factor for annual deposition of sedimentary load. The study includes following parameter:

**i) Place of Origin**

Details of origin of rivers of Arwal District is furnished below.

**Table No. 7.3: Place of Origin of important rivers and streams**

| Name of the River or Stream | Place of origin         |
|-----------------------------|-------------------------|
| Sone River                  | Amarkantak Hill         |
| Kow River                   | Tributary of Sone River |
| Thora River                 | Tributary of Sone River |

**ii) Catchment Area**

The catchment area of Son River demarcates the district boundary between Bhojpur and Patna in the central west Bihar and also district boundary between Bhojpur and Arwal. In south western Bihar it demarcates the district boundary between Rohtas and Aurangabad.

Watershed of Son includes mainly Patna and Bhojpur district and northern part of Rohtas and Bhabua District.

The catchment and watershed area of Kow and Thora is restricted almost within Rohtas district and also some part of other districts of Bihar.

**iii) General profile of river stream**

River profile has been studied along the cross-section lines which was chosen based on the drastic variation of the river widths, proximity of the operating sand Ghats and the position of the sand bars.

Relative disposition of rivers in Rohtas district along with the distribution of the section lines are shown in figure 7.1.



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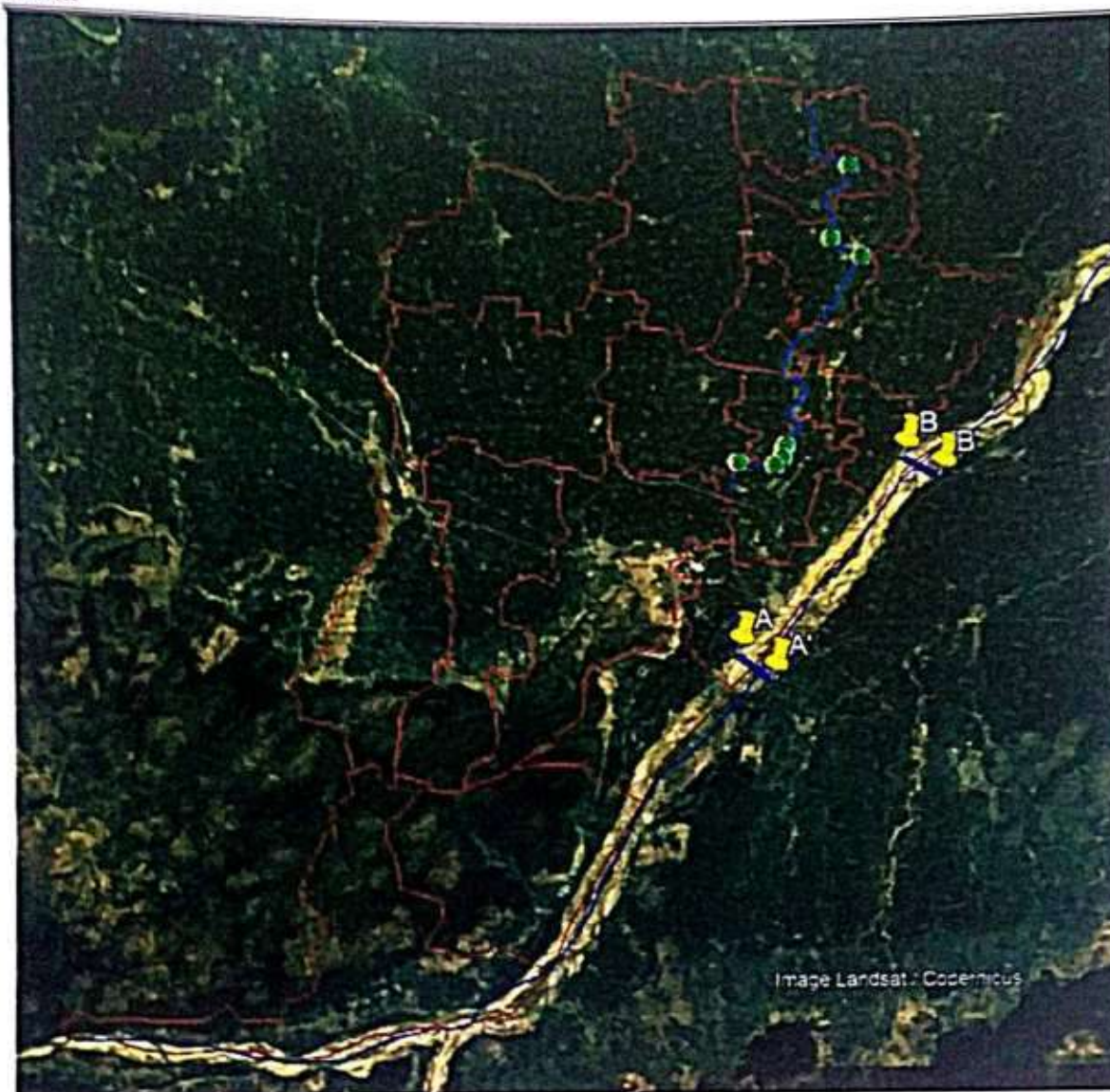


Figure No.7.1: Plan showing the major rivers along with the distribution of Section Lines, Rohtas District, Bihar in Pre monsoon

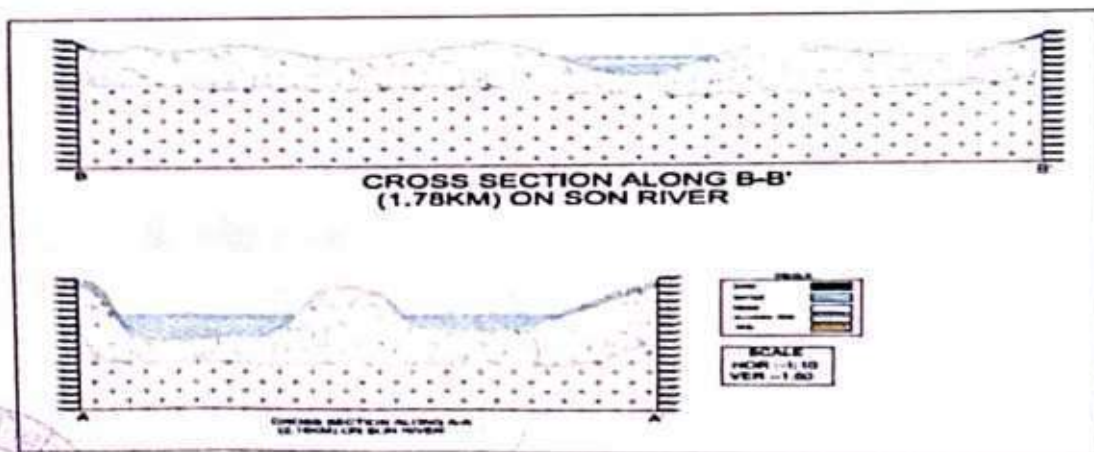


Figure No.7.2: Cross sections of Sone Rivers



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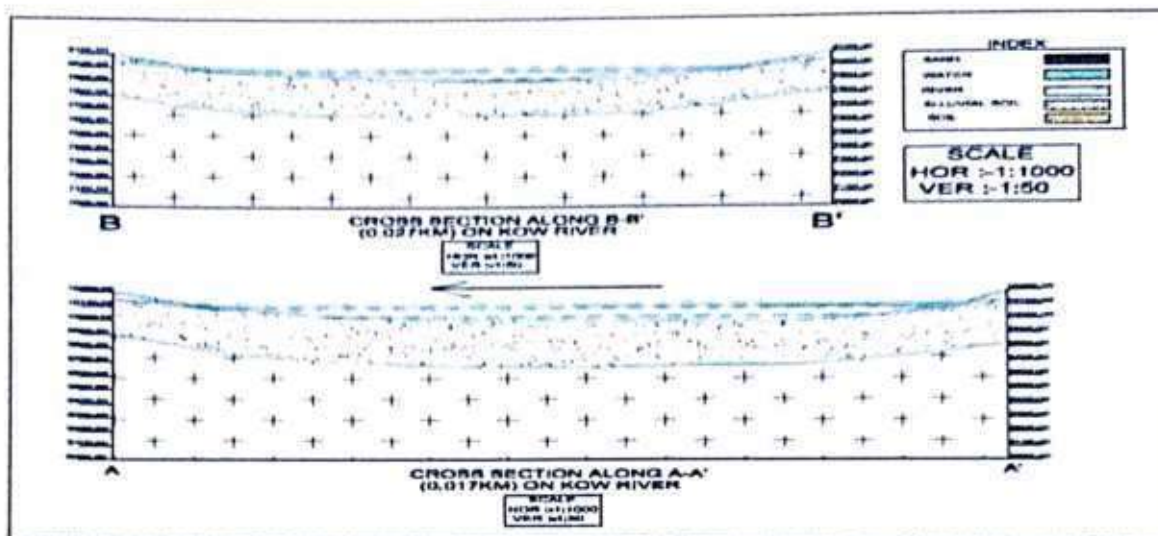


Figure No.7.3: Cross section of Kow River

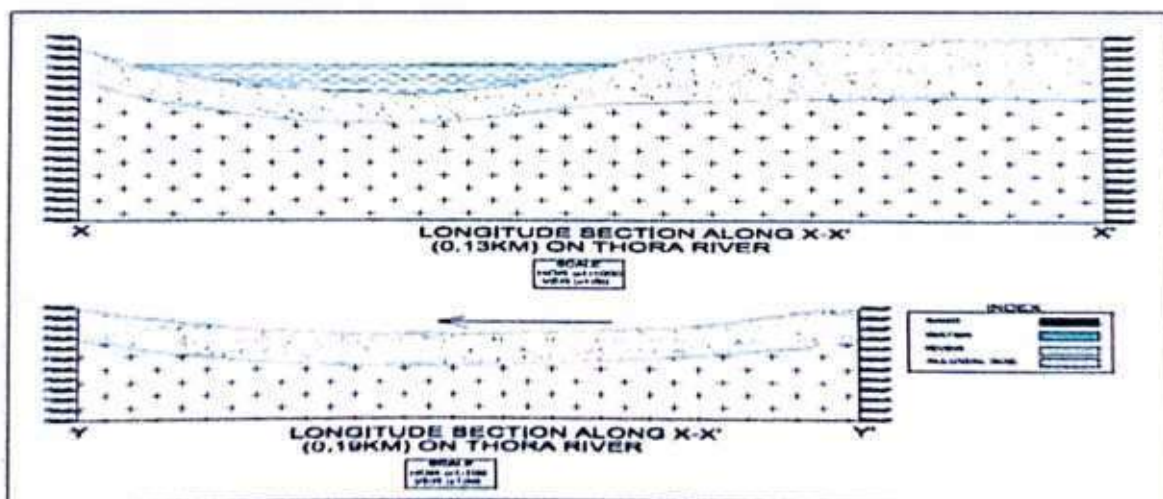


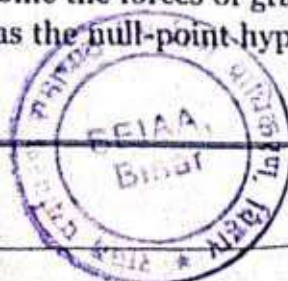
Figure No.7.4: Cross section of Thora River

iv) Annual deposition factor

Annual deposition of riverbed materials depends on various factors, such as process of deposition, mode of sediment transport, sediment transport rate, sedimentation yield of the river.

1. Process of deposition

Deposition is the processes where material being transported by a river is deposited. Deposition occurs when the forces responsible for sediment transportation are no longer sufficient to overcome the forces of gravity and friction, creating a resistance to motion; this is known as the null-point hypothesis. This can



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be when a river enters a shallow area or towards its mouth where it meets another body of water.

The principle underlying the null point theory is due to the gravitational force; finer sediments remain in the water column for longer durations allowing transportation outside the surf zone to deposit under calmer conditions. The gravitational effect or settling velocity determines the location of deposition for finer sediments, whereas a grain's internal angle of friction determines the deposition of larger grains on a shore profile.

**Deposition of non-cohesive sediments:** Large-grain sediments transported by either bedload or suspended load will come to rest when there is insufficient bed shear stress and fluid turbulence to keep the sediment moving; with the suspended load this can be some distance as the particles need to fall through the water column.

**Deposition of cohesive sediments:** The cohesion of sediment occurs with the small grain sizes associated with silts and clays, or particles smaller than  $4\phi$  on the phi scale. If these fine particles remain dispersed in the water column, Stokes law applies to the settling velocity of the individual grains. The face of a clay platelet has a slight negative charge where the edge has a slight positive charge when two platelets come into close proximity with each other the face of one particle and the edge of the other are electrostatically attracted, and then have a higher combined mass which leads to quicker deposition through a higher fall velocity.

## **2. Mode of sediment transport in rivers**

Sediment transport in rivers provides a dynamic linkage between flow and channel form. Mainly there are three processes by which sediment load is transported and these are rolling or traction, in which the particle moves along a sedimentary bed but is too heavy to be lifted from it; saltation; and suspension, in which particles remain permanently above the bed, sustained there by the turbulent flow of the water.

Another name for sediment transport is sediment load. The total load includes all particles moving as bedload, suspended load, and wash load.

**Bed load:** Bedload is the portion of sediment transport that rolls, slides or bounces along the bottom of a waterway. This sediment is not truly suspended, as it sustains intermittent contact with the streambed, and the movement is neither uniform nor continuous. Bedload occurs when the force of the water flow is strong enough to overcome the weight and cohesion of the sediment. While the particles are pushed along, they typically do not move as fast as the water around them, as the flow rate is not great enough to fully suspend them. Bedload transport can occur during low flows (smaller particles) or at high flows (for larger particles).



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Approximately 5-20% of total sediment transport is bedload. In situations where the flow rate is strong enough, some of the smaller bedload particles can be pushed up into the water column and become suspended.

**Suspended load:** While there is often overlap, the suspended load and suspended sediment are not the same thing. Suspended sediment are any particles found in the water column, whether the water is flowing or not. The suspended load, on the other hand, is the amount of sediment carried downstream within the water column by the water flow. Suspended loads require moving water, as the water flow creates small upward currents (turbulence) that keep the particles above the bed. The size of the particles that can be carried as suspended load is dependent on the flow rate. Larger particles are more likely to fall through the upward currents to the bottom, unless the flow rate increases, increasing the turbulence at the streambed. In addition, suspended sediment will not necessarily remain suspended if the flow rate slows.

**Wash load:** The wash load is a subset of the suspended load. This load is comprised of the finest suspended sediment (typically less than 0.00195 mm in diameter). The wash load is differentiated from the suspended load because it will not settle to the bottom of a waterway during a low or no flow period. Instead, these particles remain in permanent suspension as they are small enough to bounce off water molecules and stay afloat. However, during flow periods, the wash load and suspended load are indistinguishable.

### 3. Sediment Transport Rate

The rate at which sediment is moved past a cross section of the flow is called either the sediment transport rate or the sediment discharge. It's related to the sediment load, but it's different, just because different fractions of the sediment load are transported at different rates. It can be measured in mass per unit time, or in weight per unit time, or in volume per unit time. The sediment transport rate is commonly denoted by  $Q_s$ .

### 4. Estimation of Sedimentation

There are two approaches to obtaining values describing sediment loads in streams. One is based on direct measurement of the quantities of interest, and the other on relations developed between hydraulic parameters and sediment transport potential.

The total bed material load is equal to the sum of the bedload and the bed material part of the suspended load; in terms of volume transport per unit width,  $qt = qb + qs$ . Here wash load, i.e. that part of the suspended load that is too fine to be contained in measurable quantities in the river, is excluded from  $qs$ .



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There are number of equations to compute the total sediment load. Most of these equations have some theoretical and empirical bases.

In 1973, Ackers and White developed a general theory for sediment transport which was calibrated against the flume-transport data then available. Their functions have been widely accepted as one of the best available procedures for estimating the total bed over the full width of the flow section.

Dandy Bolton formula is often used to calculate the sedimentation yield. But use of these equations to predict sediment yield for a specific location would be unwise because of the wide variability caused by local factors not considered in the equations development. However, they may provide a quick, rough approximation of mean sediment yields on a regional basis. Computed sediment yields normally would be low for highly erosive areas and high for well stabilized drainage basins with high plant density because the equations are derived from average values. The equations express the general relationships between sediment yield, runoff, and drainage area.

### 5. Sedimentation Yield

All of the water that reaches a stream and its tributaries carries sediment eroded from the entire area drained by it. The total amount of erosional debris exported from such a drainage basin is its sediment load or sediment discharge and the sediment yield is the sediment discharge divided by the total drainage area of the river upstream of the cross section at which the sediment discharge is measured or estimated. Sediment yield is generally expressed as a volume or weight per unit area of drainage basin—e.g., as tons per square kilometre. Further, sediment yield is usually measured during a period of years, and the results are thus expressed as an annual average.

#### v) Replenishment Study (As per EMGSM guidelines, 2020):

Replenishment study for a river solely depends on estimation of sediment load for any river system and the estimation is a time consuming and should be done over a period. The process in general is very slow and hardly measurable on season to season basis except otherwise the effect of flood is induced which is again a cyclic phenomenon. Usually, replenishment or sediment deposition quantities can be estimated in the following ways as given below:

- A. Direct measurement of the sand bar upliftment, monitoring of the new sand bars created in the monsoon within the channel, elimination of sand bars during the monsoon etc. With systematic data acquisition, over a period, regression equations can be developed for modeling of the sediment yield and annual replenishment with variable components.



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In this report, for volume estimation of sand, "Depth x Area" has been followed. The sand bars are interpreted with the help of satellite imageries. Ground truthing done for 100% of the total identified sand bars. While ground truthing, width and length of each segment were physically measured. It has also been observed that in few cases, sand bars have attained more than 3 meters height from the average top level of the river beds. Considerations of sand resources have been restricted within 3 meters from the average top surface of the river bed. Thus, in few occasions, heights for sand reserve estimation are found to be more than 3 meters.

- B. The replenishment estimation based on a theoretical empirical formula with the estimation of bed-load transport comprising of analytical models to calculate the replenishment estimation.

**A. Replenishment estimation**

Sedimentation in any river is dependent on sediment yield and sediment yield depends on soil erosion in river's catchment area. Catchment yield is computed using Strange's Monsoon runoff tables for runoff coefficient against rainfall return period. Peak flood discharge calculated by using Dickens, Jarvis and Rational formula at 25, 50 and 100 years return period. The estimation of bed load transport using Ackers and White Equation.

**Methodology Adopted:** To delineate replenishment percentage in the river bed of the district, below mentioned steps have been followed.

• **Field data collation:**

Field data collations were done during April-2020, June-2020, November-2020 & March-2021 for starting period, pre monsoon period, post monsoon period & end period for the river ghats on continuous basis. However, the nonoperational areas were covered through traverses. In both the cases, relative elevation levels were captured through DGPS/ Electronic Total Station. Thickness of the sand bars was measured through sectional profiles. In few instances, sieve analysis of the sands was carried out to derive the size frequency analysis.

• **Selection of Study profiles:**

Study profiles are selected based on the occurrence of the sand bars in the channel profiles. Aerial extents of each of the profiles are mapped from satellite imageries. Frequency distribution did while selection of the ground truthing of the

• **Data Compilation:**



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Following data were compiled for generation of this annual replenishment report:

Elevation levels of the different sand Ghats and Sand Bar's as measured at site.

Extents of the sand bars are measured from the pre monsoon satellite imageries.

Sand production data of the district.

- **Assessment of sediment load in the river:**

Assessment of sediment load in a river is subjective to study of the whole catchment area, weathering index of the various rock types which acts as a source of sediments in the specific river bed, rainfall data over a period not less than 20 years, and finally the detail monitoring of the river bed upliftment with time axis. Again, the sediment load estimation is not a dependent variable of the imaginary district boundary, but it largely depends upon the aerial extents of the catchment areas, which crossed the district and state boundaries.

- **Estimation of annual sand deposition:**

The major sand producing river of the Rohtas district is Sone, Kow and Thora. Planning has been done for systematic sand mining in the rivers.

While calculation of the areas of sand bar, a classification system has been adopted with three categories of land identified within the channel areas, the class which followed for classification are as follows:

- a. The untapped Sand Bars.
- b. The Sand bars worked in the pre-monsoon period.
- c. Main channel course within the channel.

Details of each sand bars along with their sand resources in pre monsoon and post monsoon period are provided in below table no 7.5.



**Table No. 7.5: Estimation of Sand Resources in Pre monsoon period & Post monsoon period in sand bars**

| Sl. No.           | Sandbar Code | RL (m) | Area in Sq. m. | Thickness (m) | Volume (MCum) | Sl. No. | Sandbar Code      | RL (m) | Area in Sq. m. | Thickness (m) | Volume (MCum) | Difference (MCum) |       |
|-------------------|--------------|--------|----------------|---------------|---------------|---------|-------------------|--------|----------------|---------------|---------------|-------------------|-------|
| <b>Sone River</b> |              |        |                |               |               |         |                   |        |                |               |               |                   |       |
| 1                 | PR_RT_SN_01  | 149.90 | 260653.00      | 2.90          | 0.76          | 1       | PO_RT_SN_01       | 150    | 117533         | 3.00          | 0.35          | -0.40             |       |
| 2                 | PR_RT_SN_02  | 148.90 | 750845.00      | 2.90          | 2.18          | 2       | PO_RT_SN_02_04    | 149    | 1413630        | 3.00          | 4.24          | 2.06              |       |
| 3                 | PR_RT_SN_03  | 2.90   | 92649.50       | 2.90          | 0.27          |         |                   |        |                |               |               |                   | -0.27 |
| 4                 | PR_RT_SN_04  | 2.90   | 538714.00      | 2.90          | 1.56          |         |                   |        |                |               |               |                   | -1.56 |
| 5                 | PR_RT_SN_05  | 146.90 | 2044560.00     | 2.90          | 5.93          | 3       | PO_RT_SN_05       | 147    | 2036360        | 3.00          | 6.11          | 0.18              |       |
| 6                 | PR_RT_SN_06  | 144.70 | 8542970.00     | 2.70          | 23.07         | 4       | PO_RT_SN_06       | 145    | 8232810        | 3.00          | 24.70         | 1.63              |       |
| 7                 | PR_RT_SN_07  | 145.80 | 5244290.00     | 2.80          | 14.68         | 5       | PO_RT_SN_07       | 146    | 5303110        | 3.00          | 15.91         | 1.23              |       |
|                   |              |        |                |               |               | 6       | PO_RT_SN_7A       | 146    | 340515         | 3.00          | 1.02          | 1.02              |       |
| 8                 | PR_RT_SN_08  | 2.80   | 86630.40       | 2.80          | 0.24          |         |                   |        |                |               |               | -0.24             |       |
| 9                 | PR_RT_SN_09  | 141.80 | 1257160.00     | 2.80          | 3.52          | 7       | PO_RT_SN_9A       | 142    | 500493         | 3.00          | 1.50          | -2.02             |       |
|                   |              |        |                |               |               | 8       | PO_RT_SN_9B       | 143    | 318580         | 3.00          | 0.96          | 0.96              |       |
|                   |              |        |                |               |               | 9       | PO_RT_SN_9C       | 144    | 147212         | 3.00          | 0.44          | 0.44              |       |
| 10                | PR_RT_SN_10  | 140.70 | 153839.00      | 2.70          | 0.42          | 10      | PO_RT_SN_10       | 141    | 118917         | 3.00          | 0.36          | -0.06             |       |
| 11                | PR_RT_SN_11  | 138.70 | 1262230.00     | 2.70          | 3.41          | 11      | PO_RT_SN_11       | 139    | 1155580        | 3.00          | 3.47          | 0.06              |       |
| 12                | PR_RT_SN_12  | 137.70 | 239662.00      | 2.70          | 0.65          | 12      | PO_RT_SN_12       | 138    | 398108         | 3.00          | 1.19          | 0.55              |       |
| 13                | PR_RT_SN_13  | 2.70   | 163515.00      | 2.70          | 0.44          |         |                   |        |                |               |               | -0.44             |       |
| 14                | PR_RT_SN_14  | 134.70 | 275274.00      | 2.70          | 0.74          | 13      | PO_RT_SN_14       | 135    | 150620         | 3.00          | 0.45          | -0.29             |       |
| 15                | PR_RT_SN_15  | 133.70 | 88155.90       | 2.70          | 0.24          | 14      | PO_RT_SN_15       | 134    | 116380         | 3.00          | 0.35          | 0.11              |       |
| 16                | PR_RT_SN_16  | 132.80 | 4449420.00     | 2.80          | 12.46         | 15      | PO_RT_SN_16       | 133    | 4600010        | 3.00          | 13.80         | 1.34              |       |
| 17                | PR_RT_SN_17  | 130.80 | 1480670.00     | 2.80          | 4.15          | 16      | PO_RT_SN_17       | 131    | 1356620        | 3.00          | 4.07          | -0.08             |       |
| 18                | PR_RT_SN_18  | 129.80 | 729037.00      | 2.80          | 2.04          | 17      | PO_RT_SN_18       | 130    | 836702         | 3.00          | 2.51          | 0.47              |       |
| 19                | PR_RT_SN_19  | 127.80 | 1370410.00     | 2.80          | 3.84          | 18      | PO_RT_SN_19       | 128    | 1197070        | 3.00          | 3.59          | -0.25             |       |
| 20                | PR_RT_SN_20  | 126.80 | 44842.40       | 2.80          | 0.13          | 19      | PO_RT_SN_20_21    | 127    | 373916         | 3.00          | 1.12          | 1.00              |       |
| 21                | PR_RT_SN_21  | 2.80   | 94933.30       | 2.80          | 0.27          |         |                   |        |                |               |               |                   | -0.27 |
| 22                | PR_RT_SN_22  | 124.80 | 298886.00      | 2.80          | 0.84          | 20      | PO_RT_SN_22_23_24 | 125    | 704542         | 3.00          | 2.11          | 1.28              |       |

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| Sl. No. | Sandbar Code | RL (m) | Area in Sq. m. | Thickness (m) | Volume (MCum) | Sl. No. | Sandbar Code            | RL (m) | Area in Sq. m. | Thickness (m) | Volume (MCum) | Difference (MCum) |      |       |
|---------|--------------|--------|----------------|---------------|---------------|---------|-------------------------|--------|----------------|---------------|---------------|-------------------|------|-------|
| 23      | ER_RT_SN_23  | 2.80   | 169382.00      | 2.80          | 0.47          |         |                         |        |                |               |               | -0.47             |      |       |
| 24      | PR_RT_SN_24  | 2.80   | 139101.00      | 2.80          | 0.39          |         |                         |        |                |               |               | -0.39             |      |       |
| 25      | PR_RT_SN_25  | 123.80 | 167699.00      | 2.80          | 0.47          | 21      | PO_RT_SN_25_26_27_28_29 | 124    | 785435         | 3.00          | 2.36          | 1.89              |      |       |
| 26      | PR_RT_SN_26  | 2.90   | 144953.00      | 2.90          | 0.42          |         |                         |        |                |               |               |                   |      | -0.42 |
| 27      | PR_RT_SN_27  | 2.90   | 167514.00      | 2.90          | 0.49          |         |                         |        |                |               |               |                   |      | -0.49 |
| 28      | PR_RT_SN_28  | 2.90   | 85546.50       | 2.90          | 0.25          |         |                         |        |                |               |               |                   |      | -0.25 |
|         |              | 2.70   | 101363.00      | 2.70          | 0.27          |         |                         |        |                |               |               |                   |      | -0.27 |
| 29      | PR_RT_SN_29  |        |                |               |               |         |                         | 22     | PO_RT_SN_29A   | 123           | 111420        | 3.00              | 0.33 | 0.33  |
| 30      | PR_RT_SN_30  | 120.90 | 187895.00      | 2.90          | 0.54          | 23      | PO_RT_SN_30             | 121    | 271511         | 3.00          | 0.81          | 0.27              |      |       |
| 31      | PR_RT_SN_31  | 119.90 | 205872.00      | 2.90          | 0.60          | 24      | PO_RT_SN_31             | 120    | 210533         | 3.00          | 0.63          | 0.03              |      |       |
| 32      | PR_RT_SN_32  | 117.90 | 281627.00      | 2.90          | 0.82          | 25      | PO_RT_SN_32             | 118    | 254850         | 3.00          | 0.76          | -0.05             |      |       |
| 33      | PR_RT_SN_33  | 115.95 | 832213.00      | 2.95          | 2.46          | 26      | PO_RT_SN_33_34          | 116    | 987090         | 3.00          | 2.96          | 0.51              |      |       |
| 34      | PR_RT_SN_34  | 2.95   | 86063.60       | 2.95          | 0.25          |         |                         |        |                |               |               |                   |      | -0.25 |
| 35      | PR_RT_SN_35  | 114.95 | 625838.00      | 2.95          | 1.85          | 27      | PO_RT_SN_35             | 115    | 539649         | 3.00          | 1.62          | -0.23             |      |       |
| 36      | PR_RT_SN_36  | 2.95   | 79118.50       | 2.95          | 0.23          |         |                         |        |                |               |               | -0.23             |      |       |
| 37      | PR_RT_SN_37  | 2.95   | 122046.00      | 2.95          | 0.36          |         |                         |        |                |               |               | -0.36             |      |       |
| 38      | PR_RT_SN_38  | 2.95   | 444707.00      | 2.95          | 1.31          |         |                         |        |                |               |               | -1.31             |      |       |
| 39      | PR_RT_SN_39  | 2.95   | 135602.00      | 2.95          | 0.40          |         |                         |        |                |               |               | -0.40             |      |       |
| 40      | PR_RT_SN_40  | 2.95   | 148674.00      | 2.95          | 0.44          |         |                         |        |                |               |               | -0.44             |      |       |
| 41      | PR_RT_SN_41  | 113.95 | 417113.00      | 2.95          | 1.23          | 28      | PO_RT_SN_41_45          | 114    | 987949         | 3.00          | 2.96          | 1.73              |      |       |
| 42      | PR_RT_SN_42  | 2.95   | 219349.00      | 2.95          | 0.65          |         |                         |        |                |               |               |                   |      | -0.65 |
| 43      | PR_RT_SN_43  | 2.95   | 154529.00      | 2.95          | 0.46          |         |                         |        |                |               |               |                   |      | -0.46 |
| 44      | PR_RT_SN_44  | 2.95   | 146787.00      | 2.95          | 0.43          |         |                         |        |                |               |               |                   |      | -0.43 |
| 45      | PR_RT_SN_45  | 2.95   | 93252.00       | 2.95          | 0.28          |         |                         |        |                |               |               |                   |      | -0.28 |
| 46      | PR_RT_SN_46  | 109.95 | 956085.00      | 2.95          | 2.82          | 29      | PO_RT_SN_46             | 110    | 1070960        | 3.00          | 3.21          | 0.39              |      |       |
| 47      | PR_RT_SN_47  | 108.95 | 544265.00      | 2.95          | 1.61          | 30      | PO_RT_SN_47             | 109    | 692163         | 3.00          | 2.08          | 0.47              |      |       |
| 48      | PR_RT_SN_48  | 107.95 | 641372.00      | 2.95          | 1.89          | 31      | PO_RT_SN_48             | 108    | 971936         | 3.00          | 2.92          | 1.02              |      |       |

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| Sl. No. | Sandbar Code | RL (m) | Area in Sq. m. | Thickness (m) | Volume (MCum) | Sl. No. | Sandbar Code         | RL (m) | Area in Sq. m. | Thickness (m) | Volume (MCum) | Difference (MCum) |        |
|---------|--------------|--------|----------------|---------------|---------------|---------|----------------------|--------|----------------|---------------|---------------|-------------------|--------|
| 49      | PR_RT_SN_49  | 2.95   | 235883.00      | 2.95          | 0.70          |         |                      |        |                |               |               | -0.70             |        |
| 50      | PR_RT_SN_50  | 106.95 | 109132.00      | 2.95          | 0.32          | 32      | PO_RT_SN_50_51_52_53 | 107    | 2031840        | 3.00          | 6.10          | 5.77              |        |
| 51      | PR_RT_SN_51  | 2.95   | 98728.80       | 2.95          | 0.29          |         |                      |        |                |               |               |                   | -0.29  |
| 52      | PR_RT_SN_52  | 2.95   | 237646.00      | 2.95          | 0.70          |         |                      |        |                |               |               |                   | -0.70  |
| 53      | PR_RT_SN_53  | 2.95   | 1023960.00     | 2.95          | 3.02          |         |                      |        |                |               |               |                   |        |
|         |              |        |                |               |               | 33      | PO_RT_SN_53A         | 105    | 870007         | 3.00          | 2.61          | 2.61              |        |
|         |              |        |                |               |               | 34      | PO_RT_SN_53B         | 103    | 177641         | 3.00          | 0.53          | 0.53              |        |
| 54      | PR_RT_SN_54  | 101.90 | 2300460.00     | 2.90          | 6.67          | 35      | PO_RT_SN_54_55_56_57 | 102    | 1298280        | 3.00          | 3.89          | -2.78             |        |
| 55      | PR_RT_SN_55  | 2.90   | 85661.90       | 2.90          | 0.25          |         |                      |        |                |               |               |                   | -0.25  |
| 56      | PR_RT_SN_56  | 2.90   | 148824.00      | 2.90          | 0.43          |         |                      |        |                |               |               |                   | -0.43  |
| 57      | PR_RT_SN_57  | 2.90   | 1254850.00     | 2.90          | 3.64          |         |                      |        |                |               |               |                   | -3.64  |
| 58      | PR_RT_SN_58  | 2.90   | 263256.00      | 2.90          | 0.76          |         |                      |        |                |               |               | -0.76             |        |
| 59      | PR_RT_SN_59  | 2.90   | 461098.00      | 2.90          | 1.34          |         |                      |        |                |               |               | -1.34             |        |
| 60      | PR_RT_SN_60  | 2.90   | 125421.00      | 2.90          | 0.36          |         |                      |        |                |               |               | -0.36             |        |
| 61      | PR_RT_SN_61  | 100.50 | 2291260.00     | 2.50          | 5.73          | 36      | PO_RT_SN_61          | 101    | 2131180        | 3.00          | 6.39          | 0.67              |        |
|         |              |        |                |               |               | 37      | PO_RT_SN_61A         | 100    | 1157310        | 3.00          | 3.47          | 3.47              |        |
|         |              |        |                |               |               | 38      | PO_RT_SN_61B         | 99     | 1365370        | 3.00          | 4.10          | 4.10              |        |
| 62      | PR_RT_SN_62  | 2.95   | 2937980.00     | 2.95          | 8.67          |         |                      |        |                |               |               | -8.67             |        |
| 63      | PR_RT_SN_63  | 2.95   | 146934.00      | 2.95          | 0.43          |         |                      |        |                |               |               | -0.43             |        |
| 64      | PR_RT_SN_64  | 92.95  | 226217.00      | 2.95          | 0.67          | 39      | PO_RT_SN_64          | 93     | 241773         | 3.00          | 0.73          | 0.06              |        |
| 65      | PR_RT_SN_65  | 90.95  | 819025.00      | 2.95          | 2.42          | 40      | PO_RT_SN_65          | 91     | 712956         | 3.00          | 2.14          | -0.28             |        |
| 66      | PR_RT_SN_66  | 88.95  | 1259790.00     | 2.95          | 3.72          | 41      | PO_RT_SN_66          | 89     | 1151640        | 3.00          | 3.45          | -0.26             |        |
|         | PR_RT_SN_67  | 86.95  | 301752.00      | 2.95          | 0.89          | 42      | PO_RT_SN_67_68       | 87     | 6213180        | 3.00          | 18.64         | 17.75             |        |
|         | PR_RT_SN_68  | 2.95   | 4376610.00     | 2.95          | 12.91         |         |                      |        |                |               |               |                   | -12.91 |
|         | PR_RT_SN_69  | 2.95   | 391348.00      | 2.95          | 1.15          |         |                      |        |                |               |               | -1.15             |        |
|         | PR_RT_SN_70  | 2.95   | 146242.00      | 2.95          | 0.43          |         |                      |        |                |               |               | -0.43             |        |





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| Sl. No.            | Sandbar Code | RL (m) | Area in Sq. m. | Thickness (m) | Volume (MCum) | Sl. No. | Sandbar Code      | RL (m) | Area in Sq. m. | Thickness (m) | Volume (MCum) | Difference (MCum) |       |       |
|--------------------|--------------|--------|----------------|---------------|---------------|---------|-------------------|--------|----------------|---------------|---------------|-------------------|-------|-------|
| 71                 | PR_RT_SN_71  | 84.95  | 205746.00      | 2.95          | 0.61          | 43      | PO_RT_SN_71_72_73 | 85     | 1502300        | 3.00          | 4.51          | 3.90              |       |       |
| 72                 | PR_RT_SN_72  | 2.95   | 211333         | 2.95          | 0.62          |         |                   |        |                |               |               |                   |       | -0.62 |
| 73                 | PR_RT_SN_73  | 2.95   | 709385         | 2.95          | 2.09          |         |                   |        |                |               |               |                   |       | -2.09 |
| 74                 | PR_RT_SN_74  | 82.95  | 2459820        | 2.95          | 7.26          | 44      | PO_RT_SN_74       | 83     | 2416400        | 3.00          | 7.25          |                   | -0.01 |       |
| 75                 | PR_RT_SN_75  | 80.95  | 662194         | 2.95          | 1.95          | 45      | PO_RT_SN_75_76    | 81     | 1505000        | 3.00          | 4.52          |                   | 2.56  |       |
| 76                 | PR_RT_SN_76  | 2.95   | 444099         | 2.95          | 1.31          |         |                   |        |                |               |               |                   |       | -1.31 |
| 77                 | PR_RT_SN_77  | 77.95  | 409980         | 2.95          | 1.21          | 46      | PO_RT_SN_77_78    | 78     | 603164         | 3.00          | 1.81          |                   | 0.60  |       |
| 78                 | PR_RT_SN_78  | 2.95   | 132045         | 2.95          | 0.39          |         |                   |        |                |               |               |                   |       | -0.39 |
| 79                 | PR_RT_SN_79  | 74.95  | 348355         | 2.95          | 1.03          | 47      | PO_RT_SN_79       | 75     | 368636         | 3.00          | 1.11          |                   | 0.08  |       |
| <b>Kow River</b>   |              |        |                |               |               |         |                   |        |                |               |               |                   |       |       |
| 1                  | PR_RT_KW_01  | 86.80  | 374.544        | 1.80          | 0.001         | 1       | PO_RT_KW_01       | 87     | 524.733        | 2.00          | 0.001         |                   | 0.000 |       |
| 2                  | PR_RT_KW_02  | 85.80  | 300.667        | 1.80          | 0.001         | 2       | PO_RT_KW_02       | 86     | 406.241        | 2.00          | 0.001         |                   | 0.000 |       |
| 3                  | PR_RT_KW_03  | 84.80  | 296.289        | 1.80          | 0.001         | 3       | PO_RT_KW_03       | 85     | 567.722        | 2.00          | 0.001         |                   | 0.001 |       |
| 4                  | PR_RT_KW_04  | 84.80  | 375.132        | 1.80          | 0.001         | 4       | PO_RT_KW_04       | 85     | 473.325        | 2.00          | 0.001         |                   | 0.000 |       |
| 5                  | PR_RT_KW_05  | 85.80  | 4159.54        | 1.80          | 0.007         | 5       | PO_RT_KW_05       | 86     | 4509.64        | 2.00          | 0.009         |                   | 0.002 |       |
| 6                  | PR_RT_KW_06  | 84.80  | 491.292        | 1.80          | 0.001         | 6       | PO_RT_KW_06       | 85     | 675.941        | 2.00          | 0.001         |                   | 0.000 |       |
| 7                  | PR_RT_KW_07  | 84.80  | 556.671        | 1.80          | 0.001         | 7       | PO_RT_KW_07       | 85     | 865.552        | 2.00          | 0.002         |                   | 0.001 |       |
| 8                  | PR_RT_KW_08  | 83.80  | 993.289        | 1.80          | 0.002         | 8       | PO_RT_KW_08       | 84     | 1102.63        | 2.00          | 0.002         |                   | 0.000 |       |
| 9                  | PR_RT_KW_09  | 82.80  | 1000.66        | 1.80          | 0.002         | 9       | PO_RT_KW_09       | 83     | 1200.05        | 2.00          | 0.002         |                   | 0.001 |       |
| 10                 | PR_RT_KW_10  | 82.80  | 527.885        | 1.80          | 0.001         | 10      | PO_RT_KW_10       | 83     | 619.374        | 2.00          | 0.001         |                   | 0.000 |       |
| <b>Thora River</b> |              |        |                |               |               |         |                   |        |                |               |               |                   |       |       |
| 1                  | PR_RT_TH_01  | 83.70  | 1053.9         | 1.70          | 0.002         | 1       | PO_RT_TH_01       | 84     | 1121.33        | 2.00          | 0.002         |                   | 0.000 |       |
|                    |              |        |                |               |               | 2       | PO_RT_TH_1A       | 84     | 295.682        | 2.00          | 0.001         |                   | 0.001 |       |
| 2                  | PR_RT_TH_02  | 82.70  | 2382.72        | 1.70          | 0.004         | 3       | PO_RT_TH_02       | 83     | 2369.27        | 2.00          | 0.005         |                   | 0.001 |       |
|                    |              |        |                |               |               | 4       | PO_RT_TH_03       | 83     | 637.744        | 2.00          | 0.001         |                   | 0.000 |       |
| 3                  | PR_RT_TH_03  | 82.70  | 594.783        | 1.70          | 0.001         |         |                   |        |                |               |               |                   |       |       |



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| Sl. No.            | Sandbar Code | RL (m) | Area in Sq. m. | Thickness (m) | Volume (MCum) | Sl. No. | Sandbar Code      | RL (m) | Area in Sq. m. | Thickness (m) | Volume (MCum) | Difference (MCum) |       |
|--------------------|--------------|--------|----------------|---------------|---------------|---------|-------------------|--------|----------------|---------------|---------------|-------------------|-------|
| 71                 | PR_RT_SN_71  | 84.95  | 205746.00      | 2.95          | 0.61          | 43      | PO_RT_SN_71_72_73 | 85     | 1502300        | 3.00          | 4.51          | 3.90              |       |
| 72                 | PR_RT_SN_72  | 2.95   | 211333         | 2.95          | 0.62          |         |                   |        |                |               |               |                   | -0.62 |
| 73                 | PR_RT_SN_73  | 2.95   | 709385         | 2.95          | 2.09          |         |                   |        |                |               |               |                   | -2.09 |
| 74                 | PR_RT_SN_74  | 82.95  | 2459820        | 2.95          | 7.26          | 44      | PO_RT_SN_74       | 83     | 2416400        | 3.00          | 7.25          | -0.01             |       |
| 75                 | PR_RT_SN_75  | 80.95  | 662194         | 2.95          | 1.95          | 45      | PO_RT_SN_75_76    | 81     | 1505000        | 3.00          | 4.52          | 2.56              |       |
| 76                 | PR_RT_SN_76  | 2.95   | 444099         | 2.95          | 1.31          |         |                   |        |                |               |               |                   | -1.31 |
| 77                 | PR_RT_SN_77  | 77.95  | 409980         | 2.95          | 1.21          | 46      | PO_RT_SN_77_78    | 78     | 603164         | 3.00          | 1.81          | 0.60              |       |
| 78                 | PR_RT_SN_78  | 2.95   | 132045         | 2.95          | 0.39          |         |                   |        |                |               |               |                   | -0.39 |
| 79                 | PR_RT_SN_79  | 74.95  | 348355         | 2.95          | 1.03          | 47      | PO_RT_SN_79       | 75     | 368636         | 3.00          | 1.11          | 0.08              |       |
| <b>Kow River</b>   |              |        |                |               |               |         |                   |        |                |               |               |                   |       |
| 1                  | PR_RT_KW_01  | 86.80  | 374.544        | 1.80          | 0.001         | 1       | PO_RT_KW_01       | 87     | 524.733        | 2.00          | 0.001         | 0.000             |       |
| 2                  | PR_RT_KW_02  | 85.80  | 300.667        | 1.80          | 0.001         | 2       | PO_RT_KW_02       | 86     | 406.241        | 2.00          | 0.001         | 0.000             |       |
| 3                  | PR_RT_KW_03  | 84.80  | 296.289        | 1.80          | 0.001         | 3       | PO_RT_KW_03       | 85     | 567.722        | 2.00          | 0.001         | 0.001             |       |
| 4                  | PR_RT_KW_04  | 84.80  | 375.132        | 1.80          | 0.001         | 4       | PO_RT_KW_04       | 85     | 473.325        | 2.00          | 0.001         | 0.000             |       |
| 5                  | PR_RT_KW_05  | 85.80  | 4159.54        | 1.80          | 0.007         | 5       | PO_RT_KW_05       | 86     | 4509.64        | 2.00          | 0.009         | 0.002             |       |
| 6                  | PR_RT_KW_06  | 84.80  | 491.292        | 1.80          | 0.001         | 6       | PO_RT_KW_06       | 85     | 675.941        | 2.00          | 0.001         | 0.000             |       |
| 7                  | PR_RT_KW_07  | 84.80  | 556.671        | 1.80          | 0.001         | 7       | PO_RT_KW_07       | 85     | 865.552        | 2.00          | 0.002         | 0.001             |       |
| 8                  | PR_RT_KW_08  | 83.80  | 993.289        | 1.80          | 0.002         | 8       | PO_RT_KW_08       | 84     | 1102.63        | 2.00          | 0.002         | 0.000             |       |
| 9                  | PR_RT_KW_09  | 82.80  | 1000.66        | 1.80          | 0.002         | 9       | PO_RT_KW_09       | 83     | 1200.05        | 2.00          | 0.002         | 0.001             |       |
| 10                 | PR_RT_KW_10  | 82.80  | 527.885        | 1.80          | 0.001         | 10      | PO_RT_KW_10       | 83     | 619.374        | 2.00          | 0.001         | 0.000             |       |
| <b>Thora River</b> |              |        |                |               |               |         |                   |        |                |               |               |                   |       |
| 1                  | PR_RT_TH_01  | 83.70  | 1053.9         | 1.70          | 0.002         | 1       | PO_RT_TH_01       | 84     | 1121.33        | 2.00          | 0.002         | 0.000             |       |
|                    |              |        |                |               |               | 2       | PO_RT_TH_1A       | 84     | 295.682        | 2.00          | 0.001         | 0.001             |       |
| 2                  | PR_RT_TH_02  | 82.70  | 2382.72        | 1.70          | 0.004         | 3       | PO_RT_TH_02       | 83     | 2369.27        | 2.00          | 0.005         | 0.001             |       |
| 3                  | PR_RT_TH_03  | 82.70  | 594.783        | 1.70          | 0.001         | 4       | PO_RT_TH_03       | 83     | 637.744        | 2.00          | 0.001         | 0.000             |       |

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Thus, in Rohtas district, about 4.99 Million cum of sand has been found as an incremental volume increase in Rohtas District when compared between pre and post monsoon sand volume data.

**Note:** *The above table is having pre-monsoon (PR) and post monsoon (PO) availability of sand deposition the particular sand bar code. The blank data in front of the code shows that no sand deposition at that particular time .i.e is pre/post monsoon period.*

Maps showing distribution of sand bars on rivers of the Rohtas district during Pre and Post monsoon are depicted in Plates.

**Table No. 7.6: Sediment Load comparison between Pre & Post Monsoon periods for different rivers of Rohtas district**

| Sl. No. | River Name | Pre-Monsoon Sediment Load (Mcum) | Post Monsoon Sediment Load (Mcum) | Variance (Mcum) | Variance (%) |
|---------|------------|----------------------------------|-----------------------------------|-----------------|--------------|
| 1       | Sone       | 175.16                           | 180.15                            | 4.99            | 3            |
| 2       | Kow        | 0.016                            | 0.022                             | 0.01            | 34           |
| 3       | Thora      | 0.007                            | 0.009                             | 0.00            | 29           |
| Total   |            | 175.18                           | 180.18                            | 4.99            | 3            |

An average Variance Comes to about 3% for the District. An average aggradation & replenishment rate for the year of the District comes to about 103%.

**B. Replenishment estimation based on an empirical formula:**

The river reaches with sand provide the resource and thus it is necessary to ascertain the rate of replenishment of the mineral. Regular replenishment study needs to be carried out to keep a balance between deposition and extraction. The replenishment estimation based on a theoretical empirical formula comprising of analytical models to calculate.

Sediment load deposition in a river is depend on catchment area, weathering index of the various rock types of the catchment area, land-use pattern of the area, rainfall data and grain size distribution of the sediments. Again, the sediment load estimation is not a dependent variable of the imaginary district boundary, but it largely depends upon the aerial extents of the catchment areas, which crossed the district and state boundaries.

**i. Methodology of the study:**

The replenishment estimation is based on a theoretical empirical formula with the estimation of bedload transport comprising of analytical models to calculate the replenishment estimation. Sedimentation in



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riverbed depends on catchment yield, peak flood discharge due to rainfall, bed load transport rates and sediment yield characteristic of the river. Some of the common methods used for Replenishment study are explained below.

**Catchment Yield Calculation:**

The total quantity of surface water that can be expected in a given period from a stream at the outlet of its catchment is known as yield of the catchment in that period. The annual yield from a catchment is the end product of various processes such as precipitation, infiltration and evapotranspiration operating on the catchment.

Catchment Yield can be estimated using following formula:

$$\text{Catchment Yield (m}^3\text{)} = \text{Catchment area (m}^2\text{)} * \text{Runoff coefficient (\%)} * \text{Rainfall (m)}$$

The runoff generated from the watershed is analyzed using Strange's Tables Method to get the reliable yield results. Runoff from a catchment is dependent upon annual rainfall as well as catchment characteristics such as soil types and the type of groundcover / land usage. Remote sensing was used for demarcation of catchment area relevant to the drainage system. Runoff coefficient of the catchment has been established based on Strange's table.

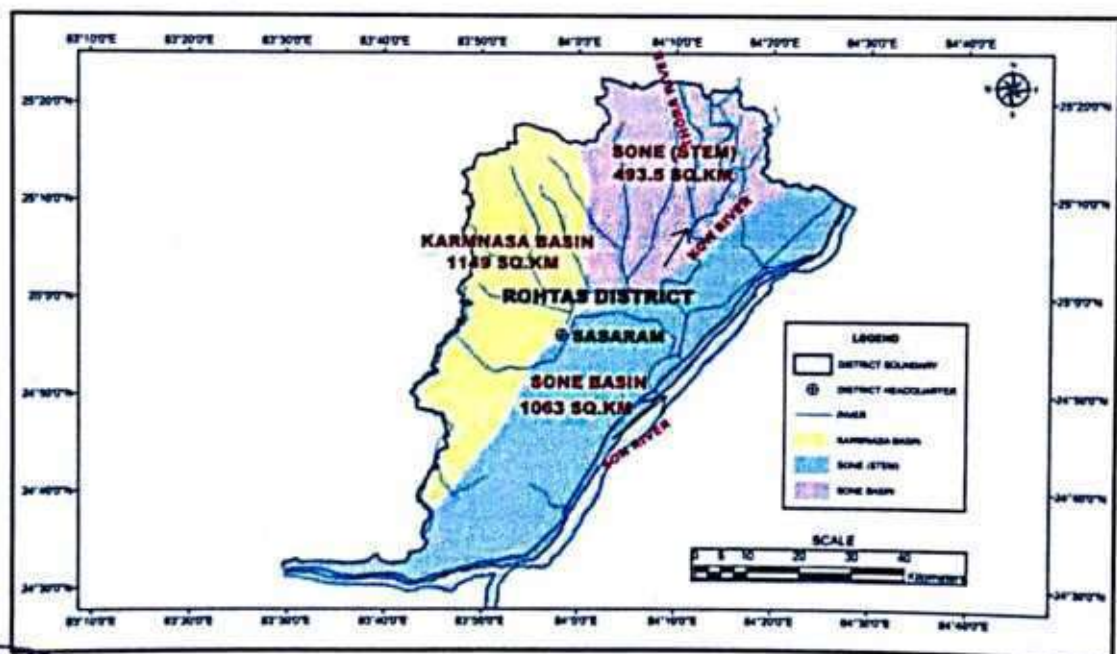


Figure No.7.7: Watershed map of Rohtas District



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Strange (1892) studied the available rainfall and runoff and obtained yield ratios as functions of indicators representing catchment characteristics. Catchments are classified as good, average and bad according to the relative magnitudes of yield they give. For example, catchment with good forest cover and having soils of high permeability would be classified as bad, while catchment having soils of low permeability and having little or no vegetal cover is termed good. Based on the study Strange established runoff coefficient table as given below:

**Table No. 7.8: Runoff coefficient of the catchment based on Strange's table**

| Total monsoon rainfall (mm) | Runoff coefficient (%) |                   |               | Total monsoon rainfall (mm) | Runoff coefficient (%) |                   |               |
|-----------------------------|------------------------|-------------------|---------------|-----------------------------|------------------------|-------------------|---------------|
|                             | Good catchment         | Average catchment | Bad catchment |                             | Good catchment         | Average catchment | Bad catchment |
| 25.4                        | 0.1                    | 0.1               | 0.1           | 787.4                       | 27.4                   | 20.5              | 13.7          |
| 50.8                        | 0.2                    | 0.2               | 0.1           | 812.8                       | 28.5                   | 21.3              | 14.2          |
| 76.2                        | 0.4                    | 0.3               | 0.2           | 838.2                       | 29.6                   | 22.2              | 14.8          |
| 101.6                       | 0.7                    | 0.5               | 0.3           | 863.6                       | 30.8                   | 23.1              | 15.4          |
| 127                         | 1                      | 0.7               | 0.5           | 889                         | 31.9                   | 23.9              | 15.9          |
| 152.4                       | 1.5                    | 1.1               | 0.7           | 914.4                       | 33                     | 24.7              | 16.5          |
| 177.8                       | 2.1                    | 1.5               | 1             | 939.8                       | 34.1                   | 25.5              | 17            |
| 203.2                       | 2.8                    | 2.1               | 1.4           | 965.2                       | 35.3                   | 26.4              | 17.6          |
| 228.6                       | 3.5                    | 2.6               | 1.7           | 990.6                       | 36.4                   | 27.3              | 18.2          |
| 254                         | 4.3                    | 3.2               | 2.1           | 1016                        | 37.5                   | 28.1              | 18.7          |
| 279.4                       | 5.2                    | 3.9               | 2.6           | 1041.4                      | 38.6                   | 28.9              | 19.3          |
| 304.8                       | 6.2                    | 4.6               | 3.1           | 1066.8                      | 39.8                   | 29.8              | 19.9          |
| 330.2                       | 7.2                    | 5.4               | 3.6           | 1092.2                      | 40.9                   | 30.6              | 20.4          |
| 355.6                       | 8.3                    | 6.2               | 4.1           | 1117.6                      | 42                     | 31.5              | 21            |
| 381                         | 9.4                    | 7                 | 4.7           | 1143                        | 43.1                   | 32.3              | 21.5          |
| 406.4                       | 10.5                   | 7.8               | 5.2           | 1168.4                      | 44.3                   | 33.2              | 22.1          |
| 431.8                       | 11.6                   | 8.7               | 5.8           | 1193.8                      | 45.4                   | 34                | 22.7          |
| 457.2                       | 12.8                   | 9.6               | 6.4           | 1219.2                      | 46.5                   | 34.8              | 23.2          |
| 482.6                       | 13.9                   | 10.4              | 6.9           | 1244.6                      | 47.6                   | 35.7              | 23.8          |
| 508                         | 15                     | 11.3              | 7.5           | 1270                        | 48.8                   | 36.6              | 24.4          |
| 533.4                       | 16.1                   | 12                | 8             | 1295.4                      | 49.9                   | 37.4              | 24.9          |
| 558.8                       | 17.3                   | 12.9              | 8.6           | 1320.8                      | 51                     | 38.2              | 25.5          |
| 584.2                       | 18.4                   | 13.8              | 9.2           | 1346.2                      | 52.1                   | 39                | 26            |
| 609.6                       | 19.5                   | 14.6              | 9.7           | 1371.6                      | 53.3                   | 39.9              | 26.6          |
| 635                         | 20.6                   | 15.4              | 10.3          | 1397                        | 54.4                   | 40.8              | 27.2          |
| 660.4                       | 21.8                   | 16.3              | 10.9          | 1422.4                      | 55.5                   | 41.6              | 27.7          |
| 685.8                       | 22.9                   | 17.1              | 11.4          | 1447.8                      | 56.6                   | 42.4              | 28.3          |
| 711.2                       | 24                     | 18                | 12            | 1473.2                      | 57.8                   | 43.3              | 28.9          |
| 736.6                       | 25.1                   | 18.8              | 12.5          | 1498.6                      | 58.9                   | 44.4              | 29.4          |
| 762                         | 26.3                   | 19.7              | 13.1          | 1524                        | 60                     | 45                | 30            |



Rainfall returns period for 25, 50 and 100 years calculated as below:

**As per Weibull's Formula,**

$$\text{Return period/Recurrence interval} = (n+1)/m$$

Where: n number of years on record;

m is the rank of observed occurrences when arranged in descending order.

**a. Peak Flood Discharge Calculation:**

The term "peak discharge" stands for the highest concentration of runoff from the basin area. The accurate estimation of flood discharge remains one of the major challenges as it depends upon physical characteristic of the catchment area and the flood intensity, duration and distribution pattern. There have been many different approaches for determining the peak runoff from an area. As a result many different models (equations) for peak discharge estimation have been developed. Formulas used for Peak Discharge calculation are as below:

**As per Dicken's formula,**

$$Q = CA^{3/4}$$

Where: Q is Maximum flood discharge (m<sup>3</sup>/sec) in a river

A is Area of catchment in Sq. Km

C is Constant whose value varies widely between 2.8 to 5.6 for catchments in plains and 14 to 28 for catchments in hills

**As per Jarvis formula,**

$$Q = CA^{1/2}$$

Where: Q is Maximum flood discharge (m<sup>3</sup>/sec) in a river

A is Area of catchment in Sq. Km

C is Constant whose value varies between 1.77 as minimum and 177 as maximum. Limiting or 100 percent chance floods are given by the value of C of 177

**As per Rational formula,**

$$Q = CIA$$

Where: Q is Maximum flood discharge (m<sup>3</sup>/sec) in a river

A is Area of catchment in Sq. Km

C is Runoff coefficient which depends on the characteristics of the catchment area. It is a ratio of runoff: rainfall

I is Intensity of rainfall (in m/sec)

**Bed Load Transport Calculation:**

The most important problems in river engineering are to predict bed load transport rates in torrential floods flowing from mountainous streams. Three modes of transport namely; rolling, sliding and saltation may occur simultaneously in bed load transport. The different modes of transportation are closely related and it is difficult, if not impossible, to



separate them completely. There are number of equations to compute the total sediment load. Most of these equations have some theoretical and empirical bases.

#### Ackers and White Equation:

Ackers and White (1973) used dimensional analysis based on flow power concept and their proposed formula is as follows.

$$C_t = C_s G_s (d_{50}/h) (v/u_*')^{n'} [(F_{gr}/A_1) - 1]^m$$

The dimensionless particle  $d_{gr}$  is calculated by:

$$d_{gr} = d_{50} (g(G_s - 1)/v^2)^{1/3}$$

The particle mobility factor  $F_{gr}$  is calculated by:

$$F_{gr} = (U_*'^n / (G_s - 1)g d_{50})^{1/2} * (V/(5.66 \log(10h/d_{50}))^{1-n'}$$

Where,

- function
- $A_1$  = Critical particle mobility factor
  - $C_s$  = Concentration coefficient in the sediment transport
  - $C_t$  = Total sediment concentration
  - $d_{50}$  = Median grain size
  - $d_{gr}$  = Dimensionless particle diameter
  - $F_{gr}$  = Particle mobility parameter
  - $g$  = Acceleration of gravity
  - $D_s, S_g$  = Specific gravity
  - $h$  = Water depth
  - $m$  = Exponent in the sediment transport function
  - $n'$  = Manning roughness coefficient
  - $U_*'$  = Shear velocity
  - $V$  = Mean flow velocity
  - $\nu$  = Kinematic viscosity

#### Meyer - Peter's equation:

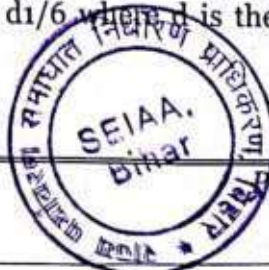
Meyer-Peter's equation is based on experimental work carried out at Federal Institute of Technology, Zurich. Mayer-Peter gave a dimensionless equation based, for the first time, on rational laws. Mayer-Peter equations giving an empirical correlation of bed load transport rates in flumes and natural rivers. The simplified Meyer-Peter's equation is given below:

$$g_b = 0.417[\tau_0 (\eta'/\eta)^{1.5} - \tau_c]^{1.5}$$

Where,

$g_b$  = Rate of bed load transport (by weight) in N per m width of channel per second.

$\eta'$  = Manning's coefficient pertaining to grain size on an unrippled bed and Strickler formula i.e.  $\eta' = (1/24) \times d^{1/6}$  where  $d$  is the median size ( $d_{50}$ ) of the bed sediment in m.



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$\eta$  = The actual observed value of the rugosity coefficient on rippled channels. Its value is generally taken as 0.020 for discharges of more than 11cumecs, and 0.0225 for lower discharges.

$\tau_c$  = Critical shear stress required to move the grain in N/m<sup>2</sup> and given by equation  $\tau_c = 0.687d_a$ , where  $d_a$  is mean or average size of the sediment in mm. This arithmetic average size is usually found to vary between  $d_{50}$  and  $d_{60}$ .

$\tau_0$  = Unit tractive force produced by flowing water i.e.  $\gamma_w R S$ . Truly speaking, its value should be taken as the unit tractive force produced by the flowing water on bed =  $0.97\gamma_w R S$ .  $R$  is the hydraulic mean depth of the channel (depth of flow for wider channel) and  $S$  is the bed slope.

**c. Sediment Yield Estimation:**

Sedimentation occurred as the velocity decreases along with its ability to carry sediment. Coarse sediments deposit first, then interfere with the channel conveyance, and may cause additional river meanders and distributaries. The area of the flowing water expands, the depth decreases, the velocity is reduced, and eventually even fine sediments begin to deposit. As a result, deltas may be formed in the upper portion of reservoirs. The deposited material may later be moved to deeper portions of the reservoir by hydraulic processes within the water body.

There are many sediment transport equations which are suitable for use in the prediction of the rate of replenishment of river. Some of the famous sediment equations are:

1. Dandy – Bolton Equation
2. Yang Equations
3. Engelund-Hansen Equation
4. Modified Universal Soil Loss Equation (MUSLE) developed by Williams and Berndt (1977)

**Dandy – Bolton Equation:**

Dandy – Bolton formula is often used to calculate the sedimentation yield because:-

- The formula uses catchment area and mean annual runoff as key determinants.
- It does not differentiate in basin wide smaller streams and their characteristics.
- Dandy and Bolton equation calculates all types of sediment yield i.e. Sheet and rill Erosion, gully Erosion, Channel Bed and bank erosion and mass movement etc.

Dandy- Bolton determined the combined influence of runoff and drainage area on sediment yield to compute the sediment yield. They developed two equations i.e. for run off less than 2 inch and for run off more than 2 inch, which are given below:

**For run off less than 2 inch:**



$$(Q < 2 \text{ in}) S = 1289 * (Q)^{0.46} * [1.43 - 0.26 \text{ Log } (A)]$$

**For run off more than 2 inches:**

$$(Q > 2 \text{ in}): S = 1958 * (e^{-0.055 * Q}) * [1.43 - 0.26 \text{ Log } (A)]$$

Where: S = Sediment yield (tons/sq miles/yr)

Q = Mean Annual runoff (inch)

A = Net drainage area in sq mile

Dandy Bolton formula is often used to calculate the sedimentation yield. But use of these equations to predict sediment yield for a specific location would be unwise because of the wide variability caused by local factors not considered in the equations development. However, they may provide a quick, rough approximation of mean sediment yields on a regional basis for preliminary watershed planning. Computed sediment yields normally would be low for highly erosive areas and high for well stabilized drainage basins with high plant density because the equations are derived from average values. The equations express the general relationships between sediment yield, runoff, and drainage area. Many variables influence sediment yield from a drainage basin. They include climate, drainage area, soils, geology, topography, vegetation and land use. The effect of any of these variables may vary greatly from one geographic location to another, and the relative importance of controlling factors often varies within a given land resource area. Studies revealed that sediment yield per unit area generally decreases as drainage area increases. As drainage area increases, average land slopes usually decrease; and there is less probability of an intense rainstorm over the entire basin. Both phenomena tend to decrease sediment yield per unit area.

#### **Modified Universal Soil Loss Equation (MUSLE):**

Modified universal soil loss equation (MUSLE) for estimation of sediment yield is also used widely. MUSLE is a modification of the Universal Soil Loss Equation (USLE). USLE is an estimate of sheet and rill soil movement down a uniform slope using rain-fall energy as the erosive force acting on the soil (Wischmeier and Smith 1978). Depending on soil characteristics (texture, structure, organic matter, and permeability), some soils erode easily while others are inherently more resistant to the erosive action of rain-fall.

MUSLE is similar to USLE except for the energy component. USLE depends strictly upon rainfall as the source of erosive energy. MUSLE uses storm-based runoff volumes and runoff peak flows to simulate erosion and sediment yield (Williams 1995). The use of runoff variables rather than rainfall erosivity as the driving force enables MUSLE to estimate sediment yields for individual storm events. The generalized formula of MUSLE is as below:

$$Y = 11.8 * (Q * qP)^{.56} * K * Ls * C * P$$



Where,

- Y = sediment yield of stream (t/yr/km<sup>2</sup>),  
Q = average annual runoff (m<sup>3</sup>),  
K = soil erodibility factor,  
qP = Highest discharge recorded (m<sup>3</sup>/s),  
Ls = gradient/slope length,  
C = cover management factor,  
P = erosion control practice

## ii. Estimation of Replenishment:

Arwal district forms a part of the Ganga basin and is characterized by a monotonously flat relief. The western part of the district is sloping due north and north-east, with elevation of the land surface varying from 68 m in the south to 48 m in the north, and from 67 m in the west to 45 m in the east.

The district is drained by the mighty Ganga in the north, by the Sone in the West, and by the Punpun and their tributaries in the central part of the terrain. These rivers and its tributary rivers are forming the main catchment area.

For replenishment study, following assumption/calculation taken in to consideration:

- Catchment area (Watershed area) against each river has been calculated based on remote sensing data.
- Rainfall runoff coefficient as per Strange's table for the catchment area is consider 49%, as the rainfall in the district is more than 1287 mm and the characteristic of the catchment of the district is average in nature.
- Peak flood discharge of the river of the district calculated based on Dicken's formula which is more applicable to north Indian and central Indian catchment. Here Dicken constant C is taken as 12 in present study as per published literature by Abhijit Saha, 2002.
- Bed load transport has not been computed in the regional aspect of the district, as the values are highly dependent on local factors such as particle mobility factor, roughness coefficient, Shear velocity, Mean flow velocity, Kinematic viscosity etc.
- Sedimentation yield calculated as per Dandy Bolton formula as the equations express the general relationships between sediment yield, runoff, and drainage area.
- Computed sediment yields by Dandy Bolton formula normally would be low for highly erosive areas and high for well stabilized drainage basins with high plant density because the equations are derived from average values.

The data estimated for each river in the district are tabulated below.

**Table No. 7.9: Replenishment parameter estimated for each river in the district**



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| Estimation parameter   | Sone        | Kow     | Thora   |
|--|-------------|---------|---------|
| Catchment Area (m <sup>2</sup> )                                     | 106300000   | 43500   | 23400   |
| Annual Rainfall (m) (in 2020)  | 0.76        | 0.76    | 0.76    |
| Strange Runoff coefficient (%)<br>(Considering good catchment)       | 25%         | 25%     | 25%     |
| Annual Run-off (m) (in 2020)   | 0.1584      | 0.1584  | 0.1584  |
| Catchment Yield (m <sup>3</sup> )                                    | 22755600    | 76734   | 34562   |
| Peak Flood Discharge (m <sup>3</sup> /sec)                           | 14525247.08 | 643578  | 345278  |
| Flow depth d (m)   | 0.8         | 0.2     | 0.3     |
| Channel width b (m)  | 800         | 20      | 30      |
| Mean velocity v (m/s)  | 0.07        | 0.04    | 0.05    |
| Channel slope S <sub>0</sub> (m/m)                                   | 0.005       | 0.0002  | 0.0003  |
| Sediment Yield (Tons/year, in 2020)                                  | 18367.68    | 6962.73 | 3454.67 |
| Estimated Annual Replenishment (in million m <sup>3</sup> , in 2020) | 0.34396     | 0.130   | 0.231   |

Year-wise sedimentation rate for last 5 years of each river has been calculated as below. Sedimentation rate of a river is dependent on the annual rainfall of the district.

**Table No. 7.10: Year-wise sedimentation rate for last 5 years of each river**

| Year | Kow    | Thora  | Sone   |
|------|--------|--------|--------|
| 2016 | 47.85  | 53.79  | 1226.2 |
| 2017 | 206.1  | 231.69 | 551.8  |
| 2018 | 230.72 | 259.36 | 499.7  |
| 2019 | 190.52 | 214.18 | 588.1  |
| 2020 | 142.39 | 160.06 | 722.6  |

**vi) Total potential of minor mineral in the river bed**

**Annual Deposition:**

Annual deposition of riverbed minerals is described below.

**Table No. 7.11: Annual deposition of Riverbed minerals**

| RIVER NAME | ZONE | BLOCK NAME       | AREA (SQMTRS) | LENGTH (MTS) | WIDTH (MTS) | THICKNESS | Volume in MCum | Volume @ 60% in MCum |
|------------|------|------------------|---------------|--------------|-------------|-----------|----------------|----------------------|
| Sone       | 1    | NAUHATTA         | 4514154.211   | 21701.12     | 400         | 3         | 13.5425        | 8.1255               |
|            | 2    | NAUHATTA         | 4156362       | 9787.796     | 700         |           | 12.4691        | 7.4815               |
|            | 3    | NAUHATTA, ROHTAS | 11039845.91   | 30849.491    | 500         |           | 33.1195        | 19.8717              |

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| RIVER NAME | ZONE  | BLOCK NAME        | AREA (SQMTS) | LENGTH (MTS) | WIDTH (MTS) | THICKNESS | Volume in MCum | Volume @ 60% in MCum |
|------------|-------|-------------------|--------------|--------------|-------------|-----------|----------------|----------------------|
|            |       | 4 ROHTAS, TILOTHU | 5516848.531  | 10728.089    | 800         | 3         | 16.5505        | 9.9303               |
|            |       | 5 DEHRI           | 3989289.213  | 6986.976     | 700         | 3         | 11.9679        | 7.1807               |
|            |       | 6 DEHRI           | 6568856.981  | 8953.024     | 1000        | 3         | 19.7066        | 11.8239              |
|            |       | 7 NASRIGANJ       | 4695140.775  | 10042.361    | 650         | 3         | 14.0854        | 8.4513               |
|            |       | 8 NASRIGANJ       | 798410.0072  | 5139.271     | 270         | 3         | 2.3952         | 1.4371               |
|            | Kow   | 1 SURYAPURA       | 204.054      | 57.33        | 15.32       | 2         | 0.0004         | 0.0002               |
|            |       | 2 BIKRAMGANJ      | 341.5018     | 35.64        | 16.15       | 2         | 0.0007         | 0.0004               |
|            |       | 3 BIKRAMGANJ      | 108.37       | 42.46        | 11.91       | 2         | 0.0002         | 0.0001               |
|            |       | 4 RAJPUR          | 334.957      | 57.73        | 15.08       | 2         | 0.0007         | 0.0004               |
|            |       | 5 RAJPUR          | 5109.824097  | 442.96       | 40          | 2         | 0.0102         | 0.0061               |
|            |       | 6 AKORHI GOLA     | 884.73       | 93.13        | 23.81       | 2         | 0.0018         | 0.0011               |
|            |       | 7 AKORHI GOLA     | 662.285      | 100.12       | 17.52       | 2         | 0.0013         | 0.0008               |
|            |       | 8 AKORHI GOLA     | 279.735      | 86.75        | 16.66       | 2         | 0.0006         | 0.0003               |
|            | Thora | 1 DAWATH          | 956.577965   | 90.44        | 25.73       | 1         | 0.0010         | 0.0006               |
|            |       | DAWATH            | 1974.896007  | 80.59        | 57.77       | 1         | 0.0020         | 0.0012               |



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| RIVER NAME | ZONE | BLOCK NAME | AREA (SQMTRS) | LENGTH (MTRS) | WIDTH (MTRS) | THICKNESS | Volume in MCum | Volume @ 60% in MCum |
|------------|------|------------|---------------|---------------|--------------|-----------|----------------|----------------------|
|            | 3    | DAWATH     | 407.637       | 67.95         | 18.29        | 1         | 0.0004         | 0.0002               |

Sand bar area recommended for mineral concession in the above table is being calculated as per the Enforcement & Monitoring Guidelines for Sand Mining (EMGSM) 2020. As per guidelines, mining depth restricted to 3 meters depth and distance from the bank is 1/4th of river width and not be less than 7.5 meters. Also, mining is prohibited up to a distance of 1 kilometer (1 km) from major bridges and highways on both sides, or five times (5x) of the span (x) of a bridge/public civil structure (including water intake points) on up-stream side and ten times (10x) the span of such bridge on down-stream side, subjected to a minimum of 250 meters on the upstream side and 500 meters on the downstream side.

iii) Riverbed Mineral Potential  
Process of disposition etc:

Table No. 7.12: Resources of Potential Riverbed Mineral

| Boulder (Mcum) | Pebbles/Gravel (Mcum) | Sand/White sand (Mcum) | Total Mineable, Mineral Potential (Mcum) |
|----------------|-----------------------|------------------------|--|
| -              | -                     | 74.31                  | 74.31                                    |

iv) Riverbed Mineral Potential Zones

Table No.7.13: Potential Zone of Riverbed Mineral

| RIVER NAME | ZONE | BLOCK NAME       | COORDINATE        |                   | Volume in MCum | Volume @ 60% in MCum |
|------------|------|------------------|-------------------|-------------------|----------------|----------------------|
|            |      |                  | LATITUDE          | LONGITUDE         |                |                      |
| Sone       | 1    | NAUHATTA         | 24° 31' 45.297" N | 83° 29' 56.320" E | 13.5425        | 8.1255               |
|            |      |                  | 24° 30' 40.515" N | 83° 42' 43.824" E |                |                      |
|            | 2    | NAUHATTA         | 24° 30' 38.344" N | 83° 43' 26.083" E | 12.4691        | 7.4815               |
|            |      |                  | 24° 32' 9.481" N  | 83° 48' 50.229" E |                |                      |
|            | 3    | NAUHATTA, ROHTAS | 24° 31' 55.420" N | 83° 49' 11.362" E | 33.1195        | 19.8717              |
|            |      |                  | 24° 42' 16.828" N | 84° 1' 39.005" E  |                |                      |
|            | 4    | ROHTAS, TILOUTHU | 24° 43' 31.271" N | 84° 3' 1.165" E   | 16.5505        | 9.9303               |
|            |      |                  | 24° 48' 26.088" N | 84° 6' 9.594" E   |                |                      |
|            | 5    | DEHRI            | 24° 50' 35.379" N | 84° 8' 23.025" E  | 11.9679        | 7.1807               |
|            |      |                  | 24° 53' 31.223" N | 84° 12' 31.620" E |                |                      |
|            | 6    | DEHRI            | 24° 54' 37.272" N | 84° 12' 31.620" E | 19.7066        | 11.8239              |



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| RIVER NAME        | ZONE | BLOCK NAME  | COORDINATE        |                   | Volume In MCum    | Volume @ 60% In MCum |        |
|-------------------|------|-------------|-------------------|-------------------|-------------------|----------------------|--------|
|                   |      |             | LATITUDE          | LONGITUDE         |                   |                      |        |
|                   | 7    | NASRIGANJ   | 24° 58' 7.877" N  | 84° 16' 13.048" E | 14.0854           | 8.4513               |        |
|                   |      |             | 24° 59' 27.822" N | 84° 16' 54.306" E |                   |                      |        |
|                   |      |             | 25° 2' 56.335" N  | 84° 21' 6.355" E  |                   |                      |        |
|                   | 8    | NASRIGANJ   | 25° 4' 41.920" N  | 84° 24' 56.059" E | 2.3952            | 1.4371               |        |
|                   |      |             | 25° 3' 20.495" N  | 84° 22' 19.109" E |                   |                      |        |
|                   | Kow  | 1           | SURYAPURA         | 25° 17' 29.875" N | 84° 15' 36.348" E | 0.0004               | 0.0002 |
|                   |      |             |                   | 25° 17' 28.238" N | 84° 15' 37.237" E |                      |        |
|                   |      | 2           | BIKRAMGANJ        | 25° 13' 37.555" N | 84° 14' 32.131" E | 0.0007               | 0.0004 |
| 25° 13' 36.759" N |      |             |                   | 84° 14' 31.240" E |                   |                      |        |
| 3                 |      | BIKRAMGANJ  | 25° 12' 38.149" N | 84° 16' 16.380" E | 0.0002            | 0.0001               |        |
|                   |      |             | 25° 12' 36.794" N | 84° 16' 16.512" E |                   |                      |        |
| 4                 |      | RAJPUR      | 25° 2' 41.070" N  | 84° 11' 50.429" E | 0.0007            | 0.0004               |        |
|                   |      |             | 25° 2' 39.631" N  | 84° 11' 49.179" E |                   |                      |        |
| 5                 |      | RAJPUR      | 25° 2' 31.992" N  | 84° 11' 41.926" E | 0.0102            | 0.0061               |        |
|                   |      |             | 25° 2' 19.555" N  | 84° 11' 40.960" E |                   |                      |        |
| 6                 |      | AKORHI GOLA | 25° 2' 1.285" N   | 84° 11' 37.761" E | 0.0018            | 0.0011               |        |
|                   |      |             | 25° 1' 58.984" N  | 84° 11' 35.931" E |                   |                      |        |
| 7                 |      | AKORHI GOLA | 25° 1' 38.281" N  | 84° 11' 8.576" E  | 0.0013            | 0.0008               |        |
|                   |      |             | 25° 1' 35.512" N  | 84° 11' 8.804" E  |                   |                      |        |
| 8                 |      | AKORHI GOLA | 25° 1' 48.066" N  | 84° 9' 3.316" E   | 0.0006            | 0.0003               |        |
|                   |      |             | 25° 1' 48.098" N  | 84° 9' 0.320" E   |                   |                      |        |
| Thora             | 1    | DAWATHI     | 25° 21' 7.809" N  | 84° 10' 30.982" E | 0.0010            | 0.0006               |        |
|                   |      |             | 25° 21' 5.332" N  | 84° 10' 29.893" E |                   |                      |        |
|                   | 2    | DAWATHI     | 25° 21' 1.823" N  | 84° 10' 27.625" E | 0.0020            | 0.0012               |        |
|                   |      |             | 25° 21' 4.377" N  | 84° 10' 28.988" E |                   |                      |        |
|                   | 3    | DAWATHI     | 25° 20' 31.426" N | 84° 10' 37.089" E | 0.0004            | 0.0002               |        |
|                   |      |             | 25° 20' 29.408" N | 84° 10' 37.633" E |                   |                      |        |



### No Mining Zone:

As per the Enforcement & Monitoring Guidelines for Sand Mining (EMGSM) 2020 the restricted zone for mining is a distance from the bank is  $\frac{1}{4}$ th of river width and not be less than 7.5 meters. Also, there is a no mining zone up to a distance of 1 kilometre (1 km) from major bridges and highways on both sides, or five times (5x) of the span (x) of a bridge/public civil structure (including water intake points) on up-stream side and ten times (10x) the span of such bridge on down-stream side, subjected to a minimum of 250 meters on the upstream side and 500 meters on the downstream side.

Also, no mining zone suggested in an area up to a width of 100 meters from the active edge of embankments.

**Table No.7.14: Restricted Zone of Riverbed Mineral**

| River       | Zone | Restricted area in sqm. |
|-------------|------|-------------------------|
| SONE RIVER  | 1    | 7286174                 |
|             | 2    | 1146749                 |
|             | 3    | 4435898.102             |
|             | 4    | 2583919.469             |
|             | 5    | 664590.6                |
|             | 6    | 105569.3                |
|             | 7    | 728557.1                |
|             | 8    | 173397.61               |
| KAW RIVER   | 1    | 320.679                 |
|             | 2    | 64.7392                 |
|             | 3    | 159.352                 |
|             | 4    | 138.368                 |
|             | 5    | 941.309021              |
|             | 6    | 217.9                   |
|             | 7    | 537.765                 |
|             | 8    | 339.639                 |
| THORA RIVER | 1    | 500.433998              |
|             | 2    | 294.373993              |
|             | 3    | 230.107                 |



## 8. Overview of mining activity in the district:

### a. General overview:

The district is not very rich in mineral resources and there are no large mines in the district. However, collection of Sand, Soil and Brick Earth are the minor mineral sources. These materials are primarily utilized for construction purpose. As per the present practice, mining is done by manual method with tools and tackles. Mechanised & Semi mechanised practice is also popular in some places.

List of existing mining leases of the districts is furnished as Annexure.

### b. Detail of production of sand and other minerals during last five years

Details of production of last years are furnished below.

**Table No.8.3: Detail of production of sand and other minerals during last five years**

| Sl. No. | Year    | Total Production in<br>CFT/MT |
|---------|---------|-------------------------------|
| 1       | 2017-18 | 15642500                      |
| 2       | 2018-19 | 188032556                     |
| 3       | 2019-20 | 193697957                     |
| 4       | 2020-21 | 100481850                     |
| 5       | 2021-22 | 2652734                       |



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**9. Details of revenue generated from mineral sector during last five years:**

Revenue generation of last five years is furnished below.

**Table No.9.1: District revenue generation from mineral sector in Rs.**

| Sl. No. | Year      | Royalty in Cr |
|---------|-----------|---------------|
| 1       | 2017-2018 | 131.55        |
| 2       | 2018-2019 | 101.33        |
| 3       | 2019-2020 | 116.43        |
| 4       | 2020-2021 | 195.63        |
| 5       | 2021-2022 | 76.90         |



### 10. Transport (Railway, road):

Nearest major roads are NH30 and NH2C are situated in the western direction of Sone River and SH15, NH12 and NH79 are situated in the western direction of Sone River. The sites are connected through all season motorable kutchra roads with the national and state highways. This city is well connected with railway and road. Dehri on Sone and Sasaram has big railway station with almost all the major train stops there. This place is well connected with the road as Grant Trunk Road passes through the heart of both of Dehri and Sasaram. Dehri on Sone has direct connectivity to all major metros in India via rail. Sasaram and Gaya Airports are the major airports to the Rohtas district. The major transportation routes for sand evacuation from the major sand producing rivers are shown in Figure no. 10.1.

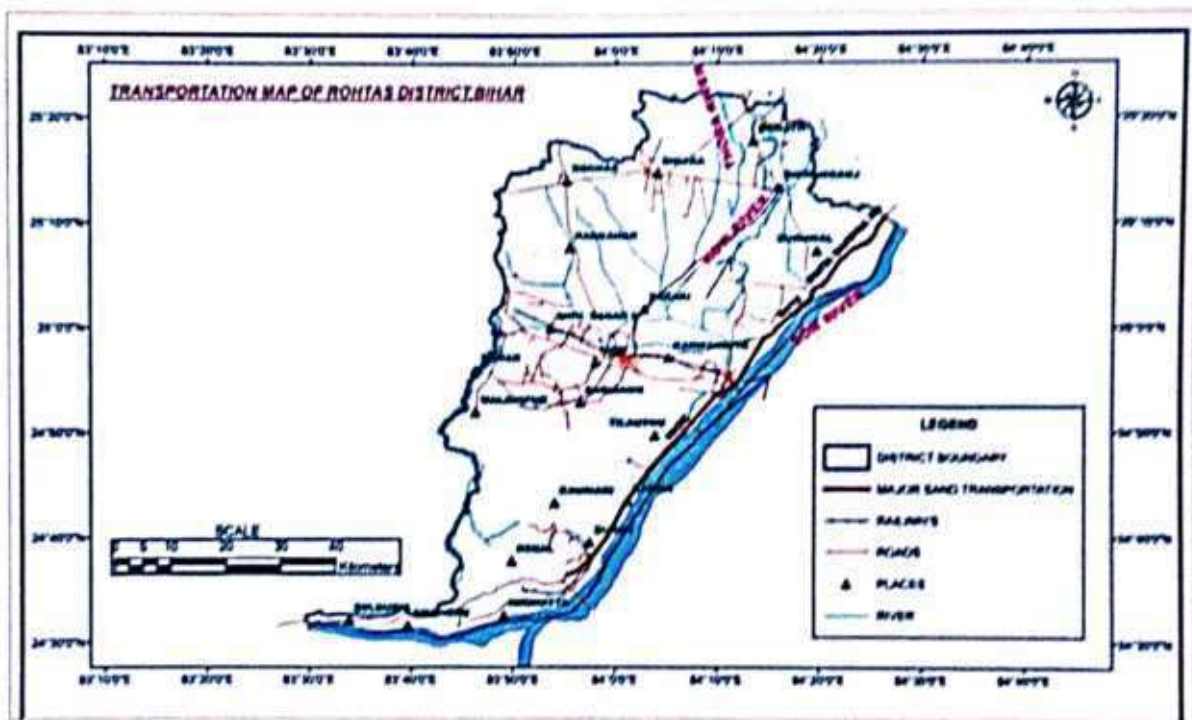


Figure No. 10.1: Transportation map of Rohtas District.



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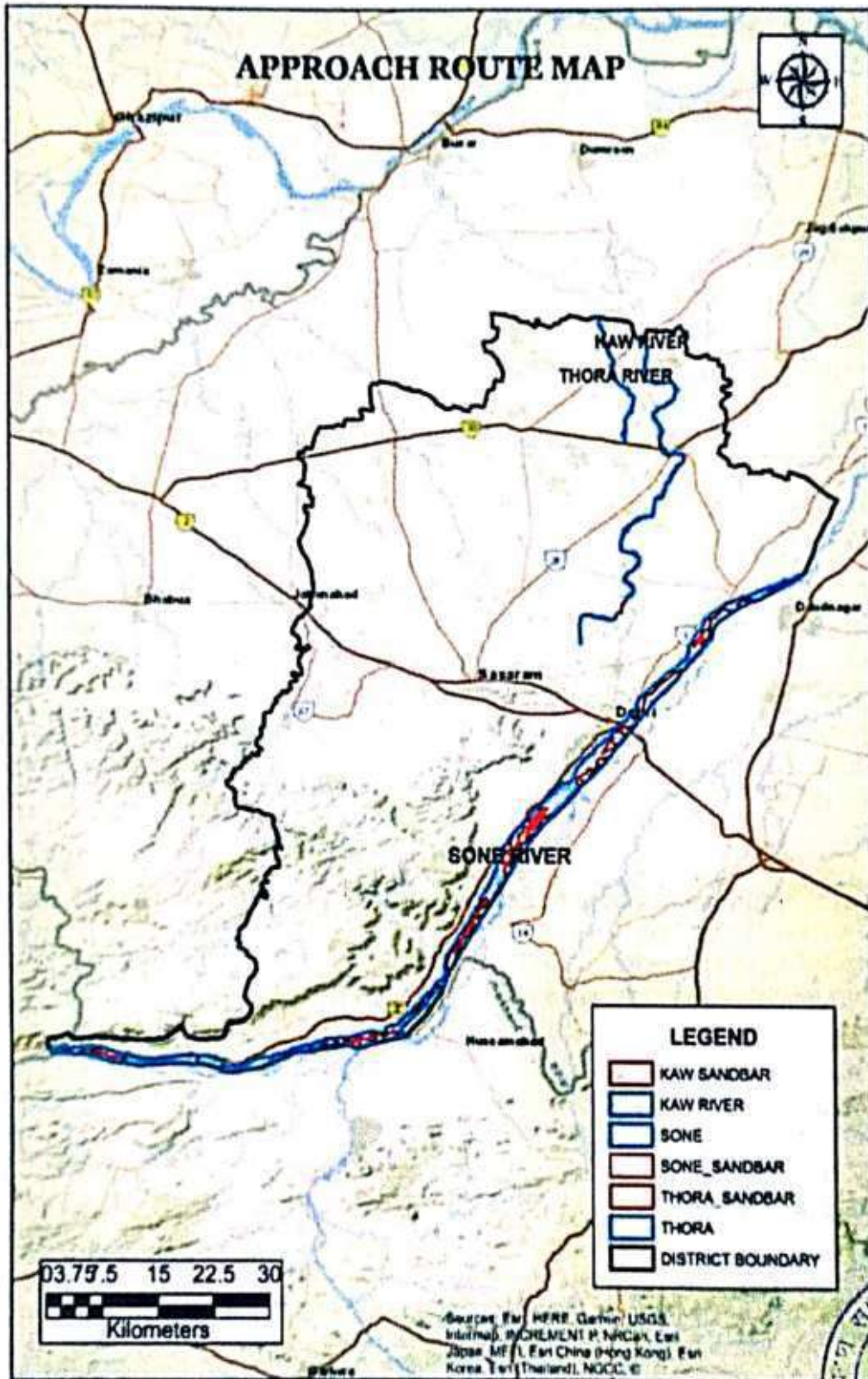


Figure No. 10, a1 Approach Road map of Rohtas District

**11. Remedial measure to mitigate the impact of mining**  
**11.1 Environmental Sensitivity**

The Rohtas area represents a unique geo- environmental perception. As human population expands, forests are being depleted for the extension of agricultural lands, introduction of new settlements, roadways etc. The growing changes is coming in the wake of urbanization and industrialization leave deep impression on the hill ecosystem; disrupting normal functioning.

Due to unprecedented growth of population during the last few, nature has started reacting sharply to the accumulated human guilt. Soil erosion and its conservation play an important role. Because of the presence of very thin soil cover plays an important role in the socio-economic development.

The adverse effect of this unscientific mining is realized in the form of landslide, removal of soil cover, siltation of river beds leading to frequent floods, endangering the lives and properties of local inhabitants.

**11.2 Sand mining Impact**

Another serious environmental problem around the globe in recent years is of illegal Sand mining. Sand mining is a process of extraction of sand from an open pit, river bed, sea beaches, ocean floor, river banks, deltas and island dunes. The extracted sand could be utilised for various types of manufacturing, such as concrete used in the construction of building and other structures. The sand can also be used as an abrasive. The demand for sand increase as population grows also urbanization with time. The high level of demands have offer led to the use of unsustainable sand mining process for speedy urbanisation resulted in illegal mining.

All though most jurisdictions have legal limit on the location and volume of sand that can be mined, illegal sand extraction is following in many parts of the country due to rapid urbanisation and industries.

Removal or extraction of too much sand from rivers leads to erosion shrinking of river banks. Deltas can recede due to sand mining. These destructive effects of sand mining ultimately result in loss of fertile land and property. It also destabilized the ground and causes the fallure of engineering structures for civilization.

In-stream mining directly alters the channel geometry and bed elevation. By removing sediment from the channel, in-stream material extraction disrupts the preexisting balance between sediment supply and transporting capacity, typically inducing incision upstream and downstream of the extraction site. The resultant valley floor water tables and frequently leads to destruction of bridges and structures.



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Sand Mining in beaches disturbs the ecosystem of different fauna of the beaches. The sand mining from natural barriers, made up of sand, causes flooding of the natural habitat. The sand mining activity destroys the aesthetic beauty of beaches and river bank and makes the ecosystem unstable. If there are popular tourist destination, tourism potential of such areas will lose.

It could be concluding that there has been little in depth research in to the environmental and social also political effect of land use practice and calls for urgent redressed by the competent authority.

### **11.3 Remedial measure**

#### **11.3.1 Sustainable Mining Practices:**

- The depth of mining in Riverbed shall not exceed 3 meter or water level whichever is less, provided that where the Joint Inspection Committee certifies about excessive deposit or over accumulation of mineral.
- Mining shall be done in layers of 3 meter depth to avoid ponding effect and after first layer is excavated, the process will be repeated for the next layers.
- No stream should be diverted for the purpose of sand mining. No natural water course and/ or water resources are obstructed due to mining operations.
- No blasting shall be resorted to in River mining and without permission at any other place.

#### **11.3.2 Monitoring the Mining of Mineral and its Transportation:**

- For each mining lease site the access should be controlled in a way that vehicles carrying mineral from that area are tracked and accounted for.
- There should be regular monitoring of the mining activities in the State to ensure effective compliance of stipulated EC conditions and of the provisions under the Minor Mineral Concessions Rules framed by the State Government.

#### **11.3.3 Noise Management:**

- Noise arising out of mining and processing shall be abated and controlled at source to keep within permissible limit.
- Restricted sand mining operation has to be carried out between 6 am to 7 pm.



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#### **11.3.4 Air Pollution and Dust Management:**

- The pollution due to transportation load on the environment will be effectively controlled and water sprinkling will also be done regularly.
- Air Pollution due to dust, exhaust emission or fumes during mining and processing phase should be controlled and kept in permissible limits specified under environmental laws.
- The mineral transportation shall be carried out through covered trucks only and the vehicles carrying the mineral shall not be overloaded. Wheel washing facility should be installed and used.

#### **11.3.5 Bio-Diversity Protection:**

- Restoration of flora affected by mining should be done immediately. Twice the number of trees destroyed by mining to be planted preferably of indigenous species. Each EC holder should plant and maintain for lease period at least 5 trees per hectare in area near lease.
- No mining lease shall be granted in the forest area without forest clearance in accordance with the provisions of the Forest Conservation Act, 1980 and the rules made there under.
- Protection of turtle and bird habitats shall be ensured.
- No felling of tree near quarry is allowed. For mining lease within 10km of the National Park / Sanctuary or in Eco-Sensitive Zone of the Protected Area, recommendation of Standing Committee of National Board of Wild Life (NBWL) have to be obtained as per the Hon'ble Supreme Court order in I.A. No. 460 of 2004.
- Spring sources should not be affected due to mining activities. Necessary Protection measures are to be incorporated.

#### **11.3.6 Management of Instability and Erosion:**

- Removal, stacking and utilization of top soil in mining are should be ensured. Where top soil cannot be used concurrently, it shall be stored separately for future use keeping in view that the bacterial organism should not die and should be spread nearby area.
- The EC should stipulate conditions for adequate steps to check soil erosion and control debris flow etc. by constructing engineering structures

Use of oversize material to control erosion and movement of sediments  
No overhangs shall be allowed to be formed due to mining and mining shall not be allowed in area where subsidence of rocks is likely to occur due to steep angle of slope.

No extraction of boulder / sand in landslide prone areas.



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- Controlled clearance of riparian vegetation to be undertaken.

**11.3.7 Waste Management:**

- Site clearance and tidiness is very much needed to have less visual impact of mining.
- Dumping of waste shall be done in earmarked places as approved in Mining Plan.
- Rubbish burial shall not be done in the Rivers.

**11.3.8 Pollution Prevention:**

- Take all possible precautions for the protection of environment and control of pollution.
- Effluent discharge should be kept to the minimum and it should meet the standards prescribed.

**11.3.9 Protection of Infrastructure:**

- Mining activities shall not be done for mine lease where mining can cause danger to site of flood protection works, places of cultural, religious, historical, and archeological importance.
- For carrying out mining in proximity to any bridge or embankment, appropriate safety zone should be worked out on case-to-case basis, taking into account the structural parameters, location aspects and flow rate, and no mining should be carried out in the safety zone so worked out.



## **12. Suggested reclamation plan for already mined out areas**

As per statute all mines/quarries are to be properly reclaimed before final closure of the mine. Reclamation plans should include:

a) A baseline survey consisting of existing condition cross-section data. Cross-sections must be surveyed between two monumented endpoints set back from the top of bank, and elevations should be referenced bench mark set;

b) The proposed mining cross-section data should be plotted over the baseline data to illustrate the vertical extent of the proposed excavation;

c) The cross-section of the replenished bar should be the same as the baseline data. This illustrates that the bar elevation after the bar is replenished will be the same as the bar before extraction;

d) A planimetric map showing the aerial extent of the excavation and extent of the riparian buffers;

e) A planting plan developed by a plant ecologist familiar with the flora of the river for any areas such as roads that need to be restored;

f) A monitoring plan has to establish.



### **13. Risk assessment and disaster management plan**

Risk analysis is the systematic study of risks encountered during various stages of mining operation. Risk analysis seek to identify the risks involved in mining operations, to understand how and when they arise, and estimate the impact (financial or otherwise) of adverse outcomes. The sand mining operation in the district is mainly done manually.

#### **13.1 Identification of risk due to river sand mining**

There is no land degradation due to mining activities as mining is done only on river bed dry surface. There will be no OB or waste generation as the sand is exposed in the river bed and is completely selable. There will be neither any stacking of soil nor creation of OB dumps. The mining activity will carried out up to a maximum depth of 3m below the surface level. So, there is no chance of slope failure, bench failure in the mines. However, there are some identified risk in the mining activity which are as below:

1. Accident during sand loading and transportation
2. Inundation/ Flooding
3. Quick Sand Condition

#### **13.2 Mitigation measures**

##### **13.2.1 Measures to prevent accidents during loading and transportation:**

- During the loading truck would be brought to a lower level so that the loading operation suits to the ergonomic condition of the workers.
- The workers will be provided with gloves and safety shoes during loading.
- Opening of the side covers of the truck should be done carefully and with warning to prevent injury to the loaders.
- Mining Operations will be takes place during daylight only.
- The truck will be covered with tarpaulin and maintained to prevent any spillage.
- To avoid danger while reversing the trackless vehicles especially at the embankment and tipping points, all areas for reversing of Lorries should be made man free as far as possible.
- All transportation within the main working will be carried out directly under the supervision and control of the management.



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- Overloading should not be permitted and the maximum permissible speed limit should be ensured.
- There will be regular maintenance of the trucks and the drivers will have valid driving license.

**13.2.2 Measures to prevent incidents during Inundation/ Flooding:**

To minimize the risk of flooding/ inundation following measures will be under taken:

- Mining will be completely closed during the monsoon months.
- Proper weather information particularly on rain should be kept during the operational period of mines so that precautionary measures will be undertaken.

**13.2.3 Measures for mitigation to quick sand condition:**

- Quick sand zone and deep-water zone will be clearly demarcated and all the mines workers will made aware of the location.
- Mining will done strictly as per the approved mining plan.

**13.3 Disaster management plan**

As the depth of mining will be maximum of 3m below the surface level considering local condition, the risk related to mining activity is much less. The mining operation will be carried out under the supervision experienced and qualified Mines Manager having Certificate of Competency to manage the mines granted by DGMS. All the provisions of Mines Act 1952, MMR 1961 and Mines Rules 1955 and other laws applicable to mine will strictly be complied. During heavy rainfall and during the monsoon season the mining activities will be closed. Proper coordination with Irrigation Department should be maintained so that at the time of releasing water, if any, from the dam suitable warning/information is given in advance. Special attention and requisite precautions shall be taken while working in areas of geological weakness like existence of slip, fault etc. The mining site will be supplied with first aid facilities and the entire mines worker will have access to that.



#### 14. Utilisation of Sand

Sand is a multi-purpose topographical material. It is known as one of the three fundamental ingredients in concrete. The composition of sand is diverse. Mostly sand is made of silica which is a common element.

From beds to flood plains to coastlines- we can find the sand at almost everywhere. The robustness of sand has played a significant role in everyday life. We use sand practically every other day.

Sand extraction from river beds and brick earth mining for making raw bricks are the main mining activities in the district. With a spurt in construction of real estate sectors and various govt. sponsored projects, the demand for both sand and bricks has increased manifold. The extraction of sand is carried out either manually or through semi- mechanized system. The depth of mining for both river bed sand and brick earth are restricted due to statutory provision in the regulations pertaining to conservation and development of minor minerals.

River sand mining is a common practice as habitation concentrates along the rivers and the mining locations are preferred near the markets or along the transportation route, for reducing the transportation cost.

In the real world, there are a lot of situations where we can find uses of sand. Followings are the common sand uses.

15. While bunting metal, we can mix sand with clay binder for frameworks used in the foundries.

16. Sand can be used for cleaning up oil leak or any spill by dredging sand on that spill. The material will form clumps by soaking up, and we can quickly clean the mess.

17. Sand can be used as a road base which is a protective layer underneath all roads

18. Industrial sand is used to make glass, as foundry sand and as abrasive sand.

19. One creative usage of sand is serving as a candle holder. We can try putting some sand before pouring tea light or any candle in a glass. It holds the candle still and refrain the candle from rolling by giving it an excellent decoration.

20. Adds texture and aesthetic appeal to space.

21. Sand is mostly pure to handle, promptly available and economically wise.

22. We use sand in aquariums, fabricating artificial fringing reefs, and in human-made beaches



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23. Sandy soils are ideal for growing crops, fruits and vegetables like watermelon, peaches, peanuts, etc.

24. Sand can light a path by filling mason jars with sand and tea light which is another inexpensive way to make a walkway glow.

25. Sand helps to improve resistance (and thus traffic safety) in icy or snowy conditions.

26. We need sand in the beaches where tides, storms or any form of preconceived changes to the shoreline crumble the first sand.

27. Sand containing silica is used for making glass in the automobile and food industry- even household products for the kitchen.

28. Sand is a strong strand which is used for plaster, mortar, concrete, and asphalt.

The usual bricks formulated of clay only is way weaker and lesser in weight than blocks made of clay mixed with sand.



**15. Conclusion:**

1. It has been observed during the preparation of district survey report that Rohtas district do not have any in-situ minor mineral occurrences as per the till date studies being carried out by various authorities and agencies. Riverbed sand and Brick earth are the only minor minerals of Rohtas District.
2. The replenishment study has been carried out during the preparation of this DSR after analysing datasets of consecutive calendar years.
3. Both field-based survey coupled with satellite imagery study and empirical study were carried out to determine the rate of replenishment in each river of the district.
4. The determined values of various methods as adopted for replenishment study gives a comparable value and in all cases the values are found to be much more as compared to the capping limit (60%) as suggested in the Enforcement & Monitoring Guidelines for Sand Mining (EMGSM) January 2020, Issued by Ministry of Environment, Forest and Climate Change (MoEF&CC) 2020.
5. It is suggested to have a periodical review along with field data acquisition during pre and post monsoon periods to record the seasonal variance of the sedimentation rate on annual basis and update this DSR in case of any abnormal findings.

**Table No.15.1: River wise replenishment rate estimation based on theoretical formula**

| River Name | Lease Area     | Surface RL Before mining | Mine out Thickness | Mine out Volume | Annual Rainfall-2020 | Estimated Replenished Volume as per Dandy-Bolton | Replenishment Rate |
|------------|----------------|--------------------------|--------------------|-----------------|----------------------|--|--------------------|
|            | m <sup>2</sup> | m                        | m                  | cum             | m                    | cum  | %                  |
| Sone       | 47901.00       | 73.00                    | 3.00               | 143703.00       | 1.97                 | 132206.76  | 92.00%             |
| Sone       | 48783.00       | 75.00                    | 3.00               | 146349.00       |                      | 139909.64  | 95.60%             |
| Sone       | 47737.00       | 74.00                    | 3.00               | 143211.00       |                      | 108840.36  | 76.00%             |
| Kow        | 22302.00       | 72.00                    | 2.50               | 55755.00        |                      | 41537.48   | 74.50%             |
| Kow        | 20239.00       | 70.00                    | 2.50               | 50597.50        |                      | 37948.13   | 75.00%             |
| Thora      | 28225.00       | 65.00                    | 2.50               | 70562.50        |                      | 53627.50   | 76.00%             |



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Theoretical Replenishment study based on mining lease shows variation from 74.50% to 95.60% with an average of 81.52% of replenishment rate in the district.

**Table No.15.2: River wise replenishment rate estimation based on field data basis**

| River Name | Area           | Before Surface RL | Thick ness | Volume  | After mining floor RL | After Surface RL | Thick ness | Volume    | Difference in RL | Replenishment Rate |
|------------|----------------|-------------------|------------|---------|-----------------------|------------------|------------|-----------|------------------|--------------------|
|            | m <sup>2</sup> | m                 | m          | cum     | m                     | m                | m          | cum       | m                | %                  |
| Sone       | 47901.00       | 73.00             | 3.00       | 143703  | 70.00                 | 72.65            | 2.65       | 126937.65 | 0.35             | 88.33%             |
| Sone       | 48783.00       | 75.00             | 3.00       | 146349  | 72.00                 | 74.53            | 2.53       | 123420.99 | 0.47             | 84.33%             |
| Sone       | 47737.00       | 74.00             | 3.00       | 143211  | 71.00                 | 73.45            | 2.45       | 116955.65 | 0.55             | 81.67%             |
| Kow        | 22302.00       | 72.00             | 2.50       | 55755   | 69.50                 | 71.70            | 2.20       | 49064.40  | 0.30             | 88.00%             |
| Kow        | 20239.00       | 70.00             | 2.50       | 50597.5 | 67.50                 | 69.60            | 2.10       | 42501.90  | 0.40             | 84.00%             |
| Thora      | 28225.00       | 65.00             | 2.50       | 70562.5 | 62.50                 | 64.80            | 2.30       | 64917.50  | 0.20             | 92.00%             |

An average replenishment rate for the year for Rohtas District comes to about 86.39%.



**Reference:**

• Details of Satellite Imagery

| DISTRICT | IMAGERY DETAILS    |                            |                     |                             |                    |                      |
|----------|--------------------|----------------------------|---------------------|-----------------------------|--------------------|----------------------|
|          | DATE (PRE-MONSOON) | PRE-MONSOON RESOLUTION (M) | DATE (POST-MONSOON) | POST-MONSOON RESOLUTION (M) | TYPE (PRE-MONSOON) | TYPE (POST-MONSOON)  |
| Rohtas   | 3rd MARCH, 2021    | 5                          | 12th NOVEMBER 2021  | 30                          | ESRI BASE MAP      | FCC - USGS LANDSET 8 |

- National Informatics Centre (NIC Website)
- Ministry of Earth Science
- National bureau of soil survey and land use planning
- ENVIS Centre on Wildlife & Protected Areas



*\*Data considered on most cloud free day*

## **Annexure -I**

**(List of the existing sand Ghats along with details of EC validity)**



### Rohtas Existing sand Ghats along With details of EC validity

| Sl .No. | River Name | Name of Ghats     | Total Area | EC Ref. No Issued Date | Lease Validity Date up to |
|---------|------------|-------------------|------------|------------------------|---------------------------|
| 1       | Son        | Amiyawar Ghat A   | 22.5       | 315/13.03.2018         | 31-05-2022                |
| 2       | Son        | Amiyawar Ghat B   | 22.5       | 315/13.03.2018         | 31-05-2022                |
| 3       | Son        | Mangrawan Ghat A  | 22.5       | 315/13.03.2018         | 31-05-2022                |
| 4       | Son        | Mangrawan Ghat B  | 22.5       | 315/13.03.2018         | 31-05-2022                |
| 5       | Son        | Sankarpura Ghat A | 24         | 315/13.03.2018         | 31-05-2022                |
| 6       | Son        | Sankarpura Ghat B | 24         | 315/13.03.2018         | 31-05-2022                |
| 7       | Son        | Darihat Ghat 3    | 24.8       | 315/13.03.2018         | 31-05-2022                |
| 8       | Son        | Kaithi Ghat       | 24         | 315/13.03.2018         | 31-05-2022                |
| 9       | Son        | Danwar Ghat       | 24         | 315/13.03.2018         | 31-05-2022                |
| 10      | Son        | Paruahara Ghat 2  | 24         | 315/13.03.2018         | 31-05-2022                |
| 11      | Son        | Katar Ghat        | 24.8       | 315/13.03.2018         | 31-05-2022                |
| 12      | Son        | Kerpa Ghat        | 24.8       | 315/13.03.2018         | 31-05-2022                |
| 13      | Son        | Majhiao Ghat      | 24         | 315/13.03.2018         | 31-05-2022                |
| 14      | Son        | Paruhar Ghat      | 24.8       | 315/13.03.2018         | 31-05-2022                |
| 15      | Son        | Chaknaha Ghat     | 24.8       | 315/13.03.2018         | 31-05-2022                |
| 16      | Son        | Hurka Ghat        | 24         | 315/13.03.2018         | 31-05-2022                |
| 17      | Son        | Jarha Bigha 1     | 24         | 315/13.03.2018         | 31-05-2022                |
| 18      | Son        | Jarha Bigha 2     | 24.8       | 315/13.03.2018         | 31-05-2022                |
| 19      | Son        | Mahadeva 1 Ghat   | 24         | 315/13.03.2018         | 31-05-2022                |
| 20      | Son        | Ramdhira Ghat I   | 24         | 315/13.03.2018         | 31-05-2022                |
| 21      | Kow        | Samri Ghat        | 1          | 315/13.03.2018         | 31-05-2022                |
| 22      | Kow        | Sadaudihra Ghat   | 1.5        | 315/13.03.2018         | 31-05-2022                |
| 23      | Kow        | Gosaldih Ghat     | 1          | 315/13.03.2018         | 31-05-2022                |
| 24      | Thora      | Jamsona Ghat      | 1          | 315/13.03.2018         | 31-05-2022                |
| 25      | SON        | DARIAHAT 2        | 4.8        | 399/28.03.2016         | 31-05-2022                |
| 26      | SON        | DARIAHAT 1        | 3.1        | 398/28.03.2016         | 31-05-2022                |
| 27      | SON        | DALMIANAGAR       | 4.9        | 392/28.03.2016         | 31-05-2022                |
| 28      | SON        | TILOUTHU          | 4.9        | 400/28.03.2016         | 31-05-2022                |
| 29      | SON        | RAMDIHRA          | 15.5       | 397/28.03.2016         | 31-05-2022                |
| 30      | SON        | MAHADEV           | 4.7        | 401/28.03.2016         | 31-05-2022                |



## **Annexure -II**

**Committee Involved in DSR as per Hon'ble  
Supreme Court Order dated 10-11-21, Civil  
Appeal No. 3661-3662/2020, State of Bihar &  
Others vs. Pawan Kumar & Others.**



समाहरणालय, रोहतास, सासाराम।  
(नगर कार्य)

क्रमांक 1162 नगर सासाराम  
दिनांक 28/4/22 2022



ई मेल info@rohtas@gmail.com

शुभे से वेगार किए गए जिला सक्षम प्रतिवेदन तदुक्त प्रारूप में उपरोक्त के अनुसार Revised Information के साथ संशोधित तदुक्त वेगार की गई है। समिति द्वारा संशोधित जिला सक्षम प्रतिवेदन तदुक्त प्रारूप को समाहती, रोहतास को भेजने हेतु निर्णय लिया गया। साथ ही समिति द्वारा स्वयंसेवक विकास प्रदाधिकारी, रोहतास, सासाराम को निवेश दिया गया, कि अगली बैठक में संशोधित जिला सक्षम प्रतिवेदन तदुक्त प्रारूप को जिला प्रदाधिकारी, रोहतास के अवलोकनायें वाली जा सकें।

*[Signature]*  
28/4/22  
अनुमोदन प्रदाधिकारी,  
सासाराम नगर (अग्रणी)

*[Signature]*  
28/4/22  
अनुमोदन प्रदाधिकारी,  
विक्रमगंज (अग्रणी)

*[Signature]*  
28/4/22  
अनुमोदन प्रदाधिकारी,  
देहरी (अग्रणी)

*[Signature]*  
02/05/2022  
कार्यपालक अधिकारी,  
नग्न (विवाद) प्रमोदन,  
सासाराम।

*[Signature]*  
कार्यपालक अधिकारी,  
तीन नगर प्रमोदन,  
विक्रमगंज।

*[Signature]*  
28-4-22  
कार्यपालक अधिकारी,  
रूपकन (Design) देहरी।

*[Signature]*  
28/4/22  
उप निरीक्षक सासाराम,  
पर्यवेक्षण कर्म एवं जनसामु  
प्रियंकर, विक्रमगंज।

*[Signature]*  
जिला निरीक्षक देहरी  
वैज्ञानिक, विहार राज्य  
प्रदूषण नियंत्रण पर्येद।

*[Signature]*  
28/4/22  
स्वयंसेवक विकास प्रदाधिकारी,  
जिला स्वयंसेवक कार्यालय,  
रोहतास, सासाराम।

*[Signature]*  
28/4/22  
स्वयंसेवक  
जिला स्वयंसेवक कार्यालय,  
रोहतास, सासाराम।

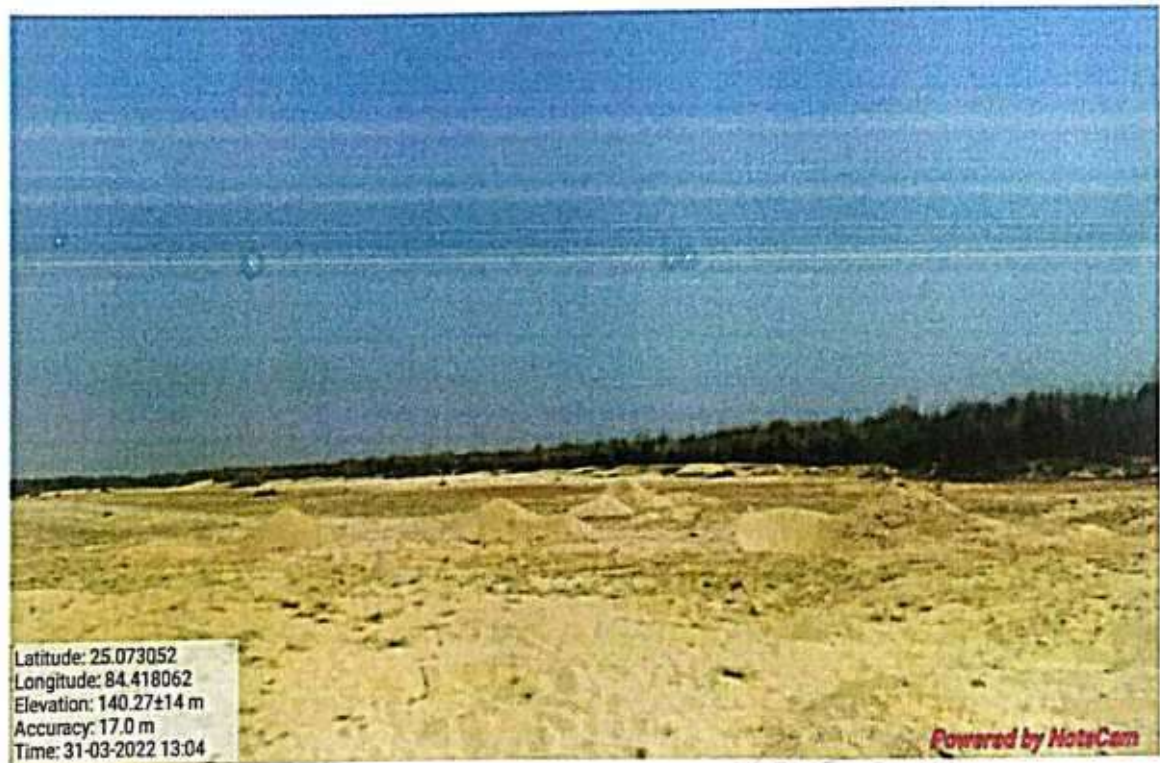
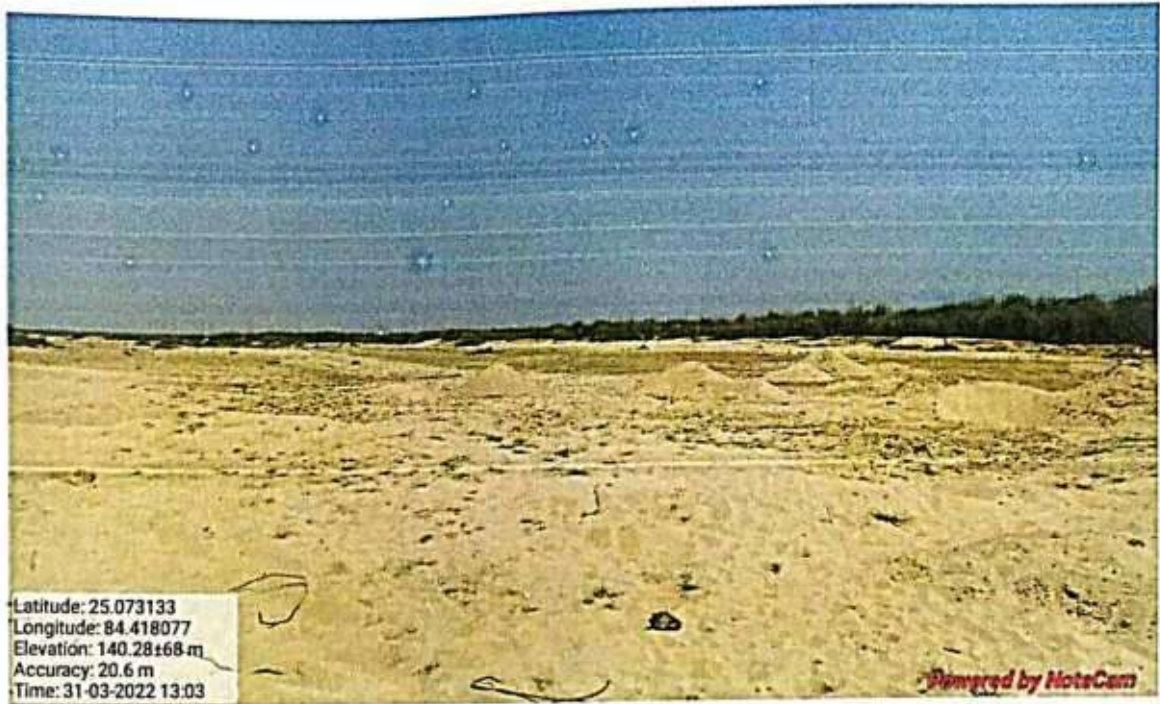


# Annexure -III

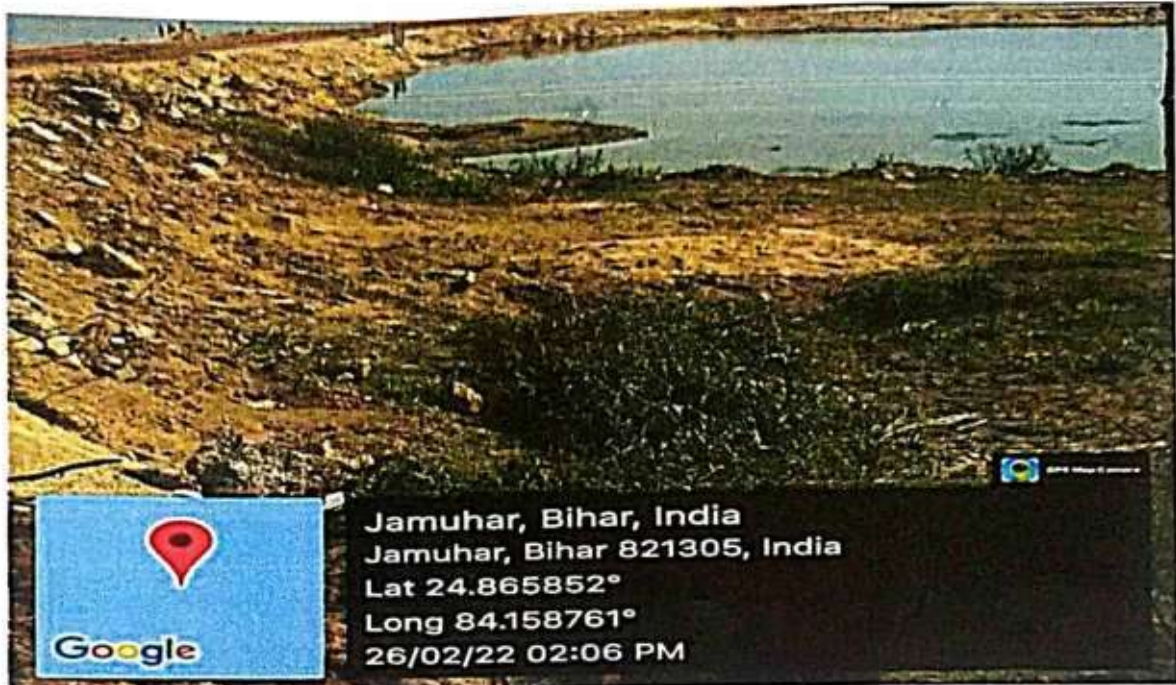
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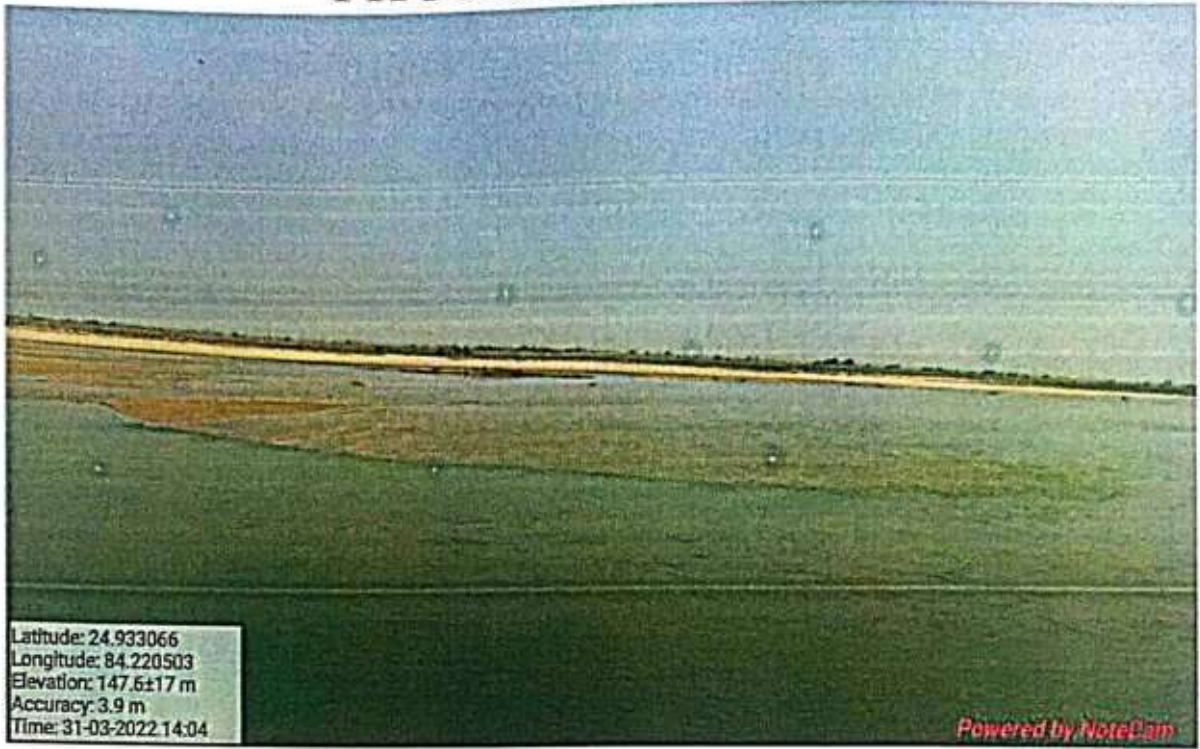
# PHOTOGRAPHS



# PHOTOGRAPHS

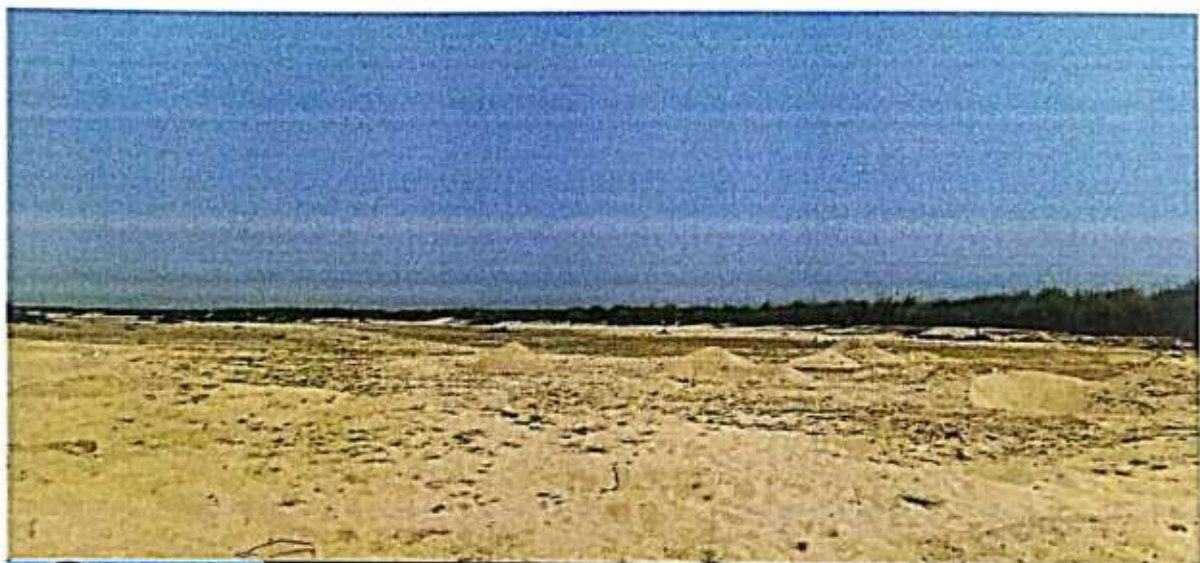


# PHOTOGRAPHS



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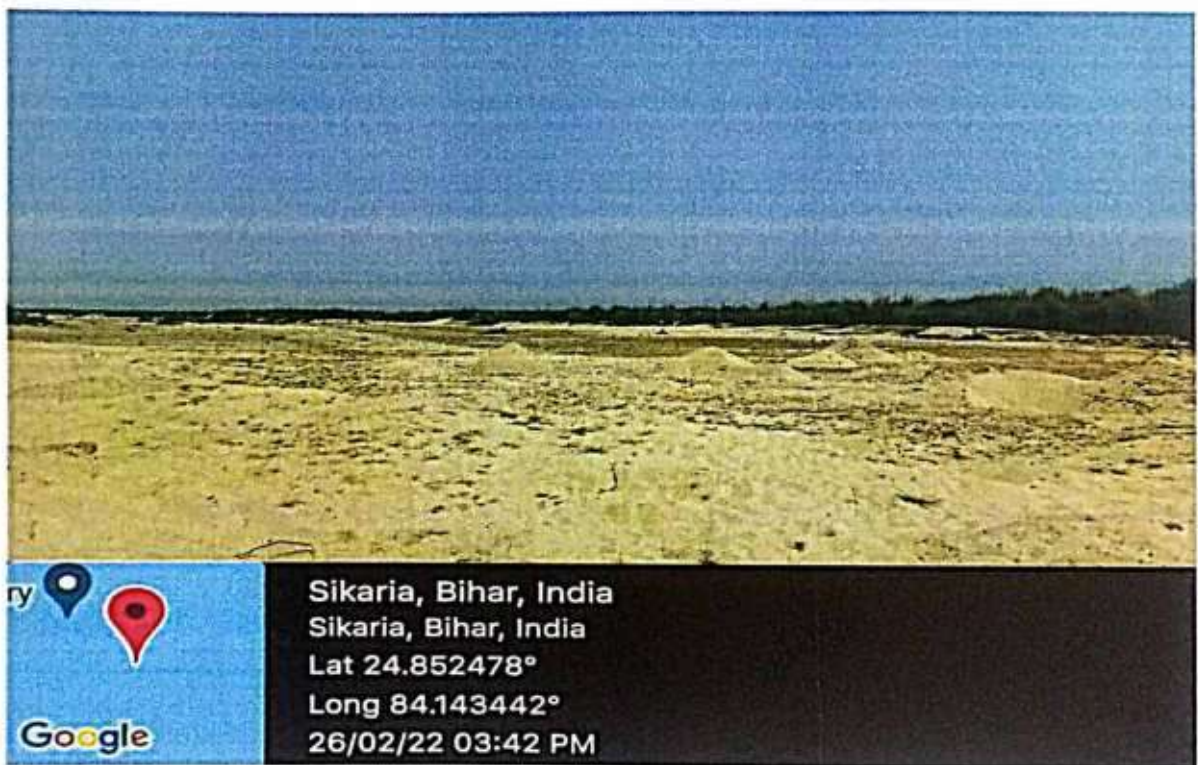
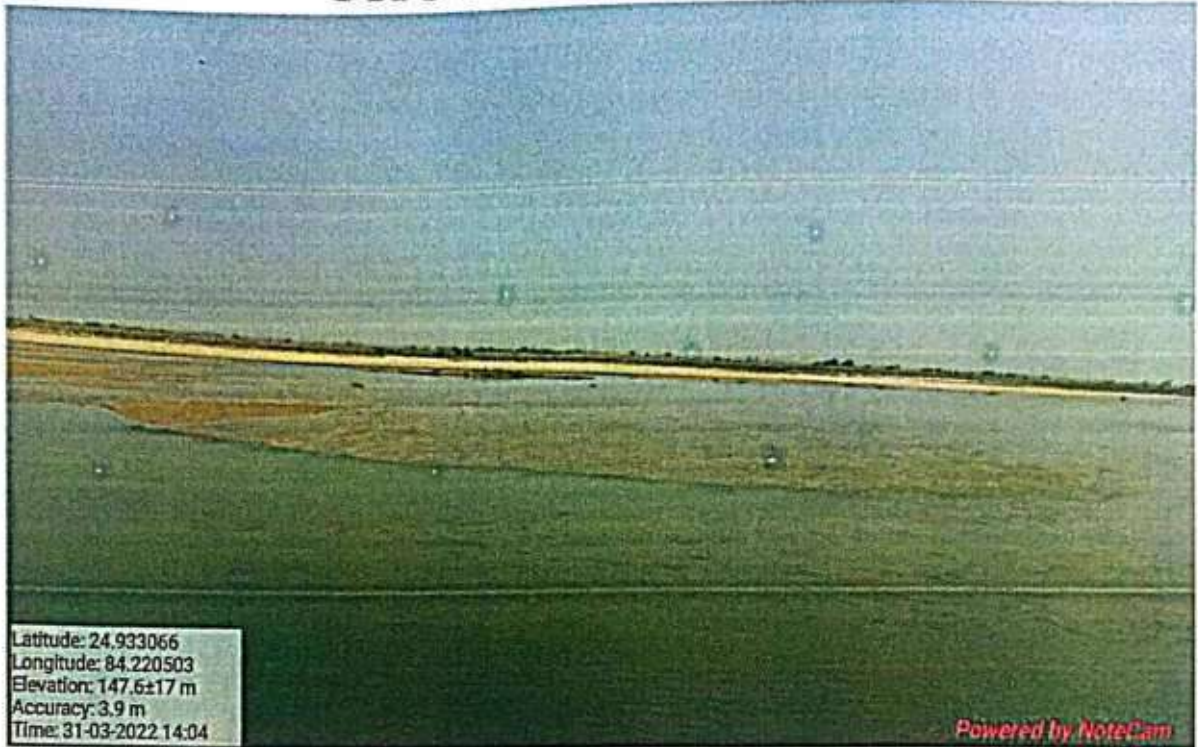
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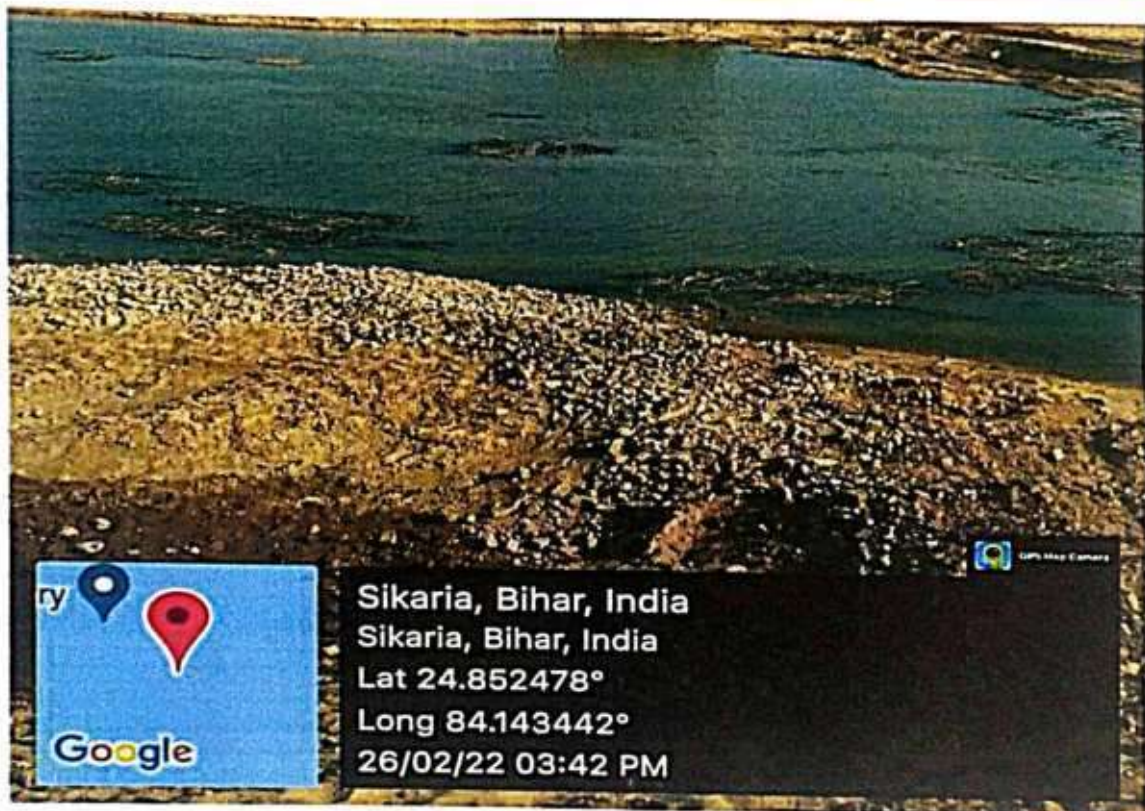
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 Long 84.143442°  
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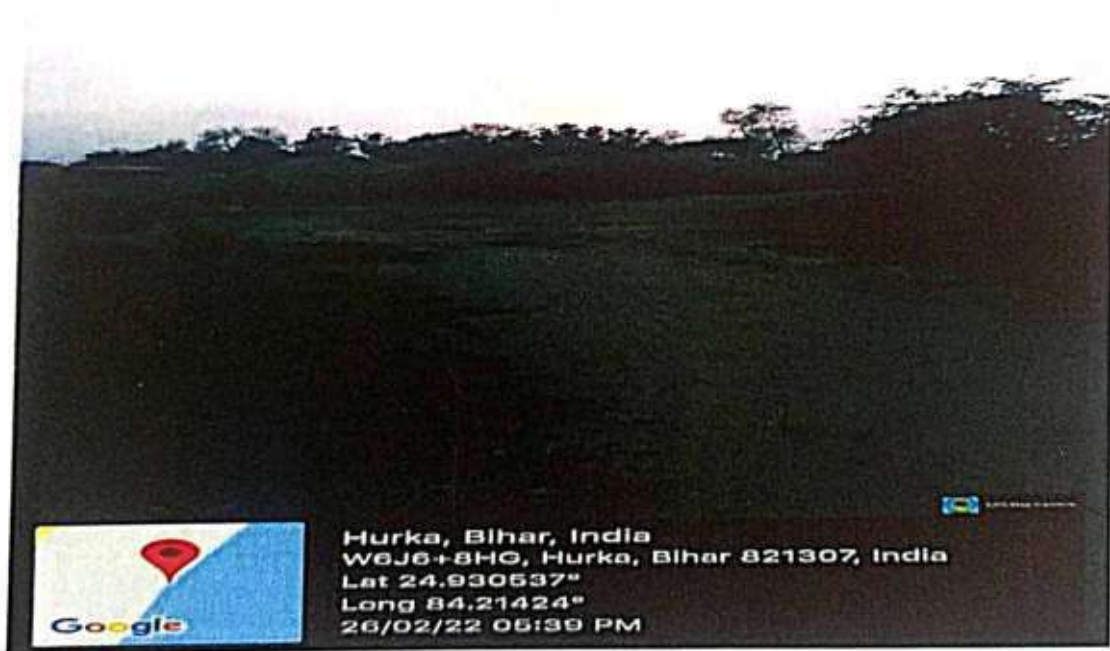
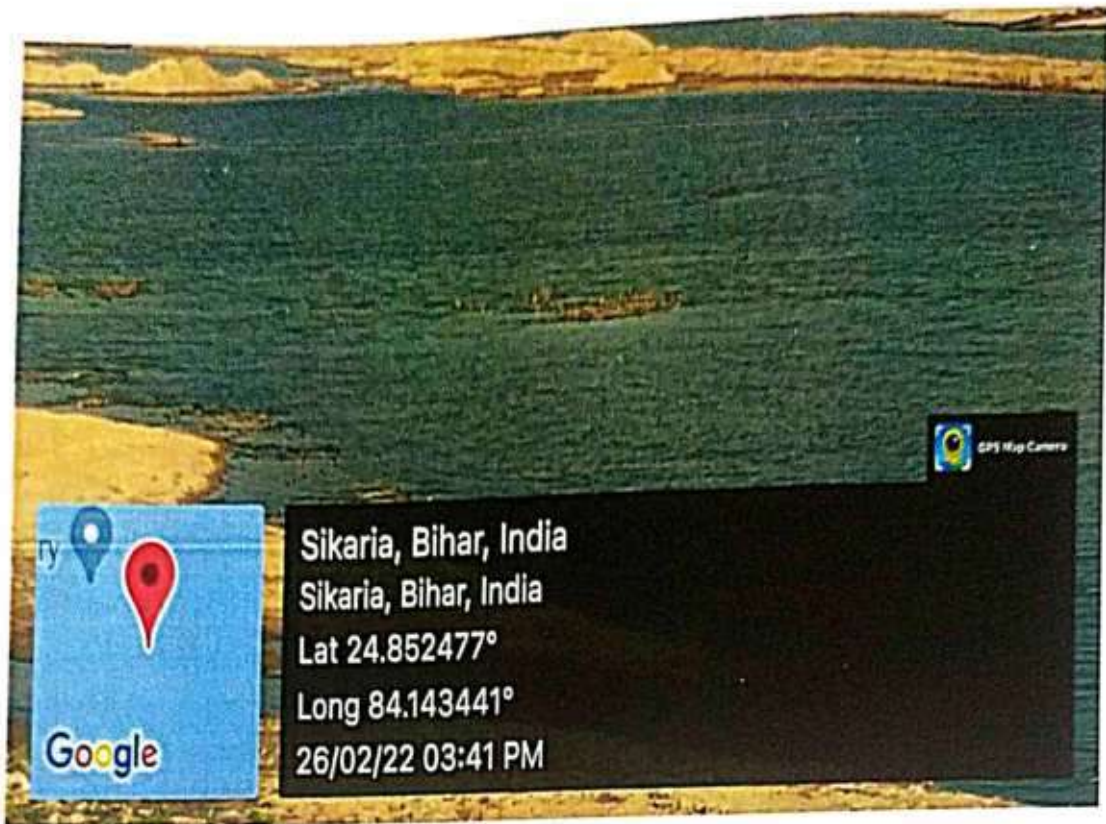
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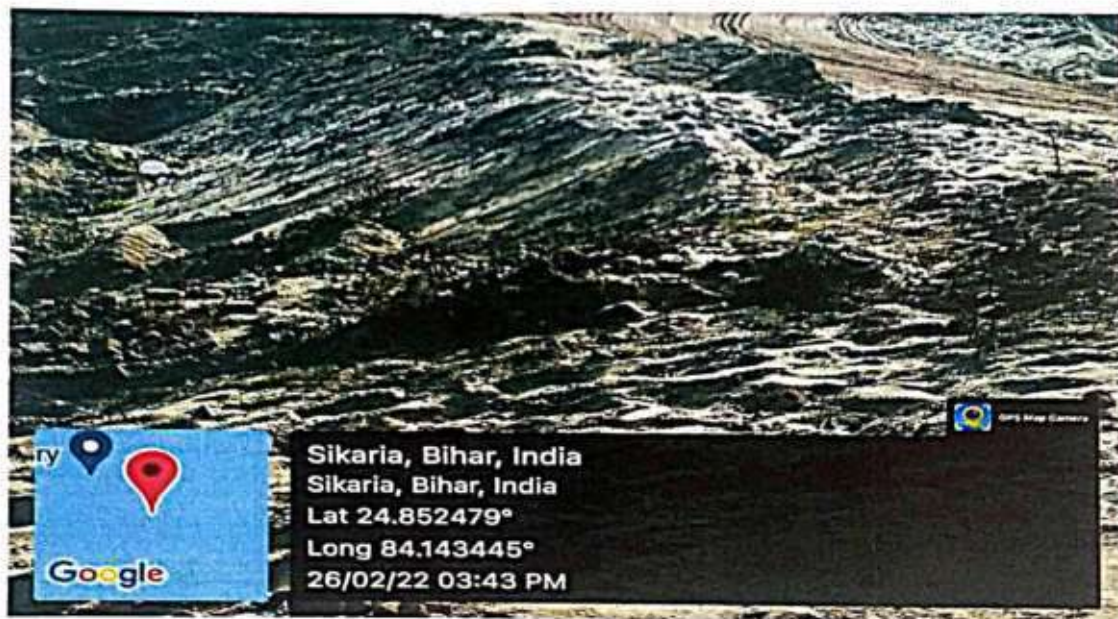
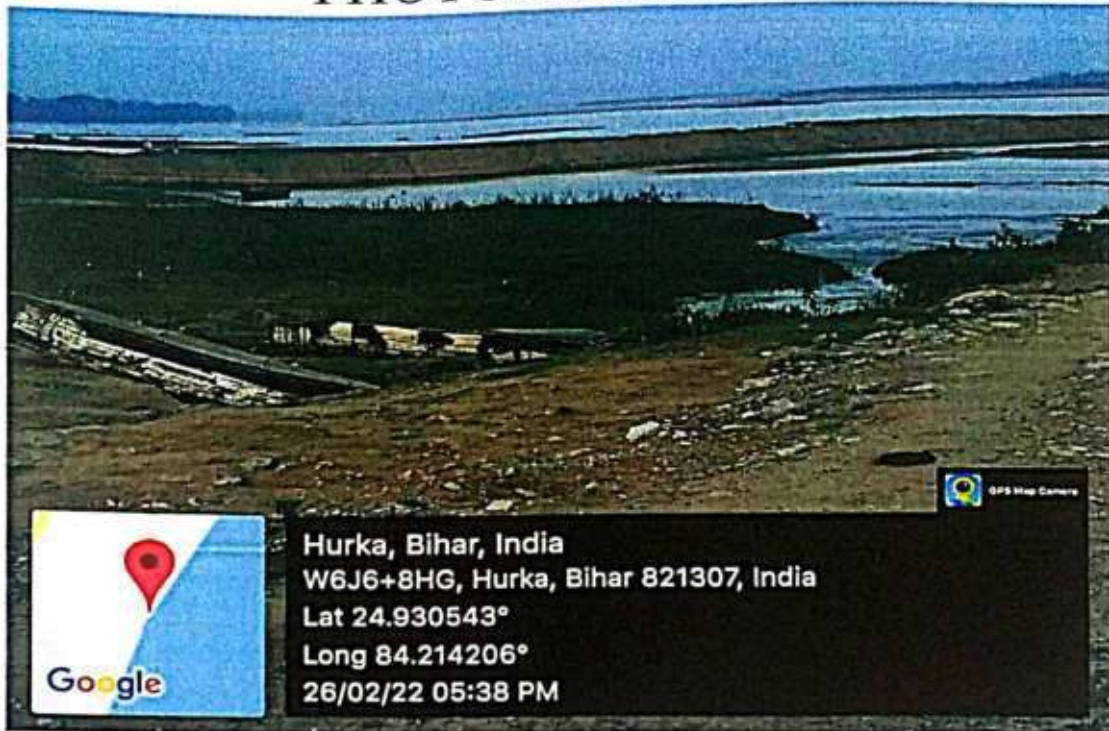
# PHOTOGRAPHS



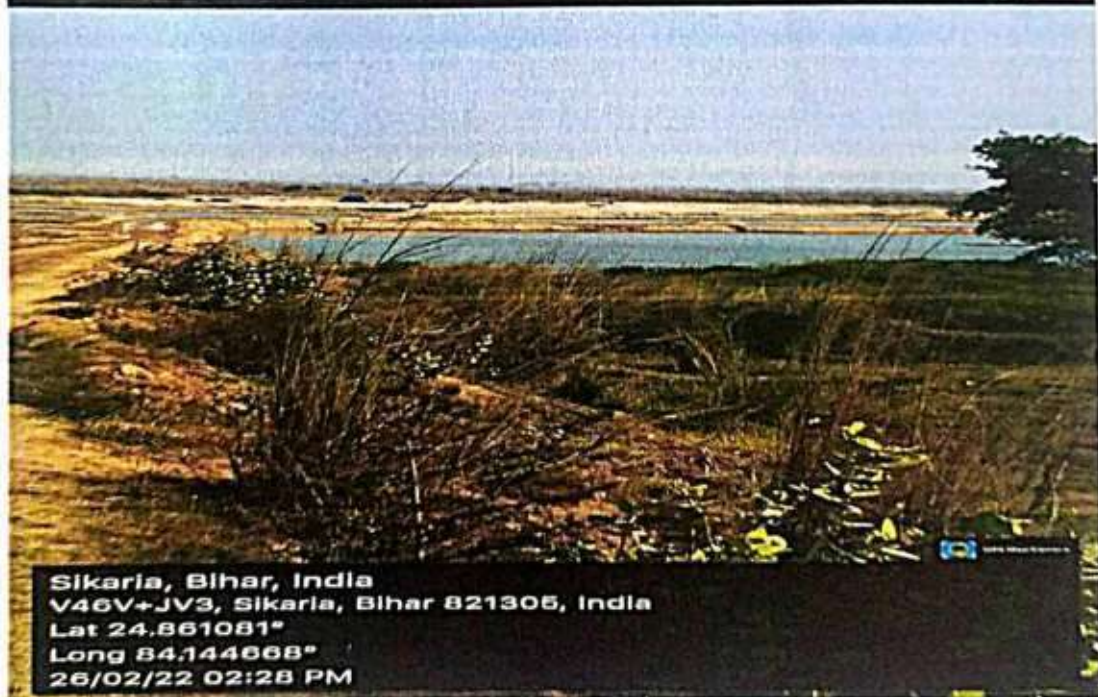
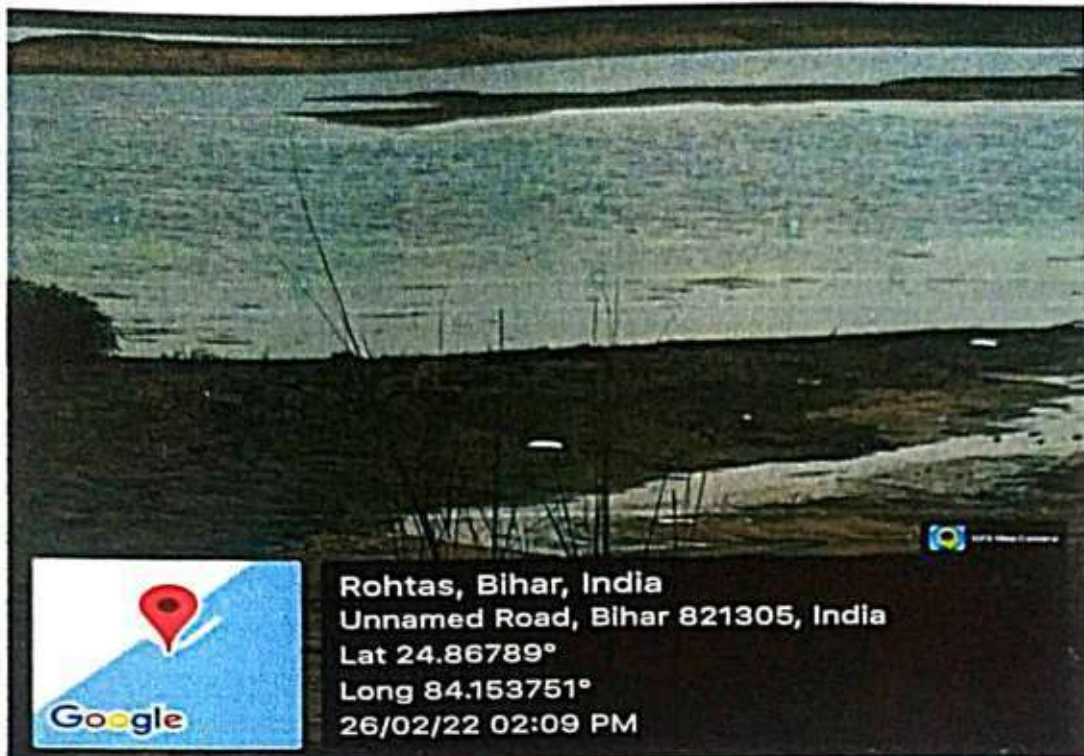
# PHOTOGRAPHS



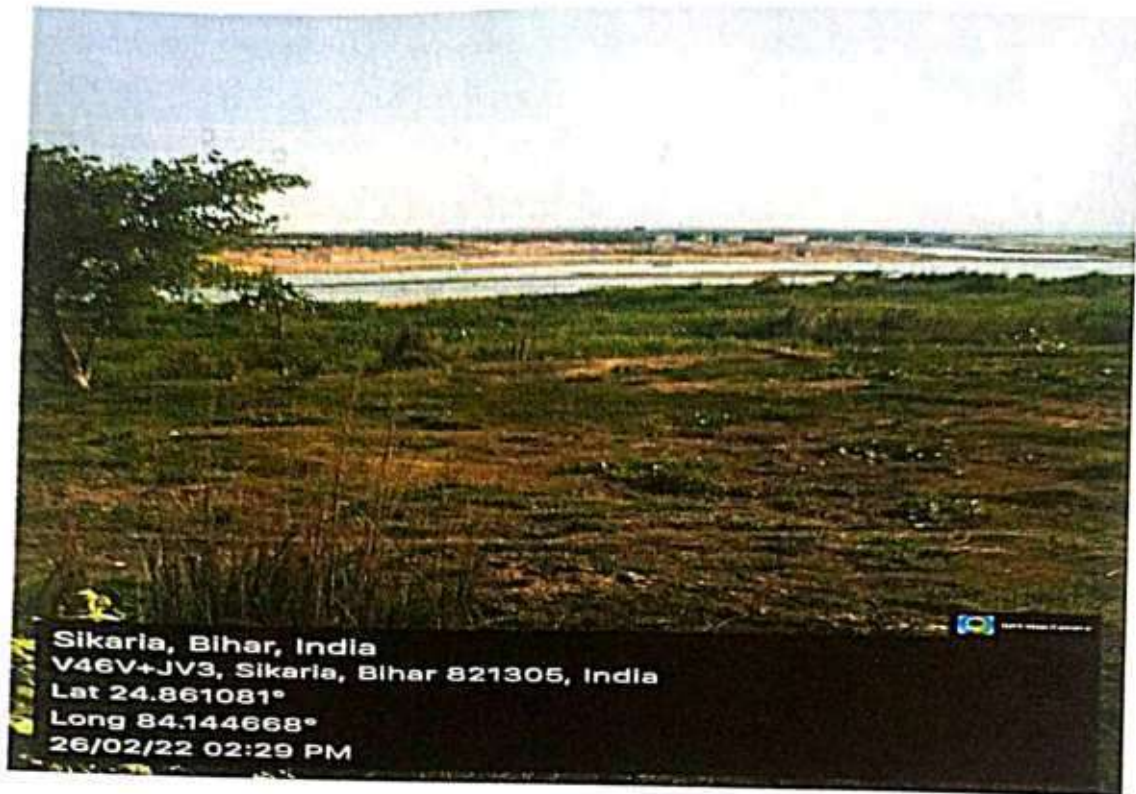
## PHOTOGRAPHS



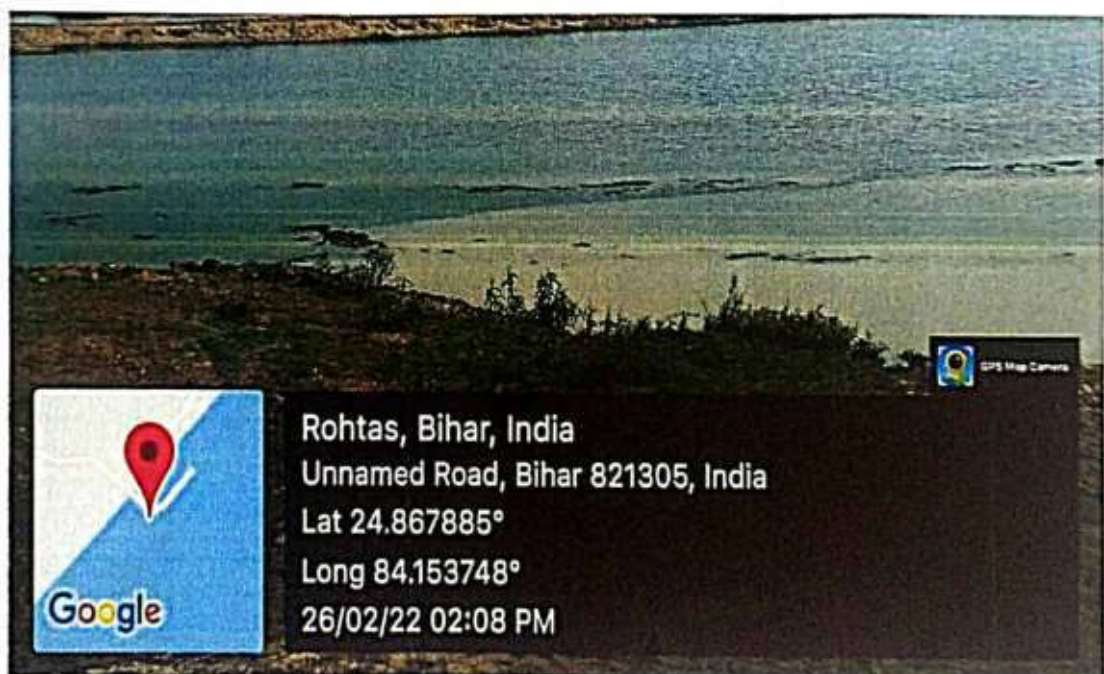
# PHOTOGRAPHS



## PHOTOGRAPHS



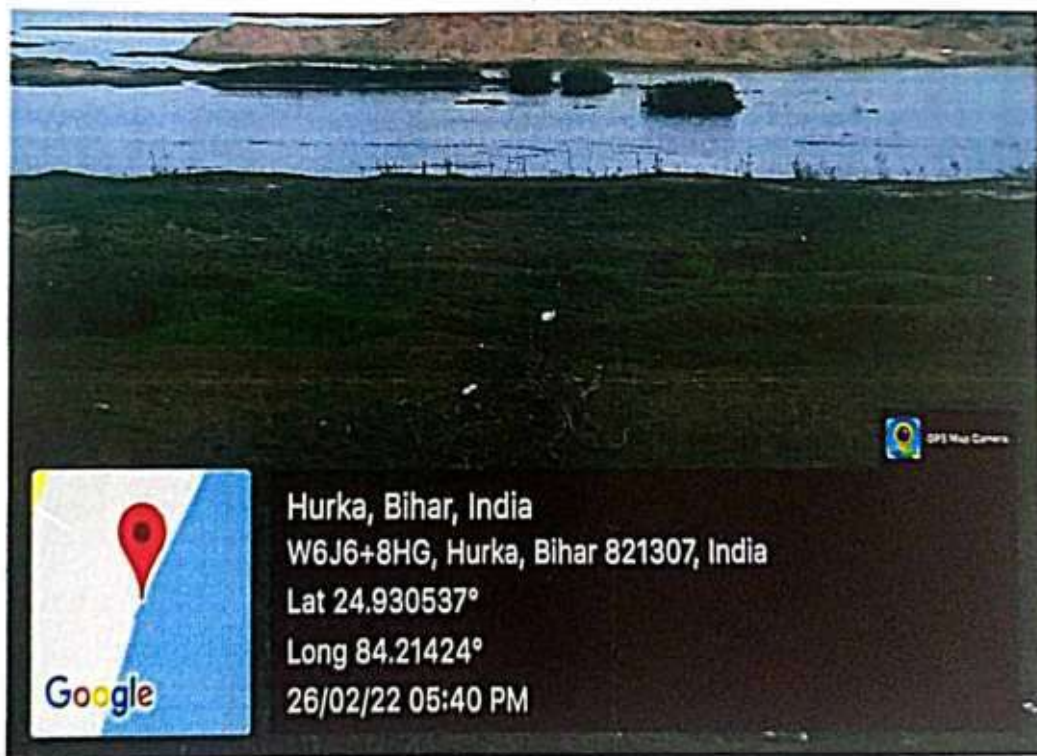
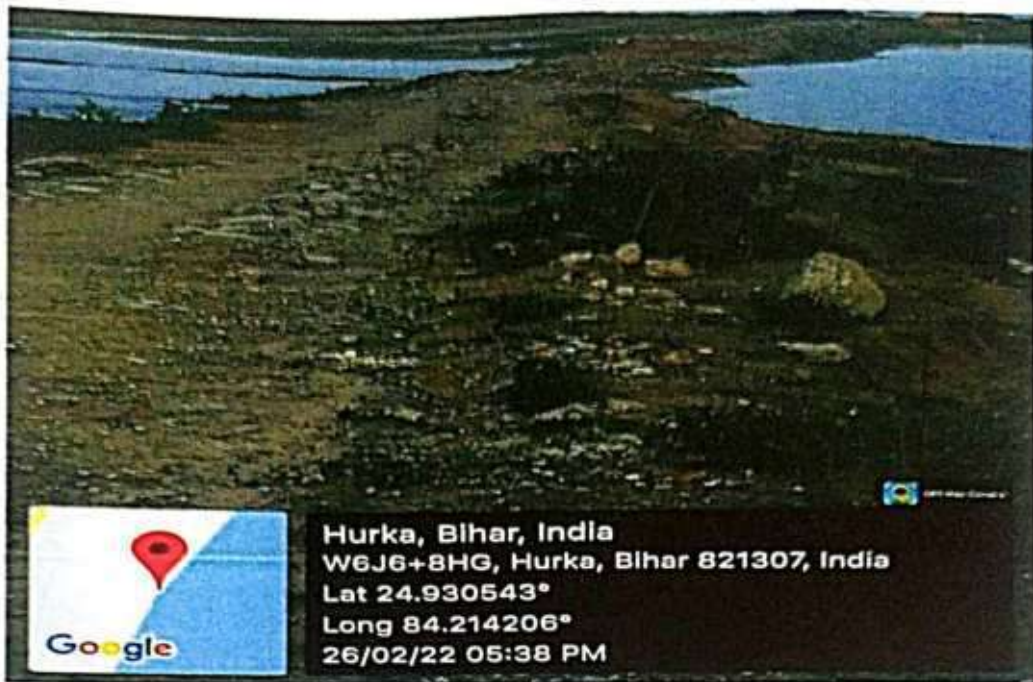
# PHOTOGRAPHS



# PHOTOGRAPHS




# PHOTOGRAPHS




# PHOTOGRAPHS



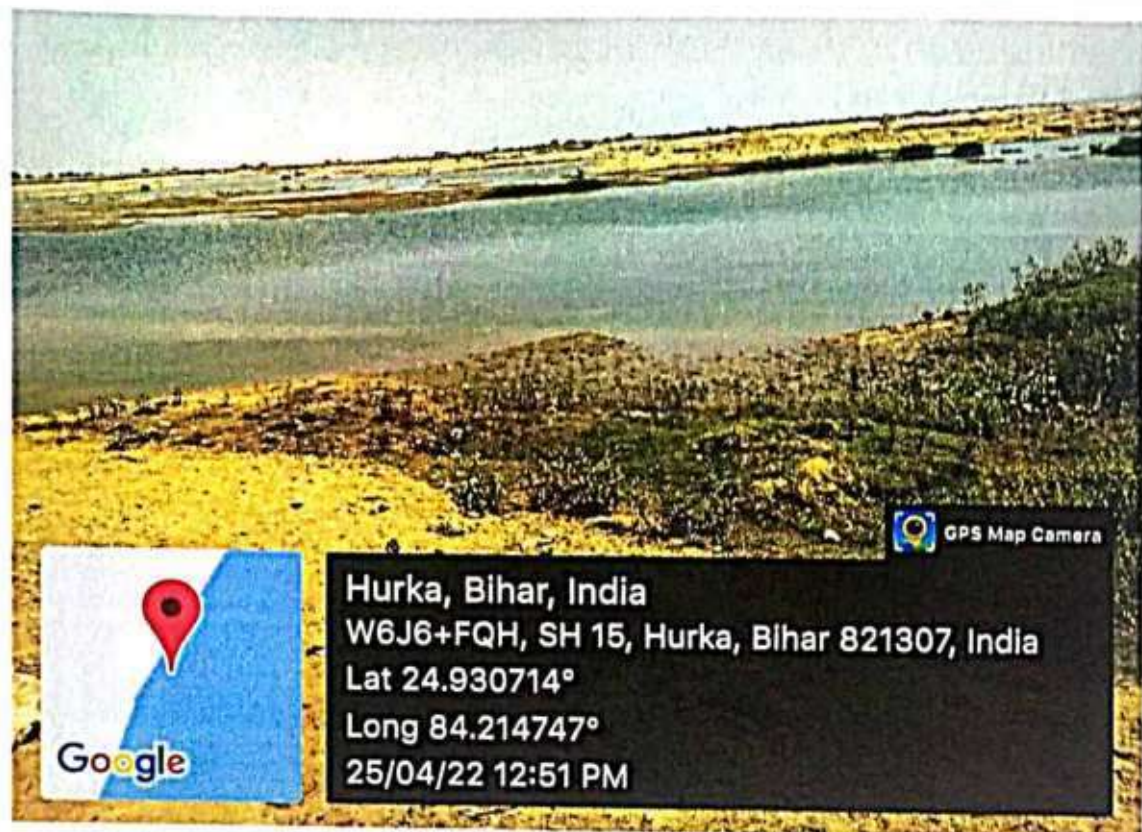
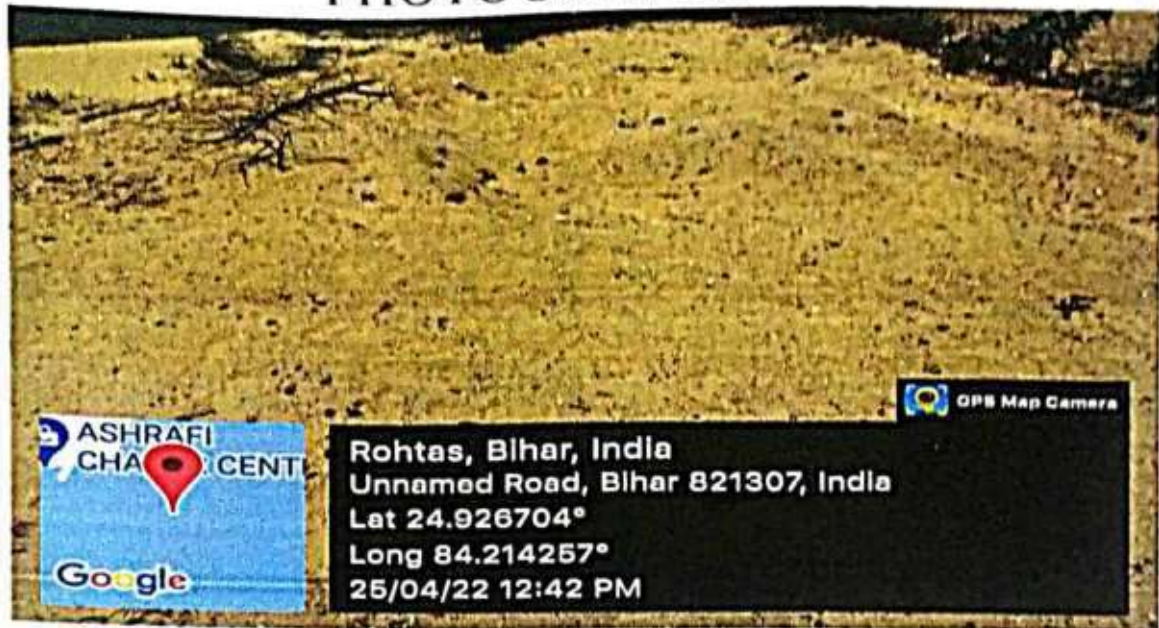

  
**Hurka, Bihar, India**  
 W6J6+8HG, Hurka, Bihar 821307, India  
 Lat 24.930746°  
 Long 84.212708°  
 26/02/22 05:46 PM



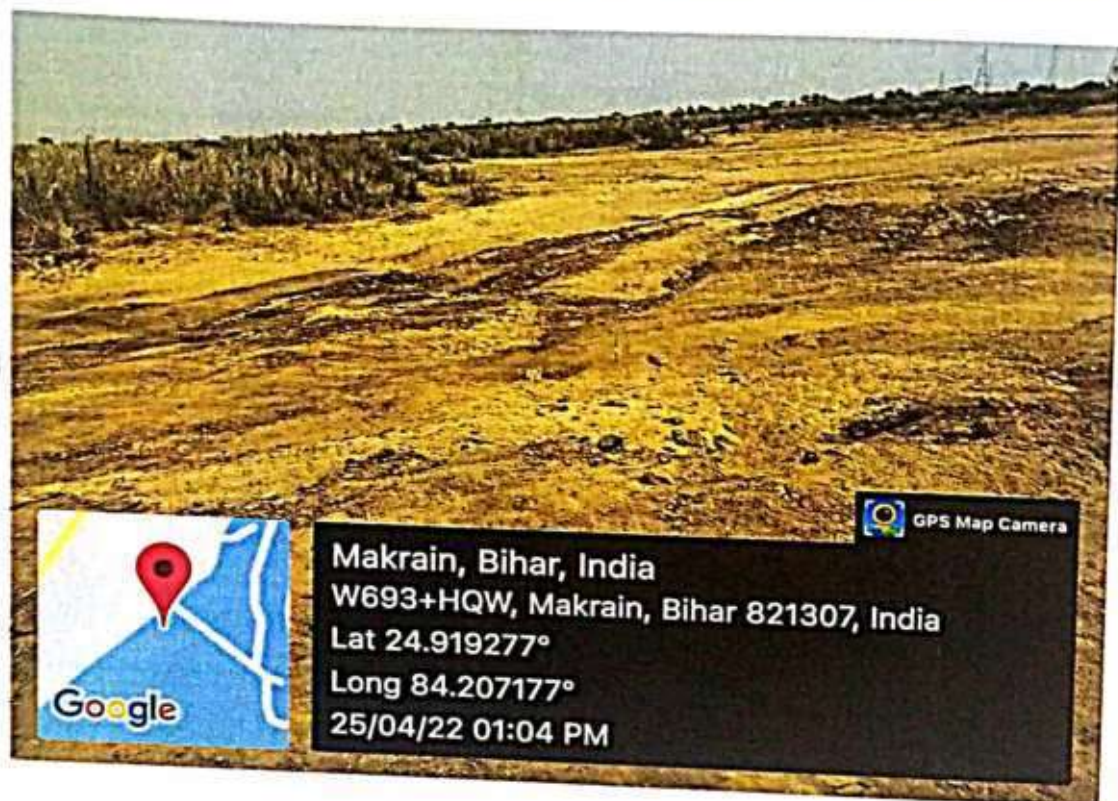
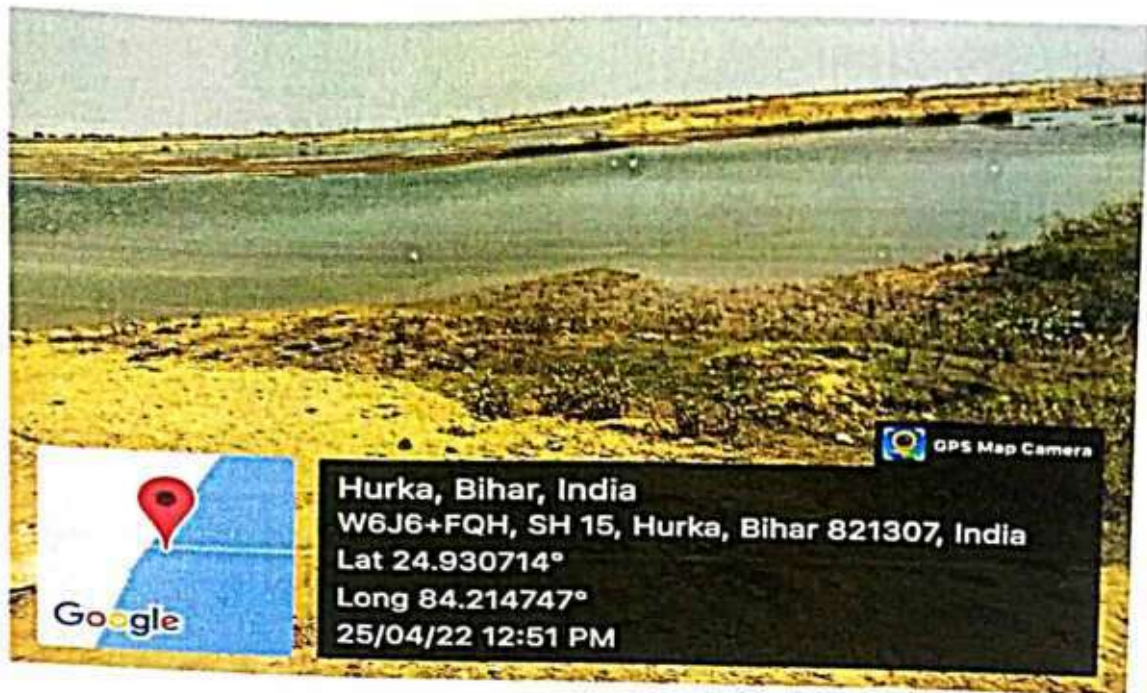

  
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 W6J6+8HG, Hurka, Bihar 821307, India  
 Lat 24.930537°  
 Long 84.21424°  
 26/02/22 05:39 PM



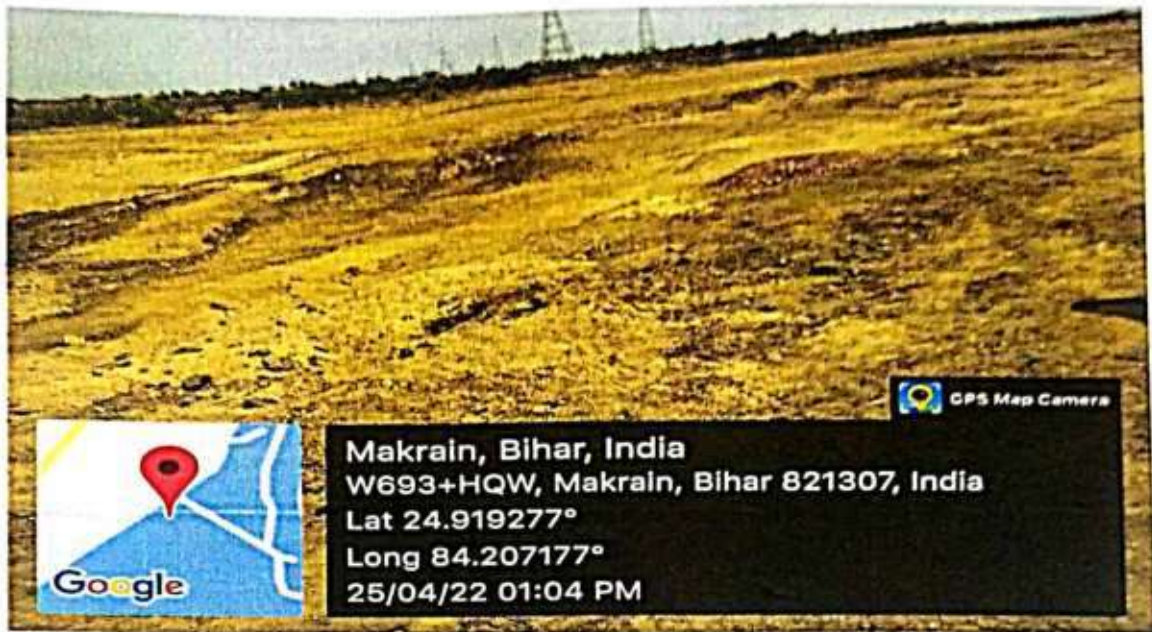
# PHOTOGRAPHS



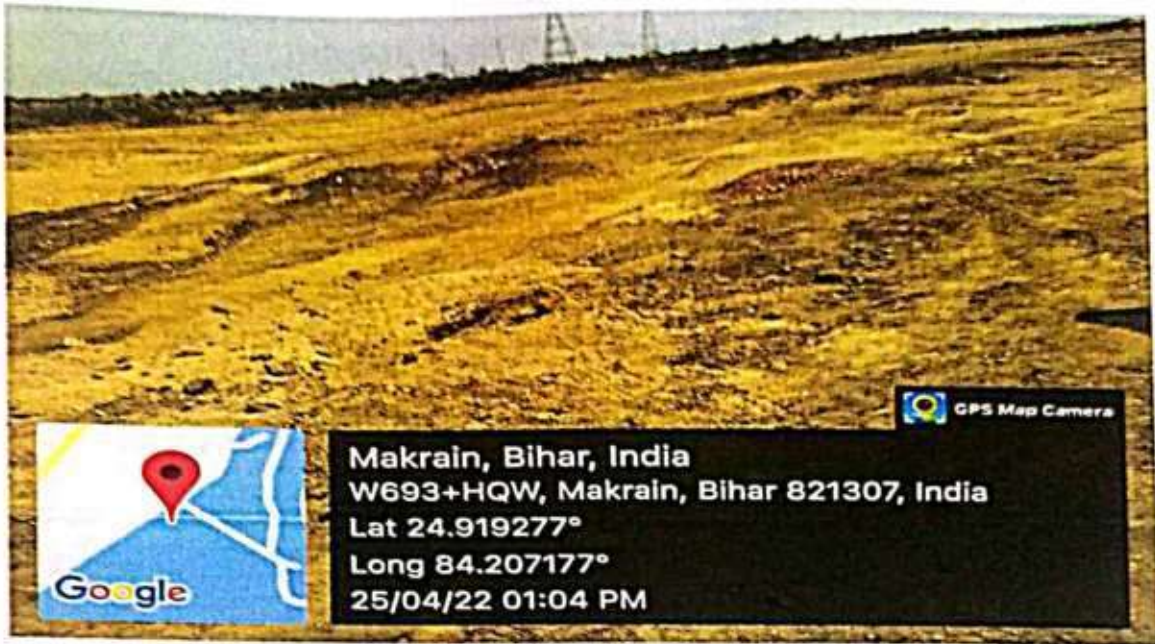
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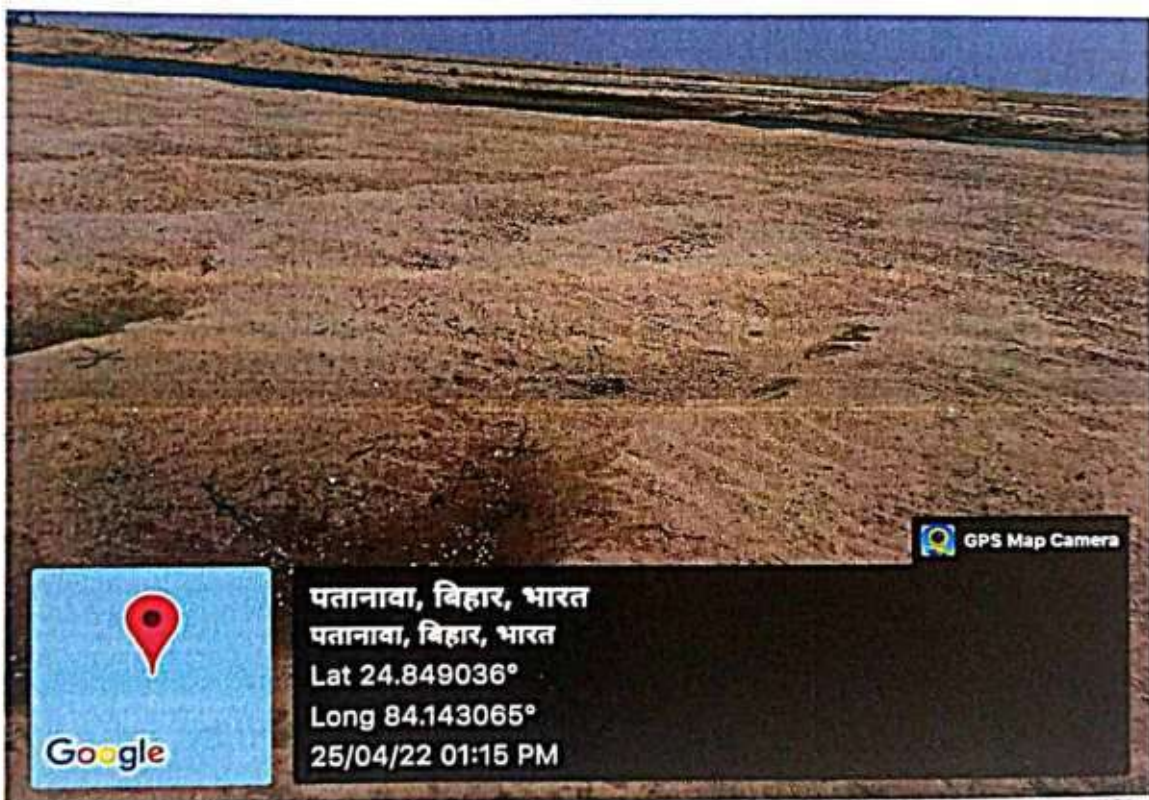
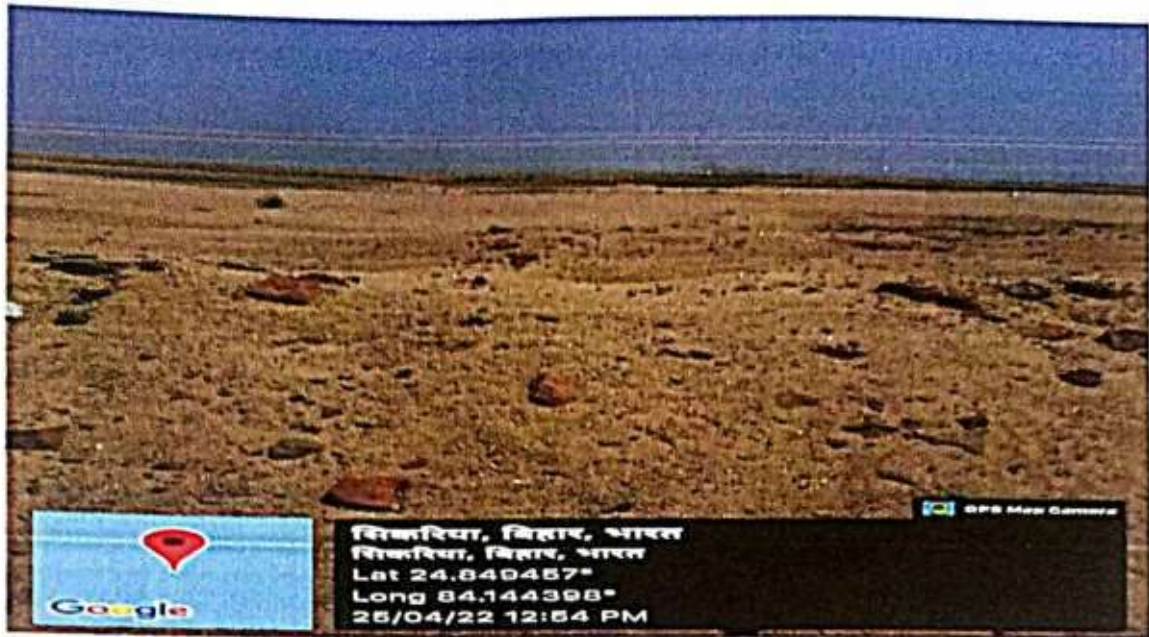
# PHOTOGRAPHS



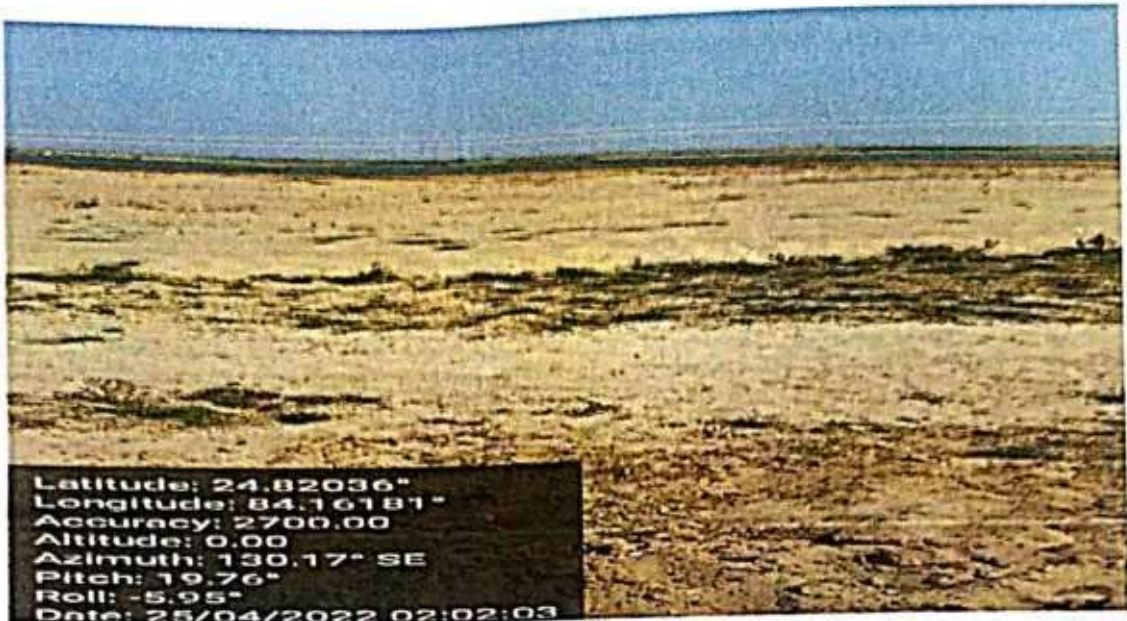
# PHOTOGRAPHS



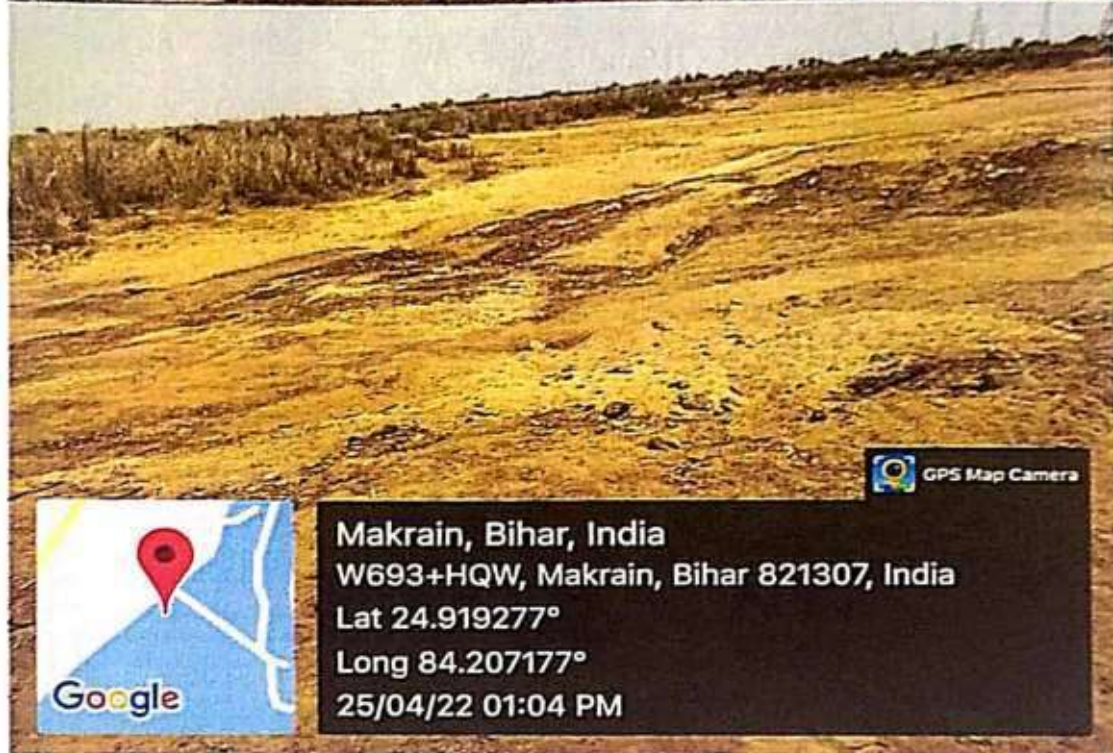
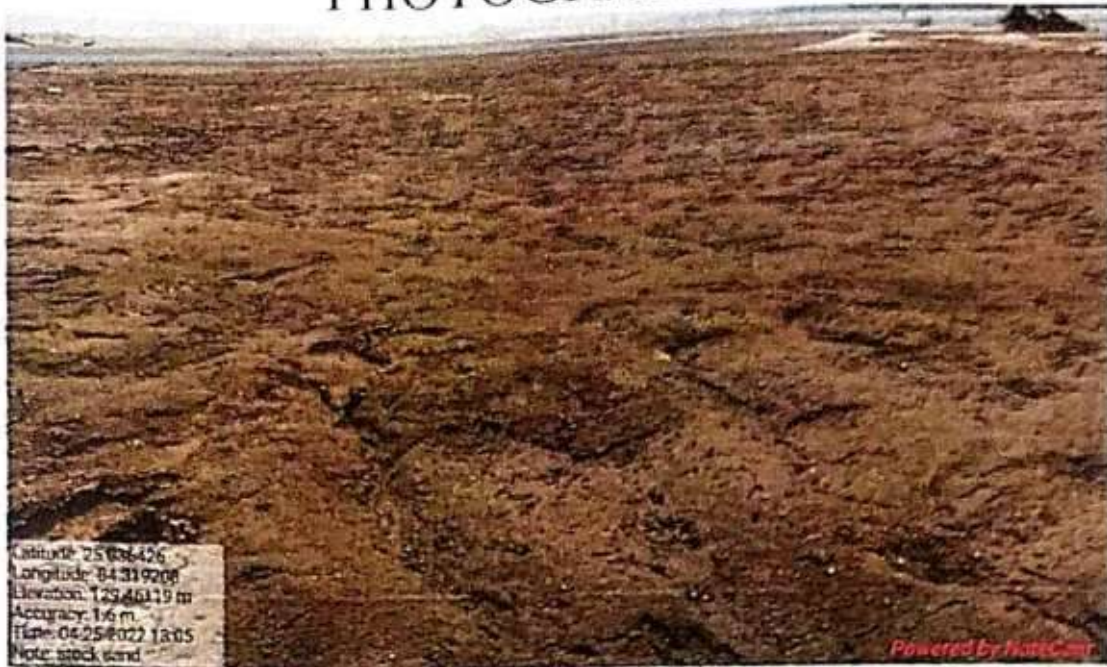
## PHOTOGRAPHS



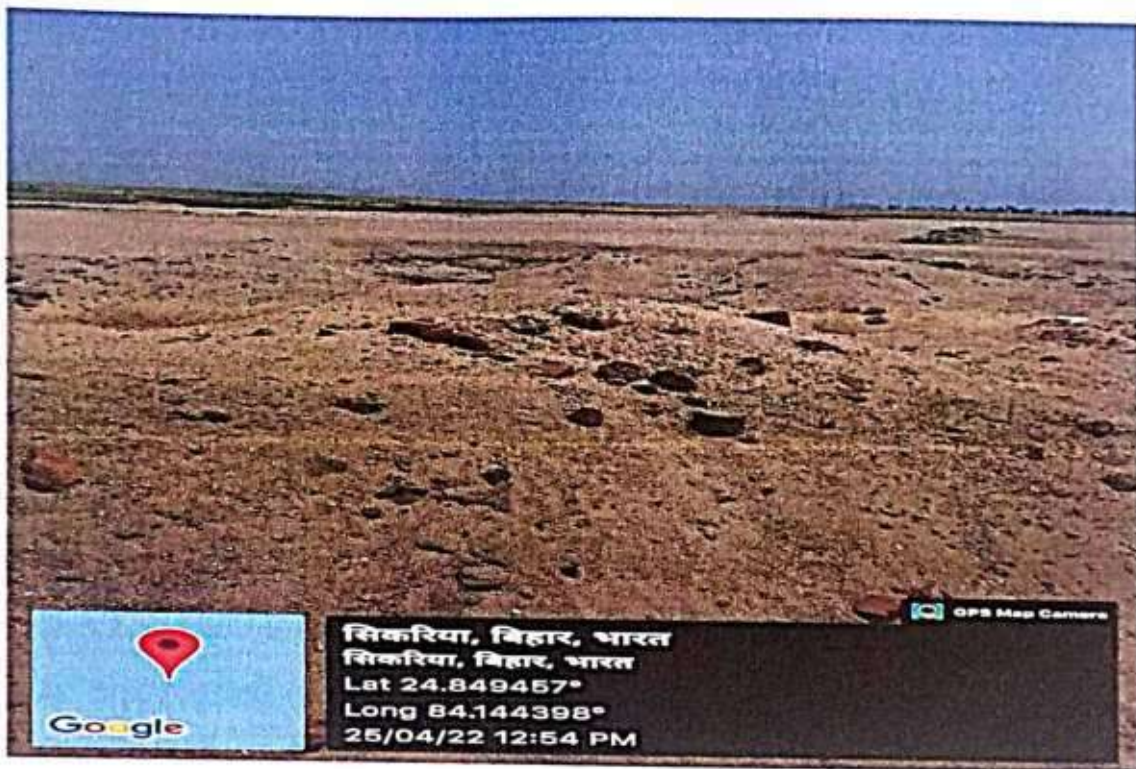
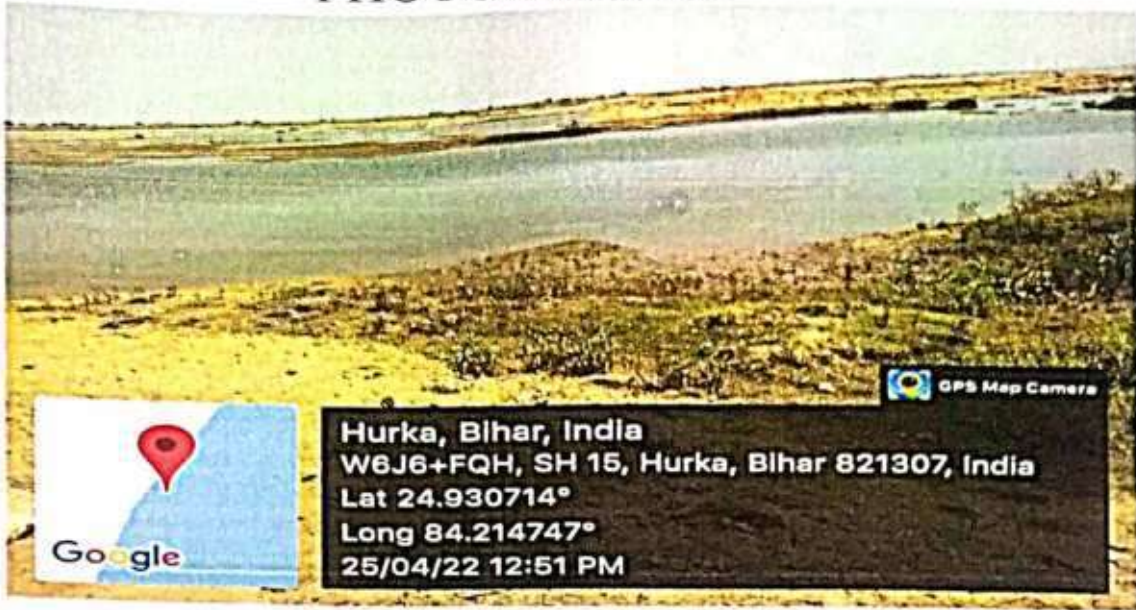
# PHOTOGRAPHS



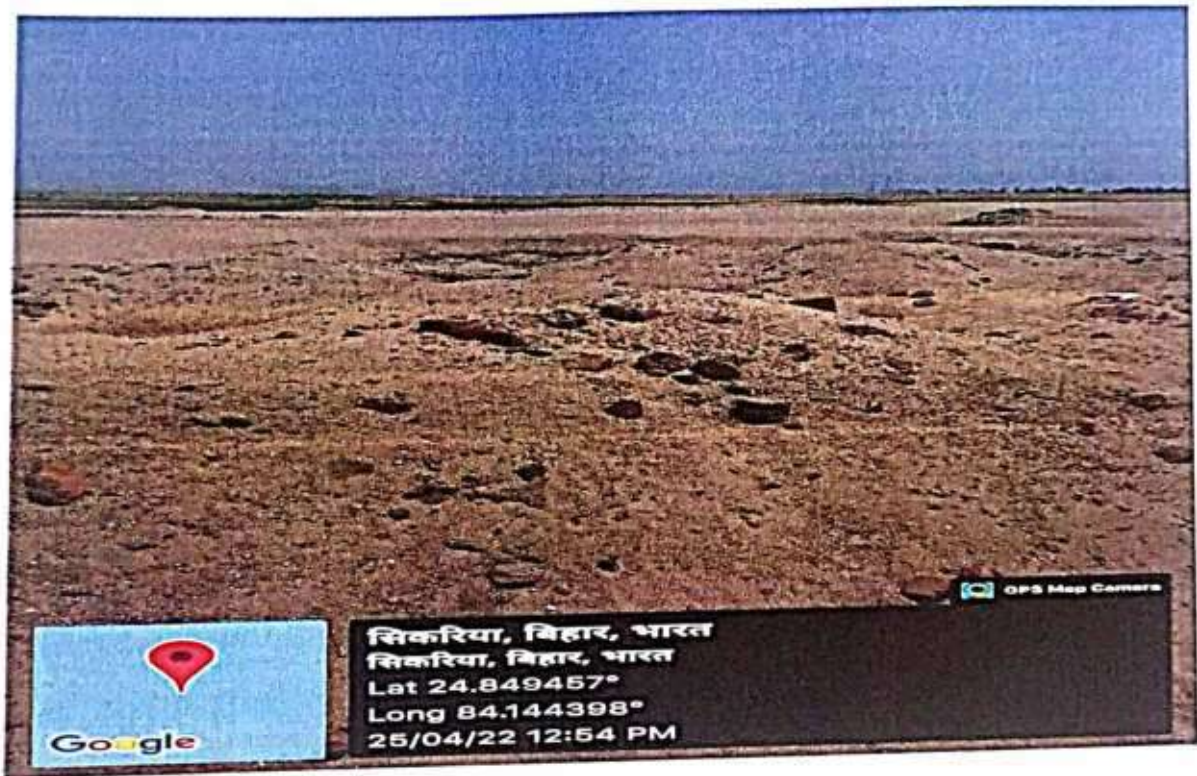
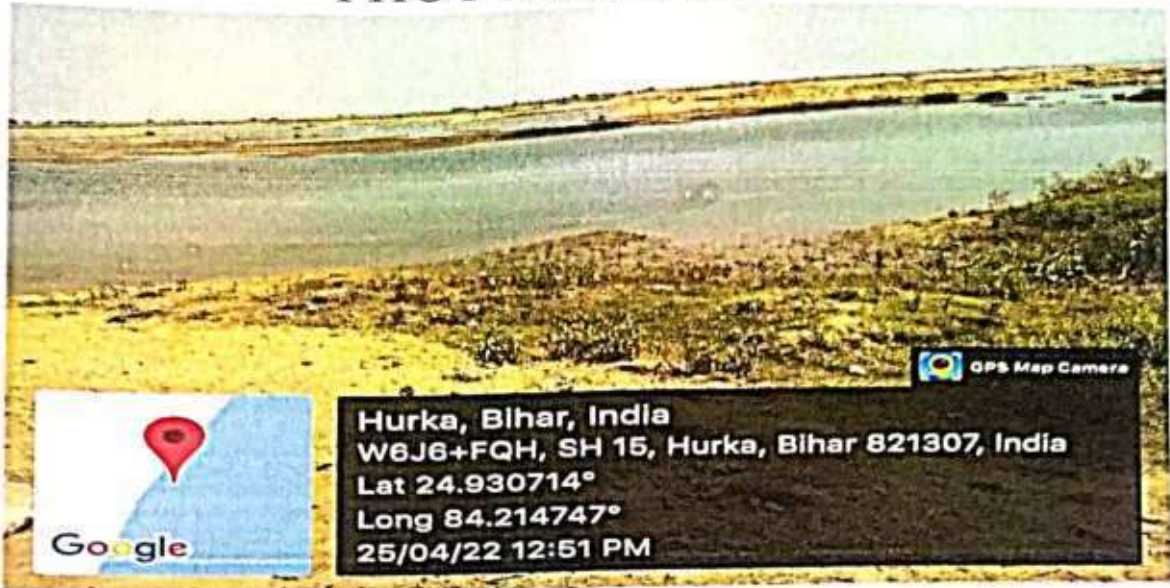
# PHOTOGRAPHS



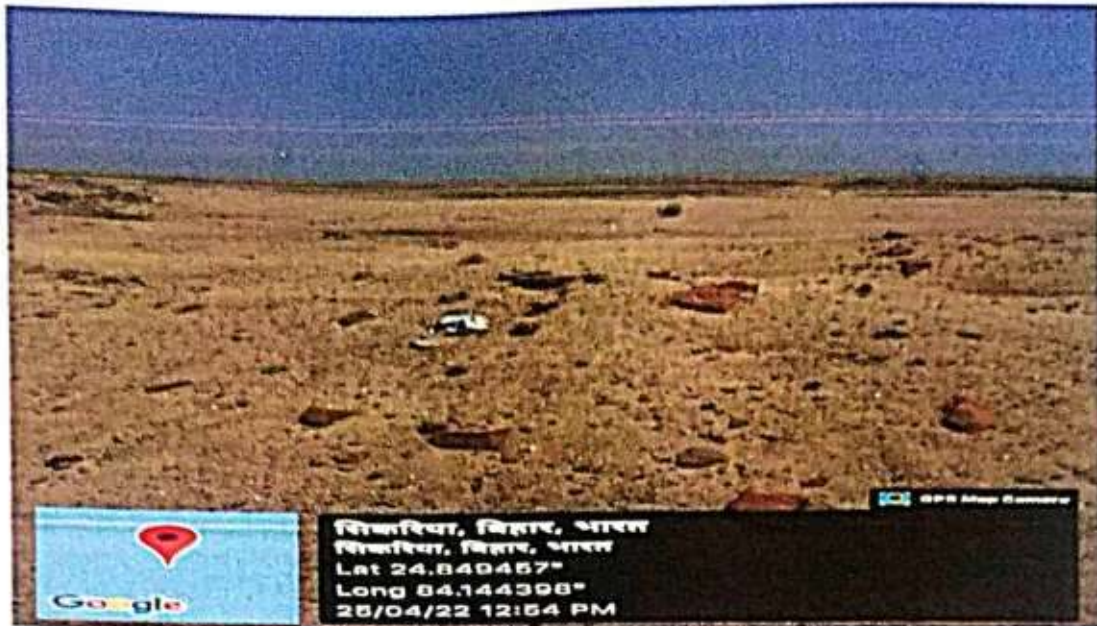
# PHOTOGRAPHS



# PHOTOGRAPHS



# PHOTOGRAPHS



### **Annexure -IV**

**(Submission date of Replenishment study report)**



### Date of submission of Replenishment Study Report




| Sl. No | Year               | Date of Submission             |
|--------|--------------------|--------------------------------|
| 1      | 2016               | 1 <sup>st</sup> July 2019      |
| 2      | 2017               | 1 <sup>st</sup> July 2019      |
| 3      | 2018               | 18 July 2019                   |
| 4      | 2019(Pre-monsoon)  | 4 <sup>th</sup> July 2019      |
| 5      | 2019(Post-monsoon) | 19 <sup>th</sup> December 2019 |
| 6      | 2020(Pre-monsoon)  | 12 October 2020                |
| 7      | 2020(Post-monsoon) | 8 <sup>th</sup> January 2021   |



## Annexure -V

(Sp. Gravity & Bulk Density data of sand from NABL lab)



## SHIVA TEST HOUSE


(Serving since 1988)

RECOMMENDED AS ENVIRONMENTAL LABORATORY BY M&EPCG, GOVT OF INDIA, UNDER ENVIRONMENT (PROTECTION) ACT 1986, DEPTT OF INDUSTRY, FORESTS & ENVIRONMENT GOVT OF BIHAR AND BIHAR STATE POLLUTION CONTROL BOARD

### TEST REPORT

|   |                |   |                |
|---|----------------|---|----------------|
| Ref. No: GTR-21-234710  | In: 21.03.2022 | Your Work Order No: Nil   | In: 21.03.2022 |
| a) Name and address of the Customer                                       |                | THE DISTRICT MINEWAL OFFICER,<br>BONHAT,<br>Distt. BONHAT,<br>BIHAR |                |
| b) Reports to be Submitted to   |                | DISTRICT MINING OFFICE, BONHAT                                      |                |
| c) Details of Sample  |                | Sand Sample   |                |
| d) Sample Collected by  |                | Customer  |                |
| e) Details of Sample Container (No. & Type of Container)                  |                | Jumbo Pouch   |                |
| f) Sample Quantity  |                | 200 gm  |                |
| g) Items required to be tested  |                | As per request  |                |
| h) Whether any specific Method of Test has been suggested by the customer |                | No  |                |
| i) Date of receiving the sample in Laboratory                             |                | 21.03.22  |                |

| S.N. | Sample Location | RESULTS             |                                    |
|------|-----------------|---------------------|------------------------------------|
|      |                 | Bulk Density(gm/cc) | Specific Gravity (G <sub>s</sub> ) |
| 1    | Sone River      | 2.10                | 2.25                               |
| 2    | Kudra River     | 2.02                | 1.8                                |




*(Signature)*  
Authorized Signatory  
Quality Manager / CEO



1. This report applies only to samples tested on site.  
 2. Total Liability of our Laboratory is limited to contractual amount.  
 3. Test Report entitles only the tests and not the product certificate.  
 4. Test Report can not be reproduced partially or full for legal/official purposes without written permission of the Laboratory.

Contact Us : 125-C, Aurha, Road No. 5A, Patna-85, Patna-85, Bihar - 800 013 (India)  
 Mob. +91 9456621777, +91 9456621788 Email: shivatesthouse@gmail.com, shivatesthouse@yahoo.com  
 Website: www.shivatesthouse.com, www.shivatesthouse.co.uk





**SHIVA TEST HOUSE**  
(Serving since 1988)






RECOMMENDED AS ENVIRONMENTAL LABORATORY BY MoEFCC, GOVT OF INDIA, UNDER ENVIRONMENT (PROTECTION) ACT 1986, DEPTT. OF INDUSTRY, FORESTS & ENVIRONMENT, GOVT OF BIHAR AND BIHAR STATE POLLUTION CONTROL BOARD

**TEST REPORT**

|   |   |
|---|---|
| Ref. No. <i>GTR-21-22-4449</i> Dt: <i>29.01.2022</i> Your Work Order No. Nil    In: <i>27.01.2022</i> |   |
| [a] Name and address of the Customer  | The DISTRICT Mining OFFICER,<br>ROHTAS,<br>Dist. ROHTAS,<br>Bihar |
| [b] Reports to be Submitted to  | DISTRICT Mining OFFICER, ROHTAS                                   |
| [c] Details of Sample   | Sand Sample   |
| [d] Sample Collected by   | Customer  |
| [e] Details of Sample Container (No. & Type of Container)   | Zipper Pouch  |
| [f] Sample Quantity   | 250 gm  |
| [g] Items required to be tested   | As per request  |
| [h] Whether any specific Method of Test has been suggested by the customer                            | No  |
| [i] Date of receiving the sample in Laboratory  | 27.01.22  |

| S.N. | Sample Location | RESULTS             |                       |
|------|-----------------|---------------------|-----------------------|
|      |                 | Bulk Density(gm/cc) | Specific Gravity (Gs) |
| 1    | Kow River       | 1.82                | 2.25                  |
| 2    | Thara River     | 1.83                | 2.23                  |





Anand Kumar  
Authorized Signatory  
Quality Manager / CEO

1. This report applies only to samples tested as above.  
 2. Total Liability of our Laboratory is limited to invoice amount.  
 3. This Report evidences only the tests and not the product compliance.  
 4. Test Report does not be reproduced partially or full for legal/contractual purposes without written permission of the Laboratory.

Contact us : 125-C, Khatla, Road No. 14, Patna, Patna, Bihar - 800 011 (Bihar)  
 Mob. +918276602749, +918276602750 Email: shivatesthouse@rediffmail.com  
 Website: www.shivatesthouse.com www.shivatesthouse.com



## **Annexure -VI**

**(Receiving copy of request letter DFO, Rohtas to provide details of Protected Forest, ESZ and Wetland in Distt. Rohtas)**



## जिला खनन कार्यालय, रोहतास (सासाराम)।

पत्रांक- 2822 / 170 सासाराम, दिनांक- 08/04/22

विषय

खनिज विकास पदाधिकारी  
जिला खनन कार्यालय  
रोहतास सासाराम।

सेवा में

Principal chief conservator of forest (HOFF),  
Environment, forest & climate change department,  
GIS Cell, Aranya Bhawan, State forest HQ,  
Patna, Bihar.

विषय -

जिला सर्वेक्षण प्रतिवेदन (DSR) को नये सिरे से तैयार करने के लिए डेटा/सूचना/  
Certificate उपलब्ध कराने के संबंध में।

भाषण

उपर्युक्त विषय के संबंध में सादर कहना है कि माननीय उच्चतम न्यायालय में बिहार सरकार द्वारा चार सिविल अपील नं. 3661-3662 बिहार राज्य एवं अन्य बनाम पवन कुमार एवं अन्य के मामले में दिनांक-10.11.2021 को पुरित आलरिन आदेश के अनुपालन हेतु बिहार राज्य स्तरीय आकलन समिति के द्वारा दिनांक-08.01.2022 को आयोजित बैठक में दिने नये टिप्पणी/निर्देश के आलोक में स्थित बालूघाटों से संबंधित जिला सर्वेक्षण प्रतिवेदन (DSR) प्रालन को पुनः तैयार कर उपलब्ध कराने हेतु निर्देश प्राप्त हुआ है। उक्त के आलोक में जिला सर्वेक्षण प्रतिवेदन (DSR) को नये सिरे से तैयार करने हेतु निम्नलिखित डेटा/सूचना/Certificate की आवश्यकता है।

- In case sand ghat is located near by the Forest/Wildlife Protected Area (Bird Sanctuary/Wildlife Sanctuary/National Park/Tiger Reserve) a certificate regarding distance of such ghat from the Eco-Sensitive Zone issued by the Ministry of Environment, Forest and Climate Change, Govt. of India should be enclosed with the DSR.

उक्त अनुरोध है कि जिला सर्वेक्षण प्रतिवेदन (DSR) को नये सिरे से तैयार करने हेतु उभरोक्त बांछित सूचना उपलब्ध कराने की कृपा की जाय।

अनुलग्नक-बालूघाटों की सूची।

विश्वासभाजन

*[Handwritten Signature]*

खनिज विकास पदाधिकारी,  
जिला खनन कार्यालय  
रोहतास, सासाराम।



  
**बिहार सहकार**  
 सर्वोपकरण, वन एवं जलसम्बन्ध परिसरों में विभाग  
कार्यालय - वन प्रबंधन परामर्शिका, रोहतास वन प्रबंधन, सासाराम।  
 वन प्रबंधन कार्यालय - 821118  
 फोन-1151

दिनांक - 12/04/2022  
 प्रमुख सौंपक, पर्यावरण,  
 वन प्रबंधन परामर्शिका,  
 रोहतास वन प्रबंधन,  
 सासाराम।


सेवा में  
 जिला विकास परामर्शिका,  
 जिला स्तरीय कार्यालय,  
 रोहतास, सासाराम।

विषय - जिला सर्वेक्षण इतिवेदन (Plan) को नवीन विवेक से संशोधन करने के लिए  
 डेटा/सूचना/Coordinates प्रस्तुत करने की संज्ञक में।

संदर्भ - मापका पत्रिका-808/1970 सासाराम, दिनांक-29.03.2022।

प्रस्ताव - उपर्युक्त विषयक प्रस्तावों पर के संबंध में सुविधा करना है कि प्राथमिक पर  
 के माध्यम से वास्तव इतिवेदन इस पर के संबंध संलग्न कर सुधारण एवं आवश्यक कारवायें  
 हेतु प्रेषित की जा रही है।

अनुलग्नक - 1 संलग्न।

विश्वासार्थ  
  
 वन प्रबंधन परामर्शिका,  
 रोहतास वन प्रबंधन, सासाराम।

| Sl. No. | Name of Ghats  | Latitude & Longitude |               |               |               | Status      | Distance from ESZ (In Km) |
|---------|----------------|----------------------|---------------|---------------|---------------|-------------|---------------------------|
|         |                | A                    | B             | C             | D             |             |                           |
| 1       | Sandhara II    | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 1.08                      |
| 2       | Sandhara I     | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 1.0                       |
| 3       | Sandhara (Ch)  | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 1.04                      |
| 4       | Esra Gh        | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 1.08                      |
| 5       | Mahadevi II    | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 11.29                     |
| 6       | Thakur Sand Gh | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 1.08                      |
| 7       | Wala Gh        | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 1.79                      |
| 8       | Chakra Gh      | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 1.0                       |
| 9       | Sandhara Gh-I  | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 1.13                      |
| 10      | Mahadevi I     | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 10.61                     |
| 11      | Sandhara Gh-II | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 1.08                      |
| 12      | Chakra Gh      | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 1.07                      |
| 13      | Esra Gh        | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 11.36                     |
| 14      | Sandhara Gh    | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 10.76                     |
| 15      | Esra Gh        | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 10.30                     |
| 16      | Mahadevi Gh    | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 10                        |
| 17      | Janki Gh       | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 10.77                     |
| 18      | Janki Gh       | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 10.68                     |
| 19      | Janki Gh       | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 10.36                     |
| 20      | Mahadevi Gh    | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 10.61                     |
| 21      | Parha Gh       | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 10.17                     |
| 22      | Janki Gh-I     | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 10.30                     |
| 23      | Janki Gh       | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 10.36                     |
| 24      | Mahadevi Gh-I  | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 11.76                     |
| 25      | Mahadevi Gh-II | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 11.36                     |
| 26      | Esra Gh        | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 10.76                     |
| 27      | Esra Gh        | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 10.68                     |
| 28      | Esra Gh        | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 10.8                      |
| 29      | Esra Gh        | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 10.47                     |
| 30      | Esra Gh        | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ | 10.87                     |

1 & 2 Attachment Noted Annexure Sheet

| Sl. No. | Name of River | Name of Ghats  | Latitude & Longitude |               |               |               | Status                         | Distance from ESZ (In Km) |
|---------|---------------|----------------|----------------------|---------------|---------------|---------------|--------------------------------|---------------------------|
|         |               |                | A                    | B             | C             | D             |                                |                           |
|         |               |                | 1                    | Debt on Sona  | 24°54'03.03"N | 84°11'23.81"E |                                |                           |
| 2       | Sera          | Chakra Gh      | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ                    | 14.78                     |
| 3       |               | Chakra Gh      | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ                    | 1.94                      |
| 4       | Sera          | Chakra Gh      | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | inside ESZ                     | 0                         |
| 5       |               | Khajuri Gh     | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | inside ESZ                     | 0                         |
| 6       | Sera          | Thakur Gh II   | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ                    | 6.67                      |
| 7       |               | Kharai Sand Gh | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ                    | 6.53                      |
| 8       | Kharai River  | Mast Sand Gh   | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ                    | 105.40                    |
| 9       |               | Kharai Sand Gh | 24°54'03.03"N        | 84°11'23.81"E | 84°11'23.81"E | 84°11'23.81"E | outside ESZ (Outside District) | 150.19                    |

18/07/22  
 Divisional Forest Officer,  
 Rohtas Forest Divn. Sonarum



## जिला खनन कार्यालय, रोहतास (सासाराम)।

पत्रांक- 904 / एम० सासाराम, दिनांक- 29.3.22

प्रेषक-

खनिज विकास पर्याधिकारी  
जिला खनन कार्यालय,  
रोहतास सासाराम।

सेवा में,

निदेशक,  
भारतीय प्राणि सर्वेक्षण,  
बिहार पटना।

विषय-

जिला सर्वेक्षण प्रतिवेदन (DSR) को नये सिरे से तैयार करने के लिए डेटा/सूचना/  
Certificate उपलब्ध कराने के संबंध में।

महाराज,

उपर्युक्त विषय के संबंध में सादर कहना है कि माननीय उच्चतम न्यायालय में विद्वत् सरकार द्वारा दायर सिविल अपील संख्या-3061-3062 बिहार राज्य एवं अन्य बनाम पदन कुमार एवं अन्य के मामले में दिनांक-10.11.2021 को पारित आंतरिम आदेश के अनुपालन हेतु बिहार राज्य स्तरीय आंकलन समिति के द्वारा दिनांक-08.01.2022 को आयोजित बैठक में दिये गये टिप्पणी/निदेश के आलाोक में स्थित बालूघाटों से संबंधित जिला सर्वेक्षण प्रतिवेदन (DSR) प्रारूप को पुनः सुधार कर उपलब्ध कराने हेतु निदेश प्राप्त हुआ है। उक्त के जालोक में जिला सर्वेक्षण प्रतिवेदन (DSR) को नये सिरे से तैयार करने हेतु निम्नांकित डेटा/सूचना/Certificate की आवश्यकता है।

1. To Verify the Proposed Sand ghat regarding habitation of aquatic animal in the Son river, Kudra river, Kow river, Thora river in the Rohtas District.
2. A Map and KML file regarding aquatic animal found in the Son river, Kudra river, Kow river, Thora river of Rohtas District.

अतः अनुरोध है कि जिला सर्वेक्षण प्रतिवेदन (DSR) को नये सिरे से तैयार करने हेतु उपरोक्त वांछित सूचना उपलब्ध कराने की कृपा की जाय।

विश्वासभाजन

*Katish*  
29/3/22

खनिज विकास पर्याधिकारी,  
जिला खनन कार्यालय,  
रोहतास, सासाराम।



## जिला खनन कार्यालय, रोहतास, सासाराम।

पत्रांक-.....४६०...../खनन, सासाराम, दिनांक-.....२६.३.२२.....

प्रेषित,

खनिज विकास पदाधिकारी,  
जिला खनन कार्यालय,  
रोहतास, सासाराम।

सेवा में,

संयुक्त निदेशक,  
एम०एम०आई०एल०सी०  
ब्लॉक-A, अनिसाबाद,  
पटना-800002

विषय :-

जिला सर्वेक्षण प्रतिवेदन (DSR) को नये सिरे से तैयार करने के लिए डेटा/मानचित्र/सूचना उपलब्ध कराने के संबंध में।

महाराष्ट्र,

उपर्युक्त विषय के संबंध में सादर कहना है कि माननीय उच्चतम न्यायालय में बिहार सरकार द्वारा दापर स्थित अपीलीय संख्या-3661-3002/2020 बिहार राज्य एवं अन्य बनाम पवन कुमार एवं अन्य के मामले में दिनांक-10.11.2021 को पारित अंतरिम आदेश के अनुपालन हेतु बिहार राज्य सारीय आकलन समिति के द्वारा दिनांक-08.01.2022 को आयोजित बैठक में दिये गये दिश्याही/निदेश के आलोक में स्थित बालूघाटों से संबंधित जिला सर्वेक्षण प्रतिवेदन (DSR) प्रारूप को पुनः सुधार कर उपलब्ध कराने हेतु निदेश प्राप्त हुआ है। उक्त के आलोक में जिला सर्वेक्षण प्रतिवेदन (DSR) को नये सिरे से तैयार करने हेतु निम्नांकित डेटा/मानचित्र/सूचना की आवश्यकता है।

1. Current high-resolution satellite map of the river flowing in the Rohtas district in soft copy which is needed to identify the sand deposits, (As directed by SEAC-Bihar under the light of Hon'ble Supreme Court order to prepared the (DSR).
2. Geo-referenced map of the rivers in Rohtas district (I.e. son river, Kudra river, Thora river, Kow river.)

अतः अनुरोध है कि जिला सर्वेक्षण प्रतिवेदन (DSR) को नये सिरे से तैयार करने हेतु उपरोक्त वांछित सूचना उपलब्ध कराने की कृपा की जाय।

विश्वास्तमाजन

*K. S. Singh*  
26/3/22  
खनिज विकास पदाधिकारी,  
जिला खनन कार्यालय,  
रोहतास, सासाराम।



## Annexure -VII

(Individual Sandbar length and width of the river)



| Son River |          |       |                         |           |          |
|-----------|----------|-------|-------------------------|-----------|----------|
| SL NO     | DISTRICT | RIVER | CODE                    | LENGTH(m) | WIDTH(m) |
| 1         | ROHTAS   | SONE  | PO_RT_SN_01             | 649.87    | 300.49   |
| 2         |          |       | PO_RT_SN_02_04          | 4954.39   | 290.52   |
| 3         |          |       | PO_RT_SN_05             | 4219.53   | 460.79   |
| 4         |          |       | PO_RT_SN_06             | 3588.24   | 850.36   |
| 5         |          |       | PO_RT_SN_07             | 9209.52   | 565.87   |
| 6         |          |       | PO_RT_SN_7A             | 1266.41   | 300.16   |
| 7         |          |       | PO_RT_SN_9A             | 2340.35   | 250.77   |
| 8         |          |       | PO_RT_SN_9B             | 890.63    | 327.64   |
| 9         |          |       | PO_RT_SN_9C             | 554.48    | 380.27   |
| 10        |          |       | PO_RT_SN_10             | 653.58    | 200.36   |
| 11        |          |       | PO_RT_SN_11             | 2701.69   | 469.35   |
| 12        |          |       | PO_RT_SN_12             | 1044.01   | 321.25   |
| 13        |          |       | PO_RT_SN_14             | 1150.37   | 140.26   |
| 14        |          |       | PO_RT_SN_15             | 670.62    | 180.34   |
| 15        |          |       | PO_RT_SN_16             | 6305.95   | 701.95   |
| 16        |          |       | PO_RT_SN_17             | 3824.15   | 411.93   |
| 17        |          |       | PO_RT_SN_18             | 1905.75   | 500.97   |
| 18        |          |       | PO_RT_SN_19             | 2319.12   | 795.39   |
| 19        |          |       | PO_RT_SN_20_21          | 2648.66   | 140.78   |
| 20        |          |       | PO_RT_SN_22_23_24       | 1996.09   | 330.49   |
| 21        |          |       | PO_RT_SN_25_26_27_28_29 | 2185.11   | 410.87   |
| 22        |          |       | PO_RT_SN_29A            | 419.82    | 321.25   |
| 23        |          |       | PO_RT_SN_30             | 979.63    | 303.2    |
| 24        |          |       | PO_RT_SN_31             | 884.76    | 232.42   |
| 25        |          |       | PO_RT_SN_32             | 1039.96   | 250.46   |
| 26        |          |       | PO_RT_SN_33_34          | 2190.89   | 511.23   |
| 27        |          |       | PO_RT_SN_35             | 2234.89   | 360.15   |
| 28        |          |       | PO_RT_SN_41_45          | 1816.18   | 739.56   |
| 29        |          |       | PO_RT_SN_46             | 1589.43   | 896.65   |
| 30        |          |       | PO_RT_SN_47             | 1680.12   | 517.27   |
| 31        |          |       | PO_RT_SN_48             | 2246.6    | 555.39   |
| 32        |          |       | PO_RT_SN_50_51_52_53    | 3719.42   | 768.56   |
| 33        |          |       | PO_RT_SN_53A            | 2350.52   | 479.25   |
| 34        |          |       | PO_RT_SN_53B            | 5572.99   | 374.27   |
| 35        |          |       | PO_RT_SN_54_55_57       | 2523.05   | 390.67   |
| 36        |          |       | PO_RT_SN_61             | 1875.21   | 760.66   |
| 37        |          |       | PO_RT_SN_61A            | 2547.73   | 731.6    |



## **Annexure -VIII**

**(Block Distribution of Sand Ghats)**



| SONE RIVER |          |            |    |            |              |                  |                   |          |
|------------|----------|------------|----|------------|--------------|------------------|-------------------|----------|
| SL.NO      | DISTRICT | RIVER NAME | ID | CODE       | SANDBAR CODE | LATITUDE         | LONGITUDE         | AREA(ha) |
| 1          |          |            | 1  |            |              | 25° 4' 30.904" N | 84° 24' 37.491" E |          |
| 2          |          |            | 2  |            |              | 25° 4' 35.362" N | 84° 24' 42.587" E |          |
| 3          |          |            | 3  |            |              | 25° 4' 34.739" N | 84° 24' 43.455" E |          |
| 4          |          |            | 4  |            |              | 25° 4' 33.412" N | 84° 24' 41.714" E |          |
| 5          |          |            | 5  |            |              | 25° 4' 32.280" N | 84° 24' 40.194" E |          |
| 6          |          |            | 6  |            |              | 25° 4' 31.481" N | 84° 24' 39.104" E |          |
| 7          |          |            | 7  |            |              | 25° 4' 30.615" N | 84° 24' 37.934" E |          |
| 8          |          |            | 8  |            |              | 25° 4' 29.315" N | 84° 24' 36.174" E |          |
| 9          |          |            | 9  |            |              | 25° 4' 28.262" N | 84° 24' 34.750" E |          |
| 10         |          |            | 10 |            |              | 25° 4' 25.857" N | 84° 24' 31.500" E |          |
| 11         |          |            | 11 |            |              | 25° 4' 23.864" N | 84° 24' 28.878" E |          |
| 12         |          |            | 12 |            |              | 25° 4' 23.489" N | 84° 24' 28.372" E |          |
| 13         |          |            | 13 |            |              | 25° 4' 21.364" N | 84° 24' 24.418" E |          |
| 14         |          |            | 14 |            |              | 25° 4' 19.979" N | 84° 24' 21.863" E |          |
| 15         |          |            | 15 |            |              | 25° 4' 17.645" N | 84° 24' 17.596" E |          |
| 16         |          |            | 16 |            |              | 25° 4' 15.571" N | 84° 24' 13.744" E |          |
| 17         |          |            | 17 |            |              | 25° 4' 14.428" N | 84° 24' 11.536" E |          |
| 18         |          |            | 18 | ROHTAS SON | PO_RT_SN_    | 25° 4' 13.633" N | 84° 24' 10.254" E |          |
| 19         |          |            | 19 | 01         | 79           | 25° 4' 12.048" N | 84° 24' 7.309" E  | 17.8     |
| 20         |          |            | 20 |            |              | 25° 4' 10.685" N | 84° 24' 0.845" E  |          |
| 21         |          |            | 21 |            |              | 25° 4' 9.747" N  | 84° 23' 51.734" E |          |
| 22         |          |            | 22 |            |              | 25° 4' 7.454" N  | 84° 23' 41.683" E |          |
| 23         |          |            | 23 |            |              | 25° 4' 5.730" N  | 84° 23' 33.341" E |          |
| 24         |          |            | 24 |            |              | 25° 4' 5.665" N  | 84° 23' 26.969" E |          |
| 25         |          |            | 25 |            |              | 25° 4' 8.493" N  | 84° 23' 31.007" E |          |
| 26         |          |            | 26 |            |              | 25° 4' 12.696" N | 84° 23' 37.245" E |          |
| 27         |          |            | 27 |            |              | 25° 4' 11.893" N | 84° 23' 50.619" E |          |
| 28         |          |            | 28 |            |              | 25° 4' 12.027" N | 84° 23' 52.139" E |          |
| 29         |          |            | 29 |            |              | 25° 4' 12.423" N | 84° 23' 55.519" E |          |
| 30         |          |            | 30 |            |              | 25° 4' 13.172" N | 84° 23' 59.073" E |          |
| 31         |          |            | 31 |            |              | 25° 4' 15.145" N | 84° 24' 9.068" E  |          |
| 32         |          |            | 32 |            |              | 25° 4' 21.693" N | 84° 24' 20.178" E |          |
| 33         |          |            | 33 |            |              | 25° 4' 23.375" N | 84° 24' 23.395" E |          |
| 34         |          |            | 34 |            |              | 25° 4' 26.326" N | 84° 24' 28.868" E |          |
| 35         |          |            | 35 |            |              | 25° 4' 29.711" N | 84° 24' 35.263" E |          |
| 36         |          |            | 36 |            |              | 25° 4' 30.904" N | 84° 24' 37.491" E |          |
| 37         |          |            | 1  |            |              | 25° 3' 16.241" N | 84° 22' 21.422" E |          |
| 38         |          |            | 2  |            |              | 25° 3' 20.296" N | 84° 22' 19.448" E |          |
| 39         |          |            | 3  |            |              | 25° 3' 24.667" N | 84° 22' 25.618" E |          |
| 40         |          |            | 4  |            |              | 25° 3' 26.134" N | 84° 22' 30.637" E |          |
| 41         |          |            | 5  |            |              | 25° 3' 31.355" N | 84° 22' 35.556" E |          |
| 42         |          |            | 6  |            |              | 25° 3' 35.335" N | 84° 22' 42.764" E |          |
| 43         |          |            | 7  | ROPHTAS    | PO_RT_SN_    | 25° 3' 35.560" N | 84° 22' 49.200" E |          |
| 44         |          |            | 8  | SON 2      | 77_78        | 25° 3' 42.259" N | 84° 23' 8.408" E  | 28.7     |
| 45         |          |            | 9  |            |              | 25° 3' 50.205" N | 84° 23' 15.461" E |          |
| 46         |          |            | 10 |            |              | 25° 3' 46.815" N | 84° 23' 20.342" E |          |
| 47         |          |            | 11 |            |              | 25° 3' 38.440" N | 84° 23' 5.406" E  |          |
| 48         |          |            | 12 |            |              | 25° 3' 23.155" N | 84° 22' 37.099" E |          |
| 49         |          |            | 13 |            |              | 25° 3' 16.241" N | 84° 22' 21.422" E |          |
| 50         |          |            | 1  |            |              | 25° 2' 26.303" N | 84° 20' 20.763" E |          |
| 51         |          |            | 2  |            |              | 25° 2' 28.743" N | 84° 20' 15.308" E |          |
| 52         |          |            | 3  |            |              | 25° 2' 30.421" N | 84° 20' 8.208" E  |          |
| 53         |          |            | 4  |            |              | 25° 2' 31.214" N | 84° 20' 6.295" E  |          |
| 54         |          |            | 5  |            |              | 25° 2' 35.284" N | 84° 20' 9.191" E  |          |
| 55         |          |            | 6  |            |              | 25° 2' 42.093" N | 84° 20' 17.054" E |          |
| 56         |          |            | 7  |            |              | 25° 2' 49.757" N | 84° 20' 27.447" E |          |
| 57         |          |            | 8  |            |              | 25° 2' 48.949" N | 84° 20' 32.929" E |          |
| 58         |          |            | 9  |            |              | 25° 2' 50.218" N | 84° 20' 36.251" E |          |
| 59         |          |            | 10 | ROHTAS SON | PO_RT_SN_    | 25° 2' 52.772" N | 84° 20' 38.981" E |          |
| 60         |          |            | 11 | 03         | 75_76        | 25° 2' 55.671" N | 84° 20' 46.474" E | 72.5     |
| 61         |          |            | 12 |            |              | 25° 2' 51.254" N | 84° 20' 43.723" E |          |
| 62         |          |            | 13 |            |              | 25° 2' 49.962" N | 84° 20' 45.510" E |          |
| 63         |          |            | 14 |            |              | 25° 2' 53.551" N | 84° 20' 55.188" E |          |
| 64         |          |            | 15 |            |              | 25° 2' 54.415" N | 84° 21' 0.118" E  |          |
| 65         |          |            | 16 |            |              | 25° 2' 57.040" N | 84° 21' 3.951" E  |          |
| 66         |          |            | 17 |            |              | 25° 2' 46.971" N | 84° 21' 8.335" E  |          |
| 67         |          |            | 18 |            |              | 25° 2' 46.007" N | 84° 21' 5.132" E  |          |
| 68         |          |            | 19 |            |              | 25° 2' 26.303" N | 84° 20' 20.763" E |          |
| 69         |          |            | 1  |            |              | 25° 2' 3.685" N  | 84° 19' 43.381" E |          |
| 70         |          |            | 2  |            |              | 25° 1' 35.211" N | 84° 18' 59.389" E |          |
| 71         |          |            | 3  |            |              | 25° 1' 52.347" N | 84° 18' 39.796" E |          |



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ROHTAS SON  
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| 25° 1' 53.956" N | 84° 18' 44.121" E |
| 25° 1' 58.219" N | 84° 18' 49.420" E |
| 25° 2' 1.059" N  | 84° 18' 52.878" E |
| 25° 2' 5.294" N  | 84° 18' 55.883" E |
| 25° 2' 9.741" N  | 84° 19' 2.421" E  |
| 25° 2' 10.816" N | 84° 19' 5.789" E  |
| 25° 2' 12.191" N | 84° 19' 11.009" E |
| 25° 2' 12.294" N | 84° 19' 14.919" E |
| 25° 2' 9.225" N  | 84° 19' 16.081" E |
| 25° 2' 8.344" N  | 84° 19' 18.267" E |
| 25° 2' 8.493" N  | 84° 19' 25.728" E |
| 25° 2' 7.319" N  | 84° 19' 32.317" E |
| 25° 2' 7.250" N  | 84° 19' 37.160" E |
| 25° 2' 8.053" N  | 84° 19' 40.547" E |
| 25° 2' 3.685" N  | 84° 19' 43.381" E |
| 25° 1' 46.592" N | 84° 18' 36.959" E |
| 25° 1' 52.341" N | 84° 18' 39.793" E |
| 25° 1' 52.347" N | 84° 18' 39.796" E |
| 25° 1' 52.288" N | 84° 18' 39.864" E |
| 25° 1' 52.220" N | 84° 18' 39.941" E |
| 25° 1' 52.158" N | 84° 18' 40.013" E |
| 25° 1' 51.923" N | 84° 18' 40.281" E |
| 25° 1' 51.875" N | 84° 18' 40.336" E |
| 25° 1' 51.658" N | 84° 18' 40.584" E |
| 25° 1' 51.551" N | 84° 18' 40.706" E |
| 25° 1' 50.886" N | 84° 18' 41.466" E |
| 25° 1' 50.664" N | 84° 18' 41.720" E |
| 25° 1' 49.776" N | 84° 18' 42.736" E |
| 25° 1' 49.260" N | 84° 18' 43.326" E |
| 25° 1' 48.759" N | 84° 18' 43.899" E |
| 25° 1' 48.183" N | 84° 18' 44.557" E |
| 25° 1' 48.015" N | 84° 18' 44.749" E |
| 25° 1' 47.131" N | 84° 18' 45.760" E |
| 25° 1' 46.987" N | 84° 18' 45.925" E |
| 25° 1' 46.676" N | 84° 18' 46.280" E |
| 25° 1' 46.490" N | 84° 18' 46.493" E |
| 25° 1' 46.320" N | 84° 18' 46.688" E |
| 25° 1' 46.292" N | 84° 18' 46.720" E |
| 25° 1' 46.234" N | 84° 18' 46.785" E |
| 25° 1' 45.738" N | 84° 18' 47.352" E |
| 25° 1' 45.457" N | 84° 18' 47.674" E |
| 25° 1' 45.318" N | 84° 18' 47.832" E |
| 25° 1' 45.264" N | 84° 18' 47.894" E |
| 25° 1' 45.246" N | 84° 18' 47.915" E |
| 25° 1' 45.121" N | 84° 18' 48.058" E |
| 25° 1' 45.077" N | 84° 18' 48.108" E |
| 25° 1' 44.945" N | 84° 18' 48.260" E |
| 25° 1' 44.915" N | 84° 18' 48.294" E |
| 25° 1' 44.756" N | 84° 18' 48.475" E |
| 25° 1' 44.732" N | 84° 18' 48.503" E |
| 25° 1' 44.619" N | 84° 18' 48.633" E |
| 25° 1' 44.577" N | 84° 18' 48.680" E |
| 25° 1' 44.544" N | 84° 18' 48.717" E |
| 25° 1' 44.520" N | 84° 18' 48.746" E |
| 25° 1' 44.481" N | 84° 18' 48.790" E |
| 25° 1' 44.441" N | 84° 18' 48.835" E |
| 25° 1' 44.432" N | 84° 18' 48.846" E |
| 25° 1' 44.424" N | 84° 18' 48.855" E |
| 25° 1' 44.343" N | 84° 18' 48.948" E |
| 25° 1' 44.342" N | 84° 18' 48.948" E |
| 25° 1' 44.294" N | 84° 18' 49.003" E |
| 25° 1' 44.266" N | 84° 18' 49.036" E |
| 25° 1' 44.251" N | 84° 18' 49.053" E |
| 25° 1' 44.213" N | 84° 18' 49.096" E |
| 25° 1' 44.189" N | 84° 18' 49.124" E |
| 25° 1' 44.173" N | 84° 18' 49.142" E |
| 25° 1' 44.142" N | 84° 18' 49.177" E |
| 25° 1' 44.115" N | 84° 18' 49.208" E |
| 25° 1' 44.084" N | 84° 18' 49.244" E |
| 25° 1' 44.063" N | 84° 18' 49.267" E |
| 25° 1' 44.048" N | 84° 18' 49.285" E |
| 25° 1' 44.007" N | 84° 18' 49.332" E |
| 25° 1' 43.963" N | 84° 18' 49.383" E |
| 25° 1' 43.940" N | 84° 18' 49.408" E |



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| 215° 18' 40.800" N | 84° 18' 40.800" E |
| 215° 18' 40.818" N | 84° 18' 40.818" E |
| 215° 18' 40.836" N | 84° 18' 40.836" E |
| 215° 18' 40.854" N | 84° 18' 40.854" E |
| 215° 18' 40.872" N | 84° 18' 40.872" E |
| 215° 18' 40.890" N | 84° 18' 40.890" E |
| 215° 18' 40.908" N | 84° 18' 40.908" E |
| 215° 18' 40.926" N | 84° 18' 40.926" E |
| 215° 18' 40.944" N | 84° 18' 40.944" E |
| 215° 18' 40.962" N | 84° 18' 40.962" E |
| 215° 18' 40.980" N | 84° 18' 40.980" E |
| 215° 18' 41.000" N | 84° 18' 41.000" E |
| 215° 18' 41.018" N | 84° 18' 41.018" E |
| 215° 18' 41.036" N | 84° 18' 41.036" E |
| 215° 18' 41.054" N | 84° 18' 41.054" E |
| 215° 18' 41.072" N | 84° 18' 41.072" E |
| 215° 18' 41.090" N | 84° 18' 41.090" E |
| 215° 18' 41.108" N | 84° 18' 41.108" E |
| 215° 18' 41.126" N | 84° 18' 41.126" E |
| 215° 18' 41.144" N | 84° 18' 41.144" E |
| 215° 18' 41.162" N | 84° 18' 41.162" E |
| 215° 18' 41.180" N | 84° 18' 41.180" E |
| 215° 18' 41.198" N | 84° 18' 41.198" E |
| 215° 18' 41.216" N | 84° 18' 41.216" E |
| 215° 18' 41.234" N | 84° 18' 41.234" E |
| 215° 18' 41.252" N | 84° 18' 41.252" E |
| 215° 18' 41.270" N | 84° 18' 41.270" E |
| 215° 18' 41.288" N | 84° 18' 41.288" E |
| 215° 18' 41.306" N | 84° 18' 41.306" E |
| 215° 18' 41.324" N | 84° 18' 41.324" E |
| 215° 18' 41.342" N | 84° 18' 41.342" E |
| 215° 18' 41.360" N | 84° 18' 41.360" E |
| 215° 18' 41.378" N | 84° 18' 41.378" E |
| 215° 18' 41.396" N | 84° 18' 41.396" E |
| 215° 18' 41.414" N | 84° 18' 41.414" E |
| 215° 18' 41.432" N | 84° 18' 41.432" E |
| 215° 18' 41.450" N | 84° 18' 41.450" E |
| 215° 18' 41.468" N | 84° 18' 41.468" E |
| 215° 18' 41.486" N | 84° 18' 41.486" E |
| 215° 18' 41.504" N | 84° 18' 41.504" E |
| 215° 18' 41.522" N | 84° 18' 41.522" E |
| 215° 18' 41.540" N | 84° 18' 41.540" E |
| 215° 18' 41.558" N | 84° 18' 41.558" E |
| 215° 18' 41.576" N | 84° 18' 41.576" E |
| 215° 18' 41.594" N | 84° 18' 41.594" E |
| 215° 18' 41.612" N | 84° 18' 41.612" E |
| 215° 18' 41.630" N | 84° 18' 41.630" E |
| 215° 18' 41.648" N | 84° 18' 41.648" E |
| 215° 18' 41.666" N | 84° 18' 41.666" E |
| 215° 18' 41.684" N | 84° 18' 41.684" E |
| 215° 18' 41.702" N | 84° 18' 41.702" E |
| 215° 18' 41.720" N | 84° 18' 41.720" E |
| 215° 18' 41.738" N | 84° 18' 41.738" E |
| 215° 18' 41.756" N | 84° 18' 41.756" E |
| 215° 18' 41.774" N | 84° 18' 41.774" E |
| 215° 18' 41.792" N | 84° 18' 41.792" E |
| 215° 18' 41.810" N | 84° 18' 41.810" E |
| 215° 18' 41.828" N | 84° 18' 41.828" E |
| 215° 18' 41.846" N | 84° 18' 41.846" E |
| 215° 18' 41.864" N | 84° 18' 41.864" E |
| 215° 18' 41.882" N | 84° 18' 41.882" E |
| 215° 18' 41.900" N | 84° 18' 41.900" E |
| 215° 18' 41.918" N | 84° 18' 41.918" E |
| 215° 18' 41.936" N | 84° 18' 41.936" E |
| 215° 18' 41.954" N | 84° 18' 41.954" E |
| 215° 18' 41.972" N | 84° 18' 41.972" E |
| 215° 18' 41.990" N | 84° 18' 41.990" E |
| 215° 18' 42.008" N | 84° 18' 42.008" E |

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| 25° 1' 41.476" N | 84° 18' 52.226" E |
| 25° 1' 41.424" N | 84° 18' 52.286" E |
| 25° 1' 41.407" N | 84° 18' 52.305" E |
| 25° 1' 41.347" N | 84° 18' 52.373" E |
| 25° 1' 41.338" N | 84° 18' 52.384" E |
| 25° 1' 41.260" N | 84° 18' 52.473" E |
| 25° 1' 41.223" N | 84° 18' 52.515" E |
| 25° 1' 41.144" N | 84° 18' 52.605" E |
| 25° 1' 41.131" N | 84° 18' 52.620" E |
| 25° 1' 41.090" N | 84° 18' 52.667" E |
| 25° 1' 41.049" N | 84° 18' 52.714" E |
| 25° 1' 41.026" N | 84° 18' 52.740" E |
| 25° 1' 40.903" N | 84° 18' 52.880" E |
| 25° 1' 40.893" N | 84° 18' 52.893" E |
| 25° 1' 40.848" N | 84° 18' 52.944" E |
| 25° 1' 40.805" N | 84° 18' 52.993" E |
| 25° 1' 40.793" N | 84° 18' 53.007" E |
| 25° 1' 40.704" N | 84° 18' 53.109" E |
| 25° 1' 40.685" N | 84° 18' 53.131" E |
| 25° 1' 40.659" N | 84° 18' 53.159" E |
| 25° 1' 40.569" N | 84° 18' 53.263" E |
| 25° 1' 40.493" N | 84° 18' 53.350" E |
| 25° 1' 40.380" N | 84° 18' 53.479" E |
| 25° 1' 40.240" N | 84° 18' 53.639" E |
| 25° 1' 40.036" N | 84° 18' 53.872" E |
| 25° 1' 39.950" N | 84° 18' 53.970" E |
| 25° 1' 39.797" N | 84° 18' 54.146" E |
| 25° 1' 39.601" N | 84° 18' 54.369" E |
| 25° 1' 39.372" N | 84° 18' 54.631" E |
| 25° 1' 39.239" N | 84° 18' 54.783" E |
| 25° 1' 39.232" N | 84° 18' 54.791" E |
| 25° 1' 39.097" N | 84° 18' 54.946" E |
| 25° 1' 38.919" N | 84° 18' 55.149" E |
| 25° 1' 38.723" N | 84° 18' 55.373" E |
| 25° 1' 38.678" N | 84° 18' 55.425" E |
| 25° 1' 38.634" N | 84° 18' 55.475" E |
| 25° 1' 38.506" N | 84° 18' 55.621" E |
| 25° 1' 38.314" N | 84° 18' 55.841" E |
| 25° 1' 38.120" N | 84° 18' 56.062" E |
| 25° 1' 38.117" N | 84° 18' 56.066" E |
| 25° 1' 37.727" N | 84° 18' 56.512" E |
| 25° 1' 37.649" N | 84° 18' 56.601" E |
| 25° 1' 37.635" N | 84° 18' 56.617" E |
| 25° 1' 37.441" N | 84° 18' 56.840" E |
| 25° 1' 36.715" N | 84° 18' 57.670" E |
| 25° 1' 36.707" N | 84° 18' 57.679" E |
| 25° 1' 36.359" N | 84° 18' 58.076" E |
| 25° 1' 35.800" N | 84° 18' 58.715" E |
| 25° 1' 35.638" N | 84° 18' 58.901" E |
| 25° 1' 35.347" N | 84° 18' 59.233" E |
| 25° 1' 35.211" N | 84° 18' 59.389" E |
| 25° 1' 35.216" N | 84° 18' 59.362" E |
| 25° 1' 28.716" N | 84° 18' 49.942" E |
| 25° 1' 26.977" N | 84° 18' 47.413" E |
| 25° 1' 24.634" N | 84° 18' 44.945" E |
| 25° 1' 18.196" N | 84° 18' 38.029" E |
| 25° 1' 14.704" N | 84° 18' 34.135" E |
| 25° 1' 10.631" N | 84° 18' 30.007" E |
| 25° 1' 24.844" N | 84° 18' 10.701" E |
| 25° 1' 26.724" N | 84° 18' 6.129" E  |
| 25° 1' 32.007" N | 84° 18' 6.085" E  |
| 25° 1' 35.915" N | 84° 18' 9.993" E  |
| 25° 1' 37.396" N | 84° 18' 14.946" E |
| 25° 1' 35.454" N | 84° 18' 21.138" E |
| 25° 1' 36.265" N | 84° 18' 26.553" E |
| 25° 1' 46.592" N | 84° 18' 36.959" E |
| 25° 1' 12.428" N | 84° 18' 8.340" E  |
| 25° 1' 23.424" N | 84° 18' 12.521" E |
| 25° 1' 23.489" N | 84° 18' 12.542" E |
| 25° 1' 23.488" N | 84° 18' 12.542" E |
| 25° 1' 23.093" N | 84° 18' 13.080" E |
| 25° 1' 21.985" N | 84° 18' 14.584" E |
| 25° 1' 21.916" N | 84° 18' 14.678" E |
| 25° 1' 21.383" N | 84° 18' 15.402" E |



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|-----|----|-------------------|--------------------|-------------------|-----------------------|------|------------------|-------------------|------|
| 294 | 9  | ROHTAS SON<br>06  | PO_RT_SN_<br>74    | 25° 1' 19.506" N  | 84° 18' 17.952" E     | 46.6 |                  |                   |      |
| 295 | 10 |                   |                    | 25° 1' 17.303" N  | 84° 18' 20.944" E     |      |                  |                   |      |
| 296 | 11 |                   |                    | 25° 1' 15.847" N  | 84° 18' 22.854" E     |      |                  |                   |      |
| 297 | 12 |                   |                    | 25° 1' 12.561" N  | 84° 18' 27.386" E     |      |                  |                   |      |
| 298 | 13 |                   |                    | 25° 1' 11.818" N  | 84° 18' 28.395" E     |      |                  |                   |      |
| 299 | 14 |                   |                    | 25° 1' 10.828" N  | 84° 18' 29.740" E     |      |                  |                   |      |
| 300 | 15 |                   |                    | 25° 1' 10.652" N  | 84° 18' 29.979" E     |      |                  |                   |      |
| 301 | 16 |                   |                    | 25° 1' 10.631" N  | 84° 18' 30.007" E     |      |                  |                   |      |
| 302 | 17 |                   |                    | 25° 1' 10.546" N  | 84° 18' 29.890" E     |      |                  |                   |      |
| 303 | 18 |                   |                    | 25° 1' 3.926" N   | 84° 18' 22.554" E     |      |                  |                   |      |
| 304 | 19 |                   |                    | 25° 0' 53.820" N  | 84° 18' 18.995" E     |      |                  |                   |      |
| 305 | 20 |                   |                    | 25° 0' 42.704" N  | 84° 18' 15.067" E     |      |                  |                   |      |
| 306 | 21 |                   |                    | 25° 0' 45.770" N  | 84° 18' 13.252" E     |      |                  |                   |      |
| 307 | 22 |                   |                    | 25° 0' 51.086" N  | 84° 18' 9.800" E      |      |                  |                   |      |
| 308 | 23 |                   |                    | 25° 0' 52.528" N  | 84° 18' 4.932" E      |      |                  |                   |      |
| 309 | 24 |                   |                    | 25° 0' 56.121" N  | 84° 18' 2.152" E      |      |                  |                   |      |
| 310 | 25 |                   |                    | 25° 1' 4.997" N   | 84° 18' 2.664" E      |      |                  |                   |      |
| 311 | 26 |                   |                    | 25° 1' 8.334" N   | 84° 18' 5.578" E      |      |                  |                   |      |
| 312 | 27 |                   |                    | 25° 1' 12.428" N  | 84° 18' 8.310" E      |      |                  |                   |      |
| 313 | 1  |                   |                    | ROHTAS SON<br>07  | PO_RT_SN_<br>71_72_73 |      | 25° 0' 40.624" N | 84° 17' 36.948" E | 98.8 |
| 314 | 2  |                   |                    |                   |                       |      | 25° 0' 41.718" N | 84° 17' 36.269" E |      |
| 315 | 3  |                   |                    |                   |                       |      | 25° 0' 27.781" N | 84° 17' 56.722" E |      |
| 316 | 4  |                   |                    |                   |                       |      | 25° 0' 22.421" N | 84° 17' 56.974" E |      |
| 317 | 5  |                   |                    |                   |                       |      | 25° 0' 14.648" N | 84° 17' 56.702" E |      |
| 318 | 6  |                   |                    |                   |                       |      | 25° 0' 12.639" N | 84° 17' 54.794" E |      |
| 319 | 7  |                   |                    |                   |                       |      | 25° 0' 11.518" N | 84° 17' 52.472" E |      |
| 320 | 8  |                   |                    |                   |                       |      | 25° 0' 9.054" N  | 84° 17' 46.710" E |      |
| 321 | 9  | 25° 0' 13.392" N  | 84° 17' 34.051" E  |                   |                       |      |                  |                   |      |
| 322 | 10 | 25° 0' 11.009" N  | 84° 17' 33.054" E  |                   |                       |      |                  |                   |      |
| 323 | 11 | 24° 59' 59.452" N | 84° 17' 42.591" E  |                   |                       |      |                  |                   |      |
| 324 | 12 | 24° 59' 57.077" N | 84° 17' 41.231" E  |                   |                       |      |                  |                   |      |
| 325 | 13 | 24° 59' 53.210" N | 84° 17' 31.227" E  |                   |                       |      |                  |                   |      |
| 326 | 14 | 24° 59' 48.960" N | 84° 17' 27.242" E  |                   |                       |      |                  |                   |      |
| 327 | 15 | 24° 59' 49.685" N | 84° 17' 25.082" E  |                   |                       |      |                  |                   |      |
| 328 | 16 | 25° 0' 0.121" N   | 84° 17' 24.647" E  |                   |                       |      |                  |                   |      |
| 329 | 17 | 25° 0' 9.528" N   | 84° 17' 25.786" E  |                   |                       |      |                  |                   |      |
| 330 | 18 | 25° 0' 13.563" N  | 84° 17' 22.836" E  |                   |                       |      |                  |                   |      |
| 331 | 19 | 25° 0' 2.702" N   | 84° 17' 12.755" E  |                   |                       |      |                  |                   |      |
| 332 | 20 | 24° 59' 59.700" N | 84° 17' 9.176" E   |                   |                       |      |                  |                   |      |
| 333 | 21 | 24° 59' 53.623" N | 84° 17' 6.305" E   |                   |                       |      |                  |                   |      |
| 334 | 22 | 24° 59' 51.512" N | 84° 17' 5.506" E   |                   |                       |      |                  |                   |      |
| 335 | 23 | 24° 59' 49.687" N | 84° 17' 4.649" E   |                   |                       |      |                  |                   |      |
| 336 | 24 | 24° 59' 56.216" N | 84° 16' 57.186" E  |                   |                       |      |                  |                   |      |
| 337 | 25 | 24° 59' 59.153" N | 84° 16' 59.023" E  |                   |                       |      |                  |                   |      |
| 338 | 26 | 24° 59' 59.065" N | 84° 17' 2.338" E   |                   |                       |      |                  |                   |      |
| 339 | 27 | 25° 0' 3.749" N   | 84° 17' 10.813" E  |                   |                       |      |                  |                   |      |
| 340 | 28 | 25° 0' 9.274" N   | 84° 17' 13.146" E  |                   |                       |      |                  |                   |      |
| 341 | 29 | 25° 0' 15.277" N  | 84° 17' 20.252" E  |                   |                       |      |                  |                   |      |
| 342 | 30 | 25° 0' 22.175" N  | 84° 17' 27.931" E  |                   |                       |      |                  |                   |      |
| 343 | 31 | 25° 0' 28.601" N  | 84° 17' 35.140" E  |                   |                       |      |                  |                   |      |
| 344 | 32 | 25° 0' 36.965" N  | 84° 17' 34.147" E  |                   |                       |      |                  |                   |      |
| 345 | 33 | 25° 0' 40.624" N  | 84° 17' 36.948" E  |                   |                       |      |                  |                   |      |
| 346 | 1  | ROHTAS SON<br>08  | PO_RT_SN_<br>67_68 | 24° 57' 59.643" N | 84° 16' 5.119" E      | 96.5 |                  |                   |      |
| 347 | 2  |                   |                    | 24° 57' 43.497" N | 84° 15' 23.231" E     |      |                  |                   |      |
| 348 | 3  |                   |                    | 24° 57' 26.095" N | 84° 15' 3.564" E      |      |                  |                   |      |
| 349 | 4  |                   |                    | 24° 57' 38.911" N | 84° 15' 16.547" E     |      |                  |                   |      |
| 350 | 5  |                   |                    | 24° 57' 52.668" N | 84° 15' 26.989" E     |      |                  |                   |      |
| 351 | 6  |                   |                    | 24° 57' 54.403" N | 84° 15' 31.334" E     |      |                  |                   |      |
| 352 | 7  |                   |                    | 24° 57' 51.948" N | 84° 15' 36.761" E     |      |                  |                   |      |
| 353 | 8  |                   |                    | 24° 57' 55.004" N | 84° 15' 46.190" E     |      |                  |                   |      |
| 354 | 9  |                   |                    | 24° 58' 0.569" N  | 84° 15' 58.053" E     |      |                  |                   |      |
| 355 | 10 |                   |                    | 24° 58' 0.655" N  | 84° 16' 2.558" E      |      |                  |                   |      |
| 356 | 11 |                   |                    | 24° 57' 59.643" N | 84° 16' 5.119" E      |      |                  |                   |      |
| 357 | 1  | ROHTAS SON<br>09  | PO_RT_SN_<br>67_68 | 24° 57' 2.698" N  | 84° 14' 26.732" E     | 98.3 |                  |                   |      |
| 358 | 2  |                   |                    | 24° 57' 25.933" N | 84° 15' 3.574" E      |      |                  |                   |      |
| 359 | 3  |                   |                    | 24° 57' 26.095" N | 84° 15' 3.564" E      |      |                  |                   |      |
| 360 | 4  |                   |                    | 24° 57' 25.448" N | 84° 15' 4.576" E      |      |                  |                   |      |
| 361 | 5  |                   |                    | 24° 57' 25.003" N | 84° 15' 5.269" E      |      |                  |                   |      |
| 362 | 6  |                   |                    | 24° 57' 24.623" N | 84° 15' 5.862" E      |      |                  |                   |      |
| 363 | 7  |                   |                    | 24° 57' 24.027" N | 84° 15' 6.793" E      |      |                  |                   |      |
| 364 | 8  |                   |                    | 24° 57' 22.454" N | 84° 15' 9.248" E      |      |                  |                   |      |
| 365 | 9  |                   |                    | 24° 57' 22.368" N | 84° 15' 9.383" E      |      |                  |                   |      |
| 366 | 10 |                   |                    | 24° 57' 21.505" N | 84° 15' 10.730" E     |      |                  |                   |      |
| 367 | 11 |                   |                    | 24° 57' 19.684" N | 84° 15' 13.573" E     |      |                  |                   |      |



|     |  |    |             |                   |                   |       |
|-----|--|----|-------------|-------------------|-------------------|-------|
| 368 |  | 12 |             | 24° 57' 17.103" N | 84° 15' 17.602" E |       |
| 369 |  | 13 |             | 24° 57' 15.209" N | 84° 15' 20.558" E |       |
| 370 |  | 14 |             | 24° 57' 13.497" N | 84° 15' 23.231" E |       |
| 371 |  | 15 |             | 24° 57' 13.416" N | 84° 15' 22.860" E |       |
| 372 |  | 16 |             | 24° 56' 44.166" N | 84° 14' 56.272" E |       |
| 373 |  | 17 |             | 24° 57' 2.698" N  | 84° 14' 26.712" E |       |
| 374 |  | 1  |             | 24° 56' 34.357" N | 84° 14' 3.551" E  |       |
| 375 |  | 2  |             | 24° 57' 2.650" N  | 84° 14' 26.692" E |       |
| 376 |  | 3  |             | 24° 57' 2.698" N  | 84° 14' 26.712" E |       |
| 377 |  | 4  |             | 24° 57' 1.951" N  | 84° 14' 27.923" E |       |
| 378 |  | 5  |             | 24° 56' 58.143" N | 84° 14' 33.993" E |       |
| 379 |  | 6  |             | 24° 56' 57.566" N | 84° 14' 34.912" E |       |
| 380 |  | 7  |             | 24° 56' 53.616" N | 84° 14' 41.208" E |       |
| 381 |  | 8  |             | 24° 56' 53.283" N | 84° 14' 41.739" E |       |
| 382 |  | 9  | ROIHTAS SON | 24° 56' 49.475" N | 84° 14' 47.809" E | 98.95 |
| 383 |  | 10 | 10          | 24° 56' 48.041" N | 84° 14' 50.096" E |       |
| 384 |  | 11 |             | 24° 56' 45.252" N | 84° 14' 54.541" E |       |
| 385 |  | 12 |             | 24° 56' 45.230" N | 84° 14' 54.577" E |       |
| 386 |  | 13 |             | 24° 56' 44.411" N | 84° 14' 55.881" E |       |
| 387 |  | 14 |             | 24° 56' 44.166" N | 84° 14' 56.272" E |       |
| 388 |  | 15 |             | 24° 56' 44.135" N | 84° 14' 56.099" E |       |
| 389 |  | 16 |             | 24° 56' 18.683" N | 84° 14' 23.966" E |       |
| 390 |  | 17 |             | 24° 56' 34.357" N | 84° 14' 3.551" E  |       |
| 391 |  | 1  |             | 24° 56' 22.791" N | 84° 13' 47.470" E |       |
| 392 |  | 2  |             | 24° 56' 34.357" N | 84° 14' 3.550" E  |       |
| 393 |  | 3  |             | 24° 56' 34.357" N | 84° 14' 3.551" E  |       |
| 394 |  | 4  |             | 24° 56' 34.322" N | 84° 14' 3.596" E  |       |
| 395 |  | 5  |             | 24° 56' 34.307" N | 84° 14' 3.616" E  |       |
| 396 |  | 6  |             | 24° 56' 34.296" N | 84° 14' 3.631" E  |       |
| 397 |  | 7  |             | 24° 56' 34.285" N | 84° 14' 3.644" E  |       |
| 398 |  | 8  |             | 24° 56' 34.276" N | 84° 14' 3.657" E  |       |
| 399 |  | 9  |             | 24° 56' 34.263" N | 84° 14' 3.674" E  |       |
| 400 |  | 10 |             | 24° 56' 34.251" N | 84° 14' 3.689" E  |       |
| 401 |  | 11 |             | 24° 56' 34.224" N | 84° 14' 3.724" E  |       |
| 402 |  | 12 |             | 24° 56' 34.057" N | 84° 14' 3.942" E  |       |
| 403 |  | 13 |             | 24° 56' 33.426" N | 84° 14' 4.763" E  |       |
| 404 |  | 14 |             | 24° 56' 30.849" N | 84° 14' 8.119" E  |       |
| 405 |  | 15 | ROIHTAS SON | 24° 56' 30.442" N | 84° 14' 8.650" E  | 96.7  |
| 406 |  | 16 | 11          | 24° 56' 30.275" N | 84° 14' 8.868" E  |       |
| 407 |  | 17 |             | 24° 56' 28.517" N | 84° 14' 11.158" E |       |
| 408 |  | 18 |             | 24° 56' 27.650" N | 84° 14' 12.287" E |       |
| 409 |  | 19 |             | 24° 56' 25.554" N | 84° 14' 15.016" E |       |
| 410 |  | 20 |             | 24° 56' 24.617" N | 84° 14' 16.237" E |       |
| 411 |  | 21 |             | 24° 56' 22.818" N | 84° 14' 18.580" E |       |
| 412 |  | 22 |             | 24° 56' 22.441" N | 84° 14' 19.071" E |       |
| 413 |  | 23 |             | 24° 56' 19.891" N | 84° 14' 22.392" E |       |
| 414 |  | 24 |             | 24° 56' 19.263" N | 84° 14' 23.210" E |       |
| 415 |  | 25 |             | 24° 56' 18.683" N | 84° 14' 23.966" E |       |
| 416 |  | 26 |             | 24° 56' 18.593" N | 84° 14' 23.914" E |       |
| 417 |  | 27 |             | 24° 56' 2.376" N  | 84° 14' 4.672" E  |       |
| 418 |  | 28 |             | 24° 55' 50.873" N | 84° 13' 54.872" E |       |
| 419 |  | 29 |             | 24° 56' 20.284" N | 84° 13' 26.840" E |       |
| 420 |  | 30 |             | 24° 56' 22.791" N | 84° 13' 47.470" E |       |
| 421 |  | 1  |             | 24° 56' 9.484" N  | 84° 13' 20.731" E |       |
| 422 |  | 2  |             | 24° 56' 19.846" N | 84° 13' 26.610" E |       |
| 423 |  | 3  |             | 24° 56' 20.284" N | 84° 13' 26.840" E |       |
| 424 |  | 4  |             | 24° 56' 11.872" N | 84° 13' 34.857" E |       |
| 425 |  | 5  |             | 24° 56' 10.578" N | 84° 13' 36.091" E |       |
| 426 |  | 6  |             | 24° 56' 5.334" N  | 84° 13' 41.089" E |       |
| 427 |  | 7  |             | 24° 56' 4.068" N  | 84° 13' 42.296" E |       |
| 428 |  | 8  |             | 24° 55' 58.069" N | 84° 13' 47.156" E |       |
| 429 |  | 9  |             | 24° 55' 56.941" N | 84° 13' 49.089" E |       |
| 430 |  | 10 | ROIHTAS SON | 24° 55' 54.112" N | 84° 13' 51.785" E | 89.96 |
| 431 |  | 11 | 12          | 24° 55' 53.965" N | 84° 13' 51.925" E |       |
| 432 |  | 12 |             | 24° 55' 53.114" N | 84° 13' 52.736" E |       |
| 433 |  | 13 |             | 24° 55' 51.598" N | 84° 13' 54.181" E |       |
| 434 |  | 14 |             | 24° 55' 51.510" N | 84° 13' 54.265" E |       |
| 435 |  | 15 |             | 24° 55' 51.066" N | 84° 13' 54.688" E |       |
| 436 |  | 16 |             | 24° 55' 50.873" N | 84° 13' 54.872" E |       |
| 437 |  | 17 |             | 24° 55' 50.742" N | 84° 13' 54.731" E |       |
| 438 |  | 18 |             | 24° 55' 30.130" N | 84° 13' 36.862" E |       |
| 439 |  | 19 |             | 24° 55' 46.783" N | 84° 13' 15.889" E |       |
| 440 |  | 20 |             | 24° 56' 9.484" N  | 84° 13' 20.731" E |       |
| 441 |  | 1  |             | 24° 55' 10.528" N | 84° 13' 6.698" E  |       |



|     |  |            |           |  |                   |                   |      |
|-----|--|------------|-----------|--|-------------------|-------------------|------|
| 442 |  |            |           |  | 24° 55' 46.687" N | 84° 13' 15.863" E |      |
| 443 |  |            |           |  | 24° 55' 46.783" N | 84° 13' 15.889" E |      |
| 444 |  |            |           |  | 24° 55' 46.074" N | 84° 13' 16.783" E |      |
| 445 |  |            |           |  | 24° 55' 45.658" N | 84° 13' 17.307" E |      |
| 446 |  |            |           |  | 24° 55' 44.878" N | 84° 13' 18.289" E |      |
| 447 |  |            |           |  | 24° 55' 44.759" N | 84° 13' 18.438" E |      |
| 448 |  |            |           |  | 24° 55' 43.953" N | 84° 13' 19.454" E |      |
| 449 |  |            |           |  | 24° 55' 43.770" N | 84° 13' 19.684" E |      |
| 450 |  |            |           |  | 24° 55' 42.940" N | 84° 13' 20.730" E |      |
| 451 |  |            |           |  | 24° 55' 42.786" N | 84° 13' 20.924" E |      |
| 452 |  |            |           |  | 24° 55' 41.946" N | 84° 13' 21.982" E |      |
| 453 |  |            |           |  | 24° 55' 41.740" N | 84° 13' 22.241" E |      |
| 454 |  |            |           |  | 24° 55' 41.118" N | 84° 13' 23.023" E |      |
| 455 |  |            |           |  | 24° 55' 41.003" N | 84° 13' 23.167" E |      |
| 456 |  |            |           |  | 24° 55' 39.781" N | 84° 13' 24.706" E |      |
| 457 |  |            |           |  | 24° 55' 39.658" N | 84° 13' 24.863" E |      |
| 458 |  |            |           |  | 24° 55' 38.793" N | 84° 13' 25.951" E |      |
| 459 |  |            |           |  | 24° 55' 38.520" N | 84° 13' 26.297" E |      |
| 460 |  | ROHTAS SON | PO_RT_SN_ |  | 24° 55' 37.522" N | 84° 13' 27.553" E | 57.8 |
| 461 |  | 13         | 67_68     |  | 24° 55' 37.212" N | 84° 13' 27.944" E |      |
| 462 |  |            |           |  | 24° 55' 36.501" N | 84° 13' 28.839" E |      |
| 463 |  |            |           |  | 24° 55' 36.379" N | 84° 13' 28.992" E |      |
| 464 |  |            |           |  | 24° 55' 35.579" N | 84° 13' 30.000" E |      |
| 465 |  |            |           |  | 24° 55' 35.297" N | 84° 13' 30.355" E |      |
| 466 |  |            |           |  | 24° 55' 34.523" N | 84° 13' 31.330" E |      |
| 467 |  |            |           |  | 24° 55' 34.439" N | 84° 13' 31.436" E |      |
| 468 |  |            |           |  | 24° 55' 33.572" N | 84° 13' 32.528" E |      |
| 469 |  |            |           |  | 24° 55' 33.352" N | 84° 13' 32.805" E |      |
| 470 |  |            |           |  | 24° 55' 32.557" N | 84° 13' 33.806" E |      |
| 471 |  |            |           |  | 24° 55' 32.424" N | 84° 13' 33.973" E |      |
| 472 |  |            |           |  | 24° 55' 31.453" N | 84° 13' 35.197" E |      |
| 473 |  |            |           |  | 24° 55' 31.260" N | 84° 13' 35.439" E |      |
| 474 |  |            |           |  | 24° 55' 30.638" N | 84° 13' 36.223" E |      |
| 475 |  |            |           |  | 24° 55' 30.361" N | 84° 13' 36.572" E |      |
| 476 |  |            |           |  | 24° 55' 30.130" N | 84° 13' 36.862" E |      |
| 477 |  |            |           |  | 24° 55' 29.955" N | 84° 13' 36.724" E |      |
| 478 |  |            |           |  | 24° 54' 58.527" N | 84° 13' 9.839" E  |      |
| 479 |  |            |           |  | 24° 55' 10.528" N | 84° 13' 6.698" E  |      |
| 480 |  |            |           |  | 24° 54' 37.435" N | 84° 12' 31.667" E |      |
| 481 |  |            |           |  | 24° 54' 48.864" N | 84° 12' 18.579" E |      |
| 482 |  |            |           |  | 24° 54' 51.520" N | 84° 12' 25.417" E |      |
| 483 |  | ROHTAS SON | PO_RT_SN_ |  | 24° 55' 7.856" N  | 84° 12' 45.579" E | 33-7 |
| 484 |  | 14         | 66        |  | 24° 55' 5.457" N  | 84° 12' 48.340" E |      |
| 485 |  |            |           |  | 24° 54' 59.730" N | 84° 12' 47.988" E |      |
| 486 |  |            |           |  | 24° 54' 50.805" N | 84° 12' 44.096" E |      |
| 487 |  |            |           |  | 24° 54' 41.812" N | 84° 12' 37.060" E |      |
| 488 |  |            |           |  | 24° 54' 37.435" N | 84° 12' 31.667" E |      |
| 489 |  |            |           |  | 24° 53' 3.846" N  | 84° 10' 38.420" E |      |
| 490 |  |            |           |  | 24° 52' 40.939" N | 84° 10' 59.133" E |      |
| 491 |  |            |           |  | 24° 52' 25.751" N | 84° 10' 29.088" E |      |
| 492 |  | ROHTAS SON | PO_RT_SN_ |  | 24° 52' 14.641" N | 84° 10' 10.551" E | 69.6 |
| 493 |  | 15         | 61B       |  | 24° 52' 15.004" N | 84° 10' 6.554" E  |      |
| 494 |  |            |           |  | 24° 52' 44.620" N | 84° 10' 29.132" E |      |
| 495 |  |            |           |  | 24° 52' 53.250" N | 84° 10' 36.190" E |      |
| 496 |  |            |           |  | 24° 52' 58.785" N | 84° 10' 36.169" E |      |
| 497 |  |            |           |  | 24° 53' 3.846" N  | 84° 10' 38.420" E |      |
| 498 |  |            |           |  | 24° 52' 5.389" N  | 84° 10' 39.011" E |      |
| 499 |  |            |           |  | 24° 51' 28.726" N | 84° 10' 7.739" E  |      |
| 500 |  |            |           |  | 24° 51' 26.863" N | 84° 9' 51.919" E  |      |
| 501 |  |            |           |  | 24° 51' 20.428" N | 84° 9' 51.313" E  |      |
| 502 |  |            |           |  | 24° 51' 19.067" N | 84° 9' 58.776" E  |      |
| 503 |  |            |           |  | 24° 51' 3.642" N  | 84° 9' 45.748" E  |      |
| 504 |  | ROHTAS SON | PO_RT_SN_ |  | 24° 51' 10.299" N | 84° 9' 41.932" E  | 86.1 |
| 505 |  | 16         | 61A       |  | 24° 51' 30.976" N | 84° 9' 47.946" E  |      |
| 506 |  |            |           |  | 24° 51' 35.456" N | 84° 9' 46.096" E  |      |
| 507 |  |            |           |  | 24° 51' 46.008" N | 84° 9' 51.143" E  |      |
| 508 |  |            |           |  | 24° 51' 53.980" N | 84° 10' 0.199" E  |      |
| 509 |  |            |           |  | 24° 51' 54.293" N | 84° 10' 16.555" E |      |
| 510 |  |            |           |  | 24° 51' 59.453" N | 84° 10' 27.407" E |      |
| 511 |  |            |           |  | 24° 52' 5.389" N  | 84° 10' 39.011" E |      |
| 512 |  |            |           |  | 24° 50' 19.613" N | 84° 8' 51.241" E  |      |
| 513 |  |            |           |  | 24° 50' 37.940" N | 84° 8' 29.648" E  |      |
| 514 |  |            |           |  | 24° 50' 45.765" N | 84° 8' 42.785" E  |      |
| 515 |  |            |           |  | 24° 50' 50.044" N | 84° 8' 55.614" E  |      |



|     |  |    |            |          |                   |                  |      |
|-----|--|----|------------|----------|-------------------|------------------|------|
| 516 |  | 5  | ROHTAS SON | PO_RT_SN | 24° 51' 0.466" N  | 84° 9' 4.518" E  | 97-4 |
| 517 |  | 6  |            |          | 24° 51' 7.127" N  | 84° 9' 6.989" E  |      |
| 518 |  | 7  | 17         | 61       | 24° 51' 9.633" N  | 84° 9' 10.584" E |      |
| 519 |  | 8  |            |          | 24° 50' 54.641" N | 84° 9' 24.795" E |      |
| 520 |  | 9  |            |          | 24° 50' 45.301" N | 84° 9' 13.188" E |      |
| 521 |  | 10 |            |          | 24° 50' 37.162" N | 84° 9' 13.796" E |      |
| 522 |  | 11 |            |          | 24° 50' 19.613" N | 84° 8' 53.241" E |      |



| KAW RIVER |          |            |    |          |             |                  |                   |          |
|-----------|----------|------------|----|----------|-------------|------------------|-------------------|----------|
| Sl.No     | DISTRICT | RIVER NAME | ID | CODE     | SANBAR CODE | LATTITUDE        | LONGITUDE         | AREA(ha) |
| 1         |          |            | 1  |          |             | 25° 1' 47.799" N | 84° 9' 0.575" E   |          |
| 2         |          |            | 2  |          |             | 25° 1' 47.515" N | 84° 9' 1.072" E   |          |
| 3         |          |            | 3  |          |             | 25° 1' 47.714" N | 84° 9' 2.222" E   |          |
| 4         |          |            | 4  |          |             | 25° 1' 47.519" N | 84° 9' 1.949" E   |          |
| 5         |          |            | 5  |          |             | 25° 1' 47.326" N | 84° 9' 1.733" E   |          |
| 6         |          |            | 6  | KOW 01   | PO_RT_KW_10 | 25° 1' 47.229" N | 84° 9' 1.475" E   | 0.03     |
| 7         |          |            | 7  |          |             | 25° 1' 47.265" N | 84° 9' 1.213" E   |          |
| 8         |          |            | 8  |          |             | 25° 1' 47.316" N | 84° 9' 1.071" E   |          |
| 9         |          |            | 9  |          |             | 25° 1' 47.667" N | 84° 9' 0.752" E   |          |
| 10        |          |            | 10 |          |             | 25° 1' 47.750" N | 84° 9' 0.601" E   |          |
| 11        |          |            | 11 |          |             | 25° 1' 47.799" N | 84° 9' 0.575" E   |          |
| 12        |          |            | 1  |          |             | 25° 1' 35.914" N | 84° 11' 8.892" E  |          |
| 13        |          |            | 2  |          |             | 25° 1' 36.039" N | 84° 11' 8.853" E  |          |
| 14        |          |            | 3  |          |             | 25° 1' 36.638" N | 84° 11' 7.603" E  |          |
| 15        |          |            | 4  |          |             | 25° 1' 36.859" N | 84° 11' 7.349" E  |          |
| 16        |          |            | 5  |          |             | 25° 1' 37.178" N | 84° 11' 7.282" E  |          |
| 17        |          |            | 6  |          |             | 25° 1' 37.576" N | 84° 11' 7.352" E  |          |
| 18        |          |            | 7  |          |             | 25° 1' 37.797" N | 84° 11' 7.498" E  |          |
| 19        |          |            | 8  |          |             | 25° 1' 38.014" N | 84° 11' 7.833" E  |          |
| 20        |          |            | 9  |          |             | 25° 1' 38.094" N | 84° 11' 8.554" E  |          |
| 21        |          |            | 10 |          |             | 25° 1' 38.004" N | 84° 11' 8.742" E  |          |
| 22        |          |            | 11 | KOW 02   | PO_RT_KW_09 | 25° 1' 38.034" N | 84° 11' 8.353" E  | 0.06     |
| 23        |          |            | 12 |          |             | 25° 1' 37.990" N | 84° 11' 8.115" E  |          |
| 24        |          |            | 13 |          |             | 25° 1' 37.900" N | 84° 11' 7.924" E  |          |
| 25        |          |            | 14 |          |             | 25° 1' 37.700" N | 84° 11' 7.734" E  |          |
| 26        |          |            | 15 |          |             | 25° 1' 37.395" N | 84° 11' 7.632" E  |          |
| 27        |          |            | 16 |          |             | 25° 1' 37.077" N | 84° 11' 7.666" E  |          |
| 28        |          |            | 17 |          |             | 25° 1' 36.742" N | 84° 11' 7.831" E  |          |
| 29        |          |            | 18 |          |             | 25° 1' 36.579" N | 84° 11' 8.047" E  |          |
| 30        |          |            | 19 |          |             | 25° 1' 36.517" N | 84° 11' 8.466" E  |          |
| 31        |          |            | 20 |          |             | 25° 1' 36.357" N | 84° 11' 8.742" E  |          |
| 32        |          |            | 21 |          |             | 25° 1' 36.003" N | 84° 11' 8.923" E  |          |
| 33        |          |            | 22 |          |             | 25° 1' 35.914" N | 84° 11' 8.892" E  |          |
| 34        |          |            | 1  |          |             | 25° 1' 59.449" N | 84° 11' 36.159" E |          |
| 35        |          |            | 2  |          |             | 25° 1' 59.759" N | 84° 11' 36.235" E |          |
| 36        |          |            | 3  |          |             | 25° 2' 0.213" N  | 84° 11' 36.447" E |          |
| 37        |          |            | 4  |          |             | 25° 2' 0.651" N  | 84° 11' 36.822" E |          |
| 38        |          |            | 5  |          |             | 25° 2' 0.924" N  | 84° 11' 37.235" E |          |
| 39        |          |            | 6  | KOW 03   | PO_RT_KW_08 | 25° 2' 1.092" N  | 84° 11' 37.693" E | 0.09     |
| 40        |          |            | 7  |          |             | 25° 2' 0.379" N  | 84° 11' 37.286" E |          |
| 41        |          |            | 8  |          |             | 25° 1' 59.664" N | 84° 11' 37.037" E |          |
| 42        |          |            | 9  |          |             | 25° 1' 59.570" N | 84° 11' 36.845" E |          |
| 43        |          |            | 10 |          |             | 25° 1' 59.591" N | 84° 11' 36.812" E |          |
| 44        |          |            | 11 |          |             | 25° 1' 59.544" N | 84° 11' 36.415" E |          |
| 45        |          |            | 12 |          |             | 25° 1' 59.449" N | 84° 11' 36.159" E |          |
| 46        |          |            | 1  |          |             | 25° 2' 19.621" N | 84° 11' 40.688" E |          |
| 47        |          |            | 2  |          |             | 25° 2' 19.841" N | 84° 11' 40.920" E |          |
| 48        |          |            | 3  |          |             | 25° 2' 20.809" N | 84° 11' 41.259" E |          |
| 49        |          |            | 4  |          |             | 25° 2' 21.298" N | 84° 11' 41.258" E |          |
| 50        |          |            | 5  |          |             | 25° 2' 20.970" N | 84° 11' 41.590" E |          |
| 51        |          |            | 6  | KOW 04.1 | PO_RT_KW_07 | 25° 2' 20.488" N | 84° 11' 41.777" E | 0.08     |
| 52        |          |            | 7  |          |             | 25° 2' 20.188" N | 84° 11' 41.799" E |          |
| 53        |          |            | 8  |          |             | 25° 2' 19.955" N | 84° 11' 41.743" E |          |
| 54        |          |            | 9  |          |             | 25° 2' 19.654" N | 84° 11' 41.548" E |          |
| 55        |          |            | 10 |          |             | 25° 2' 19.561" N | 84° 11' 40.978" E |          |
| 56        |          |            | 11 |          |             | 25° 2' 19.621" N | 84° 11' 40.688" E |          |
| 57        |          |            | 1  |          |             | 25° 2' 25.964" N | 84° 11' 39.967" E |          |
| 58        |          |            | 2  |          |             | 25° 2' 26.069" N | 84° 11' 39.818" E |          |
| 59        | ROIHTAS  | KAW        | 3  |          |             | 25° 2' 26.364" N | 84° 11' 39.649" E |          |
| 60        |          |            | 4  |          |             | 25° 2' 26.650" N | 84° 11' 39.708" E |          |
| 61        |          |            | 5  | KOW 04.2 | PO_RT_KW_06 | 25° 2' 26.952" N | 84° 11' 40.005" E | 0.04     |
| 62        |          |            | 6  |          |             | 25° 2' 27.191" N | 84° 11' 40.390" E |          |
| 63        |          |            | 7  |          |             | 25° 2' 27.310" N | 84° 11' 41.036" E |          |
| 64        |          |            | 8  |          |             | 25° 2' 26.932" N | 84° 11' 40.406" E |          |
| 65        |          |            | 9  |          |             | 25° 2' 26.520" N | 84° 11' 39.933" E |          |
| 66        |          |            | 10 |          |             | 25° 2' 25.964" N | 84° 11' 39.967" E |          |
| 67        |          |            | 1  |          |             | 25° 2' 31.813" N | 84° 11' 42.003" E |          |
| 68        |          |            | 2  |          |             | 25° 2' 31.407" N | 84° 11' 41.355" E |          |
| 69        |          |            | 3  |          |             | 25° 2' 30.817" N | 84° 11' 41.276" E |          |
| 70        |          |            | 4  |          |             | 25° 2' 30.260" N | 84° 11' 41.276" E |          |
| 71        |          |            | 5  |          |             | 25° 2' 29.886" N | 84° 11' 42.993" E |          |



|     |  |    |          |             |                   |                   |      |
|-----|--|----|----------|-------------|-------------------|-------------------|------|
| 72  |  | 6  |          |             | 25° 2' 29.362" N  | 84° 11' 42.827" E |      |
| 73  |  | 7  |          |             | 25° 2' 28.877" N  | 84° 11' 42.588" E |      |
| 74  |  | 8  | KOW 04.3 | PO_RT_KW_05 | 25° 2' 28.486" N  | 84° 11' 42.149" E | 0.36 |
| 75  |  | 9  |          |             | 25° 2' 28.107" N  | 84° 11' 41.592" E |      |
| 76  |  | 10 |          |             | 25° 2' 27.924" N  | 84° 11' 41.104" E |      |
| 77  |  | 11 |          |             | 25° 2' 28.433" N  | 84° 11' 41.302" E |      |
| 78  |  | 12 |          |             | 25° 2' 29.250" N  | 84° 11' 41.343" E |      |
| 79  |  | 13 |          |             | 25° 2' 30.063" N  | 84° 11' 41.263" E |      |
| 80  |  | 14 |          |             | 25° 2' 31.813" N  | 84° 11' 42.005" E |      |
| 81  |  | 1  |          |             | 25° 2' 39.664" N  | 84° 11' 49.320" E |      |
| 82  |  | 2  |          |             | 25° 2' 40.081" N  | 84° 11' 49.623" E |      |
| 83  |  | 3  |          |             | 25° 2' 40.702" N  | 84° 11' 50.232" E |      |
| 84  |  | 4  | KOW 04.4 | PO_RT_KW_04 | 25° 2' 41.046" N  | 84° 11' 50.416" E | 0.03 |
| 85  |  | 5  |          |             | 25° 2' 40.957" N  | 84° 11' 50.459" E |      |
| 86  |  | 6  |          |             | 25° 2' 40.030" N  | 84° 11' 50.109" E |      |
| 87  |  | 7  |          |             | 25° 2' 39.658" N  | 84° 11' 49.408" E |      |
| 88  |  | 8  |          |             | 25° 2' 39.664" N  | 84° 11' 49.320" E |      |
| 89  |  | 1  |          |             | 25° 12' 37.175" N | 84° 16' 16.333" E |      |
| 90  |  | 2  |          |             | 25° 12' 37.291" N | 84° 16' 16.252" E |      |
| 91  |  | 3  |          |             | 25° 12' 37.597" N | 84° 16' 16.211" E |      |
| 92  |  | 4  |          |             | 25° 12' 37.943" N | 84° 16' 16.224" E |      |
| 93  |  | 5  | KOW 05   | PO_RT_KW_03 | 25° 12' 38.048" N | 84° 16' 16.284" E | 0.01 |
| 94  |  | 6  |          |             | 25° 12' 38.137" N | 84° 16' 16.386" E |      |
| 95  |  | 7  |          |             | 25° 12' 38.089" N | 84° 16' 16.463" E |      |
| 96  |  | 8  |          |             | 25° 12' 37.846" N | 84° 16' 16.380" E |      |
| 97  |  | 9  |          |             | 25° 12' 37.383" N | 84° 16' 16.312" E |      |
| 98  |  | 10 |          |             | 25° 12' 37.175" N | 84° 16' 16.333" E |      |
| 99  |  | 1  |          |             | 25° 13' 36.713" N | 84° 14' 31.338" E |      |
| 100 |  | 2  |          |             | 25° 13' 36.765" N | 84° 14' 31.245" E |      |
| 101 |  | 3  |          |             | 25° 13' 37.136" N | 84° 14' 31.237" E |      |
| 102 |  | 4  |          |             | 25° 13' 37.323" N | 84° 14' 31.326" E |      |
| 103 |  | 5  |          |             | 25° 13' 37.438" N | 84° 14' 31.471" E |      |
| 104 |  | 6  |          |             | 25° 13' 37.510" N | 84° 14' 31.657" E |      |
| 105 |  | 7  | KOW 06   | PO_RT_KW_02 | 25° 13' 37.598" N | 84° 14' 32.065" E | 0.03 |
| 106 |  | 8  |          |             | 25° 13' 37.532" N | 84° 14' 32.134" E |      |
| 107 |  | 9  |          |             | 25° 13' 37.465" N | 84° 14' 32.105" E |      |
| 108 |  | 10 |          |             | 25° 13' 37.446" N | 84° 14' 32.072" E |      |
| 109 |  | 11 |          |             | 25° 13' 37.304" N | 84° 14' 31.998" E |      |
| 110 |  | 12 |          |             | 25° 13' 37.088" N | 84° 14' 31.761" E |      |
| 111 |  | 13 |          |             | 25° 13' 36.713" N | 84° 14' 31.338" E |      |
| 112 |  | 1  |          |             | 25° 17' 29.808" N | 84° 15' 36.312" E |      |
| 113 |  | 2  |          |             | 25° 17' 29.210" N | 84° 15' 36.420" E |      |
| 114 |  | 3  | KOW 07   | PO_RT_KW_01 | 25° 17' 28.518" N | 84° 15' 36.933" E | 0.02 |
| 115 |  | 4  |          |             | 25° 17' 28.971" N | 84° 15' 36.279" E |      |
| 116 |  | 5  |          |             | 25° 17' 29.153" N | 84° 15' 36.180" E |      |
| 117 |  | 6  |          |             | 25° 17' 29.808" N | 84° 15' 36.312" E |      |



| THORA RIVER |          |            |                   |                   |              |                   |                   |          |
|-------------|----------|------------|-------------------|-------------------|--------------|-------------------|-------------------|----------|
| SI. NO      | DISTRICT | RIVER NAME | ID                | CODE              | SANBAR CODE  | LATITUDE          | LONGITUDE         | AREA(ha) |
| 1           | ROHTAS   | THORA      | 1                 | Thora 1.1         | PO_RT_TH_01  | 25° 21' 7.032" N  | 84° 10' 31.231" E | 0.07     |
| 2           |          |            | 25° 21' 6.754" N  |                   |              | 84° 10' 31.399" E |                   |          |
| 3           |          |            | 25° 21' 6.540" N  |                   |              | 84° 10' 31.612" E |                   |          |
| 4           |          |            | 25° 21' 6.298" N  |                   |              | 84° 10' 31.829" E |                   |          |
| 5           |          |            | 25° 21' 5.928" N  |                   |              | 84° 10' 31.484" E |                   |          |
| 6           |          |            | 25° 21' 5.654" N  |                   |              | 84° 10' 31.377" E |                   |          |
| 7           |          |            | 25° 21' 5.435" N  |                   |              | 84° 10' 31.191" E |                   |          |
| 8           |          |            | 25° 21' 5.268" N  |                   |              | 84° 10' 30.940" E |                   |          |
| 9           |          |            | 25° 21' 5.092" N  |                   |              | 84° 10' 30.580" E |                   |          |
| 10          |          |            | 25° 21' 5.453" N  |                   |              | 84° 10' 30.342" E |                   |          |
| 11          |          |            | 25° 21' 5.735" N  |                   |              | 84° 10' 30.242" E |                   |          |
| 12          |          |            | 25° 21' 5.885" N  |                   |              | 84° 10' 30.223" E |                   |          |
| 13          |          |            | 25° 21' 5.723" N  |                   |              | 84° 10' 30.441" E |                   |          |
| 14          |          |            | 25° 21' 5.746" N  |                   |              | 84° 10' 30.725" E |                   |          |
| 15          |          |            | 25° 21' 5.915" N  |                   |              | 84° 10' 30.990" E |                   |          |
| 16          |          |            | 25° 21' 6.239" N  |                   |              | 84° 10' 31.140" E |                   |          |
| 17          |          |            | 25° 21' 6.618" N  |                   |              | 84° 10' 31.234" E |                   |          |
| 18          |          |            | 25° 21' 7.032" N  |                   |              | 84° 10' 31.231" E |                   |          |
| 19          |          |            | 25° 21' 7.068" N  | 84° 10' 29.932" E |              |                   |                   |          |
| 20          |          |            | 25° 21' 6.833" N  | 84° 10' 30.127" E |              |                   |                   |          |
| 21          |          |            | 25° 21' 6.583" N  | 84° 10' 30.102" E |              |                   |                   |          |
| 22          |          |            | 25° 21' 6.423" N  | 84° 10' 30.053" E |              |                   |                   |          |
| 23          |          |            | 25° 21' 5.894" N  | 84° 10' 29.812" E |              |                   |                   |          |
| 24          |          |            | 25° 21' 6.318" N  | 84° 10' 29.805" E |              |                   |                   |          |
| 25          |          |            | 25° 21' 7.068" N  | 84° 10' 29.932" E |              |                   |                   |          |
| 26          |          |            | 25° 21' 3.244" N  | 84° 10' 28.089" E |              |                   |                   |          |
| 27          |          |            | 25° 21' 3.255" N  | 84° 10' 28.364" E |              |                   |                   |          |
| 28          |          |            | 25° 21' 3.537" N  | 84° 10' 28.359" E |              |                   |                   |          |
| 29          |          |            | 25° 21' 3.707" N  | 84° 10' 28.808" E |              |                   |                   |          |
| 30          |          |            | 25° 21' 3.869" N  | 84° 10' 29.304" E |              |                   |                   |          |
| 31          |          |            | 25° 21' 3.860" N  | 84° 10' 29.754" E |              |                   |                   |          |
| 32          |          |            | 25° 21' 3.681" N  | 84° 10' 29.954" E |              |                   |                   |          |
| 33          |          |            | 25° 21' 3.249" N  | 84° 10' 30.246" E |              |                   |                   |          |
| 34          |          |            | 25° 21' 2.819" N  | 84° 10' 30.106" E |              |                   |                   |          |
| 35          |          |            | 25° 21' 2.464" N  | 84° 10' 29.636" E |              |                   |                   |          |
| 36          |          |            | 25° 21' 2.659" N  | 84° 10' 28.605" E |              |                   |                   |          |
| 37          |          |            | 25° 21' 3.075" N  | 84° 10' 28.307" E |              |                   |                   |          |
| 38          |          |            | 25° 21' 3.244" N  | 84° 10' 28.089" E |              |                   |                   |          |
| 39          |          |            | 25° 20' 31.322" N | 84° 10' 37.303" E |              |                   |                   |          |
| 40          |          |            | 25° 20' 31.153" N | 84° 10' 37.624" E |              |                   |                   |          |
| 41          |          |            | 25° 20' 30.555" N | 84° 10' 38.048" E |              |                   |                   |          |
| 42          |          |            | 25° 20' 30.362" N | 84° 10' 37.875" E |              |                   |                   |          |
| 43          |          |            | 25° 20' 29.533" N | 84° 10' 37.699" E |              |                   |                   |          |
| 44          |          |            | 25° 20' 29.981" N | 84° 10' 37.614" E |              |                   |                   |          |
| 45          |          |            | 25° 20' 30.245" N | 84° 10' 37.622" E |              |                   |                   |          |
| 46          |          |            | 25° 20' 30.832" N | 84° 10' 37.556" E |              |                   |                   |          |
| 47          |          |            | 25° 20' 31.322" N | 84° 10' 37.303" E |              |                   |                   |          |
|             |          |            |                   | Thora 1.2         | PO_RT_TH_01A |                   |                   | 0.02     |
|             |          |            |                   | Thora 2           | PO_RT_TH_02  |                   |                   | 0.18     |
|             |          |            |                   | Thora 3           | PO_RT_TH_03  |                   |                   | 0.03     |








**LEGEND**

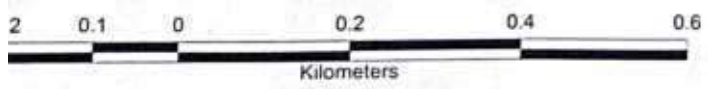
-  PROPOSED SAND BLOCK
-  THORA RIVER
-  KAW RIVER
-  SONE RIVER
-  DISTRICT BOUNDARY(ROHTAS)







### LEGEND

-  PROPOSED SAND BLOCK
-  KAW RIVER
-  DISTRICT BOUNDARY(ROHTAS)



### LEGEND

|   |                           |
|---|---------------------------|
|  | PROPOSED SAND BLOCK       |
|  | THORA RIVER               |
|  | DISTRICT BOUNDARY(ROHTAS) |

## **Annexure -IX**

**(Profile section of Rivers of Rohtas District )**



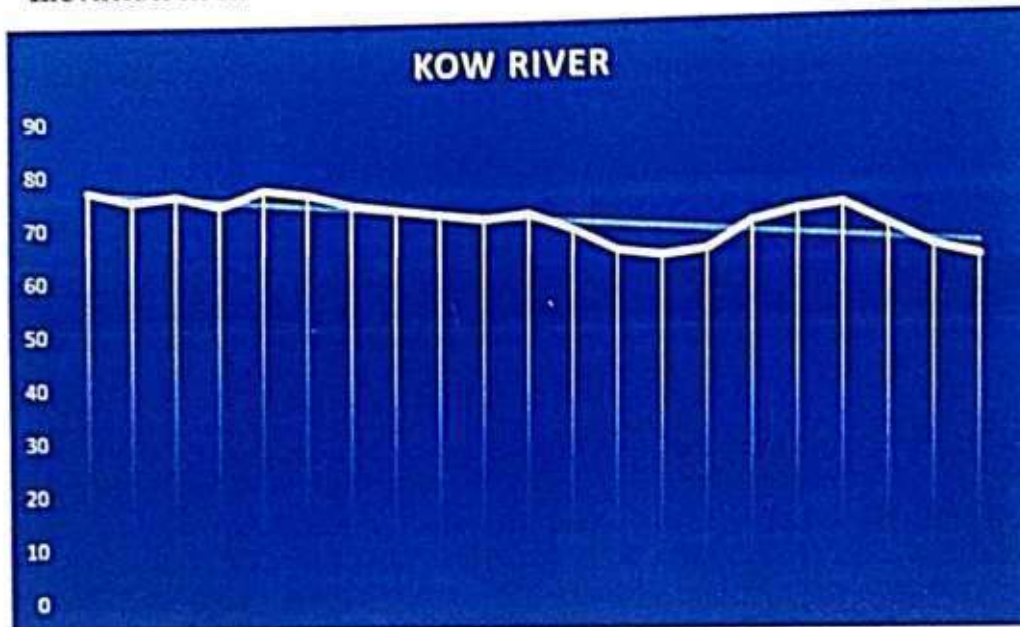
### Profile section of Rivers of Rohtas District

Elevation in m



SW-----NE  
121 km

Elevation in m

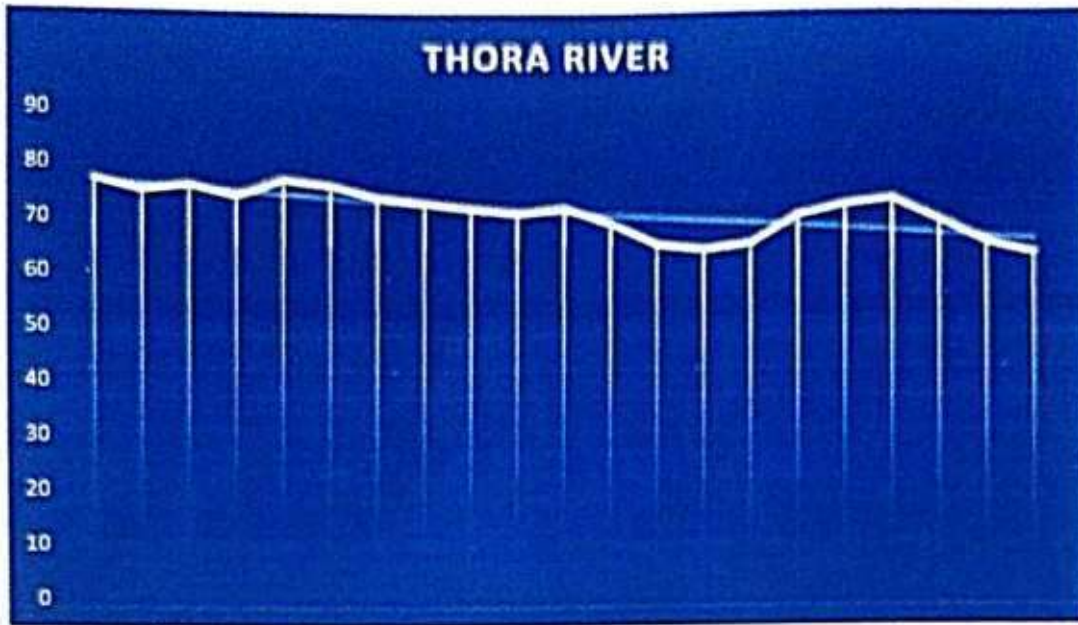


SE-----NW  
70 km



### Profile section of Rivers of Rohtas District

Elevation in m



SE-----NW  
22 km



## **Annexure -X**

**(A certificate regarding distance of ghats from the boundary of Forest/Protect Area as well as the modification status and extent of the Eco-sensitive Zone issued by the Ministry of Environment, Forest and Climate Change, Govt. of India)**



**बिहार सरकार**  
**खान एवं भूतत्व विभाग**

सं०सं०- 2 एम०एम० (बा०)-36/21-1796...../एम०, पटना, दिनांक-.....18/01/2022 L  
प्रेषक,

अंशुल कुमार, भा०प्र०रो०  
सरकार के संयुक्त सचिव।

सेवा में,

सभी खनिज विकास पदाधिकारी।

विषय:- माननीय उच्चतम न्यायालय में बिहार सरकार द्वारा दायर सिविल अपील संख्या-3661-3662/2020 बिहार राज्य एवं अन्य बनाम पवन कुमार एवं अन्य मामले में दिनांक-10.11.2021 को पारित अंतरिम आदेश के त्वरित अनुपालन के संबंध में।

महाशय,

उपर्युक्त विषयक संबंध में कहना है कि अनुमंडलीय समिति द्वारा तैयार जिला सर्वेक्षण प्रतिवेदन (DSR) प्रारूप की समीक्षा दिनांक 25.03.2022 को बिहार राज्य स्तरीय आंकलन समिति (SEAC, Bihar) के द्वारा की गई है। बैठक की कार्यवाही के एजेंडा सं०-1 की कंडिका (iv) निम्न प्रकार है-

(iv.) In case sand ghat is located near by the Forest/Wildlife Protected Area, (Bird/Wildlife Sanctuary/National Park/Tiger Reserve) a certificate regarding distance of such ghat from the boundary of Forest/Protect Area as well as the notification status and extent of the Eco-Sensitive Zone issued by the Ministry of Environment, Forest and Climate Change, Govt. of India should be enclosed with the DSR.

उपरोक्त के आलोक में अरण्य भवन, पटना से इको सेंसेटिव जोन, सुरक्षित वन क्षेत्र, वन जीव अभ्यारण्य के निर्धारण के लिए अरण्य भवन, पटना से KML फाईल प्राप्त किया गया है।

अतः प्राप्त KML फाईल को पत्र के साथ संलग्न कर, निदेश दिया जाता है कि आपके जिला के द्वारा तैयार की गई KML फाईल से इसका मिलान कर/आवश्यकतानुसार संशोधित कर SEAC/SEIAA को अग्रसारित करें।

अनुलग्नक:- KML फाईल।

विश्वासभाजन  
18/01/22  
सरकार के संयुक्त सचिव  
Bimal



Please refer to Annexure XIII.

## **Annexure -XI**

**(Undertaking regarding aquatic animal found in river/  
proposed sand ghat area)**



जिला खनन कार्यालय, रोहतास (सासाराम)

Date: \_\_\_\_\_

UNDERTAKING

I, Kartik Kumar Mineral Development Officer, District Mining Office, Rohtas hereby undertake the following:

1. The Sand ghats are proposed in dry Part of the river bed, where no aquatic animals are found.
2. The Potential sand mining areas are identified keeping in view the Ecological and Biological Environment.
3. The proposed area is not used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering & migration.

Kartik  
20/5/22

Mineral Development Officer  
(District Mining Office, Rohtas)



## **Annexure -XII**

**(Clear and high-resolution colour images)**



Clear and high-resolution colour images provided as soft copy in pen drive.



## **Annexure -XIII**

**(Annexure as prescribed in the EMGSM, 2020)**



## Annexure-I

## Details of Sand/M-Sand Sources

## a) Rivers:

| River Name/M-Sand Plant | Total Stretch of River (in KM) | Type of River (Perennial or Non-Perennial ) |
|-------------------------|--------------------------------|---|
| SON                     | 121.80                         | Perennial                                   |
| KOW                     | 69.61                          | Non-Perennial                               |
| THORA                   | 22.72                          | Non-Perennial                               |

## b) De-Siltation Location: (Lakes/Ponds/Dams etc.)

| Name of Reservoir/Dams | Maintain/Controlled by State Govt./PSU etc. | Location | District | Tehsil | Village | Size(Ha) |
|------------------------|---|----------|----------|--------|---------|----------|
| Nil                    | Nil   | Nil      | Nil      | Nil    | Nil     | Nil      |

## c) Patta Lands/Khatedari Land:

| Owner | Sy. No | Area (Ha) | District | Tehsil | Village | Agricultural Land (Yes/No) |
|-------|--------|-----------|----------|--------|---------|----------------------------|
| None  | Nil    | Nil       | Nil      | Nil    | Nil     | Nil                        |

## d) M-Sand Plants:

| Plant Name | Owner | District | Tehsil | Village | Geo-location | Quantity Tonnes /Annum |
|------------|-------|----------|--------|---------|--------------|------------------------|
| Nil        | Nil   | Nil      | Nil    | Nil     | Nil          | Nil                    |

**Note:** For inclusion of M-Sand Plant/Patta Land in DSR the plant/landowners need to submit the request to the Mining Department with complete details. Inclusion in DSR does not give them the right to operate the M-Sand Plant/Sand Mining lease.





### List of Potential Mining Leases (existing & proposed) Rivers

### Annexure-II

#### EXISTING GHATS

| River Details | Lease Details     | Area (in Ha) | Distance (in KM) from PA/BR/WC / | Distance from Forest Area (in KM) | Mining leases within 500 meters (if yes cluster area) | Total excavation in Tonnes /Annum considering digging depth max as 3 meters | Mineral to be mined (Sand/Bajri / RBM etc.) | Existing / Proposed |
|---------------|-------------------|--------------|----------------------------------|-----------------------------------|---|---|---|---------------------|
| Son           | Amiyawar Ghat A   | 22.5         | NA                               | Approx. 24.88 km                  | NO  | 972000  | Sand  | Existing            |
| Son           | Amiyawar Ghat B   | 22.5         | NA                               | Approx. 23.06 km                  | NO  | 972000  | Sand  | Existing            |
| Son           | Mangrawan Ghat A  | 22.5         | NA                               | Approx. 35.83 km                  | NO  | 972000  | Sand  | Existing            |
| Son           | Mangrawan Ghat B  | 22.5         | NA                               | Approx. 37.10 km                  | NO  | 972000  | Sand  | Existing            |
| Son           | Sankarpura Ghat A | 24           | NA                               | Approx. 4.54 km                   | NO  | 1036800   | Sand  | Existing            |
| Son           | Sankarpura Ghat B | 24           | NA                               | Approx. 4.41 km                   | NO  | 1036800   | Sand  | Existing            |
| Son           | Darihat Ghat 3    | 24.8         | NA                               | Approx. 18.21 km                  | NO  | 1071360   | Sand  | Existing            |
| Son           | Kaithi Ghat       | 24           | NA                               | Approx. 40.09 km                  | NO  | 1036800   | Sand  | Existing            |
| Son           | Danwar Ghat       | 24           | NA                               | Approx. 42.84 km                  | NO  | 1036800   | Sand  | Existing            |
| Son           | Paruahara Ghat 2  | 24           | NA                               | Approx. 21.83 km                  | NO  | 1036800   | Sand  | Existing            |
| Son           | Katar Ghat        | 24.8         | NA                               | Approx. 5.90 km                   | NO  | 1071360   | Sand  | Existing            |
| Son           | Kerpa Ghat        | 24.8         | NA                               | Approx. 1.54 km                   | NO  | 1071360   | Sand  | Existing            |

|       |                 |      |    |                  |    |         |      |          |
|-------|-----------------|------|----|------------------|----|---------|------|----------|
| Son   | Majhiao Ghat    | 24   | NA | Approx. 19.19 km | NO | 1036800 | Sand | Existing |
| Son   | Paruhar Ghat    | 24.8 | NA | Approx. 20.06 km | NO | 1071360 | Sand | Existing |
| Son   | Chaknaha Ghat   | 24.8 | NA | Approx. 5.09 km  | NO | 1071360 | Sand | Existing |
| Son   | Hurka Ghat      | 24   | NA | Approx. 11.59 km | NO | 1036800 | Sand | Existing |
| Son   | Jarha Bigha 1   | 24   | NA | Approx. 2.86 km  | NO | 1036800 | Sand | Existing |
| Son   | Jarha Bigha 2   | 24.8 | NA | Approx. 2.85 km  | NO | 1071360 | Sand | Existing |
| Son   | Mahadeva 1 Ghat | 24   | NA | Approx. 33.40 km | NO | 1036800 | Sand | Existing |
| Son   | Ramdihra Ghat I | 24   | NA | Approx. 1.18 km  | NO | 1036800 | Sand | Existing |
| Kow   | Samri Ghat      | 1    | NA | Approx. 48.20 km | NO | 43200   | Sand | Existing |
| Kow   | Sadaudihra Ghat | 1.5  | NA | Approx. 41.68 km | NO | 64800   | Sand | Existing |
| Kow   | Gosaldih Ghat   | 1    | NA | Approx. 40.88 km | NO | 43200   | Sand | Existing |
| Thora | Jamsona Ghat    | 1    | NA | Approx. 46.18 km | NO | 43200   | Sand | Existing |
| SON   | DARIAHAT 2      | 4.8  | NA | Approx. 15.08 km | NO | 241883  | Sand | Existing |
| SON   | DARIAHAT 1      | 3.1  | NA | Approx. 13.95 km | NO | 150187  | Sand | Existing |
| SON   | DALMIANAGAR     | 4.9  | NA | Approx. 10.68 km | NO | 237010  | Sand | Existing |
| SON   | TILOUTHU        | 4.9  | NA | Approx. 4.58 km  | NO | 239550  | Sand | Existing |
| SON   | RAMDIHRA        | 15.5 | NA | Approx. 0.40 km  | NO | 739198  | Sand | Existing |
| SON   | MAHADEV         | 4.7  | NA | Approx. 34.45 km | NO | 222788  | Sand | Existing |





## PROPOSED GHATS

| River Details | Lease Details | Area (in Ha) | Distance (in KM) from PA/BR/WC / | Distance from Forest Area (in KM) | Mining leases within 500 meters (if yes cluster area) | Total excavation in Tonnes /Annum considering digging depth max as 3 meters | Mineral to be mined (Sand/Bajri / RBM etc.) | Existing / Proposed |
|---------------|---------------|--------------|----------------------------------|-----------------------------------|---|---|---|---------------------|
| SON           | ROHTAS SON 1  | 17.8<br>3    | NA                               | Approx. 35.80 km                  | No  | 577724.4  | Sand  | Proposed            |
| SON           | ROHTAS SON 2  | 28.7         | NA                               | Approx. 31.24 km                  | No  | 929880  | Sand  | Proposed            |
| SON           | ROHTAS SON 3  | 72.5         | NA                               | Approx. 27.40 km                  | No  | 2349000   | Sand  | Proposed            |
| SON           | ROHTAS SON 4  | 99.8         | NA                               | Approx. 24.83 km                  | Yes   | 3233520   | Sand  | Proposed            |
| SON           | ROHTAS SON 5  | 86.4         | NA                               | Approx. 23.48 km                  | Yes   | 2799360   | Sand  | Proposed            |
| SON           | ROHTAS SON 6  | 46.6         | NA                               | Approx. 23.00 km                  | Yes   | 1509840   | Sand  | Proposed            |
| SON           | ROHTAS SON 7  | 98.8         | NA                               | Approx. 21.97 km                  | No  | 3201120   | Sand  | Proposed            |
| SON           | ROHTAS SON 8  | 96.5         | NA                               | Approx. 17.38 km                  | Yes   | 3126600   | Sand  | Proposed            |
| SON           | ROHTAS SON 9  | 98.3         | NA                               | Approx. 15.68 km                  | Yes   | 3184920   | Sand  | Proposed            |
| SON           | ROHTAS SON 10 | 98.9<br>5    | NA                               | Approx. 14.57 km                  | Yes   | 3205980   | Sand  | Proposed            |
| SON           | ROHTAS SON 11 | 96.7         | NA                               | Approx. 13.47 km                  | Yes   | 3133080   | Sand  | Proposed            |

|       |                    |           |    |                     |                      |         |      |          |
|-------|--------------------|-----------|----|---------------------|----------------------|---------|------|----------|
| SON   | ROHTAS SON 12      | 89.9<br>6 | NA | Approx. 12.72<br>km | Yes                  | 2914704 | Sand | Proposed |
| SON   | ROHTAS SON 13      | 57.8      | NA | Approx. 12.29<br>km | Yes                  | 1872720 | Sand | Proposed |
| SON   | ROHTAS SON 14      | 33.7      | NA | Approx. 10.61<br>km | No                   | 1091880 | Sand | Proposed |
| SON   | ROHTAS SON 15      | 69.6      | NA | Approx. 6.64 km     | No                   | 2255040 | Sand | Proposed |
| SON   | ROHTAS SON 16      | 86.1      | NA | Approx. 6.02 km     | No                   | 2789640 | Sand | Proposed |
| SON   | ROHTAS SON 17      | 97.4      | NA | Approx. 5.23 km     | No                   | 3155760 | Sand | Proposed |
| KOW   | ROHTAS KOW 01      | 0.03      | NA | Approx. 11.37<br>km | No                   | 648     | Sand | Proposed |
| KOW   | ROHTAS KOW 02      | 0.06      | NA | Approx. 13.42<br>km | No                   | 1296    | Sand | Proposed |
| KOW   | ROHTAS KOW 03      | 0.09      | NA | Approx. 14.52<br>km | No                   | 1944    | Sand | Proposed |
| KOW   | ROHTAS KOW<br>04.1 | 0.08      | NA | Approx. 15.0 km     | Yes, Area 0.51<br>Ha | 1728    | Sand | Proposed |
| KOW   | ROHTAS KOW<br>04.2 | 0.04      | NA | Approx. 15.10<br>km |                      | 864     | Sand | Proposed |
| KOW   | ROHTAS KOW<br>04.3 | 0.36      | NA | Approx. 15.19<br>km |                      | 7776    | Sand | Proposed |
| KOW   | ROHTAS KOW<br>04.4 | 0.03      | NA | Approx. 15.55<br>km |                      | 648     | Sand | Proposed |
| KOW   | ROHTAS KOW 05      | 0.01      | NA | Approx. 34.77<br>km | No                   | 216     | Sand | Proposed |
| KOW   | ROHTAS KOW 06      | 0.03      | NA | Approx. 34.93<br>km | No                   | 648     | Sand | Proposed |
| KOW   | ROHTAS KOW 07      | 0.02      | NA | Approx. 42.16<br>km | No                   | 432     | Sand | Proposed |
| THORA | ROHTAS Thora 1.1   | 0.07      | NA | Approx. 45.94<br>km | Yes, Area 0.27<br>Ha | 1512    | Sand | Proposed |





|       |                  |      |    |                  |    |      |      |          |
|-------|------------------|------|----|------------------|----|------|------|----------|
| THORA | ROHTAS Thora 1.2 | 0.02 | NA | Approx. 45.95 km |    | 432  | Sand | Proposed |
| THORA | ROHTAS Thora 2   | 0.18 | NA | Approx. 45.85 km |    | 3888 | Sand | Proposed |
| THORA | ROHTAS Thora 3   | 0.03 | NA | Approx. 44.92 km | No | 648  | Sand | Proposed |

**Patta Lands/Khatedari Land: (existing & proposed)**

| Owner | Sy. No | Area | District | Tehsil | Village | Total Reserve (MT) | Total Mineral to be mined (MT) | Existing /Proposed |
|-------|--------|------|----------|--------|---------|--------------------|--------------------------------|--------------------|
| None  | Nil    | Nil  | Nil      | Nil    | Nil     | Nil                | Nil                            | Nil                |

**De-Siltation Location :( Lakes/Ponds/Dams etc) (Existing&proposed)**

| Name of Reservoir /Dams | Maintain /Controlled by State Govt./PSU etc. | Location | District | Tehsil | Village | Size (Ha) | Quantity MT /Year | Existing /Proposed |
|-------------------------|--|----------|----------|--------|---------|-----------|-------------------|--------------------|
| None                    | Nil  | Nil      | Nil      | Nil    | Nil     | Nil       | Nil               | Nil                |

**M-Sand Plants :( existing & proposed)**

| Plant Name | Owner | District | Tehsil | Village | Geo- location | Quantity Tonnes/ Annum | Existing/ Proposed |
|------------|-------|----------|--------|---------|---------------|------------------------|--------------------|
| None       | Nil   | Nil      | Nil    | Nil     | Nil           | Nil                    | None               |



## Cluster &amp; Contiguous Cluster details


## Clusters:

| River Name | Cluster No. | Lease No   | Location (Riverbed / Patta Land) | Village | Area (in Ha) | Total Excavation (Ton) | Total Mineral Excavation (Ton) |
|------------|-------------|--|----------------------------------|---------|--------------|------------------------|--------------------------------|
| SON        | 1           | ROHTAS SON 4   | Riverbed                         | -       | 99.8         | 3233520                | 3233520                        |
|            |             | ROHTAS SON 5   |                                  |         | 86.4         | 2799360                | 2799360                        |
|            |             | ROHTAS SON 6   |                                  |         | 46.6         | 1509840                | 1509840                        |
| SON        | 2           | ROHTAS SON 8   |                                  |         | 96.5         | 3126600                | 3126600                        |
|            |             | ROHTAS SON 9   |                                  |         | 98.3         | 3184920                | 3184920                        |
|            |             | ROHTAS SON 10  |                                  |         | 98.95        | 3205980                | 3205980                        |
|            |             | ROHTAS SON 11  |                                  |         | 96.7         | 3133080                | 3133080                        |
|            |             | ROHTAS SON 12  |                                  |         | 89.96        | 2914704                | 2914704                        |
|            |             | ROHTAS SON 13  |                                  |         | 57.8         | 1872720                | 1872720                        |
| KOW        | 1           | ROHTAS KOW 04.1<br>ROHTAS KOW 04.2<br>ROHTAS KOW 04.3<br>ROHTAS KOW 04.4 | Riverbed                         | -       | 0.51         | 11016                  | 11016                          |
| THORA      | 1           | ROHTAS THORA 1.1<br>ROHTAS THORA 1.2<br>ROHTAS THORA 2                   | Riverbed                         | -       | 0.27         | 5832                   | 5832                           |

## Contiguous Clusters:

| River Name | Contiguous Cluster No. | Cluster No | Number Of Leases in the cluster | Location (Riverbed/ Patta Land) | Distance between clusters | Village | Area of Cluster (Ha) | Total Mineral Excavation (Ton) |
|------------|------------------------|------------|---------------------------------|---------------------------------|---------------------------|---------|----------------------|--------------------------------|
| SON        | Nil                    | Nil        | Nil                             | Nil                             | Nil                       | Nil     | Nil                  | Nil                            |
| KOW        | Nil                    | Nil        | Nil                             | Nil                             | Nil                       | Nil     | Nil                  | Nil                            |
| THORA      | Nil                    | Nil        | Nil                             | Nil                             | Nil                       | Nil     | Nil                  | Nil                            |





|                |                                       |   |    |      |         |         |             |                    |
|----------------|---------------------------------------|---|----|------|---------|---------|-------------|--------------------|
| ROHTAS KOW 01  | Road going towards Lilari & Bahaon    | 1 | NA | 0.74 | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS KOW 02  | Road going towards Suara              | 1 | NA | 0.5  | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS KOW 03  | Road going towards Bagah Khoh & Niman | 1 | NA | 0.28 | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS KOW 05  | Roads going Towards Reriya            | 1 | NA | 0.3  | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS KOW 06  | SH 15                                 | 1 | NA | 0.9  | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS KOW 07  | Road towards Nima                     | 1 | NA | 0.85 | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS Thora 3 | Road going towards Chhitni            | 1 | NA | 0.25 | Unpaved | Unpaved | Lease Owner | Route Map Attached |

| Cluster No. | Transportation Route No | Number of tippers /day of lease | Number of tippers /day of all the lease on route | Length of Route in KM | Type of Road (Black Topped/unpaved) | Recommendation for road (Black Topped/unpaved) | The road will be Constructed by Govt/ Lease Owner | Route Map & Location |
|-------------|-------------------------|---------------------------------|--|-----------------------|-------------------------------------|--|---|----------------------|
|-------------|-------------------------|---------------------------------|--|-----------------------|-------------------------------------|--|---|----------------------|

## Annexure-IV

## Transportation Routes for individual leases and leases in Cluster

| Lease No.     | Transportation Route No                                     | Number of tippers /dayof lease | Number of tippers /day of all the leaseon route | Length of Route in KM | Type of Road (Black Toppe d/unpaved) | Recommendation for road (Black Topped/unpaved) | The road will be Construc ted by Govt/ Lease Owner | Route Map & Locati on |
|---------------|---|--------------------------------|---|-----------------------|--------------------------------------|--|--|-----------------------|
| ROHTAS SON 1  | Road going towatds Nasirganj-Mangraon                       | 89                             | NA  | 0.24                  | Unpaved                              | Unpaved  | Lease Owner  | Route Map Attached    |
| ROHTAS SON 2  | Road going towards Nasirganj-Mangraon & Daudnagar-Nasibganj | 144                            | NA  | 1                     | Unpaved                              | Unpaved  | Lease Owner  | Route Map Attached    |
| ROHTAS SON 3  | Road going towards Daudnagar-Nasibganj                      | 363                            | NA  | 2                     | Unpaved                              | Unpaved  | Lease Owner  | Route Map Attached    |
| ROHTAS SON 7  | SII-15  | 494                            | NA  | 0.25                  | Unpaved                              | Unpaved  | Lease Owner  | Route Map Attached    |
| ROHTAS SON 14 | SII-15  | 169                            | NA  | 0.68                  | Unpaved                              | Unpaved  | Lease Owner  | Route Map Attached    |
| ROHTAS SON 15 | NH- 119   | 348                            | NA  | 1.85                  | Unpaved                              | Unpaved  | Lease Owner  | Route Map Attached    |
| ROHTAS SON 16 | NH- 119   | 431                            | NA  | 2.4                   | Unpaved                              | Unpaved  | Lease Owner  | Route Map Attached    |
| ROHTAS SON 17 | NH- 119   | 487                            | NA  | 2.5                   | Unpaved                              | Unpaved  | Lease Owner  | Route Map Attached    |



|  |                                       |       |     |                            |         |         |             |                    |                    |         |             |                    |
|--|---------------------------------------|-------|-----|----------------------------|---------|---------|-------------|--------------------|--------------------|---------|-------------|--------------------|
| ROHTAS SON 4   | Rohtas Son cluster 1                  | SH-15 | 499 | NA                         | 0.65    | Unpaved | Unpaved     | Lease Owner        | Route Map Attached |         |             |                    |
| ROHTAS SON 5   |                                       | SH-15 | 432 | NA                         | 0.8     | Unpaved | Unpaved     | Lease Owner        | Route Map Attached |         |             |                    |
| ROHTAS SON 6   |                                       | SH-15 | 233 | NA                         | 0.3     | Unpaved | Unpaved     | Lease Owner        | Route Map Attached |         |             |                    |
| ROHTAS SON 8   | Rohtas Son cluster 2                  | SH-15 | 483 | NA                         | 2.4     | Unpaved | Unpaved     | Lease Owner        | Route Map Attached |         |             |                    |
| ROHTAS SON 9   |                                       | SH-15 | 492 | NA                         | 2.4     | Unpaved | Unpaved     | Lease Owner        | Route Map Attached |         |             |                    |
| ROHTAS SON 10  |                                       | SH-15 | 495 | NA                         | 1.6     | Unpaved | Unpaved     | Lease Owner        | Route Map Attached |         |             |                    |
| ROHTAS SON 11  |                                       | SH-15 | 484 | NA                         | 1.3     | Unpaved | Unpaved     | Lease Owner        | Route Map Attached |         |             |                    |
| ROHTAS SON 12  |                                       | SH-15 | 450 | NA                         | 0.82    | Unpaved | Unpaved     | Lease Owner        | Route Map Attached |         |             |                    |
| ROHTAS SON 13  |                                       | SH-15 | 289 | NA                         | 0.88    | Unpaved | Unpaved     | Lease Owner        | Route Map Attached |         |             |                    |
| ROHTAS KOW 04.1<br>ROHTAS KOW 04.2<br>ROHTAS KOW 04.3<br>ROHTAS KOW 04.4 | Road Going towards Bagah Khoh & Niman | 6     | NA  | 0.55<br>0.8<br>0.1<br>0.84 | Unpaved | unpaved | Lease Owner | Route Map Attached |                    |         |             |                    |
| ROHTAS Thora 1.1<br>ROHTAS Thora 1.2<br>ROHTAS Thora 2                   | Road going towards, Kawai & Awadhi    | 3     | NA  | 0.34<br>0.14               |         |         |             |                    | Unpaved            | unpaved | Lease Owner | Route Map Attached |





### Final List of Potential Mining Leases (existing & proposed) Rivers

Annexure-V

#### EXISTING GHATS

| River Details | Lease Details     | Area (in Ha) | Distance (in KM) from PA/BR/WC / | Distance from Forest Area (in KM) | Mining leases within 500 meters (if yes cluster area) | Total excavation in Tonnes /Annum considering digging depth max as 3 meters | Mineral to be mined (Sand/Bajri / RBM etc.) | Existing / Proposed |
|---------------|-------------------|--------------|----------------------------------|-----------------------------------|---|---|---|---------------------|
| Son           | Amiyawar Ghat A   | 22.5         | NA                               | Approx. 24.88 km                  | NO  | 972000  | Sand  | Existing            |
| Son           | Amiyawar Ghat B   | 22.5         | NA                               | Approx. 23.06 km                  | NO  | 972000  | Sand  | Existing            |
| Son           | Mangrawan Ghat A  | 22.5         | NA                               | Approx. 35.83 km                  | NO  | 972000  | Sand  | Existing            |
| Son           | Mangrawan Ghat B  | 22.5         | NA                               | Approx. 37.10 km                  | NO  | 972000  | Sand  | Existing            |
| Son           | Sankarpura Ghat A | 24           | NA                               | Approx. 4.54 km                   | NO  | 1036800   | Sand  | Existing            |
| Son           | Sankarpura Ghat B | 24           | NA                               | Approx. 4.41 km                   | NO  | 1036800   | Sand  | Existing            |
| Son           | Darihat Ghat 3    | 24.8         | NA                               | Approx. 18.21 km                  | NO  | 1071360   | Sand  | Existing            |
| Son           | Kaithi Ghat       | 24           | NA                               | Approx. 40.09 km                  | NO  | 1036800   | Sand  | Existing            |
| Son           | Danwar Ghat       | 24           | NA                               | Approx. 42.84 km                  | NO  | 1036800   | Sand  | Existing            |
| Son           | Paruahara Ghat 2  | 24           | NA                               | Approx. 21.83 km                  | NO  | 1036800   | Sand  | Existing            |
| Son           | Katar Ghat        | 24.8         | NA                               | Approx. 5.90 km                   | NO  | 1071360   | Sand  | Existing            |
| Son           | Kerpa Ghat        | 24.8         | NA                               | Approx. 1.54 km                   | NO  | 1071360   | Sand  | Existing            |



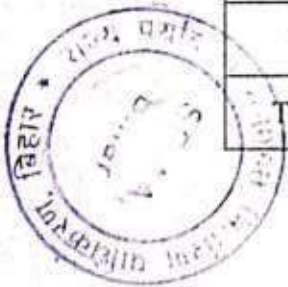
## PROPOSED GHATS

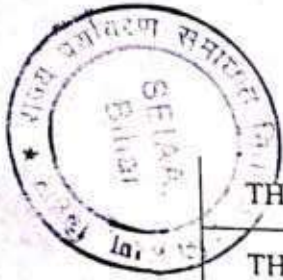
| River Details | Lease Details | Area (in Ha) | Distance (in KM) from PA/BR/WC / | Distance from Forest Area (in KM) | Mining leases within 500 meters (if yes cluster area) | Total excavation in Tonnes /Annum considering digging depth max as 3 meters | Mineral to be mined (Sand/Bajri / RBM etc.) | Existing / Proposed |
|---------------|---------------|--------------|----------------------------------|-----------------------------------|---|---|---|---------------------|
| SON           | ROHTAS SON 1  | 17.83        | NA                               | Approx. 35.80 km                  | No  | 577724.4  | Sand  | Proposed            |
| SON           | ROHTAS SON 2  | 28.7         | NA                               | Approx. 31.24 km                  | No  | 929880  | Sand  | Proposed            |
| SON           | ROHTAS SON 3  | 72.5         | NA                               | Approx. 27.40 km                  | No  | 2349000   | Sand  | Proposed            |
| SON           | ROHTAS SON 4  | 99.8         | NA                               | Approx. 24.83 km                  | Yes   | 3233520   | Sand  | Proposed            |
| SON           | ROHTAS SON 5  | 86.4         | NA                               | Approx. 23.48 km                  | Yes   | 2799360   | Sand  | Proposed            |
| SON           | ROHTAS SON 6  | 46.6         | NA                               | Approx. 23.00 km                  | Yes   | 1509840   | Sand  | Proposed            |
| SON           | ROHTAS SON 7  | 98.8         | NA                               | Approx. 21.97 km                  | No  | 3201120   | Sand  | Proposed            |
| SON           | ROHTAS SON 8  | 96.5         | NA                               | Approx. 17.38 km                  | Yes   | 3126600   | Sand  | Proposed            |
| SON           | ROHTAS SON 9  | 98.3         | NA                               | Approx. 15.68 km                  | Yes   | 3184920   | Sand  | Proposed            |
| SON           | ROHTAS SON 10 | 98.95        | NA                               | Approx. 14.57 km                  | Yes   | 3205980   | Sand  | Proposed            |
| SON           | ROHTAS SON 11 | 96.7         | NA                               | Approx. 13.47 km                  | Yes   | 3133080   | Sand  | Proposed            |

|       |                 |      |    |                  |    |         |      |          |
|-------|-----------------|------|----|------------------|----|---------|------|----------|
| Son   | Majhiao Ghat    | 24   | NA | Approx. 19.19 km | NO | 1036800 | Sand | Existing |
| Son   | Parubar Ghat    | 24.8 | NA | Approx. 20.06 km | NO | 1071360 | Sand | Existing |
| Son   | Chaknaha Ghat   | 24.8 | NA | Approx. 5.09 km  | NO | 1071360 | Sand | Existing |
| Son   | Hurka Ghat      | 24   | NA | Approx. 11.59 km | NO | 1036800 | Sand | Existing |
| Son   | Jarha Bigha 1   | 24   | NA | Approx. 2.86 km  | NO | 1036800 | Sand | Existing |
| Son   | Jarha Bigha 2   | 24.8 | NA | Approx. 2.85 km  | NO | 1071360 | Sand | Existing |
| Son   | Mahadeva 1 Ghat | 24   | NA | Approx. 33.40 km | NO | 1036800 | Sand | Existing |
| Son   | Ramdihra Ghat 1 | 24   | NA | Approx. 1.18 km  | NO | 1036800 | Sand | Existing |
| Kow   | Samri Ghat      | 1    | NA | Approx. 48.20 km | NO | 43200   | Sand | Existing |
| Kow   | Sadaudihra Ghat | 1.5  | NA | Approx. 41.68 km | NO | 64800   | Sand | Existing |
| Kow   | Gosaldih Ghat   | 1    | NA | Approx. 40.88 km | NO | 43200   | Sand | Existing |
| Thora | Jamsona Ghat    | 1    | NA | Approx. 46.18 km | NO | 43200   | Sand | Existing |
| SON   | DARIAHAT 2      | 4.8  | NA | Approx. 15.08 km | NO | 241883  | Sand | Existing |
| SON   | DARIAHAT 1      | 3.1  | NA | Approx. 13.95 km | NO | 150187  | Sand | Existing |
| SON   | DALMIANAGAR     | 4.9  | NA | Approx. 10.68 km | NO | 237010  | Sand | Existing |
| SON   | TILOUTHU        | 4.9  | NA | Approx. 4.58 km  | NO | 239550  | Sand | Existing |
| SON   | RAMDIHRA        | 15.5 | NA | Approx. 0.40 km  | NO | 739198  | Sand | Existing |
| SON   | MAHADEV         | 4.7  | NA | Approx. 34.45 km | NO | 222788  | Sand | Existing |



|       |                    |           |    |                     |                      |         |      |          |
|-------|--------------------|-----------|----|---------------------|----------------------|---------|------|----------|
| SON   | ROHTAS SON 12      | 89.9<br>6 | NA | Approx. 12.72<br>km | Yes                  | 2914704 | Sand | Proposed |
| SON   | ROHTAS SON 13      | 57.8      | NA | Approx. 12.29<br>km | Yes                  | 1872720 | Sand | Proposed |
| SON   | ROHTAS SON 14      | 33.7      | NA | Approx. 10.61<br>km | No                   | 1091880 | Sand | Proposed |
| SON   | ROHTAS SON 15      | 69.6      | NA | Approx. 6.64 km     | No                   | 2255040 | Sand | Proposed |
| SON   | ROHTAS SON 16      | 86.1      | NA | Approx. 6.02 km     | No                   | 2789640 | Sand | Proposed |
| SON   | ROHTAS SON 17      | 97.4      | NA | Approx. 5.23 km     | No                   | 3155760 | Sand | Proposed |
| KOW   | ROHTAS KOW 01      | 0.03      | NA | Approx. 11.37<br>km | No                   | 648     | Sand | Proposed |
| KOW   | ROHTAS KOW 02      | 0.06      | NA | Approx. 13.42<br>km | No                   | 1296    | Sand | Proposed |
| KOW   | ROHTAS KOW 03      | 0.09      | NA | Approx. 14.52<br>km | No                   | 1944    | Sand | Proposed |
| KOW   | ROHTAS KOW<br>04.1 | 0.08      | NA | Approx. 15.0 km     | Yes, Area 0.51<br>Ha | 1728    | Sand | Proposed |
| KOW   | ROHTAS KOW<br>04.2 | 0.04      | NA | Approx. 15.10<br>km |                      | 864     | Sand | Proposed |
| KOW   | ROHTAS KOW<br>04.3 | 0.36      | NA | Approx. 15.19<br>km |                      | 7776    | Sand | Proposed |
| KOW   | ROHTAS KOW<br>04.4 | 0.03      | NA | Approx. 15.55<br>km |                      | 648     | Sand | Proposed |
| KOW   | ROHTAS KOW 05      | 0.01      | NA | Approx. 34.77<br>km | No                   | 216     | Sand | Proposed |
| KOW   | ROHTAS KOW 06      | 0.03      | NA | Approx. 34.93<br>km | No                   | 648     | Sand | Proposed |
| KOW   | ROHTAS KOW 07      | 0.02      | NA | Approx. 42.16<br>km | No                   | 432     | Sand | Proposed |
| THORA | ROHTAS Thora 1.1   | 0.07      | NA | Approx. 45.94<br>km | Yes, Area 0.27<br>Ha | 1512    | Sand | Proposed |





|       |                  |      |    |                  |    |      |      |          |
|-------|------------------|------|----|------------------|----|------|------|----------|
| THORA | ROHTAS Thora 1.2 | 0.02 | NA | Approx. 45.95 km |    | 432  | Sand | Proposed |
| THORA | ROHTAS Thora 2   | 0.18 | NA | Approx. 45.85 km |    | 3888 | Sand | Proposed |
| THORA | ROHTAS Thora 3   | 0.03 | NA | Approx. 44.92 km | No | 648  | Sand | Proposed |

**Patta Lands/Khatedari Land: (existing & proposed)**

| Owner | Sy. No | Area | District | Tehsil | Village | Total Reserve (MT) | Total Mineral to be mined (MT) | Existing /Proposed |
|-------|--------|------|----------|--------|---------|--------------------|--------------------------------|--------------------|
| None  | Nil    | Nil  | Nil      | Nil    | Nil     | Nil                | Nil                            | Nil                |

**De-Siltation Location :( Lakes/Ponds/Dams etc) (Existing&proposed)**

| Name of Reservoir /Dams | Maintain /Controlled by State Govt./PSU etc. | Location | District | Tehsil | Village | Size (Ha) | Quantity MT /Year | Existing /Proposed |
|-------------------------|--|----------|----------|--------|---------|-----------|-------------------|--------------------|
| None                    | Nil  | Nil      | Nil      | Nil    | Nil     | Nil       | Nil               | Nil                |

**M-Sand Plants :( existing & proposed)**

| Plant Name | Chemical | District | Block | Village | Geo. location | Quantity<br>Tonnes/<br>Annun | Recting/<br>Proposed |
|------------|----------|----------|-------|---------|---------------|------------------------------|----------------------|
| None       | Nil      | Nil      | Nil   | Nil     | Nil           | Nil                          | None                 |



## Annexure VI

## Final Cluster &amp; Contiguous Cluster details

**Clusters:**

| River Name | Cluster No. | Lease No   | Location (Riverbed / Patta Land) | Village | Area (in Ha)                                   | Total Excavation (Ton)   | Total Mineral Excavation (Ton)                                 |
|------------|-------------|--|----------------------------------|---------|--|--|--|
| SON        | 1           | ROHTAS SON 4<br>ROHTAS SON 5<br>ROHTAS SON 6   | Riverbed                         | -       | 99.8<br>86.4<br>46.6                           | 3233520<br>2799360<br>1509840                                  | 3233520<br>2799360<br>1509840                                  |
| SON        | 2           | ROHTAS SON 8<br>ROHTAS SON 9<br>ROHTAS SON 10<br>ROHTAS SON 11<br>ROHTAS SON 12<br>ROHTAS SON 13 | Riverbed                         | -       | 96.5<br>98.3<br>98.95<br>96.7<br>89.96<br>57.8 | 3126600<br>3184920<br>3205980<br>3133080<br>2914704<br>1872720 | 3126600<br>3184920<br>3205980<br>3133080<br>2914704<br>1872720 |
| KOW        | 1           | ROHTAS KOW 04.1<br>ROHTAS KOW 04.2<br>ROHTAS KOW 04.3<br>ROHTAS KOW 04.4                         | Riverbed                         | -       | 0.51   | 11016  | 11016  |
| THORA      | 1           | ROHTAS THORA 1.1<br>ROHTAS THORA 1.2<br>ROHTAS THORA 2   | Riverbed                         | -       | 0.27   | 5832   | 5832   |

## Contiguous Clusters:

| River Name | Contiguous Cluster No. | Cluster No | Number Of Leases in the cluster | Location (Riverbed/ Patta Land) | Distance between clusters | Village | Area of Cluster ( Ha) | Total Mineral Excavation (Ton) |
|------------|------------------------|------------|---------------------------------|---------------------------------|---------------------------|---------|-----------------------|--------------------------------|
| SON        | Nil                    | Nil        | Nil                             | Nil                             | Nil                       | Nil     | Nil                   | Nil                            |
| KOW        | Nil                    | Nil        | Nil                             | Nil                             | Nil                       | Nil     | Nil                   | Nil                            |
| THORA      | Nil                    | Nil        | Nil                             | Nil                             | Nil                       | Nil     | Nil                   | Nil                            |



|                |                                       |   |    |      |         |         |             |                    |
|----------------|---------------------------------------|---|----|------|---------|---------|-------------|--------------------|
| ROHTAS KOW 01  | Road going towards Lilari & Bahaon    | 1 | NA | 0.74 | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS KOW 02  | Road going towards Suara              | 1 | NA | 0.5  | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS KOW 03  | Road going towards Bagah Khoh & Niman | 1 | NA | 0.28 | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS KOW 05  | Roads going Towards Reriya            | 1 | NA | 0.3  | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS KOW 06  | SH 15                                 | 1 | NA | 0.9  | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS KOW 07  | Road towards Nima                     | 1 | NA | 0.85 | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS Thora 3 | Road going towards Chhitni            | 1 | NA | 0.25 | Unpaved | Unpaved | Lease Owner | Route Map Attached |



| Cluster No. | Transportation Route No | Number of tippers /day of lease | Number of tippers /day of all the lease on route | Length of Route in KM | Type of Road (Black Topped/unpaved) | Recommendation for road (Black Topped/unpaved) | The road will be Constructed by Govt/ Lease Owner | Route Map & Location |
|-------------|-------------------------|---------------------------------|--|-----------------------|-------------------------------------|--|---|----------------------|
|-------------|-------------------------|---------------------------------|--|-----------------------|-------------------------------------|--|---|----------------------|

## Annexure-VII

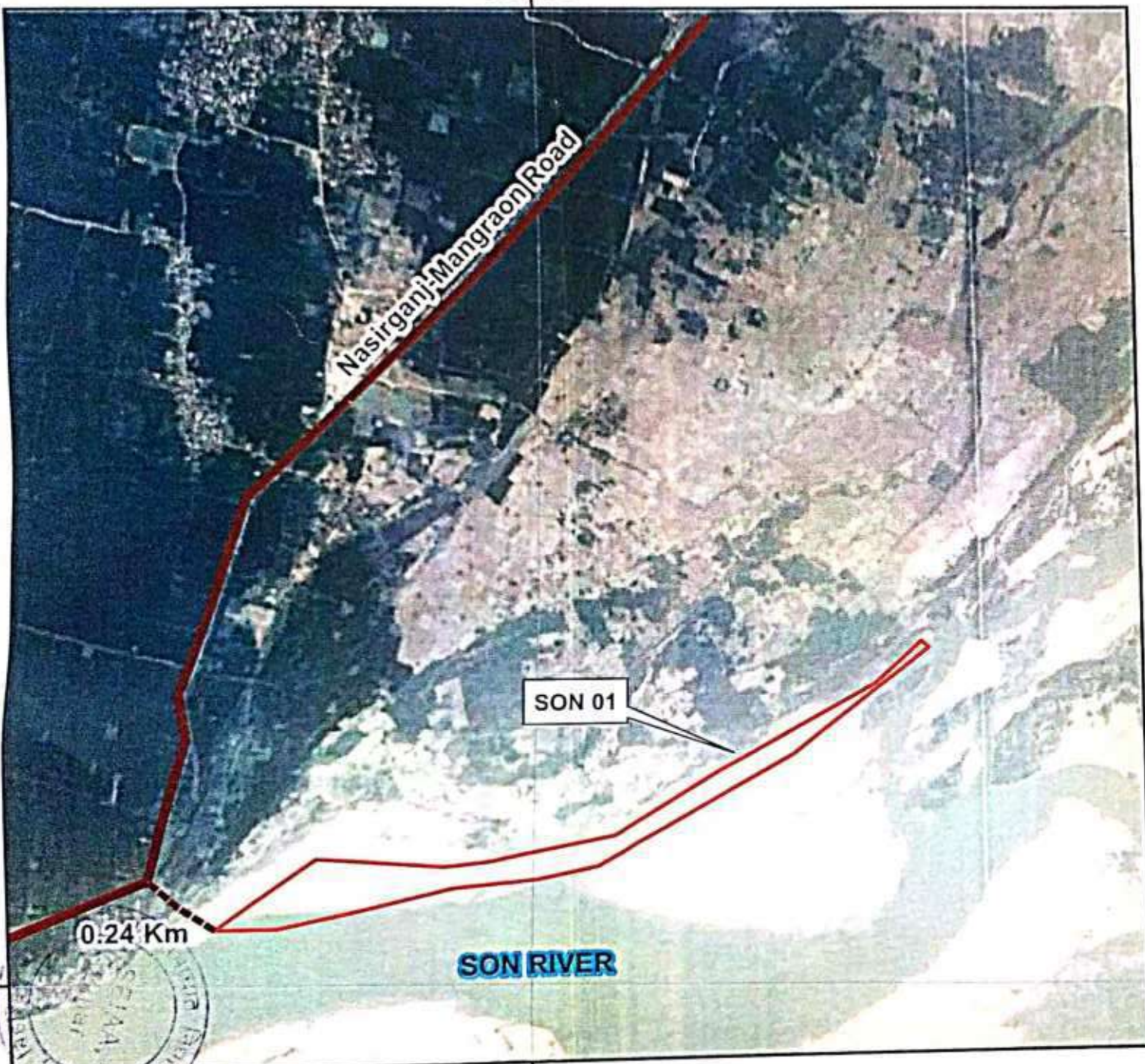
## Final Transportation Routes for individual leases and leases in Cluster

| Lease No.     | Transportation Route No                                     | Number of tippers /dayof lease | Number of tippers /day of all the leaseon route | Length of Route in KM | Type of Road (Black Toppe d/unpaved) | Recommend ation for road (Black Topped/ unpaved) | The road will be Construc ted by Govt/ Lease Owner | Route Map & Locati on |
|---------------|---|--------------------------------|---|-----------------------|--------------------------------------|--|--|-----------------------|
| ROHTAS SON 1  | Road going towatds Nasirganj-Mangraon                       | 89                             | NA  | 0.24                  | Unpaved                              | Unpaved  | Lease Owner  | Route Map Attached    |
| ROHTAS SON 2  | Road going towards Nasirganj-Mangraon & Daudnagar-Nasibganj | 144                            | NA  | 1                     | Unpaved                              | Unpaved  | Lease Owner  | Route Map Attached    |
| ROHTAS SON 3  | Road going towards Daudnagar-Nasibganj                      | 363                            | NA  | 2                     | Unpaved                              | Unpaved  | Lease Owner  | Route Map Attached    |
| ROHTAS SON 7  | SH-15   | 494                            | NA  | 0.25                  | Unpaved                              | Unpaved  | Lease Owner  | Route Map Attached    |
| ROHTAS SON 14 | SH-15   | 169                            | NA  | 0.68                  | Unpaved                              | Unpaved  | Lease Owner  | Route Map Attached    |
| ROHTAS SON 15 | NH- 119   | 348                            | NA  | 1.85                  | Unpaved                              | Unpaved  | Lease Owner  | Route Map Attached    |
| ROHTAS SON 16 | NH- 119   | 431                            | NA  | 2.4                   | Unpaved                              | Unpaved  | Lease Owner  | Route Map Attached    |
| ROHTAS SON 17 | NH- 119   | 487                            | NA  | 2.5                   | Unpaved                              | Unpaved  | Lease Owner  | Route Map Attached    |



|  |                                       |       |     |                            |         |         |             |                    |                    |         |             |                    |
|--|---------------------------------------|-------|-----|----------------------------|---------|---------|-------------|--------------------|--------------------|---------|-------------|--------------------|
| ROHTAS SON 4   | Rohtas Son Cluster 1                  | SH-15 | 499 | NA                         | 0.65    | Unpaved | Unpaved     | Lease Owner        | Route Map Attached |         |             |                    |
| ROHTAS SON 5   |                                       | SH-15 | 432 | NA                         | 0.8     | Unpaved | Unpaved     | Lease Owner        | Route Map Attached |         |             |                    |
| ROHTAS SON 6   |                                       | SH-15 | 233 | NA                         | 0.3     | Unpaved | Unpaved     | Lease Owner        | Route Map Attached |         |             |                    |
| ROHTAS SON 8   | Rohtas Son Cluster 2                  | SH-15 | 483 | NA                         | 2.4     | Unpaved | Unpaved     | Lease Owner        | Route Map Attached |         |             |                    |
| ROHTAS SON 9   |                                       | SH-15 | 492 | NA                         | 2.4     | Unpaved | Unpaved     | Lease Owner        | Route Map Attached |         |             |                    |
| ROHTAS SON 10  |                                       | SH-15 | 495 | NA                         | 1.6     | Unpaved | Unpaved     | Lease Owner        | Route Map Attached |         |             |                    |
| ROHTAS SON 11  |                                       | SH-15 | 484 | NA                         | 1.3     | Unpaved | Unpaved     | Lease Owner        | Route Map Attached |         |             |                    |
| ROHTAS SON 12  |                                       | SH-15 | 450 | NA                         | 0.82    | Unpaved | Unpaved     | Lease Owner        | Route Map Attached |         |             |                    |
| ROHTAS SON 13  |                                       | SH-15 | 289 | NA                         | 0.88    | Unpaved | Unpaved     | Lease Owner        | Route Map Attached |         |             |                    |
| ROHTAS KOW 04.1<br>ROHTAS KOW 04.2<br>ROHTAS KOW 04.3<br>ROHTAS KOW 04.4 | Road Going towards Bagah Khoh & Niman | 6     | NA  | 0.55<br>0.8<br>0.1<br>0.84 | Unpaved | unpaved | Lease Owner | Route Map Attached |                    |         |             |                    |
| ROHTAS Thora 1.1<br>ROHTAS Thora 1.2<br>ROHTAS Thora 2                   | Road going towards, Kawai & Awadhi    | 3     | NA  | 0.34<br>0.14               |         |         |             |                    | Unpaved            | unpaved | Lease Owner | Route Map Attached |





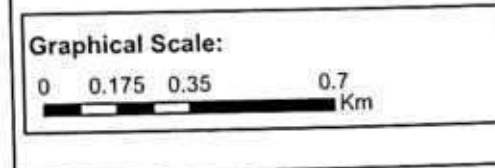
**HAUL ROAD MAP  
OF THE PROJECT SITE**

**Legend**

- Mining Site
- Haul Road
- Metalled Road

**Project: ROHTAS SON 01  
Sand Mining Project at Son River  
Area: 17.8 HA**

**Source: Google Earth Image**



25°4'0"N

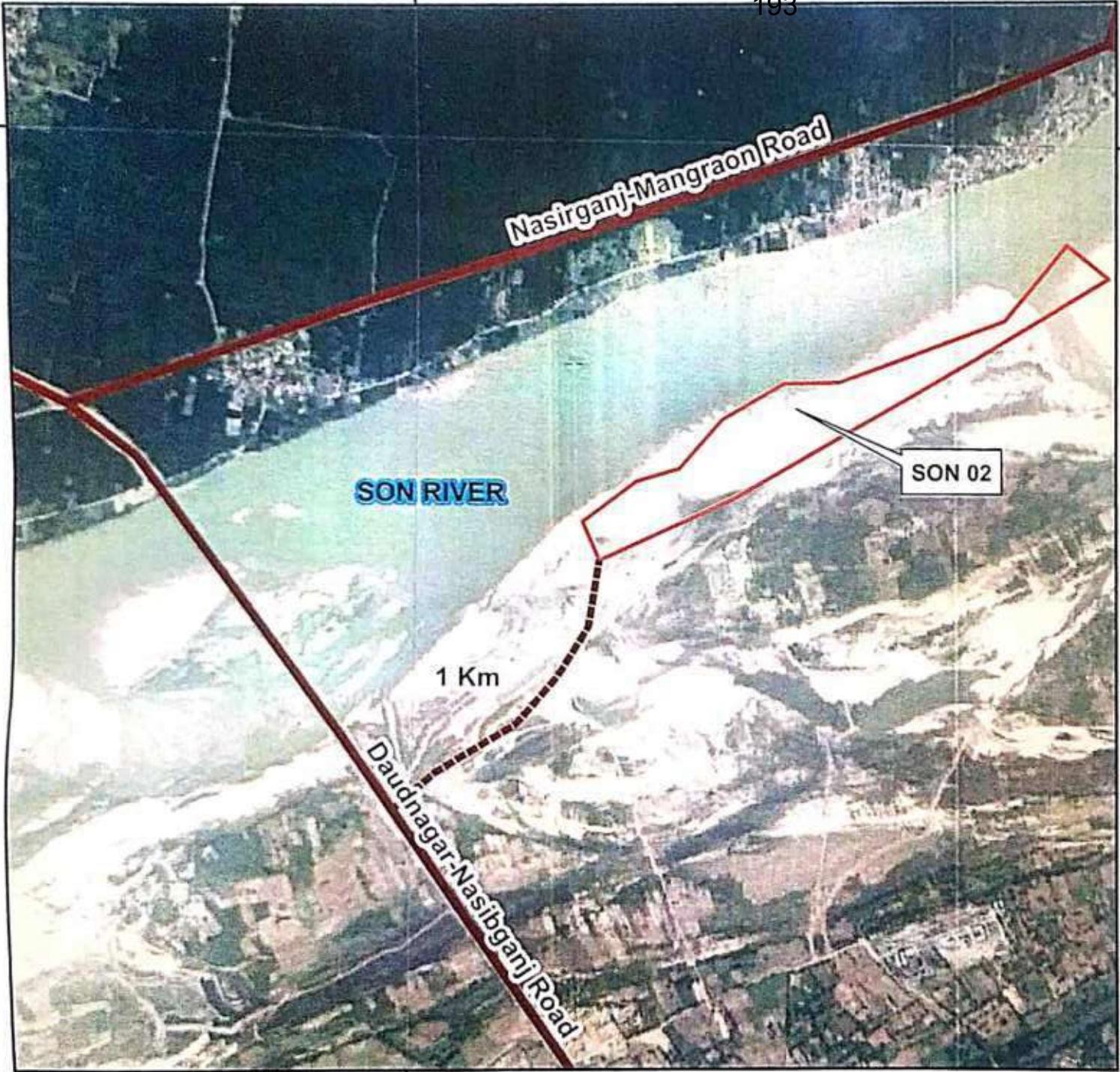
25°4'0"N

25°40'N

84°22'0"E




193

198



**HAUL ROAD MAP  
OF THE PROJECT SITE**

**Legend**

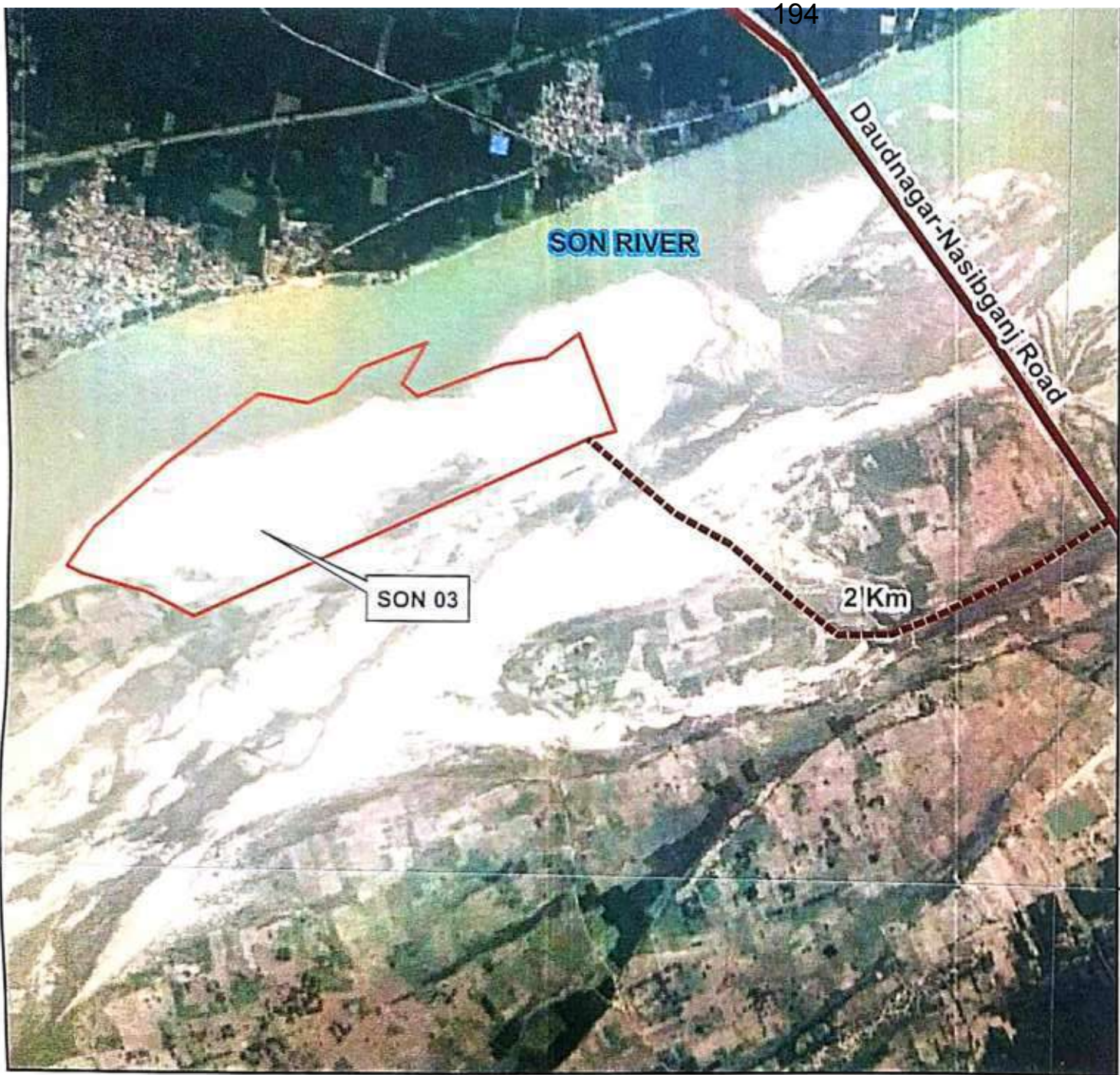
-  Mining Site
-  Haul Road
-  Metalled Road

Project: ROHTAS SON 02  
Sand Mining Project at Son River  
Area: 28.7 HA

Source: Google Earth Image



84°22'0"E



194



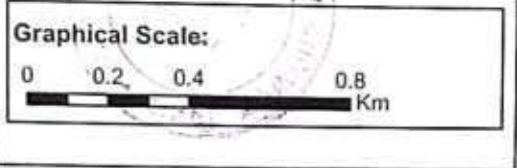
**HAUL ROAD MAP OF THE PROJECT SITE**

**Legend**

- Mining Site
- Haul Road
- Metalled Road

Project: ROHTAS SON 03  
 Sand Mining Project at Son River  
 Area: 72.5 HA

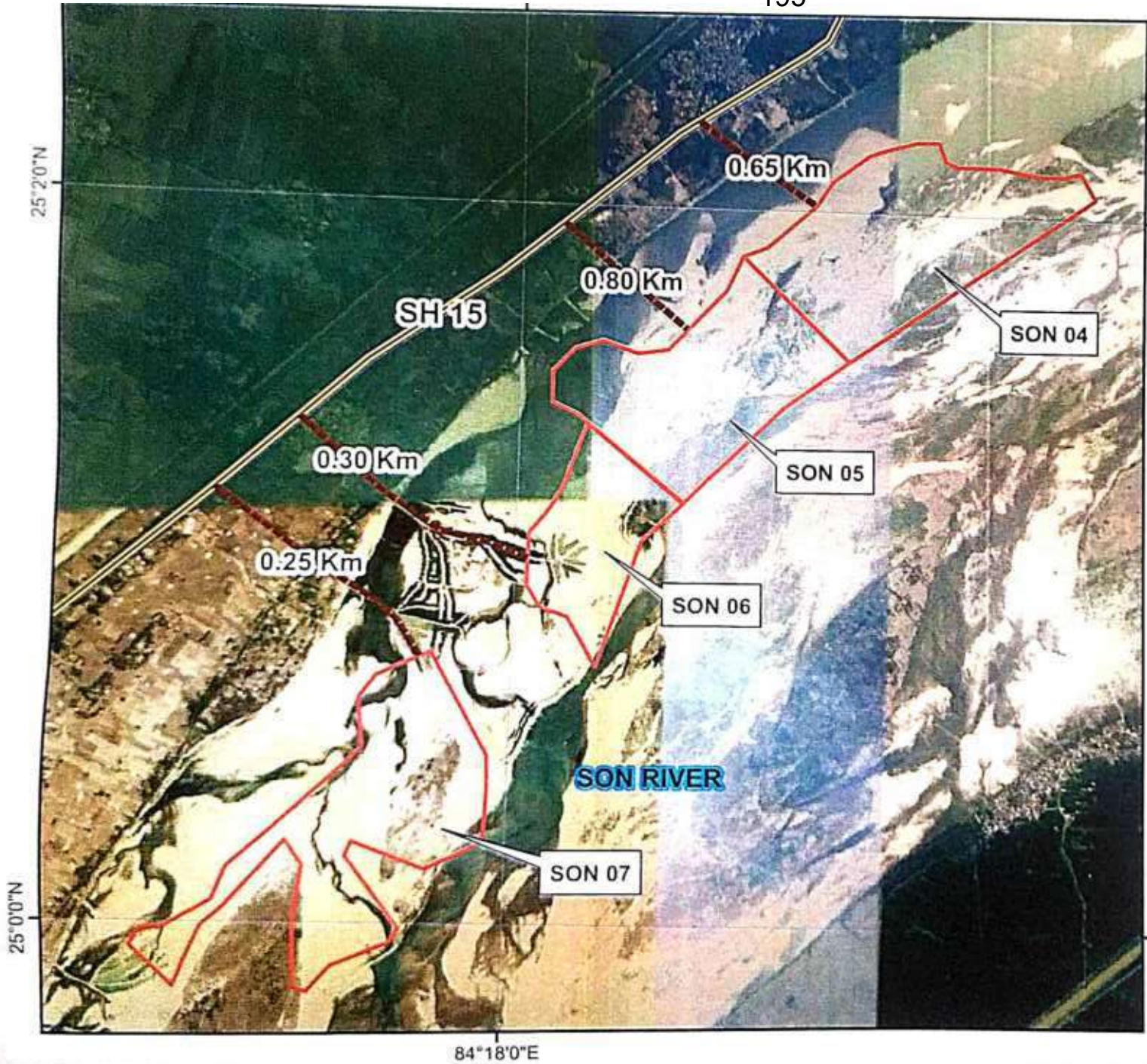
Source: Google Earth Image



25°20'N

25°20'N

84°22'0"E





**HAUL ROAD MAP OF THE PROJECT SITE**

**Legend**

- Mining Site
- Haul Road
- Metalled Road

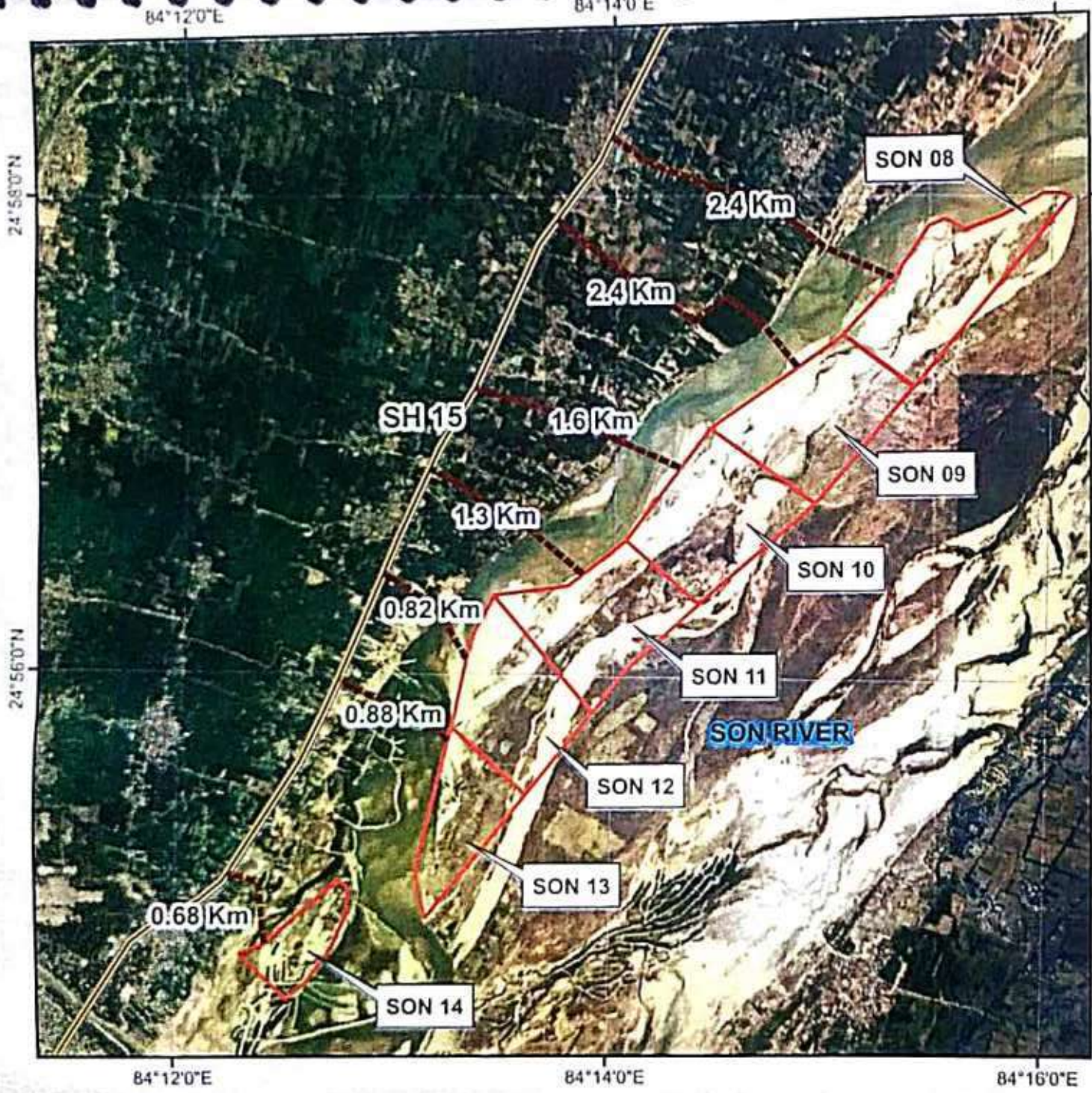
Project: ROHTAS SON 04 to 07  
Sand Mining Project at Son River

Source: Google Earth Image

Graphical Scale:



0 1.2 Km



**HAUL ROAD MAP OF THE PROJECT SITE**

**Legend**

- Mining Site
- Haul Road
- Metalled Road
- Highway

Project: ROHTAS SON 08 to 14 Sand Mining Project at Son River



Source: Google Earth Image

**Graphical Scale:**





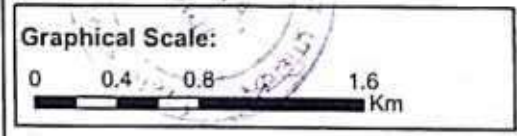
**HAUL ROAD MAP OF THE PROJECT SITE**

**Legend**

- Mining Site
- Haul Road
- Metalled Road
- Highway

**Project: ROHTAS SON 15 to 17 Sand Mining Project at Son River**

Source: Google Earth Image





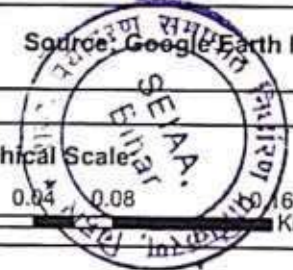
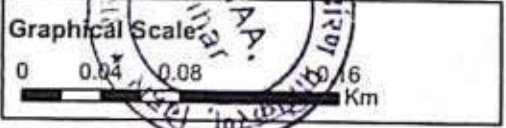
**HAUL ROAD MAP OF THE PROJECT SITE**

**Legend**

- Mining Site
- Haul Road
- Metalled Road

Project: ROHTAS KAW 1  
 Sand Mining Project at Kaw River  
 Area: 0.03 HA

Source: Google Earth Image





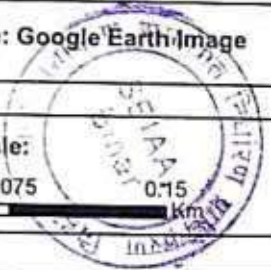
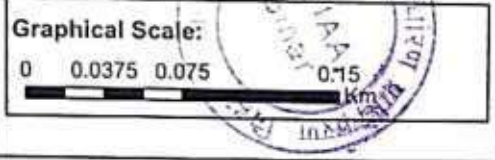
**HAUL ROAD MAP OF THE PROJECT SITE**

**Legend**

- Mining Site
- Haul Road
- Metalled Road

Project: ROHTAS KAW 2  
 Sand Mining Project at Kaw River  
 Area: 0.06 HA

Source: Google Earth Image





25°2'0"N

25°2'0"N

84°12'0"E



**HAUL ROAD MAP  
OF THE PROJECT SITE**

**Legend**

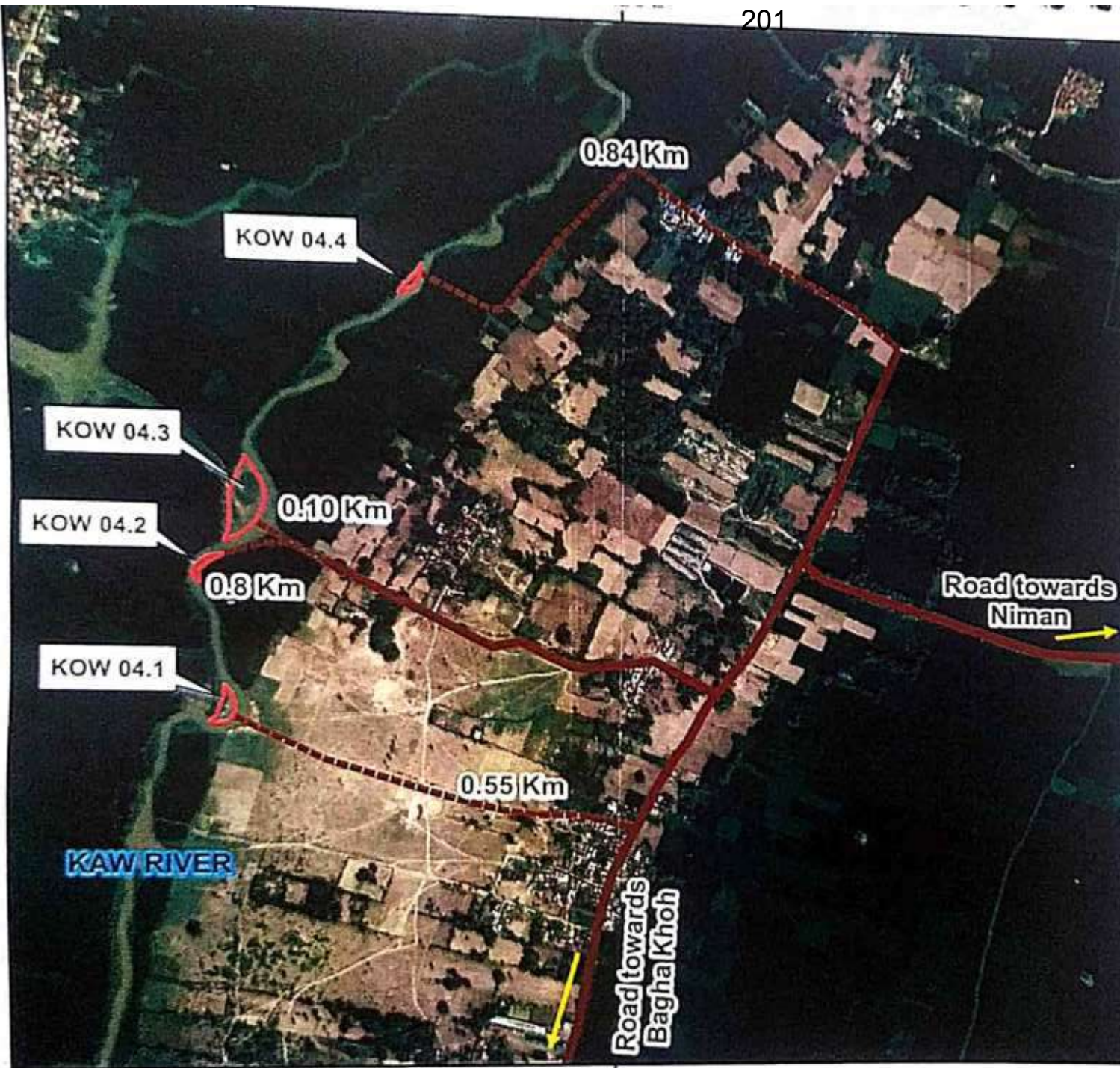
- Mining Site
- Haul Road
- Metalled Road

Project: ROHTAS KAW 3  
Sand Mining Project at Kaw River  
Area: 0.09 HA

Source: Google Earth Image

**Graphical Scale:**





84°12'0"E



**HAUL ROAD MAP OF THE PROJECT SITE**

**Legend**

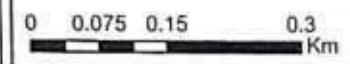
- Mining Site
- Haul Road
- Metalled Road

Project: ROHTAS KAW 04.1, 04.2, 04.3, 04.4 Sand Mining Project at Kaw River

Source: Google Earth Image



**Graphical Scale:**



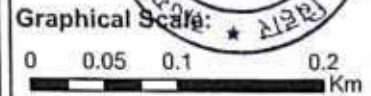


**HAUL ROAD MAP  
OF THE PROJECT SITE**

**Legend**

- Mining Site
- Haul Road
- Metalled Road

Project: ROHTAS KAW 5  
Sand Mining Project  
at Kaw River  
Area- 0.01 Ha





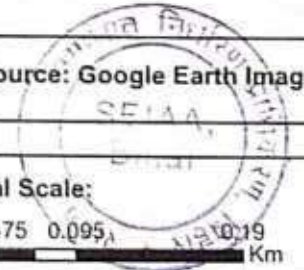
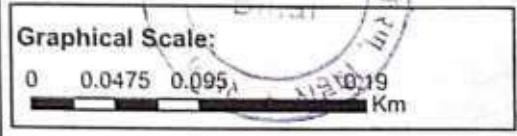
**HAUL ROAD MAP OF THE PROJECT SITE**

**Legend**

- Mining Site
- Haul Road
- Metalled Road
- Highway

Project: ROHTAS KAW 6  
 Sand Mining Project at Kaw River  
 Area- 0.03 Ha

Source: Google Earth Image





**HAUL ROAD MAP OF THE PROJECT SITE**

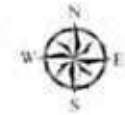
**Legend**

- Mining Site
- Haul Road
- Metalled Road
- Highway

Project: ROHTAS KAW 7  
 Sand Mining Project at Kaw River  
 Area- 0.02 Ha

Source: Google Earth Image  
 Eihar





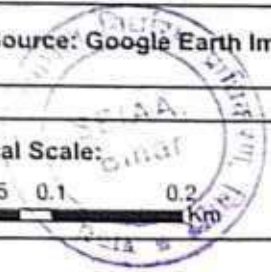
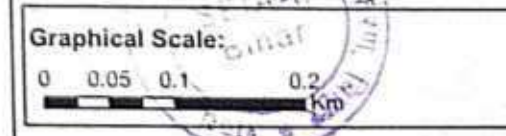
**HAUL ROAD MAP OF THE PROJECT SITE**

**Legend**

- Mining Site
- Haul Road
- Metalled Road
- Highway

Project: ROHTAS THORA 01.1, 1.2, 2  
Sand Mining Project at Thora River

Source: Google Earth Image





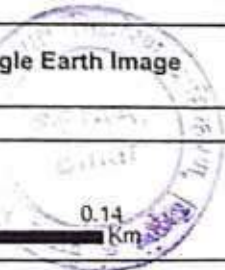
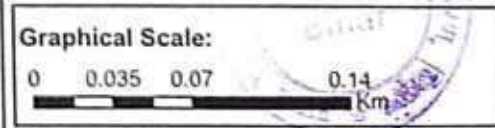
**HAUL ROAD MAP OF THE PROJECT SITE**

**Legend**

- Mining Site
- Haul Road
- Metalled Road
- Highway

Project: ROHTAS THORA 3  
Sand Mining Project at Thora River

Source: Google Earth Image





## **Annexure -XIV**

**(Letter to FMISC (Flood Management Improvement Support Center), a R&D unit under WRD (Water Resource Department) at Anishabad regarding requirement of high-resolution satellite maps of river systems of Bihar)**

जिला खनन कार्यालय, रोहतास (सासाराम)

To,  
The Member Secretary,  
State Environment Impact Assessment Authority,  
Patna, Bihar

**Sub: Regarding Procurement of geo-referenced maps of the river to support DSR.**

Dear Sir,

With reference to the above mentioned subject, we would like to inform you that, SEAC during its meeting held on dated 25-03-2022 has directed the District Authorities to contact the office of FMISC for procurement of geo-referenced maps of the river to support the DSR.

In this connection, we have contacted the FMISC for procurement of the aforesaid map, but we have not obtained the Map so far.

Further we would like to bring to your notice that we have provided ESRI BASE MAP (Pre- Monsoon) having resolution 5 M & FCC-USGLANDSET 8 (Post-Monsoon) having resolution 30 M in the DSR.

These Maps have high resolution and may be used in place of FMISC Maps.

We request you to kindly consider the same and do the needful.

Thanking you

Yours faithfully

*Handwritten signature*  
20/3/22

M. D. O.  
Rohatoo



## **Plate 1**

**(Plate showing sandbars in pre-monsoon & post  
monsoon)**



District Survey Report  
Rohtas, Bihar

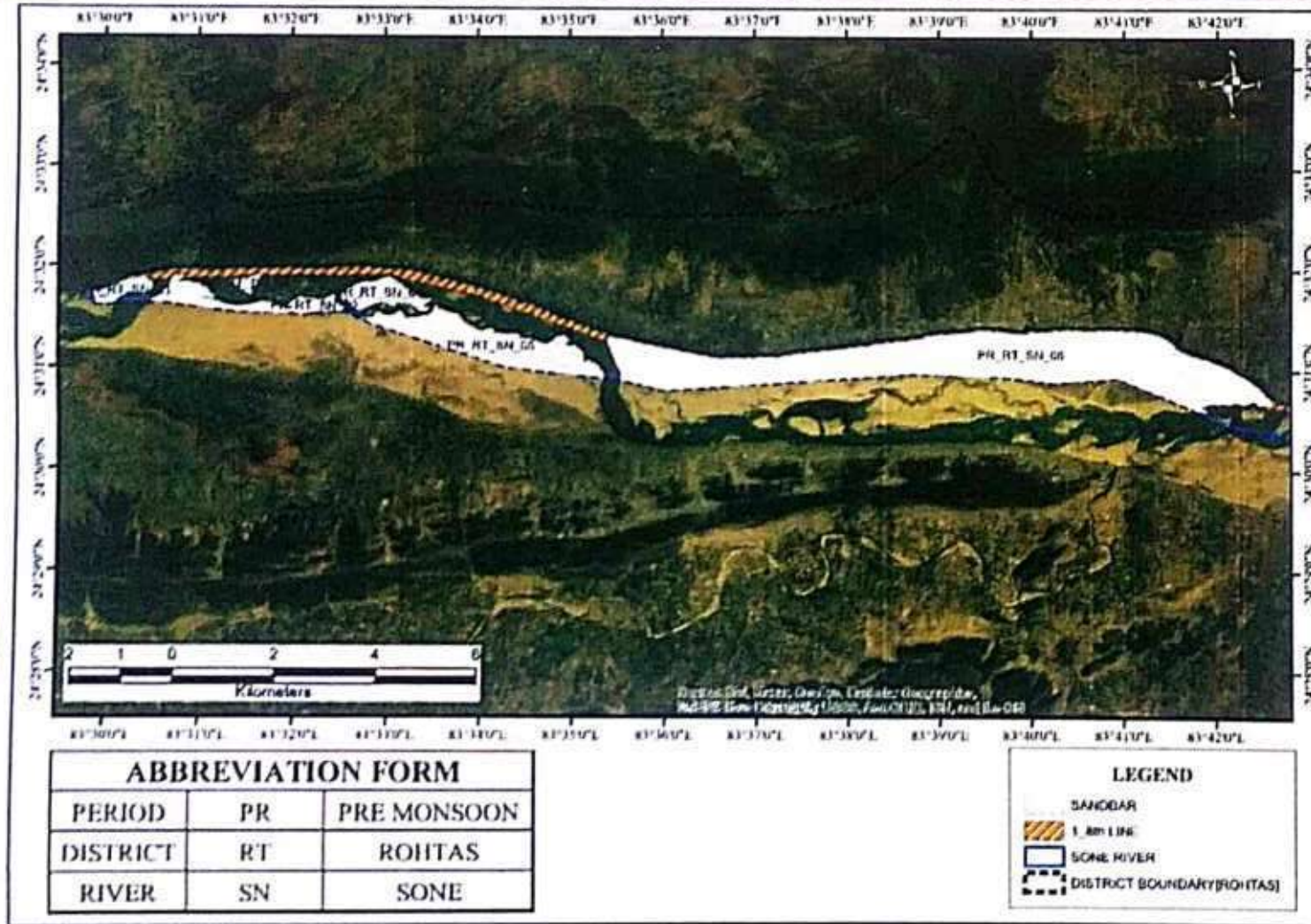


Plate No. 1A: Plate showing sandbars in pre-monsoon of Sone River

District Survey Report  
Rohtas, Bihar

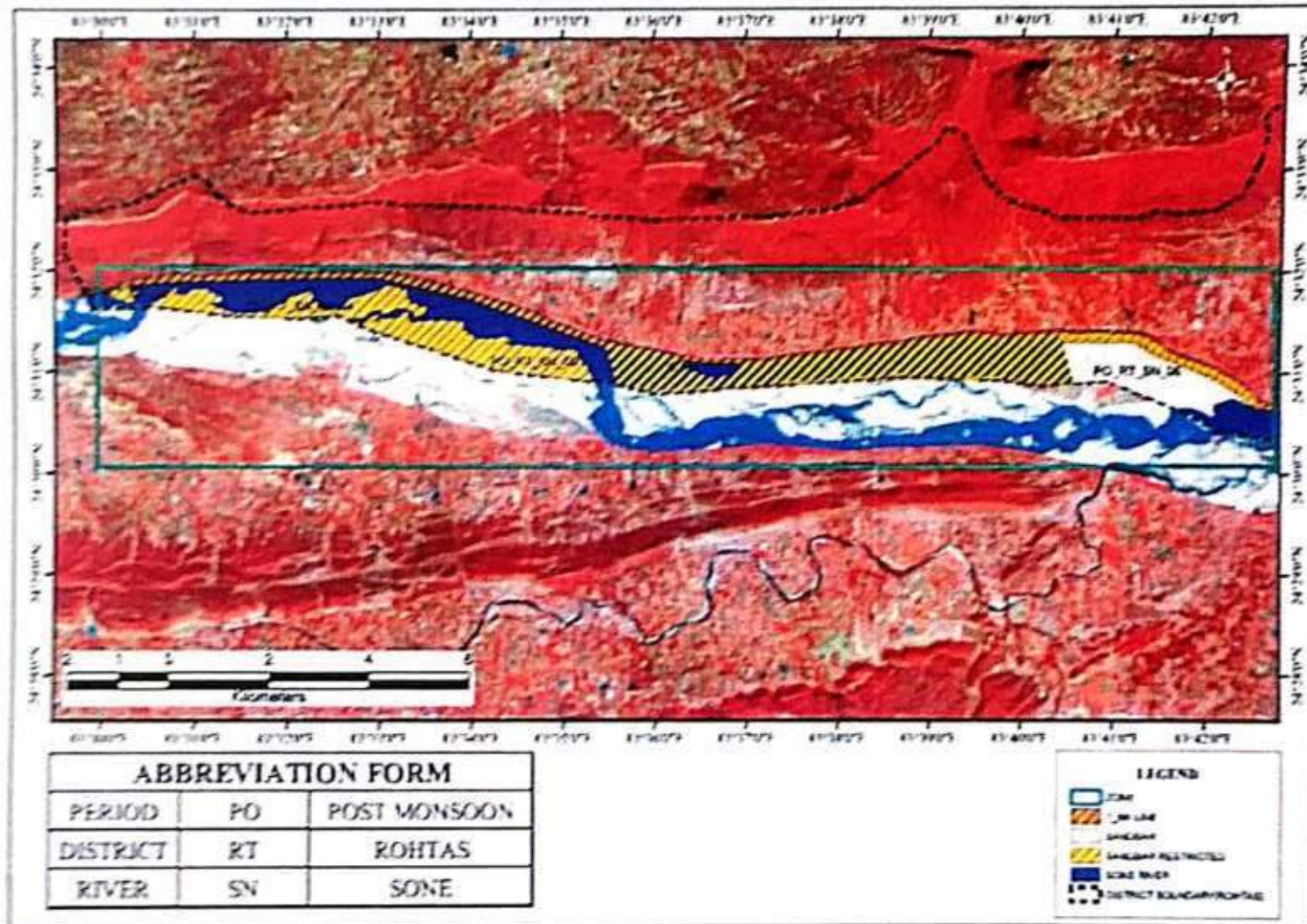


Plate No. 1A': Plate showing potential Zone in post-monsoon of Sone River

District Survey Report  
Rohtas, Bihar

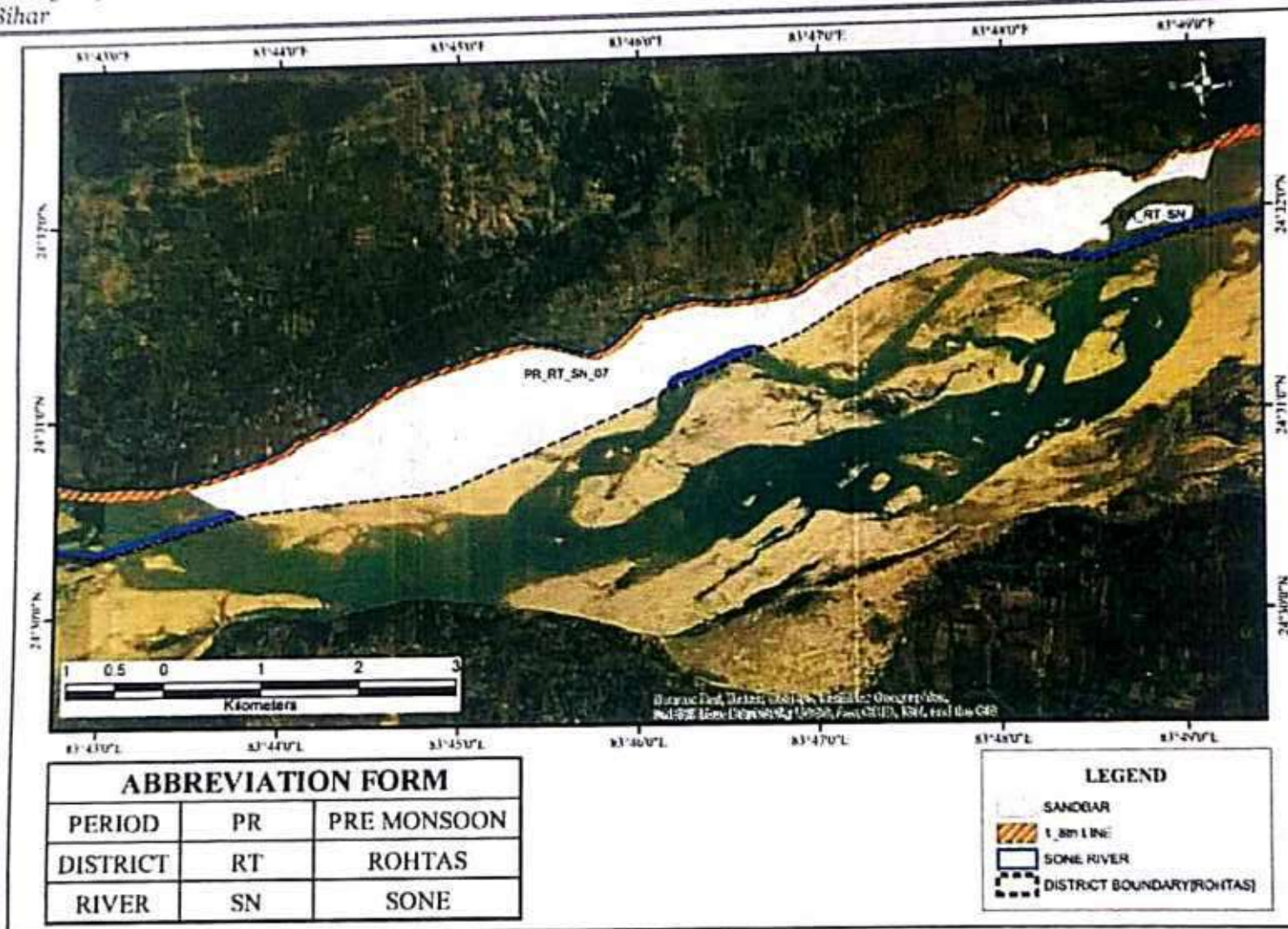


Plate No. 1B: Plate showing sandbars in pre-monsoon of Sone River

District Survey Report  
Rohtas, Bihar

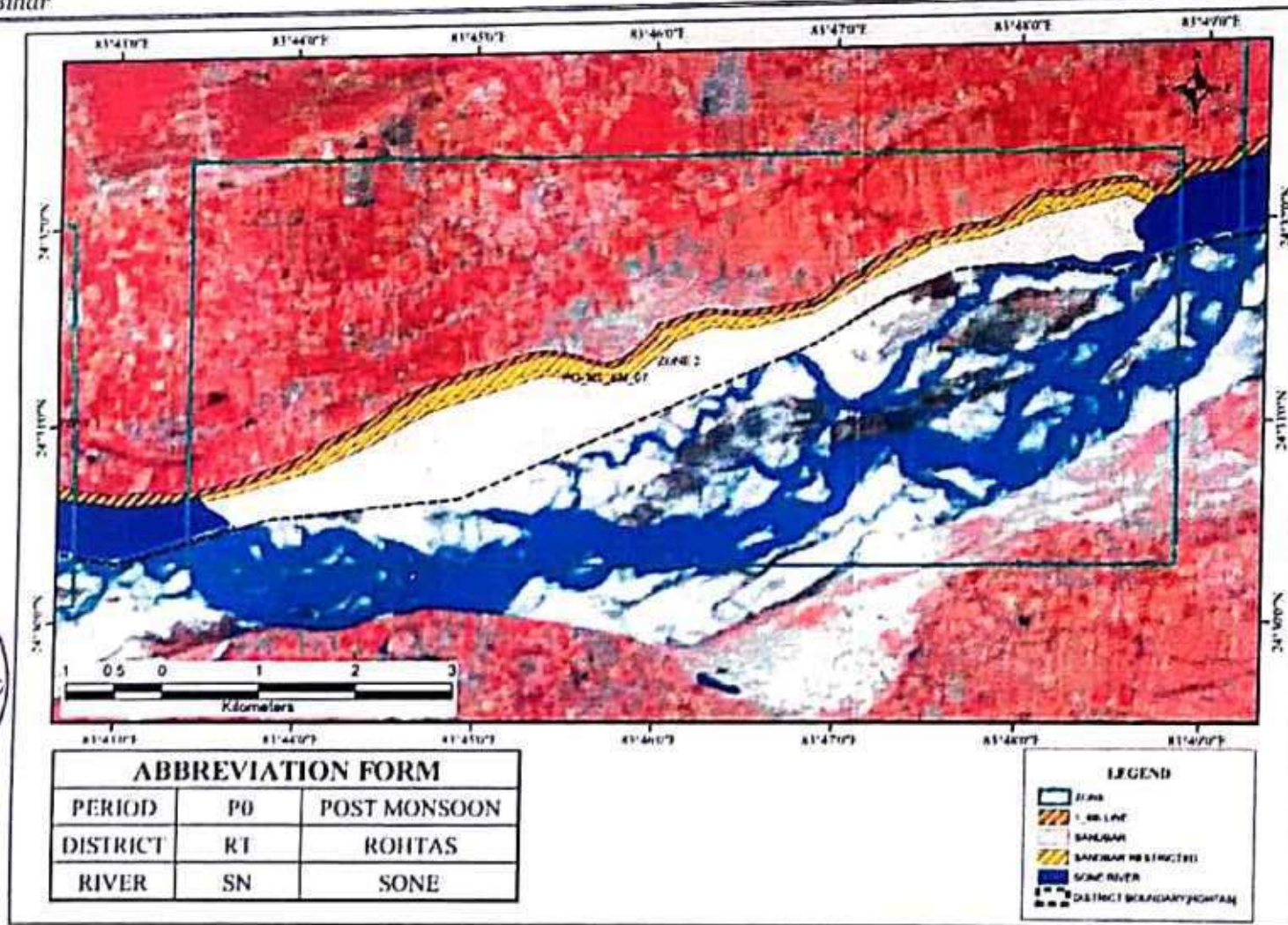


Plate No. 1B': Plate showing potential Zone in post-monsoon of Sone River

District Survey Report  
Rohtas, Bihar

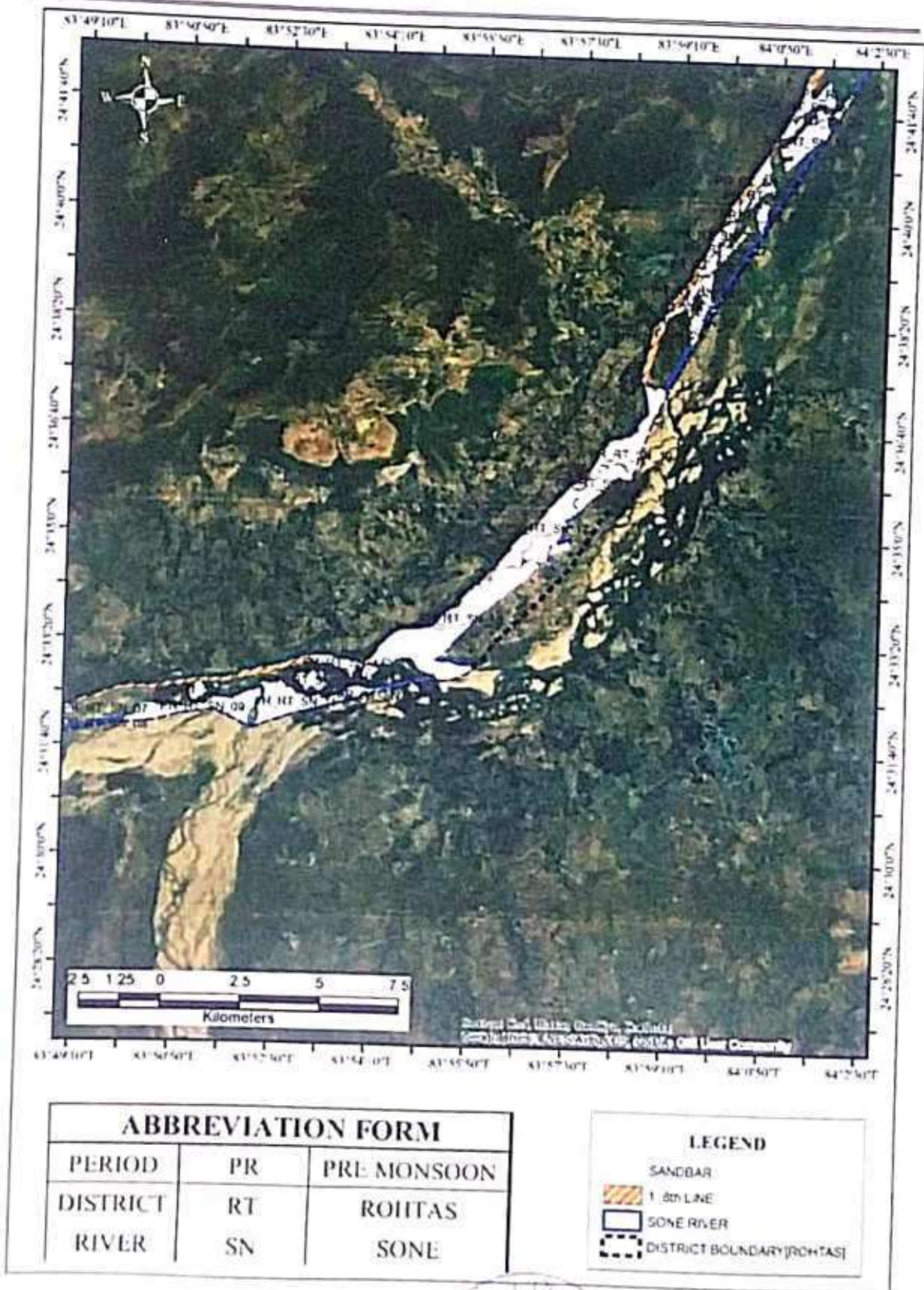
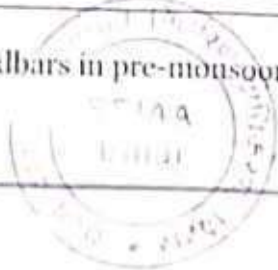


Plate No. 1C: Plate showing sandbars in pre-monsoon of Sone River



District Survey Report  
Rohtas, Bihar

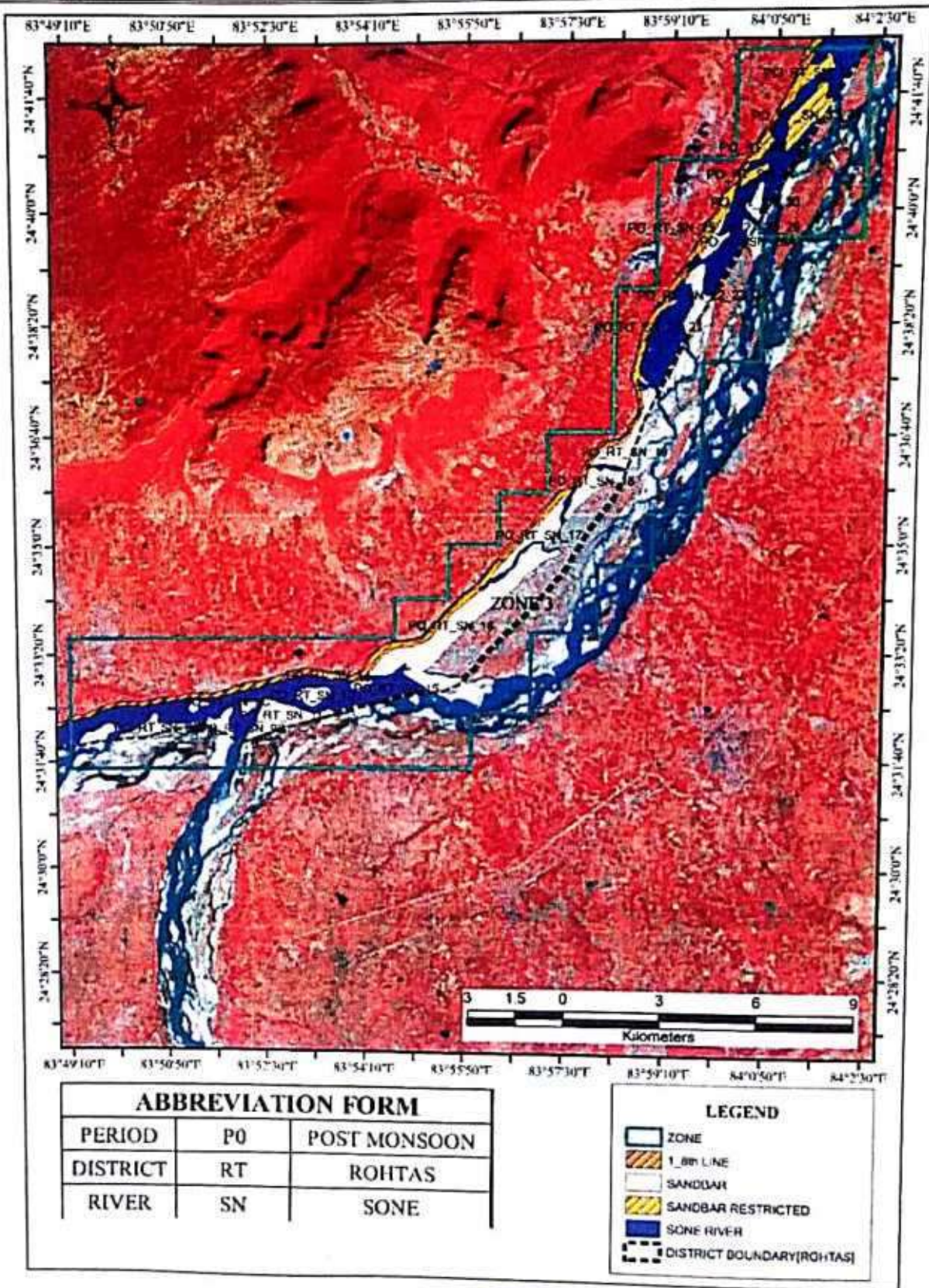
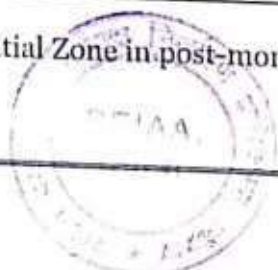


Plate No. 1C: Plate showing potential Zone in post-monsoon of Sone River



District Survey Report  
Rohtas, Bihar

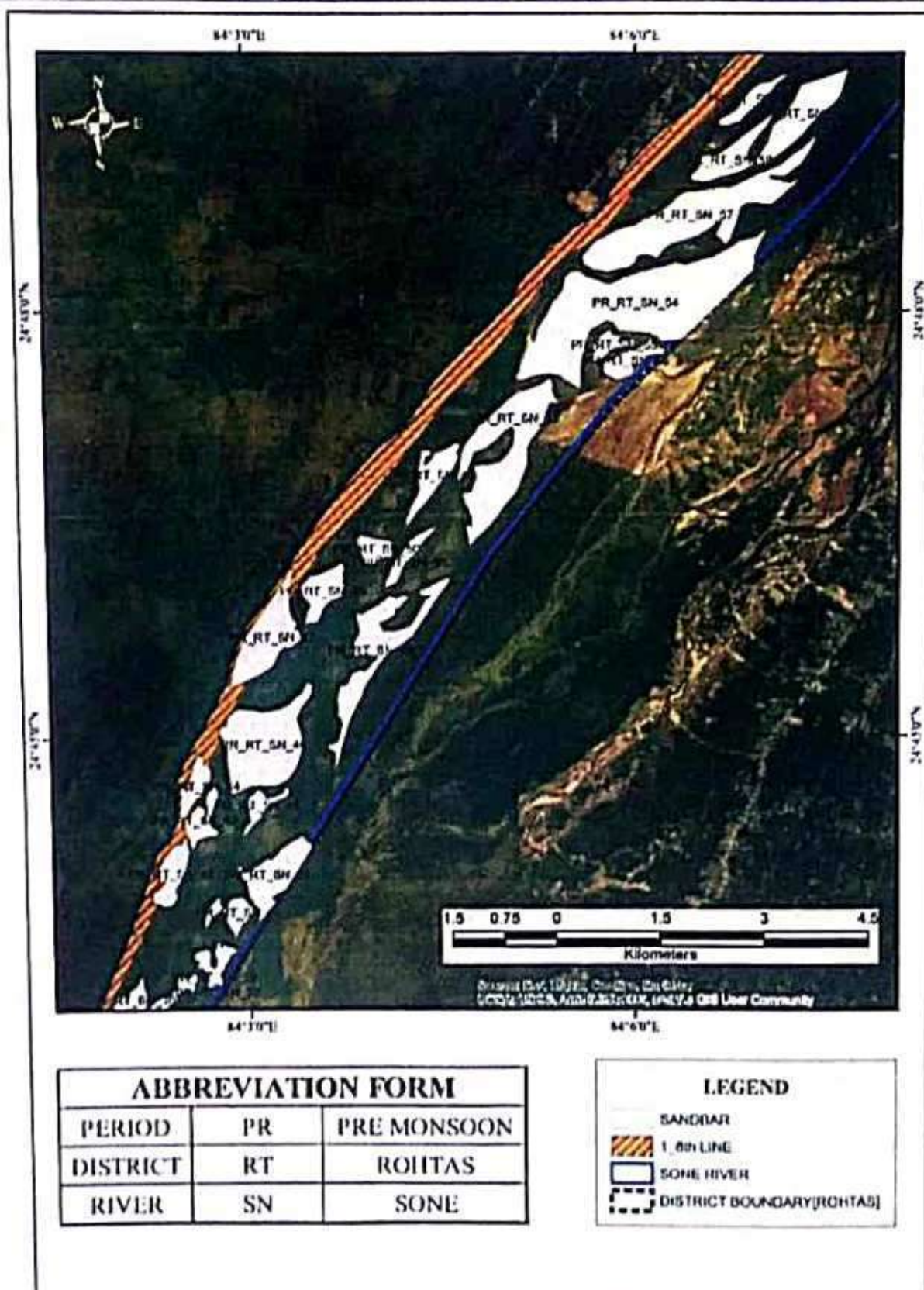
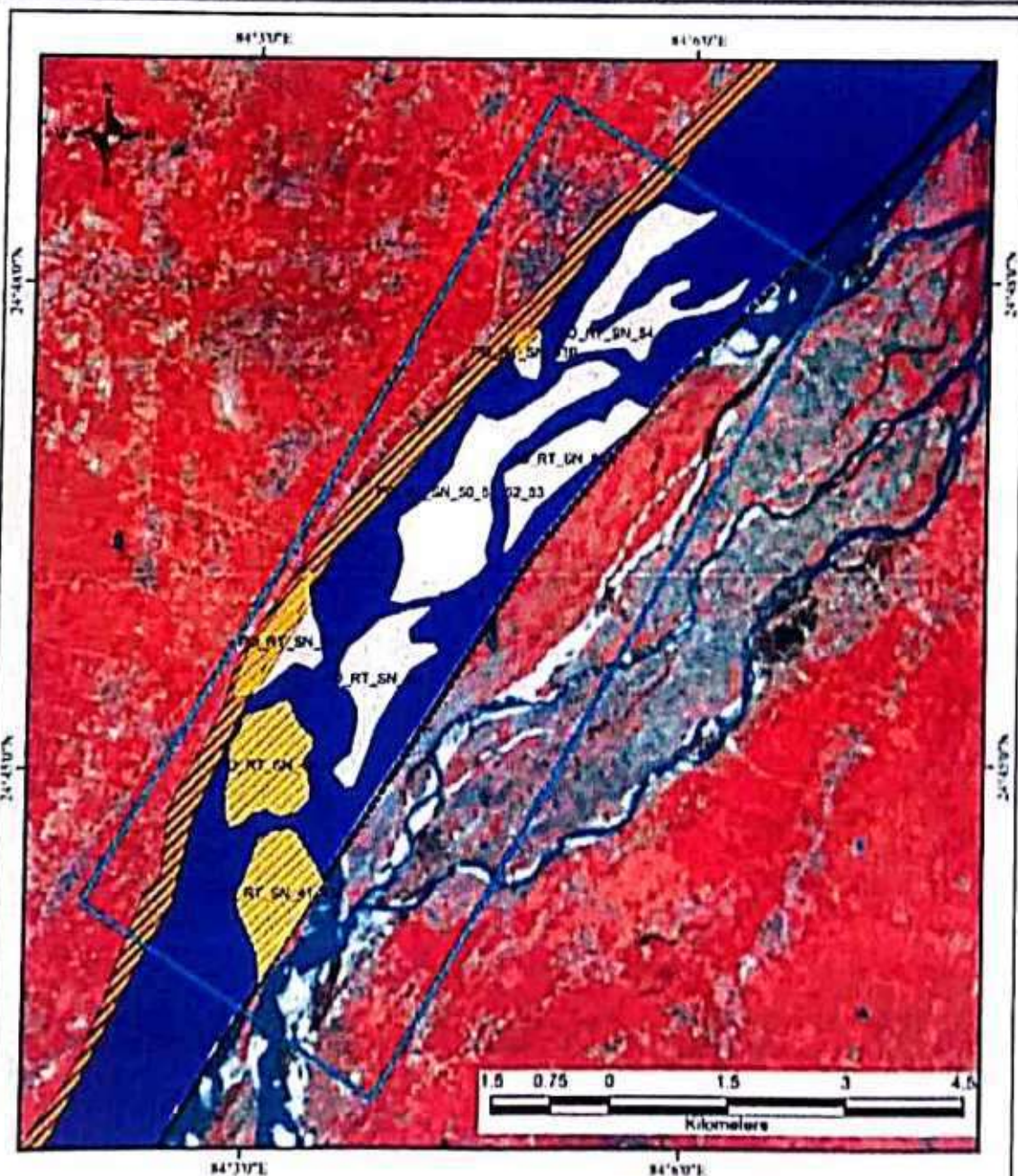


Plate No. 1D: Plate showing sandbars in pre-monsoon of Sone River

District Survey Report  
Rohtas, Bihar



| ABBREVIATION FORM |    |              |
|-------------------|----|--------------|
| PERIOD            | P0 | POST MONSOON |
| DISTRICT          | RT | ROHTAS       |
| RIVER             | SN | SONE         |

| LEGEND |                            |
|--------|----------------------------|
|        | ZONE                       |
|        | 1_0th LINE                 |
|        | SANDBAR                    |
|        | SANDBAR RESTRICTED         |
|        | SONE RIVER                 |
|        | DISTRICT BOUNDARY (ROHTAS) |

Plate No. 1D: Plate showing potential Zones in post-monsoon of Sone River



District Survey Report  
Rohtas, Bihar

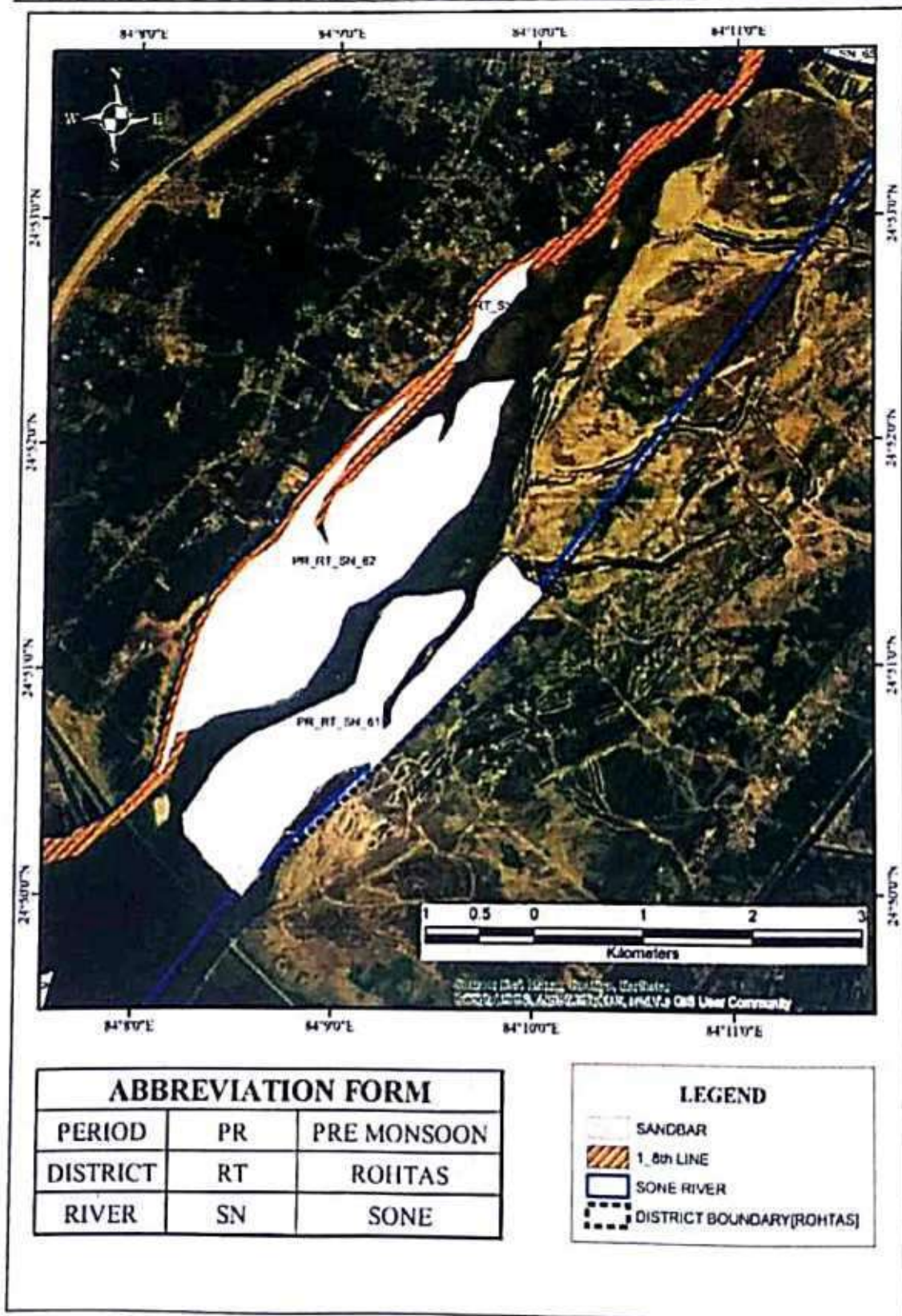


Plate No. 1E: Plate showing sandbars in pre-monsoon of Sone River



District Survey Report  
Rohtas, Bihar

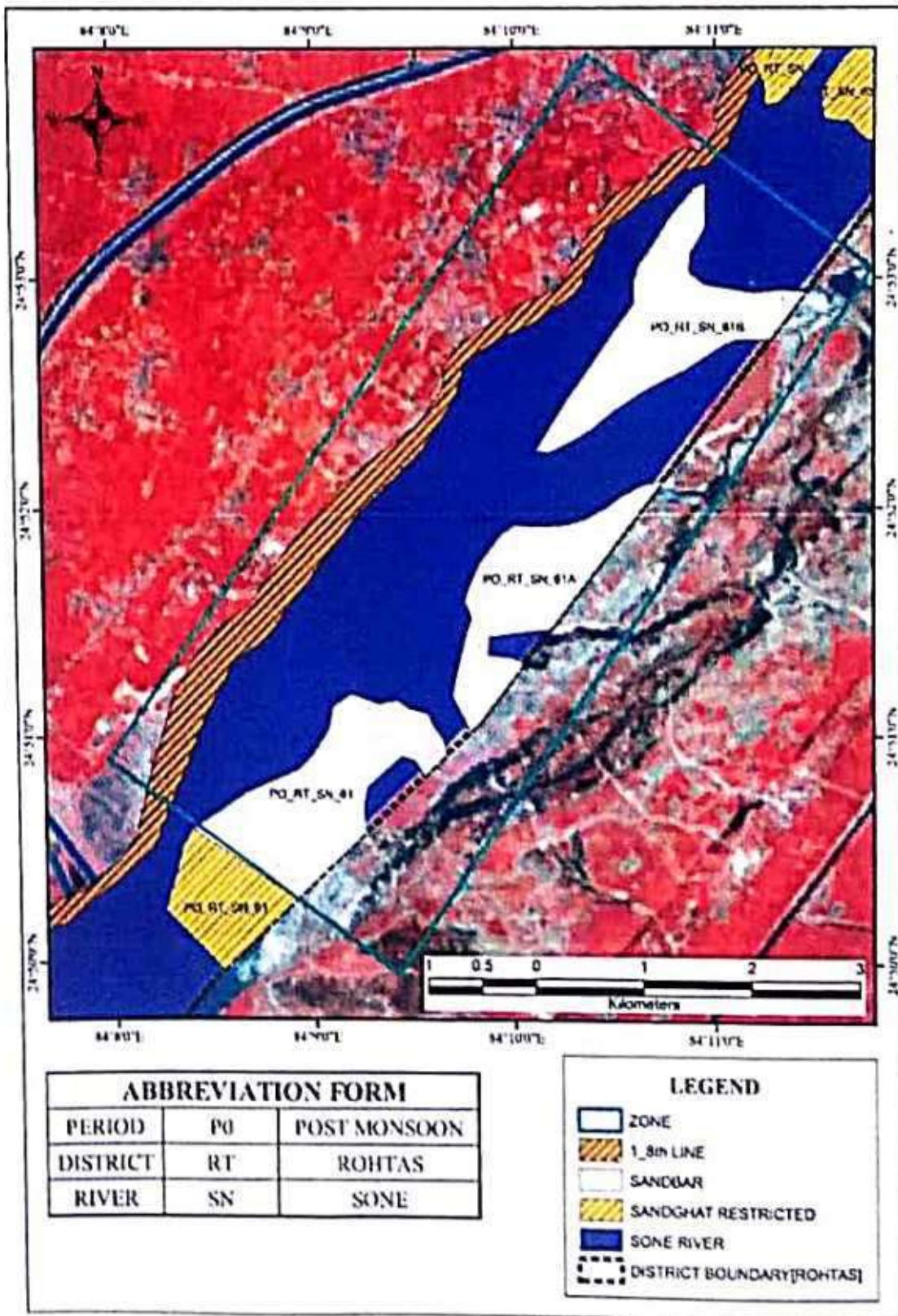
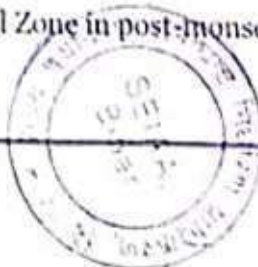


Plate No. 1E: Plate showing potential Zone in post-monsoon of Sone River



District Survey Report  
Rohtas, Bihar

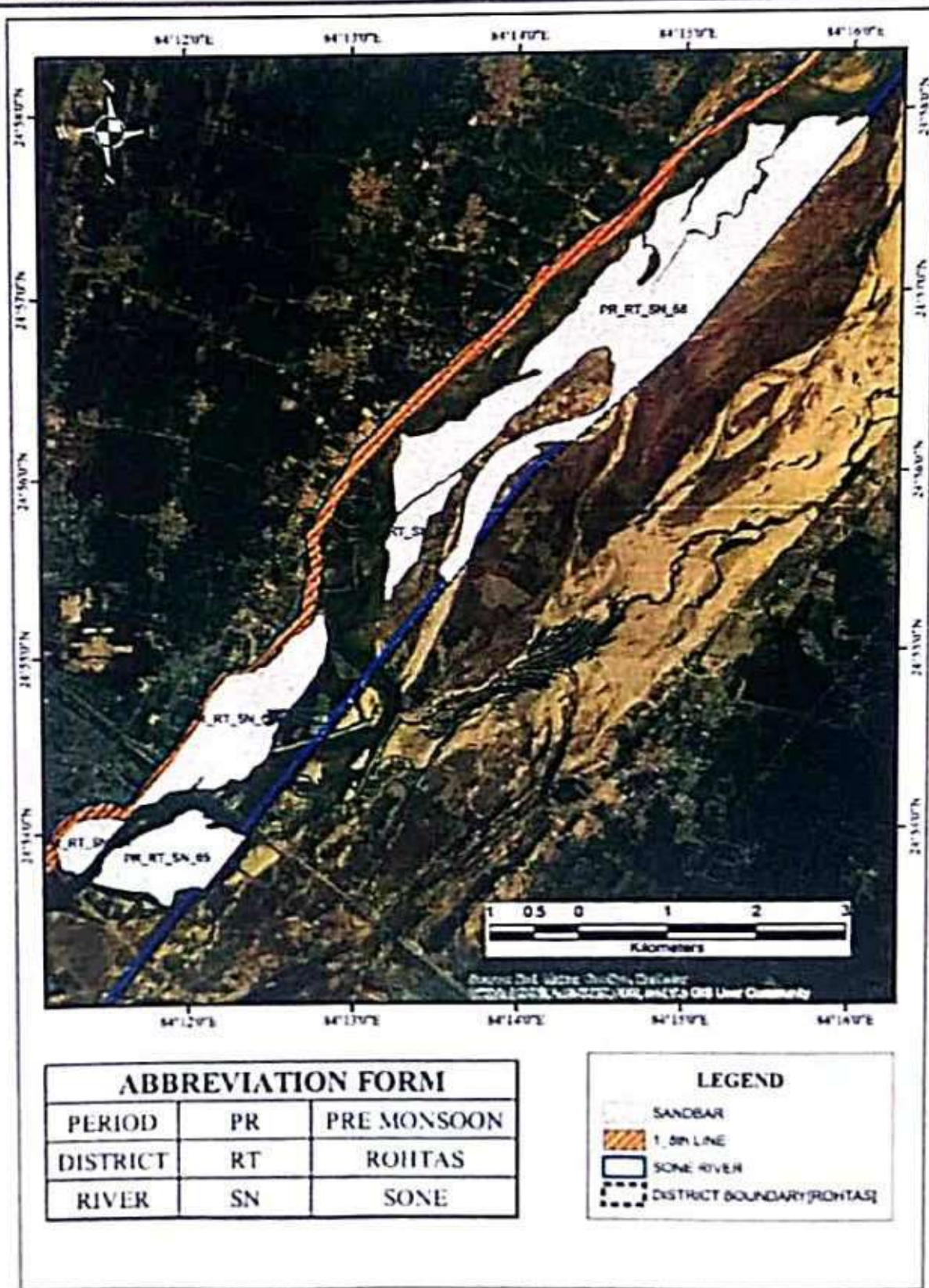


Plate No. 1F: Plate showing sandbars in pre-monsoon of Sone River



District Survey Report  
Rohtas, Bihar

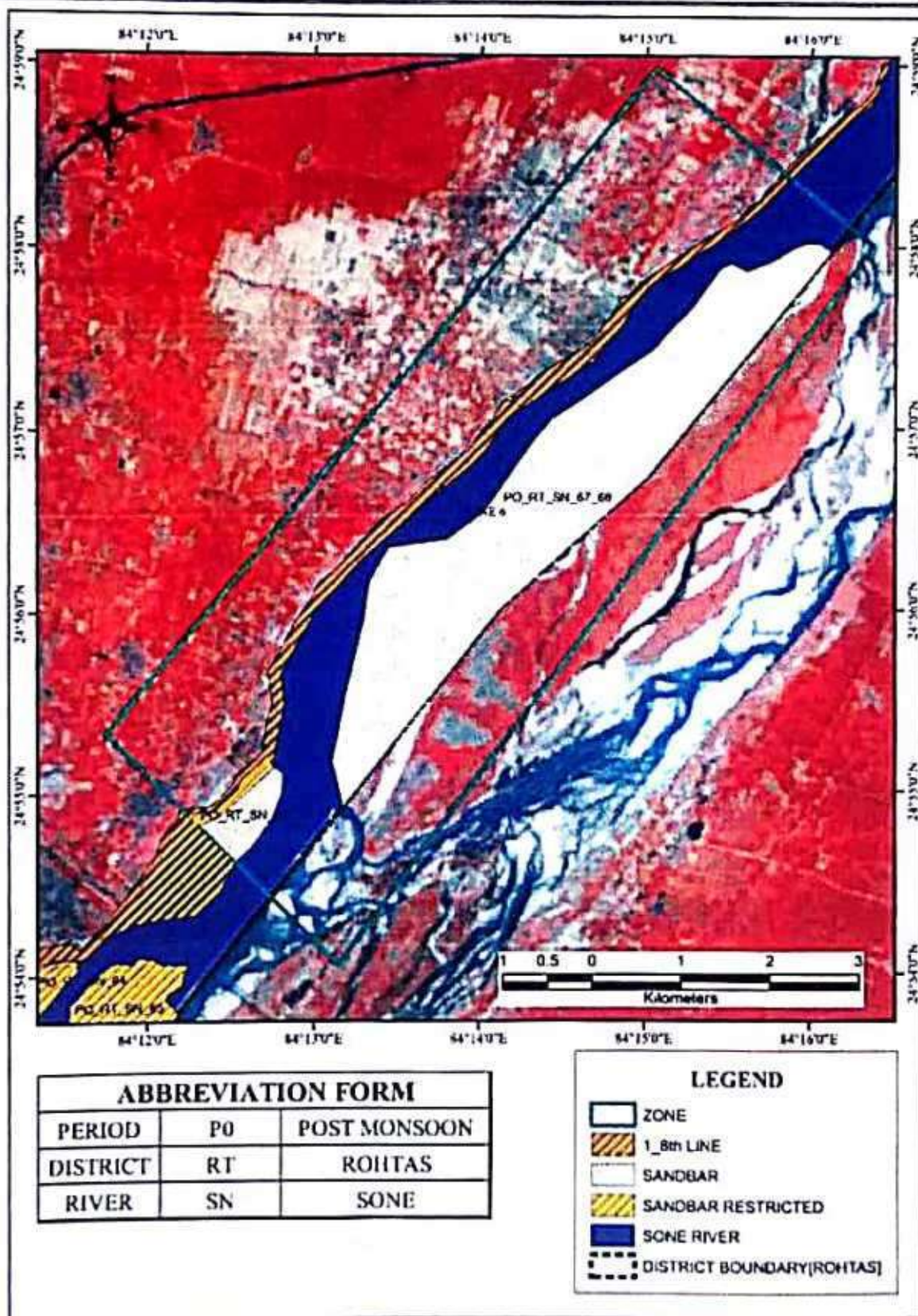


Plate No. 1F: Plate showing potential Zone in post-monsoon of Sone River



District Survey Report  
Rohtas, Bihar

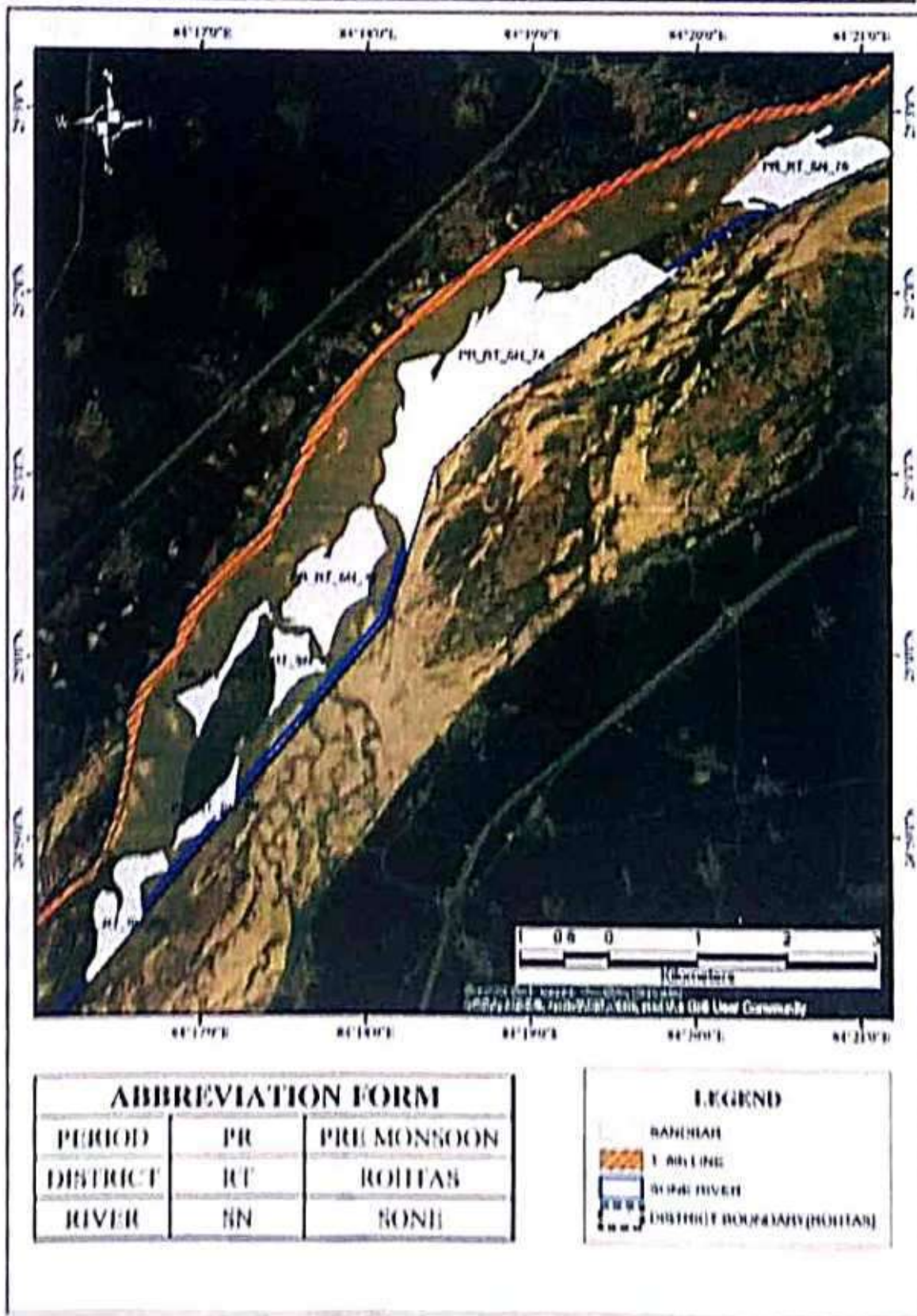


Plate No. 10: Plate showing sandbars in pre-monsoon of Sone River



District Survey Report  
Rohtas, Bihar

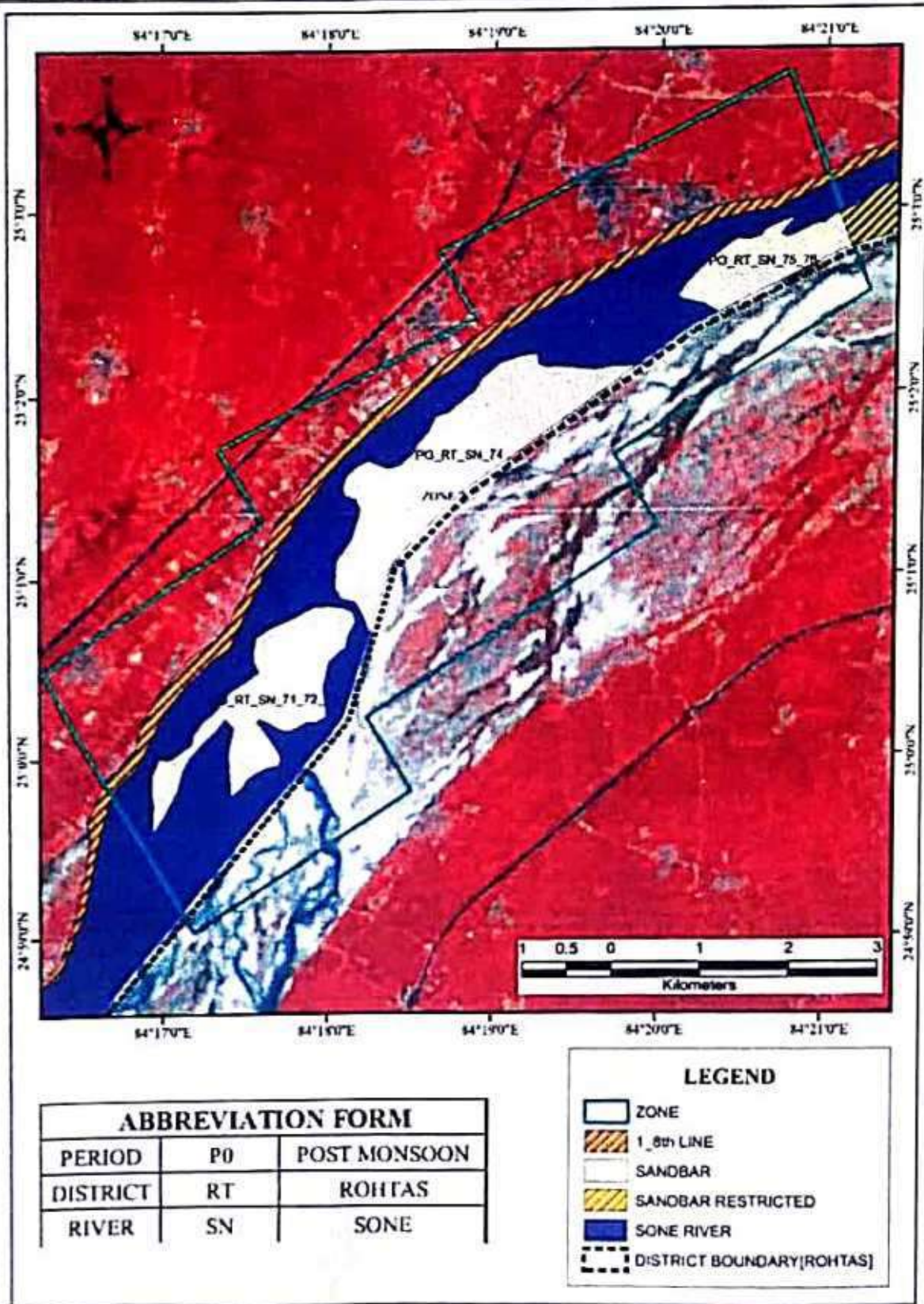
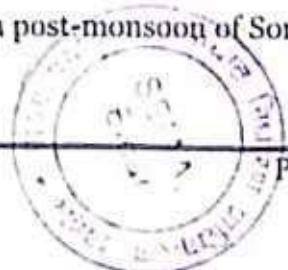


Plate No. 1G: Plate showing potential Zone in post-monsoon of Sone River



District Survey Report  
Rohtas, Bihar

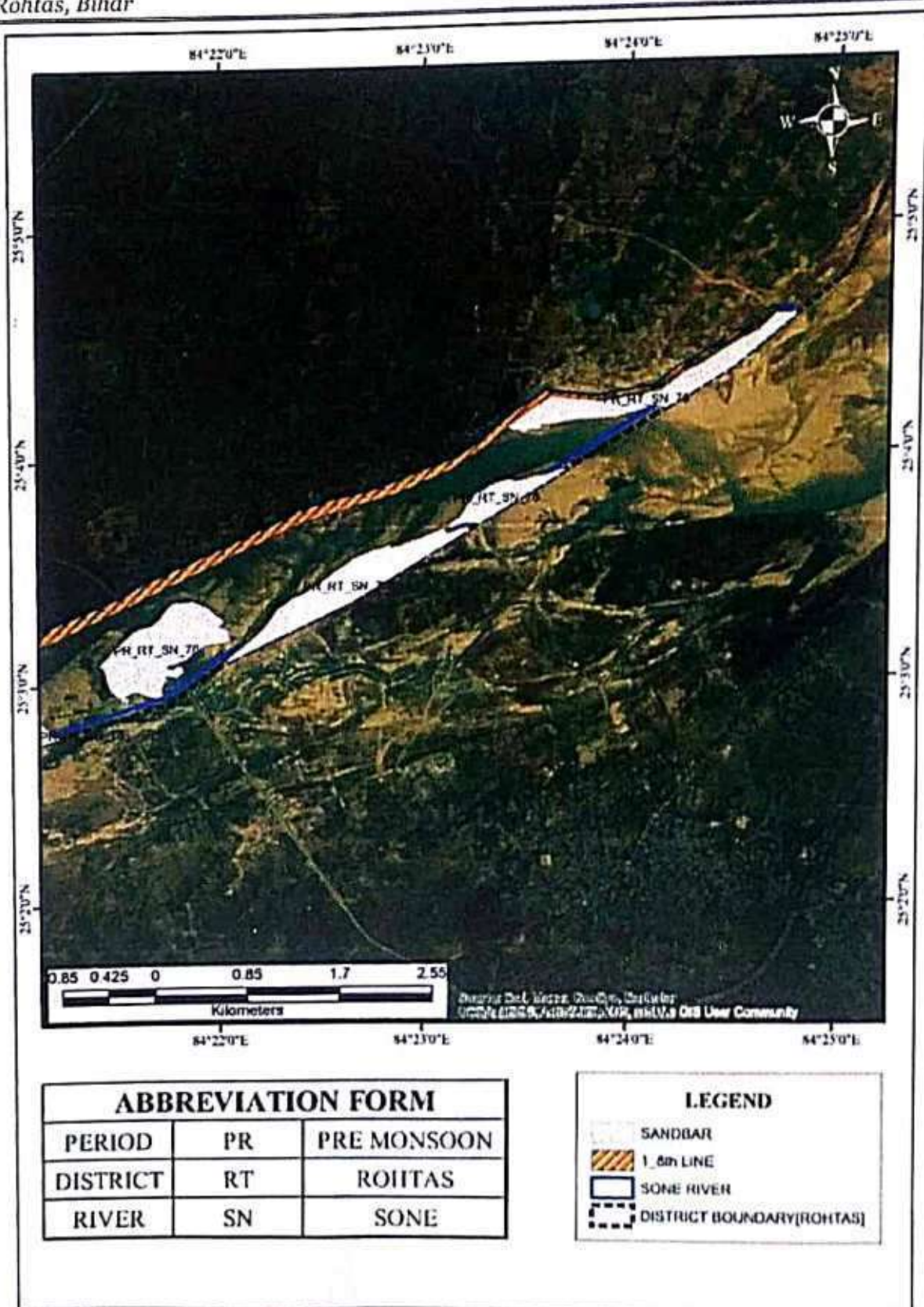


Plate No. 1H: Plate showing sandbars in pre-monsoon of Sone River

District Survey Report  
Rohtas, Bihar

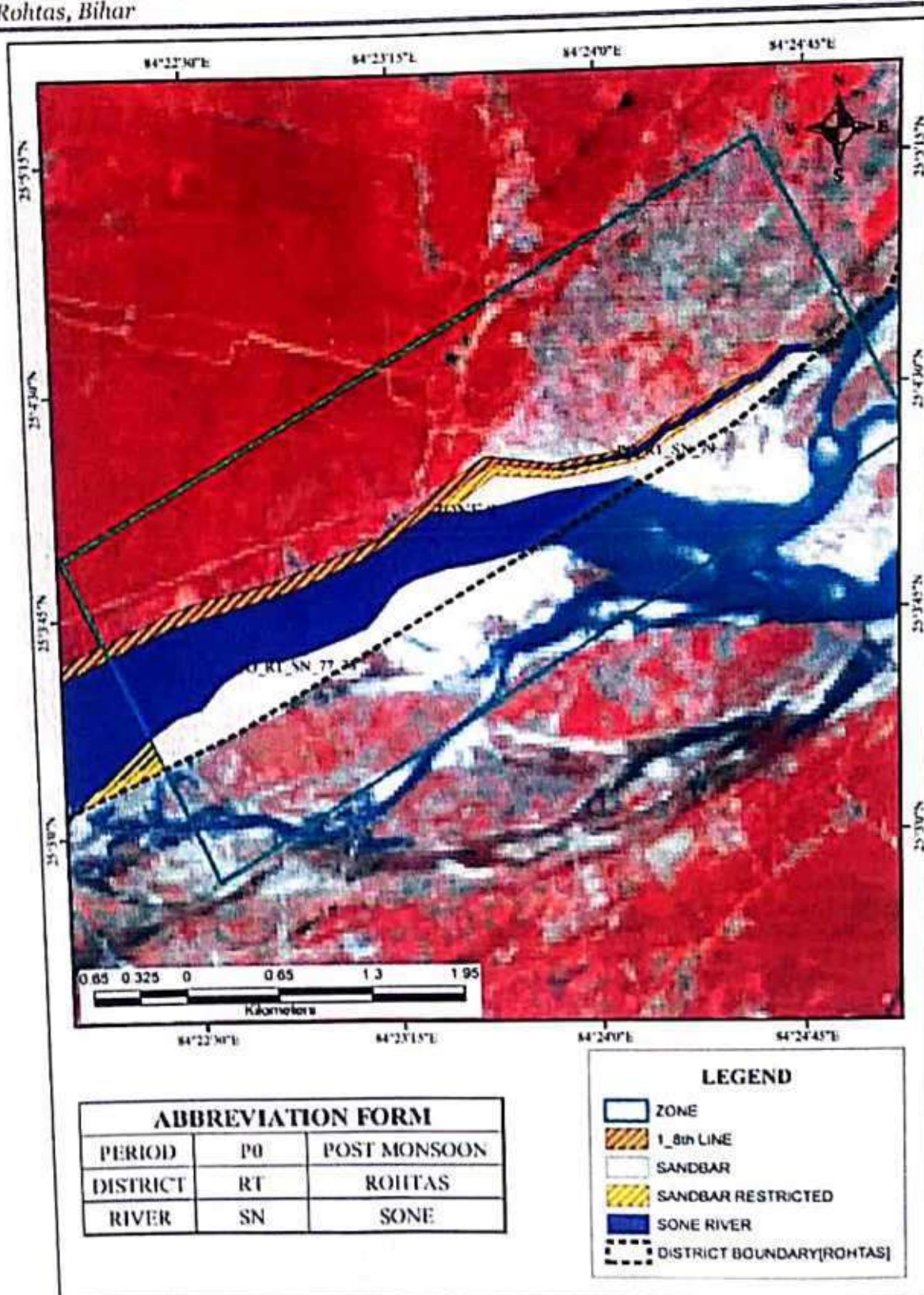


Plate No. 111: Plate showing potential Zone in post-monsoon of Sone River



District Survey Report  
Rohtas, Bihar

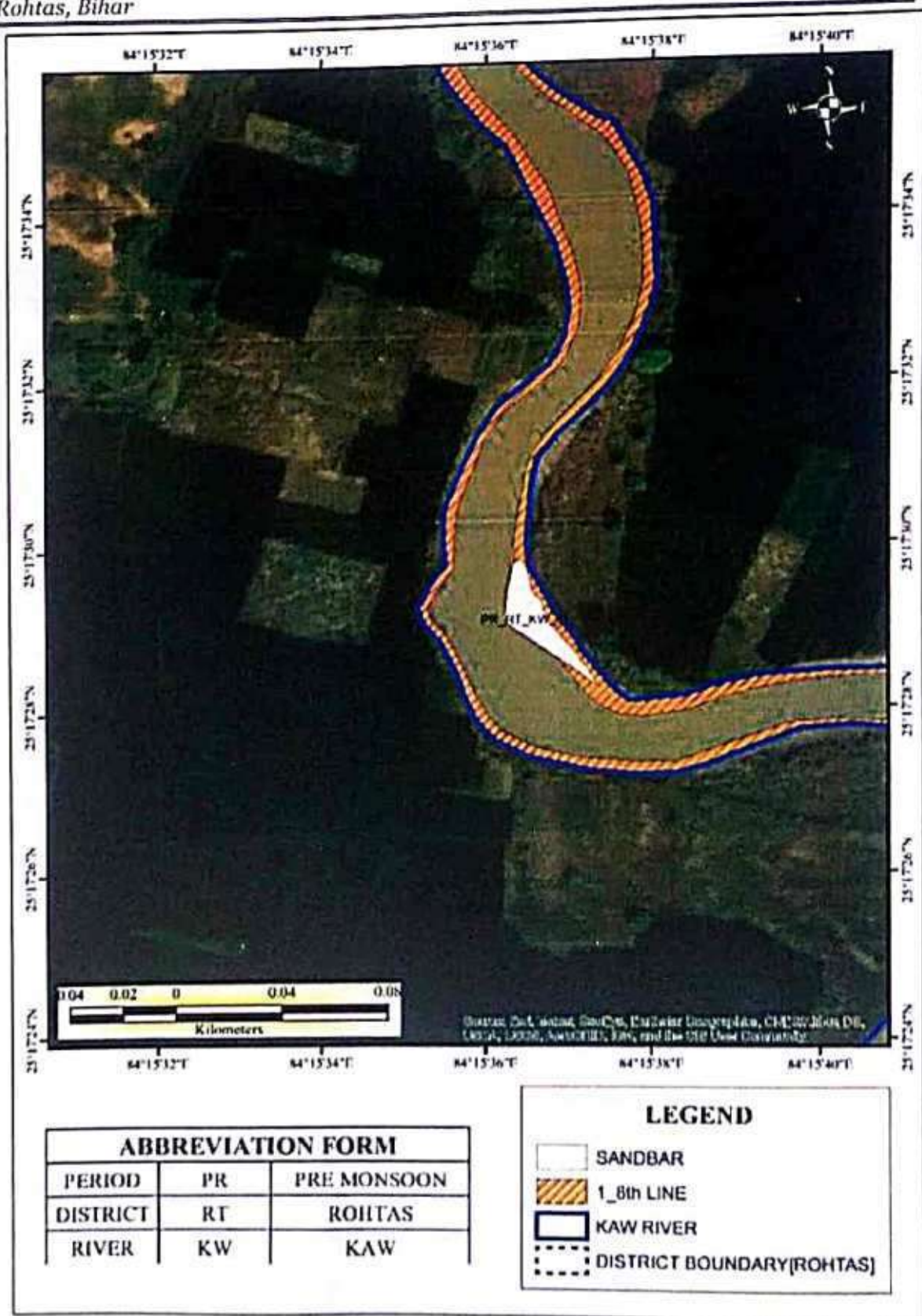


Plate No. 11: Plate showing sandbars in pre-monsoon of Kaw River



District Survey Report  
Rohtas, Bihar

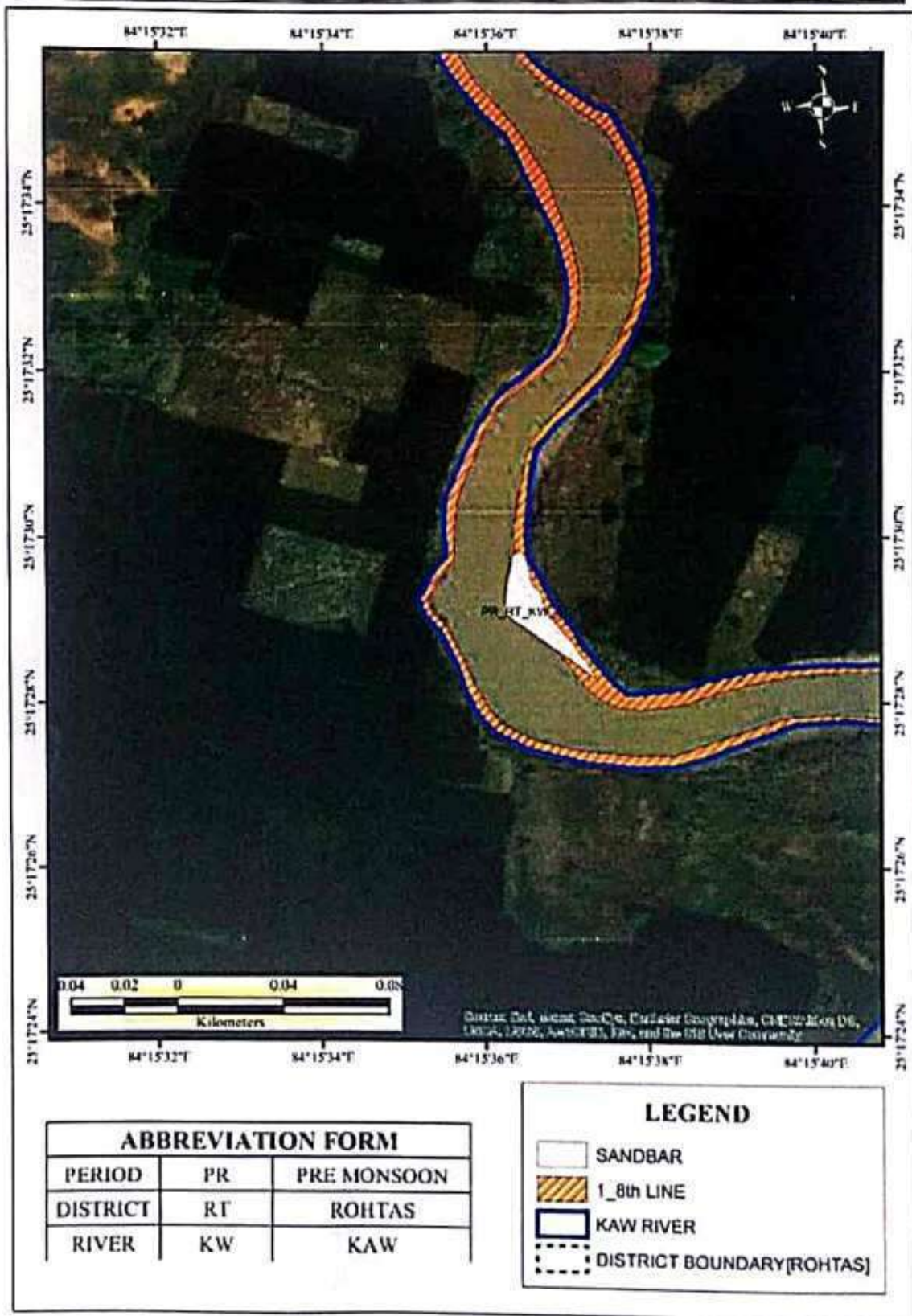


Plate No. 11: Plate showing sandbars in pre-monsoon of Kaw River



District Survey Report  
Rohtas, Bihar

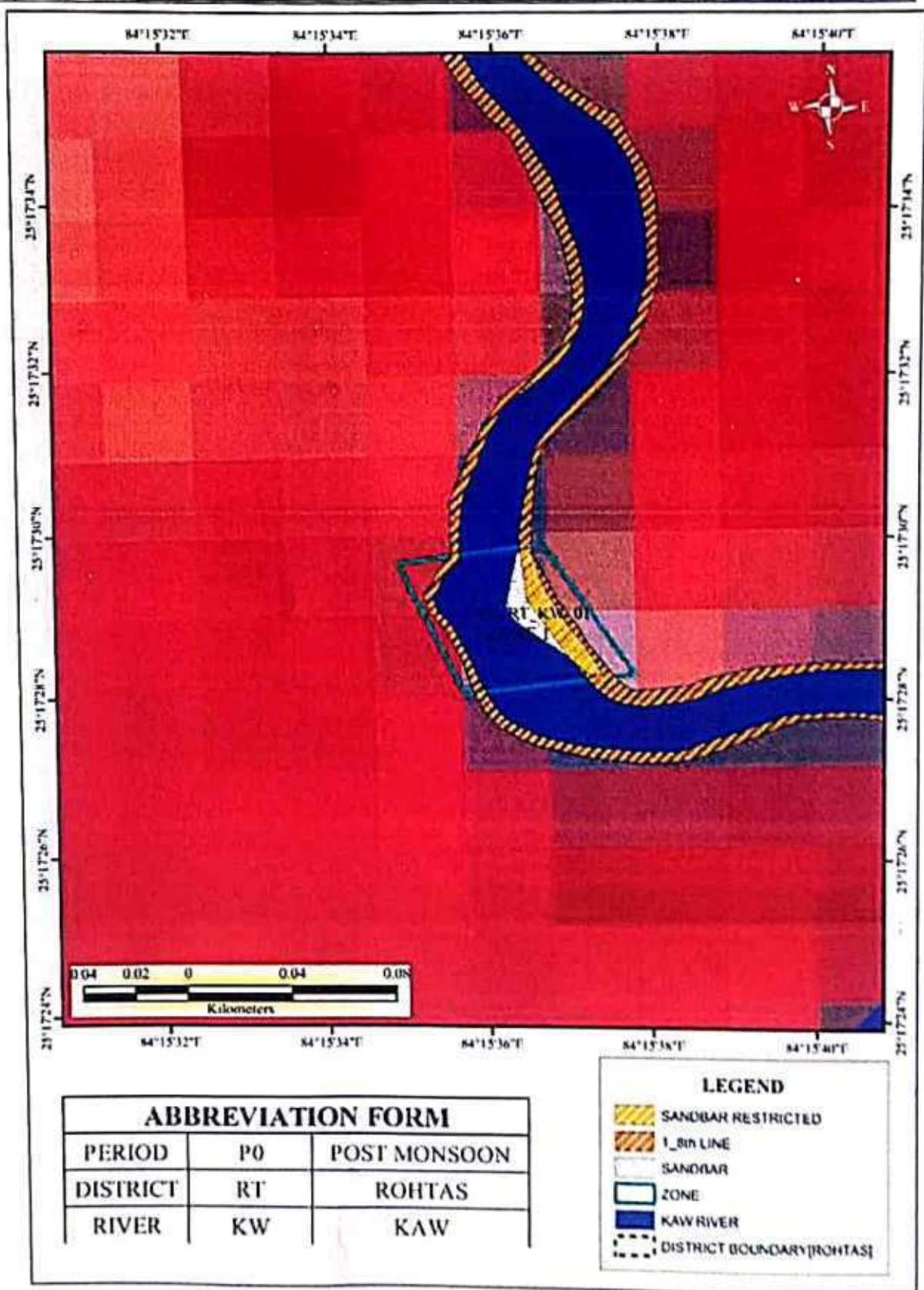


Plate No. 11: Plate showing potential Zone in post-monsoon of Kaw River



District Survey Report  
Rohtas, Bihar

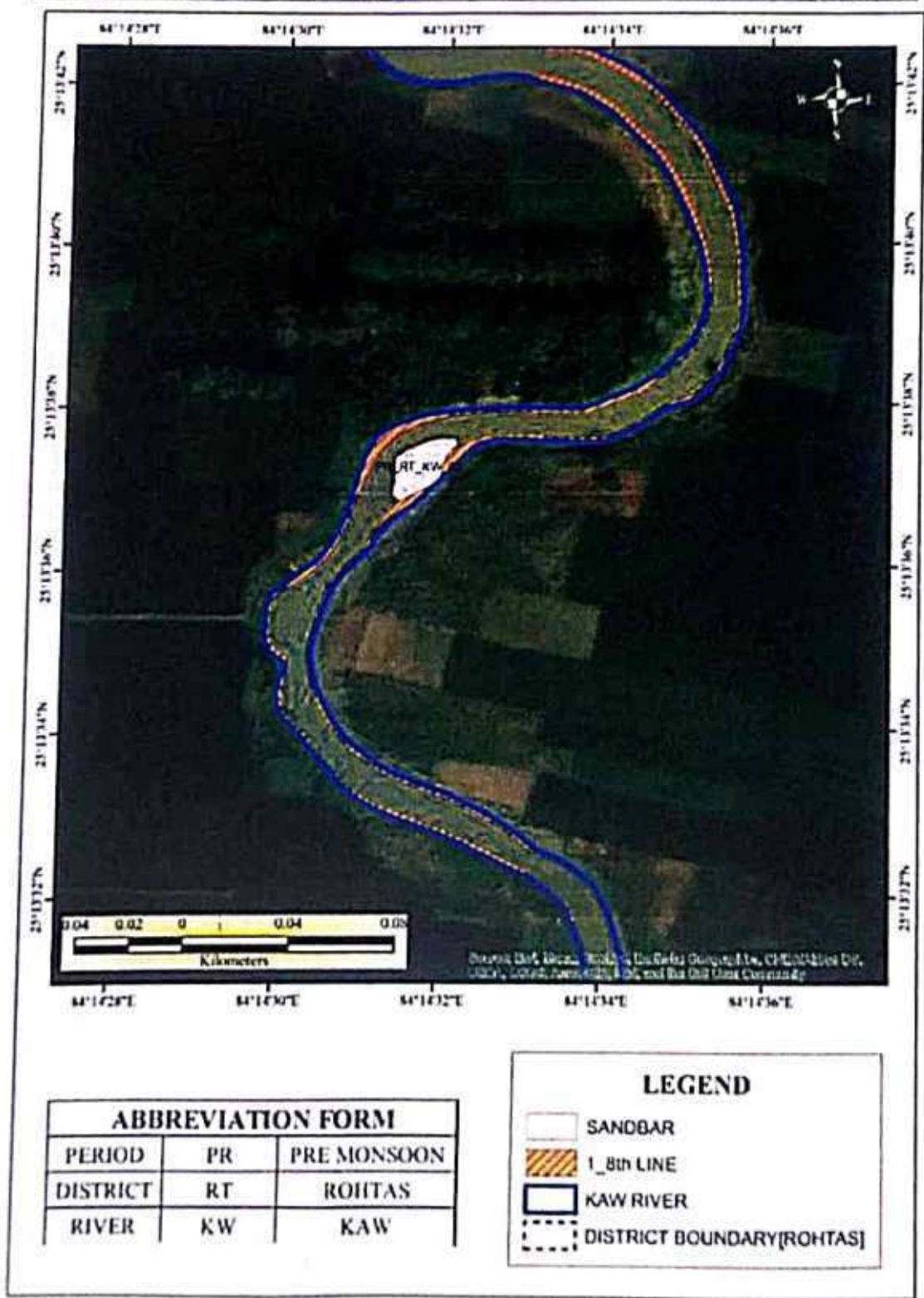
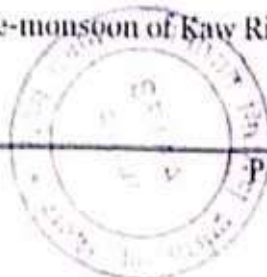


Plate No. 1J: Plate showing sandbars in pre-monsoon of Kaw River



District Survey Report  
Rohtas, Bihar

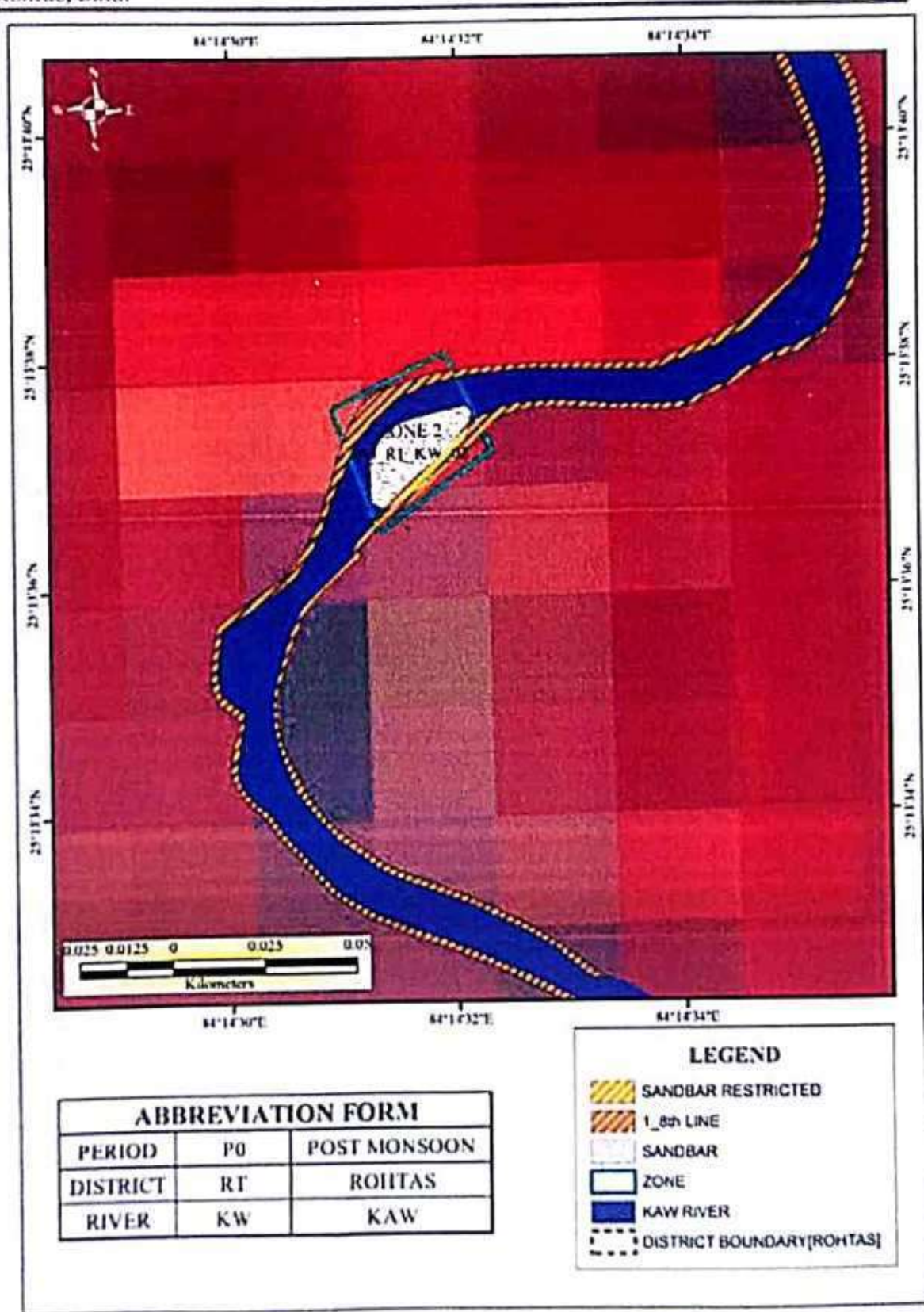


Plate No. 1F: Plate showing potential Zone in post-monsoon of Kaw River



District Survey Report  
Rohtas, Bihar

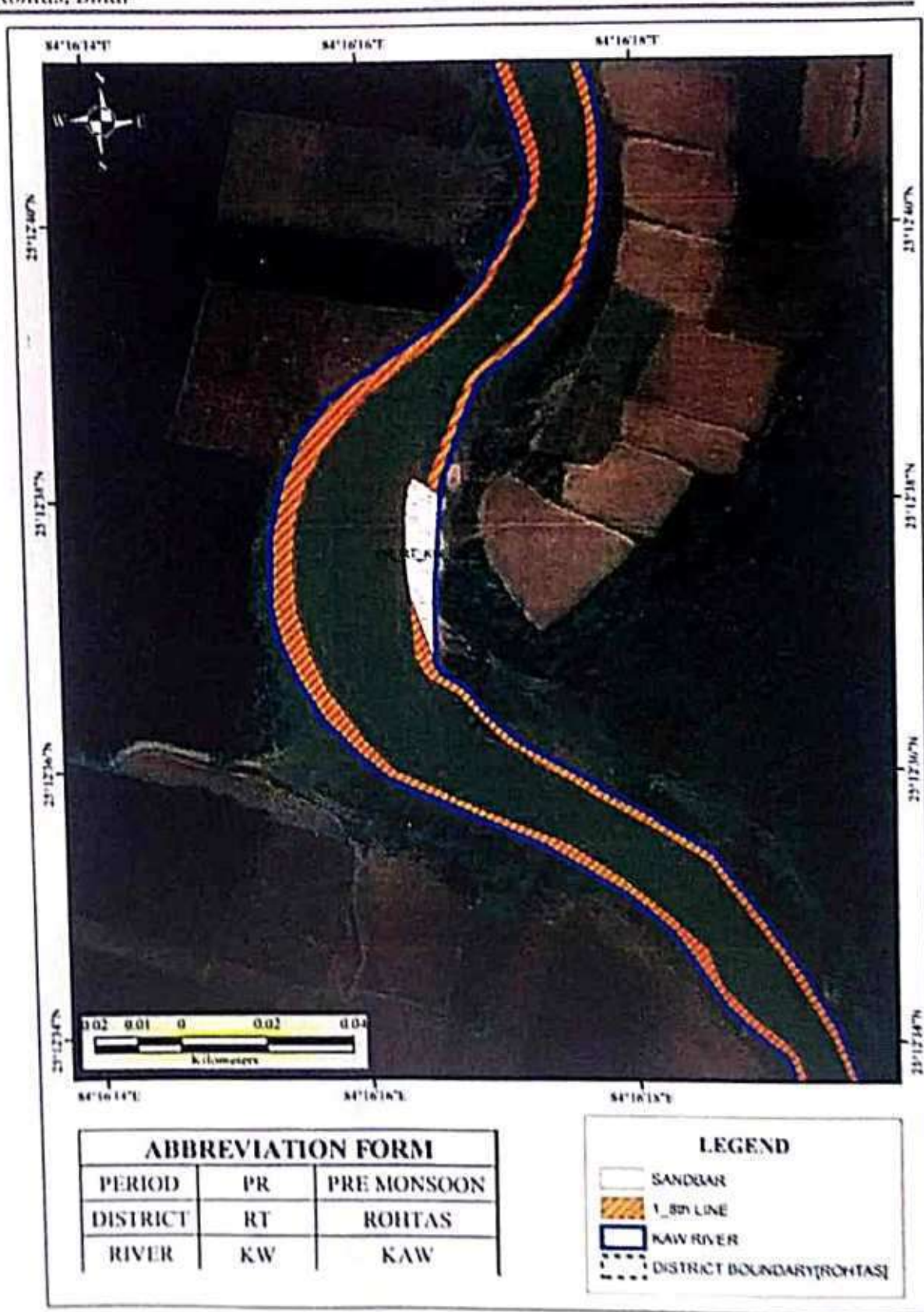
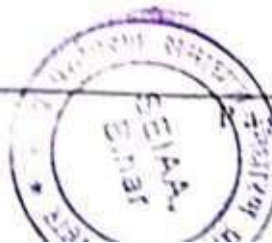


Plate No. 1K: Plate showing sandbars in pre-monsoon of Kaw River



District Survey Report  
Rohtas, Bihar

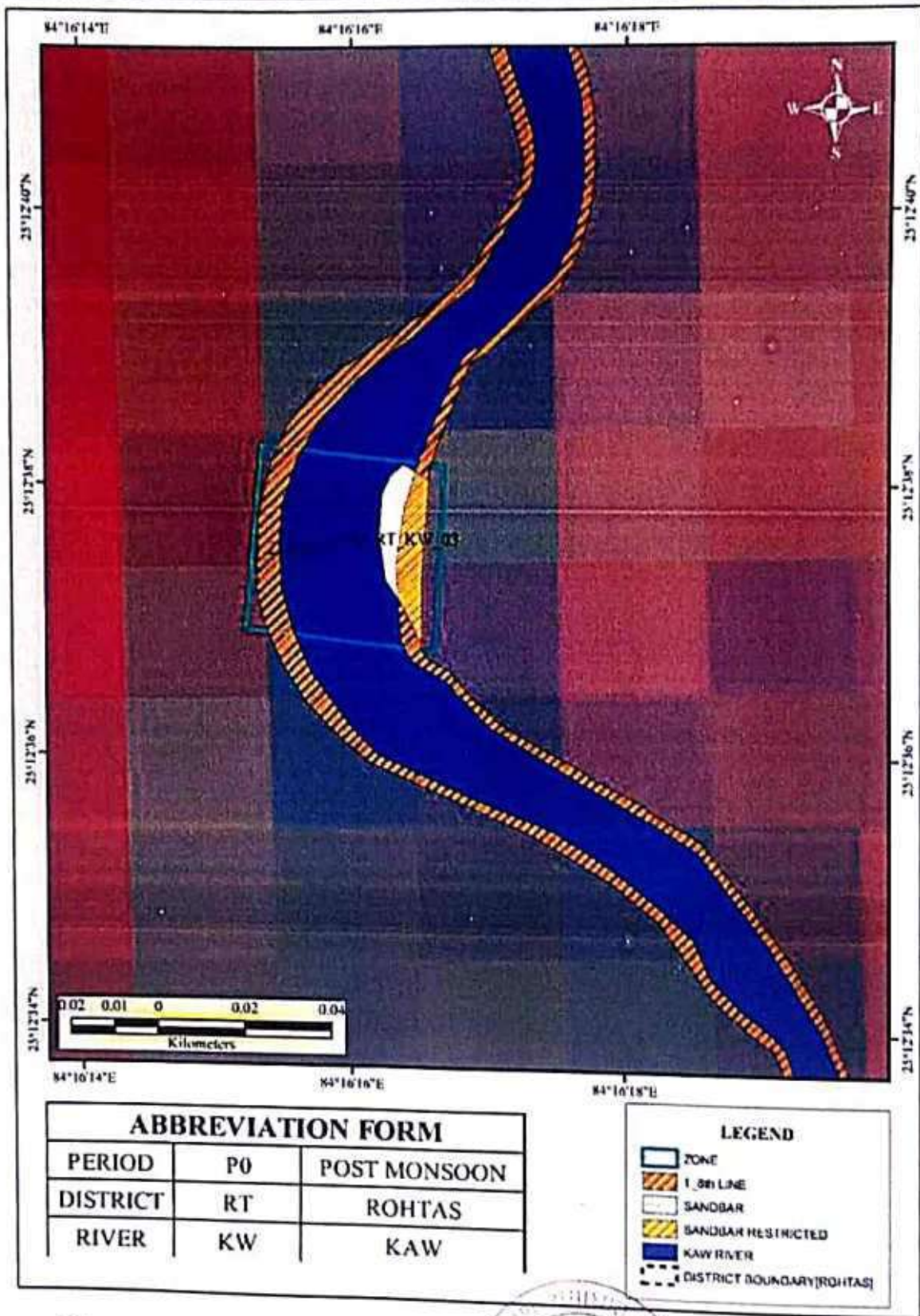
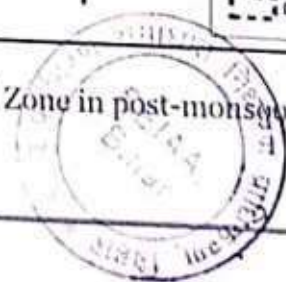


Plate No. 1K: Plate showing potential Zone in post-monsoon of Kaw River



District Survey Report  
Rohtas, Bihar



Plate No. 1L: Plate showing sandbars in pre-monsoon of KAW River



District Survey Report  
Rohtas, Bihar

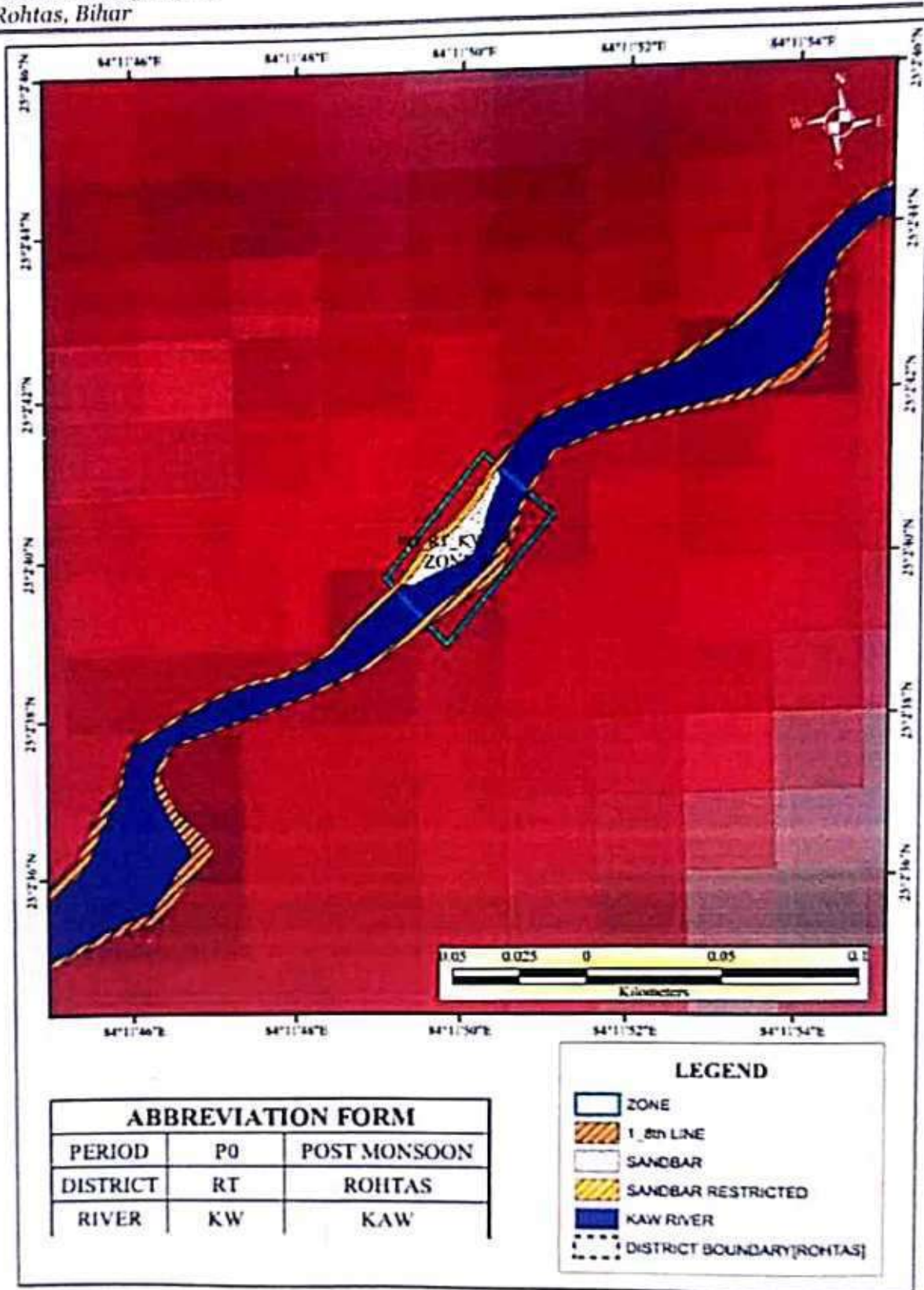
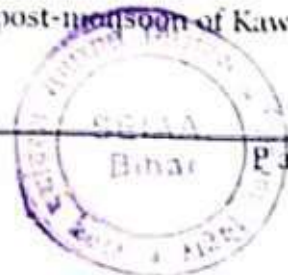


Plate No. 1L: Plate showing potential Zone in post-monsoon of KAW River



District Survey Report  
Rohtas, Bihar

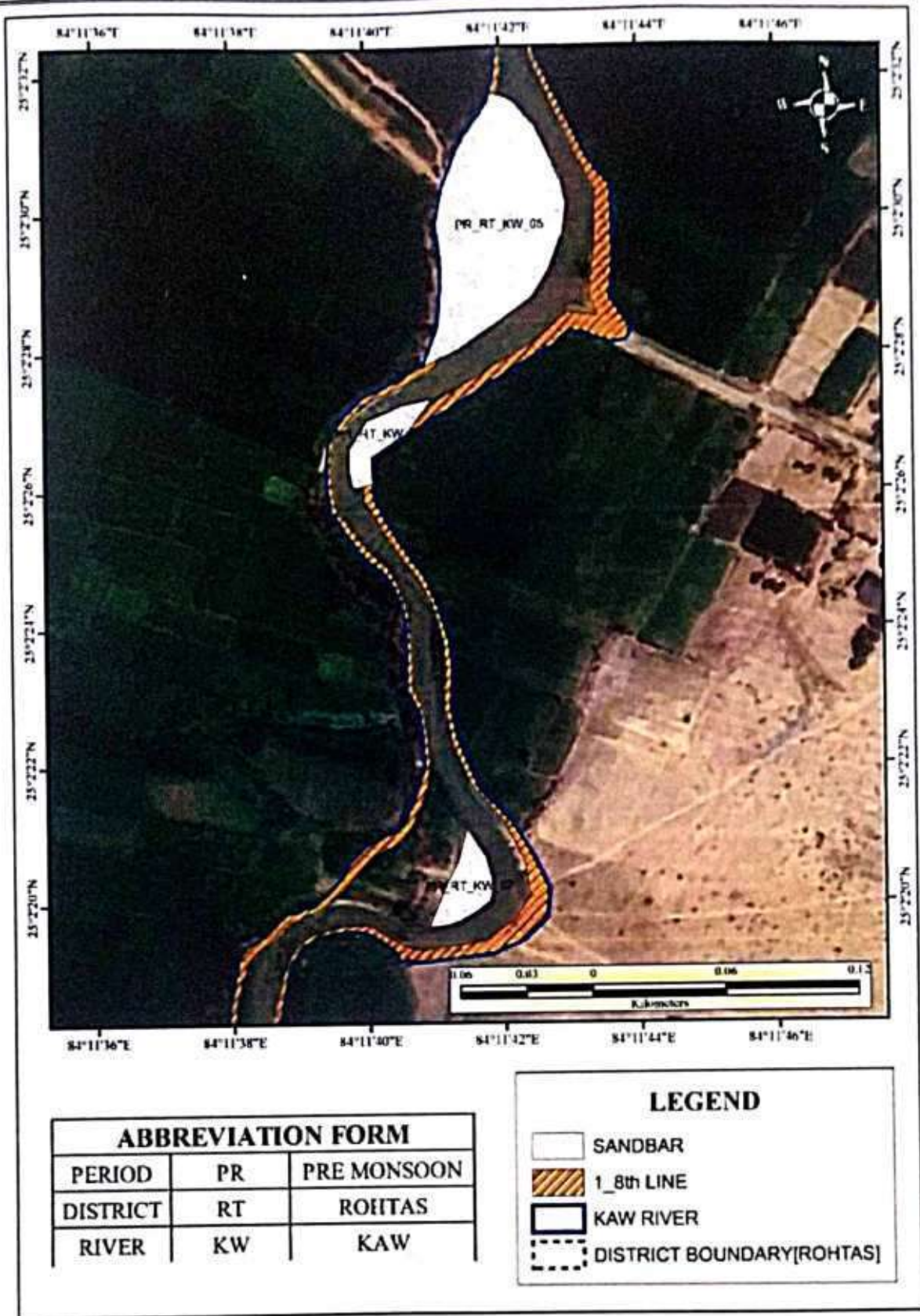


Plate No. 1M: Plate showing sandbars in pre-monsoon of Kaw River



District Survey Report  
Rohtas, Bihar

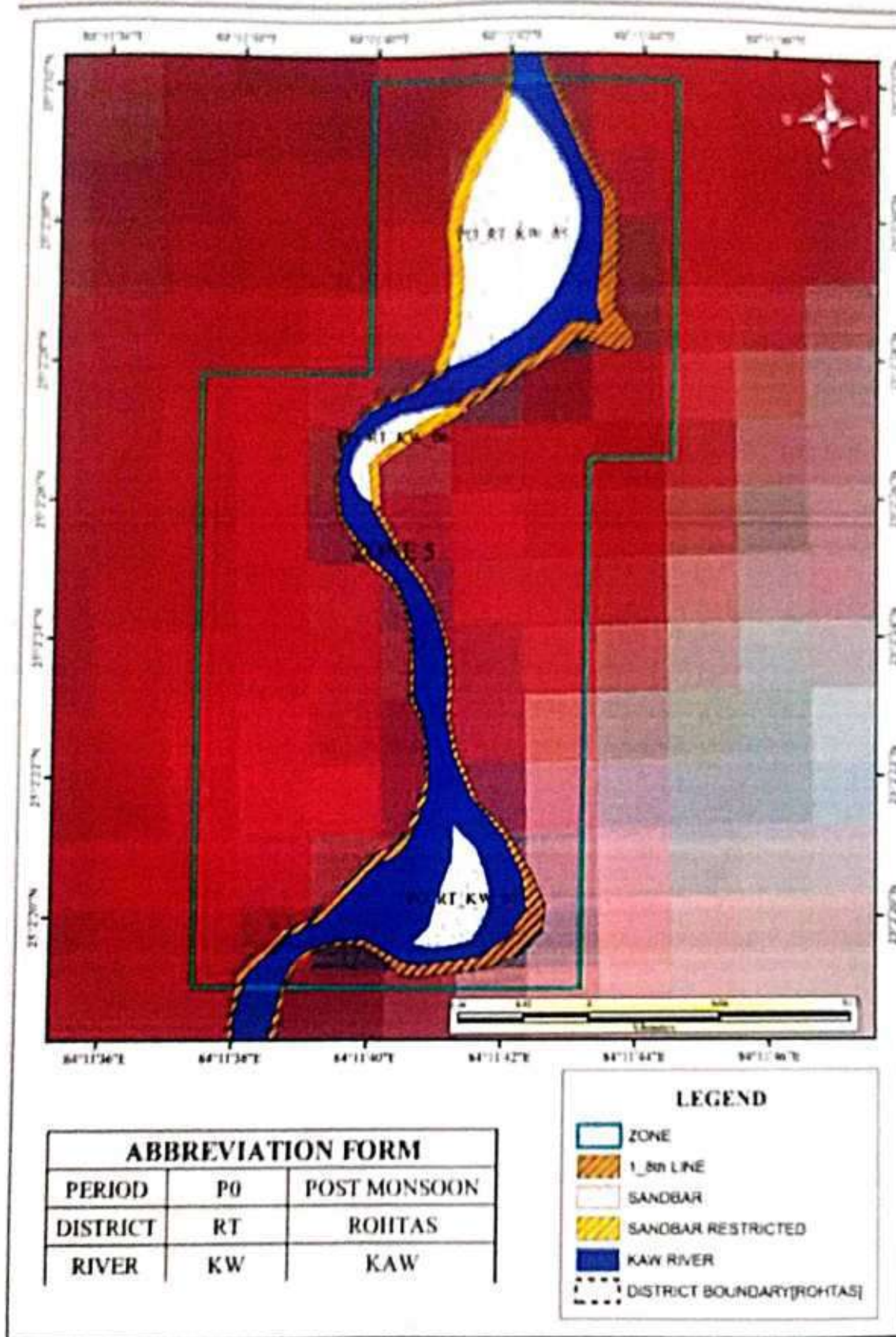


Plate No. 1M: Plate showing potential Zone in post-monsoon of Kaw River



District Survey Report  
Rohtas, Bihar

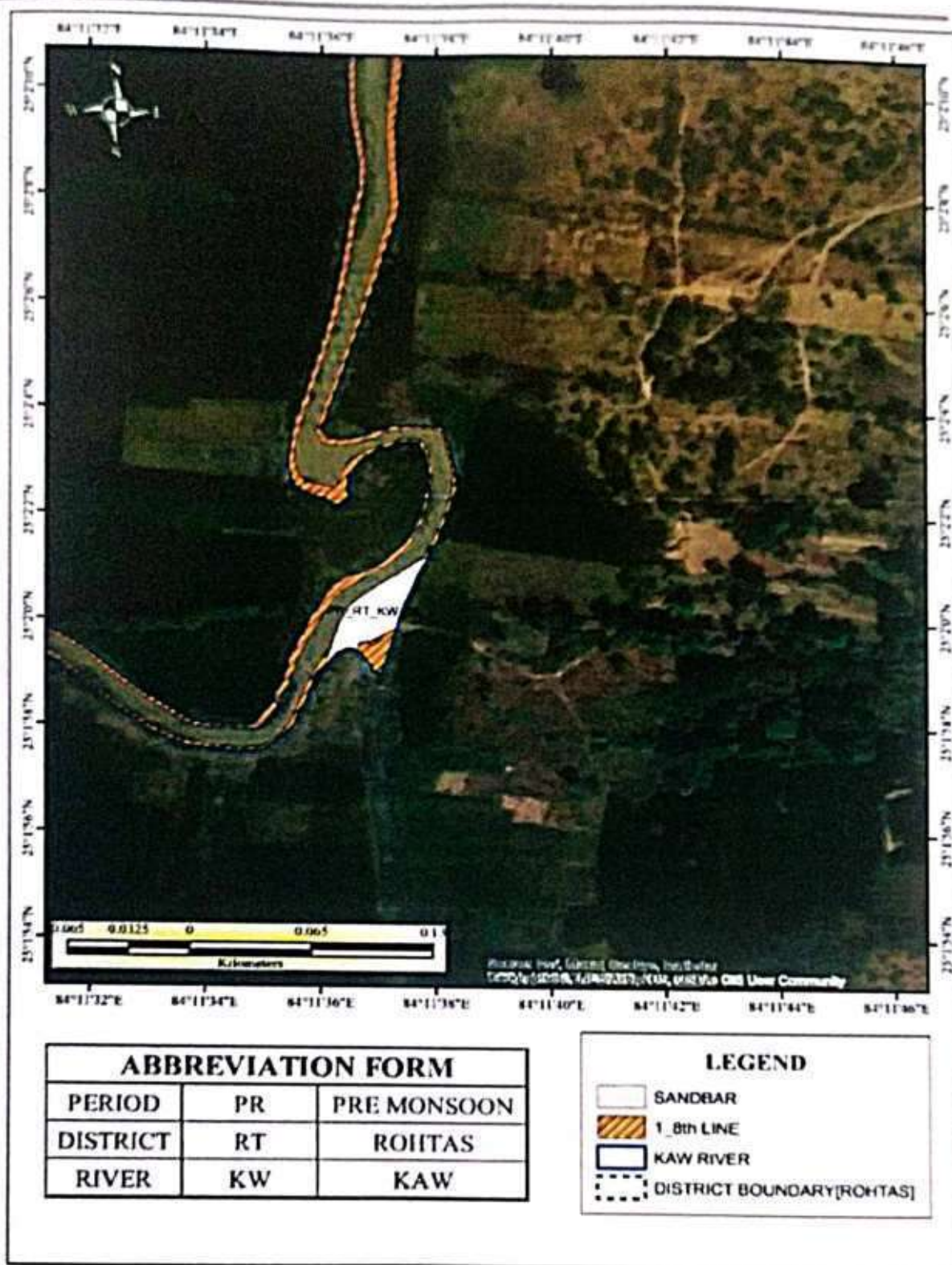
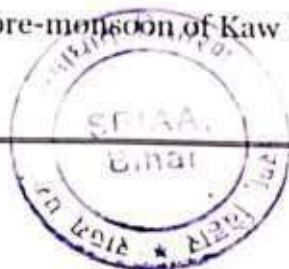


Plate No. 1N: Plate showing sandbars in pre-monsoon of Kaw River



District Survey Report  
Rohtas, Bihar

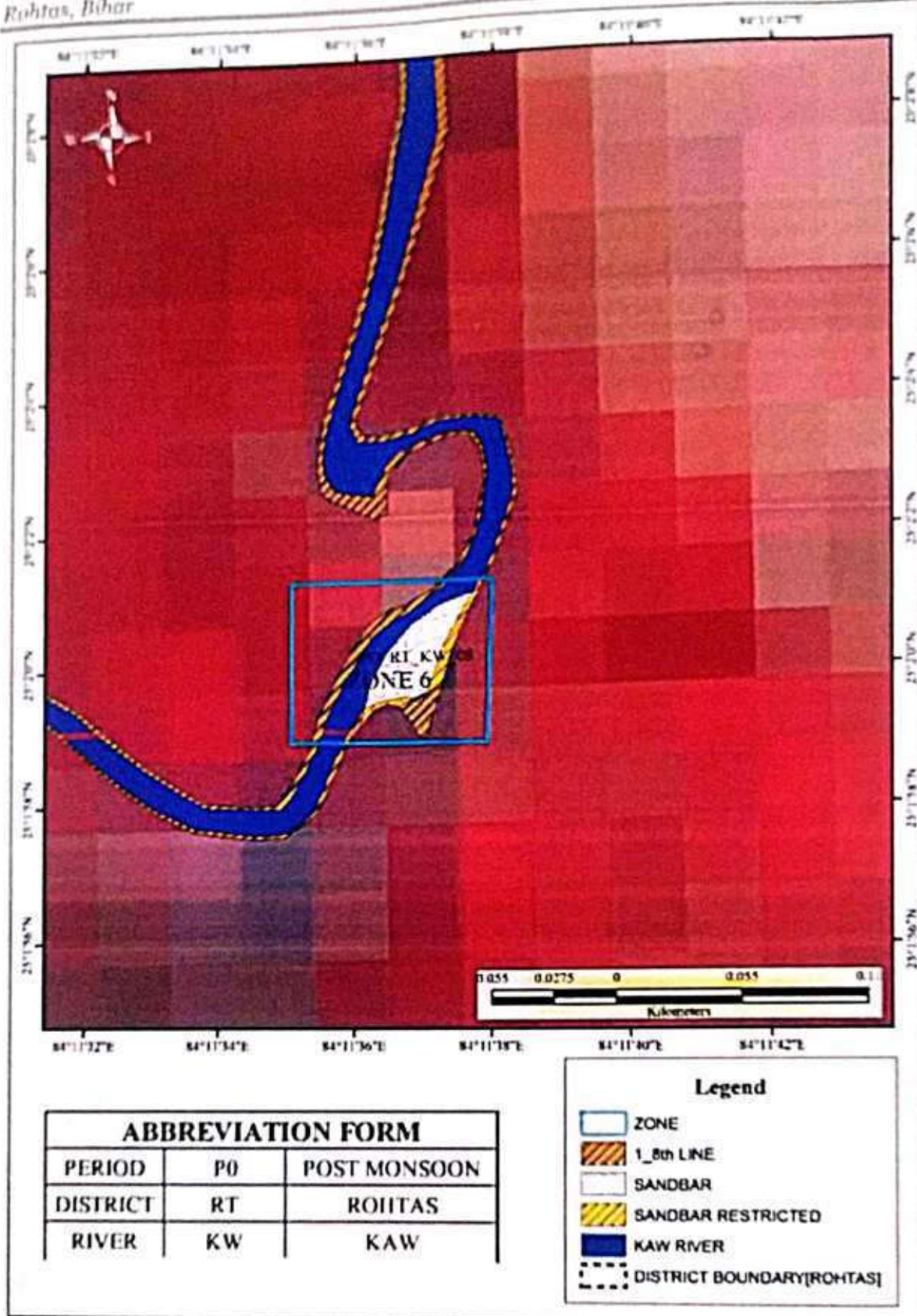
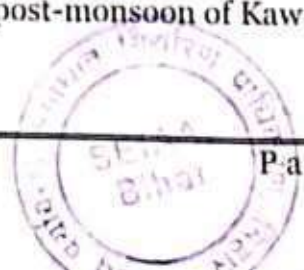


Plate No. 1N': Plate showing potential Zone in post-monsoon of Kaw River



District Survey Report  
Rohtas, Bihar

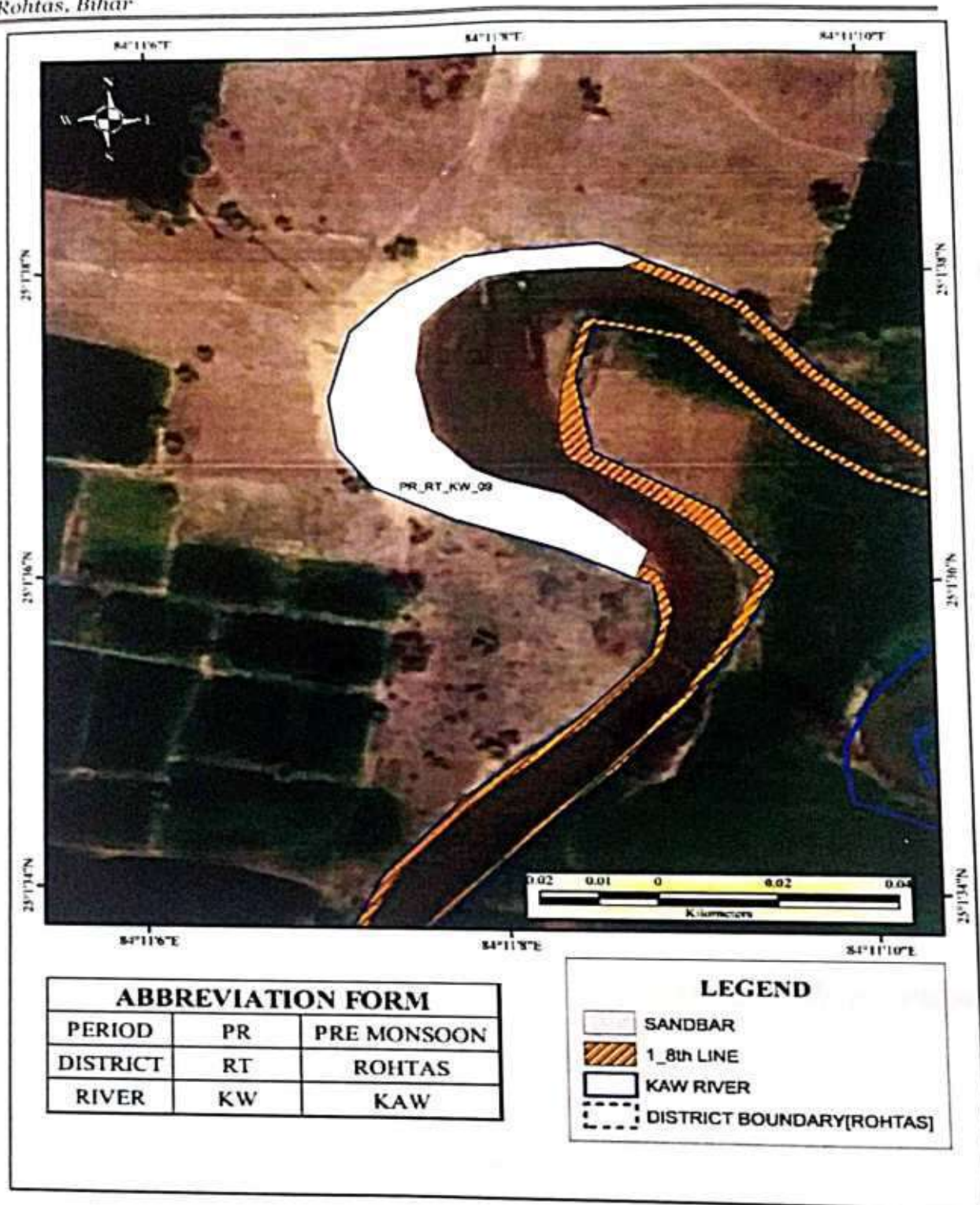
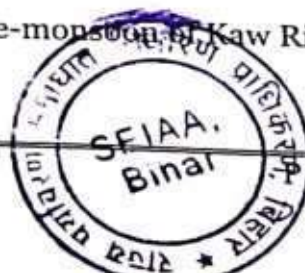


Plate No. 10: Plate showing sandbars in pre-monsoon of Kaw River



District Survey Report  
Rohtas, Bihar

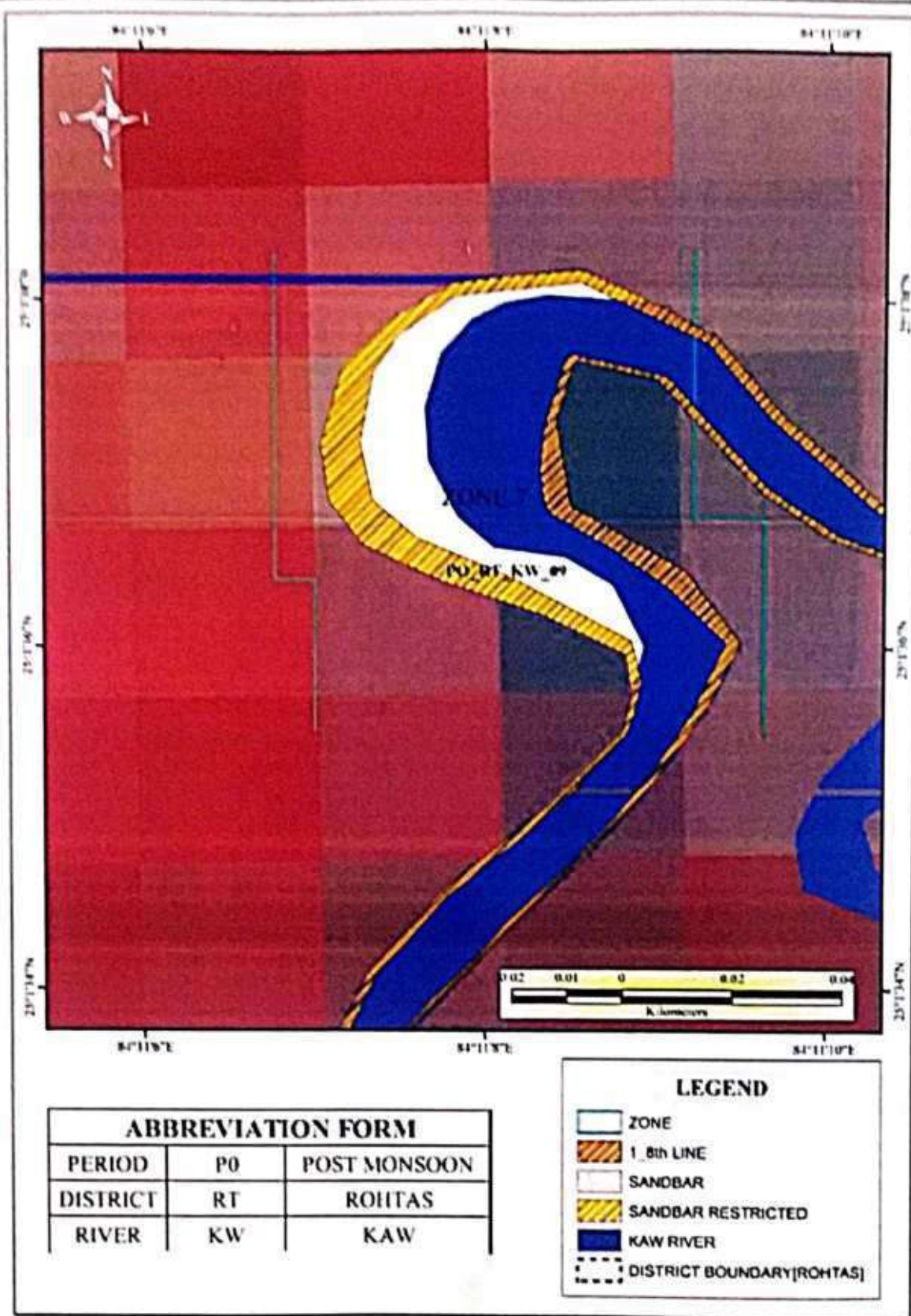


Plate No. 10: Plate showing potential Zone in post-monsoon of Kaw River



District Survey Report  
Rohtas, Bihar

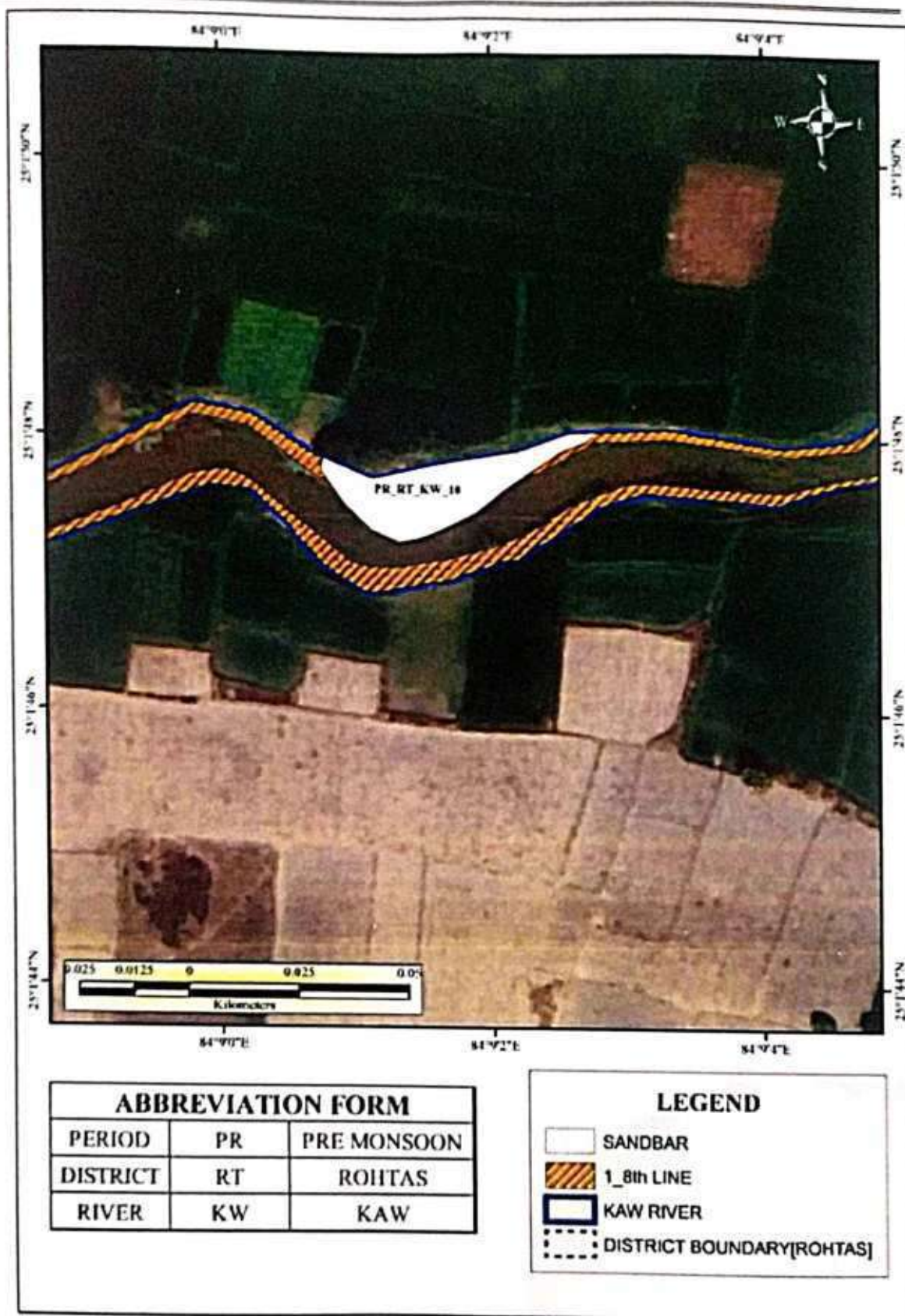


Plate No. 1P: Plate showing sandbars in pre-monsoon of Kaw River



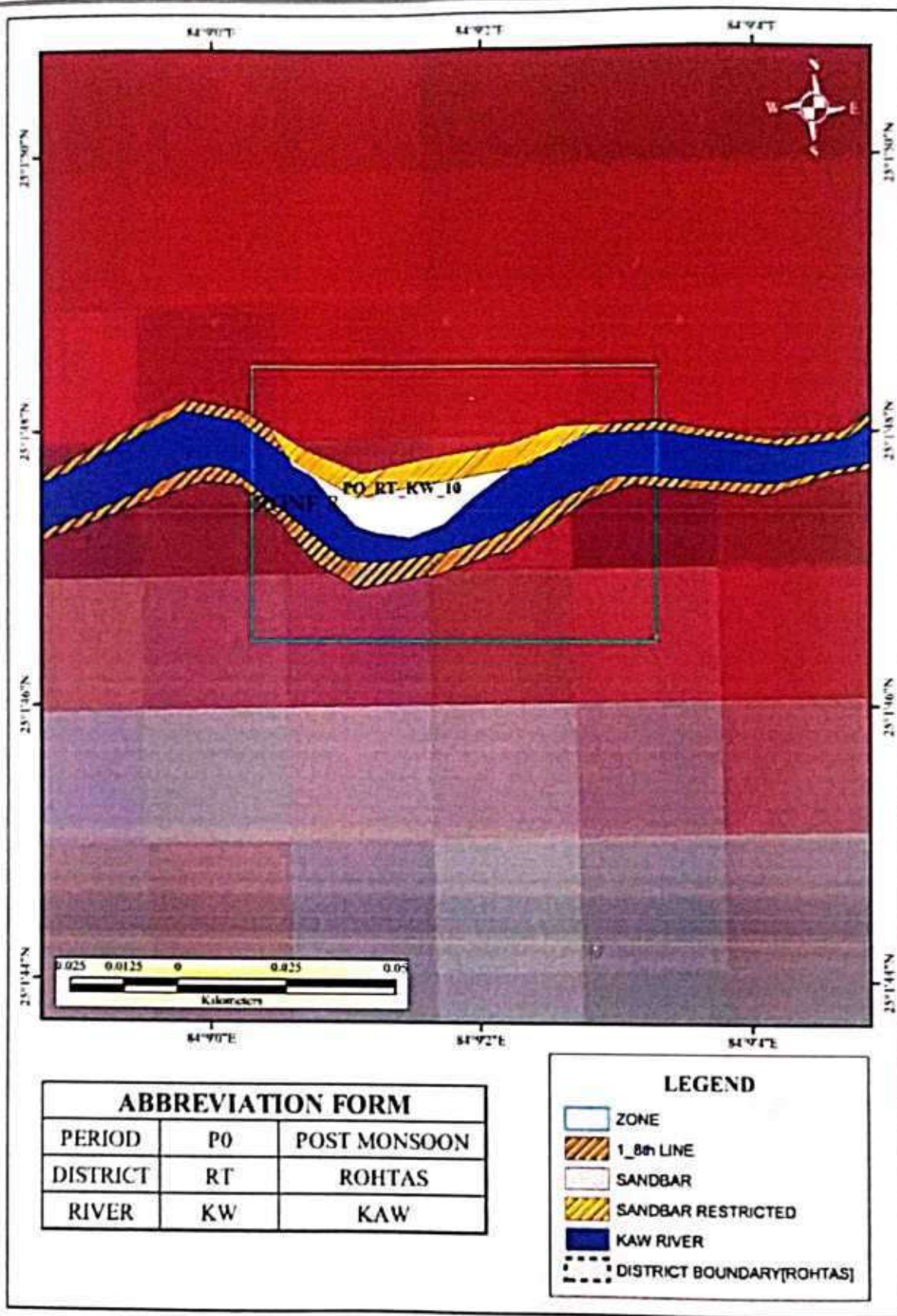


Plate No. 1P': Plate showing potential Zone in post-monsoon of Kaw River



District Survey Report  
Rohtas, Bihar

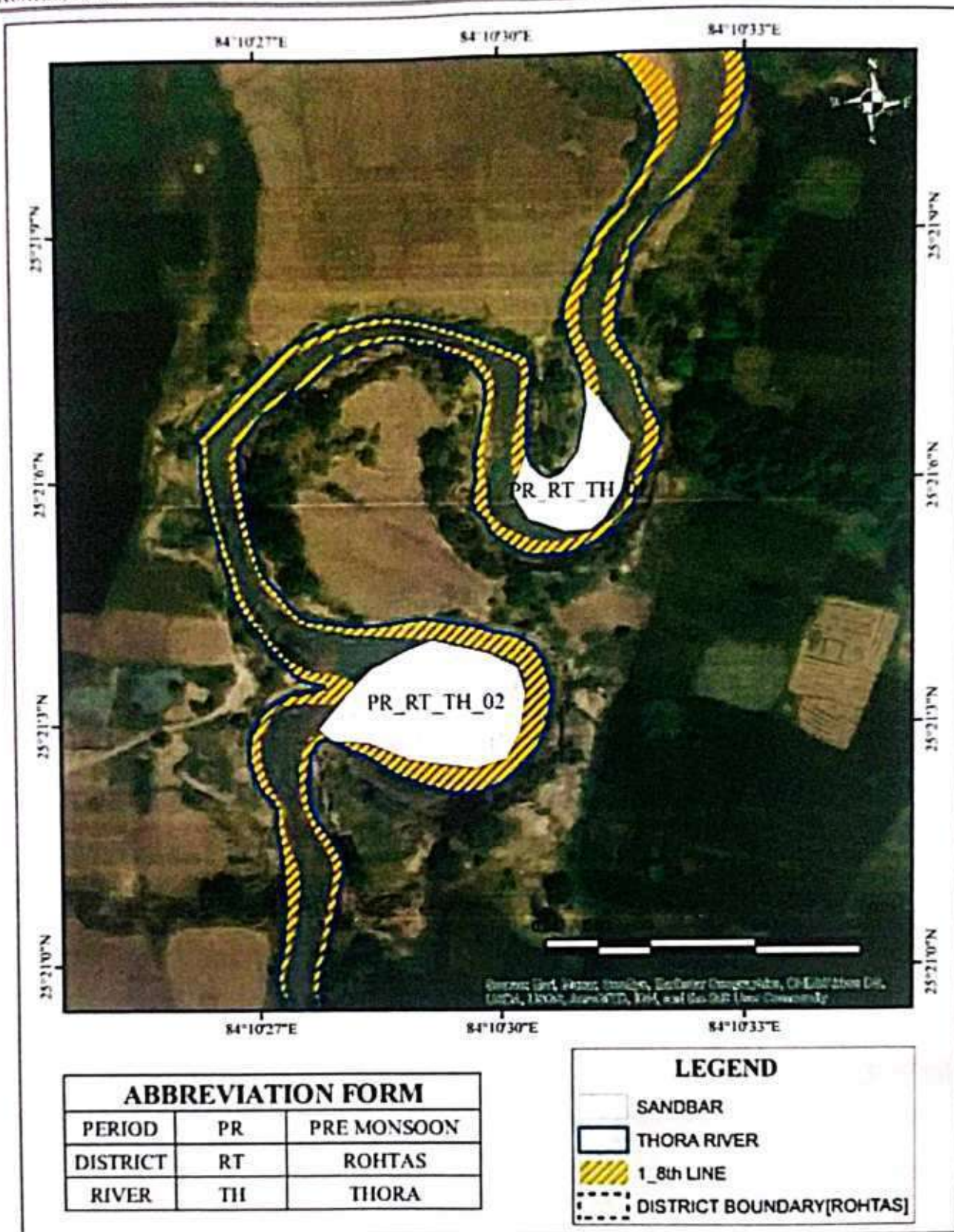


Plate No. 1T: Plate showing sandbars in pre-monsoon of Thora River



District Survey Report  
Rohtas, Bihar

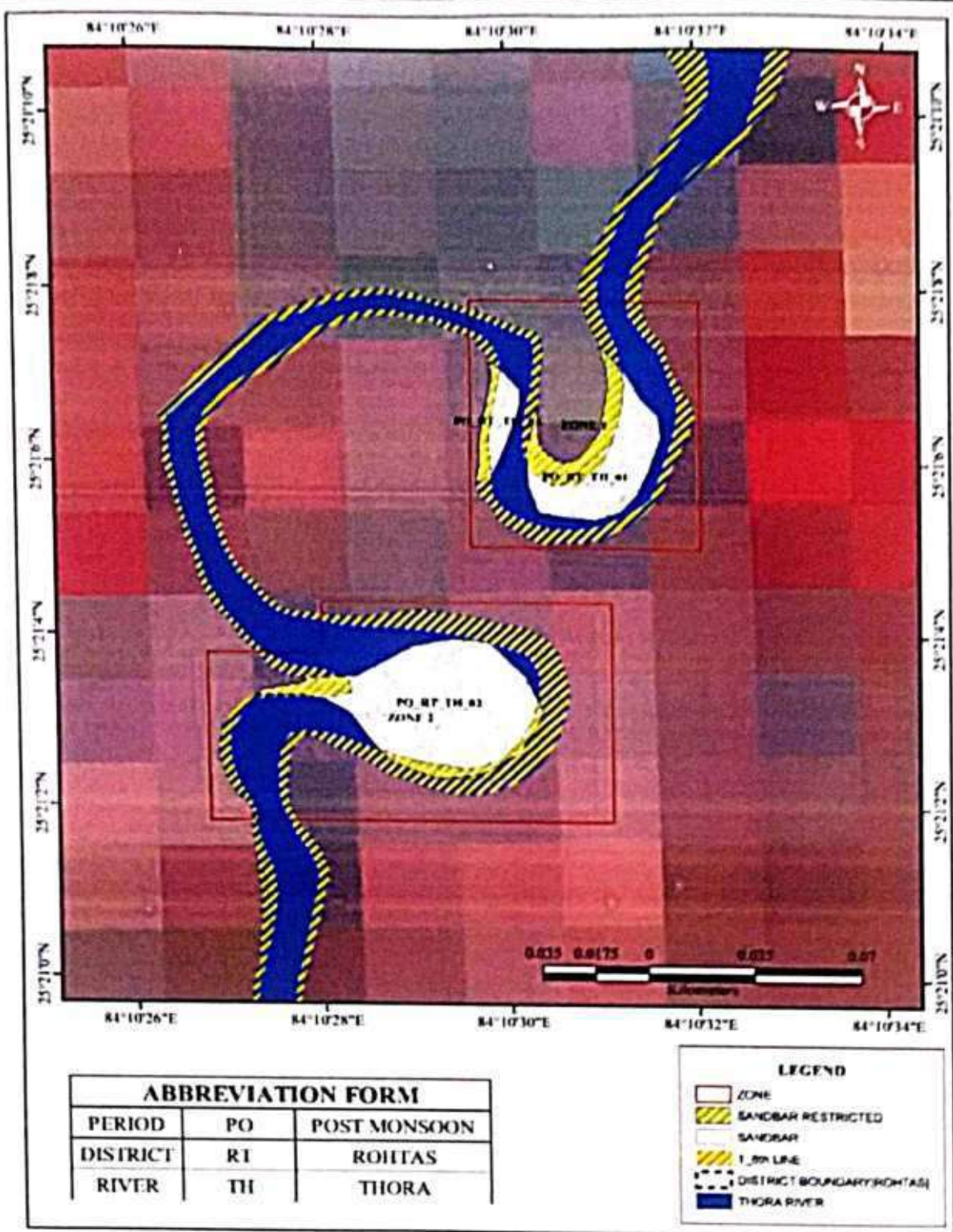


Plate No. 1T: Plate showing potential Zone in post-monsoon of Thora River



District Survey Report  
Rohtas, Bihar

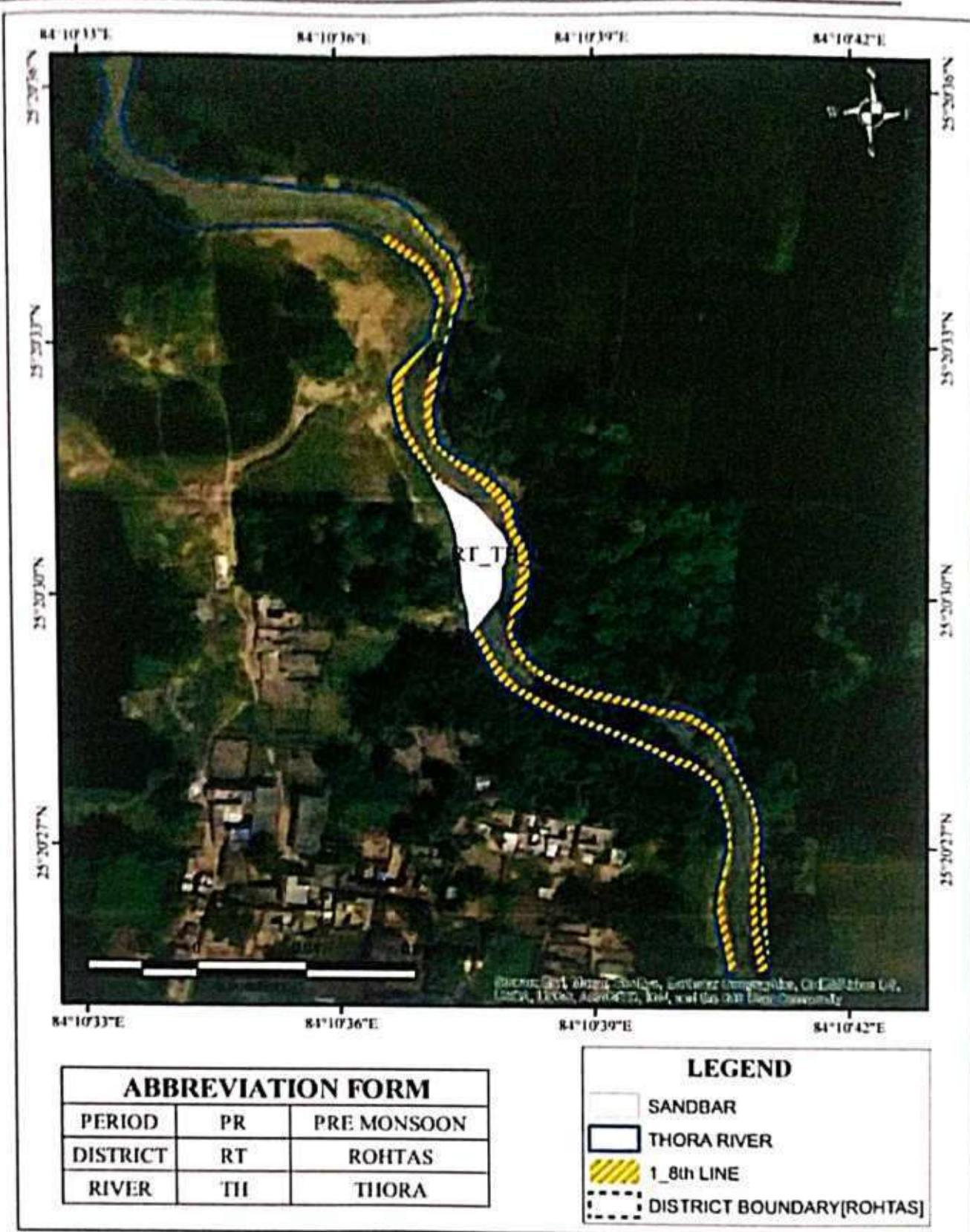


Plate No. 1U: Plate showing sandbars in pre-monsoon of Thora River



District Survey Report  
Rohtas, Bihar

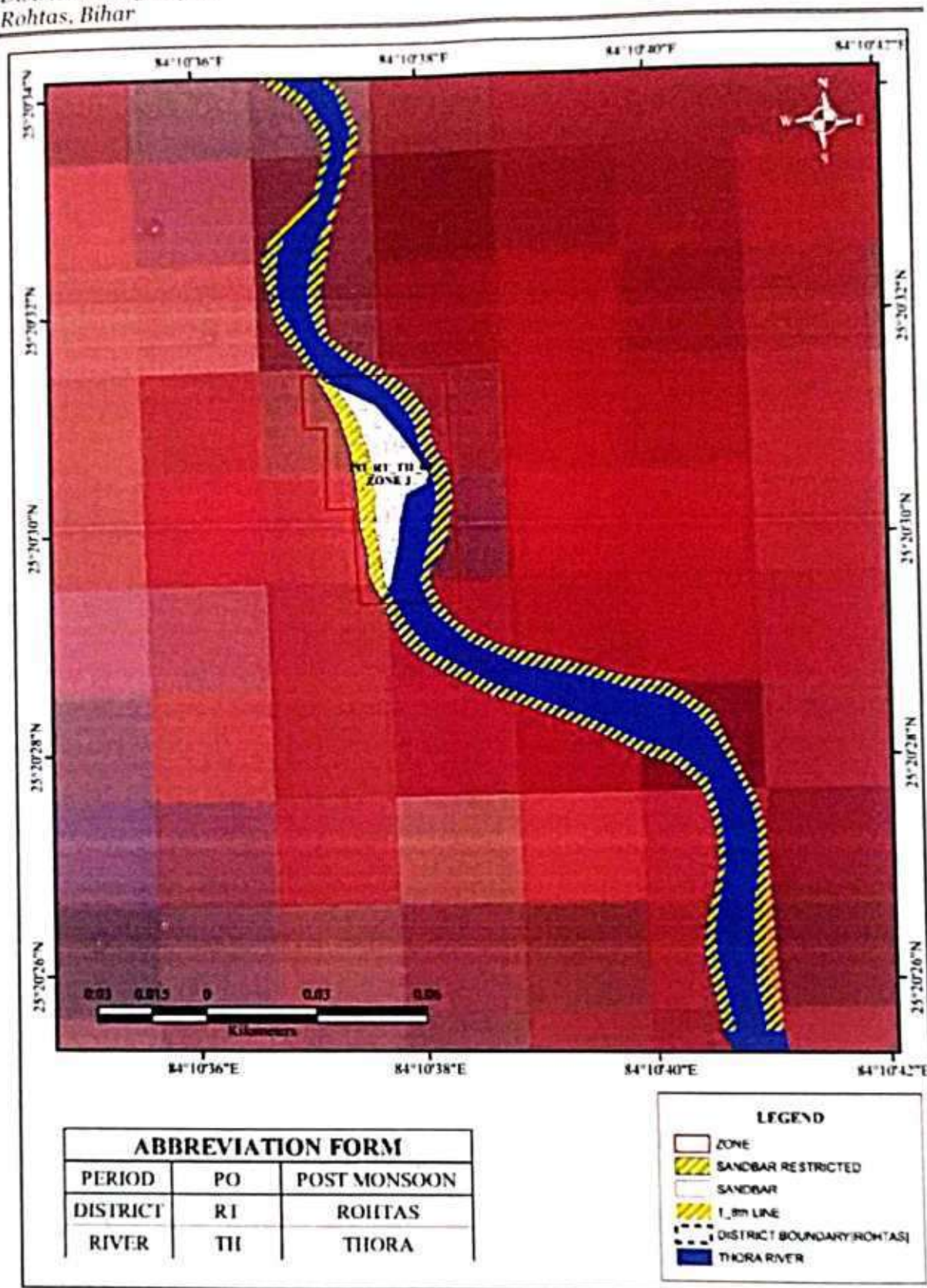


Plate No. 1U': Plate showing potential Zone in post-monsoon of Thora River

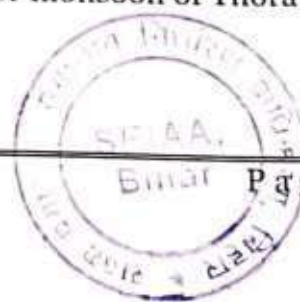
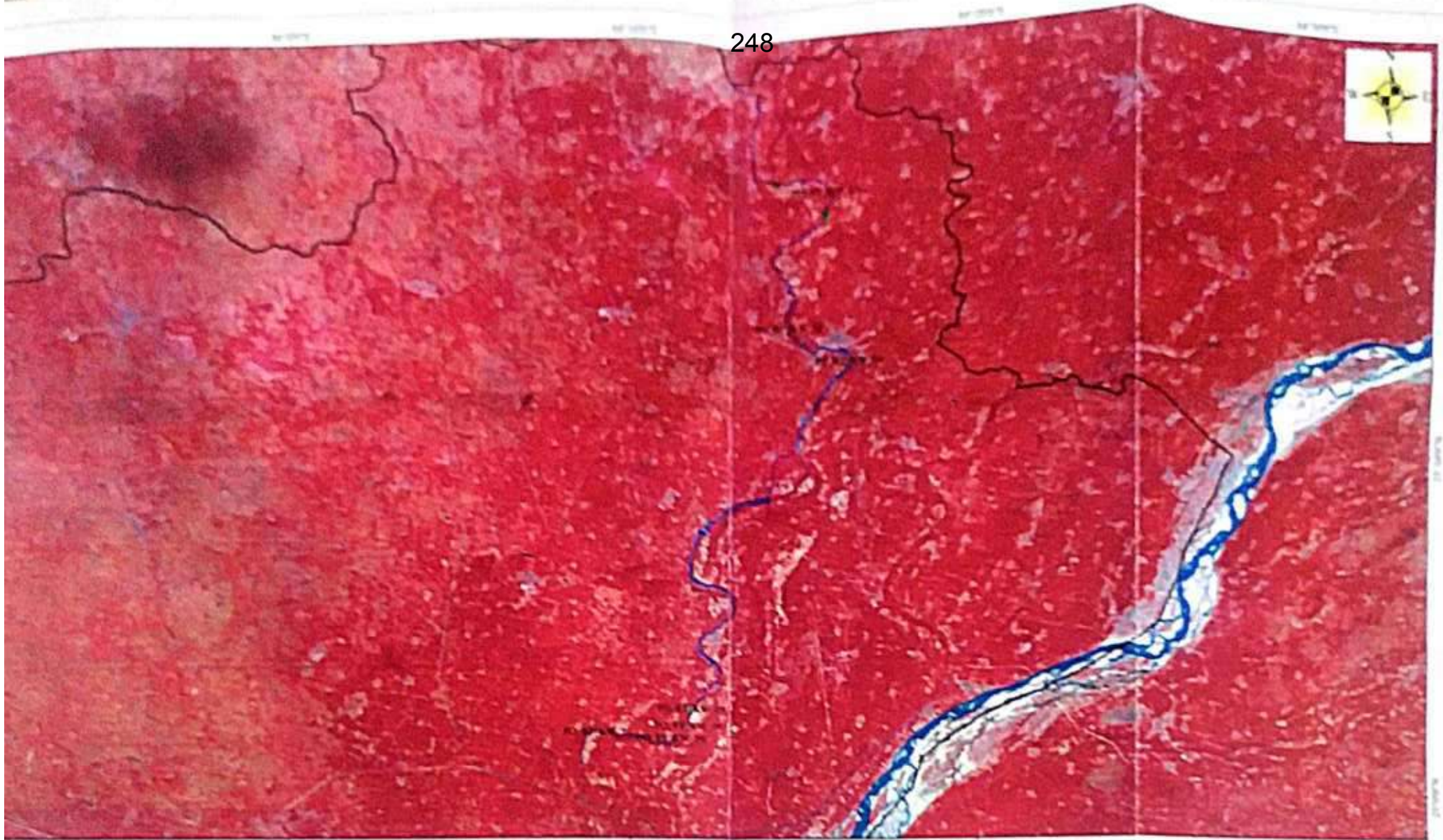


Plate 2A River Wise Composite Map-Sone River





### ABBREVIATION FORM

|          |    |              |
|----------|----|--------------|
| PERIOD   | PO | POST MONSOON |
| DISTRICT | RT | ROHTAS       |
| RIVER    | SN | SONE         |

| LEGEND |                           |
|--------|---------------------------|
|        | ZONE                      |
|        | 1:500 LINE                |
|        | SANDBAR RESTRICTED        |
|        | SANDBAR                   |
|        | KAVI RIVER                |
|        | EXISTING LEASE SANDGHAT   |
|        | DISTRICT BOUNDARY[ROHTAS] |

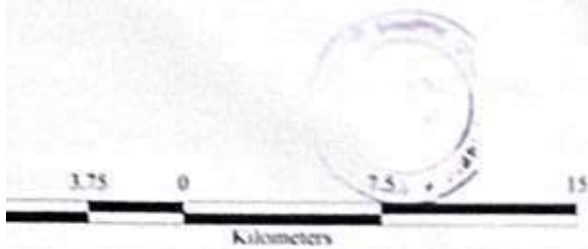


Plate 2B River Wise Composite Map-Kow River





250

253

### ABBREVIATION FORM

|          |    |              |
|----------|----|--------------|
| PERIOD   | PO | POST MONSOON |
| DISTRICT | RT | ROHTAS       |
| RIVER    | SN | SONE         |

### LEGEND

- ZONE
- 1<sup>st</sup> LINE
- SANDBAR RESTRICTED
- SANDBAR
- KAW RIVER
- EXISTING LEASE SANDGHAT
- DISTRICT BOUNDARY (ROHTAS)

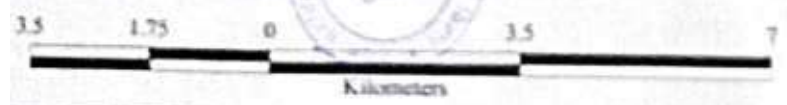
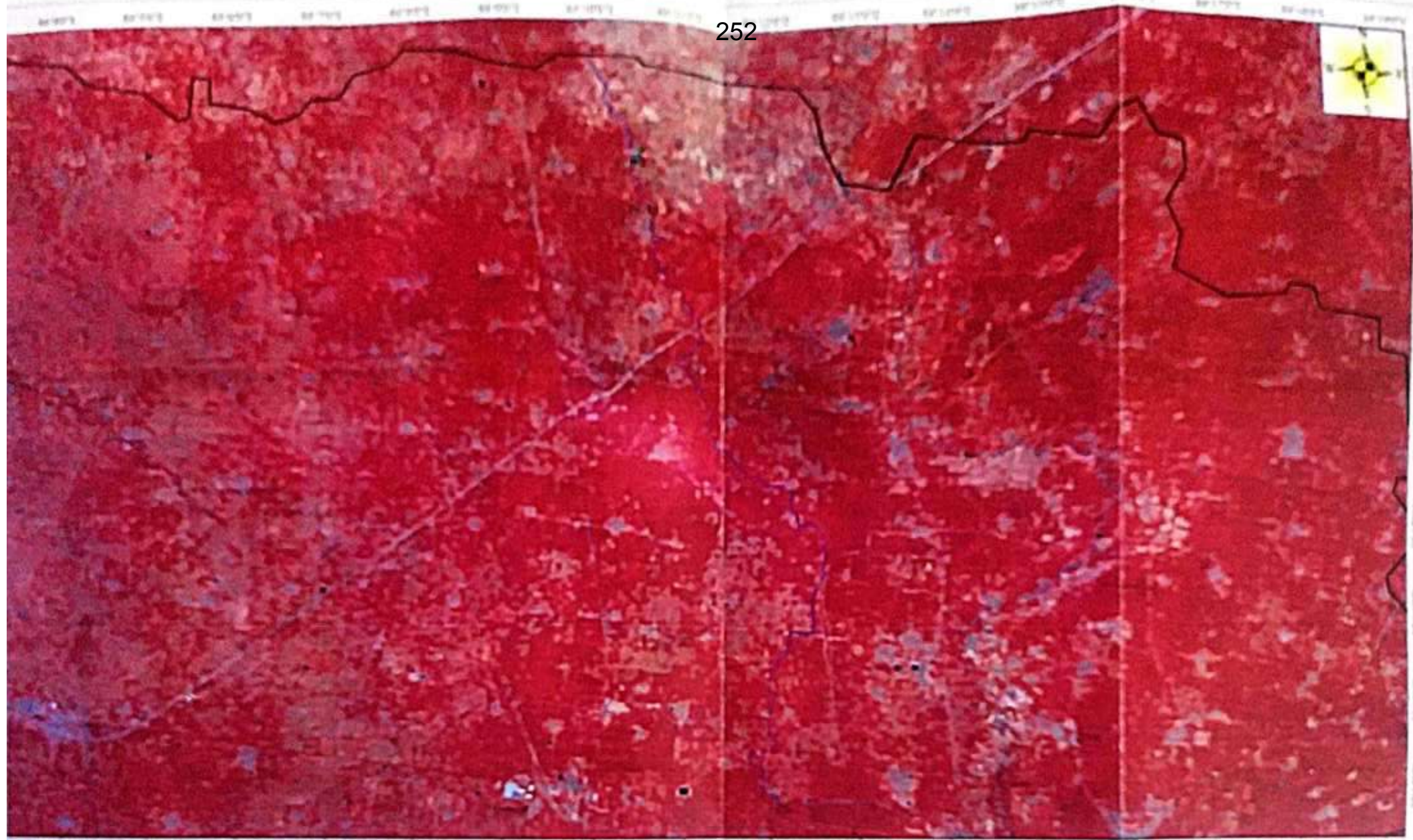


3.75 0 15

Kilometers

Plate 2C River Wise Composite Map-Thora River





**ABBREVIATION FORM**

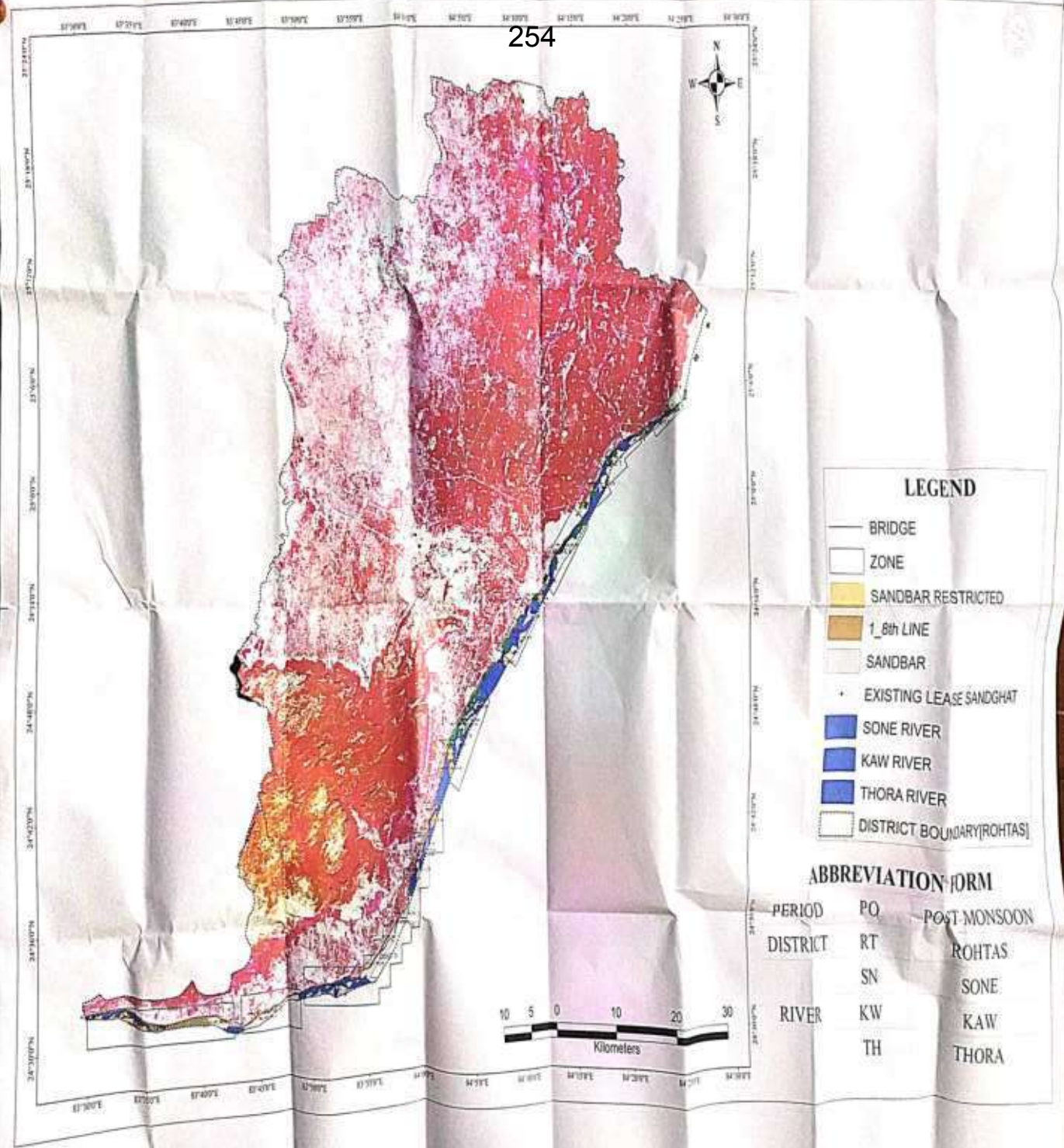
|          |    |              |
|----------|----|--------------|
| PERIOD   | PO | POST MONSOON |
| DISTRICT | RT | ROHTAS       |
| RIVER    | TH | THORA        |

**LEGEND**

- ZONE
- SANGHAI RESTRICTED
- EXISTING LEASE SANGHAI
- T. M. LINE
- SANGHAI
- THORA RIVER
- DISTRICT BOUNDARY/POCHONG

Plate 3 Composite Map of Rohtas District





**LEGEND**

- BRIDGE
- ZONE
- SANDBAR RESTRICTED
- 1<sup>st</sup> LINE
- SANDBAR
- EXISTING LEASE SANDGHAT
- SONE RIVER
- KAW RIVER
- THORA RIVER
- DISTRICT BOUNDARY[ROHTAS]

**ABBREVIATION FORM**

|          |    |              |
|----------|----|--------------|
| PERIOD   | PQ | POST-MONSOON |
| DISTRICT | RT | ROHTAS       |
|          | SN | SONE         |
| RIVER    | KW | KAW          |
|          | TH | THORA        |

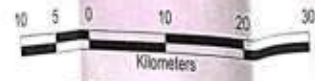
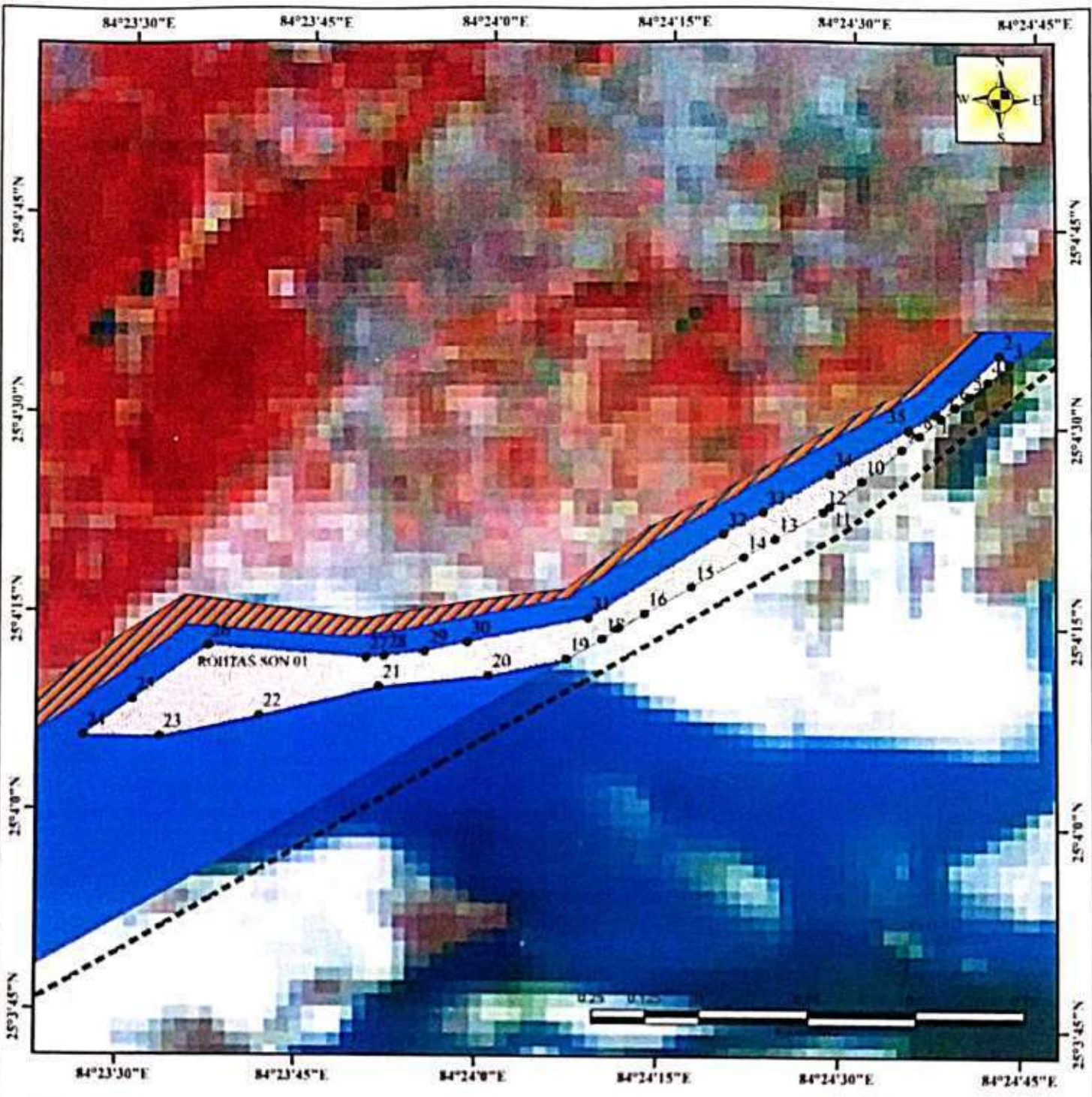


Plate:4  
Pillar Coordinate Map of Rohtas District



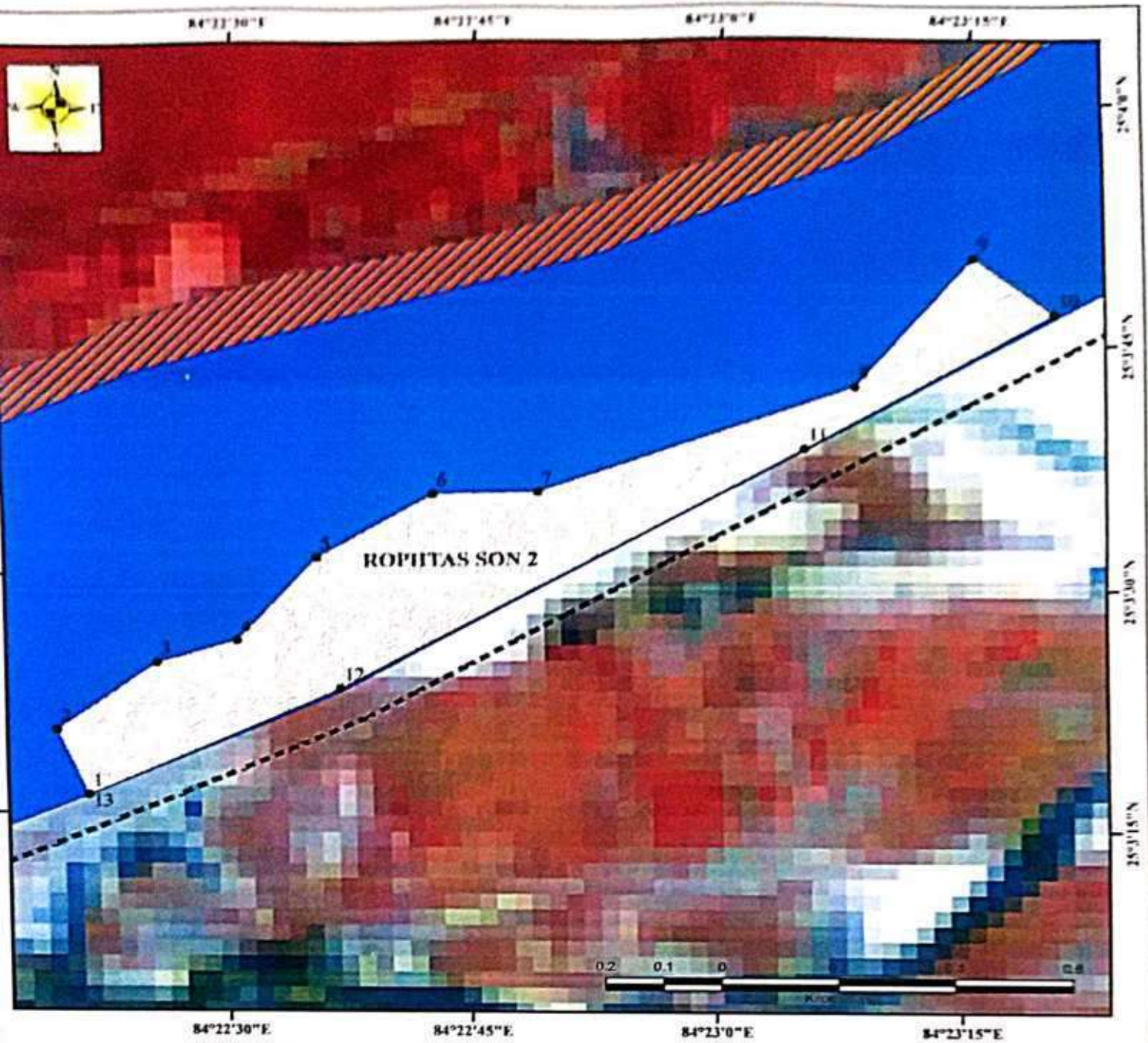


| ROHTAS SON 01 |                  |                   |          |                  |                   |
|---------------|------------------|-------------------|----------|------------------|-------------------|
| POINT NO      | LATITUDE         | LONGITUDE         | POINT NO | LATITUDE         | LONGITUDE         |
| 1             | 25° 4' 30.904" N | 84° 24' 37.491" E | 19       | 25° 4' 12.048" N | 84° 24' 7.309" E  |
| 2             | 25° 4' 35.362" N | 84° 24' 42.587" E | 20       | 25° 4' 10.685" N | 84° 24' 0.845" E  |
| 3             | 25° 4' 34.739" N | 84° 24' 43.455" E | 21       | 25° 4' 9.747" N  | 84° 23' 51.734" E |
| 4             | 25° 4' 33.412" N | 84° 24' 41.714" E | 22       | 25° 4' 7.454" N  | 84° 23' 41.683" E |
| 5             | 25° 4' 32.280" N | 84° 24' 40.194" E | 23       | 25° 4' 5.730" N  | 84° 23' 33.341" E |
| 6             | 25° 4' 31.481" N | 84° 24' 39.104" E | 24       | 25° 4' 5.665" N  | 84° 23' 26.969" E |
| 7             | 25° 4' 30.615" N | 84° 24' 37.934" E | 25       | 25° 4' 8.493" N  | 84° 23' 31.007" E |
| 8             | 25° 4' 29.315" N | 84° 24' 36.174" E | 26       | 25° 4' 12.696" N | 84° 23' 37.245" E |
| 9             | 25° 4' 28.262" N | 84° 24' 34.750" E | 27       | 25° 4' 11.893" N | 84° 23' 50.619" E |
| 10            | 25° 4' 25.857" N | 84° 24' 31.500" E | 28       | 25° 4' 12.027" N | 84° 23' 52.139" E |
| 11            | 25° 4' 23.864" N | 84° 24' 28.878" E | 29       | 25° 4' 12.423" N | 84° 23' 55.519" E |
| 12            | 25° 4' 23.489" N | 84° 24' 28.372" E | 30       | 25° 4' 13.172" N | 84° 23' 59.073" E |
| 13            | 25° 4' 21.364" N | 84° 24' 24.418" E | 31       | 25° 4' 15.145" N | 84° 24' 9.068" E  |
| 14            | 25° 4' 19.979" N | 84° 24' 21.863" E | 32       | 25° 4' 21.693" N | 84° 24' 20.178" E |
| 15            | 25° 4' 17.645" N | 84° 24' 17.596" E | 33       | 25° 4' 23.375" N | 84° 24' 23.395" E |
| 16            | 25° 4' 15.571" N | 84° 24' 13.744" E | 34       | 25° 4' 26.326" N | 84° 24' 28.868" E |
| 17            | 25° 4' 14.428" N | 84° 24' 11.536" E | 35       | 25° 4' 29.711" N | 84° 24' 35.263" E |
| 18            | 25° 4' 13.633" N | 84° 24' 10.254" E | 36       | 25° 4' 30.904" N | 84° 24' 37.491" E |



**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- ▨ SAFETY BARRIER
- SONE RIVER
- ⋯ DISTRICT BOUNDARY(ROHTAS)



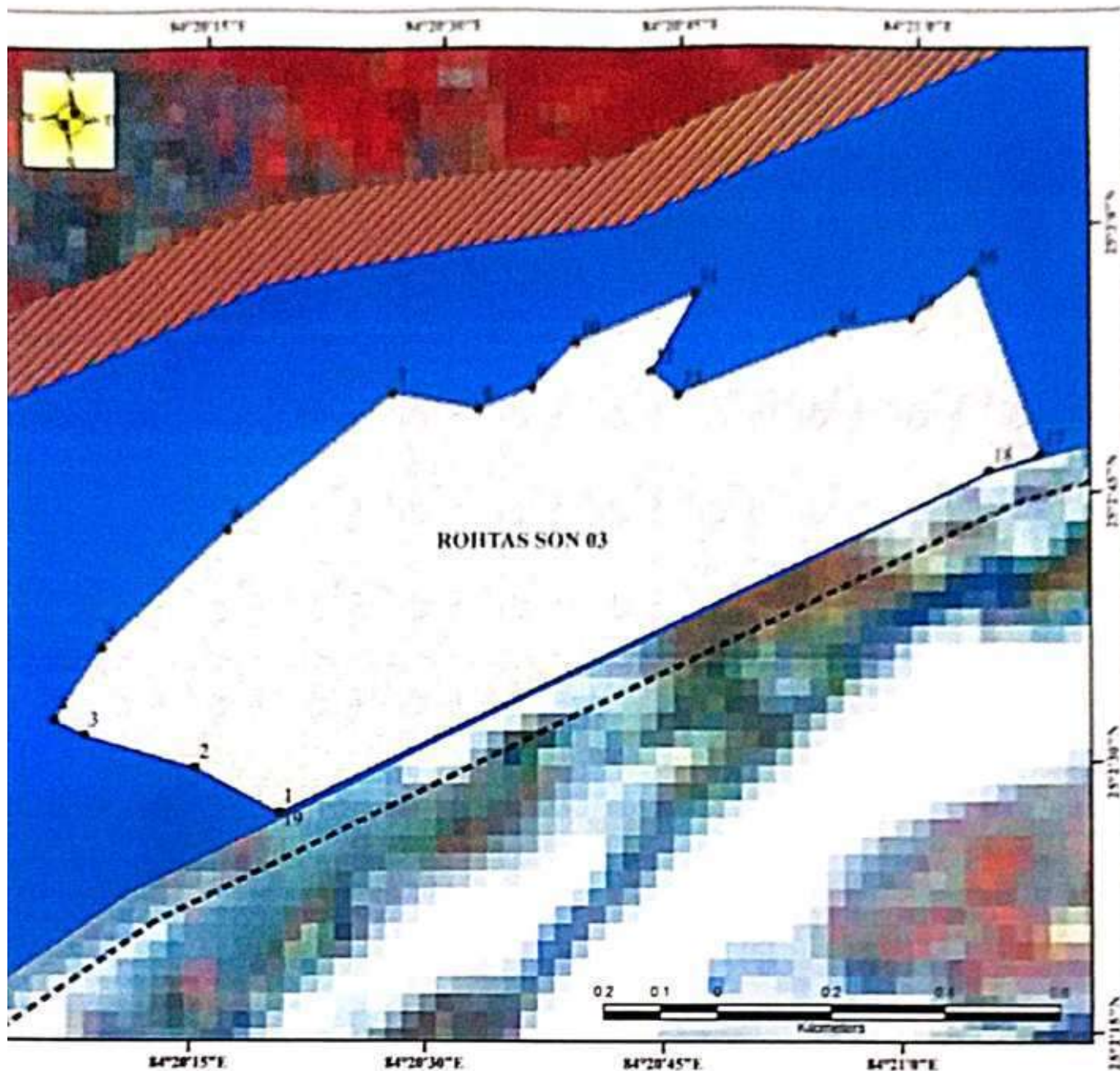
**ROHTAS SON 02**

| POINT NO | LATITUDE         | LONGITUDE         |
|----------|------------------|-------------------|
| 1        | 25° 3' 16.241" N | 84° 22' 21.422" E |
| 2        | 25° 3' 20.296" N | 84° 22' 19.448" E |
| 3        | 25° 3' 24.667" N | 84° 22' 25.618" E |
| 4        | 25° 3' 26.134" N | 84° 22' 30.637" E |
| 5        | 25° 3' 31.355" N | 84° 22' 35.556" E |
| 6        | 25° 3' 35.335" N | 84° 22' 42.764" E |
| 7        | 25° 3' 35.560" N | 84° 22' 49.200" E |
| 8        | 25° 3' 42.259" N | 84° 23' 8.408" E  |
| 9        | 25° 3' 50.205" N | 84° 23' 15.461" E |
| 10       | 25° 3' 46.815" N | 84° 23' 20.342" E |
| 11       | 25° 3' 38.440" N | 84° 23' 5.406" E  |
| 12       | 25° 3' 23.155" N | 84° 22' 37.099" E |
| 13       | 25° 3' 16.241" N | 84° 22' 21.422" E |



**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- ▨ SAFETY BARRIER
- SONE RIVER
- - - DISTRICT BOUNDARY(ROHTAS)

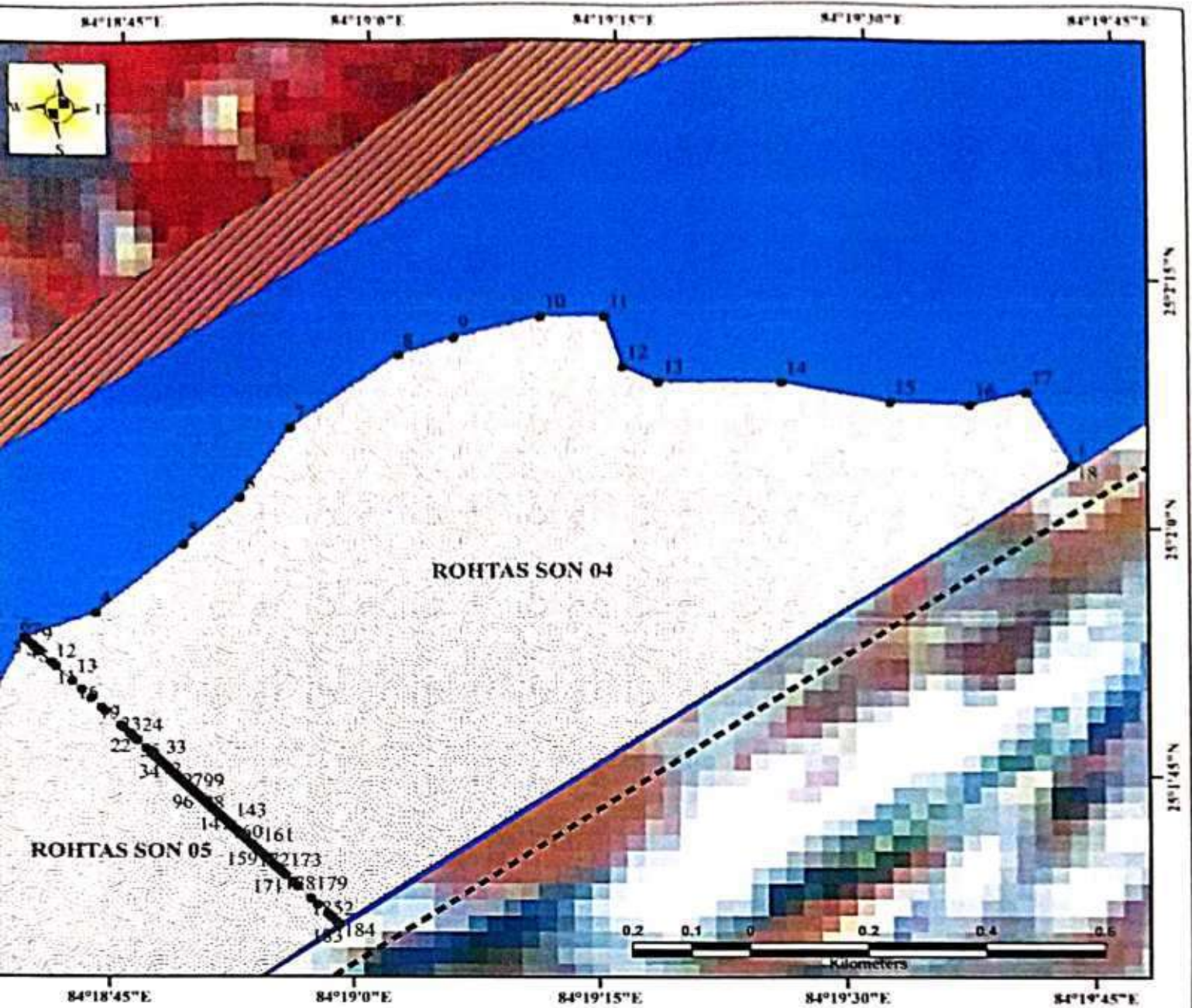


| ROHTAS SON 03 |                  |                   |
|---------------|------------------|-------------------|
| POINT NO      | LATITUDE         | LONGITUDE         |
| 1             | 25° 2' 26.303" N | 84° 20' 20.763" E |
| 2             | 25° 2' 28.743" N | 84° 20' 15.308" E |
| 3             | 25° 2' 30.421" N | 84° 20' 8.208" E  |
| 4             | 25° 2' 31.214" N | 84° 20' 6.295" E  |
| 5             | 25° 2' 35.284" N | 84° 20' 9.191" E  |
| 6             | 25° 2' 42.093" N | 84° 20' 17.054" E |
| 7             | 25° 2' 49.757" N | 84° 20' 27.447" E |
| 8             | 25° 2' 48.949" N | 84° 20' 32.929" E |
| 9             | 25° 2' 50.218" N | 84° 20' 36.251" E |
| 10            | 25° 2' 52.772" N | 84° 20' 38.981" E |
| 11            | 25° 2' 55.671" N | 84° 20' 46.474" E |
| 12            | 25° 2' 51.254" N | 84° 20' 43.723" E |
| 13            | 25° 2' 49.962" N | 84° 20' 45.510" E |
| 14            | 25° 2' 53.551" N | 84° 20' 55.188" E |
| 15            | 25° 2' 54.415" N | 84° 21' 0.118" E  |
| 16            | 25° 2' 57.040" N | 84° 21' 3.951" E  |
| 17            | 25° 2' 46.971" N | 84° 21' 8.335" E  |
| 18            | 25° 2' 46.007" N | 84° 21' 5.132" E  |
| 19            | 25° 2' 26.303" N | 84° 20' 20.763" E |



**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- ▨ SAFETY BARRIER
- SONE RIVER
- - - DISTRICT BOUNDARY(ROHTAS)

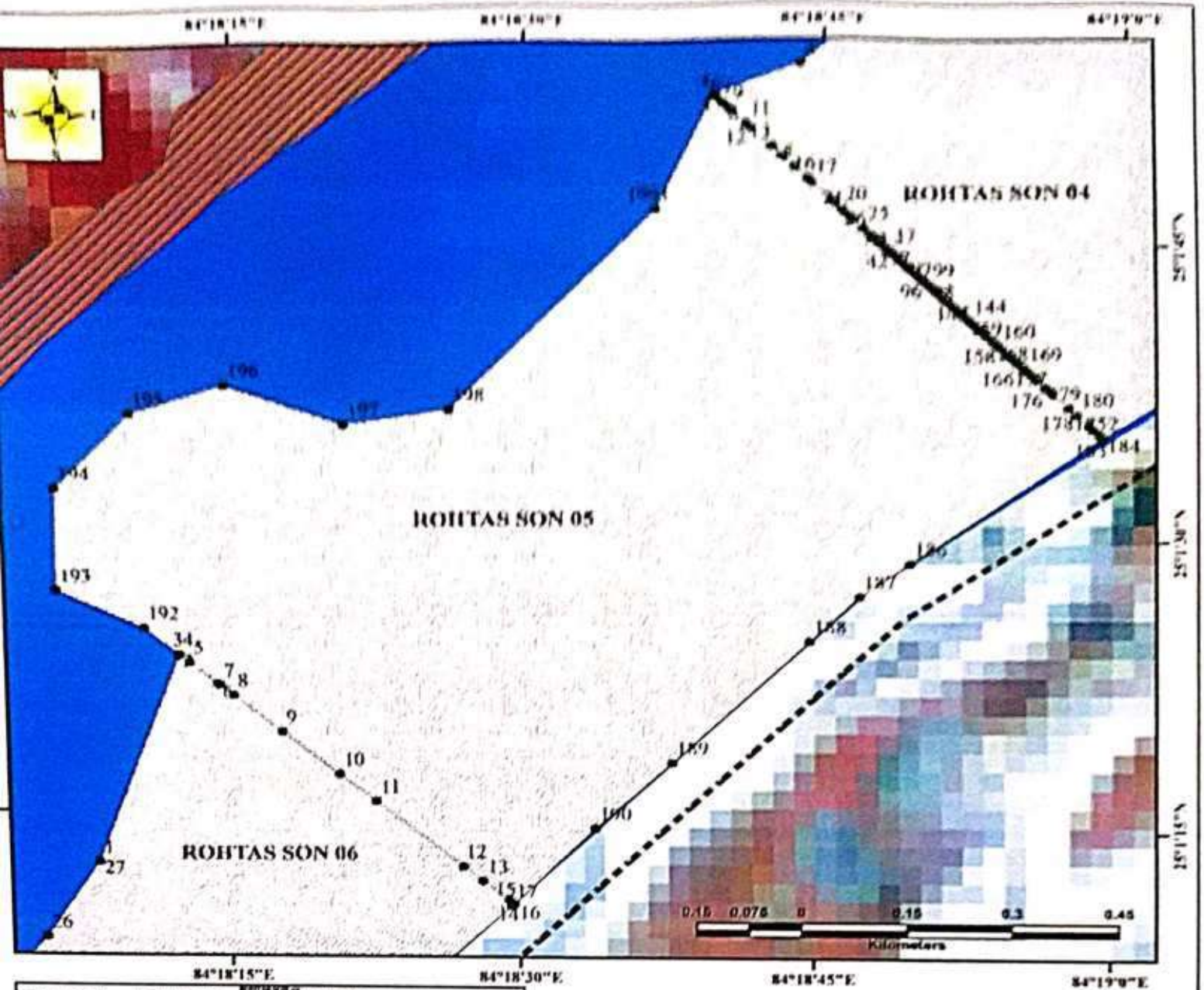


| ROHTAS SON 04 |                  |                   |
|---------------|------------------|-------------------|
| POINT NO      | LATITUDE         | LONGITUDE         |
| 1             | 25° 2' 3.685" N  | 84° 19' 43.381" E |
| 2             | 25° 1' 35.211" N | 84° 18' 59.389" E |
| 3             | 25° 1' 52.347" N | 84° 18' 39.796" E |
| 4             | 25° 1' 53.956" N | 84° 18' 44.121" E |
| 5             | 25° 1' 58.219" N | 84° 18' 49.420" E |
| 6             | 25° 2' 1.059" N  | 84° 18' 52.878" E |
| 7             | 25° 2' 5.294" N  | 84° 18' 55.883" E |
| 8             | 25° 2' 9.741" N  | 84° 19' 2.421" E  |
| 9             | 25° 2' 10.816" N | 84° 19' 5.789" E  |
| 10            | 25° 2' 12.191" N | 84° 19' 11.009" E |
| 11            | 25° 2' 12.294" N | 84° 19' 14.919" E |
| 12            | 25° 2' 9.225" N  | 84° 19' 16.081" E |
| 13            | 25° 2' 8.344" N  | 84° 19' 18.267" E |
| 14            | 25° 2' 8.405" N  | 84° 19' 25.728" E |
| 15            | 25° 2' 7.319" N  | 84° 19' 32.317" E |
| 16            | 25° 2' 7.250" N  | 84° 19' 37.160" E |
| 17            | 25° 2' 8.055" N  | 84° 19' 40.547" E |
| 18            | 25° 2' 3.685" N  | 84° 19' 43.381" E |



**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- SAFETY BARRIER
- SONE RIVER
- DISTRICT BOUNDARY(ROHTAS)

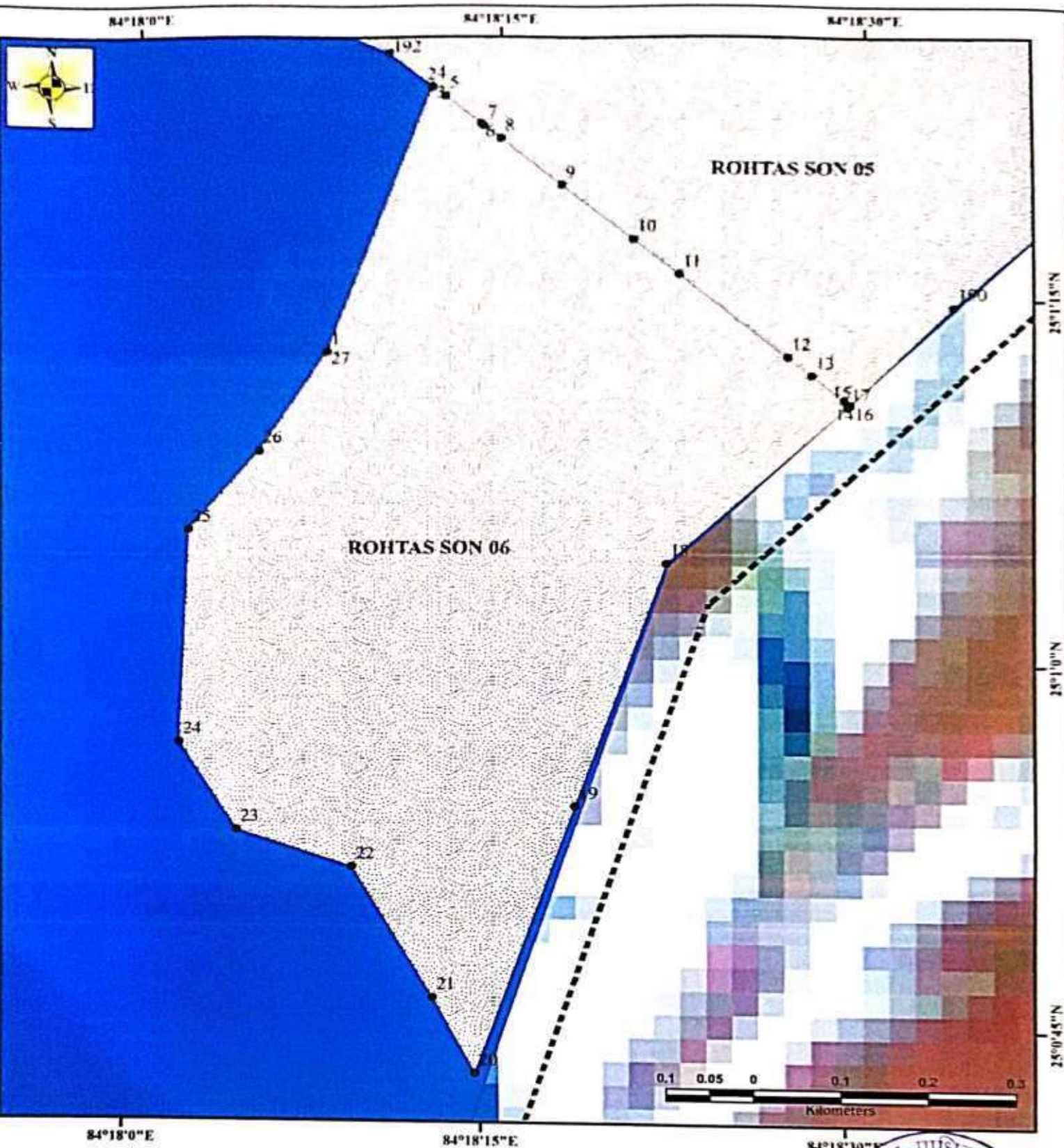


| Block No. | Coordinate | Block No. | Coordinate | Block No. | Coordinate |
|-----------|------------|-----------|------------|-----------|------------|
| 1         | ...        | 101       | ...        | 201       | ...        |
| 2         | ...        | 102       | ...        | 202       | ...        |
| 3         | ...        | 103       | ...        | 203       | ...        |
| 4         | ...        | 104       | ...        | 204       | ...        |
| 5         | ...        | 105       | ...        | 205       | ...        |
| 6         | ...        | 106       | ...        | 206       | ...        |
| 7         | ...        | 107       | ...        | 207       | ...        |
| 8         | ...        | 108       | ...        | 208       | ...        |
| 9         | ...        | 109       | ...        | 209       | ...        |
| 10        | ...        | 110       | ...        | 210       | ...        |
| 11        | ...        | 111       | ...        | 211       | ...        |
| 12        | ...        | 112       | ...        | 212       | ...        |
| 13        | ...        | 113       | ...        | 213       | ...        |
| 14        | ...        | 114       | ...        | 214       | ...        |
| 15        | ...        | 115       | ...        | 215       | ...        |
| 16        | ...        | 116       | ...        | 216       | ...        |
| 17        | ...        | 117       | ...        | 217       | ...        |
| 18        | ...        | 118       | ...        | 218       | ...        |
| 19        | ...        | 119       | ...        | 219       | ...        |
| 20        | ...        | 120       | ...        | 220       | ...        |
| 21        | ...        | 121       | ...        | 221       | ...        |
| 22        | ...        | 122       | ...        | 222       | ...        |
| 23        | ...        | 123       | ...        | 223       | ...        |
| 24        | ...        | 124       | ...        | 224       | ...        |
| 25        | ...        | 125       | ...        | 225       | ...        |
| 26        | ...        | 126       | ...        | 226       | ...        |
| 27        | ...        | 127       | ...        | 227       | ...        |
| 28        | ...        | 128       | ...        | 228       | ...        |
| 29        | ...        | 129       | ...        | 229       | ...        |
| 30        | ...        | 130       | ...        | 230       | ...        |
| 31        | ...        | 131       | ...        | 231       | ...        |
| 32        | ...        | 132       | ...        | 232       | ...        |
| 33        | ...        | 133       | ...        | 233       | ...        |
| 34        | ...        | 134       | ...        | 234       | ...        |
| 35        | ...        | 135       | ...        | 235       | ...        |
| 36        | ...        | 136       | ...        | 236       | ...        |
| 37        | ...        | 137       | ...        | 237       | ...        |
| 38        | ...        | 138       | ...        | 238       | ...        |
| 39        | ...        | 139       | ...        | 239       | ...        |
| 40        | ...        | 140       | ...        | 240       | ...        |
| 41        | ...        | 141       | ...        | 241       | ...        |
| 42        | ...        | 142       | ...        | 242       | ...        |
| 43        | ...        | 143       | ...        | 243       | ...        |
| 44        | ...        | 144       | ...        | 244       | ...        |
| 45        | ...        | 145       | ...        | 245       | ...        |
| 46        | ...        | 146       | ...        | 246       | ...        |
| 47        | ...        | 147       | ...        | 247       | ...        |
| 48        | ...        | 148       | ...        | 248       | ...        |
| 49        | ...        | 149       | ...        | 249       | ...        |
| 50        | ...        | 150       | ...        | 250       | ...        |
| 51        | ...        | 151       | ...        | 251       | ...        |
| 52        | ...        | 152       | ...        | 252       | ...        |
| 53        | ...        | 153       | ...        | 253       | ...        |
| 54        | ...        | 154       | ...        | 254       | ...        |
| 55        | ...        | 155       | ...        | 255       | ...        |
| 56        | ...        | 156       | ...        | 256       | ...        |
| 57        | ...        | 157       | ...        | 257       | ...        |
| 58        | ...        | 158       | ...        | 258       | ...        |
| 59        | ...        | 159       | ...        | 259       | ...        |
| 60        | ...        | 160       | ...        | 260       | ...        |
| 61        | ...        | 161       | ...        | 261       | ...        |
| 62        | ...        | 162       | ...        | 262       | ...        |
| 63        | ...        | 163       | ...        | 263       | ...        |
| 64        | ...        | 164       | ...        | 264       | ...        |
| 65        | ...        | 165       | ...        | 265       | ...        |
| 66        | ...        | 166       | ...        | 266       | ...        |
| 67        | ...        | 167       | ...        | 267       | ...        |
| 68        | ...        | 168       | ...        | 268       | ...        |
| 69        | ...        | 169       | ...        | 269       | ...        |
| 70        | ...        | 170       | ...        | 270       | ...        |
| 71        | ...        | 171       | ...        | 271       | ...        |
| 72        | ...        | 172       | ...        | 272       | ...        |
| 73        | ...        | 173       | ...        | 273       | ...        |
| 74        | ...        | 174       | ...        | 274       | ...        |
| 75        | ...        | 175       | ...        | 275       | ...        |
| 76        | ...        | 176       | ...        | 276       | ...        |
| 77        | ...        | 177       | ...        | 277       | ...        |
| 78        | ...        | 178       | ...        | 278       | ...        |
| 79        | ...        | 179       | ...        | 279       | ...        |
| 80        | ...        | 180       | ...        | 280       | ...        |
| 81        | ...        | 181       | ...        | 281       | ...        |
| 82        | ...        | 182       | ...        | 282       | ...        |
| 83        | ...        | 183       | ...        | 283       | ...        |
| 84        | ...        | 184       | ...        | 284       | ...        |
| 85        | ...        | 185       | ...        | 285       | ...        |
| 86        | ...        | 186       | ...        | 286       | ...        |
| 87        | ...        | 187       | ...        | 287       | ...        |
| 88        | ...        | 188       | ...        | 288       | ...        |
| 89        | ...        | 189       | ...        | 289       | ...        |
| 90        | ...        | 190       | ...        | 290       | ...        |
| 91        | ...        | 191       | ...        | 291       | ...        |
| 92        | ...        | 192       | ...        | 292       | ...        |
| 93        | ...        | 193       | ...        | 293       | ...        |
| 94        | ...        | 194       | ...        | 294       | ...        |
| 95        | ...        | 195       | ...        | 295       | ...        |
| 96        | ...        | 196       | ...        | 296       | ...        |
| 97        | ...        | 197       | ...        | 297       | ...        |
| 98        | ...        | 198       | ...        | 298       | ...        |
| 99        | ...        | 199       | ...        | 299       | ...        |
| 100       | ...        | 200       | ...        | 300       | ...        |



**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- ▨ SAFETY BARRIER
- SONE RIVER
- DISTRICT BOUNDARY(ROHTAS)

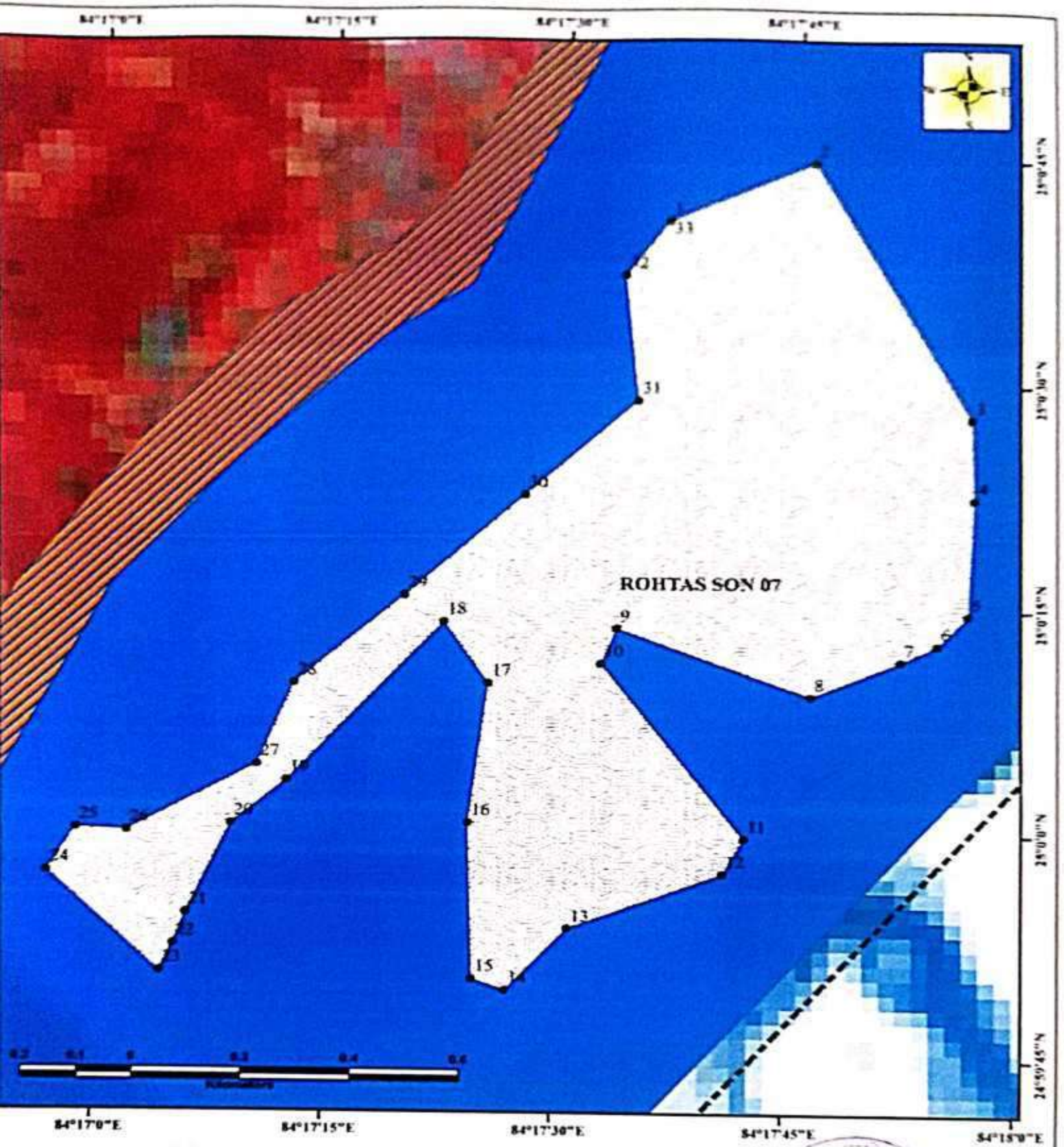


| ROHTAS SON 06 |                  |                   |          |                  |                   |
|---------------|------------------|-------------------|----------|------------------|-------------------|
| POINT NO      | LATITUDE         | LONGITUDE         | POINT NO | LATITUDE         | LONGITUDE         |
| 1             | 25° 1' 12.428" N | 84° 18' 8.340" E  | 15       | 25° 1' 10.652" N | 84° 18' 29.979" E |
| 2             | 25° 1' 23.424" N | 84° 18' 12.521" E | 16       | 25° 1' 10.631" N | 84° 18' 30.007" E |
| 3             | 25° 1' 23.489" N | 84° 18' 12.542" E | 17       | 25° 1' 10.546" N | 84° 18' 29.890" E |
| 4             | 25° 1' 23.488" N | 84° 18' 12.542" E | 18       | 25° 1' 3.926" N  | 84° 18' 22.554" E |
| 5             | 25° 1' 23.093" N | 84° 18' 13.080" E | 19       | 25° 0' 53.820" N | 84° 18' 18.995" E |
| 6             | 25° 1' 21.985" N | 84° 18' 14.584" E | 20       | 25° 0' 42.704" N | 84° 18' 15.067" E |
| 7             | 25° 1' 21.916" N | 84° 18' 14.678" E | 21       | 25° 0' 45.770" N | 84° 18' 13.252" E |
| 8             | 25° 1' 21.383" N | 84° 18' 15.402" E | 22       | 25° 0' 51.086" N | 84° 18' 9.800" E  |
| 9             | 25° 1' 19.506" N | 84° 18' 17.952" E | 23       | 25° 0' 52.528" N | 84° 18' 4.952" E  |
| 10            | 25° 1' 17.303" N | 84° 18' 20.944" E | 24       | 25° 0' 56.121" N | 84° 18' 2.452" E  |
| 11            | 25° 1' 15.897" N | 84° 18' 22.854" E | 25       | 25° 1' 4.997" N  | 84° 18' 2.664" E  |
| 12            | 25° 1' 12.561" N | 84° 18' 27.386" E | 26       | 25° 1' 8.334" N  | 84° 18' 5.578" E  |
| 13            | 25° 1' 11.818" N | 84° 18' 28.395" E | 27       | 25° 1' 12.428" N | 84° 18' 8.340" E  |
| 14            | 25° 1' 10.828" N | 84° 18' 29.740" E |          |                  |                   |

**LEGEND**

- COORDINATE
- ▨ POTENTIAL BLOCK
- ▨ SAFETY BARRIER
- SONE RIVER
- ⋯ DISTRICT BOUNDARY(ROHTAS)

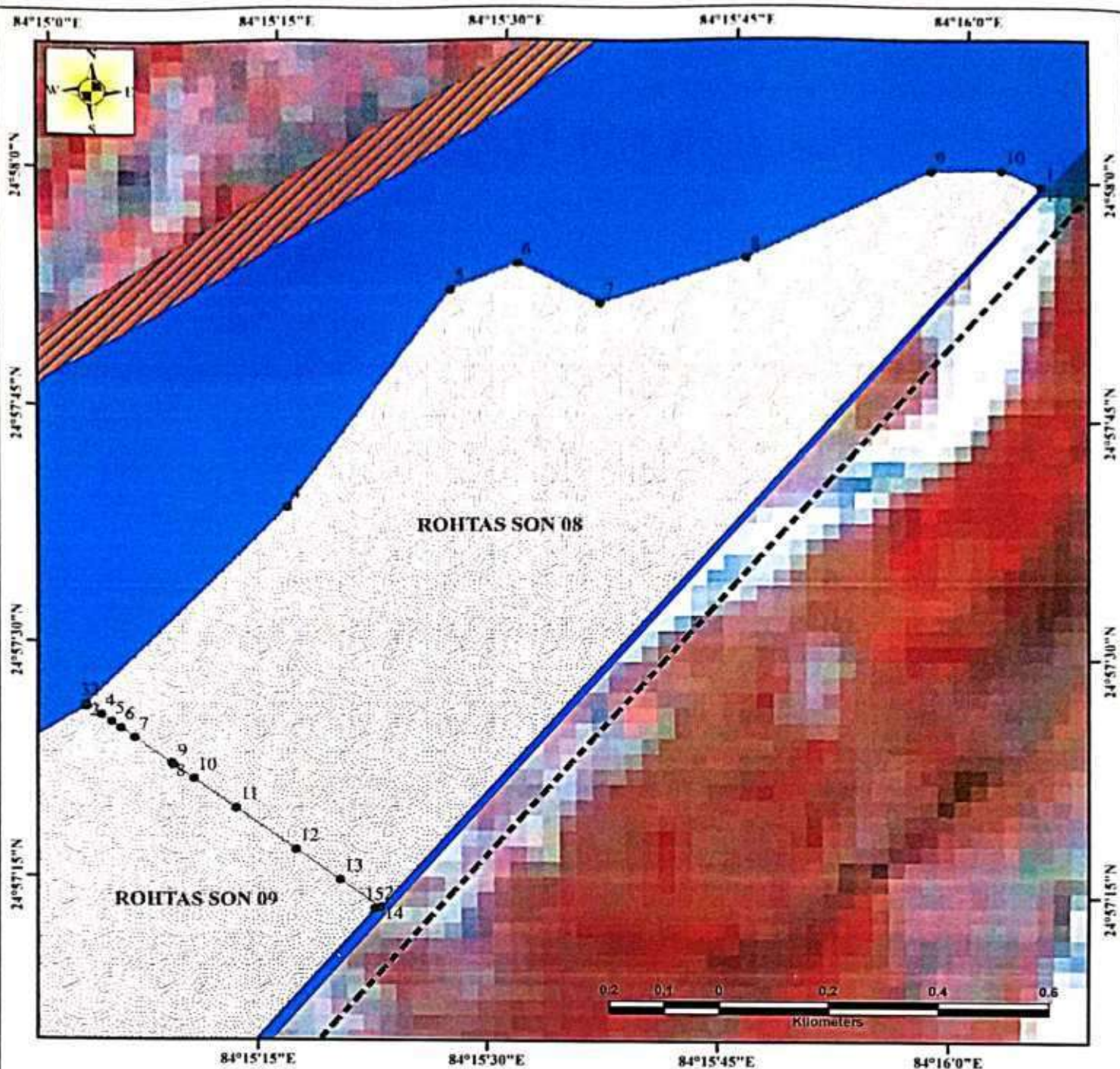




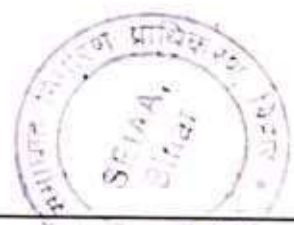
| ROHTAS SON 07 |                   |                   |           |                   |                   |           |                   |                   |
|---------------|-------------------|-------------------|-----------|-------------------|-------------------|-----------|-------------------|-------------------|
| POINT NO.     | LATITUDE          | LONGITUDE         | POINT NO. | LATITUDE          | LONGITUDE         | POINT NO. | LATITUDE          | LONGITUDE         |
| 1             | 25° 0' 00.000" N  | 84° 17' 20.000" E | 12        | 24° 59' 27.000" N | 84° 17' 41.000" E | 23        | 24° 59' 20.000" N | 84° 17' 24.000" E |
| 2             | 25° 0' 00.000" N  | 84° 17' 20.000" E | 13        | 24° 59' 27.000" N | 84° 17' 41.000" E | 24        | 24° 59' 20.000" N | 84° 17' 24.000" E |
| 3             | 25° 0' 00.000" N  | 84° 17' 20.000" E | 14        | 24° 59' 27.000" N | 84° 17' 41.000" E | 25        | 24° 59' 20.000" N | 84° 17' 24.000" E |
| 4             | 25° 0' 00.000" N  | 84° 17' 20.000" E | 15        | 24° 59' 27.000" N | 84° 17' 41.000" E | 26        | 24° 59' 20.000" N | 84° 17' 24.000" E |
| 5             | 25° 0' 00.000" N  | 84° 17' 20.000" E | 16        | 24° 59' 27.000" N | 84° 17' 41.000" E | 27        | 24° 59' 20.000" N | 84° 17' 24.000" E |
| 6             | 25° 0' 00.000" N  | 84° 17' 20.000" E | 17        | 24° 59' 27.000" N | 84° 17' 41.000" E | 28        | 24° 59' 20.000" N | 84° 17' 24.000" E |
| 7             | 25° 0' 00.000" N  | 84° 17' 20.000" E | 18        | 24° 59' 27.000" N | 84° 17' 41.000" E | 29        | 24° 59' 20.000" N | 84° 17' 24.000" E |
| 8             | 25° 0' 00.000" N  | 84° 17' 20.000" E | 19        | 24° 59' 27.000" N | 84° 17' 41.000" E | 30        | 24° 59' 20.000" N | 84° 17' 24.000" E |
| 9             | 25° 0' 00.000" N  | 84° 17' 20.000" E | 20        | 24° 59' 27.000" N | 84° 17' 41.000" E | 31        | 24° 59' 20.000" N | 84° 17' 24.000" E |
| 10            | 25° 0' 00.000" N  | 84° 17' 20.000" E | 21        | 24° 59' 27.000" N | 84° 17' 41.000" E | 32        | 24° 59' 20.000" N | 84° 17' 24.000" E |
| 11            | 24° 59' 27.000" N | 84° 17' 41.000" E | 22        | 24° 59' 27.000" N | 84° 17' 41.000" E | 33        | 24° 59' 20.000" N | 84° 17' 24.000" E |

**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- ▨ SAFETY BARRIER
- SONE RIVER
- - - DISTRICT BOUNDARY(ROHTAS)

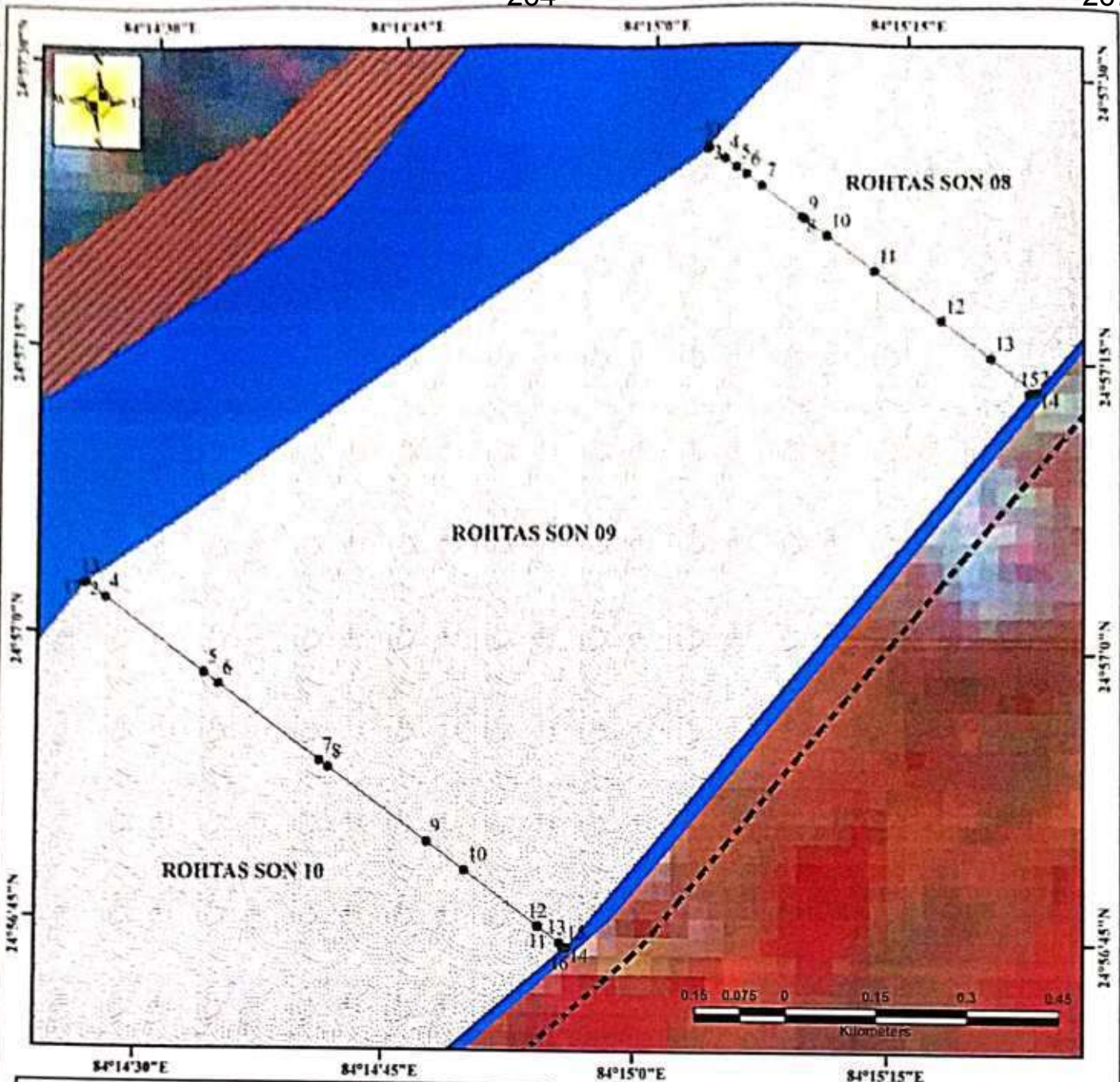


| ROHTAS SON 08 |                   |                   |
|---------------|-------------------|-------------------|
| POINT NO      | LATITUDE          | LONGITUDE         |
| 1             | 24° 57' 59.643" N | 84° 16' 5.119" E  |
| 2             | 24° 57' 13.497" N | 84° 15' 23.231" E |
| 3             | 24° 57' 26.095" N | 84° 15' 3.564" E  |
| 4             | 24° 57' 38.911" N | 84° 15' 16.547" E |
| 5             | 24° 57' 52.668" N | 84° 15' 26.989" E |
| 6             | 24° 57' 54.403" N | 84° 15' 31.334" E |
| 7             | 24° 57' 51.948" N | 84° 15' 36.761" E |
| 8             | 24° 57' 55.004" N | 84° 15' 46.190" E |
| 9             | 24° 58' 0.569" N  | 84° 15' 58.053" E |
| 10            | 24° 58' 0.655" N  | 84° 16' 2.558" E  |
| 11            | 24° 57' 59.643" N | 84° 16' 5.119" E  |



**LEGEND**

- COORDINATE
- ▨ POTENTIAL BLOCK
- ▨ SAFETY BARRIER
- SONE RIVER
- - - DISTRICT BOUNDARY(ROHTAS)



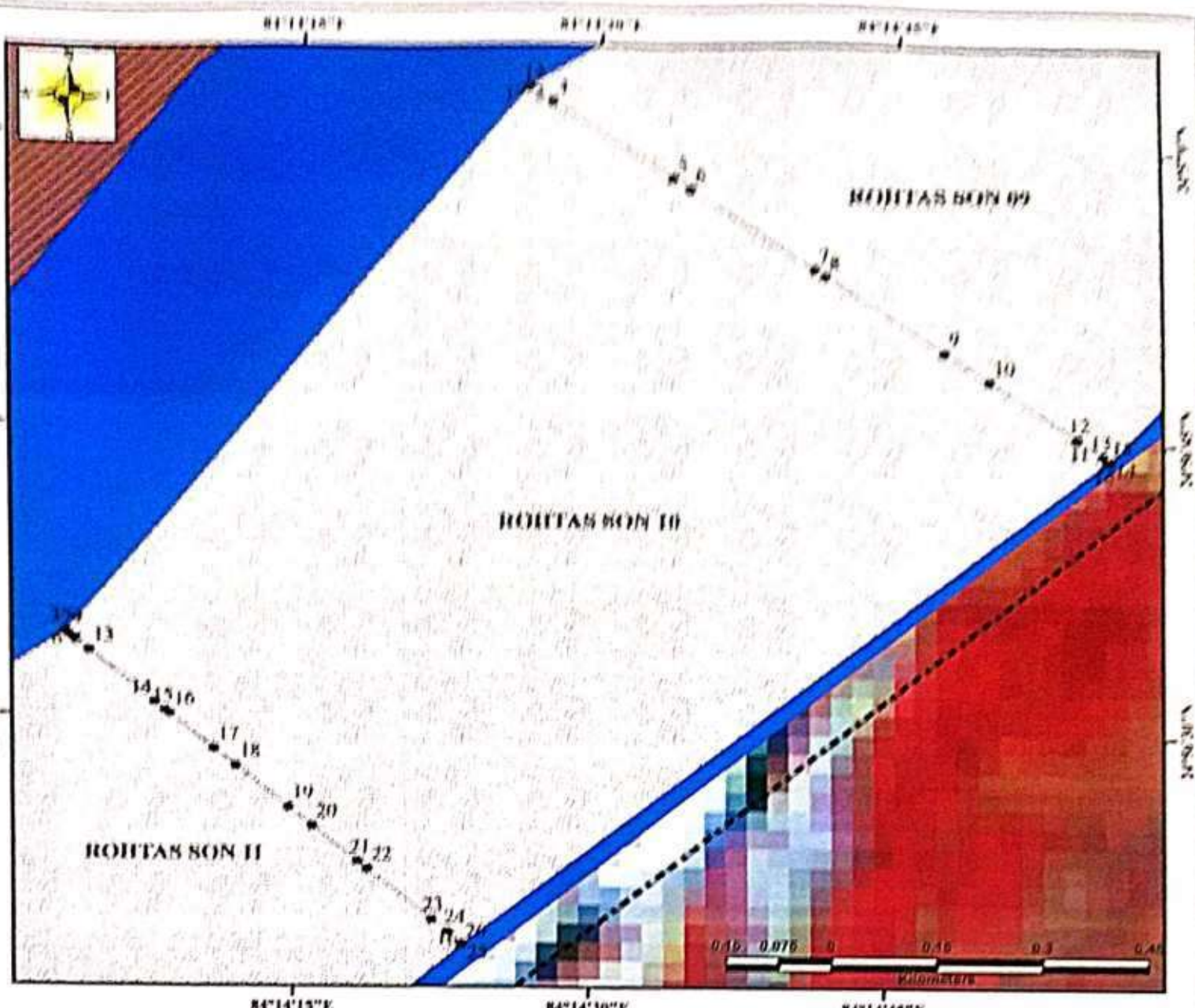
**ROHTAS SON 09**

| POINT NO | LATITUDE          | LONGITUDE         |
|----------|-------------------|-------------------|
| 1        | 24° 57' 2.698" N  | 84° 14' 26.732" E |
| 2        | 24° 57' 25.933" N | 84° 15' 3.574" E  |
| 3        | 24° 57' 26.095" N | 84° 15' 3.564" E  |
| 4        | 24° 57' 25.448" N | 84° 15' 4.576" E  |
| 5        | 24° 57' 25.003" N | 84° 15' 5.269" E  |
| 6        | 24° 57' 24.623" N | 84° 15' 5.862" E  |
| 7        | 24° 57' 24.027" N | 84° 15' 6.793" E  |
| 8        | 24° 57' 22.454" N | 84° 15' 9.248" E  |
| 9        | 24° 57' 22.368" N | 84° 15' 9.383" E  |
| 10       | 24° 57' 21.505" N | 84° 15' 10.730" E |
| 11       | 24° 57' 19.684" N | 84° 15' 13.573" E |
| 12       | 24° 57' 17.103" N | 84° 15' 17.602" E |
| 13       | 24° 57' 15.209" N | 84° 15' 20.558" E |
| 14       | 24° 57' 13.497" N | 84° 15' 23.231" E |
| 15       | 24° 57' 13.416" N | 84° 15' 22.860" E |
| 16       | 24° 56' 44.166" N | 84° 14' 56.272" E |
| 17       | 24° 57' 2.698" N  | 84° 14' 26.732" E |



**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- SAFETY BARRIER
- SONE RIVER
- DISTRICT BOUNDARY(ROHTAS)

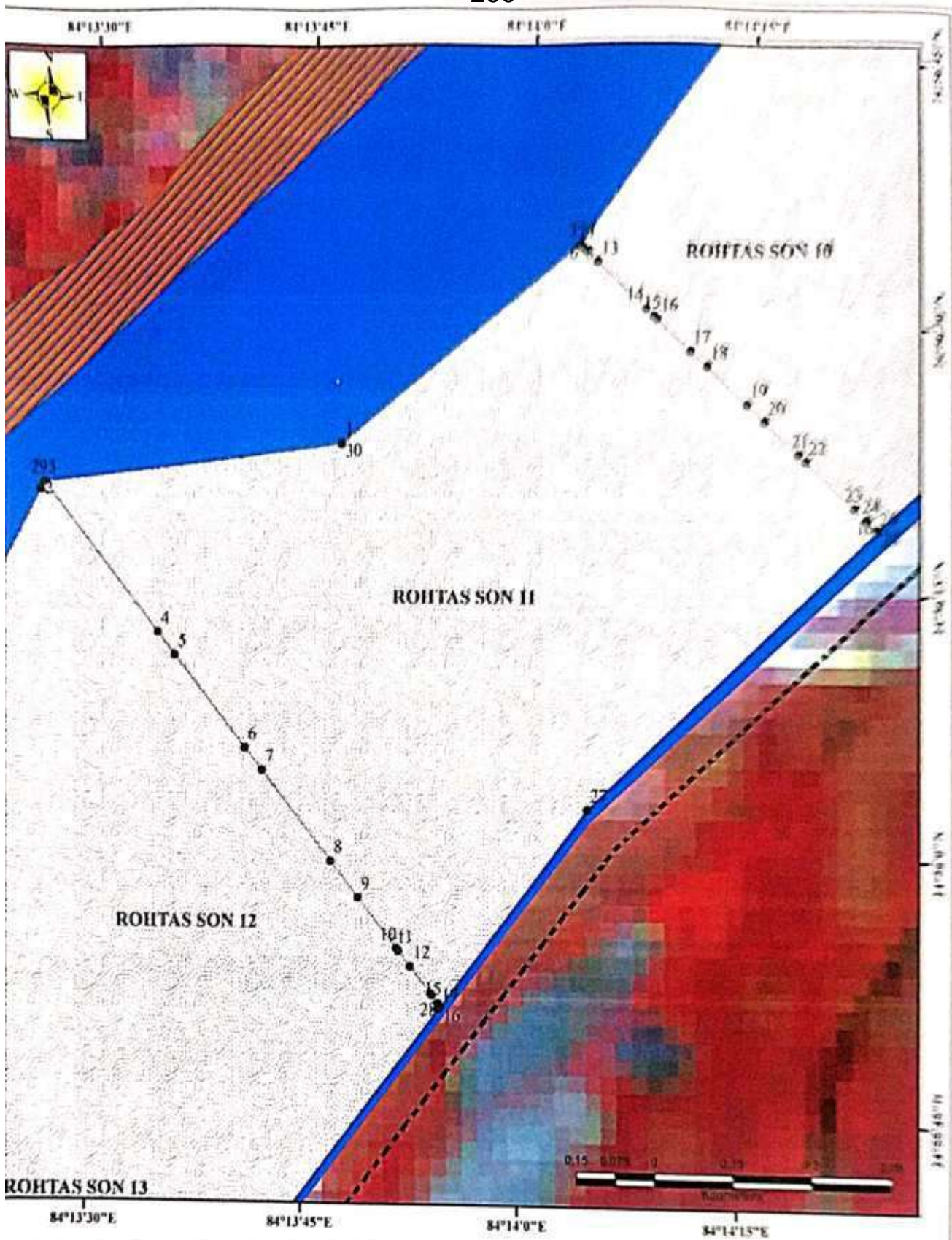


ROHTAS SON 10

| POINT_NO | LATITUDE          | LONGITUDE         |
|----------|-------------------|-------------------|
| 1        | 24° 56' 34.357" N | 84° 14' 3.551" E  |
| 2        | 24° 57' 2.650" N  | 84° 14' 26.692" E |
| 3        | 24° 57' 2.698" N  | 84° 14' 26.732" E |
| 4        | 24° 57' 1.951" N  | 84° 14' 27.923" E |
| 5        | 24° 56' 58.143" N | 84° 14' 33.993" E |
| 6        | 24° 56' 57.566" N | 84° 14' 34.912" E |
| 7        | 24° 56' 53.616" N | 84° 14' 41.208" E |
| 8        | 24° 56' 53.283" N | 84° 14' 41.739" E |
| 9        | 24° 56' 49.475" N | 84° 14' 47.809" E |
| 10       | 24° 56' 48.041" N | 84° 14' 50.096" E |
| 11       | 24° 56' 45.252" N | 84° 14' 54.541" E |
| 12       | 24° 56' 45.230" N | 84° 14' 54.577" E |
| 13       | 24° 56' 44.411" N | 84° 14' 55.881" E |
| 14       | 24° 56' 44.166" N | 84° 14' 56.272" E |
| 15       | 24° 56' 44.135" N | 84° 14' 56.099" E |
| 16       | 24° 56' 18.683" N | 84° 14' 23.966" E |
| 17       | 24° 56' 34.357" N | 84° 14' 3.551" E  |

**LEGEND**

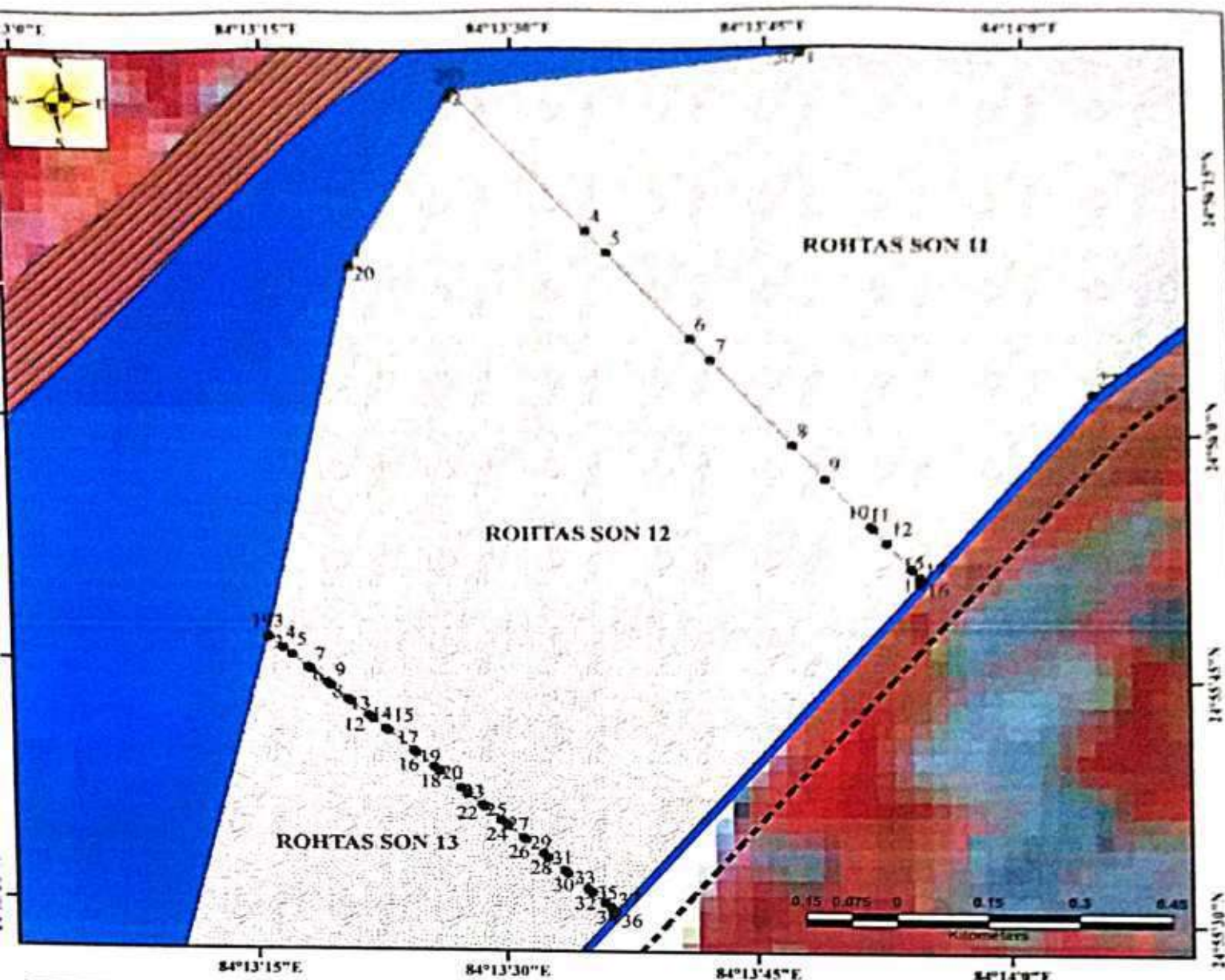
- COORDINATE
- POTENTIAL BLOCK
- SAFETY BARRIER
- SONE RIVER
- DISTRICT BOUNDARY(ROHTAS)



| ROHTAS SON 11 |                   |                   |          |                   |                   |
|---------------|-------------------|-------------------|----------|-------------------|-------------------|
| SNT NO        | LATITUDE          | LONGITUDE         | POINT NO | LATITUDE          | LONGITUDE         |
| 1             | 24° 56' 22.791" N | 84° 13' 47.470" E | 16       | 24° 56' 30.275" N | 84° 14' 8.868" E  |
| 2             | 24° 56' 34.357" N | 84° 14' 3.550" E  | 17       | 24° 56' 28.517" N | 84° 14' 11.158" E |
| 3             | 24° 56' 34.357" N | 84° 14' 3.551" E  | 18       | 24° 56' 27.650" N | 84° 14' 12.287" E |
| 4             | 24° 56' 34.322" N | 84° 14' 3.596" E  | 19       | 24° 56' 25.554" N | 84° 14' 13.016" E |
| 5             | 24° 56' 34.307" N | 84° 14' 3.616" E  | 20       | 24° 56' 24.617" N | 84° 14' 16.237" E |
| 6             | 24° 56' 34.296" N | 84° 14' 3.631" E  | 21       | 24° 56' 22.818" N | 84° 14' 18.380" E |
| 7             | 24° 56' 34.285" N | 84° 14' 3.644" E  | 22       | 24° 56' 22.441" N | 84° 14' 19.071" E |
| 8             | 24° 56' 34.276" N | 84° 14' 3.657" E  | 23       | 24° 56' 19.891" N | 84° 14' 22.392" E |
| 9             | 24° 56' 34.263" N | 84° 14' 3.674" E  | 24       | 24° 56' 19.263" N | 84° 14' 23.210" E |
| 10            | 24° 56' 34.251" N | 84° 14' 3.689" E  | 25       | 24° 56' 18.683" N | 84° 14' 23.966" E |
| 11            | 24° 56' 34.224" N | 84° 14' 3.724" E  | 26       | 24° 56' 18.393" N | 84° 14' 23.914" E |
| 12            | 24° 56' 34.057" N | 84° 14' 3.942" E  | 27       | 24° 56' 2.576" N  | 84° 14' 4.672" E  |
| 13            | 24° 56' 33.426" N | 84° 14' 4.763" E  | 28       | 24° 55' 50.873" N | 84° 13' 54.872" E |
| 14            | 24° 56' 30.849" N | 84° 14' 8.119" E  | 29       | 24° 56' 20.284" N | 84° 13' 26.810" E |
| 15            | 24° 56' 30.442" N | 84° 14' 8.650" E  | 30       | 24° 56' 22.791" N | 84° 13' 47.470" E |

**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- ▨ SAFETY BARRIER
- SONE RIVER
- - - DISTRICT BOUNDARY(ROHTAS)

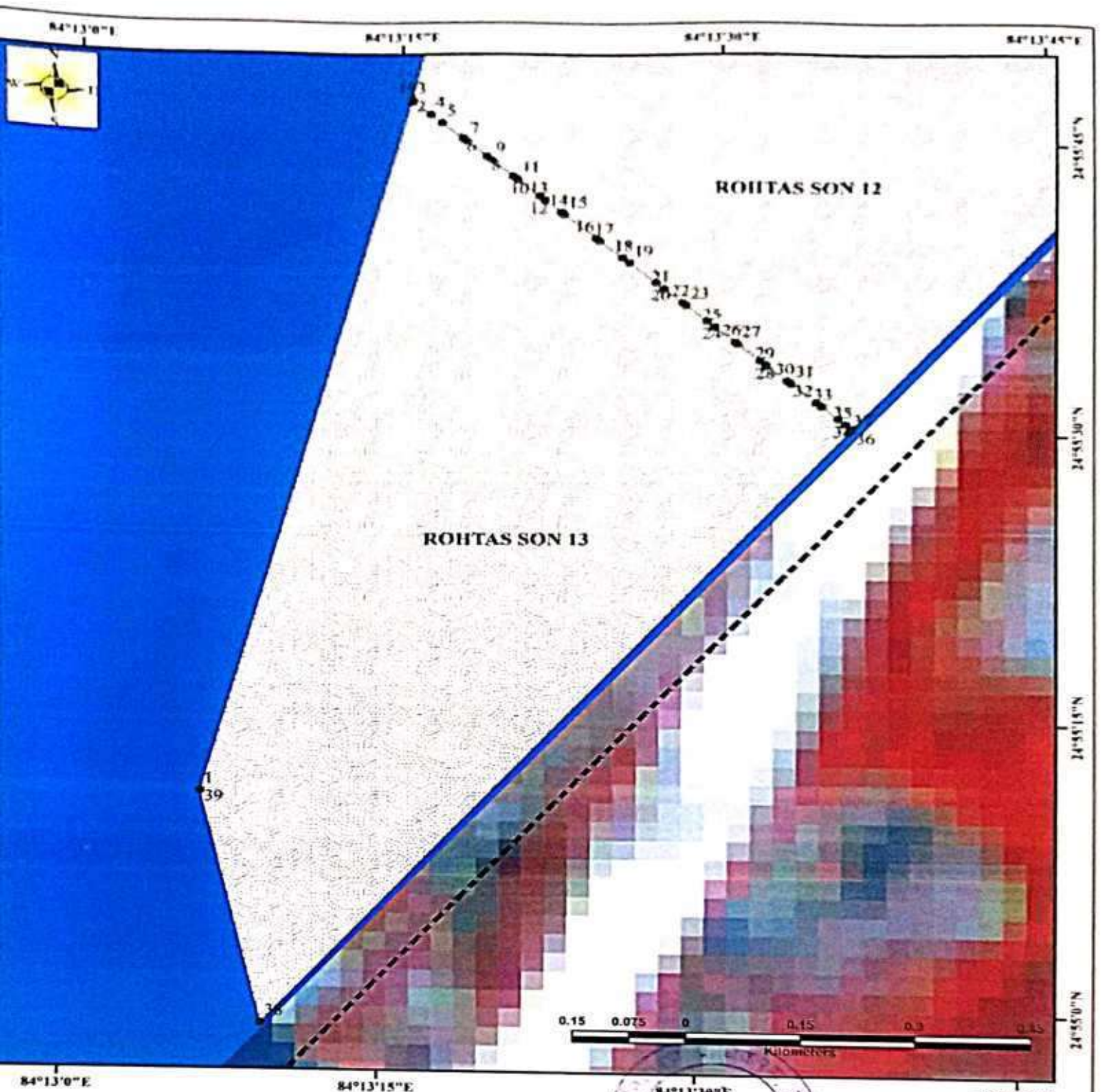


| ROHTAS SON 12 |                   |                   |
|---------------|-------------------|-------------------|
| POINT NO      | LATITUDE          | LONGITUDE         |
| 1             | 24° 56' 9.484" N  | 84° 13' 20.731" E |
| 2             | 24° 56' 19.846" N | 84° 13' 26.610" E |
| 3             | 24° 56' 20.284" N | 84° 13' 26.840" E |
| 4             | 24° 56' 11.872" N | 84° 13' 34.857" E |
| 5             | 24° 56' 10.578" N | 84° 13' 36.091" E |
| 6             | 24° 56' 5.334" N  | 84° 13' 41.089" E |
| 7             | 24° 56' 4.068" N  | 84° 13' 42.296" E |
| 8             | 24° 55' 58.969" N | 84° 13' 47.156" E |
| 9             | 24° 55' 56.941" N | 84° 13' 49.089" E |
| 10            | 24° 55' 54.112" N | 84° 13' 51.785" E |
| 11            | 24° 55' 53.965" N | 84° 13' 51.925" E |
| 12            | 24° 55' 53.114" N | 84° 13' 52.736" E |
| 13            | 24° 55' 51.598" N | 84° 13' 54.181" E |
| 14            | 24° 55' 51.510" N | 84° 13' 54.265" E |
| 15            | 24° 55' 51.066" N | 84° 13' 54.688" E |
| 16            | 24° 55' 50.873" N | 84° 13' 54.872" E |
| 17            | 24° 55' 50.742" N | 84° 13' 54.731" E |
| 18            | 24° 55' 30.130" N | 84° 13' 36.862" E |
| 19            | 24° 55' 46.783" N | 84° 13' 15.889" E |
| 20            | 24° 56' 9.484" N  | 84° 13' 20.731" E |



**LEGEND**

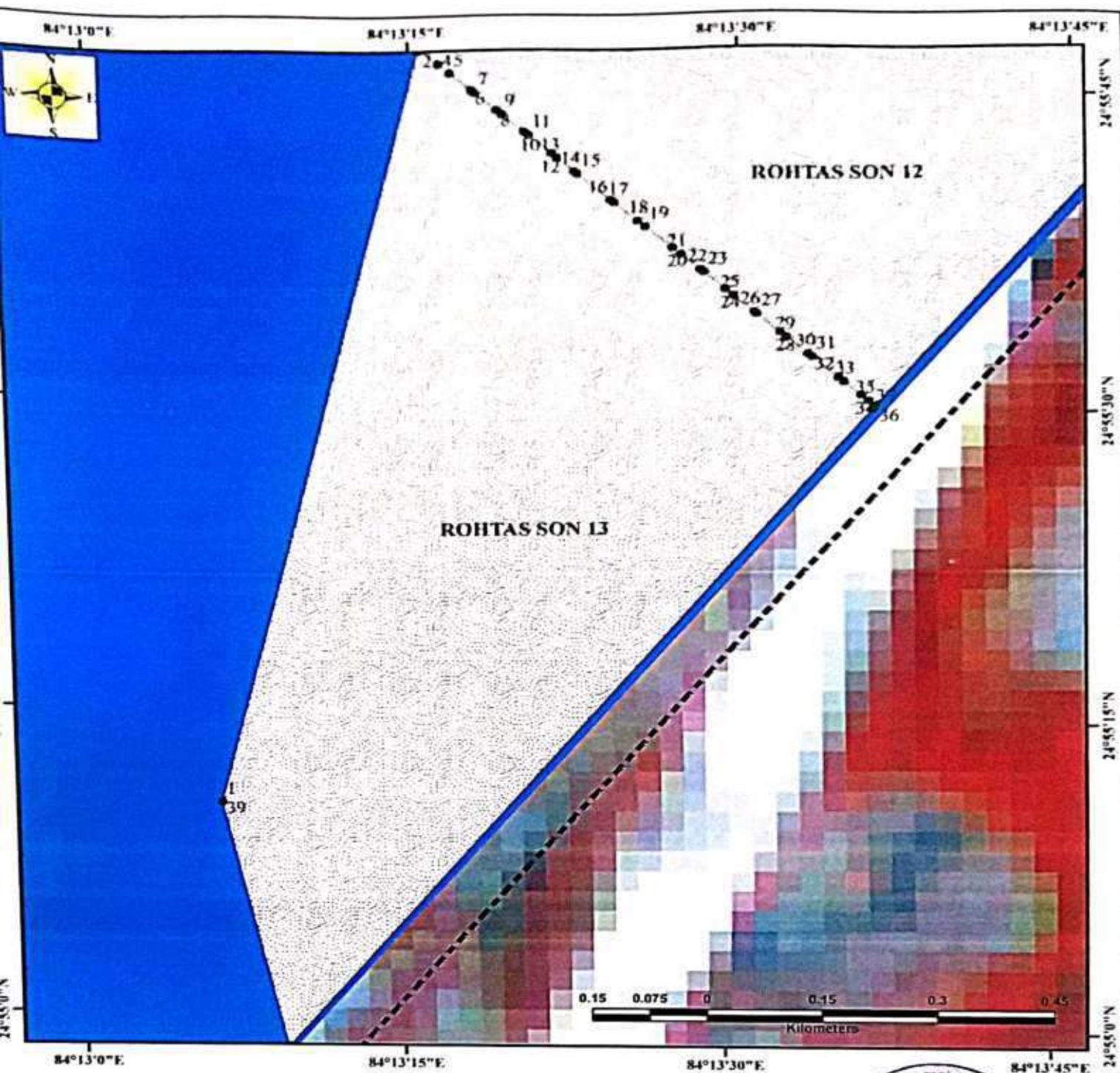
- COORDINATE
- POTENTIAL BLOCK
- SAFETY BARRIER
- SONE RIVER
- DISTRICT BOUNDARY(ROHTAS)



| ROHTAS SON 12 |                   |                   |           |                   |                   |           |                   |
|---------------|-------------------|-------------------|-----------|-------------------|-------------------|-----------|-------------------|
| PUNKT NO.     | LATITUDE          | LONGITUDE         | PUNKT NO. | LATITUDE          | LONGITUDE         | PUNKT NO. | LATITUDE          |
| 1             | 24° 55' 44.000" N | 84° 13' 00.000" E | 17        | 24° 55' 38.000" N | 84° 13' 30.000" E | 33        | 24° 55' 31.000" N |
| 2             | 24° 55' 40.000" N | 84° 13' 05.000" E | 18        | 24° 55' 34.000" N | 84° 13' 35.000" E | 34        | 24° 55' 27.000" N |
| 3             | 24° 55' 36.000" N | 84° 13' 10.000" E | 19        | 24° 55' 30.000" N | 84° 13' 40.000" E | 35        | 24° 55' 23.000" N |
| 4             | 24° 55' 32.000" N | 84° 13' 15.000" E | 20        | 24° 55' 26.000" N | 84° 13' 45.000" E | 36        | 24° 55' 19.000" N |
| 5             | 24° 55' 28.000" N | 84° 13' 20.000" E | 21        | 24° 55' 22.000" N | 84° 13' 50.000" E | 37        | 24° 55' 15.000" N |
| 6             | 24° 55' 24.000" N | 84° 13' 25.000" E | 22        | 24° 55' 18.000" N | 84° 13' 55.000" E | 38        | 24° 55' 11.000" N |
| 7             | 24° 55' 20.000" N | 84° 13' 30.000" E | 23        | 24° 55' 14.000" N | 84° 14' 00.000" E | 39        | 24° 55' 07.000" N |
| 8             | 24° 55' 16.000" N | 84° 13' 35.000" E | 24        | 24° 55' 10.000" N | 84° 14' 05.000" E | 40        | 24° 55' 03.000" N |
| 9             | 24° 55' 12.000" N | 84° 13' 40.000" E | 25        | 24° 55' 06.000" N | 84° 14' 10.000" E | 41        | 24° 55' 00.000" N |
| 10            | 24° 55' 08.000" N | 84° 13' 45.000" E | 26        | 24° 55' 02.000" N | 84° 14' 15.000" E | 42        | 24° 54' 56.000" N |
| 11            | 24° 55' 04.000" N | 84° 13' 50.000" E | 27        | 24° 54' 58.000" N | 84° 14' 20.000" E | 43        | 24° 54' 52.000" N |
| 12            | 24° 55' 00.000" N | 84° 13' 55.000" E | 28        | 24° 54' 54.000" N | 84° 14' 25.000" E | 44        | 24° 54' 48.000" N |
| 13            | 24° 54' 56.000" N | 84° 14' 00.000" E | 29        | 24° 54' 50.000" N | 84° 14' 30.000" E | 45        | 24° 54' 44.000" N |
| 14            | 24° 54' 52.000" N | 84° 14' 05.000" E | 30        | 24° 54' 46.000" N | 84° 14' 35.000" E | 46        | 24° 54' 40.000" N |
| 15            | 24° 54' 48.000" N | 84° 14' 10.000" E | 31        | 24° 54' 42.000" N | 84° 14' 40.000" E | 47        | 24° 54' 36.000" N |
| 16            | 24° 54' 44.000" N | 84° 14' 15.000" E | 32        | 24° 54' 38.000" N | 84° 14' 45.000" E | 48        | 24° 54' 32.000" N |
| 17            | 24° 54' 40.000" N | 84° 14' 20.000" E | 33        | 24° 54' 34.000" N | 84° 14' 50.000" E | 49        | 24° 54' 28.000" N |
| 18            | 24° 54' 36.000" N | 84° 14' 25.000" E | 34        | 24° 54' 30.000" N | 84° 14' 55.000" E | 50        | 24° 54' 24.000" N |
| 19            | 24° 54' 32.000" N | 84° 14' 30.000" E | 35        | 24° 54' 26.000" N | 84° 15' 00.000" E | 51        | 24° 54' 20.000" N |
| 20            | 24° 54' 28.000" N | 84° 14' 35.000" E | 36        | 24° 54' 22.000" N | 84° 15' 05.000" E | 52        | 24° 54' 16.000" N |
| 21            | 24° 54' 24.000" N | 84° 14' 40.000" E | 37        | 24° 54' 18.000" N | 84° 15' 10.000" E | 53        | 24° 54' 12.000" N |
| 22            | 24° 54' 20.000" N | 84° 14' 45.000" E | 38        | 24° 54' 14.000" N | 84° 15' 15.000" E | 54        | 24° 54' 08.000" N |
| 23            | 24° 54' 16.000" N | 84° 14' 50.000" E | 39        | 24° 54' 10.000" N | 84° 15' 20.000" E | 55        | 24° 54' 04.000" N |
| 24            | 24° 54' 12.000" N | 84° 14' 55.000" E | 40        | 24° 54' 06.000" N | 84° 15' 25.000" E | 56        | 24° 54' 00.000" N |
| 25            | 24° 54' 08.000" N | 84° 15' 00.000" E | 41        | 24° 54' 02.000" N | 84° 15' 30.000" E | 57        | 24° 53' 56.000" N |
| 26            | 24° 54' 04.000" N | 84° 15' 05.000" E | 42        | 24° 53' 58.000" N | 84° 15' 35.000" E | 58        | 24° 53' 52.000" N |
| 27            | 24° 54' 00.000" N | 84° 15' 10.000" E | 43        | 24° 53' 54.000" N | 84° 15' 40.000" E | 59        | 24° 53' 48.000" N |
| 28            | 24° 53' 56.000" N | 84° 15' 15.000" E | 44        | 24° 53' 50.000" N | 84° 15' 45.000" E | 60        | 24° 53' 44.000" N |
| 29            | 24° 53' 52.000" N | 84° 15' 20.000" E | 45        | 24° 53' 46.000" N | 84° 15' 50.000" E | 61        | 24° 53' 40.000" N |
| 30            | 24° 53' 48.000" N | 84° 15' 25.000" E | 46        | 24° 53' 42.000" N | 84° 15' 55.000" E | 62        | 24° 53' 36.000" N |
| 31            | 24° 53' 44.000" N | 84° 15' 30.000" E | 47        | 24° 53' 38.000" N | 84° 16' 00.000" E | 63        | 24° 53' 32.000" N |
| 32            | 24° 53' 40.000" N | 84° 15' 35.000" E | 48        | 24° 53' 34.000" N | 84° 16' 05.000" E | 64        | 24° 53' 28.000" N |
| 33            | 24° 53' 36.000" N | 84° 15' 40.000" E | 49        | 24° 53' 30.000" N | 84° 16' 10.000" E | 65        | 24° 53' 24.000" N |
| 34            | 24° 53' 32.000" N | 84° 15' 45.000" E | 50        | 24° 53' 26.000" N | 84° 16' 15.000" E | 66        | 24° 53' 20.000" N |
| 35            | 24° 53' 28.000" N | 84° 15' 50.000" E | 51        | 24° 53' 22.000" N | 84° 16' 20.000" E | 67        | 24° 53' 16.000" N |
| 36            | 24° 53' 24.000" N | 84° 15' 55.000" E | 52        | 24° 53' 18.000" N | 84° 16' 25.000" E | 68        | 24° 53' 12.000" N |
| 37            | 24° 53' 20.000" N | 84° 16' 00.000" E | 53        | 24° 53' 14.000" N | 84° 16' 30.000" E | 69        | 24° 53' 08.000" N |
| 38            | 24° 53' 16.000" N | 84° 16' 05.000" E | 54        | 24° 53' 10.000" N | 84° 16' 35.000" E | 70        | 24° 53' 04.000" N |
| 39            | 24° 53' 12.000" N | 84° 16' 10.000" E | 55        | 24° 53' 06.000" N | 84° 16' 40.000" E | 71        | 24° 53' 00.000" N |
| 40            | 24° 53' 08.000" N | 84° 16' 15.000" E | 56        | 24° 53' 02.000" N | 84° 16' 45.000" E | 72        | 24° 52' 56.000" N |
| 41            | 24° 53' 04.000" N | 84° 16' 20.000" E | 57        | 24° 52' 58.000" N | 84° 16' 50.000" E | 73        | 24° 52' 52.000" N |
| 42            | 24° 53' 00.000" N | 84° 16' 25.000" E | 58        | 24° 52' 54.000" N | 84° 16' 55.000" E | 74        | 24° 52' 48.000" N |
| 43            | 24° 52' 56.000" N | 84° 16' 30.000" E | 59        | 24° 52' 50.000" N | 84° 17' 00.000" E | 75        | 24° 52' 44.000" N |
| 44            | 24° 52' 52.000" N | 84° 16' 35.000" E | 60        | 24° 52' 46.000" N | 84° 17' 05.000" E | 76        | 24° 52' 40.000" N |
| 45            | 24° 52' 48.000" N | 84° 16' 40.000" E | 61        | 24° 52' 42.000" N | 84° 17' 10.000" E | 77        | 24° 52' 36.000" N |
| 46            | 24° 52' 44.000" N | 84° 16' 45.000" E | 62        | 24° 52' 38.000" N | 84° 17' 15.000" E | 78        | 24° 52' 32.000" N |
| 47            | 24° 52' 40.000" N | 84° 16' 50.000" E | 63        | 24° 52' 34.000" N | 84° 17' 20.000" E | 79        | 24° 52' 28.000" N |
| 48            | 24° 52' 36.000" N | 84° 16' 55.000" E | 64        | 24° 52' 30.000" N | 84° 17' 25.000" E | 80        | 24° 52' 24.000" N |
| 49            | 24° 52' 32.000" N | 84° 17' 00.000" E | 65        | 24° 52' 26.000" N | 84° 17' 30.000" E | 81        | 24° 52' 20.000" N |
| 50            | 24° 52' 28.000" N | 84° 17' 05.000" E | 66        | 24° 52' 22.000" N | 84° 17' 35.000" E | 82        | 24° 52' 16.000" N |
| 51            | 24° 52' 24.000" N | 84° 17' 10.000" E | 67        | 24° 52' 18.000" N | 84° 17' 40.000" E | 83        | 24° 52' 12.000" N |
| 52            | 24° 52' 20.000" N | 84° 17' 15.000" E | 68        | 24° 52' 14.000" N | 84° 17' 45.000" E | 84        | 24° 52' 08.000" N |
| 53            | 24° 52' 16.000" N | 84° 17' 20.000" E | 69        | 24° 52' 10.000" N | 84° 17' 50.000" E | 85        | 24° 52' 04.000" N |
| 54            | 24° 52' 12.000" N | 84° 17' 25.000" E | 70        | 24° 52' 06.000" N | 84° 17' 55.000" E | 86        | 24° 52' 00.000" N |
| 55            | 24° 52' 08.000" N | 84° 17' 30.000" E | 71        | 24° 52' 02.000" N | 84° 18' 00.000" E | 87        | 24° 51' 56.000" N |
| 56            | 24° 52' 04.000" N | 84° 17' 35.000" E | 72        | 24° 51' 58.000" N | 84° 18' 05.000" E | 88        | 24° 51' 52.000" N |
| 57            | 24° 52' 00.000" N | 84° 17' 40.000" E | 73        | 24° 51' 54.000" N | 84° 18' 10.000" E | 89        | 24° 51' 48.000" N |
| 58            | 24° 51' 56.000" N | 84° 17' 45.000" E | 74        | 24° 51' 50.000" N | 84° 18' 15.000" E | 90        | 24° 51' 44.000" N |
| 59            | 24° 51' 52.000" N | 84° 17' 50.000" E | 75        | 24° 51' 46.000" N | 84° 18' 20.000" E | 91        | 24° 51' 40.000" N |
| 60            | 24° 51' 48.000" N | 84° 17' 55.000" E | 76        | 24° 51' 42.000" N | 84° 18' 25.000" E | 92        | 24° 51' 36.000" N |
| 61            | 24° 51' 44.000" N | 84° 18' 00.000" E | 77        | 24° 51' 38.000" N | 84° 18' 30.000" E | 93        | 24° 51' 32.000" N |
| 62            | 24° 51' 40.000" N | 84° 18' 05.000" E | 78        | 24° 51' 34.000" N | 84° 18' 35.000" E | 94        | 24° 51' 28.000" N |
| 63            | 24° 51' 36.000" N | 84° 18' 10.000" E | 79        | 24° 51' 30.000" N | 84° 18' 40.000" E | 95        | 24° 51' 24.000" N |
| 64            | 24° 51' 32.000" N | 84° 18' 15.000" E | 80        | 24° 51' 26.000" N | 84° 18' 45.000" E | 96        | 24° 51' 20.000" N |
| 65            | 24° 51' 28.000" N | 84° 18' 20.000" E | 81        | 24° 51' 22.000" N | 84° 18' 50.000" E | 97        | 24° 51' 16.000" N |
| 66            | 24° 51' 24.000" N | 84° 18' 25.000" E | 82        | 24° 51' 18.000" N | 84° 18' 55.000" E | 98        | 24° 51' 12.000" N |
| 67            | 24° 51' 20.000" N | 84° 18' 30.000" E | 83        | 24° 51' 14.000" N | 84° 19' 00.000" E | 99        | 24° 51' 08.000" N |
| 68            | 24° 51' 16.000" N | 84° 18' 35.000" E | 84        | 24° 51' 10.000" N | 84° 19' 05.000" E | 100       | 24° 51' 04.000" N |
| 69            | 24° 51' 12.000" N | 84° 18' 40.000" E | 85        | 24° 51' 06.000" N | 84° 19' 10.000" E |           |                   |
| 70            | 24° 51' 08.000" N | 84° 18' 45.000" E | 86        | 24° 51' 02.000" N | 84° 19' 15.000" E |           |                   |
| 71            | 24° 51' 04.000" N | 84° 18' 50.000" E | 87        | 24° 50' 58.000" N | 84° 19' 20.000" E |           |                   |
| 72            | 24° 51' 00.000" N | 84° 18' 55.000" E | 88        | 24° 50' 54.000" N | 84° 19' 25.000" E |           |                   |
| 73            | 24° 50' 56.000" N | 84° 19' 00.000" E | 89        | 24° 50' 50.000" N | 84° 19' 30.000" E |           |                   |
| 74            | 24° 50' 52.000" N | 84° 19' 05.000" E | 90        | 24° 50' 46.000" N | 84° 19' 35.000" E |           |                   |
| 75            | 24° 50' 48.000" N | 84° 19' 10.000" E | 91        | 24° 50' 42.000" N | 84° 19' 40.000" E |           |                   |
| 76            | 24° 50' 44.000" N | 84° 19' 15.000" E | 92        | 24° 50' 38.000" N | 84° 19' 45.000" E |           |                   |
| 77            | 24° 50' 40.000" N | 84° 19' 20.000" E | 93        | 24° 50' 34.000" N | 84° 19' 50.000" E |           |                   |
| 78            | 24° 50' 36.000" N | 84° 19' 25.000" E | 94        | 24° 50' 30.000" N | 84° 19' 55.000" E |           |                   |
| 79            | 24° 50' 32.000" N | 84° 19' 30.000" E | 95        | 24° 50' 26.000" N | 84° 20' 00.000" E |           |                   |
| 80            | 24° 50' 28.000" N | 84° 19' 35.000" E | 96        | 24° 50' 22.000" N | 84° 20' 05.000" E |           |                   |
| 81            | 24° 50' 24.000" N | 84° 19' 40.000" E | 97        | 24° 50' 18.000" N | 84° 20' 10.000" E |           |                   |
| 82            | 24° 50' 20.000" N | 84° 19' 45.000" E | 98        | 24° 50' 14.000" N | 84° 20' 15.000" E |           |                   |
| 83            | 24° 50' 16.000" N | 84° 19' 50.000" E | 99        | 24° 50' 10.000" N | 84° 20' 20.000" E |           |                   |
| 84            | 24° 50' 12.000" N | 84° 19' 55.000" E | 100       | 24° 50' 06.000" N | 84° 20' 25.000" E |           |                   |

**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- ▨ SAFETY BARRIER
- SONE RIVER
- ⋯ DISTRICT BOUNDARY(ROHTAS)

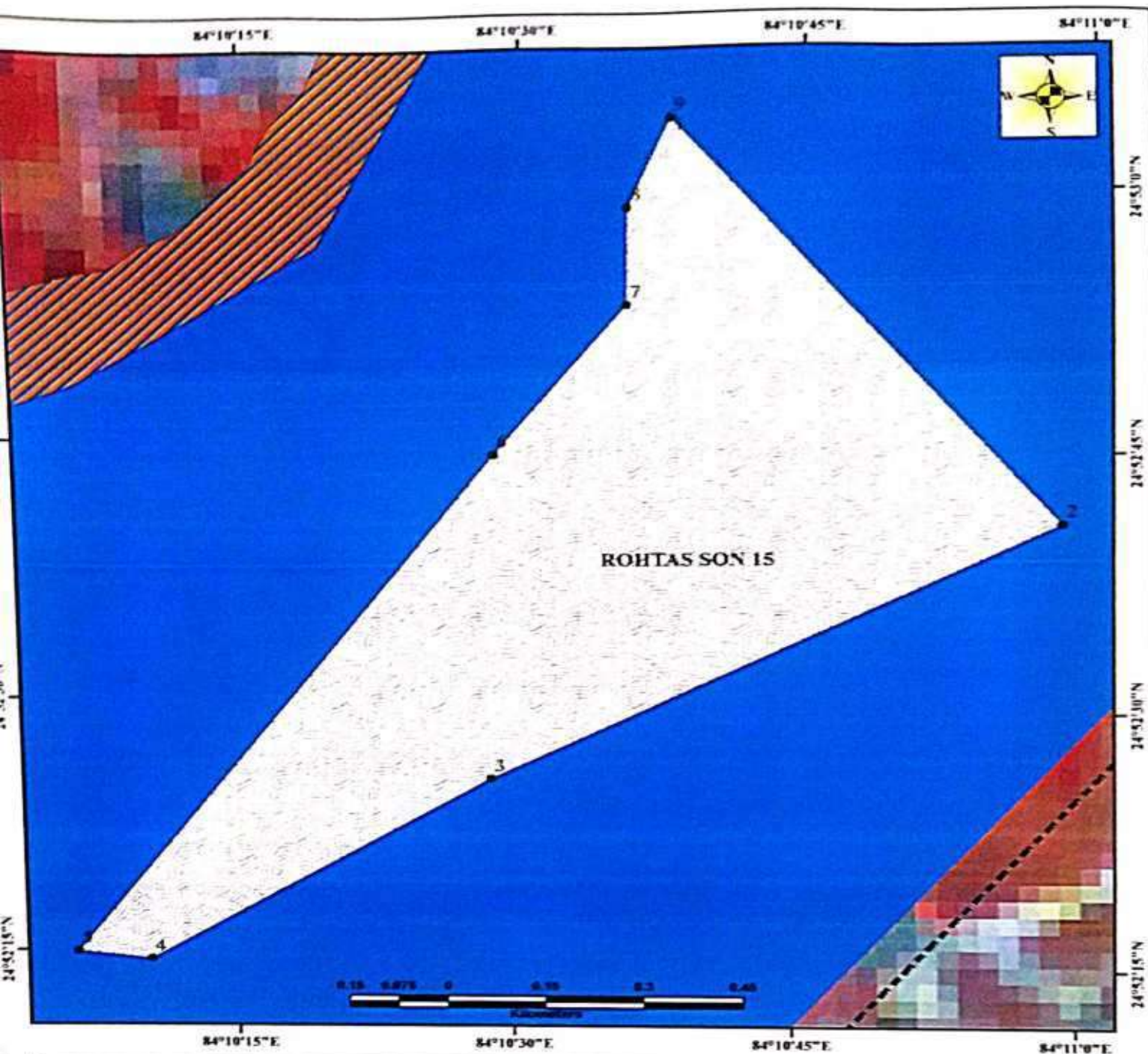


| ROHTAS SON 14 |                   |                   |
|---------------|-------------------|-------------------|
| POINT_NO      | LATITUDE          | LONGITUDE         |
| 1             | 24° 54' 37.435" N | 84° 12' 31.667" E |
| 2             | 24° 54' 48.864" N | 84° 12' 18.579" E |
| 3             | 24° 54' 51.520" N | 84° 12' 25.417" E |
| 4             | 24° 55' 7.856" N  | 84° 12' 45.579" E |
| 5             | 24° 55' 5.457" N  | 84° 12' 48.340" E |
| 6             | 24° 54' 59.730" N | 84° 12' 47.988" E |
| 7             | 24° 54' 50.805" N | 84° 12' 44.096" E |
| 8             | 24° 54' 41.812" N | 84° 12' 37.060" E |
| 9             | 24° 54' 37.435" N | 84° 12' 31.667" E |



**LEGEND**

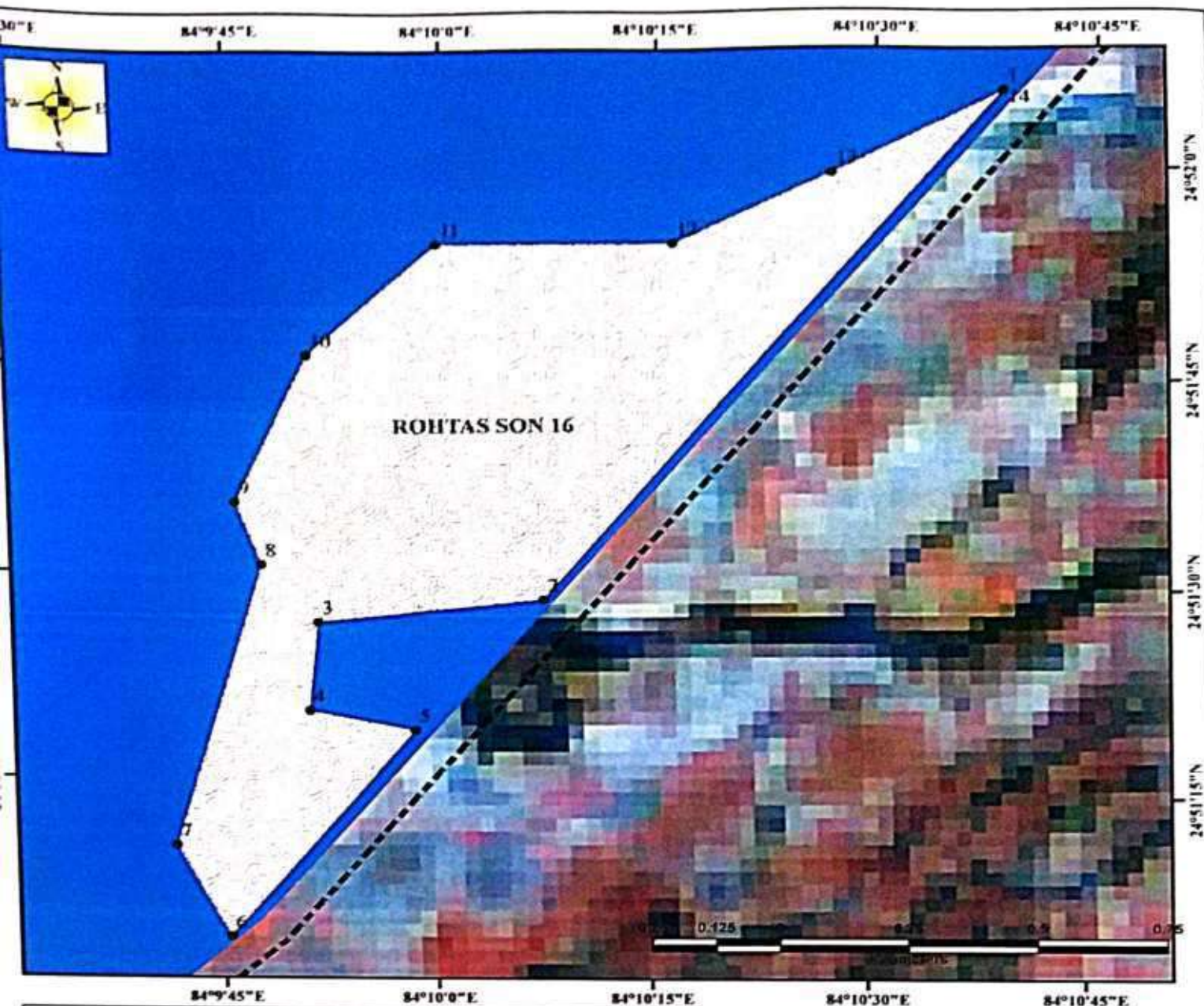
- COORDINATE
- POTENTIAL BLOCK
- ▨ SAFETY BARRIER
- SONE RIVER
- - - DISTRICT BOUNDARY(ROHTAS)



| ROHTAS SON 15 |                   |                   |
|---------------|-------------------|-------------------|
| POINT NO      | LATITUDE          | LONGITUDE         |
| 1             | 24° 53' 3.846" N  | 84° 10' 38.420" E |
| 2             | 24° 52' 40.939" N | 84° 10' 59.133" E |
| 3             | 24° 52' 25.751" N | 84° 10' 29.088" E |
| 4             | 24° 52' 14.641" N | 84° 10' 10.551" E |
| 5             | 24° 52' 15.004" N | 84° 10' 6.554" E  |
| 6             | 24° 52' 44.629" N | 84° 10' 29.132" E |
| 7             | 24° 52' 53.250" N | 84° 10' 36.190" E |
| 8             | 24° 52' 58.785" N | 84° 10' 36.169" E |
| 9             | 24° 53' 3.846" N  | 84° 10' 38.420" E |

**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- ▨ SAFETY BARRIER
- SONE RIVER
- - - DISTRICT BOUNDARY (ROHTAS)

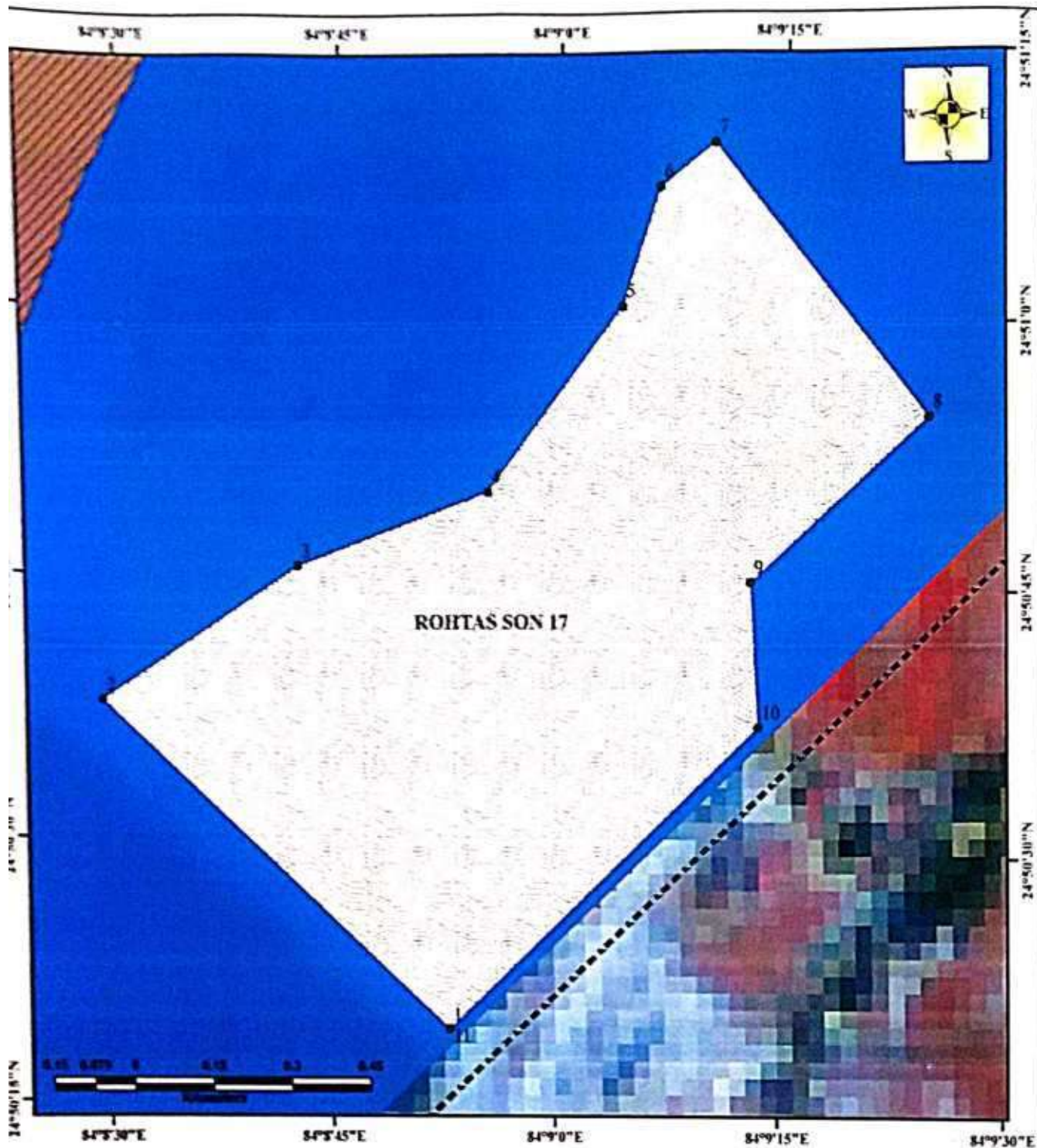


| ROHTAS SON 16 |                   |                   |
|---------------|-------------------|-------------------|
| POINT_NO      | LATITUDE          | LONGITUDE         |
| 1             | 24° 52' 5.389" N  | 84° 10' 39.011" E |
| 2             | 24° 51' 28.726" N | 84° 10' 7.739" E  |
| 3             | 24° 51' 26.863" N | 84° 9' 51.919" E  |
| 4             | 24° 51' 20.428" N | 84° 9' 51.313" E  |
| 5             | 24° 51' 19.067" N | 84° 9' 58.776" E  |
| 6             | 24° 51' 3.642" N  | 84° 9' 45.748" E  |
| 7             | 24° 51' 10.299" N | 84° 9' 41.932" E  |
| 8             | 24° 51' 30.976" N | 84° 9' 47.946" E  |
| 9             | 24° 51' 35.456" N | 84° 9' 46.096" E  |
| 10            | 24° 51' 46.008" N | 84° 9' 51.143" E  |
| 11            | 24° 51' 53.980" N | 84° 10' 0.199" E  |
| 12            | 24° 51' 54.293" N | 84° 10' 16.555" E |
| 13            | 24° 51' 59.453" N | 84° 10' 27.407" E |
| 14            | 24° 52' 5.389" N  | 84° 10' 39.011" E |



**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- ▨ SAFETY BARRIER
- SONE RIVER
- - - DISTRICT BOUNDARY(ROHTAS)

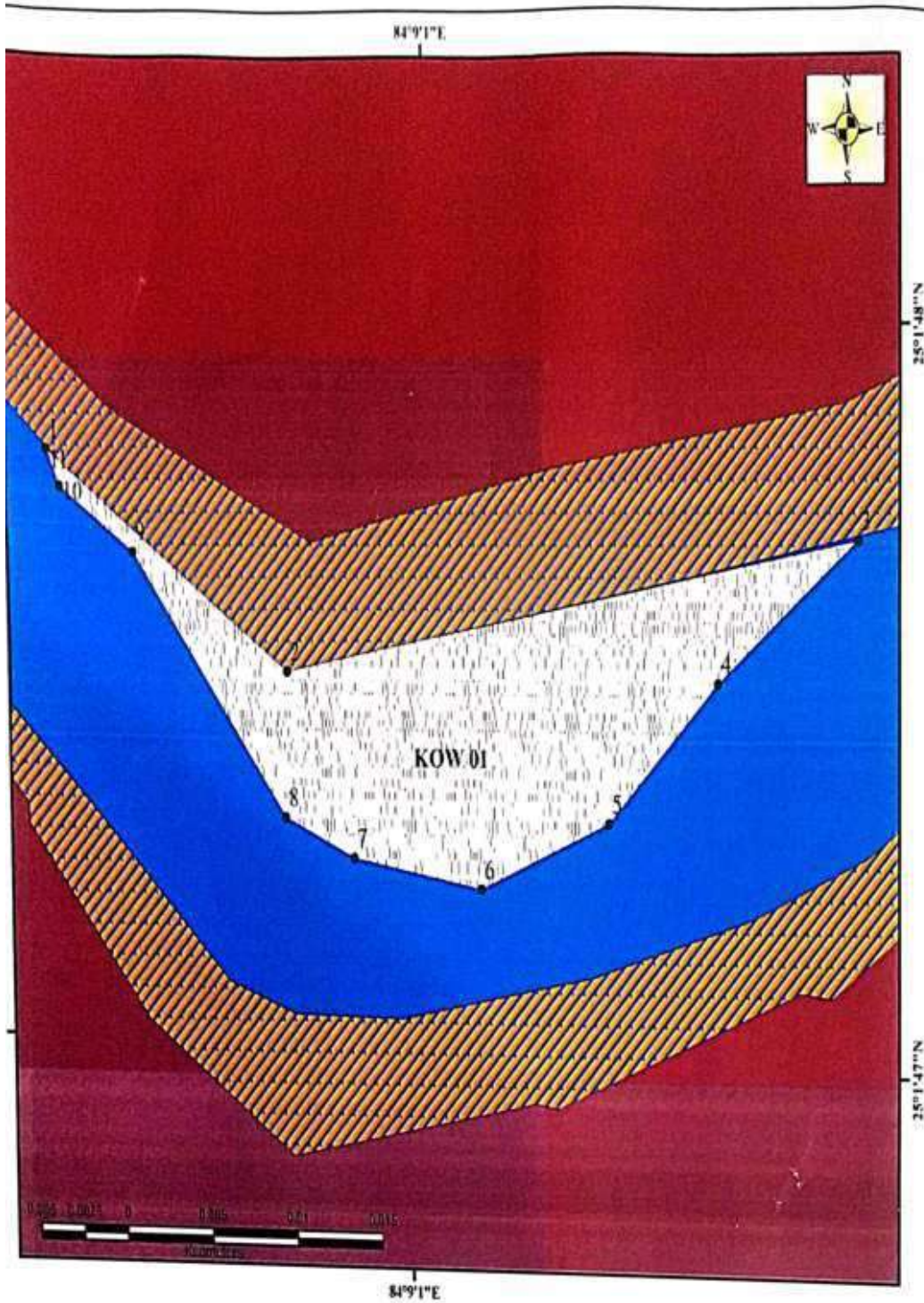


| ROHTAS SON 17 |                   |                  |
|---------------|-------------------|------------------|
| POINT_NO      | LATITUDE          | LONGITUDE        |
| 1             | 24° 50' 19.613" N | 84° 8' 53.241" E |
| 2             | 24° 50' 37.940" N | 84° 8' 29.648" E |
| 3             | 24° 50' 45.765" N | 84° 8' 42.785" E |
| 4             | 24° 50' 50.044" N | 84° 8' 55.614" E |
| 5             | 24° 51' 0.466" N  | 84° 9' 4.518" E  |
| 6             | 24° 51' 7.127" N  | 84° 9' 6.989" E  |
| 7             | 24° 51' 9.633" N  | 84° 9' 10.584" E |
| 8             | 24° 50' 54.641" N | 84° 9' 24.795" E |
| 9             | 24° 50' 45.301" N | 84° 9' 13.188" E |
| 10            | 24° 50' 37.162" N | 84° 9' 13.796" E |
| 11            | 24° 50' 19.613" N | 84° 8' 53.241" E |



**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- SAFETY BARRIER
- SONE RIVER
- DISTRICT BOUNDARY(ROHTAS)

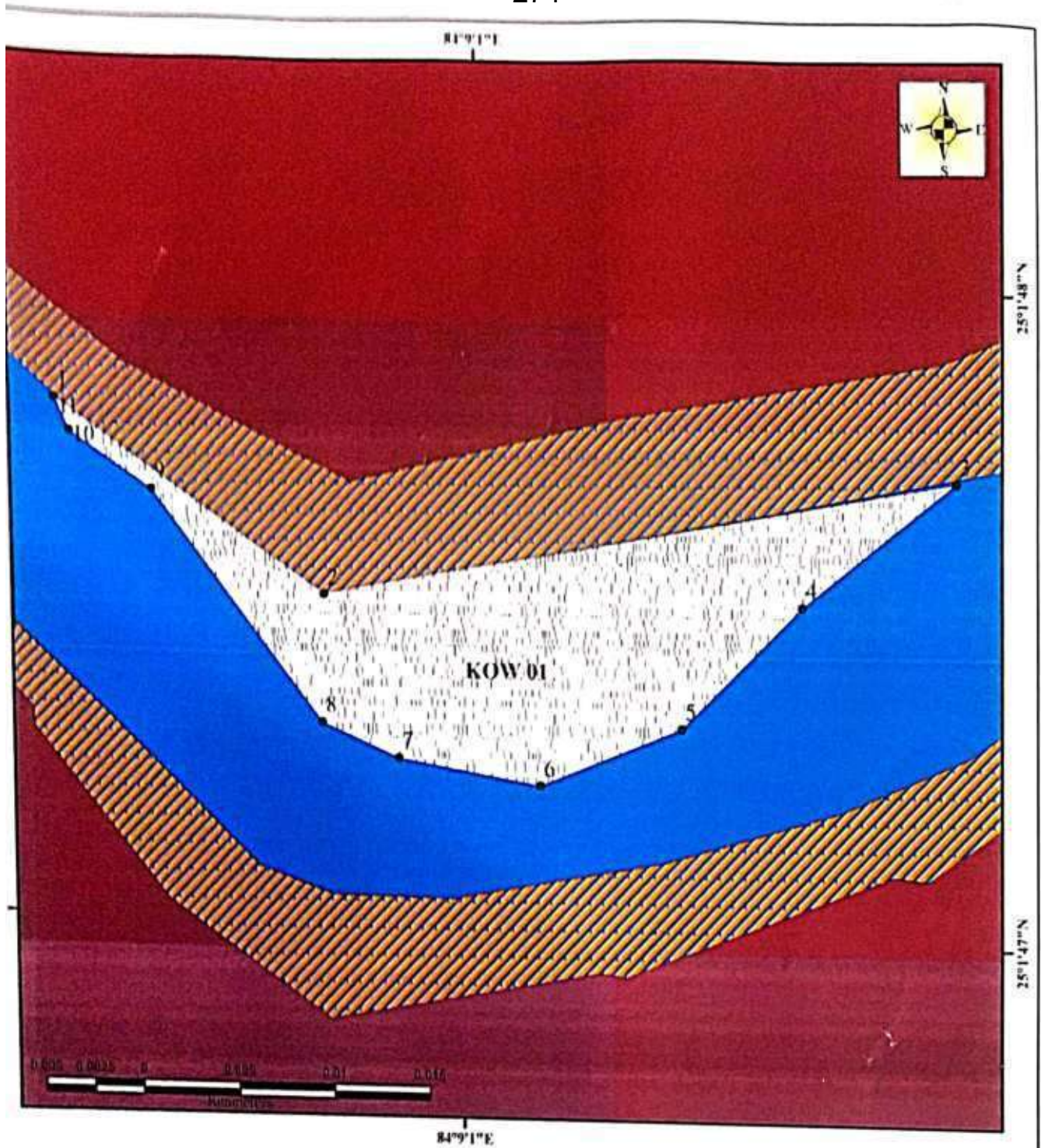


| KOW 01   |                  |                 |
|----------|------------------|-----------------|
| POINT NO | LATITUDE         | LONGITUDE       |
| 1        | 25° 1' 47.799" N | 84° 9' 0.575" E |
| 2        | 25° 1' 47.515" N | 84° 9' 1.072" E |
| 3        | 25° 1' 47.714" N | 84° 9' 2.222" E |
| 4        | 25° 1' 47.519" N | 84° 9' 1.949" E |
| 5        | 25° 1' 47.326" N | 84° 9' 1.733" E |
| 6        | 25° 1' 47.229" N | 84° 9' 1.475" E |
| 7        | 25° 1' 47.265" N | 84° 9' 1.213" E |
| 8        | 25° 1' 47.316" N | 84° 9' 1.071" E |
| 9        | 25° 1' 47.667" N | 84° 9' 0.752" E |
| 10       | 25° 1' 47.750" N | 84° 9' 0.601" E |
| 11       | 25° 1' 47.799" N | 84° 9' 0.575" E |



**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- ▨ SAFTY BARRIER
- KAW RIVER
- ⋯ DISTRICT BOUNDARY(ROHTAS)



| KOW 01   |                  |                 |
|----------|------------------|-----------------|
| POINT NO | LATITUDE         | LONGITUDE       |
| 1        | 25° 1' 47.799" N | 84° 9' 0.575" E |
| 2        | 25° 1' 47.515" N | 84° 9' 1.072" E |
| 3        | 25° 1' 47.714" N | 84° 9' 2.222" E |
| 4        | 25° 1' 47.519" N | 84° 9' 1.949" E |
| 5        | 25° 1' 47.326" N | 84° 9' 1.733" E |
| 6        | 25° 1' 47.229" N | 84° 9' 1.475" E |
| 7        | 25° 1' 47.265" N | 84° 9' 1.213" E |
| 8        | 25° 1' 47.316" N | 84° 9' 1.071" E |
| 9        | 25° 1' 47.667" N | 84° 9' 0.752" E |
| 10       | 25° 1' 47.750" N | 84° 9' 0.601" E |
| 11       | 25° 1' 47.799" N | 84° 9' 0.575" E |



**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- ▨ SAFTY BARRIER
- KAW RIVER
- ⋯ DISTRICT BOUNDARY(ROHTAS)

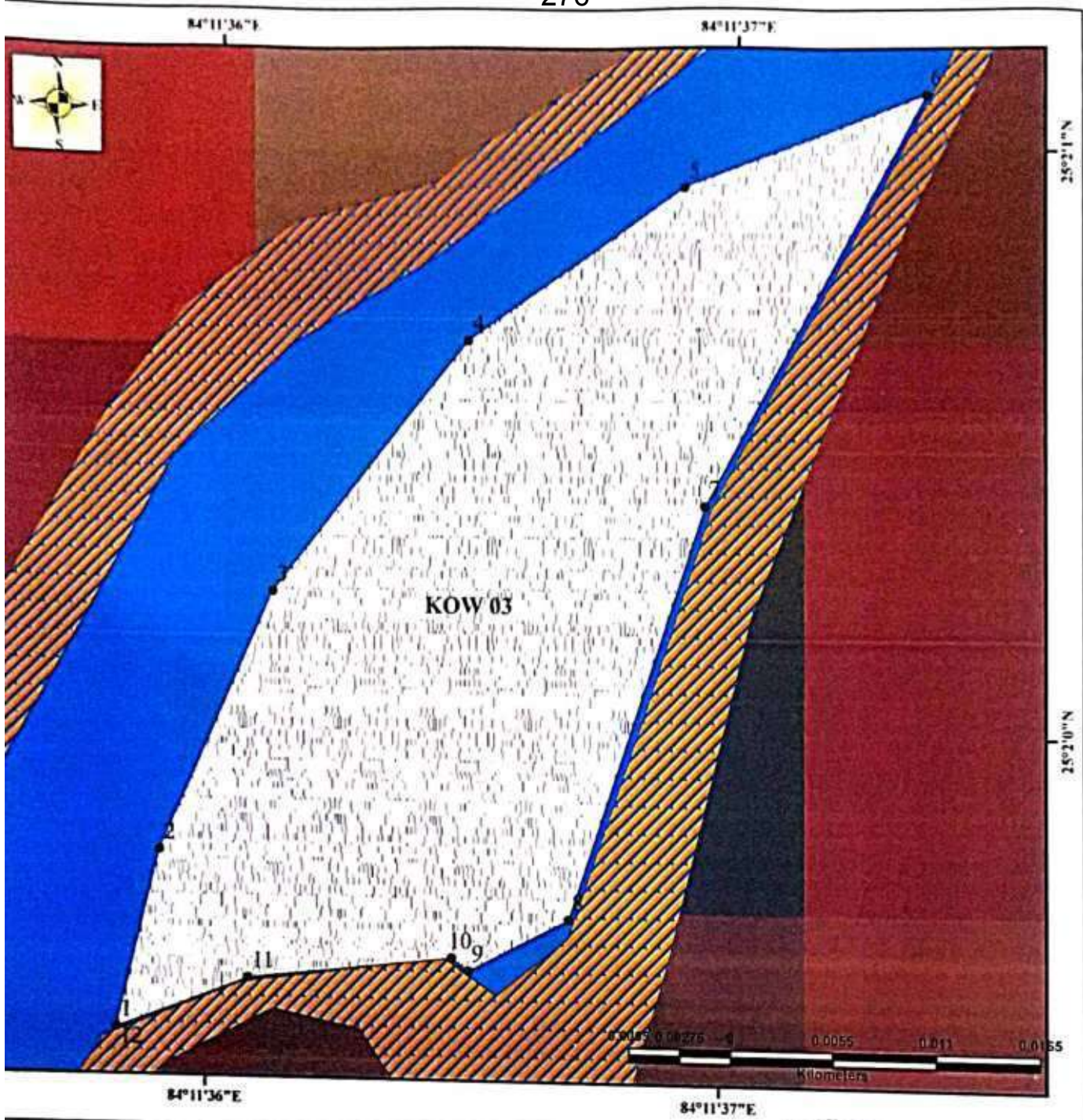


**KOW 02**

| POINT NO | LATITUDE         | LONGITUDE        | POINT NO | LATITUDE         | LONGITUDE        |
|----------|------------------|------------------|----------|------------------|------------------|
| 1        | 25° 1' 35.914" N | 84° 11' 8.892" E | 12       | 25° 1' 37.990" N | 84° 11' 8.115" E |
| 2        | 25° 1' 36.039" N | 84° 11' 8.833" E | 13       | 25° 1' 37.900" N | 84° 11' 7.924" E |
| 3        | 25° 1' 36.638" N | 84° 11' 7.603" E | 14       | 25° 1' 37.700" N | 84° 11' 7.734" E |
| 4        | 25° 1' 36.859" N | 84° 11' 7.349" E | 15       | 25° 1' 37.395" N | 84° 11' 7.632" E |
| 5        | 25° 1' 37.178" N | 84° 11' 7.282" E | 16       | 25° 1' 37.077" N | 84° 11' 7.666" E |
| 6        | 25° 1' 37.576" N | 84° 11' 7.352" E | 17       | 25° 1' 36.742" N | 84° 11' 7.831" E |
| 7        | 25° 1' 37.797" N | 84° 11' 7.498" E | 18       | 25° 1' 36.579" N | 84° 11' 8.047" E |
| 8        | 25° 1' 38.014" N | 84° 11' 7.833" E | 19       | 25° 1' 36.517" N | 84° 11' 8.466" E |
| 9        | 25° 1' 38.094" N | 84° 11' 8.354" E | 20       | 25° 1' 36.357" N | 84° 11' 8.742" E |
| 10       | 25° 1' 38.004" N | 84° 11' 8.742" E | 21       | 25° 1' 36.003" N | 84° 11' 8.923" E |
| 11       | 25° 1' 38.014" N | 84° 11' 8.353" E | 22       | 25° 1' 35.914" N | 84° 11' 8.892" E |

**LEGEND**

- POTENTIAL BLOCK
- SAFETY BARRIER
- KAW RIVER
- DISTRICT BOUNDARY(ROHTAS)

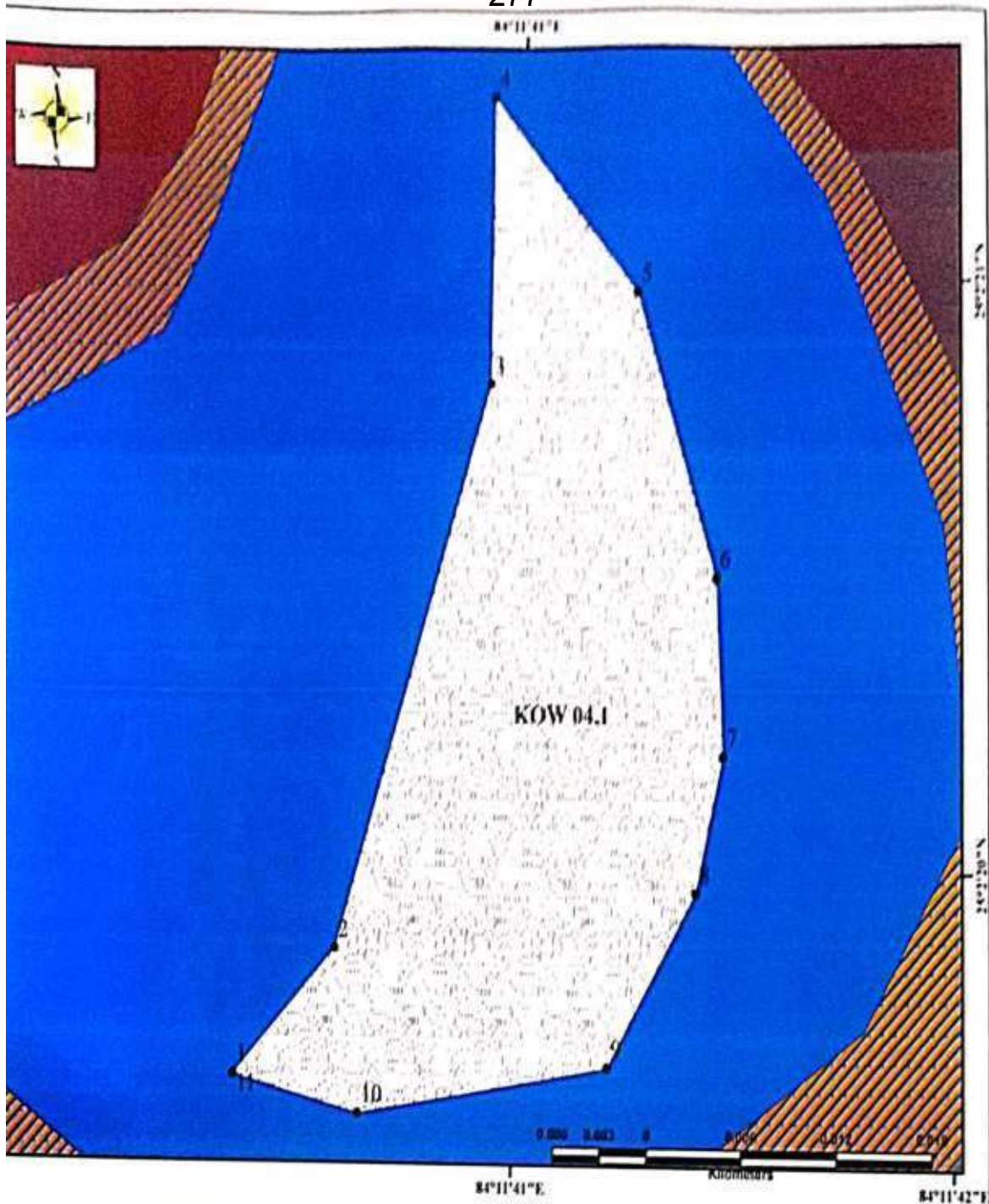


| KOW 03   |                  |                   |
|----------|------------------|-------------------|
| POINT NO | LATITUDE         | LONGITUDE         |
| 1        | 25° 1' 59.449" N | 84° 11' 36.159" E |
| 2        | 25° 1' 59.759" N | 84° 11' 36.235" E |
| 3        | 25° 2' 0.213" N  | 84° 11' 36.447" E |
| 4        | 25° 2' 0.651" N  | 84° 11' 36.822" E |
| 5        | 25° 2' 0.924" N  | 84° 11' 37.235" E |
| 6        | 25° 2' 1.092" N  | 84° 11' 37.693" E |
| 7        | 25° 2' 0.379" N  | 84° 11' 37.286" E |
| 8        | 25° 1' 59.664" N | 84° 11' 37.037" E |
| 9        | 25° 1' 59.570" N | 84° 11' 36.845" E |
| 10       | 25° 1' 59.591" N | 84° 11' 36.812" E |
| 11       | 25° 1' 59.544" N | 84° 11' 36.415" E |
| 12       | 25° 1' 59.449" N | 84° 11' 36.159" E |



**LEGEND**

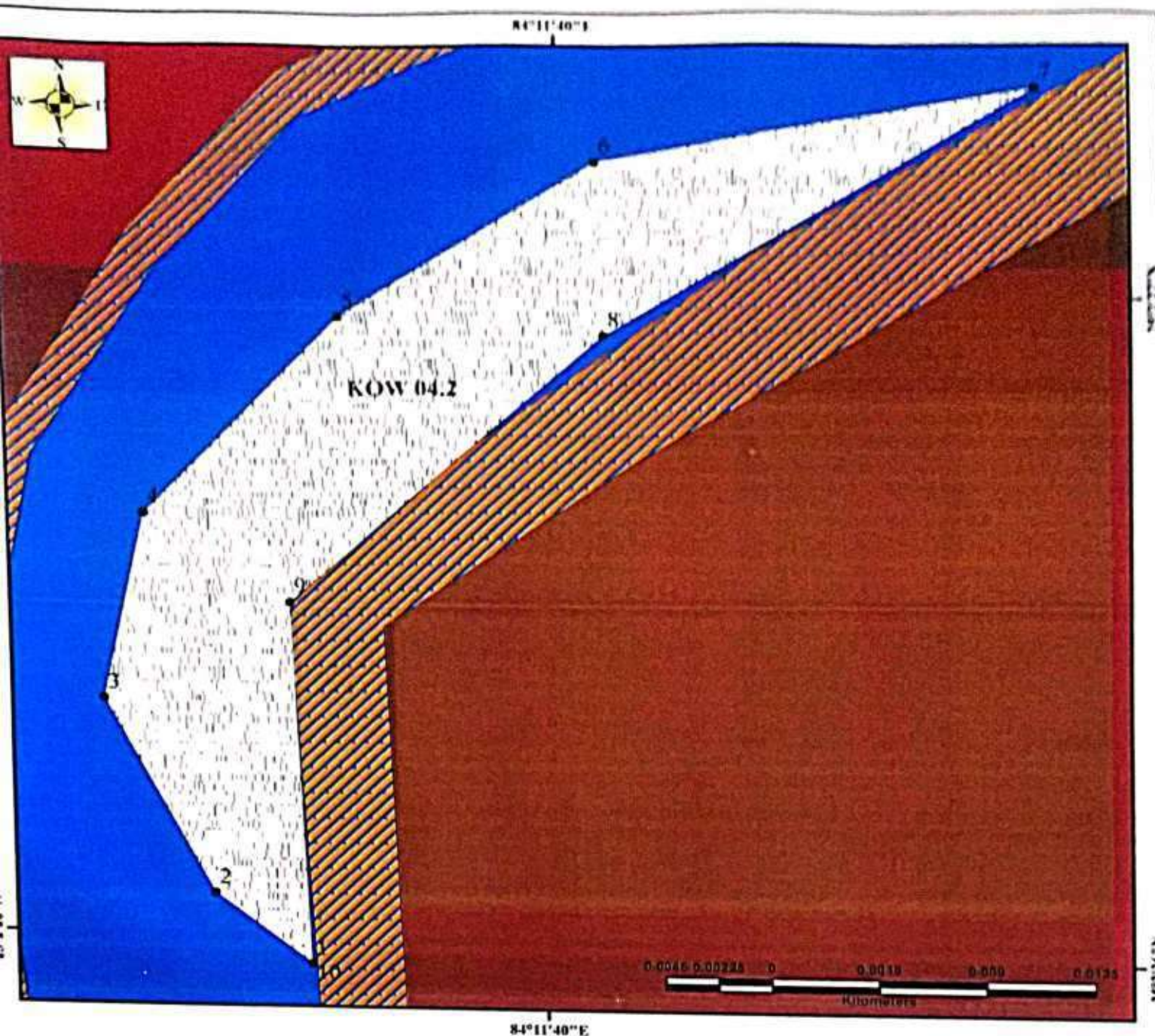
- COORDINATE
- POTENTIAL BLOCK
- SAFTY BARRIER
- KAW RIVER
- DISTRICT BOUNDARY(ROHTAS)



| KOW 4.1  |                  |                   |
|----------|------------------|-------------------|
| POINT NO | LATITUDE         | LONGITUDE         |
| 1        | 25° 2' 19.621" N | 84° 11' 40.688" E |
| 2        | 25° 2' 19.841" N | 84° 11' 40.920" E |
| 3        | 25° 2' 20.809" N | 84° 11' 41.259" E |
| 4        | 25° 2' 21.298" N | 84° 11' 41.258" E |
| 5        | 25° 2' 20.970" N | 84° 11' 41.590" E |
| 6        | 25° 2' 20.488" N | 84° 11' 41.777" E |
| 7        | 25° 2' 20.188" N | 84° 11' 41.799" E |
| 8        | 25° 2' 19.955" N | 84° 11' 41.743" E |
| 9        | 25° 2' 19.654" N | 84° 11' 41.548" E |
| 10       | 25° 2' 19.561" N | 84° 11' 40.978" E |
| 11       | 25° 2' 19.621" N | 84° 11' 40.688" E |

**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- ▨ SAFETY BARRIER
- KAW RIVER
- ⋯ DISTRICT BOUNDARY(ROHTAS)

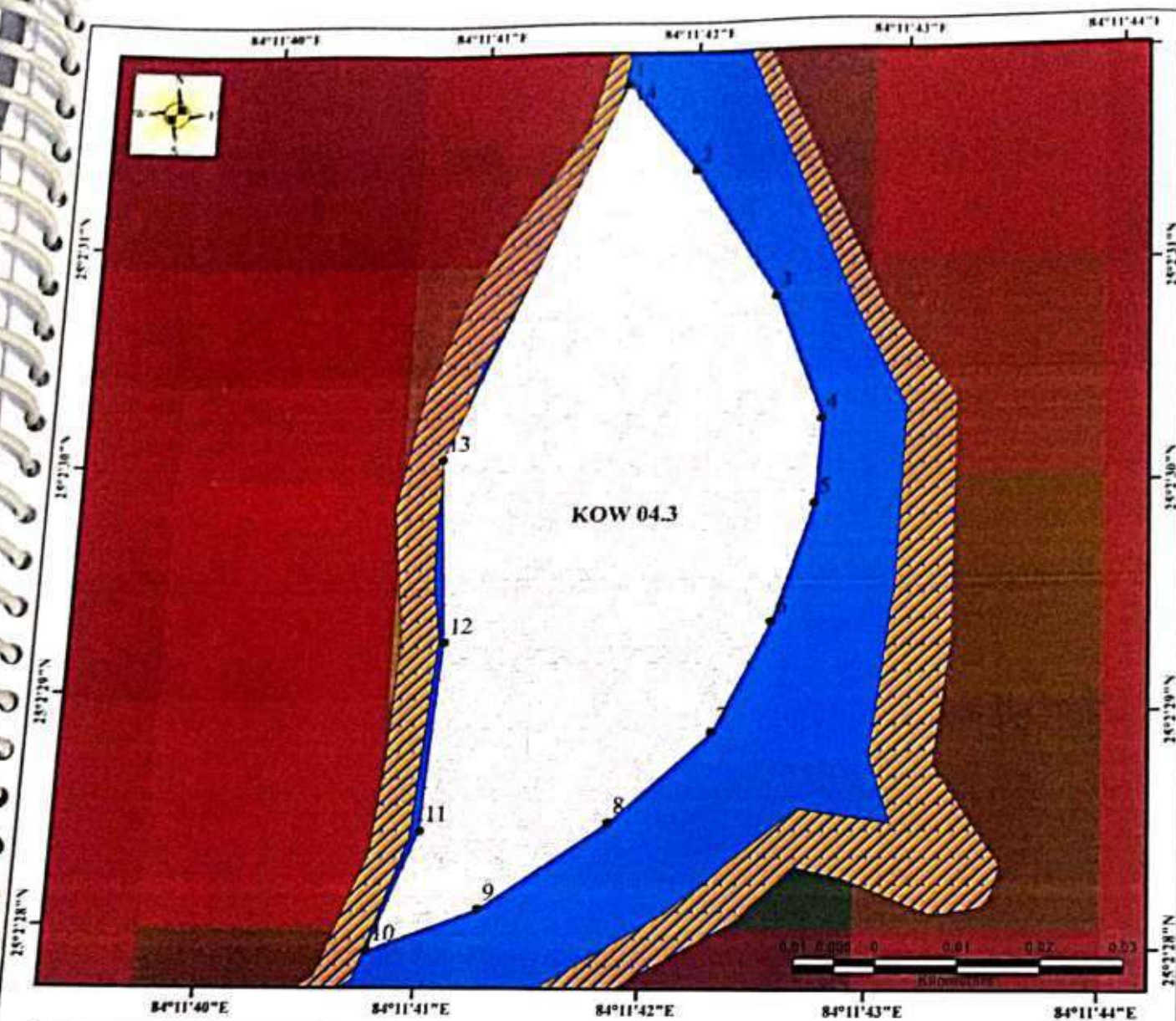


| KOW 4.2  |                  |                   |
|----------|------------------|-------------------|
| POINT NO | LATITUDE         | LONGITUDE         |
| 1        | 25° 2' 25.964" N | 84° 11' 39.967" E |
| 2        | 25° 2' 26.069" N | 84° 11' 39.818" E |
| 3        | 25° 2' 26.364" N | 84° 11' 39.649" E |
| 4        | 25° 2' 26.650" N | 84° 11' 39.708" E |
| 5        | 25° 2' 26.952" N | 84° 11' 40.005" E |
| 6        | 25° 2' 27.191" N | 84° 11' 40.390" E |
| 7        | 25° 2' 27.310" N | 84° 11' 41.036" E |
| 8        | 25° 2' 26.932" N | 84° 11' 40.406" E |
| 9        | 25° 2' 26.520" N | 84° 11' 39.933" E |
| 10       | 25° 2' 25.964" N | 84° 11' 39.967" E |



**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- ▨ SAFTY BARRIER
- KAW RIVER
- ⊞ DISTRICT BOUNDARY (ROHTAS)



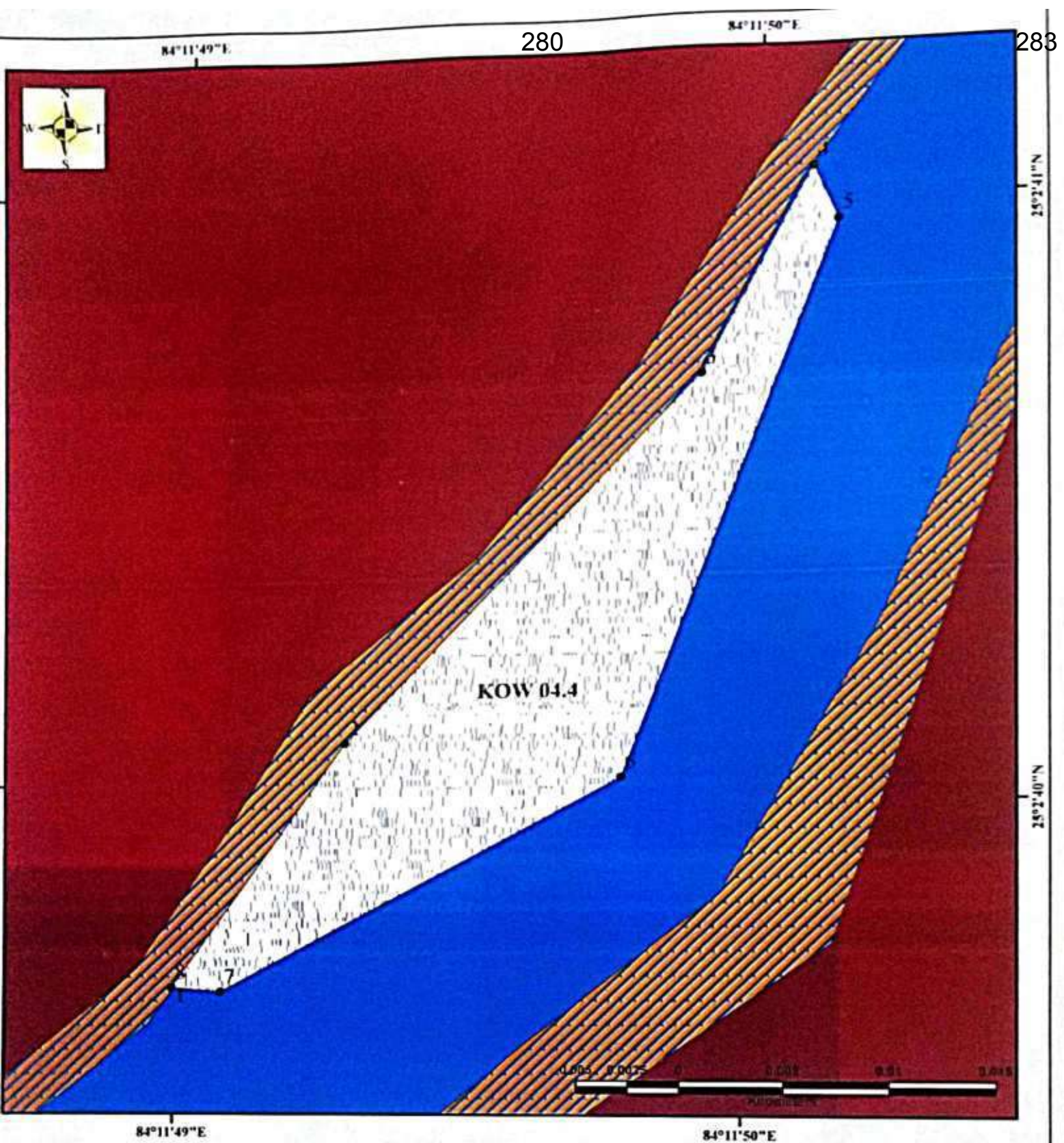
KOW 4.3

| POINT NO | LATITUDE         | LONGITUDE         |
|----------|------------------|-------------------|
| 1        | 25° 2' 31.813" N | 84° 11' 42.005" E |
| 2        | 25° 2' 31.407" N | 84° 11' 42.351" E |
| 3        | 25° 2' 30.817" N | 84° 11' 42.763" E |
| 4        | 25° 2' 30.260" N | 84° 11' 43.005" E |
| 5        | 25° 2' 29.886" N | 84° 11' 42.993" E |
| 6        | 25° 2' 29.362" N | 84° 11' 42.827" E |
| 7        | 25° 2' 28.877" N | 84° 11' 42.588" E |
| 8        | 25° 2' 28.486" N | 84° 11' 42.149" E |
| 9        | 25° 2' 28.107" N | 84° 11' 41.592" E |
| 10       | 25° 2' 27.924" N | 84° 11' 41.104" E |
| 11       | 25° 2' 28.433" N | 84° 11' 41.302" E |
| 12       | 25° 2' 29.250" N | 84° 11' 41.343" E |
| 13       | 25° 2' 30.063" N | 84° 11' 41.263" E |
| 14       | 25° 2' 31.813" N | 84° 11' 42.005" E |



## LEGEND

- COORDINATE
- POTENTIAL BLOCK
- ▨ SAFETY BARRIER
- KAW RIVER
- ⋯ DISTRICT BOUNDARY(ROHTAS)

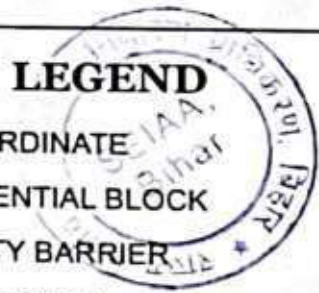


**KOW 4.4**

| POINT NO | LATITUDE         | LONGITUDE         |
|----------|------------------|-------------------|
| 1        | 25° 2' 39.664" N | 84° 11' 49.320" E |
| 2        | 25° 2' 40.081" N | 84° 11' 49.623" E |
| 3        | 25° 2' 40.702" N | 84° 11' 50.232" E |
| 4        | 25° 2' 41.046" N | 84° 11' 50.416" E |
| 5        | 25° 2' 40.957" N | 84° 11' 50.459" E |
| 6        | 25° 2' 40.030" N | 84° 11' 50.109" E |
| 7        | 25° 2' 39.658" N | 84° 11' 49.408" E |
| 8        | 25° 2' 39.664" N | 84° 11' 49.320" E |

**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- SAFTY BARRIER
- KAW RIVER
- DISTRICT BOUNDARY(ROHTAS)

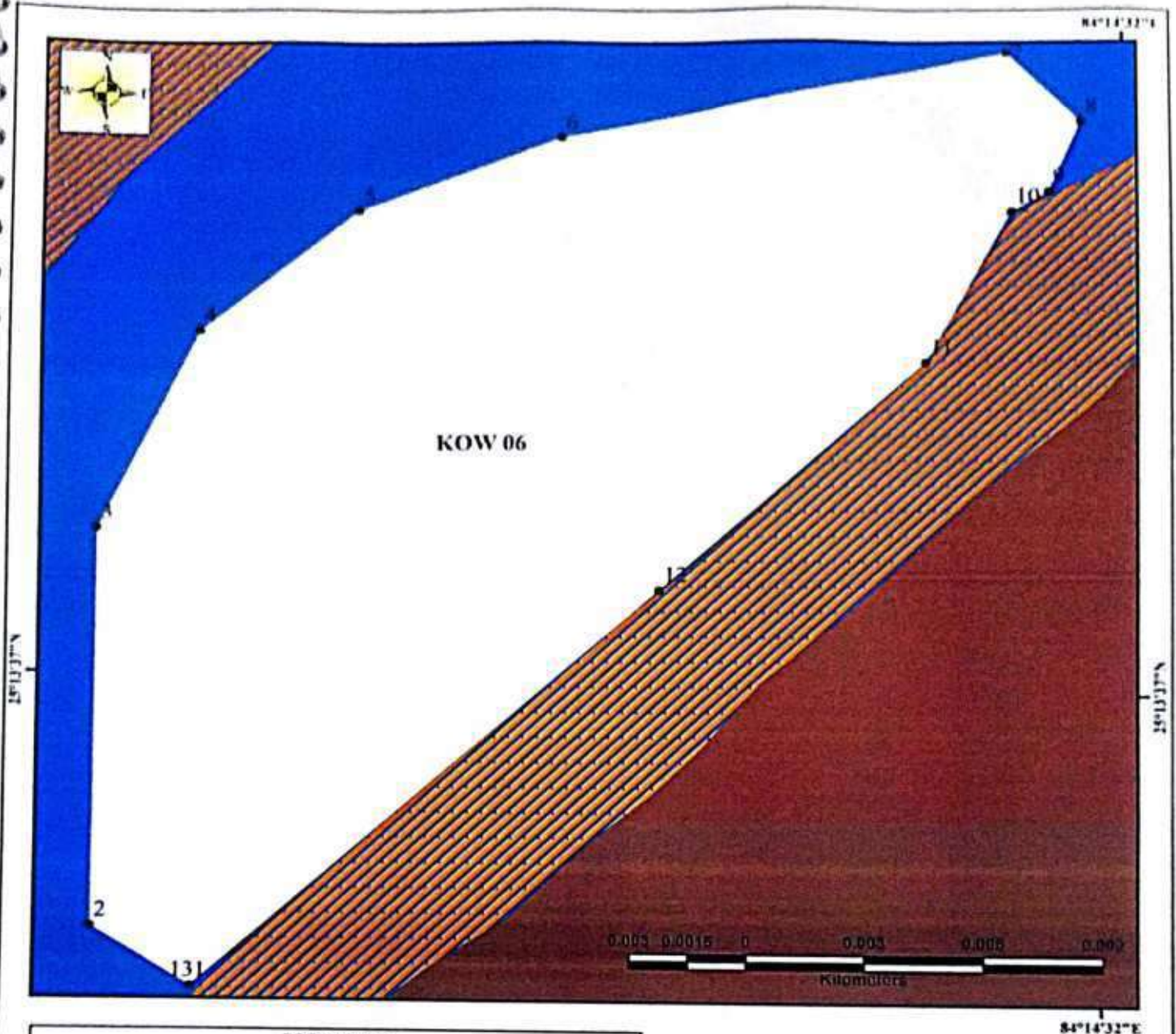




| KOW 05   |                   |                   |
|----------|-------------------|-------------------|
| POINT_NO | LATITUDE          | LONGITUDE         |
| 1        | 25° 12' 37.175" N | 84° 16' 16.333" E |
| 2        | 25° 12' 37.291" N | 84° 16' 16.252" E |
| 3        | 25° 12' 37.597" N | 84° 16' 16.211" E |
| 4        | 25° 12' 37.943" N | 84° 16' 16.224" E |
| 5        | 25° 12' 38.048" N | 84° 16' 16.284" E |
| 6        | 25° 12' 38.137" N | 84° 16' 16.386" E |
| 7        | 25° 12' 38.089" N | 84° 16' 16.463" E |
| 8        | 25° 12' 37.846" N | 84° 16' 16.380" E |
| 9        | 25° 12' 37.383" N | 84° 16' 16.312" E |
| 10       | 25° 12' 37.175" N | 84° 16' 16.333" E |

**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- SAFTY BARRIER
- KAW RIVER
- DISTRICT BOUNDARY(ROHTAS)

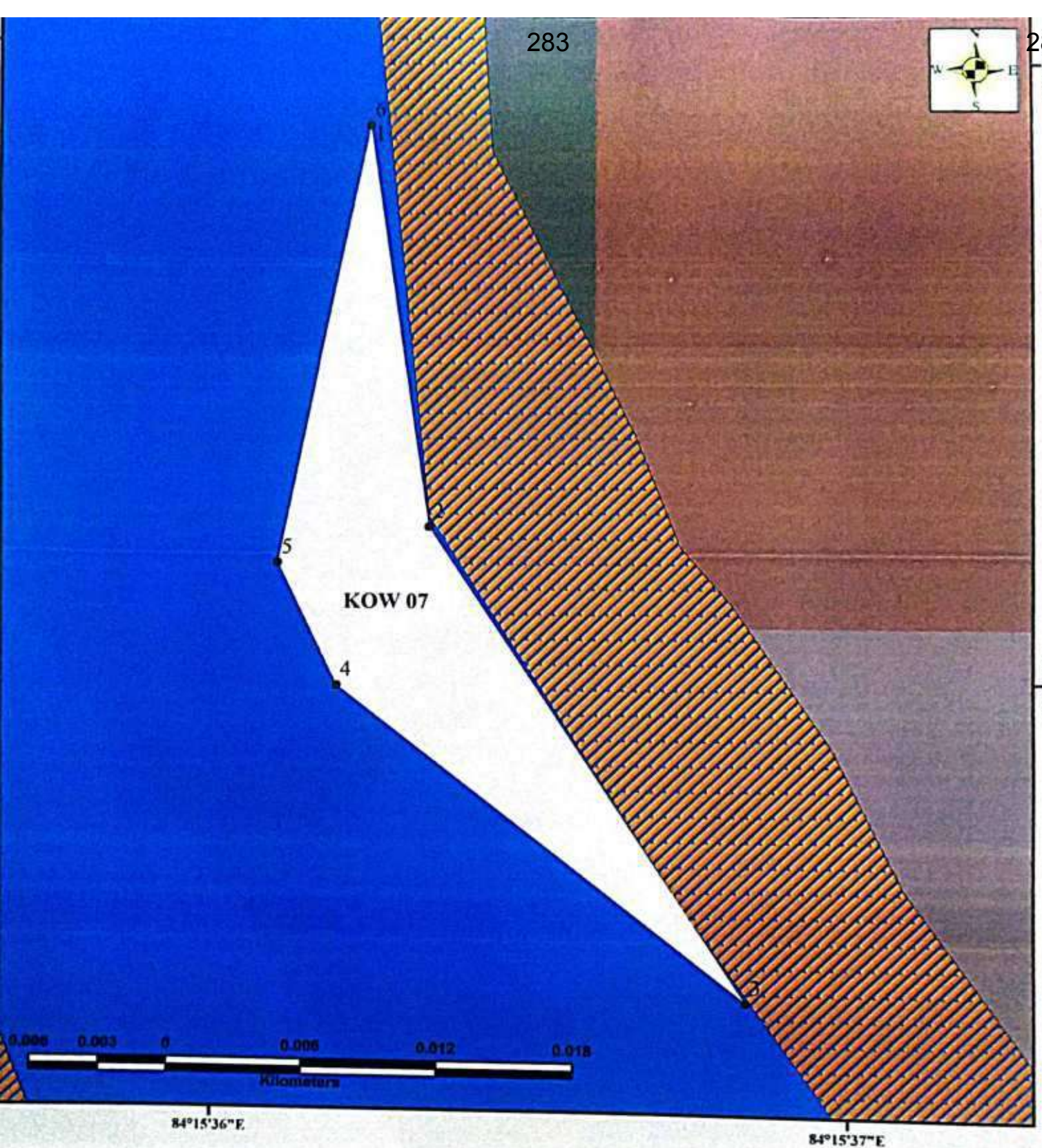


| KOW 06   |                   |                   |
|----------|-------------------|-------------------|
| POINT NO | LATITUDE          | LONGITUDE         |
| 1        | 25° 13' 36.713" N | 84° 14' 31.338" E |
| 2        | 25° 13' 36.765" N | 84° 14' 31.245" E |
| 3        | 25° 13' 37.136" N | 84° 14' 31.237" E |
| 4        | 25° 13' 37.323" N | 84° 14' 31.326" E |
| 5        | 25° 13' 37.438" N | 84° 14' 31.471" E |
| 6        | 25° 13' 37.510" N | 84° 14' 31.657" E |
| 7        | 25° 13' 37.598" N | 84° 14' 32.065" E |
| 8        | 25° 13' 37.532" N | 84° 14' 32.134" E |
| 9        | 25° 13' 37.465" N | 84° 14' 32.105" E |
| 10       | 25° 13' 37.446" N | 84° 14' 32.072" E |
| 11       | 25° 13' 37.304" N | 84° 14' 31.998" E |
| 12       | 25° 13' 37.088" N | 84° 14' 31.761" E |
| 13       | 25° 13' 36.713" N | 84° 14' 31.338" E |

**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- SAFETY BARRIER
- KAW RIVER
- DISTRICT BOUNDARY(ROHTAS)

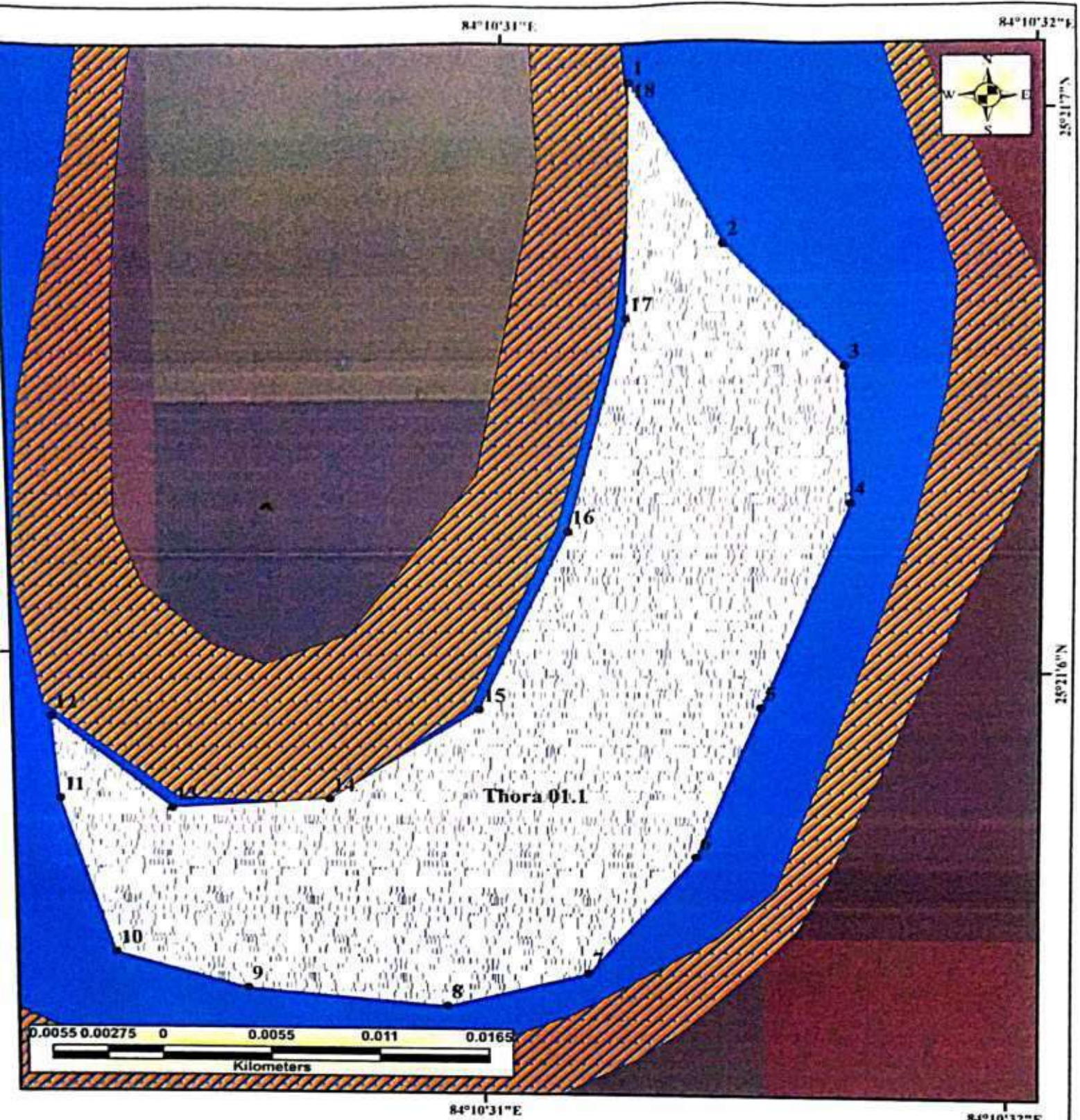
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| KOW 07   |                   |                   |
|----------|-------------------|-------------------|
| POINT NO | LATITUDE          | LONGITUDE         |
| 1        | 25° 17' 29.808" N | 84° 15' 36.312" E |
| 2        | 25° 17' 29.210" N | 84° 15' 36.420" E |
| 3        | 25° 17' 28.518" N | 84° 15' 36.933" E |
| 4        | 25° 17' 28.971" N | 84° 15' 36.279" E |
| 5        | 25° 17' 29.153" N | 84° 15' 36.180" E |
| 6        | 25° 17' 29.808" N | 84° 15' 36.312" E |

**LEGEND**

- COORDINATE
- [Hatched Box] POTENTIAL BLOCK
- [Hatched Box] SAFTY BARRIER
- [Blue Box] KAW RIVER
- [Dashed Box] DISTRICT BOUNDARY(ROHTAS)

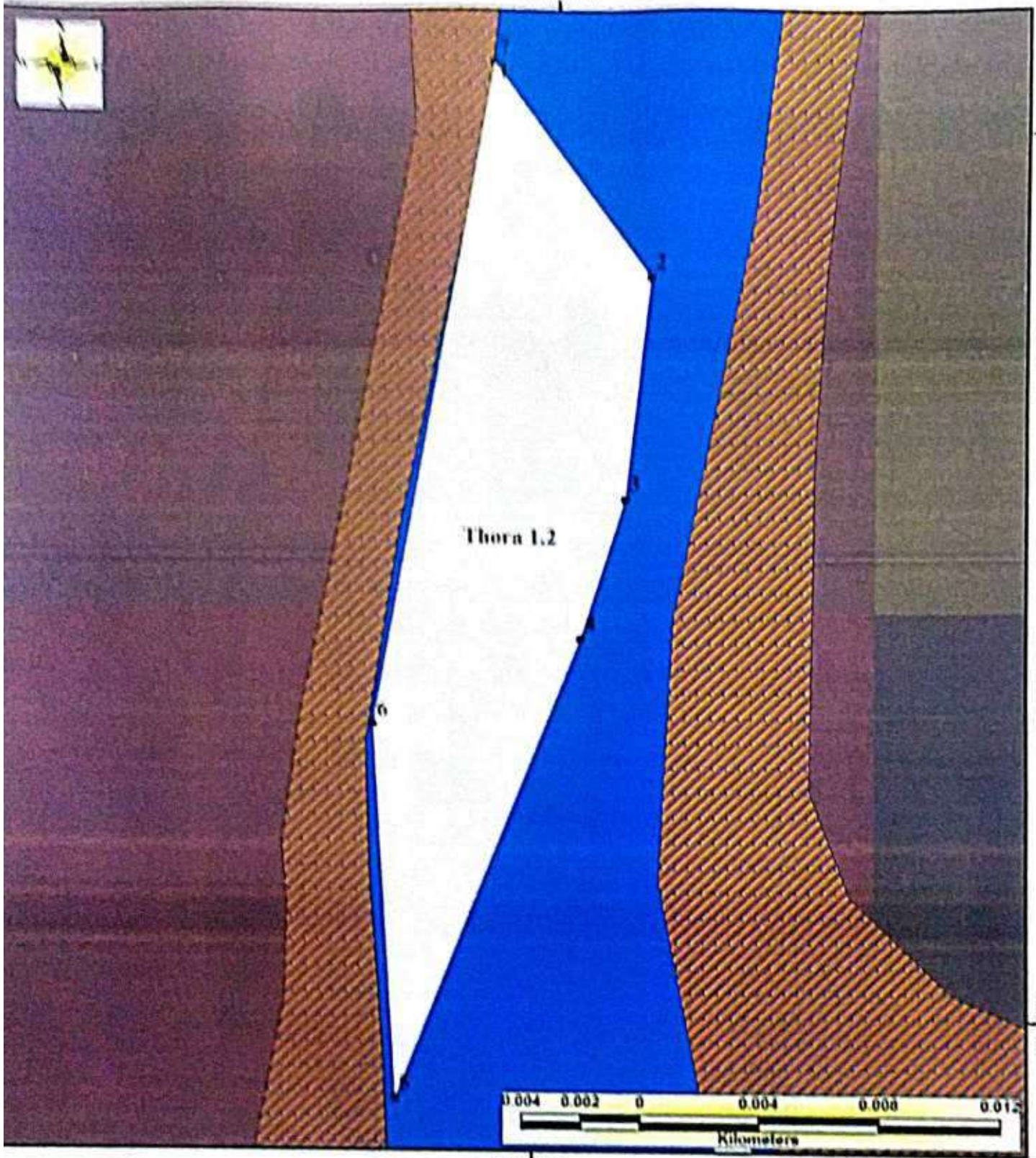


**THORA 01.1**

| POINT NO | LATITUDE         | LONGITUDE         | POINT NO | LATITUDE         | LONGITUDE         |
|----------|------------------|-------------------|----------|------------------|-------------------|
| 1        | 25° 21' 7.032" N | 84° 10' 31.231" E | 10       | 25° 21' 5.453" N | 84° 10' 30.342" E |
| 2        | 25° 21' 6.754" N | 84° 10' 31.399" E | 11       | 25° 21' 5.735" N | 84° 10' 30.242" E |
| 3        | 25° 21' 6.540" N | 84° 10' 31.612" E | 12       | 25° 21' 5.885" N | 84° 10' 30.225" E |
| 4        | 25° 21' 6.298" N | 84° 10' 31.629" E | 13       | 25° 21' 5.723" N | 84° 10' 30.441" E |
| 5        | 25° 21' 5.928" N | 84° 10' 31.484" E | 14       | 25° 21' 5.746" N | 84° 10' 30.725" E |
| 6        | 25° 21' 5.654" N | 84° 10' 31.377" E | 15       | 25° 21' 5.915" N | 84° 10' 30.990" E |
| 7        | 25° 21' 5.435" N | 84° 10' 31.194" E | 16       | 25° 21' 6.239" N | 84° 10' 31.140" E |
| 8        | 25° 21' 5.368" N | 84° 10' 30.940" E | 17       | 25° 21' 6.618" N | 84° 10' 31.234" E |
| 9        | 25° 21' 5.392" N | 84° 10' 30.580" E | 18       | 25° 21' 7.032" N | 84° 10' 31.231" E |

**LEGEND**

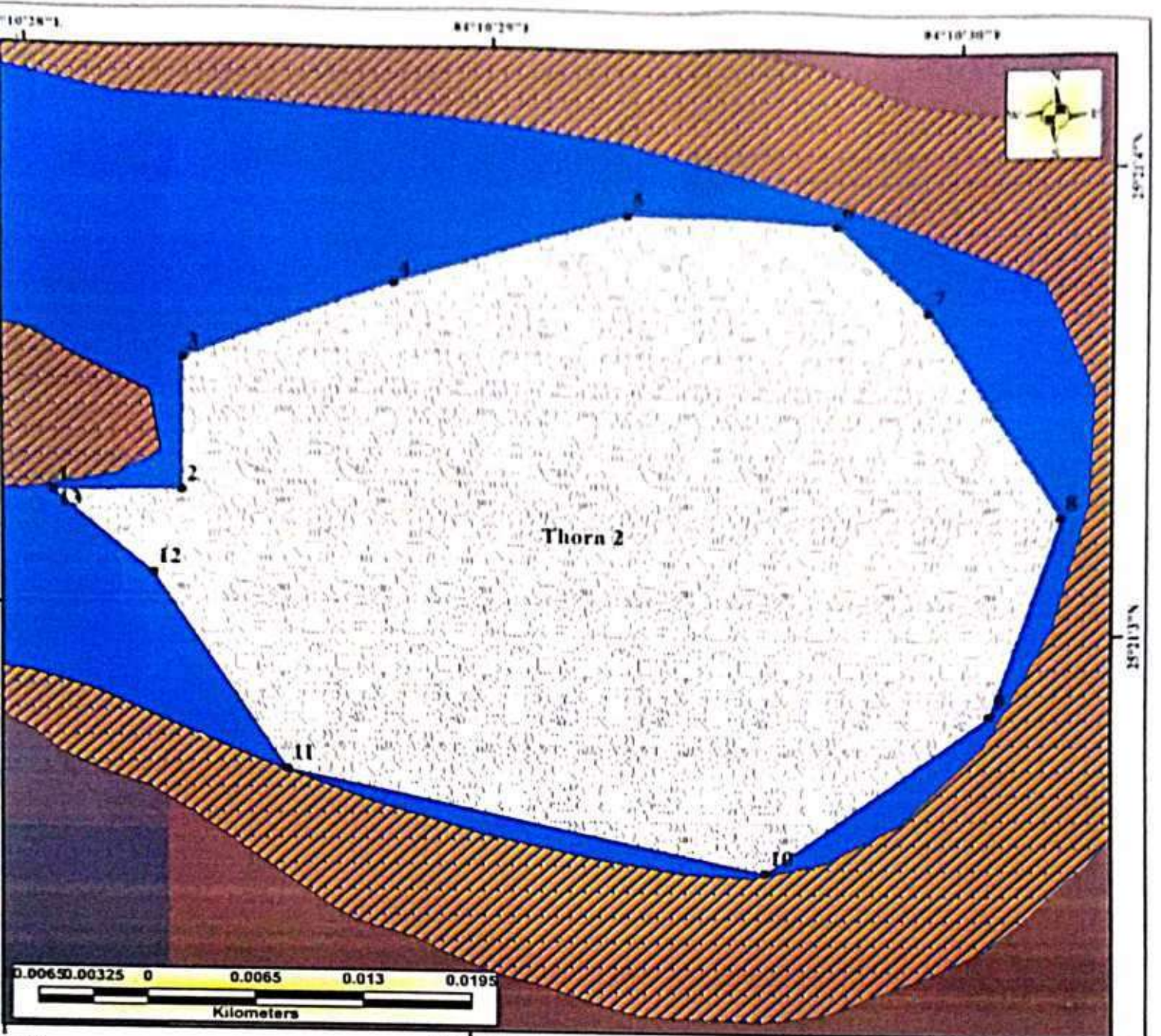
- COORDINATE
- POTENTIAL BLOCK
- ▨ SAFETY BARRIER
- THORA RIVER
- DISTRICT BOUNDARY(ROHTAS)



| THORA 1.2 |                  |                   |
|-----------|------------------|-------------------|
| POINT_NO  | LATITUDE         | LONGITUDE         |
| 1         | 25° 21' 7.068" N | 84° 10' 29.932" E |
| 2         | 25° 21' 6.833" N | 84° 10' 30.127" E |
| 3         | 25° 21' 6.583" N | 84° 10' 30.102" E |
| 4         | 25° 21' 6.423" N | 84° 10' 30.053" E |
| 5         | 25° 21' 5.894" N | 84° 10' 29.842" E |
| 6         | 25° 21' 6.318" N | 84° 10' 29.805" E |
| 7         | 25° 21' 7.068" N | 84° 10' 29.932" E |

**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- ▨ SAFETY BARRIER
- THORA RIVER
- DISTRICT BOUNDARY(ROHTAS)

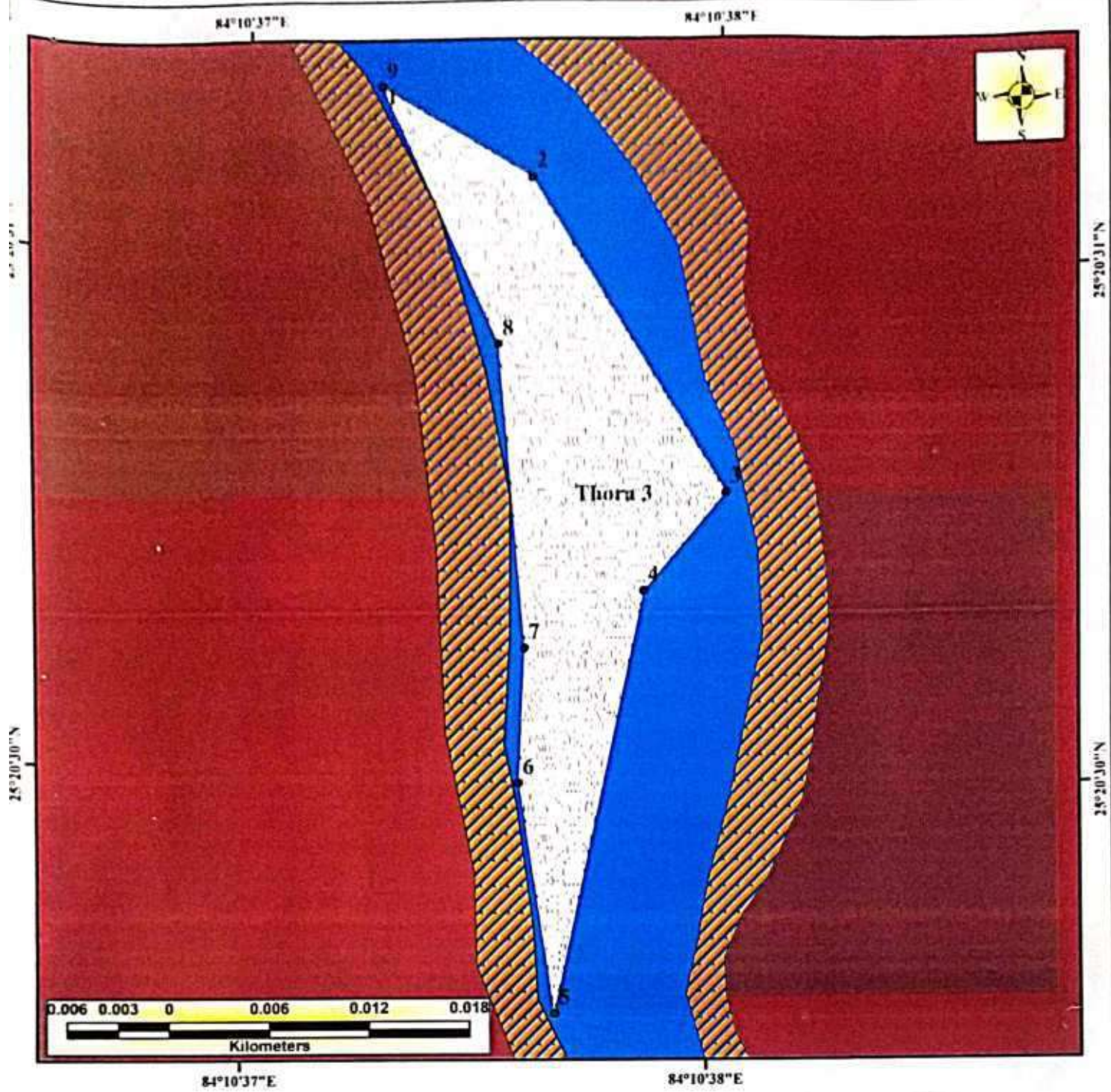


| THORA 2  |                  |                   |
|----------|------------------|-------------------|
| POINT NO | LATITUDE         | LONGITUDE         |
| 1        | 25° 21' 3.244" N | 84° 10' 28.089" E |
| 2        | 25° 21' 3.255" N | 84° 10' 28.364" E |
| 3        | 25° 21' 3.537" N | 84° 10' 28.359" E |
| 4        | 25° 21' 3.707" N | 84° 10' 28.808" E |
| 5        | 25° 21' 3.869" N | 84° 10' 29.304" E |
| 6        | 25° 21' 3.860" N | 84° 10' 29.754" E |
| 7        | 25° 21' 3.681" N | 84° 10' 29.954" E |
| 8        | 25° 21' 3.249" N | 84° 10' 30.246" E |
| 9        | 25° 21' 2.819" N | 84° 10' 30.106" E |
| 10       | 25° 21' 2.464" N | 84° 10' 29.636" E |
| 11       | 25° 21' 2.659" N | 84° 10' 28.605" E |
| 12       | 25° 21' 3.075" N | 84° 10' 28.307" E |
| 13       | 25° 21' 3.244" N | 84° 10' 28.089" E |



**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- ▨ SAFTY BARRIER
- THORA RIVER
- ⋯ DISTRICT BOUNDARY(ROHTAS)



| THORA 3  |                   |                   |
|----------|-------------------|-------------------|
| POINT NO | LATITUDE          | LONGITUDE         |
| 1        | 25° 20' 31.322" N | 84° 10' 37.303" E |
| 2        | 25° 20' 31.153" N | 84° 10' 37.624" E |
| 3        | 25° 20' 30.555" N | 84° 10' 38.048" E |
| 4        | 25° 20' 30.362" N | 84° 10' 37.875" E |
| 5        | 25° 20' 29.533" N | 84° 10' 37.699" E |
| 6        | 25° 20' 29.981" N | 84° 10' 37.614" E |
| 7        | 25° 20' 30.245" N | 84° 10' 37.622" E |
| 8        | 25° 20' 30.832" N | 84° 10' 37.556" E |
| 9        | 25° 20' 31.322" N | 84° 10' 37.303" E |



**LEGEND**

- COORDINATE
- POTENTIAL BLOCK
- ▨ SAFTY BARRIER
- THORA RIVER
- ⋯ DISTRICT BOUNDARY(ROHTAS)

जिला खनन कार्यालय, रोहतास (साक्षाराम)

To,  
The Member Secretary,  
State Environment Impact Assessment Authority,  
Patna, Bihar

**Subject: Regarding Public consultation for District Survey Report of Rohtas District.**

Dear Sir,

With reference to the above mentioned subject, we would like to inform you that, in compliance of the Minutes of Meeting held on dated 25.03.2022 of SEAC, vide letter No. 132 dated 07-04-2022, District Mining Office, Rohtashas placed the District Survey Report (DSR) in the public domain for more than One Month for obtaining comments of the general public.

As of date the Department has not been in receipt of any comments from the general Public.

Thanking you

Yours faithfully

*M. D. A.*  
20/5/22

M. D. A.  
Rohtas



Browser tabs: DSR ROHTAS - print@nianenvir... | Renewal CTO of M/s Bhagwan S... | WhatsApp | District Survey Report (DSR) pro... | 2022022412.pdf

Address bar: rohtas.nic.in/district-survey-report-dsr-mining-department/

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## District Survey Report (DSR) proforma – Mining Department

PUBLISH DATE : 24/02/2022

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बिहार राज्य पर्यावरण समाघात निर्धारण प्राधिकरण,  
द्वितीय तल, बेल्ट्रॉन भवन, शास्त्रीनगर, पटना-23

पत्रांक :- 392

पटना, दिनांक :- 03/11/2023

प्रेषक,

सुधीर कुमार,  
सदस्य सचिव,  
बिहार राज्य पर्यावरण समाघात  
निर्धारण प्राधिकरण, (SEIAA), बिहार।

सेवा में,

समाहर्ता,  
रोहतास।

विषय:- रोहतास जिला के अनुमोदित जिला सर्वेक्षण प्रतिवेदन (DSR) में संशोधन किए जाने के संबंध में।

प्रसंग:- आपका पत्रांक:-1335, दिनांक:-01.06.2023 एवं पत्रांक:-1882, दिनांक:-21.08.2023/प्राधिकरण का पत्रांक:-269, दिनांक:-23.05.2022 एवं पत्रांक:-388, दिनांक:-21.09.2022।

महोदय,

निदेशानुसार उपर्युक्त विषयक के संबंध में सूचित करना है कि आपके द्वारा समर्पित रोहतास जिला के बालु खनिज हेतु अनुमोदित जिला सर्वेक्षण प्रतिवेदन (DSR) में संशोधन कर इसकी एक प्रति संलग्न कर भेजी जा रही है।

अनुलग्नक:-यथोक्त।

विश्वासभाजन

3/11/2023

(सुधीर कुमार)  
सदस्य सचिव

# जिला खनन कार्यालय, रोहतास (सासाराम)।

पत्रांक-...1882... / एम0, सासाराम, दिनांक-...21-08-2023

प्रेषक,

खनिज विकास पदाधिकारी,  
रोहतास (सासाराम)।

सेवा में,

सदस्य सचिव,  
SEAC, Bihar.

विषय-

जिला सर्वेक्षण प्रतिवेदन (DSR) में संशोधन हेतु SEAC, बिहार, पटना द्वारा दिनांक-22.07.2023 को सम्पन्न बैठक में वांछित बिन्दुओं पर प्रतिवेदन उपलब्ध कराने के संबंध में।

प्रसंग-

विभागीय पत्रांक-4275/एम0, पटना, दिनांक-17.08.2023 एवं भवदीय का पत्रांक-236, पटना, दिनांक-02.08.2023

महाशय,

उपर्युक्त विषयक प्रासंगिक पत्र के संबंध में कहना है कि रोहतास जिला का जिला सर्वेक्षण प्रतिवेदन (DSR) में संशोधन हेतु SEAC, बिहार, पटना द्वारा दिनांक-22.07.2023 को सम्पन्न बैठक में वांछित बिन्दुओं का उत्तर प्रतिवेदन निम्नवत है:-

| क्र0 सं0 | वांछित बिन्दू  | उत्तर प्रतिवेदन |
|----------|--|-----------------|
| 1        | Submit the coloured map of all the sand mining blocks.   | संलग्न है।      |
| 2        | Approach roads of mining blocks should not be built across the active flow of the river. So, submit the alternative approach road of the sand mining blocks. | संलग्न है।      |
| 3        | Submit all documents in hard copy.   | संलग्न है।      |

कृपया सादर सूचनार्थ समर्पित।

अनुलग्नक:-यथोक्त।

विश्वासभाजन

*Anil*  
21-08-23  
खनिज विकास पदाधिकारी,  
रोहतास, सासाराम।



1. Rohtas (As per Minutes Ref No. 236 Patna Dated 02/08/2023, Meeting Date 22 July 2023.)

| Sl.no | District- Rohtas   | Reply   |
|-------|--|---|
| A     | Submit the coloured Map of all the sand mining blocks.   | We are submitting coloured map of all the sand mining blocks.   |
| B     | Approach roads of mining blocks should not be built across the active flow of the river. So, submit the alternative approach road of the sand mining blocks. | Rule 29 (I), of Bihar Minerals (Concession, Prevention of Illegal Mining, Transportation & Storage) Rules, 2019, is furnished below: -<br><b>"No objection from Water Resources Department: -</b><br>In case of lifting sand from any sand ghat if any natural water course / irrigation canal falls in between the link road and the sandghat then the settlee may erect temporary structure for transportation of sand with prior permission of water resources department. Such application for prior permission shall be submitted by the settlee before the concerned Chief Engineer of Water Resources Department. If no decision is communicated in this regard to the settlee within one month from the date of application then it will be deemed that the concerned Department has no objection in the proposal."<br>Compliance will be done accordingly. |
| C     | Submit all documents in hard copy.   | Noted.  |



*Amil*  
 21-08-23  
 खनिज विकास पराधिकारी  
 रोहतास, सासाराम

## State Environment Impact Assessment Authority, Bihar

2<sup>nd</sup> floor, Beltron Bhawan, Shastri Nagar, Patna - 800 023.

Ref. No. - 361

Patna, Date:- 16/10/2023

### Minutes of the 44<sup>th</sup> meeting of SEIAA, Bihar, constituted on 12-08-2021 convened on 11<sup>th</sup> October, 2023

A meeting of SEIAA was convened on Wednesday, 11.10.2023. Following members were present in the meeting.

**Present: -**

- |                            |   |                  |
|----------------------------|---|------------------|
| 1. Shri Atul Aditya Pandey | - | Chairman.        |
| 2. Shri Arun Prakash       | - | Member.          |
| 3. Shri Sudhir Kumar       | - | Member Secretary |

**Agenda Item No.- 01**

Discussion regarding amendment in District Survey Report of Aurangabad district of State Bihar.

➤ **Resolve of the SEIAA:-**

In view of the consideration of SEAC and its recommendation to grant of Amendment of Approved District Survey Report (DSR), the SEIAA resolved to grant Amendments in the Approved District Survey Report (DSR) (Letter No. 963, dated 17.05.2023 of District Magistrate, Aurangabad and Letter No. 1585, dated 21.08.2023 of District Mining Office, Aurangabad).

Stabilised area / areas / must be taken care of at the time of auctioning the ghats. The conditions be fulfilled along with additional conditions as imposed by the SEAC in its MoM (Ref. No. 316, dated 15.09.2023).

**Agenda Item No.- 02**

Discussion regarding amendment in District Survey Report of Bhojpur district of State Bihar.



5

➤ **Resolve of the SEIAA:-**

In view of the consideration of SEAC and its recommendation (Ref. No. 316, dated 15.09.2023) to grant of Amendment of Approved District Survey Report (DSR), the SEIAA resolved to grant Amendments in the Approved District Survey Report (DSR) (Letter No. 3292, dated 20.07.2023 and Letter No. 3565, dated 14.08.2023 of District Magistrate, Bhojpur).

**Agenda Item No.- 03**

Discussion regarding amendment in District Survey Report of Patna district of State Bihar.

➤ **Resolve of the SEIAA:-**

In view of the consideration of SEAC and its recommendation (Ref. No. 316, dated 15.09.2023) to grant of Amendment of Approved District Survey Report (DSR), the SEIAA resolved to grant Amendments in the Approved District Survey Report (DSR) (Letter No. 1577, dated 26.05.2023 and Letter No. 2489, dated 23.08.2023 of District Magistrate, Patna).

**Agenda Item No.- 04**

Discussion regarding amendment in District Survey Report of Rohtas district of State Bihar.

➤ **Resolve of the SEIAA:-**

In view of the consideration of SEAC and its recommendation (Ref. No. 316, dated 15.09.2023) to grant of Amendment of Approved District Survey Report (DSR), the SEIAA resolved to grant Amendments in the Approved District Survey Report (DSR) (Letter No. 1335, dated 01.06.2023 of District Magistrate, Rohtas and Letter No. 1882, dated 21.08.2023 of District Mining Office, Rohtas).

**Agenda Item No.- 05**

Discussion regarding amendment in District Survey Report of East Champaran district of State Bihar.



5

➤ **Resolve of the SEIAA:-**

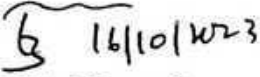
In view of the consideration of SEAC and its recommendation (Ref. No. 316, dated 15.09.2023) to grant of Amendment of Approved District Survey Report (DSR), the SEIAA resolved to grant Amendments in the Approved District Survey Report (DSR) (Letter No. 783, dated 16.08.2023 of District Magistrate, East Champaran).

**Agenda Item No.- 06**

**Discussion regarding amendment in District Survey Report of Muzaffarpur district of State Bihar.**

➤ **Resolve of the SEIAA:-**

In view of the consideration of SEAC and its recommendation (Ref. No. 316, dated 15.09.2023) to grant of Amendment of Approved District Survey Report (DSR), the SEIAA resolved to grant Amendments in the Approved District Survey Report (DSR) (Letter No. 863, dated 22.07.2023 of District Magistrate, Muzaffarpur).

  
(Sudhir Kumar)  
Member Secretary, SEIAA

Sd/-  
(Arun Prakash),  
Member, SEIAA

  
(Atul Aditya Pandey)  
Chairman, SEIAA

**Copy to:-**

1. Member Secretary, SEAC, Bihar.
2. The Director, Mines and Geology Deptt., Govt. of Bihar, Vikash Bhawan, Patna – 15.
3. The District Magistrate, Aurangabad.
4. The District Magistrate, Bhojpur.
5. The District Magistrate, Patna.
6. The District Magistrate, Rohtas.
7. The District Magistrate, East Champaran.
8. The District Magistrate, Muzaffarpur.  
for information and necessary action.



## State Environment Impact Assessment Authority, Bihar

2<sup>nd</sup> floor, Beltron Bhawan, Shastri Nagar, Patna - 800 023.

Ref. No. - 361

Patna, Date:- 16/10/2023

### Minutes of the 44<sup>th</sup> meeting of SEIAA, Bihar, constituted on 12-08-2021 convened on 11<sup>th</sup> October, 2023

A meeting of SEIAA was convened on Wednesday, 11.10.2023. Following members were present in the meeting.

**Present: -**

- |                            |   |                  |
|----------------------------|---|------------------|
| 1. Shri Atul Aditya Pandey | - | Chairman.        |
| 2. Shri Arun Prakash       | - | Member.          |
| 3. Shri Sudhir Kumar       | - | Member Secretary |

**Agenda Item No.- 01**

Discussion regarding amendment in District Survey Report of Aurangabad district of State Bihar.

➤ **Resolve of the SEIAA:-**

In view of the consideration of SEAC and its recommendation to grant of Amendment of Approved District Survey Report (DSR), the SEIAA resolved to grant Amendments in the Approved District Survey Report (DSR) (Letter No. 963, dated 17.05.2023 of District Magistrate, Aurangabad and Letter No. 1585, dated 21.08.2023 of District Mining Office, Aurangabad).

Stabilised area / areas / must be taken care of at the time of auctioning the ghats. The conditions be fulfilled along with additional conditions as imposed by the SEAC in its MoM (Ref. No. 316, dated 15.09.2023).

**Agenda Item No.- 02**

Discussion regarding amendment in District Survey Report of Bhojpur district of State Bihar.



➤ **Resolve of the SEIAA:-**

In view of the consideration of SEAC and its recommendation (Ref. No. 316, dated 15.09.2023) to grant of Amendment of Approved District Survey Report (DSR), the SEIAA resolved to grant Amendments in the Approved District Survey Report (DSR) (Letter No. 3292, dated 20.07.2023 and Letter No. 3565, dated 14.08.2023 of District Magistrate, Bhojpur).

**Agenda Item No.- 03**

Discussion regarding amendment in District Survey Report of Patna district of State Bihar.

➤ **Resolve of the SEIAA:-**

In view of the consideration of SEAC and its recommendation (Ref. No. 316, dated 15.09.2023) to grant of Amendment of Approved District Survey Report (DSR), the SEIAA resolved to grant Amendments in the Approved District Survey Report (DSR) (Letter No. 1577, dated 26.05.2023 and Letter No. 2489, dated 23.08.2023 of District Magistrate, Patna).

**Agenda Item No.- 04**

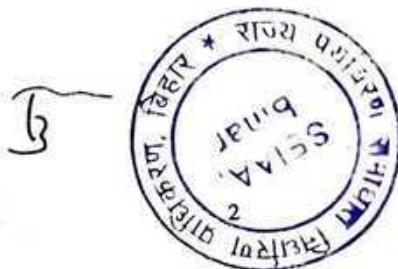
Discussion regarding amendment in District Survey Report of Rohtas district of State Bihar.

➤ **Resolve of the SEIAA:-**

In view of the consideration of SEAC and its recommendation (Ref. No. 316, dated 15.09.2023) to grant of Amendment of Approved District Survey Report (DSR), the SEIAA resolved to grant Amendments in the Approved District Survey Report (DSR) (Letter No. 1335, dated 01.06.2023 of District Magistrate, Rohtas and Letter No. 1882, dated 21.08.2023 of District Mining Office, Rohtas).

**Agenda Item No.- 05**

Discussion regarding amendment in District Survey Report of East Champaran district of State Bihar.



➤ **Resolve of the SEIAA:-**

In view of the consideration of SEAC and its recommendation (Ref. No. 316, dated 15.09.2023) to grant of Amendment of Approved District Survey Report (DSR), the SEIAA resolved to grant Amendments in the Approved District Survey Report (DSR) (Letter No. 783, dated 16.08.2023 of District Magistrate, East Champaran).

**Agenda Item No.- 06**

Discussion regarding amendment in District Survey Report of Muzaffarpur district of State Bihar.

➤ **Resolve of the SEIAA:-**

In view of the consideration of SEAC and its recommendation (Ref. No. 316, dated 15.09.2023) to grant of Amendment of Approved District Survey Report (DSR), the SEIAA resolved to grant Amendments in the Approved District Survey Report (DSR) (Letter No. 863, dated 22.07.2023 of District Magistrate, Muzaffarpur).

*S* 16/10/23

(Sudhir Kumar)  
Member Secretary, SEIAA

Sd/-

(Arun Prakash),  
Member, SEIAA

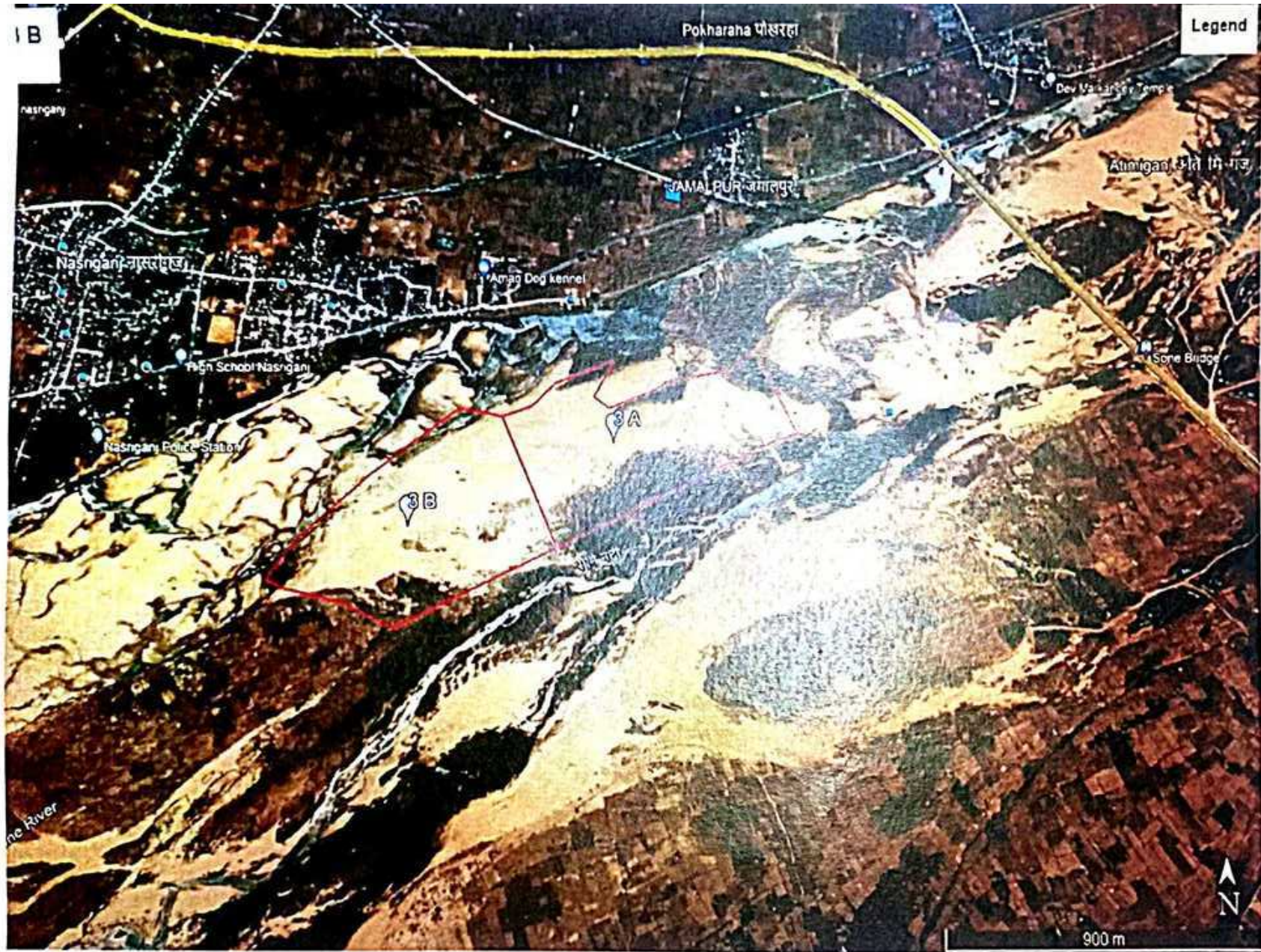
*Atul* 16.10.23

(Atul Aditya Pandey)  
Chairman, SEIAA

**Copy to:-**

1. Member Secretary, SEAC, Bihar.
2. The Director, Mines and Geology Deptt., Govt. of Bihar, Vikash Bhawan, Patna – 15.
3. The District Magistrate, Aurangabad.
4. The District Magistrate, Bhojpur.
5. The District Magistrate, Patna.
6. The District Magistrate, Rohtas.
7. The District Magistrate, East Champaran.
8. The District Magistrate, Muzaffarpur.  
for information and necessary action.





**Legend**

 Project Site


**PROJECT:** Rohtas Son 3 A, 3 B,  
**AREA (in Ha):** 35.5, 37.0  
**RIVER:** Son



**Source:** Google Earth Image



**Legend**

 **Project Site**

**PROJECT: Rohtas Son 9 A, 9 B,**  
**AREA (in Ha).: 49.8, 48.5**  
**RIVER: Son**



**Source: Google Earth Image**



Legend



Legend



Project Site

**PROJECT:** Rohtas Son 11 A, 11 B,  
**AREA (in Ha):** 48.0, 48.7  
**RIVER:** Son



Source: Google Earth Image

## Annexure-I

## Details of Sand/M-Sand Sources

## a) Rivers:

| River Name/M-Sand Plant | Total Stretch of River (in KM) | Type of River (Perennial or Non-Perennial) |
|-------------------------|--------------------------------|--|
| SON                     | 121.80                         | Perennial                                  |
| KOW                     | 69.61                          | Non-Perennial                              |
| THORA                   | 22.72                          | Non-Perennial                              |

## b) De-Siltation Location: (Lakes/Ponds/Dams etc.)

| Name of Reservoir/Dams | Maintain/Controlled by State Govt./PSU etc. | Location | District | Tehsil | Village | Size (Ha) |
|------------------------|---|----------|----------|--------|---------|-----------|
| Nil                    | Nil   | Nil      | Nil      | Nil    | Nil     | Nil       |

## c) Patta Lands/Khatedari Land:

| Owner | Sy. No | Area (Ha) | District | Tehsil | Village | Agricultural Land (Yes/No) |
|-------|--------|-----------|----------|--------|---------|----------------------------|
| None  | Nil    | Nil       | Nil      | Nil    | Nil     | Nil                        |

## d) M-Sand Plants:

| Plant Name | Owner | District | Tehsil | Village | Geo-location | Quantity Tonnes /Annum |
|------------|-------|----------|--------|---------|--------------|------------------------|
| Nil        | Nil   | Nil      | Nil    | Nil     | Nil          | Nil                    |

**Note:** For inclusion of M-Sand Plant/Patta Land in DSR the plant/landowners need to submit the request to the Mining Department with complete details. Inclusion in DSR does not give them the right to operate the M-Sand Plant/Sand Mining lease.



## List of Potential Mining Leases (existing &amp; proposed) Rivers

| Sl. No. #    | Name of Ghat    | Area (Ha.)     | Distance in Km from PA/BR/WC | Distance from forest Area (in Km) | Mining Lease within 500 meters (if Yes Cluster Area in ha) | Total excavation in Tonnes (Bulk Density: 1.8, Depth: 3.0 m) | Total excavation in Tonnes (Considering 60% as per EMGSM, 2020) | Total Mineable excavation in Cum | Mineral to be mined (Sand/Bajri/RBM etc.) | Existing/Proposed |
|--------------|-----------------|----------------|------------------------------|-----------------------------------|--|--|---|----------------------------------|---|-------------------|
| 1            | ROHTAS SON 1    | 17.83          | NA                           | NA                                | NO   | 962874   | 577724.4  | 320958                           | Sand                                      | Proposed          |
| 2            | ROHTAS SON 2    | 28.7           | NA                           | NA                                | NO   | 1549800  | 929880  | 516600                           | Sand                                      | Proposed          |
| 3            | ROHTAS SON 3 A  | 35.5           | NA                           | NA                                | Yes, Cluster Area 72.5                                     | 1917000  | 1150200   | 639000                           | Sand                                      | Proposed          |
| 4            | ROHTAS SON 3 B  | 37             | NA                           | NA                                |  | 1998000  | 1198800   | 666000                           | Sand                                      | Proposed          |
| 5            | ROHTAS SON 4    | 99.8           | NA                           | NA                                | Yes, Cluster Area 232.8                                    | 5389200  | 3233520   | 1796400                          | Sand                                      | Proposed          |
| 6            | ROHTAS SON 5    | 86.4           | NA                           | NA                                |  | 4665600  | 2799360   | 1555200                          | Sand                                      | Proposed          |
| 7            | ROHTAS SON 6    | 46.6           | NA                           | NA                                |  | 2516400  | 1509840   | 838800                           | Sand                                      | Proposed          |
| 8            | ROHTAS SON 7    | 98.8           | NA                           | NA                                | NO   | 5335200  | 3201120   | 1778400                          | Sand                                      | Proposed          |
| 9            | ROHTAS SON 8    | 96.5           | NA                           | NA                                | Yes, Cluster Area 538.21                                   | 5211000  | 3126600   | 1737000                          | Sand                                      | Proposed          |
| 10           | ROHTAS SON 9 A  | 49.8           | NA                           | NA                                |  | 2689200  | 1613520   | 896400                           | Sand                                      | Proposed          |
| 11           | ROHTAS SON 9 B  | 48.5           | NA                           | NA                                |  | 2619000  | 1571400   | 873000                           | Sand                                      | Proposed          |
| 12           | ROHTAS SON 10   | 98.95          | NA                           | NA                                |  | 5343300  | 3205980   | 1781100                          | Sand                                      | Proposed          |
| 13           | ROHTAS SON 11 A | 48             | NA                           | NA                                |  | 2592000  | 1555200   | 864000                           | Sand                                      | Proposed          |
| 14           | ROHTAS SON 11 B | 48.7           | NA                           | NA                                |  | 2629800  | 1577880   | 876600                           | Sand                                      | Proposed          |
| 15           | ROHTAS SON 12   | 89.96          | NA                           | NA                                |  | 4857840  | 2914704   | 1619280                          | Sand                                      | Proposed          |
| 16           | ROHTAS SON 13   | 57.8           | NA                           | NA                                |  | 3121200  | 1872720   | 1040400                          | Sand                                      | Proposed          |
| 17           | ROHTAS SON 14   | 33.7           | NA                           | NA                                | NO   | 1819800  | 1091880   | 606600                           | Sand                                      | Proposed          |
| 18           | ROHTAS SON 15   | 69.6           | NA                           | NA                                | NO   | 3758400  | 2255040   | 1252800                          | Sand                                      | Proposed          |
| 19           | ROHTAS SON 16   | 86.1           | NA                           | NA                                | NO   | 4649400  | 2789640   | 1549800                          | Sand                                      | Proposed          |
| 20           | ROHTAS SON 17   | 97.4           | NA                           | NA                                | NO   | 5259600  | 3155760   | 1753200                          | Sand                                      | Proposed          |
| <b>Total</b> |                 | <b>1275.64</b> |                              |                                   |  |  |   |                                  |   |                   |

**Patta Lands/Khatedari Land: (existing & proposed)**

| Owner | Sy. No | Area | District | Tehsil | Village | Total Reserve (MT) | Total Mineral to be mined (MT) | Existing /Proposed |
|-------|--------|------|----------|--------|---------|--------------------|--------------------------------|--------------------|
| None  | Nil    | Nil  | Nil      | Nil    | Nil     | Nil                | Nil                            | Nil                |

**De-Siltation Location :( Lakes/Ponds/Dams etc) (Existing&proposed)**

| Name of Reservoir /Dams | Maintain /Controlled by State Govt./PSU etc. | Location | District | Tehsil | Village | Size (Ha) | Quantity MT /Year | Existing /Proposed |
|-------------------------|--|----------|----------|--------|---------|-----------|-------------------|--------------------|
| None                    | Nil  | Nil      | Nil      | Nil    | Nil     | Nil       | Nil               | Nil                |

**M-Sand Plants :( existing & proposed)**

| Plant Name | Owner | District | Tehsil | Village | Geo- location | Quantity Tonnes/ Annum | Existing/ Proposed |
|------------|-------|----------|--------|---------|---------------|------------------------|--------------------|
| None       | Nil   | Nil      | Nil    | Nil     | Nil           | Nil                    | None               |



## Annexure-III

## Cluster &amp; Contiguous Cluster details Clusters:

| River Name | Cluster No.  | Lease No             | Location (Riverbed/Patta/Land) | Village | Area (in Ha) | Total Excavation (Ton) | Total Mineral Excavation (Ton) (Considering 60% as per EMGSM, 2020) |
|------------|--------------|----------------------|--------------------------------|---------|--------------|------------------------|---|
| Son        | Rohats Son 1 | Rohtas Son 3 A & 3 B | Riverbed                       |         | 72.5         | 3915000                | 2349000   |
| Son        | Rohats Son 2 | Rohtas Son 4, 5 & 6  | Riverbed                       |         | 232.8        | 12571200               | 7542720   |
| Son        | Rohats Son 3 | Rohtas Son 8- 13     | Riverbed                       |         | 538.21       | 29063340               | 17438004  |

## Contiguous Clusters:

| River Name | Contiguous Cluster No. | Cluster No | Number of Leases in the cluster | Location (Riverbed / Patta /Land) | Distance between cluster | Village | Area of Cluster (Ha) | Total Mineral Excavation (Ton) |
|------------|------------------------|------------|---------------------------------|-----------------------------------|--------------------------|---------|----------------------|--------------------------------|
| SON        | Nil                    | Nil        | Nil                             | Nil                               | Nil                      | Nil     | Nil                  | Nil                            |



## Annexure-IV

## Transportation Routes for individual leases and leases in Cluster

| Lease No       | Transportation Name/Route No.                         | Number of tippers/days of lease | Number of tippers/days of all the lease on route | Length of Route in Km | Type of Road (Black Topped/Unpaved) | Recommendation for road (Black Topped/unpaved) | The road will be Constructed by Govt/Lease Owner | Route Map & Location |
|----------------|---|---------------------------------|--|-----------------------|-------------------------------------|--|--|----------------------|
| ROHTAS SON 1   | Road going towards Nasirganj Mangraon                 | 201                             | NA   | 0.24                  | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |
| ROHTAS SON 2   | Road towards Nasirganj Mangraon & Daudnagar Nasibganj | 323                             | NA   | 1                     | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |
| ROHTAS SON 3 A | Road towards Nasirganj Daudnagar Rd                   | 399                             | NA   | 0.33                  | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |
| ROHTAS SON 3 B |   | 416                             | NA   | 0.35                  | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |
| ROHTAS SON 4   | Road towards SH-15                                    | 1123                            | NA   | 0.65                  | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |
| ROHTAS SON 5   |   | 972                             | NA   | 0.8                   | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |
| ROHTAS SON 6   |   | 524                             | NA   | 0.3                   | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |
| ROHTAS SON 7   | Road towards SH-15                                    | 1112                            | NA   | 0.25                  | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |
| ROHTAS SON 8   | Road towards SH-15                                    | 1086                            | NA   | 2.4                   | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |



|                 |                     |      |    |      |         |         |             |                    |
|-----------------|---------------------|------|----|------|---------|---------|-------------|--------------------|
| ROHTAS SON 9 A  |                     | 560  | NA | 2.3  | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS SON 9 B  |                     | 546  | NA | 2.2  | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS SON 10   |                     | 1113 | NA | 1.6  | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS SON 11 A |                     | 540  | NA | 1.43 | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS SON 11 B |                     | 548  | NA | 0.85 | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS SON 12   |                     | 1012 | NA | 0.82 | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS SON 13   |                     | 650  | NA | 0.88 | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS SON 14   | Road towards SH-15  | 379  | NA | 0.68 | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS SON 15   | Road towards NH-119 | 783  | NA | 1.85 | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS SON 16   | Road towards NH-120 | 969  | NA | 2.4  | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS SON 17   | Road towards NH-121 | 1096 | NA | 2.5  | Unpaved | Unpaved | Lease Owner | Route Map Attached |



| Cluster No    | Lease No              | Transportation Name/Route No.        | Number of tippers/days of Cluster | Number of tippers/days of all the clusters on route | Length of Route in Km | Type of Road (Black Topped/Unpaved) | Recommendation for road (Black Topped/unpaved) | The road will be Constructed by Govt/Lease Owner | Route Map & Location |
|---------------|-----------------------|--------------------------------------|-----------------------------------|---|-----------------------|-------------------------------------|--|--|----------------------|
| Roht as son 1 | Roht as Son 3 A & 3 B | Road towards Nasariganj Daudnagar Rd | 816                               | NA  | 0.68                  | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |
| Roht as son 2 | Roht as Son 4, 5 & 6  | Road towards SH-15                   | 2619                              | NA  | 1.75                  | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |
| Roht as son 3 | Roht as Son 8-13      | Road towards SH-15                   | 6055                              | NA  | 12.48                 | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |



## Annexure-V

## Final List of Potential Mining Leases (existing &amp; proposed) Rivers

| Sl. No. #    | Name of Ghat    | Area (Ha.)     | Distance in Km from PA/BR/WC | Distance from forest Area (in Km) | Mining Lease within 500 meters (if Yes Cluster Area in ha) | Total excavation in Tonnes (Bulk Density: 1.8, Depth: 3.0 m) | Total excavation in Tonnes (Considering 60% as per EMGSM, 2020) | Total Mineable excavation in Cum | Mineral to be mined (Sand/ Bajri/ RBM etc.) | Existing/ Proposed |
|--------------|-----------------|----------------|------------------------------|-----------------------------------|--|--|---|----------------------------------|---|--------------------|
| 1            | ROHTAS SON 1    | 17.83          | NA                           | NA                                | NO   | 962874   | 577724.4  | 320958                           | Sand  | Proposed           |
| 2            | ROHTAS SON 2    | 28.7           | NA                           | NA                                | NO   | 1549800  | 929880  | 516600                           | Sand  | Proposed           |
| 3            | ROHTAS SON 3 A  | 35.5           | NA                           | NA                                | Yes, Cluster Area 72.5                                     | 1917000  | 1150200   | 639000                           | Sand  | Proposed           |
| 4            | ROHTAS SON 3 B  | 37             | NA                           | NA                                |  | 1998000  | 1198800   | 666000                           | Sand  | Proposed           |
| 5            | ROHTAS SON 4    | 99.8           | NA                           | NA                                | Yes, Cluster Area 232.8                                    | 5389200  | 3233520   | 1796400                          | Sand  | Proposed           |
| 6            | ROHTAS SON 5    | 86.4           | NA                           | NA                                |  | 4665600  | 2799360   | 1555200                          | Sand  | Proposed           |
| 7            | ROHTAS SON 6    | 46.6           | NA                           | NA                                |  | 2516400  | 1509840   | 838800                           | Sand  | Proposed           |
| 8            | ROHTAS SON 7    | 98.8           | NA                           | NA                                | NO   | 5335200  | 3201120   | 1778400                          | Sand  | Proposed           |
| 9            | ROHTAS SON 8    | 96.5           | NA                           | NA                                | Yes, Cluster Area 538.21                                   | 5211000  | 3126600   | 1737000                          | Sand  | Proposed           |
| 10           | ROHTAS SON 9 A  | 49.8           | NA                           | NA                                |  | 2689200  | 1613520   | 896400                           | Sand  | Proposed           |
| 11           | ROHTAS SON 9 B  | 48.5           | NA                           | NA                                |  | 2619000  | 1571400   | 873000                           | Sand  | Proposed           |
| 12           | ROHTAS SON 10   | 98.95          | NA                           | NA                                |  | 5343300  | 3205980   | 1781100                          | Sand  | Proposed           |
| 13           | ROHTAS SON 11 A | 48             | NA                           | NA                                |  | 2592000  | 1555200   | 864000                           | Sand  | Proposed           |
| 14           | ROHTAS SON 11 B | 48.7           | NA                           | NA                                |  | 2629800  | 1577880   | 876600                           | Sand  | Proposed           |
| 15           | ROHTAS SON 12   | 89.96          | NA                           | NA                                |  | 4857840  | 2914704   | 1619280                          | Sand  | Proposed           |
| 16           | ROHTAS SON 13   | 57.8           | NA                           | NA                                |  | 3121200  | 1872720   | 1040400                          | Sand  | Proposed           |
| 17           | ROHTAS SON 14   | 33.7           | NA                           | NA                                | NO   | 1819800  | 1091880   | 606600                           | Sand  | Proposed           |
| 18           | ROHTAS SON 15   | 69.6           | NA                           | NA                                | NO   | 3758400  | 2255040   | 1252800                          | Sand  | Proposed           |
| 19           | ROHTAS SON 16   | 86.1           | NA                           | NA                                | NO   | 4649400  | 2789640   | 1549800                          | Sand  | Proposed           |
| 20           | ROHTAS SON 17   | 97.4           | NA                           | NA                                | NO   | 5259600  | 3155760   | 1753200                          | Sand  | Proposed           |
| <b>Total</b> |                 | <b>1275.64</b> |                              |                                   |  |  |   |                                  |   |                    |

**Patta Lands/Khatedari Land: (existing & proposed)**

| Owner | Sy. No | Area | District | Tehsil | Village | Total Reserve (MT) | Total Mineral to be mined (MT) | Existing /Proposed |
|-------|--------|------|----------|--------|---------|--------------------|--------------------------------|--------------------|
| NIL   | NIL    | NIL  | NIL      | NIL    | NIL     | NIL                | NIL                            | NIL                |

**De-Siltation Location: (Lakes/Ponds/Dams etc.) (Existing & proposed)**

| Name of Reservoir/Dams | Maintain/ Controlled by State Govt./PSU etc. | Location | Distt. | Tehsil | Village | Size (Ha) | Quantity MT/Year | Existing/ Proposed |
|------------------------|--|----------|--------|--------|---------|-----------|------------------|--------------------|
| NIL                    | NIL  | NIL      | NIL    | NIL    | NIL     | NIL       | NIL              | NIL                |

**M-Sand Plants :( existing & proposed)**

| Plant Name | Owner | District | Tehsil | Village | Geo-location | Quantity MT/Annum | Existing/Proposed |
|------------|-------|----------|--------|---------|--------------|-------------------|-------------------|
| NIL        | NIL   | NIL      | NIL    | NIL     | NIL          | NIL               | NIL               |



## Annexure-VI

## Final List of Cluster &amp; Contiguous Clusters:

| River Name | Cluster No.  | Lease No             | Location (Riverbed/Patta/Land) | Village | Area (in Ha) | Total Excavation (Ton) | Total Mineral Excavation (Ton) (Considering 60% as per EMGSM, 2020) |
|------------|--------------|----------------------|--------------------------------|---------|--------------|------------------------|---|
| Son        | Rohats Son 1 | Rohtas Son 3 A & 3 B | Riverbed                       |         | 72.5         | 3915000                | 2349000   |
| Son        | Rohats Son 2 | Rohtas Son 4, 5 & 6  | Riverbed                       |         | 232.8        | 12571200               | 7542720   |
| Son        | Rohats Son 3 | Rohtas Son 8- 13     | Riverbed                       |         | 538.21       | 29063340               | 17438004  |

## Contiguous Clusters:

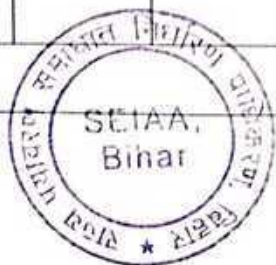
| River Name | Contiguous Cluster No. | Cluster No | Number of Leases in the cluster | Location (Riverbed/Patta/Land) | Distance between cluster | Village | Area of Cluster (Ha) | Total Mineral Excavation (Ton) |
|------------|------------------------|------------|---------------------------------|--------------------------------|--------------------------|---------|----------------------|--------------------------------|
| SON        | Nil                    | Nil        | Nil                             | Nil                            | Nil                      | Nil     | Nil                  | Nil                            |



## Annexure-VII

## Final Transportation Routes for individual leases and leases in Cluster

| Lease No       | Transportation Name/Route No.                         | Number of tippers/days of lease | Number of tippers/days of all the lease on route | Length of Route in Km | Type of Road (Black Topped/Unpaved) | Recommendation for road (Black Topped/unpaved) | The road will be Constructed by Govt/Lease Owner | Route Map & Location |
|----------------|---|---------------------------------|--|-----------------------|-------------------------------------|--|--|----------------------|
| ROHTAS SON 1   | Road going towards Nasirganj Mangraon                 | 201                             | NA   | 0.24                  | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |
| ROHTAS SON 2   | Road towards Nasirganj Mangraon & Daudnagar Nasibganj | 323                             | NA   | 1                     | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |
| ROHTAS SON 3 A | Road towards Nasirganj Daudnagar Rd                   | 399                             | NA   | 0.33                  | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |
| ROHTAS SON 3 B |   | 416                             | NA   | 0.35                  | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |
| ROHTAS SON 4   | Road towards SH-15                                    | 1123                            | NA   | 0.65                  | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |
| ROHTAS SON 5   |   | 972                             | NA   | 0.8                   | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |
| ROHTAS SON 6   |   | 524                             | NA   | 0.3                   | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |
| ROHTAS SON 7   | Road towards SH-15                                    | 1112                            | NA   | 0.25                  | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |
| ROHTAS SON 8   | Road towards SH-15                                    | 1086                            | NA   | 2.4                   | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |




|                 |                     |      |    |      |         |         |             |                    |
|-----------------|---------------------|------|----|------|---------|---------|-------------|--------------------|
| ROHTAS SON 9 A  |                     | 560  | NA | 2.3  | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS SON 9 B  |                     | 546  | NA | 2.2  | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS SON 10   |                     | 1113 | NA | 1.6  | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS SON 11 A |                     | 540  | NA | 1.43 | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS SON 11 B |                     | 548  | NA | 0.85 | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS SON 12   |                     | 1012 | NA | 0.82 | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS SON 13   |                     | 650  | NA | 0.88 | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS SON 14   | Road towards SH-15  | 379  | NA | 0.68 | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS SON 15   | Road towards NH-119 | 783  | NA | 1.85 | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS SON 16   | Road towards NH-120 | 969  | NA | 2.4  | Unpaved | Unpaved | Lease Owner | Route Map Attached |
| ROHTAS SON 17   | Road towards NH-121 | 1096 | NA | 2.5  | Unpaved | Unpaved | Lease Owner | Route Map Attached |



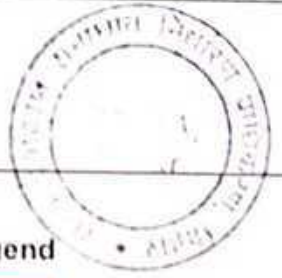
| Cluster No | Lease No           | Transportation Name/Route No.        | Number of tippers/days of Cluster | Number of tippers/days of all the clusters on route | Length of Route in Km | Type of Road (Black Topped/Unpaved) | Recommendation for road (Black Topped/unpaved) | The road will be Constructed by Govt/Lease Owner | Route Map & Location |
|------------|--------------------|--------------------------------------|-----------------------------------|---|-----------------------|-------------------------------------|--|--|----------------------|
| Rohtason 1 | Rohtason 3 A & 3 B | Road towards Nasariganj Daudnagar Rd | 816                               | NA  | 0.68                  | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |
| Rohtason 2 | Rohtason 4, 5 & 6  | Road towards SH-15                   | 2619                              | NA  | 1.75                  | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |
| Rohtason 3 | Rohtason 8-13      | Road towards SH-15                   | 6055                              | NA  | 12.48                 | Unpaved                             | Unpaved  | Lease Owner                                      | Route Map Attached   |







**HAUL ROAD MAP  
OF THE PROJECT SITE**



**Legend**


- Mining Site
- Haul Road
- Metalled Road

**Project: ROHTAS SON 01**  
**Sand Mining Project at Son River**  
**Area: 17.8 HA**

**Source: Google Earth Image**

**Graphical Scale:**

0    0.175    0.35    0.7    Km





SON RIVER

Nasirganj-Mangraon Road

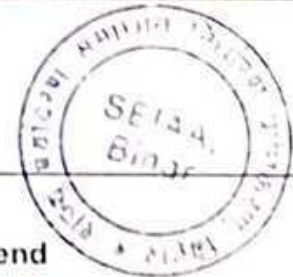
SON 02

1 Km

Daudnagar-Nasibganj Road



**HAUL ROAD MAP  
OF THE PROJECT SITE**



**Legend**

- Mining Site
- Haul Road
- Metalled Road

Project: ROHTAS SON 02  
Sand Mining Project at Son River  
Area: 28.7 HA

Source: Google Earth Image

**Graphical Scale:**



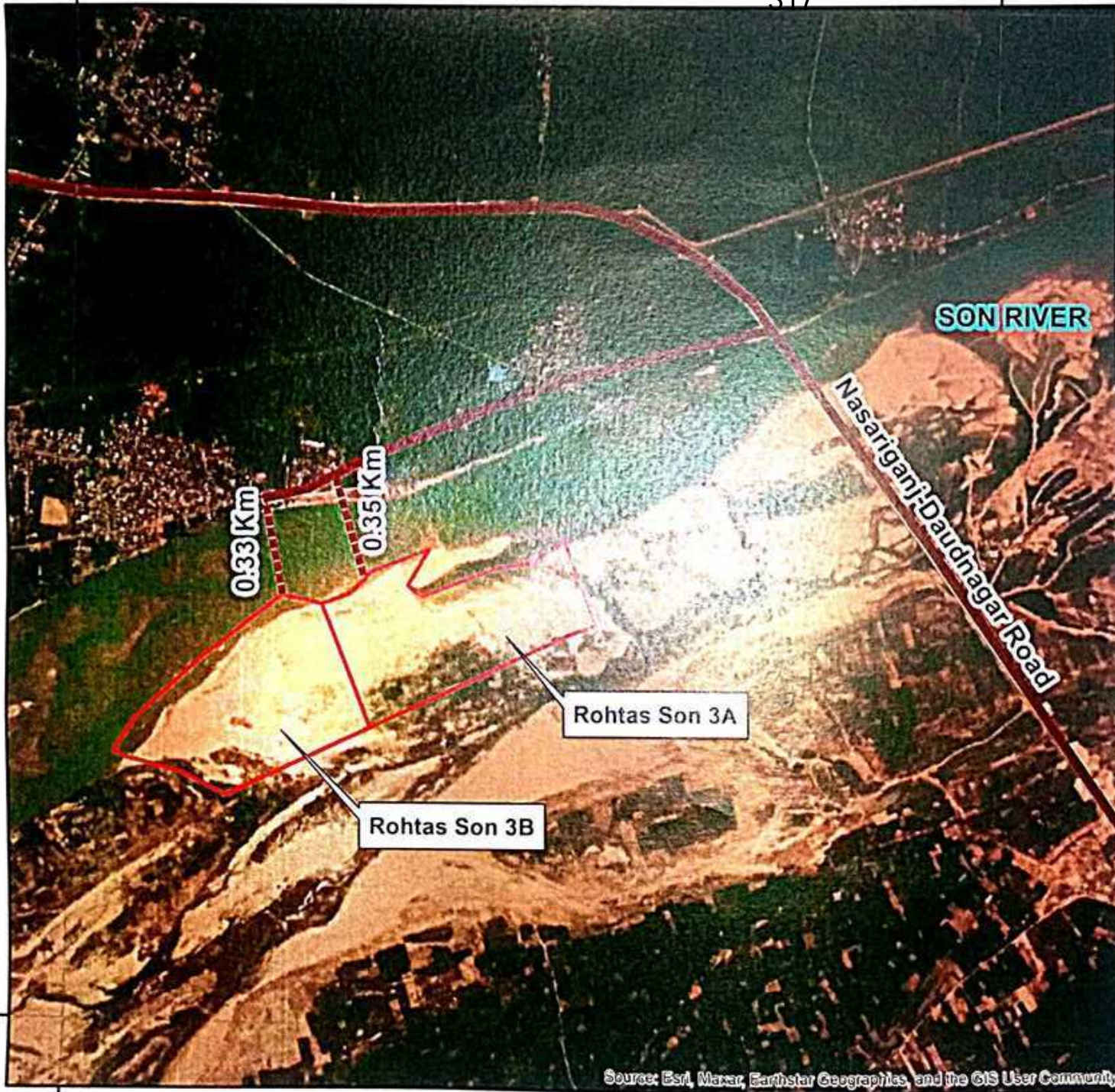
84°20'0"E

317

84°22'0"E

25°4'0"N

320



**HAUL ROAD MAP  
OF THE PROJECT SITE**



**Legend**

- Mining Site
- Haul Road
- Metalled Road

**Project: Rohtas Son 03  
Sand Mining Project at Son River  
Area: 72.5 HA**

**Source: Google Earth Image**

**Graphical Scale:**



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

25°2'0"N

310

84°20'0"E

84°22'0"E

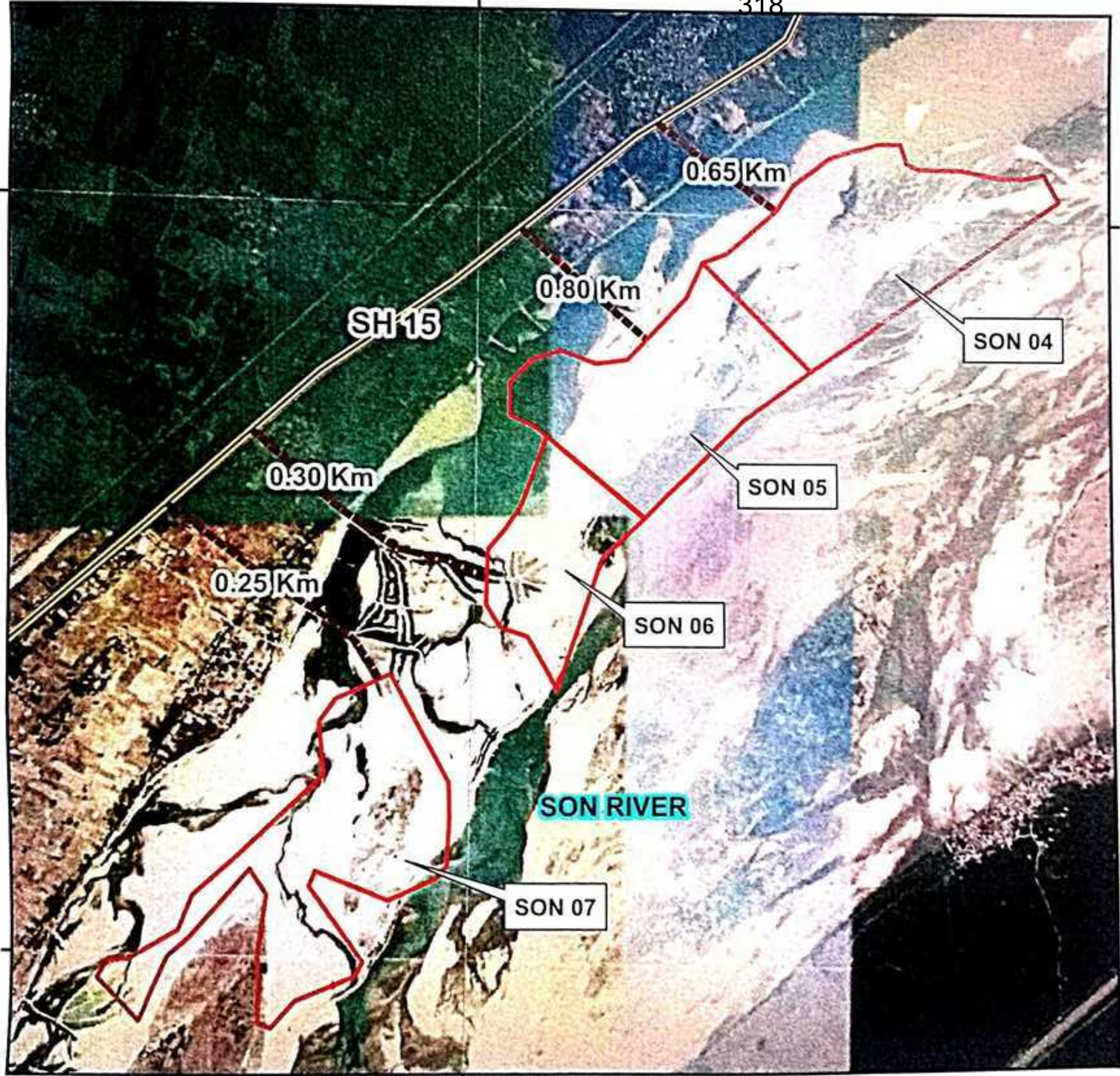
25°2'0"N

25°2'0"N

25°2'0"N

25°0'0"N

25°0'0"N



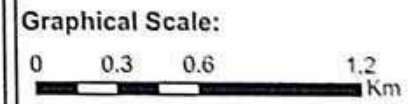
**HAUL ROAD MAP OF THE PROJECT SITE**



- Legend**
- Mining Site
  - Haul Road
  - Metalled Road

Project: ROHTAS SON 04 to 07 Sand Mining Project at Son River

Source: Google Earth Image



24°58'0"N



24°58'0"N

### HAUL ROAD MAP OF THE PROJECT SITE

**Legend**

- Mining Site
- Haul Road
- Metalled Road
- Highway

**Project: Rohtas Son 09**  
**Sand Mining Project at Son River**  
**Area: 98.3 HA**

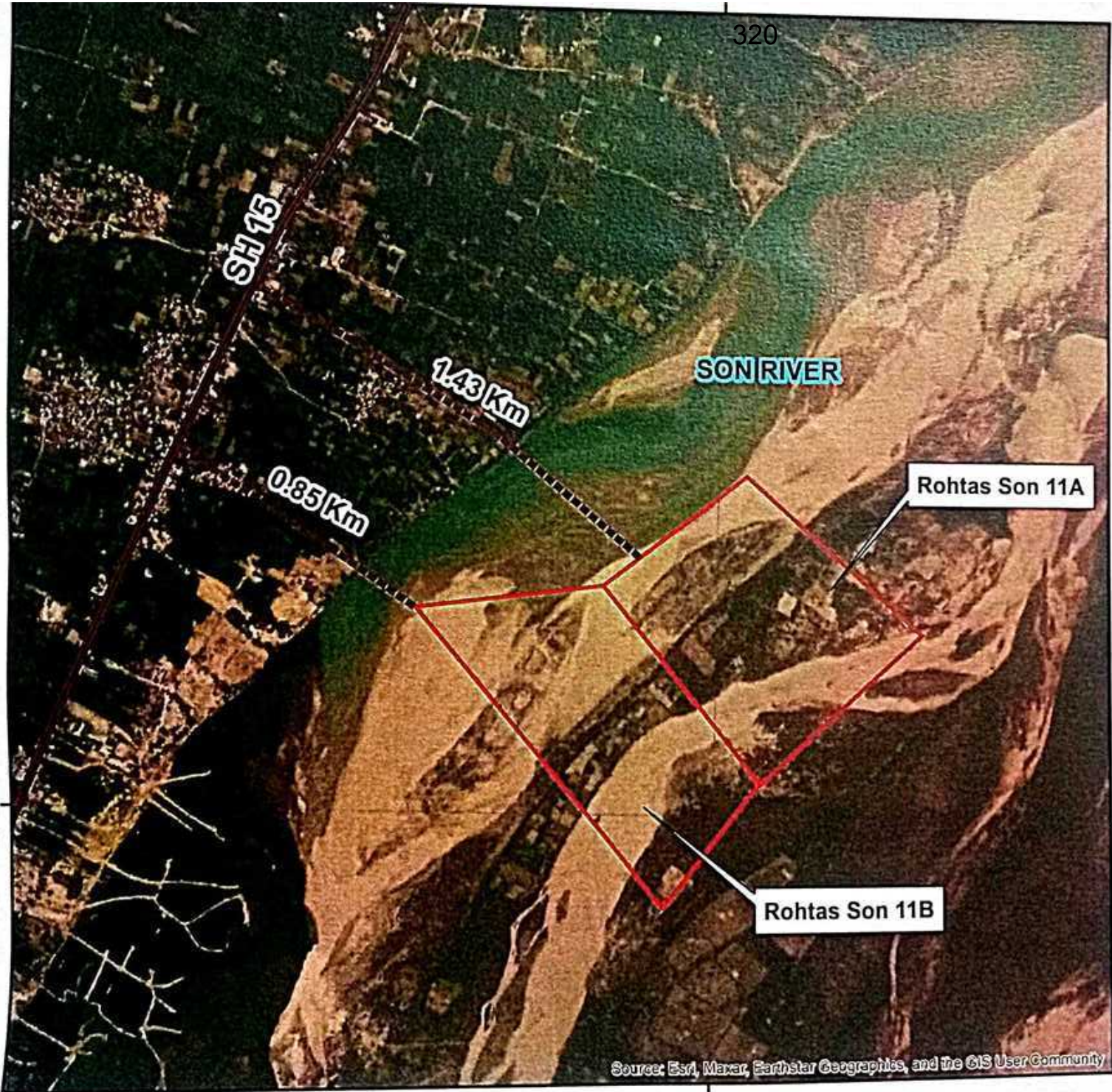
Source: Google Earth Image

**Graphical Scale:**

0    0.25    0.5    1    Km

84°14'0"E

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



**HAUL ROAD MAP OF THE PROJECT SITE**

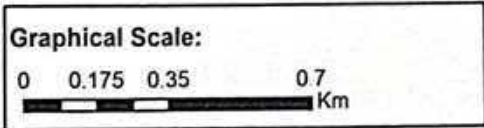


**Legend**

- Mining Site
- Haul Road
- Metalled Road
- Highway

**Project: Rohtas Son 11  
Sand Mining Project at Son River  
Area: 96.7 HA**

**Source: Google Earth Image**



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

24°58'0"N

24°56'0"N

24°58'0"N

24°56'0"N

84°12'0"E

84°14'0"E

84°16'0"E



**HAUL ROAD MAP  
OF THE PROJECT SITE**



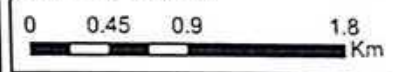
**Legend**

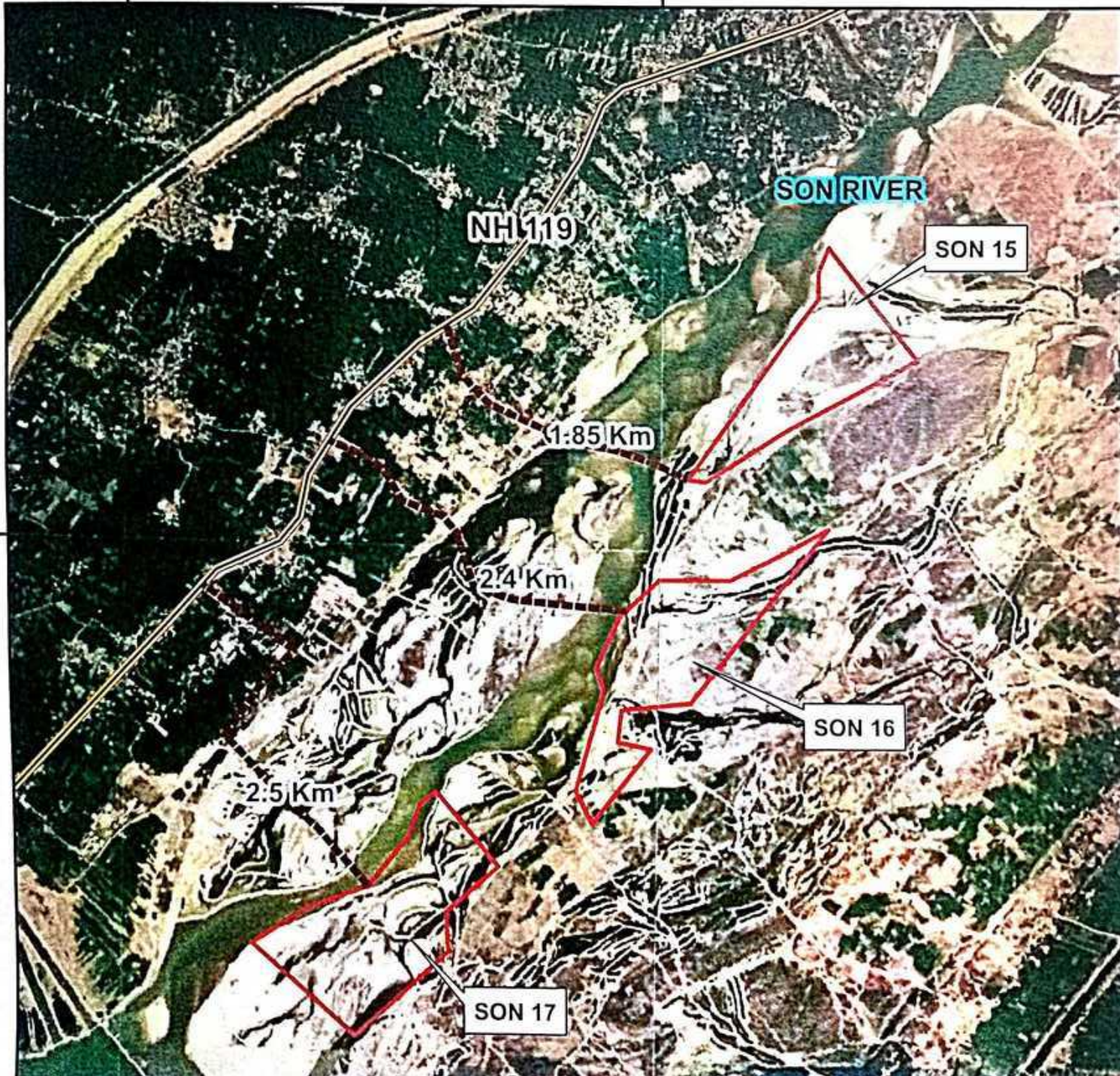
- Mining Site
- Haul Road
- Metalled Road
- Highway

**Project: ROHTAS SON 08 to 14  
Sand Mining Project at Son River**

Source: Google Earth Image

**Graphical Scale:**





24°52'0"N

24°52'0"N



**HAUL ROAD MAP  
OF THE PROJECT SITE**



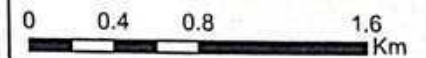
**Legend**

- Mining Site
- Haul Road
- Metalled Road
- Highway


**Project: ROHTAS SON 15 to 17  
Sand Mining Project at Son River**

**Source: Google Earth Image**

**Graphical Scale:**



### Rohtas Son Ghat List

| Sl. No | Name of Ghat(OLD)  | Area (Ha.)    | Name of Ghat(NEW) | Area (Ha.)    | Pillar | Latitude      | Longitude     |               |               |               |
|--------|--|---------------|-------------------|---------------|--------|---------------|---------------|---------------|---------------|---------------|
| 1      | <br>Rohtas Son 03 | 72.5          | Rohtas Son 3A     | 35.5          | 1      | 25° 2'46.98"N | 84°21'8.34"E  |               |               |               |
|        |  |               |                   |               | 2      | 25° 2'56.78"N | 84°21'3.97"E  |               |               |               |
|        |  |               |                   |               | 3      | 25° 2'54.19"N | 84°21'0.01"E  |               |               |               |
|        |  |               |                   |               | 4      | 25° 2'53.51"N | 84°20'55.11"E |               |               |               |
|        |  |               |                   |               | 5      | 25° 2'49.80"N | 84°20'45.57"E |               |               |               |
|        |  |               |                   |               | 6      | 25° 2'51.23"N | 84°20'43.77"E |               |               |               |
|        |  |               |                   |               | 7      | 25° 2'55.63"N | 84°20'46.40"E |               |               |               |
|        |  |               |                   |               | 8      | 25° 2'52.72"N | 84°20'39.11"E |               |               |               |
|        |  |               |                   |               | 9      | 25° 2'50.17"N | 84°20'36.21"E |               |               |               |
|        |  |               |                   |               | 10     | 25° 2'48.79"N | 84°20'32.75"E |               |               |               |
|        |  |               |                   |               | 11     | 25° 2'34.41"N | 84°20'39.12"E |               |               |               |
|        |  |               |                   |               | 12     | 25° 2'45.91"N | 84°21'4.89"E  |               |               |               |
|        |  |               |                   |               |        | Rohtas Son 3B | 37            | 1             | 25° 2'48.79"N | 84°20'32.75"E |
|        |  |               |                   |               |        |               |               | 2             | 25° 2'34.41"N | 84°20'39.12"E |
|        |  |               |                   |               |        |               |               | 3             | 25° 2'49.82"N | 84°20'27.51"E |
|        |  |               |                   |               |        |               |               | 4             | 25° 2'41.90"N | 84°20'16.73"E |
|        |  |               |                   |               |        |               |               | 5             | 25° 2'35.30"N | 84°20'9.19"E  |
|        |  |               |                   |               |        |               |               | 6             | 25° 2'31.25"N | 84°20'6.30"E  |
|        |  |               |                   |               |        |               |               | 7             | 25° 2'30.38"N | 84°20'8.17"E  |
|        |  |               |                   |               |        |               |               | 8             | 25° 2'28.79"N | 84°20'15.23"E |
|        |  |               |                   |               |        |               |               | 9             | 25° 2'26.27"N | 84°20'20.82"E |
|        |  |               | 2                 | Rohtas Son 09 | 98.3   |               |               | Rohtas Son 9A | 49.8          | 1             |
| 2      | 24°57'13.48"N  | 84°15'22.82"E |                   |               |        |               |               |               |               |               |
| 3      | 24°56'55.94"N  | 84°15'7.10"E  |                   |               |        |               |               |               |               |               |
| 4      | 24°57'13.48"N  | 84°14'44.37"E |                   |               |        |               |               |               |               |               |
|        |  |               |                   |               |        | Rohtas Son 9B | 48.5          | 1             | 24°56'55.94"N | 84°15'7.10"E  |
|        |  |               |                   |               |        |               |               | 2             | 24°57'13.48"N | 84°14'44.37"E |
|        |  |               |                   |               |        |               |               | 3             | 24°57'2.59"N  | 84°14'26.77"E |
|        |  |               |                   |               |        |               |               | 4             | 24°56'44.03"N | 84°14'56.25"E |
|        |  |               |                   |               |        |               |               | 1             | 24°56'34.29"N | 84°14'3.47"E  |
|        |  |               |                   |               |        |               |               | 2             | 24°56'18.52"N | 84°14'23.88"E |
|        |  |               | Rohtas Son 11A    | AR            |        |               |               |               |               |               |

|   |               |      |                |      |   |               |               |
|---|---------------|------|----------------|------|---|---------------|---------------|
| 2 | Rohtas Son 11 | 96.7 | Rohtas Son 11A | 70   | 3 | 24°56'3.15"N  | 84°14'5.66"E  |
|   |               |      | Rohtas Son 11B | 48.7 | 4 | 24°56'22.78"N | 84°13'47.52"E |
|   |               |      |                |      | 1 | 24°56'3.15"N  | 84°14'5.66"E  |
|   |               |      |                |      | 2 | 24°56'22.78"N | 84°13'47.52"E |
|   |               |      |                |      | 3 | 24°56'20.10"N | 84°13'26.87"E |
|   |               |      |                |      | 4 | 24°55'50.83"N | 84°13'54.87"E |
|   |               |      |                |      | 5 | 24°56'2.04"N  | 84°14'4.39"E  |



बिहार राज्य पर्यावरण समाघात निर्धारण प्राधिकरण,  
द्वितीय तल, बेल्ट्रॉन भवन, शास्त्रीनगर, पटना-23

पत्रांक :- 269

पटना, दिनांक :- 23/05/2022

प्रेषक

सदस्य सचिव,  
SEIAA, Bihar

सेवा में,

जिलाधिकारी,  
रोहतास (सासाराम)।

विषय :-

माननीय उच्चतम न्यायालय के सरकार द्वारा दायर सिविल अपील संख्या-3661-3662/2020 बिहार राज्य एवं अन्य बनाम पवन कुमार एवं अन्य मामले में दिनांक-10.11.2021 को पारित आदेश के त्वरित अनुपालन के आलोक में जिला सर्वेक्षण प्रतिवेदन के अनुमोदन के संबंध में।

महाशय,

निदेशानुसार उपर्युक्त विषयक के संबंध में सूचित करना है कि आपके द्वारा समर्पित रोहतास (सासाराम) जिला के बालु खनिज हेतु जिला सर्वेक्षण प्रतिवेदन (DSR) को अनुमोदित कर इसकी एक प्रति संलग्न कर भेजी जा रही है।

अनु०:-यथोक्त।

विश्वासभाजन

23.5.2022

(सदस्य सचिव)  
SEIAA, Bihar

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## Annexure III

| Sl. No. | Name and address of the sand ghat settlement holder  | Name of auctioned Sand Ghat/ Clusters  | Status of Auctioned Sand Ghat      |
|---------|--|--|------------------------------------|
| 1.      | M/s Banshidhar Construction Pvt. Ltd., Smt. Lalti Devi, Director, 2nd Floor, Plot No.-388/389, Near Biscuit Factory More, Nasriganj Digha, Danapur, Dist.-Patna-800012             | Son Block-1/ Mahadewa, Itawa, Bagha Khoh, Chit Bisawan, Suara, Kusadhar, Bikramganj, Dhangain, Paraiya, Dharkanha, Jamsona | Operational                        |
| 2.      | Sri Santosh Kumar, S/o Sri Mahendra Prasad, M/s Aarunya Construction & Supply Services Private Limited, Zila Parishad Market, Rajgir, Dist.-Nalanda.                               | Son Block-2 /Atimiganj   | Non-operational                    |
| 3.      | M/s Pragati Indian Road lines, Sri Amendra Thakur, Ashirwadpuram Colony, C-37, Dhimrapur Chowk, Raigarh, Chhattisgarh-496001   | Son Block-3A /Nasariganj   | Operational                        |
| 4.      | M/s Rakesh Chaubey, Sri Rakesh Chaubey, S/o Sri Ramesh Chandra Chaubey, 89, Canal Road, Jakki Bigha, Dehri, Dist.-Rohtas-821307  | Son Block-3B /Nasariganj   | Extraction Path under construction |
| 5.      | Sri Premchand Singh, S/o Radheshyam Singh, M/s Ganpati Fuel, At- East Pali, Dehri on Sone, Dist.-Rohas-821305  | Son Block-4 /Amiawar   | Non-operational                    |
| 6.      | M/s Jai Mata Dee & Maa Sita Construction Sri Sanjay Kumar, S/o Lala Bahadur Rai, Vill.-Khairhi, P.O.-Pachpokhri, P.S.-Baghaila, Dist.-Rohtas-802217                                | Son Block-5 /Sabdala   | Operational                        |
| 7.      | M/s B. D. Enterprises, Sri Umashankar Singh, S/o Lalan Singh, Sarveshwari Bhawan, Near Sadanath Mahadev Mandir, P.o.-Gutwa, P.S.-Nagri, Kathal More Randhi, Dist.-Jharkhand-835303 | Son Block-6 /Sabdala   | Operational                        |
| 8.      | M/s Mor Mukat Marketing Pvt. Ltd., Prabhawati Devi, Plot No.-388/389, Near Biscuit Factory More, Nasriganj, Danapur, Dist.-Patna-800012  | Son Block-7 /Paruri  | Operational                        |
| 9.      | M/s Shivam Coke Pvt. Ltd., Sri Rakesh Kumar, Bunglow No.-06, At-Chanchani Colony, Near Hirak Point, Dhanbad, Jharkhand-826004  | Son Block-8 /Darihat   | Non-operational                    |

|     |  |                        |  |
|-----|--|------------------------|--|
| 10. | Sri Arvind Kumar,<br>S/o Shiv Narayan Prasad Gupta, Ward<br>No.-13, East Pali, Dehri on son<br>Rohtas.<br>Dist.-Rohtas. 821305   | Son Block-9A /Darihat  | Non-<br>operational                      |
| 11. | M/s Laxmi Traders, Pro-Sonu Kumar,<br>S/o- Sri Umesh kumar Soni, Vill-<br>Nasariganj, Ward No.-6, P.O.+P.S.-<br>Nasariganj, Dist-Rohtas-821310                               | Son Block-9B /Darihat  | Non-<br>operational                      |
| 12. | Sri Sonu Kumar, S/o- Sri Dayanand,<br>House No.-99, Pocket-10 Sector-22,<br>Rohini, New Delhi-110085   | Son Block-10 /Chainpur | Non-<br>operational                      |
| 13. | Sri Karan Kumar Bhutoria, Innocent<br>Traders Ltd; 16 Strand Road, Diamond<br>Heritage, 7th Floor, Room No.-701-D,<br>Kolkata-700001   | Son Block-11A /Berkap  | Non-<br>operational                      |
| 14. | Sri Gopal Kumar Singh, S/o- Sri<br>Ramratan singh, Vill.-Madhurapur<br>Vichla Tola, Ward No.-25, P.S.+P.O.-<br>Teghda, Begusarai-851133                                      | Son Block-11B /Berkap  | Non-<br>operational                      |
| 15. | Sri Arvind Kumar,<br>S/o Shiv Narayan Prasad Gupta, Ward<br>No.-13, East Pali, Dehri on son<br>Rohtas.<br>Dist.-Rohtas. 821305   | Son Block-12 /Berkap   | Extraction Path<br>under<br>construction |
| 16. | Sri Vikash Kumar Singh, S/o Ram<br>Lakhan Singh, Chandanpura Mohalla,<br>Civil Line, P.O.+P.S.-Sasaram, Dist.-<br>Rohtas   | Son Block-13 /Hurka    | Non-<br>operational                      |
| 17. | M/s Rudra Mining LLP, Pro- Sri<br>Vishwajit kumar, S/o- Visheshwar<br>Prasad, Pareo, P.O.-Pareo, Dist.-Patna-<br>802160;   | Son Block-14 /Makrain  | Non-<br>operational                      |
| 18. | Sri Sanjay Kumar, S/o Sri Ganga<br>Kumar Yadav, M/s Sanjay Kumar<br>Technocrate Private Limited, Mohalla-<br>Indai, P.O.+P.S.-Sheikhpura, Dist.-<br>Sheikhpura-811105        | Son Block-15 /Dehri    | Non-<br>operational                      |
| 19. | M/s Katyani Natural Resources Ltd.,<br>Sri Sudama Kumar, S/o- Rameshwar<br>Ram, At- Pareo, Thana-Bihta, Dist-<br>Patna-802160  | Son Block-16 /Bardiha  | Non-<br>operational                      |
| 20. | M/s Uma Associates Infratech<br>Developers Pvt. Ltd., Director-Sri<br>Anand Singh, S/o- Sri Ramgopal<br>Singh, Vill.-Jahanabad, P.O.+Thana-<br>Kudra, Dist.-Kaimur (Bhabhua) | Son Block-17 /Sikaria  | Operational                              |

## Annexure IV

**Table 1: Environmental Clearances issued by State Environmental Impact Assessment Authority, Bihar**

| Lease Holder   | Sand Ghat/Cluster | EC Identification No. | Date       |  |
|--|-------------------|-----------------------|------------|--|
|  |                   |                       | Issue      | Valid upto   |
| M/s Banshidhar Construction Pvt. Ltd., Smt. Lalti Devi                     | Son Block-01      | EC24B001BR150203      | 31.01.2024 | The Environmental Clearance will be valid for mine lease period subject to a ceiling of 5 Years. |
| Aarunya Construction & Supply Services Private Limited, Sri Santosh Kumar, | Son Block-02      | EC23B001BR110207      | 22.09.2023 | 5 Years  |
| M/s Pragati Indian Road lines, Sri Amendra Thakur,                         | Son Block-3A      | EC24B0107BR5465496N   | 10.08.2024 | 5 Years  |
| Rakesh Chaubey, Sri Rakesh Chaubey   | Son Block-3B      | EC24B0107BR5959022N   | 11.08.2024 | 5 Years  |
| M/s Ganpati Fuel, Sri Premchand Singh                                      | Son Block-04      | EC23B001BR181126      | 22.09.2023 | 5 Years  |
| Jai Mata Dee & Maa Sita Construction Sri Sanjay Kumar                      | Son Block-05      | EC23B001BR181750      | 20.10.2023 | 5 Years  |
| M/s B. D. Enterprises, Sri Umashankar Singh,                               | Son Block-06      | EC23B001BR164234      | 22.09.2023 | 5 Years  |
| Mor Mukat Marketing Pvt. Ltd.,   | Son Block-07      | EC23B001BR158011      | 01.12.2023 | 5 Years  |

|  |               |                     |            |         |
|--|---------------|---------------------|------------|---------|
| Director-Prabhawati Devi                                   |               |                     |            |         |
| Sri Sonu Kumar,<br>S/o- Sri Dayanand                       | Son Block-10  | EC23B001BR113708    | 22.09.2023 | 5 Years |
| Innocent Traders Ltd;<br>Sri Karan Kumar Bhutoria          | Son Block-11A | EC24B0107BR5328156N | 10.08.2024 | 5 Years |
| Sri Gopal Kumar Singh,<br>S/o- Sri Ramratan singh,         | Son Block-11B | EC24B0107BR5854990N | 10.08.2024 | 5 Years |
| Sri Arvind Kumar,<br>S/o Shiv Narayan Prasad Gupta         | Son Block-12  | EC23B001BR110499    | 20.10.2023 | 5 Years |
| Sri Vikash Kumar Singh,<br>S/o Ram Lakhan Singh            | Son Block-13  | EC24B0107BR5396205T | 10.08.2024 | 5 Years |
| M/s Rudra Mining LLP,<br>Pro- Sri Vishwajit kumar,         | Son Block-14  | EC23B001BR170379    | 20.10.2023 | 5 Years |
| M/s Sanjay Kumar Technocrate Pvt. Ltd,<br>Sri Sanjay Kumar | Son Block-15  | EC23B001BR124640    | 22.09.2023 | 5 Years |
| M/s Katyani Natural Resources Ltd.,<br>Sri Sudama Kumar,   | Son Block-16  | EC24B001BR110703    | 01.01.2024 | 5 Years |
| M/s Uma Associates Infratech                               | Son Block-17  | EC24B0107BR5119301A | 25.04.2024 | 5 Years |

|   |  |  |  |  |
|---|--|--|--|--|
| Developers<br>Pvt. Ltd.,<br>Director-Sri<br>Anand Singh |  |  |  |  |
|---|--|--|--|--|

**Table 2: Consent to Operate issued by Bihar State Pollution Control Board**

| Lease Holder  | Sand Ghat/<br>Cluster | CTO<br>No.   | Date                 |            |
|---|-----------------------|--------------|----------------------|------------|
|   |                       |              | Issue                | Valid upto |
| M/s Banshidhar Construction Pvt. Ltd.,<br>Smt. Lalti Devi                         | Son Block-01          | 479<br>480   | 19.02.24             | Five year  |
| Aarunya Construction & Supply Services<br>Private Limited,<br>Sri Santosh Kumar,  | Son Block-02          | 2530<br>2531 | 19.10.23             | Five year  |
| M/s Pragati Indian Road lines, Sri<br>Amendra Thakur,                             | Son Block-3A          | 2409<br>2410 | 21.10.24             | Five year  |
| Rakesh Chaubey,<br>Sri Rakesh Chaubey   | Son Block-3B          | 2447<br>2448 | 25.10.24             | Five year  |
| M/s Ganpati Fuel,<br>Sri Premchand Singh  | Son Block-04          | 2123<br>2124 | 17.10.23             | Five year  |
| Jai Mata Dee & Maa Sita Construction<br>Sri Sanjay Kumar                          | Son Block-05          | 2510<br>2511 | 30.11.23             | Five year  |
| M/s B. D. Enterprises,<br>Sri Umashankar Singh,                                   | Son Block-06          | 2296<br>2297 | 07.11.23             | Five year  |
| Mor Mukat Marketing Pvt. Ltd.,<br>Director-Prabhawati Devi                        | Son Block-07          | 90<br>91     | 11.01.24             | Five year  |
| Sri Sonu Kumar,<br>S/o- Sri Dayanand  | Son Block-10          | 2005<br>2401 | 05.10.23<br>13.10.23 | Five year  |
| Innocent Traders Ltd;<br>Sri Karan Kumar Bhutoria                                 | Son Block-<br>11A     | 2451<br>2452 | 25.10.24             | Five year  |
| Sri Gopal Kumar Singh,<br>S/o- Sri Ramratan singh,                                | Son Block-<br>11B     | 2465<br>2466 | 04.11.24             | Five year  |
| Sri Arvind Kumar,<br>S/o Shiv Narayan Prasad Gupta                                | Son Block-12          | 2381<br>2382 | 10.11.23             | Five year  |
| Sri Vikash Kumar Singh,<br>S/o Ram Lakhn Singh                                    | Son Block-13          | 2487<br>2488 | 19.11.24             | Five year  |
| M/s Rudra Mining LLP,<br>Pro- Sri Vishwajit kumar,                                | Son Block-14          | 2383<br>2384 | 10.11.23             | Five year  |
| M/s Sanjay Kumar Technocrate Pvt. Ltd,<br>Sri Sanjay Kumar                        | Son Block-15          | 2157<br>2158 | 19.10.23             | Five year  |
| M/s Katyani Natural Resources Ltd.,<br>Sri Sudama Kumar,                          | Son Block-16          |              |                      | Five year  |
| M/s Uma Associates Infratech Developers<br>Pvt. Ltd.,<br>Director-Sri Anand Singh | Son Block-17          | 939          | 14.05.24             | Five year  |

**Table 3: Letter of Intent issued by the District Administration, Rohtas**

| Lease Holder  | Sand Ghat/<br>Cluster | LoI<br>No. | Date       |                 |
|---|-----------------------|------------|------------|-----------------|
|   |                       |            | Issue      | Valid<br>upto   |
| M/s Banshidhar Construction Pvt. Ltd.,<br>Smt. Lalti Devi                         | Son Block-01          | 4525       | 30.11.2022 | Lease<br>Period |
| Aarunya Construction & Supply Services<br>Private Limited,<br>Sri Santosh Kumar,  | Son Block-02          | 4521       | 30.11.2022 | Lease<br>Period |
| M/s Pragati Indian Road lines, Sri<br>Amendra Thakur,                             | Son Block-3A          | 52         | 09.01.2024 | Lease<br>Period |
| Rakesh Chaubey,<br>Sri Rakesh Chaubey   | Son Block-3B          | 25         | 01.01.2024 | Lease<br>Period |
| M/s Ganpati Fuel,<br>Sri Premchand Singh  | Son Block-04          | 4654       | 14.12.2022 | Lease<br>Period |
| Jai Mata Dee & Maa Sita Construction<br>Sri Sanjay Kumar                          | Son Block-05          | 4651       | 13.12.2022 | Lease<br>Period |
| M/s B. D. Enterprises,<br>Sri Umashankar Singh,                                   | Son Block-06          | 4520       | 30.11.2022 | Lease<br>Period |
| Mor Mukat Marketing Pvt. Ltd.,<br>Director-Prabhawati Devi                        | Son Block-07          | 4234       | 01.11.2022 | Lease<br>Period |
| Sri Sonu Kumar,<br>S/o- Sri Dayanand  | Son Block-10          | 03         | 02.01.2023 | Lease<br>Period |
| Innocent Traders Ltd;<br>Sri Karan Kumar Bhutoria                                 | Son Block-11A         | 26         | 01.01.2024 | Lease<br>Period |
| Sri Gopal Kumar Singh,<br>S/o- Sri Ramratan singh,                                | Son Block-11B         | 24         | 04.01.2024 | Lease<br>Period |
| Sri Arvind Kumar,<br>S/o Shiv Narayan Prasad Gupta                                | Son Block-12          | 4524       | 30.11.2022 | Lease<br>Period |
| Sri Vikash Kumar Singh,<br>S/o Ram Lakhon Singh                                   | Son Block-13          | 955        | 12.06.2024 | Lease<br>Period |
| M/s Rudra Mining LLP,<br>Pro- Sri Vishwajit kumar,                                | Son Block-14          | 4232       | 01.11.2022 | Lease<br>Period |
| M/s Sanjay Kumar Technocrate Pvt. Ltd,<br>Sri Sanjay Kumar                        | Son Block-15          | 4522       | 30.11.2022 | Lease<br>Period |
| M/s Katyani Natural Resources Ltd.,<br>Sri Sudama Kumar,                          | Son Block-16          | 4233       | 01.11.2022 | Lease<br>Period |
| M/s Uma Associates Infratech Developers<br>Pvt. Ltd.,<br>Director-Sri Anand Singh | Son Block-17          | 318        | 16.12.2022 | Lease<br>Period |

**Table 4: Mining Lease granted by District Mining Office, Rohtas**

| Lease Holder   | Sand Ghat/Cluster | Lease/ Work order No. | Date     |              |
|--|-------------------|-----------------------|----------|--------------|
|  |                   |                       | Issue    | Valid upto   |
| M/s Banshidhar Construction Pvt. Ltd.,<br>Smt. Lalti Devi                      | Son Block-01      | 493                   | 15.03.24 | Lease Period |
| Aarunya Construction & Supply Services Private Limited,<br>Sri Santosh Kumar,  | Son Block-02      | 2429                  | 27.11.23 | Lease Period |
| M/s Pragati Indian Road lines, Sri Amendra Thakur,                             | Son Block-3A      | 1893                  | 26.11.24 | Lease Period |
| Rakesh Chaubey,<br>Sri Rakesh Chaubey  | Son Block-3B      | 1876                  | 21.11.24 | Lease Period |
| M/s Ganpati Fuel,<br>Sri Premchand Singh                                       | Son Block-04      | 100                   | 13.01.24 | Lease Period |
| Jai Mata Dee & Maa Sita Construction<br>Sri Sanjay Kumar                       | Son Block-05      | 2447                  | 01.12.23 | Lease Period |
| M/s B. D. Enterprises,<br>Sri Umashankar Singh,                                | Son Block-06      | 23                    | 04.01.24 | Lease Period |
| Mor Mukat Marketing Pvt. Ltd.,<br>Director-Prabhawati Devi                     | Son Block-07      | 166                   | 24.01.24 | Lease Period |
| Sri Sonu Kumar,<br>S/o- Sri Dayanand   | Son Block-10      | 2424                  | 25.11.23 | Lease Period |
| Innocent Traders Ltd;<br>Sri Karan Kumar Bhutoria                              | Son Block-11A     | 1971                  | 12.12.24 | Lease Period |
| Sri Gopal Kumar Singh,<br>S/o- Sri Ramratan singh,                             | Son Block-11B     | 1945                  | 09.12.24 | Lease Period |
| Sri Arvind Kumar,<br>S/o Shiv Narayan Prasad Gupta                             | Son Block-12      | 2561                  | 16.12.23 | Lease Period |
| Sri Vikash Kumar Singh,<br>S/o Ram Lakhani Singh                               | Son Block-13      | 1944                  | 09.12.24 | Lease Period |
| M/s Rudra Mining LLP,<br>Pro- Sri Vishwajit kumar,                             | Son Block-14      | 2425                  | 25.11.23 | Lease Period |
| M/s Sanjay Kumar Technocrate Pvt. Ltd,<br>Sri Sanjay Kumar                     | Son Block-15      | 2426                  | 25.11.23 | Lease Period |
| M/s Katyani Natural Resources Ltd.,<br>Sri Sudama Kumar,                       | Son Block-16      | -                     | -        | -            |
| M/s Uma Associates Infratech Developers Pvt. Ltd.,<br>Director-Sri Anand Singh | Son Block-17      | 1063                  | 05.07.24 | Lease Period |

ENVIRONMENTAL  
CLEARANCE

**Government of India**  
**Ministry of Environment, Forest and Climate Change**  
**(Issued by the State Environment Impact Assessment**  
**Authority(SEIAA), BIHAR)**

To,

The -1

BANS HIDHAR CONSTRUCTION PRIVATE LIMITED

2nd Floor, Plot No.-388/389, Near Biscuit Factory More, Nasriganj Digha,  
Danapur -800012

**Subject:** Grant of Environmental Clearance (EC) to the proposed Project Activity under the provision of EIA Notification 2006-regarding

Sir/Madam,

This is in reference to your application for Environmental Clearance (EC) in respect of project submitted to the SEIAA vide proposal number SIA/BR/MIN/444012/2023 dated 12 Sep 2023. The particulars of the environmental clearance granted to the project are as below.

- |  |   |
|--|---|
| 1. EC Identification No.                   | <b>EC24B001BR150203</b>   |
| 2. File No.                                | SIA/1(a)/2366/2023  |
| 3. Project Type                            | New   |
| 4. Category                                | B   |
| 5. Project/Activity including Schedule No. | 1(a) Mining of minerals   |
| 6. Name of Project                         | Sand Mining Project of Area 18.88 Hectare at Rohtas Sone, Know, Thora Sand Ghat (Block-1) on Sone, Kow, Thora River of District-Rohtas State-Bihar. |
| 7. Name of Company/Organization            | BANS HIDHAR CONSTRUCTION PRIVATE LIMITED  |
| 8. Location of Project                     | BIHAR   |
| 9. TOR Date                                | N/A   |

The project details along with terms and conditions are appended herewith from page no 2 onwards.

Date: 31/01/2024

(e-signed)  
**Mr. Sudhir Kumar**  
**Member Secretary**  
**SEIAA - (BIHAR)**

*Note: A valid environmental clearance shall be one that has EC identification number & E-Sign generated from PARIVESH. Please quote identification number in all future correspondence.*

*This is a computer generated cover page.*

PARIVESH

*(Pro-Active and Responsive Facilitation by Interactive,  
and Virtuous Environmental Single-Window Hub)*



**STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY, BIHAR**

F. No.:- SIA/1(a)/2366/2023

**Sub:** Proposed Sand Mining Project on Rohtas Sone Kow, Thora Sand Ghat (Block.-01) on Sone, Kow, Thora River at "Rohtas" Sand Ghat, at Mauza:- Mahadeva, Itawa, Bagha Khoh, Chit Bisawan, Saura, Kusadhar, Dharupur, Dhangain, Parariya, Dharkanha, Jamsona, Block:-Nasriganj, Nokha, Dawath, Suryapura, Bikramganj, Rajpur, Akodhigola, District:-Rohtas,, State:- Bihar; Area:- 18.88 Ha. [Total Production Capacity:- 333558 cum per Annum,] - Environmental Clearance regarding.

- Reference:-**
1. MoEF&CC ToR Proposal No. - SIA/BR/MIN/423775/2023, MoEF&CC EC Proposal No. - SIA/BR/MIN/444012/2023 & SEIAA File No.:- SIA/1(a)/2366/2023.
  2. Scrutiny fee submission dated 21-04-2023.
  3. ToR issued date 25-04-2023.
  4. Final EIA submission dated 14-09-2023.
  5. SEAC meeting held on 22-09-2023 to 23-09-2023 & 10-01-2024 (For EC).
  6. SEIAA meeting held on 15-01-2024 to 17-01-2024 (For EC).

**Sir,**

This has reference to your online application for River Sand Mining by M/s **Banshidhar Construction Private Limited** for Mining of **Rohtas Sone Kow, Thora Sand Ghat (Block.-01)** Sand Ghat on Sone, Kow, Thora River of District:- Rohtas, State:- Bihar. The details of the projects as mentioned in application are as below:-

| Sl. No. | Item                | Details  |
|---------|---------------------|--|
| 1.      | Name of the project | Proposed Sand Mining Project on Sone, Kow, Thora River at <b>Rohtas Sone Kow, Thora Sand Ghat (Block.-01)</b> Sand Ghat, |
| 2.      | Area of the project | 18.88 Ha.  |
| 3.      | Depth of Mining     | 03 Meter   |
| 4.      | Proposed Production | 333558 cum per Annum   |
| 5.      | Name of River       | Sone, Kow, Thora River   |
| 6.      | Name of Mineral     | Sand   |

| 7.   | Location of the Project | Mauza:- Mahadeva, Itawa, Bagha Khoh, Chit Bisawan, Saura, Kusadhar, Dharupur, Dhangain, Parariya, Dharkanba, Jamsona, Block:-Nasriganj, Nokha,Dawath, Suryapura, Bikramganj, Rajpur, Akodhigola, District:-Rohtas,, State:-Bihar.: |                  |                   |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
|--|-------------------------|--|------------------|-------------------|--|---------|---------------|-----|-----------|------------|---|-----------------------|-------|------------------|-------------------|---|------------------|-------------------|---|------------------|-------------------|---|------------------|-------------------|---|------------------|-------------------|---|------------------|-------------------|---|------------------|-------------------|---|------------------|-------------------|---|------------------|-------------------|----|------------------|-------------------|----|------------------|-------------------|----|------------------|-------------------|----|------------------|-------------------|----|------------------|-------------------|----|------------------|-------------------|----|------------------|-------------------|----|------------------|-------------------|----|------------------|-------------------|----|------------------|------------------|----|------------------|------------------|----|-----------------|-------------------|----|-----------------|-------------------|
| <b>GPS Co-Ordinates Latitude &amp; Longitude</b>   |                         |  |                  |                   |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| <b>RohtasSone, KowThera Sand Ghat (Block-1)</b>  |                         |  |                  |                   |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Sl. No.</th> <th>Name of River</th> <th>Ha.</th> <th>Latitudes</th> <th>Longitudes</th> </tr> </thead> <tbody> <tr> <td>1</td> <td rowspan="22" style="text-align: center; vertical-align: middle;">SON<br/>(Mahad<br/>awa)</td> <td rowspan="22" style="text-align: center; vertical-align: middle;">17.83</td> <td>25° 4' 30.904" N</td> <td>84° 24' 37.491" E</td> </tr> <tr> <td>2</td> <td>25° 4' 35.362" N</td> <td>84° 24' 42.587" E</td> </tr> <tr> <td>3</td> <td>25° 4' 34.739" N</td> <td>84° 24' 43.455" E</td> </tr> <tr> <td>4</td> <td>25° 4' 33.412" N</td> <td>84° 24' 41.714" E</td> </tr> <tr> <td>5</td> <td>25° 4' 32.280" N</td> <td>84° 24' 40.194" E</td> </tr> <tr> <td>6</td> <td>25° 4' 31.481" N</td> <td>84° 24' 39.104" E</td> </tr> <tr> <td>7</td> <td>25° 4' 30.615" N</td> <td>84° 24' 37.934" E</td> </tr> <tr> <td>8</td> <td>25° 4' 29.315" N</td> <td>84° 24' 36.174" E</td> </tr> <tr> <td>9</td> <td>25° 4' 28.262" N</td> <td>84° 24' 34.750" E</td> </tr> <tr> <td>10</td> <td>25° 4' 25.857" N</td> <td>84° 24' 31.500" E</td> </tr> <tr> <td>11</td> <td>25° 4' 23.864" N</td> <td>84° 24' 28.878" E</td> </tr> <tr> <td>12</td> <td>25° 4' 23.489" N</td> <td>84° 24' 28.372" E</td> </tr> <tr> <td>13</td> <td>25° 4' 21.364" N</td> <td>84° 24' 24.418" E</td> </tr> <tr> <td>14</td> <td>25° 4' 19.979" N</td> <td>84° 24' 21.863" E</td> </tr> <tr> <td>15</td> <td>25° 4' 17.645" N</td> <td>84° 24' 17.596" E</td> </tr> <tr> <td>16</td> <td>25° 4' 15.571" N</td> <td>84° 24' 13.744" E</td> </tr> <tr> <td>17</td> <td>25° 4' 14.428" N</td> <td>84° 24' 11.536" E</td> </tr> <tr> <td>18</td> <td>25° 4' 13.633" N</td> <td>84° 24' 10.254" E</td> </tr> <tr> <td>19</td> <td>25° 4' 12.048" N</td> <td>84° 24' 7.309" E</td> </tr> <tr> <td>20</td> <td>25° 4' 10.685" N</td> <td>84° 24' 0.845" E</td> </tr> <tr> <td>21</td> <td>25° 4' 9.747" N</td> <td>84° 23' 51.734" E</td> </tr> <tr> <td>22</td> <td>25° 4' 7.454" N</td> <td>84° 23' 41.683" E</td> </tr> </tbody> </table> |                         |  |                  |                   |  | Sl. No. | Name of River | Ha. | Latitudes | Longitudes | 1 | SON<br>(Mahad<br>awa) | 17.83 | 25° 4' 30.904" N | 84° 24' 37.491" E | 2 | 25° 4' 35.362" N | 84° 24' 42.587" E | 3 | 25° 4' 34.739" N | 84° 24' 43.455" E | 4 | 25° 4' 33.412" N | 84° 24' 41.714" E | 5 | 25° 4' 32.280" N | 84° 24' 40.194" E | 6 | 25° 4' 31.481" N | 84° 24' 39.104" E | 7 | 25° 4' 30.615" N | 84° 24' 37.934" E | 8 | 25° 4' 29.315" N | 84° 24' 36.174" E | 9 | 25° 4' 28.262" N | 84° 24' 34.750" E | 10 | 25° 4' 25.857" N | 84° 24' 31.500" E | 11 | 25° 4' 23.864" N | 84° 24' 28.878" E | 12 | 25° 4' 23.489" N | 84° 24' 28.372" E | 13 | 25° 4' 21.364" N | 84° 24' 24.418" E | 14 | 25° 4' 19.979" N | 84° 24' 21.863" E | 15 | 25° 4' 17.645" N | 84° 24' 17.596" E | 16 | 25° 4' 15.571" N | 84° 24' 13.744" E | 17 | 25° 4' 14.428" N | 84° 24' 11.536" E | 18 | 25° 4' 13.633" N | 84° 24' 10.254" E | 19 | 25° 4' 12.048" N | 84° 24' 7.309" E | 20 | 25° 4' 10.685" N | 84° 24' 0.845" E | 21 | 25° 4' 9.747" N | 84° 23' 51.734" E | 22 | 25° 4' 7.454" N | 84° 23' 41.683" E |
| Sl. No.  | Name of River           | Ha.  | Latitudes        | Longitudes        |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 1  | SON<br>(Mahad<br>awa)   | 17.83  | 25° 4' 30.904" N | 84° 24' 37.491" E |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 2  |                         |  | 25° 4' 35.362" N | 84° 24' 42.587" E |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 3  |                         |  | 25° 4' 34.739" N | 84° 24' 43.455" E |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 4  |                         |  | 25° 4' 33.412" N | 84° 24' 41.714" E |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 5  |                         |  | 25° 4' 32.280" N | 84° 24' 40.194" E |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 6  |                         |  | 25° 4' 31.481" N | 84° 24' 39.104" E |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 7  |                         |  | 25° 4' 30.615" N | 84° 24' 37.934" E |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 8  |                         |  | 25° 4' 29.315" N | 84° 24' 36.174" E |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 9  |                         |  | 25° 4' 28.262" N | 84° 24' 34.750" E |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 10   |                         |  | 25° 4' 25.857" N | 84° 24' 31.500" E |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 11   |                         |  | 25° 4' 23.864" N | 84° 24' 28.878" E |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 12   |                         |  | 25° 4' 23.489" N | 84° 24' 28.372" E |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 13   |                         |  | 25° 4' 21.364" N | 84° 24' 24.418" E |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 14   |                         |  | 25° 4' 19.979" N | 84° 24' 21.863" E |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 15   |                         |  | 25° 4' 17.645" N | 84° 24' 17.596" E |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 16   |                         |  | 25° 4' 15.571" N | 84° 24' 13.744" E |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 17   |                         |  | 25° 4' 14.428" N | 84° 24' 11.536" E |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 18   |                         |  | 25° 4' 13.633" N | 84° 24' 10.254" E |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 19   |                         |  | 25° 4' 12.048" N | 84° 24' 7.309" E  |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 20   |                         |  | 25° 4' 10.685" N | 84° 24' 0.845" E  |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 21   |                         |  | 25° 4' 9.747" N  | 84° 23' 51.734" E |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 22   |                         |  | 25° 4' 7.454" N  | 84° 23' 41.683" E |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |
| 8.   | Latitude & Longitude    |  |                  |                   |  |         |               |     |           |            |   |                       |       |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |   |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                   |    |                  |                  |    |                  |                  |    |                 |                   |    |                 |                   |

|  |  |    |       |      |                  |                   |
|--|--|----|-------|------|------------------|-------------------|
|  |  | 23 |       |      | 25° 4' 5.730" N  | 84° 23' 33.341" E |
|  |  | 24 |       |      | 25° 4' 5.665" N  | 84° 23' 26.969" E |
|  |  | 25 |       |      | 25° 4' 8.493" N  | 84° 23' 31.007" E |
|  |  | 26 |       |      | 25° 4' 12.696" N | 84° 23' 37.245" E |
|  |  | 27 |       |      | 25° 4' 11.893" N | 84° 23' 50.619" E |
|  |  | 28 |       |      | 25° 4' 12.027" N | 84° 23' 52.139" E |
|  |  | 29 |       |      | 25° 4' 12.423" N | 84° 23' 55.519" E |
|  |  | 30 |       |      | 25° 4' 13.172" N | 84° 23' 59.073" E |
|  |  | 31 |       |      | 25° 4' 15.145" N | 84° 24' 9.068" E  |
|  |  | 32 |       |      | 25° 4' 21.693" N | 84° 24' 20.178" E |
|  |  | 33 |       |      | 25° 4' 23.375" N | 84° 24' 23.395" E |
|  |  | 34 |       |      | 25° 4' 26.326" N | 84° 24' 28.868" E |
|  |  | 35 |       |      | 25° 4' 29.711" N | 84° 24' 35.263" E |
|  |  | 36 |       |      | 25° 4' 30.904" N | 84° 24' 37.491" E |
|  |  | 1  |       |      | 25° 1' 47.799" N | 84° 9' 0.575" E   |
|  |  | 2  |       |      | 25° 1' 47.515" N | 84° 9' 1.072" E   |
|  |  | 3  |       |      | 25° 1' 47.714" N | 84° 9' 2.222" E   |
|  |  | 4  |       |      | 25° 1' 47.519" N | 84° 9' 1.949" E   |
|  |  | 5  |       |      | 25° 1' 47.326" N | 84° 9' 1.733" E   |
|  |  | 6  | KOW   |      | 25° 1' 47.229" N | 84° 9' 1.475" E   |
|  |  | 7  | 01    | 0.03 | 25° 1' 47.265" N | 84° 9' 1.213" E   |
|  |  | 8  | Itawa |      | 25° 1' 47.316" N | 84° 9' 1.071" E   |
|  |  | 9  |       |      | 25° 1' 47.667" N | 84° 9' 0.752" E   |
|  |  | 10 |       |      | 25° 1' 47.750" N | 84° 9' 0.601" E   |
|  |  | 11 |       |      | 25° 1' 47.799" N | 84° 9' 0.575" E   |
|  |  | 1  |       |      | 25° 1' 35.914" N | 84° 11' 8.892" E  |
|  |  | 2  |       |      | 25° 1' 36.039" N | 84° 11' 8.853" E  |
|  |  | 3  |       |      | 25° 1' 36.638" N | 84° 11' 7.603" E  |

|  |  |    |         |      |                  |                   |
|--|--|----|---------|------|------------------|-------------------|
|  |  | 4  |         |      | 25° 1' 36.859" N | 84° 11' 7.349" E  |
|  |  | 5  |         |      | 25° 1' 37.178" N | 84° 11' 7.282" E  |
|  |  | 6  |         |      | 25° 1' 37.576" N | 84° 11' 7.352" E  |
|  |  | 7  |         |      | 25° 1' 37.797" N | 84° 11' 7.498" E  |
|  |  | 8  | KOW     |      | 25° 1' 38.014" N | 84° 11' 7.833" E  |
|  |  | 9  | 02      | 0.06 | 25° 1' 38.094" N | 84° 11' 8.554" E  |
|  |  | 10 | BaghaK  |      | 25° 1' 38.004" N | 84° 11' 8.742" E  |
|  |  | 11 | hob     |      | 25° 1' 38.034" N | 84° 11' 8.353" E  |
|  |  | 12 |         |      | 25° 1' 37.990" N | 84° 11' 8.115" E  |
|  |  | 13 |         |      | 25° 1' 37.900" N | 84° 11' 7.924" E  |
|  |  | 14 |         |      | 25° 1' 37.700" N | 84° 11' 7.734" E  |
|  |  | 15 |         |      | 25° 1' 37.395" N | 84° 11' 7.632" E  |
|  |  | 16 |         |      | 25° 1' 37.077" N | 84° 11' 7.666" E  |
|  |  | 17 |         |      | 25° 1' 36.742" N | 84° 11' 7.831" E  |
|  |  | 18 |         |      | 25° 1' 36.579" N | 84° 11' 8.047" E  |
|  |  | 19 |         |      | 25° 1' 36.517" N | 84° 11' 8.466" E  |
|  |  | 20 |         |      | 25° 1' 36.357" N | 84° 11' 8.742" E  |
|  |  | 21 |         |      | 25° 1' 36.003" N | 84° 11' 8.923" E  |
|  |  | 22 |         |      | 25° 1' 35.914" N | 84° 11' 8.892" E  |
|  |  | 1  |         |      | 25° 1' 59.449" N | 84° 11' 36.159" E |
|  |  | 2  |         |      | 25° 1' 59.759" N | 84° 11' 36.235" E |
|  |  | 3  |         |      | 25° 2' 0.213" N  | 84° 11' 36.447" E |
|  |  | 4  | KOW     |      | 25° 2' 0.651" N  | 84° 11' 36.822" E |
|  |  | 5  | 03      | 0.09 | 25° 2' 0.924" N  | 84° 11' 37.235" E |
|  |  | 6  | Chit    |      | 25° 2' 1.092" N  | 84° 11' 37.639" E |
|  |  | 7  | Bisawan |      | 25° 2' 0.379" N  | 84° 11' 37.286" E |
|  |  | 8  |         |      | 25° 1' 59.664" N | 84° 11' 37.037" E |
|  |  | 9  |         |      | 25° 1' 59.570" N | 84° 11' 36.845" E |

|  |  |    |                             |                   |                   |                   |
|--|--|----|-----------------------------|-------------------|-------------------|-------------------|
|  |  | 10 |                             | 25° 1' 59.591" N  | 84° 11' 36.812" E |                   |
|  |  | 11 |                             | 25° 1' 59.544" N  | 84° 11' 36.415" E |                   |
|  |  | 12 |                             | 25° 1' 59.449" N  | 84° 11' 36.159" E |                   |
|  |  | 1  | KOW<br>04.1<br>Suara        | 0.08              | 25° 2' 19.621" N  | 84° 11' 40.688" E |
|  |  | 2  |                             |                   | 25° 2' 19.841" N  | 84° 11' 40.920" E |
|  |  | 3  |                             |                   | 25° 2' 20.809" N  | 84° 11' 41.259" E |
|  |  | 4  |                             |                   | 25° 2' 21.298" N  | 84° 11' 41.258" E |
|  |  | 5  |                             |                   | 25° 2' 20.970" N  | 84° 11' 41.590" E |
|  |  | 6  |                             |                   | 25° 2' 20.488" N  | 84° 11' 41.777" E |
|  |  | 7  |                             |                   | 25° 2' 20.188" N  | 84° 11' 41.799" E |
|  |  | 8  |                             |                   | 25° 2' 19.955" N  | 84° 11' 41.743" E |
|  |  | 9  |                             |                   | 25° 2' 19.634" N  | 84° 11' 41.548" E |
|  |  | 10 |                             |                   | 25° 2' 19.561" N  | 84° 11' 40.978" E |
|  |  | 11 | 25° 2' 19.621" N            | 84° 11' 40.688" E |                   |                   |
|  |  | 1  | KOW<br>04.2<br>Kusadha<br>r | 0.04              | 25° 2' 25.964" N  | 84° 11' 39.967" E |
|  |  | 2  |                             |                   | 25° 2' 26.069" N  | 84° 11' 39.818" E |
|  |  | 3  |                             |                   | 25° 2' 26.364" N  | 84° 11' 39.649" E |
|  |  | 4  |                             |                   | 25° 2' 26.650" N  | 84° 11' 39.708" E |
|  |  | 5  |                             |                   | 25° 2' 26.952" N  | 84° 11' 40.005" E |
|  |  | 6  |                             |                   | 25° 2' 27.191" N  | 84° 11' 40.390" E |
|  |  | 7  |                             |                   | 25° 2' 27.310" N  | 84° 11' 41.036" E |
|  |  | 8  |                             |                   | 25° 2' 26.932" N  | 84° 11' 40.406" E |
|  |  | 9  |                             |                   | 25° 2' 26.520" N  | 84° 11' 39.933" E |
|  |  | 10 |                             |                   | 25° 2' 25.964" N  | 84° 11' 39.967" E |
|  |  | 1  | KOW                         |                   | 25° 2' 31.813" N  | 84° 11' 42.005" E |
|  |  | 2  |                             |                   | 25° 2' 31.407" N  | 84° 11' 42.351" E |
|  |  | 3  |                             |                   | 25° 2' 30.817" N  | 84° 11' 42.763" E |
|  |  | 4  |                             |                   | 25° 2' 30.260" N  | 84° 11' 43.005" E |

|  |  |    |                                 |                   |                             |                   |
|--|--|----|---------------------------------|-------------------|-----------------------------|-------------------|
|  |  | 5  | 04.3                            | 0.36              | 25° 2' 29.886" N            | 84° 11' 42.993" E |
|  |  | 6  | Kusadha<br>r                    | 0.36              | 25° 2' 29.362" N            | 84° 11' 42.827" E |
|  |  | 7  |                                 |                   | 25° 2' 28.877" N            | 84° 11' 42.588" E |
|  |  | 8  |                                 |                   | 25° 2' 28.486" N            | 84° 11' 42.149" E |
|  |  | 9  |                                 |                   | 25° 2' 28.107" N            | 84° 11' 41.592" E |
|  |  | 10 |                                 |                   | 25° 2' 27.924" N            | 84° 11' 41.104" E |
|  |  | 11 |                                 |                   | 25° 2' 28.453" N            | 84° 11' 41.302" E |
|  |  | 12 |                                 |                   | 25° 2' 29.250" N            | 84° 11' 41.343" E |
|  |  | 13 |                                 |                   | 25° 2' 30.063" N            | 84° 11' 41.263" E |
|  |  | 14 |                                 |                   | 25° 2' 31.813" N            | 84° 11' 42.005" E |
|  |  | 1  |                                 |                   | KOW<br>04.4<br>Kusadha<br>r | 0.03              |
|  |  | 2  | 25° 2' 40.081" N                | 84° 11' 49.623" E |                             |                   |
|  |  | 3  | 25° 2' 40.702" N                | 84° 11' 50.232" E |                             |                   |
|  |  | 4  | 25° 2' 41.046" N                | 84° 11' 50.416" E |                             |                   |
|  |  | 5  | 25° 2' 40.457" N                | 84° 11' 50.459" E |                             |                   |
|  |  | 6  | 25° 2' 40.030" N                | 84° 11' 50.109" E |                             |                   |
|  |  | 7  | 25° 2' 39.658" N                | 84° 11' 49.408" E |                             |                   |
|  |  | 8  | 25° 2' 39.664" N                | 84° 11' 49.320" E |                             |                   |
|  |  | 1  | KOW<br>05<br>Bikra<br>ng<br>anj | 0.01              | 25° 12' 37.175" N           | 84° 16' 16.333" E |
|  |  | 2  |                                 |                   | 25° 12' 37.291" N           | 84° 16' 16.252" E |
|  |  | 3  |                                 |                   | 25° 12' 37.597" N           | 84° 16' 16.211" E |
|  |  | 4  |                                 |                   | 25° 12' 37.943" N           | 84° 16' 16.224" E |
|  |  | 5  |                                 |                   | 25° 12' 38.048" N           | 84° 16' 16.284" E |
|  |  | 6  |                                 |                   | 25° 12' 38.137" N           | 84° 16' 16.386" E |
|  |  | 7  |                                 |                   | 25° 12' 38.089" N           | 84° 16' 16.463" E |
|  |  | 8  |                                 |                   | 25° 12' 37.846" N           | 84° 16' 16.380" E |
|  |  | 9  |                                 |                   | 25° 12' 37.383" N           | 84° 16' 16.312" E |
|  |  | 10 |                                 |                   | 25° 12' 37.175" N           | 84° 16' 16.333" E |

|  |  |    |           |      |                   |                   |
|--|--|----|-----------|------|-------------------|-------------------|
|  |  | 1  |           |      | 25° 13' 36.713" N | 84° 14' 31.338" E |
|  |  | 2  |           |      | 25° 13' 36.765" N | 84° 14' 31.245" E |
|  |  | 3  |           |      | 25° 13' 37.136" N | 84° 14' 31.237" E |
|  |  | 4  |           |      | 25° 13' 37.323" N | 84° 14' 31.326" E |
|  |  | 5  |           |      | 25° 13' 37.438" N | 84° 14' 31.471" E |
|  |  | 6  |           |      | 25° 13' 37.510" N | 84° 14' 31.657" E |
|  |  | 7  | KOW<br>06 | 0.03 | 25° 13' 37.598" N | 84° 14' 32.065" E |
|  |  | 8  | Dhangsi   |      | 25° 13' 37.532" N | 84° 14' 32.134" E |
|  |  | 9  | n         |      | 25° 13' 37.465" N | 84° 14' 32.105" E |
|  |  | 10 |           |      | 25° 13' 37.446" N | 84° 14' 32.072" E |
|  |  | 11 |           |      | 25° 13' 37.304" N | 84° 14' 31.998" E |
|  |  | 12 |           |      | 25° 13' 37.088" N | 84° 14' 31.761" E |
|  |  | 13 |           |      | 25° 13' 36.713" N | 84° 14' 31.338" E |
|  |  | 1  |           |      | 25° 17' 29.808" N | 84° 15' 36.312" E |
|  |  | 2  |           |      | 25° 17' 29.210" N | 84° 15' 36.420" E |
|  |  | 3  |           |      | 25° 17' 28.518" N | 84° 15' 36.933" E |
|  |  | 4  | KOW<br>07 | 0.02 | 25° 17' 28.971" N | 84° 15' 36.279" E |
|  |  | 5  | Parariya  |      | 25° 17' 29.153" N | 84° 15' 36.180" E |
|  |  | 6  |           |      | 25° 17' 29.808" N | 84° 15' 36.312" E |
|  |  | 1  |           |      | 25° 21' 7.032" N  | 84° 10' 31.231" E |
|  |  | 2  |           |      | 25° 21' 6.754" N  | 84° 10' 31.399" E |
|  |  | 3  |           |      | 25° 21' 6.540" N  | 84° 10' 31.612" E |
|  |  | 4  |           |      | 25° 21' 6.298" N  | 84° 10' 31.629" E |
|  |  | 5  |           |      | 25° 21' 5.928" N  | 84° 10' 31.484" E |
|  |  | 6  |           |      | 25° 21' 5.654" N  | 84° 10' 31.377" E |
|  |  | 7  |           |      | 25° 21' 5.435" N  | 84° 10' 31.191" E |
|  |  | 8  |           |      | 25° 21' 5.368" N  | 84° 10' 30.940" E |
|  |  | 9  |           |      | 25° 21' 5.392" N  | 84° 10' 30.580" E |

|  |  |    |               |      |                  |                   |                   |
|--|--|----|---------------|------|------------------|-------------------|-------------------|
|  |  | 10 | THORA<br>1.1  | 0.07 | 25° 21' 5.453" N | 84° 10' 30.342" E |                   |
|  |  | 11 | Dharkan<br>ha |      | 25° 21' 5.735" N | 84° 10' 30.242" E |                   |
|  |  | 12 |               |      | 25° 21' 5.885" N | 84° 10' 30.225" E |                   |
|  |  | 13 |               |      | 25° 21' 5.723" N | 84° 10' 30.441" E |                   |
|  |  | 14 |               |      | 25° 21' 5.746" N | 84° 10' 30.725" E |                   |
|  |  | 15 |               |      | 25° 21' 5.915" N | 84° 10' 30.990" E |                   |
|  |  | 16 |               |      | 25° 21' 6.239" N | 84° 10' 31.140" E |                   |
|  |  | 17 |               |      | 25° 21' 6.618" N | 84° 10' 31.234" E |                   |
|  |  | 18 |               |      | 25° 21' 7.032" N | 84° 10' 31.231" E |                   |
|  |  | 1  | THORA<br>1.2  | 0.02 | 25° 21' 7.068" N | 84° 10' 29.932" E |                   |
|  |  | 2  |               |      | 25° 21' 6.833" N | 84° 10' 30.127" E |                   |
|  |  | 3  |               |      | 25° 21' 6.583" N | 84° 10' 30.102" E |                   |
|  |  | 4  |               |      | Dharkan<br>ha    | 25° 21' 6.423" N  | 84° 10' 30.053" E |
|  |  | 5  |               |      |                  | 25° 21' 5.894" N  | 84° 10' 29.842" E |
|  |  | 6  |               |      |                  | 25° 21' 6.318" N  | 84° 10' 29.805" E |
|  |  | 7  |               |      |                  | 25° 21' 7.068" N  | 84° 10' 29.932" E |
|  |  | 1  | THORA<br>2    | 0.18 | 25° 21' 3.244" N | 84° 10' 28.089" E |                   |
|  |  | 2  |               |      | 25° 21' 3.255" N | 84° 10' 28.364" E |                   |
|  |  | 3  |               |      | 25° 21' 3.537" N | 84° 10' 28.359" E |                   |
|  |  | 4  |               |      | 25° 21' 3.707" N | 84° 10' 28.808" E |                   |
|  |  | 5  |               |      | 25° 21' 3.869" N | 84° 10' 29.304" E |                   |
|  |  | 6  |               |      | 25° 21' 3.860" N | 84° 10' 29.754" E |                   |
|  |  | 7  |               |      | Dharkan<br>ha    | 25° 21' 3.681" N  | 84° 10' 29.754" E |
|  |  | 8  |               |      |                  | 25° 21' 3.249" N  | 84° 10' 30.246" E |
|  |  | 9  |               |      |                  | 25° 21' 2.819" N  | 84° 10' 30.106" E |
|  |  | 10 |               |      |                  | 25° 21' 2.464" N  | 84° 10' 29.636" E |
|  |  | 11 |               |      |                  | 25° 21' 2.659" N  | 84° 10' 28.605" E |
|  |  | 12 |               |      |                  | 25° 21' 3.075" N  | 84° 10' 28.307" E |



|     |                              | Commitment)                        |       |       |
|-----|------------------------------|------------------------------------|-------|-------|
|     |                              | Grand Total                        | 14.07 | 10.44 |
| 12. | Project Cost of Project Site | Total Project Cost - ₹ 193345930/- |       |       |

### PREMISES OF THE ENVIRONMENTAL CLEARANCE

This Environmental Clearance is being issued on the premises which have been substantiated / described in detail in the format of application along with enclosed affidavits / certificates / undertakings etc. furnished therewith by the project proponent:-

- (i) Information provided, descriptions mentioned are complete, true and actual and no relevant fact has been concealed to obtain Environmental Clearance deceitfully by the project proponent.
- (ii) River Sand Mining shall not be done in rainy Season (mid June to mid October) of each calendar year.
- (iii) The Environmental Clearance holder shall take all possible precautions and safeguards for protection of Environment and control of pollution as well as road safety and mining shall be done in socially responsible manner.

Air, water, Noise pollution and visual impact due to mining operations / extraction / Transportation of mined mineral / over burden etc. shall be kept within prescribed limits in the operational area.

- (iv) Mining shall only be done after obtaining valid mining lease / permit from the competent authorities and operations shall take place only within validity period of lease / permit. All the provisions made and restrictions imposed as covered in the relevant minor mineral Rule, shall be complied with, particularly regarding EMP.
- (v) Dept. of Mines & Geology, Govt. of Bihar shall keep a strict vigil in the compliance of relevant provisions of applicable Bihar Minerals (Concession, Prevention of Illegal mining, Transportation and Storage) Rule 2019 and its amendment especially scientific execution of mining plan (as approved by them themselves) and report violations if any is found as well as action taken for the same.

- (vi) Project Proponent shall submit (to the SEIAA, Bihar, Regional Office of MoEF&CC at Ranchi, Bihar State Pollution Control Board) six monthly compliance report with evidence of the conditions within a fortnight after the end of every six month till validity period of Environmental Clearance.
- (vii) *Environmental Clearance shall be liable to be revoked if furnished information, provided description / Certificates / Affidavits / Undertaking etc are found false / concocted at any stage of its validity.*
- (viii) *This Environmental Clearance is issued without affecting any court order / statutory other institutions as well as relevant other laws enacted by MoEF&CC, Govt, New Delhi.*
- (ix) Mining and transportation of mined material from mine site to stock yard shall be done in the day time only to avoid noise pollution in the nearby human habitation area.
- (x) No part of the mining area is in a protected or Reserve forest and it also does not fall either within a wildlife protected area or within its eco-sensitive zone.
- (xi) Project Proponent shall intimate SEIAA immediately if there is any change in their official address / E-mail / Ph. No / Cell. no etc failing which communication sent to them on old address shall be considered as delivered.

#### **A. Specific Condition**

1. The Project Proponent shall obtain all necessary clearance/ permission from all concerned departments before commencement of mining works.
2. **The Environmental Clearance will be valid for mine lease period subject to a ceiling of 5 years.**
3. The project proponent before starting any activity /preparation of ground, on the leased area shall demarcate his lease hold by RCC pillars erected at the cost of lease holder after certification of the mining officer. On each pillar Geo-Coordinate and fore bearing/ back bearing shall be written with permanent paint mark as described in the mining plan. All the pillars should remain intact at same geo-coordinate. Establishment/ labeling of Benchmark at each pillars or ground control points.
4. Extraction of sand beyond annual production capacity is not permitted.

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5. The Project Proponent should undertake the sand mining limited to 03 meter (three meter) depth by semi-mechanised method (without using any heavy machine), preferably by manual excavation.
6. Extraction will be carried out up to a maximum depth of 03 meter from surface of mineral deposit and not less than one meter from the water level of the River channel whichever is earlier.
7. No mining shall be carried out in the areas prominently used by wild animals (birds and reptiles) for nesting. Restricted working hours-Sand mining operation has to be carried out between 6 am to 7 pm.
8. No mining shall be carried out in 3 meter wide strip from the river bank in a River flood plain and within flowing/live water channel.
9. To maintain the safety and stability of Riverbanks, 3 meter or 10% of the width of the River whichever is more will be left intact as "No Mining Zone".
10. No stream shall be diverted for the purpose of sand mining. No natural water course and / or water reservoirs shall be obstructed due to mining operations.
11. The pollution due to transportation load on the environment will be effectively controlled & water sprinkling will also be done regularly. Vehicles with PUC only will be allowed to ply. The mineral transportation shall be carried out through covered vehicles / trucks only and the vehicle shall not be overloaded. Project should obtain 'PUC' certificate for all the vehicles from authorized pollution testing centre.
12. The stacking area of mined-out sand which shall be situated near the mining site within a fenced area from all sides to avoid being spread in the nearby areas by high winds and the height of stacking should not exceed 2 meter. Transportation shall be confined to day time only that is from sunrise to sunset, to avoid inconvenience to local population in anyway.
13. Rubbish burial shall not be done in the Rivers.
14. Adequate steps shall be taken to check soil erosion and control of debris flow etc. by constructing engineering structures.
15. Mining activity shall not be done for mine lease where mining can cause danger to site of flood protection works, places of cultural, religious, historical, and archaeological importance.

16. The approach road from loading point upto main road shall be properly developed with proper width and geometry required for safe movement of traffic by lease holder at his own cost.
17. Main haulage road in the mine shall be provided with permanent water sprinklers and other roads shall be regularly wetted with water tankers fitted with sprinklers.
18. Transportation of the Minerals by road passing through the village shall not be allowed. A 'bypass' road should be constructed (say, leaving a gap of at least 200 meters) for the purpose of transportation of the minerals so that the impact of sound, dust and accidents could be mitigated. The Project Proponent shall bear the cost towards the widening and strengthening of existing public road-network in case the same is proposed to be used for the Project. No road movement should be allowed on existing village road network without appropriately increasing the carrying capacity of such roads.
19. The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No. 22-65/2017-LA.III dated 1st May 2018, as applicable, regarding Corporate Environment Responsibility.
20. Project Proponent shall appoint a Monitoring committee to monitor the replenishment study, traffic management, levels of production, river Bank erosion and maintenance of Road etc.
21. Project Proponent shall submit the annual replenishment report certified by an authorized agency. In case the replenishment is lower than the approved rate of production, then the mining activity / production levels shall be decreased / stopped accordingly till the replenishment is completed.
22. Regular monitoring of the flow rate of the springs and seasonal stream flowing in and around the mine lease shall be carried out and records maintained. Regular monitoring of water quality upstream and downstream of water bodies shall be carried out and record of monitoring data should be maintained and submitted to the SEIAA, Bihar, Regional office, Ranchi, Central Ground water Authority, Regional Director, Central Ground water Board, State Pollution Control Board and Central Pollution Control Board.
23. The project proponent shall abide by the Hon'ble Supreme Court order dated 08.01.2020 [Writ Petition 9 (s) (Civil No. (s) 114/2014)], Proposal of re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land

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to a condition which is fit for growth of fodder, flora, fauna etc. In compliance to the direction dated 8<sup>th</sup> January, 2020 of Hon'ble Supreme Court in Writ Petitioner(s) Civil No. 114/2014, Common Cause Vs Union of India & Ors.

24. The individual sand ghat-miner will take appropriate measures to avoid parking of empty / loaded vehicles on nearest highway/ public roads to avoid traffic congestion.
25. Project Proponent will adhere to all applicable provisions of Sustainable Sand Mining Management Guidelines 2016 and Enforcement & Monitoring Guidelines for Sand Mining, 2020 (EMGSM – 2020) issued by Ministry of Environment, Forest and Climate Change, Government of India. In case, any ambiguity or variation between the provision of both these document arises, the provision made in "Enforcement and Monitoring Guidelines for Sand Mining – 2020" shall prevail.
26. All specific and general conditions which are of public concern at large shall be permanently displayed at a prominent place for public along with address and contact details of authority where the violation of EC conditions can be reported.
27. Project proponent shall erect a signboard on his project site and display information regarding name of the project, No. & date of validity period of EC, annual production capacity of the mineral and other relevant information for the general public.

#### **B. General condition**

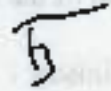
1. No stacking of sand is allowed on road side of any public road including national highways/ State highways.
2. No labour camp shall be allowed in riverbed.
3. Provision shall be made for housing labour with all necessary infrastructure and facilities (outside mining Block and river-bed) such as fuel for cooking, toilets / mobile toilets, safe drinking water, First-Aid facilities, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
4. Labour & Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers shall be undertaken periodically to observe any adverse health impact due to exposure to dust and take corrective measures, if needed.

5. The Project Proponent shall make arrangements for safe drinking water, first aid facility along With anti-venom injection, in case of emergency for the workers.
6. The project proponent shall maintain register for production and dispatch of mineral and submit periodic return (six-monthly) to the SELAA, Bihar / Regional Office of Ministry of Environment, Forest and Climate Change, Government of India, Ranchi. If the remaining period of lease is for less than a year, the Project Proponent shall submit a monthly return of production.
7. The EC holder shall keep a correct account of quantity of mineral mined out, dispatched from the mine, mode of transport, registration number of vehicle and mine plan. This should be produced before officers of Central and State Government for inspection whenever asked for.
8. Regular monitoring of ground water table shall be carried out at the upstream and depth of water available in the adjoining dug-well.
9. Monitoring of Ambient Air Quality, Water Quality & Noise Quality shall be carried out as per the Notification, as amended from time to time by the Central Pollution Control Board. Water sprinkling should be increased at places of loading and unloading points & transfer points to reduce all sorts of fugitive emissions.
10. The funds earmarked for environmental protection measures should be kept in a separate bank account and should not be diverted for other purpose. Year-wise expenditure should be reported to the SELAA, Bihar.
11. The Project proponent shall provide all necessary logistic support to the authorized officer of this authority as and when required. They will facilitate and assist the authority in site inspection and monitoring.
12. All the provisions made and restrictions imposed as envisaged in the Bihar Minor Mineral Rule, shall be complied with; particularly regarding Environment Management and payment of compensation to the affected land owner(s).
13. No change in mining technology and scope of working should be made without prior approval of the SELAA, Bihar.
14. The Ministry / SEIAA may alter / modify the above conditions or stipulate any additional condition(s) in the interest of environment.

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15. Concealing of factual data or submission of false / fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal/suspension of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
16. The instruction contained herein above regarding air and noise pollution and details of mining proposals shall be displayed on Signboard in Hindi for the public information.
17. The SEIAA may impose additional conditions in the interest of Environment & Ecology whenever it becomes necessary to do so.
18. Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under section 16 of the National Green Tribunal Act, 2010.

**C. Special Conditions**

1. The proposed plantation consisting of mixture of indigenous and fast growing species of trees must be done and proper care must be taken to ensure 100% survival. Plantation of a minimum of 5 feet tall plants must be done in the 1<sup>st</sup> year of lease period and properly maintained till the validity of Environmental Clearance.
2. The Project Proponent shall execute and conduct measurable Corporate Environment Responsibility (CER) activities like facilities for drinking water supply, infrastructure creation, solar power, Rain Water Harvesting, Solid Waste Management Facilities, sanitation, essential furnitures for the local government schools and Anganwadi Kendras. A display board must be placed for the information to the public (with intimation to the concerned District Magistrate and the concerned district level officers of the concerned departments).
3. Under the Corporate Environment Responsibilities the modalities of all expenditure on skill development programme need to be done in consultation with and guidance of Bihar Skill Devolvement Mission.
4. The Project Proponent has to fix display board on each mining site mentioning thereupon various activities to be done under Environment Management Plan (EMP).
5. The Project Proponent must maintain existing ponds nearby, if any. 

6. Proper care should to be taken during transportation of sand from the sand mining site. There should be freeboard of atleast 03 inches from the body level of the vehicle, so that the sand doesn't get spilled on the road and doesn't affect the air quality as well.
7. The Project Proponent to install lightning arrestor in the area concerned to protect the inhabitants from hazards like lightning.
8. The Proponent must submit untreated high resolution satellite images with stereoscopic 3D view from the National Remote Sensing Centre (NRSC), Hyderabad for the month of June and December every year, along with the respective half-yearly compliance report in hard and soft copy.

Sd/-

(Sudhir Kumar)  
Member-Secretary  
SEIAA, Bihar

**Copy, through email, for information and necessary action to :-**

1. The Secretary, Environment, Forest and Climate Change Deptt., Govt. of Bihar, Sinchai Bhowan, Patna - 15.
2. The Additional Chief Secretary, Mines and Geology Deptt., Govt. of Bihar, Vikas Bhowan, Patna - 15
3. The Chairman, SEAC, Bihar.
4. The Member Secretary, Bihar State Pollution Control Board, Patna-23.
5. The Director, Mines and Geology Deptt., Govt. Of Bihar, Vikash Bhowan, Patna - 15.
6. MoEF&CC, Integrated Regional Office, Ranchi, 2<sup>nd</sup> Floor, Headquarter - Jharkhand State Housing Board, Harmu Chowk, Ranchi, Jharkhand - 834002.
7. Guard file.

  
(Sudhir Kumar)  
Member Secretary,  
SEIAA, Bihar

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ENVIRONMENTAL  
CLEARANCE

Government of India  
Ministry of Environment, Forest and Climate Change  
(Issued by the State Environment Impact Assessment  
Authority (SEIAA), BIHAR)

To,

The -1  
AARUNYA CONSTRUCTION & SUPPLY SERVICES PRIVATE LIMITED  
Zila Parishad Market, Rajgir, Nalanda, Bihar, 803116 -803116

Subject: Grant of Environmental Clearance (EC) to the proposed Project Activity  
under the provision of EIA Notification 2006-regarding

Sir/Madam,

This is in reference to your application for Environmental Clearance (EC)  
in respect of project submitted to the SEIAA vide proposal number  
SIA/BR/MIN/440416/2023 dated 16 Aug 2023. The particulars of the environmental  
clearance granted to the project are as below.

- |   |   |
|---|---|
| 1. EC Identification No.                      | EC23B001BR110207  |
| 2. File No.                                   | SIA/1(a)/2257/2023  |
| 3. Project Type                               | New   |
| 4. Category                                   | B   |
| 5. Project/Activity including<br>Schedule No. | 1(a) Mining of minerals   |
| 6. Name of Project                            | Proposed Sand Mining Project of Area<br>28.70 Ha at Rohtas Sone Ghat 02 on<br>Sone River of District-Rohtas, State-<br>Bihar. |
| 7. Name of Company/Organization               | AARUNYA CONSTRUCTION & SUPPLY<br>SERVICES PRIVATE LIMITED   |
| 8. Location of Project                        | BIHAR   |
| 9. TOR Date                                   | N/A   |

The project details along with terms and conditions are appended herewith from page  
no 2 onwards.

Date: 22/09/2023

(e-signed)  
Mr. Sudhir Kumar  
Member Secretary  
SEIAA - (BIHAR)

Note: A valid environmental clearance shall be one that has EC identification  
number & E-Sign generated from PARIVESH. Please quote identification  
number in all future correspondence.

This is a computer generated cover page.

PARIVESH

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and Virtuous Environmental Single-Window Hub)



**STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY, BIHAR**

F. No.:- SIA/1(a)/2257/2023

**Sub:**

**Proposed Sand Mining Project on Sone River at "Rohtas Sone 02" Sand Ghat, at Mauza:- Atimi, Block:- Nasriganj, District:- Rohtas, State:- Bihar; Area:- 28.70 Ha [Total Production Capacity:- 516600 cum per Annum] - Environmental Clearance regarding.**

**Reference:-**

1. MoEF&CC ToR Proposal No. - SIA/BR/MIN/413771/2023, MoEF&CC EC Proposal No. - SIA/BR/MIN/440416/2023 & SEIAA File No.:- SIA/1(a)/2257/2023.
2. Scrutiny fee submission dated 25-01-2023.
3. ToR issued date 31-01-2023.
4. Final EIA submission dated 18-08-2023.
5. SEAC meeting held on 25-08-2023 (For EC).
6. SEIAA meeting held on 08-09-2023 and 09-09-2023 (For EC).

**Sir,**

This has reference to your online application for River Sand Mining by M/s **Aarunya Construction & Supply Services Private Limited** for Mining of **Rohtas Sone 02** Sand Ghat on Sone River of District:- Rohtas, State:- Bihar. The details of the projects as mentioned in application are as below:-

| Sl. No. | Item                    | Details  |
|---------|-------------------------|--|
| 1.      | Name of the project     | Proposed Sand Mining Project on Sone River at "Rohtas Sone 02" Sand Ghat   |
| 2.      | Area of the project     | 28.70 Ha   |
| 3.      | Proposed Production     | 516600 cum per Annum   |
| 4.      | Name of River           | Sone River   |
| 5.      | Name of Mineral         | Sand   |
| 6.      | Location of the Project | Mauza:- Atimi, Block:- Nasriganj, District:- Rohtas, State:- Bihar.  |
| 7.      | Latitude & Longitude    | Corner 1 - 25° 03' 16.241" N 84° 22' 21.422" E<br>Corner 2 - 25° 03' 20.296" N 84° 22' 19.448" E<br>Corner 3 - 25° 03' 24.667" N 84° 22' 25.618" E<br>Corner 4 - 25° 03' 26.134" N 84° 22' 30.637" E<br>Corner 5 - 25° 03' 31.355" N 84° 22' 35.556" E<br>Corner 6 - 25° 03' 35.335" N 84° 22' 42.764" E |

B

|     |                                  |  |                             |                               |
|-----|----------------------------------|--|-----------------------------|-------------------------------|
|     |                                  | Corner 7 - 25° 03' 35.560" N 84° 22' 49.200" E<br>Corner 8 - 25° 03' 42.259" N 84° 23' 08.408" E<br>Corner 9 - 25° 03' 50.205" N 84° 23' 15.461" E<br>Corner 10 - 25° 03' 46.815" N 84° 23' 20.342" E<br>Corner 11 - 25° 03' 38.440" N 84° 23' 05.406" E<br>Corner 12 - 25° 03' 23.155" N 84° 22' 37.099" E<br>Corner 13 - 25° 03' 16.241" N 84° 22' 21.422" E |                             |                               |
| 8.  | Water Requirement                | Domestic Water – 0.33 KLD<br>Dust Suppression – 05 KLD<br>Green Development – 0.861 KLD<br>Total Water Requirement – 06.191 KLD  |                             |                               |
| 9.  | Manpower                         | 33   |                             |                               |
| 10. | Environment Management Plan Cost | <b>Description</b>   | <b>Capital Cost (Lakhs)</b> | <b>Recurring Cost (Lakhs)</b> |
|     |                                  | Pollution Control & Dust Suppression   | Nil                         | 2.0                           |
|     |                                  | Pollution Monitoring   | --                          | 2.0                           |
|     |                                  | Plantation and Salary for one gardener (part time basis)   | 0.86                        | 1.0                           |
|     |                                  | Haul Road Maintenance Road   | 1.5                         | 1.44                          |
|     |                                  | Occupational health and Safety of the workers  | 1.0                         | 3.0                           |
|     |                                  | CER Budget (PH Commitment)   | 15.0                        | --                            |
|     |                                  | <b>Total</b>   | <b>18.36</b>                | <b>9.44</b>                   |
| 11. | Project Cost of Project Site     | Total Project Cost - ` 227621000/-   |                             |                               |

### PREMISES OF THE ENVIRONMENTAL CLEARANCE

This Environmental Clearance is being issued on the premises which have been substantiated / described in detail in the format of application along with enclosed affidavits / certificates / undertakings etc. furnished therewith by the project proponent:-

- (i) Information provided, descriptions mentioned are complete, true and actual and no relevant fact has been concealed to obtain Environmental Clearance deceitfully by the project proponent.
- (ii) River Sand Mining shall not be done in rainy Season (mid June to mid October) of each calendar year.

- (iii) The Environmental Clearance holder shall take all possible precautions and safeguards for protection of Environment and control of pollution as well as road safety and mining shall be done in socially responsible manner.

Air, water, Noise pollution and visual impact due to mining operations / extraction / Transportation of mined mineral / over burden etc. shall be kept within prescribed limits in the operational area.

- (iv) Mining shall only be done after obtaining valid mining lease / permit from the competent authorities and operations shall take place only within validity period of lease / permit. All the provisions made and restrictions imposed as covered in the relevant minor mineral Rule, shall be complied with, particularly regarding EMP.
- (v) *Dept. of Mines & Geology, Govt. of Bihar shall keep a strict vigil in the compliance of relevant provisions of applicable Bihar Minerals (Concession, Prevention of Illegal mining, Transportation and Storage) Rule 2019 and its amendment especially scientific execution of mining plan (as approved by them themselves) and report violations if any is found as well as action taken for the same.*
- (vi) Project Proponent shall submit (to the SEIAA, Bihar, Regional Office of MoEF&CC at Ranchi, Bihar State Pollution Control Board) six monthly compliance report with evidence of the conditions within a fortnight after the end of every six month till validity period of Environmental Clearance.
- (vii) *Environmental Clearance shall be liable to be revoked if furnished information, provided description / Certificates / Affidavits / Undertaking etc. are found false / concocted at any stage of its validity.*
- (viii) *This Environmental Clearance is issued without affecting any court order / statutory other institutions as well as relevant other laws enacted by MoEF&CC, GoI, New Delhi.*
- (ix) Mining and transportation of mined material from mine site to stock yard shall be done in the day time only to avoid noise pollution in the nearby human habitation area.
- (x) No part of the mining area is in a protected or Reserve forest and it also does not fall either within a wildlife protected area or within its eco-sensitive zone.

6

- (xi) Project Proponent shall intimate SEIAA immediately if there is any change in their official address / E-mail / Ph. No / Cell. no etc failing which communication sent to them on old address shall be considered as delivered.

**A. Specific Condition**

1. The Project Proponent shall obtain all necessary clearance/ permission from all concerned departments before commencement of mining works.
2. **The Environmental Clearance will be valid for mine lease period subject to a ceiling of 5 years.**
3. The project proponent before starting any activity /preparation of ground, on the leased area shall demarcate his lease hold by RCC pillars erected at the cost of lease holder after certification of the mining officer. On each pillar Geo-Coordinate and fore bearing/ back bearing shall be written with permanent paint mark as described in the mining plan. All the pillars should remain intact at same geo-coordinate. Establishment/ labeling of Benchmark at each pillars or ground control points.
4. Extraction of sand beyond annual production capacity is not permitted.
5. The Project Proponent should undertake the sand mining limited to 03 meter (three meter) depth by semi-mechanised method (without using any heavy machine), preferably by manual excavation.
6. Extraction will be carried out up to a maximum depth of 3 meters from surface of mineral deposit and not less than one meter from the water level of the River channel whichever is earlier.
7. No mining shall be carried out in the areas prominently used by wild animals (birds and reptiles) for nesting. Restricted working hours-Sand mining operation has to be carried out between 6 am to 7 pm.
8. No mining shall be carried out in 3 meter wide strip from the river bank in a River flood plain and within flowing/live water channel.
9. To maintain the safety and stability of Riverbanks, 3 meter or 10% of the width of the River whichever is more will be left intact as "No Mining Zone".



10. No stream shall be diverted for the purpose of sand mining. No natural water course and / or water reservoirs shall be obstructed due to mining operations.
11. The pollution due to transportation load on the environment will be effectively controlled & water sprinkling will also be done regularly. Vehicles with PUC only will be allowed to ply. The mineral transportation shall be carried out through covered vehicles / trucks only and the vehicle shall not be overloaded. Project should obtain 'PUC' certificate for all the vehicles from authorized pollution testing centre.
12. The stacking area of mined-out sand which shall be situated near the mining site within a fenced area from all sides to avoid being spread in the nearby areas by high winds and the height of stacking should not exceed 2 meter. Transportation shall be confined to day time only that is from sunrise to sunset, to avoid inconvenience to local population in anyway.
13. Rubbish burial shall not be done in the Rivers.
14. Adequate steps shall be taken to check soil erosion and control of debris flow etc. by constructing engineering structures.
15. Mining activity shall not be done for mine lease where mining can cause danger to site of flood protection works, places of cultural, religious, historical, and archaeological importance.
16. The approach road from loading point upto main road shall be properly developed with proper width and geometry required for safe movement of traffic by lease holder at his own cost.
17. Main haulage road in the mine shall be provided with permanent water sprinklers and other roads shall be regularly wetted with water tankers fitted with sprinklers.
18. Transportation of the Minerals by road passing through the village shall not be allowed. A 'bypass' road should be constructed (say, leaving a gap of at least 200 meters) for the purpose of transportation of the minerals so that the impact of sound, dust and accidents could be mitigated. The Project Proponent shall bear the cost towards the widening and strengthening of existing public road-network in case the same is proposed to be used for the Project. No road movement should be allowed on existing village road network without appropriately increasing the carrying capacity of such roads.




19. The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No. 22-65/2017-IA.III dated 1st May 2018, as applicable, regarding Corporate Environment Responsibility.
20. Project Proponent shall appoint a Monitoring committee to monitor the replenishment study, traffic management, levels of production, river Bank erosion and maintenance of Road etc.
21. Project Proponent shall submit the annual replenishment report certified by an authorized agency. In case the replenishment is lower than the approved rate of production, then the mining activity / production levels shall be decreased / stopped accordingly till the replenishment is completed.
22. Regular monitoring of the flow rate of the springs and seasonal stream flowing in and around the mine lease shall be carried out and records maintained. Regular monitoring of water quality upstream and downstream of water bodies shall be carried out and record of monitoring data should be maintained and submitted to the SEIAA, Bihar, Regional office, Ranchi, Central Ground water Authority, Regional Director, Central Ground water Board, State Pollution Control Board and Central Pollution Control Board.
23. The project proponent shall abide by the Hon'ble Supreme Court order dated 08.01.2020 [Writ Petition 9 (s) (Civil No. (s) 114/2014]. Proposal of re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. In compliance to the direction dated 8<sup>th</sup> January, 2020 of Hon'ble Supreme Court in Writ Petitioner(s) Civil No. 114/2014, Common Cause Vs Union of India & Ors.
24. The individual sand ghat-miner will take appropriate measures to avoid parking of empty / loaded vehicles on nearest highway/ public roads to avoid traffic congestion.
25. Project Proponent will adhere to all applicable provisions of Sustainable Sand Mining Management Guidelines 2016 and Enforcement & Monitoring Guidelines for Sand Mining, 2020 (EMGSM – 2020) issued by Ministry of Environment, Forest and Climate Change, Government of India. In case, any ambiguity or variation between the provision of both these document arises, the provision made in "Enforcement and Monitoring Guidelines for Sand Mining – 2020" shall prevail.



26. All specific and general conditions which are of public concern at large shall be permanently displayed at a prominent place for public along with address and contact details of authority where the violation of EC conditions can be reported.
27. Project proponent shall erect a signboard on his project site and display information regarding name of the project, No. & date of validity period of EC, annual production capacity of the mineral and other relevant information for the general public.

**B. General condition**

1. No stacking of sand is allowed on road side of any public road including national highways/ State highways.
2. No labour camp shall be allowed in riverbed.
3. Provision shall be made for housing labour with all necessary infrastructure and facilities (outside mining Block and river-bed) such as fuel for cooking, toilets / mobile toilets, safe drinking water, First-Aid facilities, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
4. Labour & Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers shall be undertaken periodically to observe any adverse health impact due to exposure to dust and take corrective measures, if needed.
5. The Project Proponent shall make arrangements for safe drinking water, first aid facility along With anti-venom injection, in case of emergency for the workers.
6. The project proponent shall maintain register for production and dispatch of mineral and submit periodic return (six-monthly) to the SEIAA, Bihar / Regional Office of Ministry of Environment, Forest and Climate Change, Government of India, Ranchi. If the remaining period of lease is for less than a year, the Project Proponent shall submit a monthly return of production.
7. The EC holder shall keep a correct account of quantity of mineral mined out, dispatched from the mine, mode of transport, registration number of vehicle and mine plan. This should be produced before officers of Central and State Government for inspection whenever asked for.



8. Regular monitoring of ground water table shall be carried out at the upstream and depth of water available in the adjoining dug-well.
9. Monitoring of Ambient Air Quality, Water Quality & Noise Quality shall be carried out as per the Notification, as amended from time to time by the Central Pollution Control Board. Water sprinkling should be increased at places of loading and unloading points & transfer points to reduce all sorts of fugitive emissions.
10. The funds earmarked for environmental protection measures should be kept in a separate bank account and should not be diverted for other purpose. Year-wise expenditure should be reported to the SEIAA, Bihar.
11. The Project proponent shall provide all necessary logistic support to the authorized officer of this authority as and when required. They will facilitate and assist the authority in site inspection and monitoring.
12. All the provisions made and restrictions imposed as envisaged in the Bihar Minor Mineral Rule, shall be complied with; particularly regarding Environment Management and payment of compensation to the affected land owner(s).
13. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Bihar.
14. The Ministry / SEIAA may alter / modify the above conditions or stipulate any additional condition(s) in the interest of environment.
15. Concealing of factual data or submission of false / fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal/suspension of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
16. The instruction contained herein above regarding air and noise pollution and details of mining proposals shall be displayed on Signboard in Hindi for the public information.
17. The SEIAA may impose additional conditions in the interest of Environment & Ecology whenever it becomes necessary to do so.
18. Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under section 16 of the National Green Tribunal Act, 2010.

**C. Special Conditions**

1. Plantation consisting of mixture of indigenous and fast growing species of trees must be done and proper care must be taken. Plantation of a minimum of 5 feet tall plants must be done in the 1<sup>st</sup> year of lease period and properly maintained till the validity of Environmental Clearance.
2. The Project Proponent shall execute and conduct measurable CER activities like facilities for drinking water supply, infrastructure creation, solar power, Rain Water Harvesting, Solid Waste Management Facilities, sanitation, essential furnitures for the local government schools and Anganwadi Kendra. A display board must be placed for the information to the public (with intimation to the concerned District Magistrate and the concerned district level officers of the concerned departments).
3. The Project Proponent must maintain existing ponds nearby, if any.
4. The Proponent must submit untreated high resolution satellite images with stereoscopic 3D view from the National Remote Sensing Centre (NRSC), Hyderabad for the month of June and December every year, along with the respective half-yearly compliance report in hard and soft copy.

Sd/-

(Sudhir Kumar)  
Member-Secretary  
SEIAA, Bihar

**Copy, through email, for information and necessary action to :-**

1. The Secretary, Environment, Forest and Climate Change Deptt., Govt. of Bihar, Sinchai Bhawan, Patna - 15.
2. The Additional Chief Secretary, Mines and Geology Deptt., Govt. of Bihar, Vikas Bhawan, Patna - 15
3. The Chairman, SEAC, Bihar.
4. The Member Secretary, Bihar State Pollution Control Board, Patna-23.
5. The Director, Mines and Geology Deptt., Govt. Of Bihar, Vikash Bhawan, Patna - 15.
6. MoEF&CC, Integrated Regional Office, Ranchi, 2<sup>nd</sup> Floor, Headquarter - Jharkhand State Housing Board, Harmu Chowk, Ranchi, Jharkhand - 834002.
7. Guard file.

(Sudhir Kumar)  
Member Secretary,  
SEIAA, Bihar

Signature Not Verified  
Digitally signed by Mr. Sudhir  
Kumar  
Member Secretary  
Date: 9/22/2023 9:52:51 PM  
Page 10 of 10



File No.: SIA/1(a)/2509/2024

Government of India

Ministry of Environment, Forest and Climate Change  
(Issued by the State Environment Impact Assessment  
Authority(SEIAA), BIHAR)

\*\*\*



Dated 10/08/2024



To,

AMENDRA THAKUR  
Ashirwadpuram Colony, C-37, Dhimrapur Chowk, Raigarh, Chhattisgarh , RAIGARH,  
CHHATTISGARH, 496001  
pragatiindiansroadlines@gmail.com

**Subject:** Grant of prior Environmental Clearance (EC) to the proposed Mining Project under the provisions of EIA Notification 2006-regarding

**Sir/Madam,**

This is in reference to your application submitted to SEIAA, Bihar vide proposal number SIA/BR/MIN/486030/2024 dated 05/07/2024 for grant of prior Environmental Clearance (EC) to the project under the provision of the EIA Notification 2006-and as amended thereof.

2. The particulars of the proposal are as below :

|  |   |
|--|---|
| (i) EC Identification No.                  | EC24B0107BR5465496N   |
| (ii) File No.                              | SIA/1(a)/2509/2024  |
| (iii) Clearance Type                       | Fresh EC  |
| (iv) Category                              | B1  |
| (v) Project/Activity Included Schedule No. | 1(a) Mining of minerals   |
| (vii) Name of Project                      | Sand Mining Project on Sone River at Rohtas Sone<br>3A Sand Ghat of District - Rohtas, State-Bihar. |
| (ix) Location of Project (District, State) | ROHTAS, BIHAR   |
| (x) Issuing Authority                      | SEIAA, Bihar  |
| (xii) Applicability of General Conditions  | No  |

3. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1 (Part A, B and C)/ EIA & EMP Reports were submitted to the SEIAA, Bihar for an appraisal by the SEAC under the provision of EIA notification 2006 and its subsequent amendments.

4. The above-mentioned proposal has been considered by SEIAA, Bihar in the meeting held on 24/07/2024 & 25/07/2024. The minutes of the meeting and all the project documents are available on PARIVESH portal which can be accessed from the PARIVESH portal by scanning the QR Code above.

5. Details of the minerals to be mined along with production capacity and the brief on the salient features of the project as submitted by the project proponent in Form 1 (Part A, B and C) in the reports and as presented during SEIAA are annexed to this EC .
6. The SEIAA, Bihar in its meeting held on 24/07/2024 & 25/07/2024, based on information submitted viz: Form 1 (Part A, B and C), EIA/EMP report etc & clarifications provided by the project proponent and after detailed deliberations on all technical aspects and public hearing issues and compliance thereto furnished by the Project Proponent, recommended the proposal for grant of Environment Clearance under the provision of EIA Notification, 2006 and as amended thereof subject to stipulation of Specific and Standard EC conditions as detailed in the point below.
7. The SEIAA, Bihar has examined the proposal in accordance with the provisions contained in the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and based on the recommendations of the SEAC hereby accords Environment Clearance for the instant proposal to M/s. AMENDRA THAKUR under the provisions of EIA Notification, 2006 and as amended thereof subject to compliance of the Specific and Standard EC conditions as given in Annexure (2)
8. The SEIAA, Bihar reserves the right to stipulate additional conditions, if found necessary.
9. The Environmental Clearance to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.
10. The PP is under obligation to implement commitments made in the Environment Management Plan, which forms part of this EC.
11. Any appeal against this EC shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.
12. This issue with an approval of the Competent Authority.

#### Annexure 2

#### Details of the Project

| S. No. | Particulars   | Details  |                   |
|--------|---|--|-------------------|
| a.     | Details of the Project                              | Sand Mining Project on Sone River at Rohtas Sone 3A Sand Ghat of District - Rohtas, State-Bihar. |                   |
| b.     | Latitude and Longitude of the project site          | 25.04291739919557,84.3424165525648<br>25.04916800429666,84.35231813821035                        |                   |
| c.     | Land Requirement (in Ha) of the project or activity | <b>Nature of Land involved</b>   | <b>Area in Ha</b> |
|        |   | Non-Forest Land (A)  | 0                 |
|        |   | Forest Land (B)  | 0                 |
|        |   | Total Land (A+B)   | 35.5              |

| S. No. | Particulars                                       | Details  |
|--------|---|--|
| d.     | Date of Public Consultation                       | Public consultation for the project was held on 2024-06-22 |
| e.     | Rehabilitation and Resettlement (R&R) involvement | NO   |
| f.     | Project Cost (in lacs)                            | 272030000  |
| g.     | EMP Cost (in lacs)                                | 9.35   |
| h.     | Employment Details                                |  |

**Details of Minerals Products & By-products**

| Name of the Mineral to be mined | Classification of mineral [Major/Minor] | Production capacity in MTPA | Remarks |
|---------------------------------|---|-----------------------------|---------|
| Ordinary Sand                   | Minor                                   | 1.1502                      |         |

**STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY, BIHAR**

F. No.: SIA/1(a)/2509/2024

**Sub:** Proposed Sand Mining Project on Son, Sone River at "Rohtas Sone- 03A" Sand Ghat, at Mauza:- Pokhaha, Jamalpur & Nasriganj, Block:-Nasriganj, District:- Rohtas, State:- Bihar; Area:- 35.5 Ha. [Total Production Capacity:- 639000 cum per Annum] – Environmental Clearance regarding.

- Reference:-**
1. MoEF&CC ToR Proposal No. - SIA/BR/MIN/464339/2024, MoEF&CC EC Proposal No. - SIA/BR/MIN/486030/2024 & SELAA File No.:- SIA/1(a)/2509/2024.
  2. Scrutiny fee submission dated 04-03-2024.
  3. ToR issued date 20-03-2024.
  4. Online Final EIA submission dated 05-07-2024.
  5. SEAC meeting held on 13-07-2024 (For EC).
  6. SEIAA meeting held on 24-07-2024 and 25-07-2024 (For EC).

**Sir,**

This has reference to your online application for River Sand Mining by M/s **Pragati (Indian) Road Lines** for Mining of Rohtas Sone – 03A Sand Ghat on Sone River of District:- Rohtas, State:- Bihar. The details of the projects as mentioned in application are as below:-

| Sl. No. | Item                    | Details   |                 |                  |
|---------|-------------------------|---|-----------------|------------------|
| 1.      | Name of the project     | Proposed Sand Mining Project on Sone River at " Rohtas Sone – 03 A" Sand Ghat               |                 |                  |
| 2.      | Area of the project     | 35.5 Ha.  |                 |                  |
| 3.      | Proposed Production     | 639000 cum per Annum  |                 |                  |
| 4.      | Depth of Mining         | 03 Meters   |                 |                  |
| 5.      | Name of River           | Sone River  |                 |                  |
| 6.      | Name of Mineral         | Sand  |                 |                  |
| 7.      | Location of the Project | Mauza:- Pokhaha, Jamalpur & Nasriganj, Block:- Nasriganj, District:- Rohtas, State:- Bihar; |                 |                  |
| 8.      | Latitude & Longitude    | Sl. No.   | Latitudes       | Longitudes       |
|         |                         | 1   | 25° 2' 46.98" N | 84° 21' 8.34" E  |
|         |                         | 2   | 25° 2' 56.78" N | 84° 21' 3.97" E  |
|         |                         | 3   | 25° 2' 54.19" N | 84° 21' 0.01" E  |
|         |                         | 4   | 25° 2' 53.51" N | 84° 20' 55.11" E |
|         |                         | 5   | 25° 2' 49.80" N | 84° 20' 45.57" E |
|         |                         | 6   | 25° 2' 51.23" N | 84° 20' 43.77" E |
|         |                         | 7   | 25° 2' 55.63" N | 84° 20' 46.40" E |
|         |                         | 8   | 25° 2' 52.72" N | 84° 20' 39.11" E |
|         |                         | 9   | 25° 2' 50.17" N | 84° 20' 36.21" E |
| 10      | 25° 2' 48.79" N         | 84° 20' 32.75" E  |                 |                  |

|     |                                  |   |                            |                              |
|-----|----------------------------------|---|----------------------------|------------------------------|
|     |                                  | 11  | 25° 2' 34.41" N            | 84° 20' 39.12" E             |
|     |                                  | 12  | 25° 2' 45.91" N            | 84° 21' 4.89" E              |
| 9.  | Water Requirement                | Domestic Water – 0.50 KLD<br>Dust Suppression – 5.0 KLD<br>Green Development – 1.06 KLD<br>Total Water Requirement – 6.56 KLD |                            |                              |
| 10. | Manpower                         | 50  |                            |                              |
| 11. | Environment Management Plan Cost | <b>Description</b>  | <b>Capital Cost (Lakh)</b> | <b>Recurring Cost (Lakh)</b> |
|     |                                  | Pollution Control & Dust Suppression  | Nil                        | 2.5                          |
|     |                                  | Pollution Monitoring  | --                         | 2.0                          |
|     |                                  | Plantation and Salary for one gardener (part time basis)  | 7.1                        | 1.0                          |
|     |                                  | Haul Road Maintenance Cost  | 1.25                       | 1.44                         |
|     |                                  | Occupational Health and Safety of the workers   | 1.0                        | 3.0                          |
|     |                                  | CER Budget (PH Commitment)  | 54.4                       | --                           |
|     |                                  | <b>Grand Total</b>  | <b>63.75</b>               | <b>9.94</b>                  |
| 12. | Project Cost of Project Site     | Total Project Cost – ₹ 2720.3 Lakhs/-   |                            |                              |

### PREMISES OF THE ENVIRONMENTAL CLEARANCE

This Environmental Clearance is being issued on the premises which have been substantiated / described in detail in the format of application along with enclosed affidavits / certificates / undertakings etc. furnished therewith by the project proponent:-

- (i) Information provided, descriptions mentioned are complete, true and actual and no relevant fact has been concealed to obtain Environmental Clearance deceitfully by the project proponent.
- (ii) River Sand Mining shall not be done in rainy Season (mid June to mid October) of each calendar year.
- (iii) The Environmental Clearance holder shall take all possible precautions and safeguards for protection of Environment and control of pollution as well as road safety and mining shall be done in socially responsible manner.

Air, water, Noise pollution and visual impact due to mining operations / extraction / Transportation of mined mineral / over burden etc. shall be kept within prescribed limits in the operational area.


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- (iv) Mining shall only be done after obtaining valid mining lease / permit from the competent authorities and operations shall take place only within validity period of lease / permit. All the provisions made and restrictions imposed as covered in the relevant minor mineral Rule, shall be complied with, particularly regarding EMP.
- (v) *Dept. of Mines & Geology, Govt. of Bihar shall keep a strict vigil in the compliance of relevant provisions of applicable Bihar Minerals (Concession, Prevention of Illegal mining, Transportation and Storage) Rule 2019 and its amendment especially scientific execution of mining plan (as approved by them themselves) and report violations if any is found as well as action taken for the same.*
- (vi) Project Proponent shall submit (to the SEIAA, Bihar, Regional Office of MoEF&CC at Ranchi, Bihar State Pollution Control Board) six monthly compliance report with evidence of the conditions within a fortnight after the end of every six month till validity period of Environmental Clearance.
- (vii) *Environmental Clearance shall be liable to be revoked if furnished information, provided description / Certificates / Affidavits / Undertaking etc. are found false / concocted at any stage of its validity.*
- (viii) *This Environmental Clearance is issued without affecting any court order / statutory other institutions as well as relevant other laws enacted by MoEF&CC, Govt. New Delhi.*
- (ix) Mining and transportation of mined material from mine site to stock yard shall be done in the day time only to avoid noise pollution in the nearby human habitation area.
- (x) No part of the mining area is in a protected or Reserve forest and it also does not fall either within a wildlife protected area or within its eco-sensitive zone.
- (xi) Project Proponent shall intimate SEIAA immediately if there is any change in their official address / E-mail / Ph. No / Cell. no etc failing which communication sent to them on old address shall be considered as delivered.

#### **A. Specific Condition**

1. The Project Proponent shall obtain all necessary clearance/ permission from all concerned departments before commencement of mining works.
2. The Environmental Clearance will be valid for mine lease period subject to a ceiling of 5 years.

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3. The project proponent before starting any activity /preparation of ground, on the leased area shall demarcate his lease hold by RCC pillars erected at the cost of lease holder after certification of the mining officer. On each pillar Geo-Coordinate and fore bearing/ back bearing shall be written with permanent paint mark as described in the mining plan. All the pillars should remain intact at same geo-coordinate. Establishment/ labeling of Benchmark at each pillars or ground control points.
4. Extraction of sand beyond annual production capacity is not permitted.
5. The Project Proponent should undertake the sand mining limited to 03 meter (three meter) depth by semi-mechanised method (without using any heavy machine), preferably by manual excavation.
6. Extraction will be carried out up to a maximum depth of 03 meter from surface of mineral deposit and not less than one meter from the water level of the River channel whichever is earlier.
7. No mining shall be carried out in the areas prominently used by wild animals (birds and reptiles) for nesting. Restricted working hours-Sand mining operation has to be carried out between 6 am to 7 pm.
8. No mining shall be carried out in 3 meter wide strip from the river bank in a River flood plain and within flowing/live water channel.
9. To maintain the safety and stability of Riverbanks, 3 meter or 10% of the width of the River whichever is more will be left intact as "No Mining Zone".
10. No stream shall be diverted for the purpose of sand mining. No natural water course and / or water reservoirs shall be obstructed due to mining operations.
11. The pollution due to transportation load on the environment will be effectively controlled & water sprinkling will also be done regularly. Vehicles with PUCC only will be allowed to ply. The mineral transportation shall be carried out through covered vehicles / trucks only and the vehicle shall not be overloaded. Project should obtain 'PUC' certificate for all the vehicles from authorized pollution testing centre.
12. The stacking area of mined-out sand which shall be situated near the mining site within a fenced area from all sides to avoid being spread in the nearby areas by high winds and the height of stacking should not exceed 2 meter. Transportation shall be confined to day time only that is from sunrise to sunset, to avoid inconvenience to local population in anyway.
13. Rubbish burial shall not be done in the Rivers. 

14. Adequate steps shall be taken to check soil erosion and control of debris flow etc. by constructing engineering structures.
15. Mining activity shall not be done for mine lease where mining can cause danger to site of flood protection works, places of cultural, religious, historical, and archaeological importance.
16. The approach road from loading point upto main road shall be properly developed with proper width and geometry required for safe movement of traffic by lease holder at his own cost.
17. Main haulage road in the mine shall be provided with permanent water sprinklers and other roads shall be regularly wetted with water tankers fitted with sprinklers.
18. Transportation of the Minerals by road passing through the village shall not be allowed. A 'bypass' road should be constructed (say, leaving a gap of at least 200 meters) for the purpose of transportation of the minerals so that the impact of sound, dust and accidents could be mitigated. The Project Proponent shall bear the cost towards the widening and strengthening of existing public road-network in case the same is proposed to be used for the Project. No road movement should be allowed on existing village road network without appropriately increasing the carrying capacity of such roads.
19. The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No. 22-65/2017-IA.III dated 1st May 2018, as applicable, regarding Corporate Environment Responsibility.
20. Project Proponent shall appoint a Monitoring committee to monitor the replenishment study, traffic management, levels of production, river Bank erosion and maintenance of Road etc.
21. Project Proponent shall submit the annual replenishment report certified by an authorized agency. In case the replenishment is lower than the approved rate of production, then the mining activity / production levels shall be decreased / stopped accordingly till the replenishment is completed.
22. Regular monitoring of the flow rate of the springs and seasonal stream flowing in and around the mine lease shall be carried out and records maintained. Regular monitoring of water quality upstream and downstream of water bodies shall be carried out and record of monitoring data should be maintained and submitted to the SEJAA, Bihar, Regional office, Ranchi, Central Ground water Authority, Regional Director, Central Ground water Board, State Pollution Control Board and Central Pollution Control Board.
23. The project proponent shall abide by the Hon'ble Supreme Court order dated 08.01.2020 [Writ Petition 9 (s) (Civil No. (s) 114/2014)]. Proposal of re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a

condition which is fit for growth of fodder, flora, fauna etc. In compliance to the direction dated 8<sup>th</sup> January, 2020 of Hon'ble Supreme Court in Writ Petitioner(s) Civil No. 114/2014, Common Cause Vs Union of India & Ors.

24. The individual sand ghat-miner will take appropriate measures to avoid parking of empty / loaded vehicles on nearest highway/ public roads to avoid traffic congestion.
25. Project Proponent will adhere to all applicable provisions of Sustainable Sand Mining Management Guidelines 2016 and Enforcement & Monitoring Guidelines for Sand Mining, 2020 (EMGSM – 2020) issued by Ministry of Environment, Forest and Climate Change, Government of India. In case, any ambiguity or variation between the provision of both these document arises, the provision made in "Enforcement and Monitoring Guidelines for Sand Mining – 2020" shall prevail.
26. All specific and general conditions which are of public concern at large shall be permanently displayed at a prominent place for public along with address and contact details of authority where the violation of EC conditions can be reported.
27. Project proponent shall erect a signboard on his project site and display information regarding name of the project, No. & date of validity period of EC, annual production capacity of the mineral and other relevant information for the general public.

#### **E. General condition**

1. No stacking of sand is allowed on road side of any public road including national highways/ State highways.
2. No labour camp shall be allowed in riverbed.
3. Provision shall be made for housing labour with all necessary infrastructure and facilities (outside mining Block and river-bed) such as fuel for cooking, toilets / mobile toilets, safe drinking water, First-Aid facilities, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
4. Labour & Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers shall be undertaken periodically to observe any adverse health impact due to exposure to dust and take corrective measures, if needed.
5. The Project Proponent shall make arrangements for safe drinking water, first aid facility along With anti-venom injection, in case of emergency for the workers.

6. The project proponent shall maintain register for production and dispatch of mineral and submit periodic return (six-monthly) to the SELAA, Bihar / Regional Office of Ministry of Environment, Forest and Climate Change, Government of India, Ranchi. If the remaining period of lease is for less than a year, the Project Proponent shall submit a monthly return of production.
7. The EC holder shall keep a correct account of quantity of mineral mined out, dispatched from the mine, mode of transport, registration number of vehicle and mine plan. This should be produced before officers of Central and State Government for inspection whenever asked for.
8. Regular monitoring of ground water table shall be carried out at the upstream and depth of water available in the adjoining dug-well.
9. Monitoring of Ambient Air Quality, Water Quality & Noise Quality shall be carried out as per the Notification, as amended from time to time by the Central Pollution Control Board. Water sprinkling should be increased at places of loading and unloading points & transfer points to reduce all sorts of fugitive emissions.
10. The funds earmarked for environmental protection measures should be kept in a separate bank account and should not be diverted for other purpose. Year-wise expenditure should be reported to the SEIAA, Bihar.
11. The Project proponent shall provide all necessary logistic support to the authorized officer of this authority as and when required. They will facilitate and assist the authority in site inspection and monitoring.
12. All the provisions made and restrictions imposed as envisaged in the Bihar Minor Mineral Rule, shall be complied with; particularly regarding Environment Management and payment of compensation to the affected land owner(s).
13. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Bihar.
14. The Ministry / SEIAA may alter / modify the above conditions or stipulate any additional condition(s) in the interest of environment.
15. Concealing of factual data or submission of false / fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal/suspension of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
16. The instruction contained herein above regarding air and noise pollution and details of mining proposals shall be displayed on Signboard in Hindi for the public information.

17. The SEIAA may impose additional conditions in the interest of Environment & Ecology whenever it becomes necessary to do so.
18. Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under section 16 of the National Green Tribunal Act, 2010.

**C. Special Conditions**

1. The proposed plantation consisting of mixture of indigenous and fast growing species of trees must be done and proper care must be taken. Plantation of a minimum of 5 feet tall plants must be done in the 1<sup>st</sup> year of lease period itself and properly maintained till the validity of Environmental Clearance and preserve the existing trees at the proposed site.
2. The Project Proponent shall execute and conduct measurable Corporate Environment Responsibility (CER) activities like facilities for drinking water supply, infrastructure creation, solar power, Rain Water Harvesting, Solid Waste Management Facilities, sanitation, essential furnitures for the local government schools and Anganwadi Kendra. A display board of the CER activities must be fixed for the information to the public. The Project Proponent has to intimate the concerned District Magistrate and the concerned district level officers of the concerned departments for record and information, with copy marked to the Bihar State Pollution Control Board, (BSPCB) Patna.
3. Under the Corporate Environment Responsibilities the modalities of all expenditure on skill development programme need to be done in consultation with and guidance of Bihar Skill Devolvement Mission, with intimation to the concerned District Magistrate, State Environment Impact Assessment Authority and Bihar State Pollution Control Board, Patna.
4. Project Proponent has to fix display board on each mining site mentioning thereupon various activities to be done under Environment Management Plan (EMP).
5. The Project Proponent must maintain existing ponds nearby, if any.
6. Proper care should to be taken during transportation of sand from the sand mining site by covering the loaded sand. There should be freeboard of atleast 03 inches from the body level of the vehicle, so that the sand doesn't get spilled on the road and doesn't affect the air quality as well.
7. The Project Proponent to install lightning arrestor in the area concerned to protect the inhabitants from hazards like lightning.

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8. The Proponent must submit untreated high resolution satellite images with stereoscopic 3D view from the National Remote Sensing Centre (NRSC), Hyderabad for the month of June and December every year, along with the respective half-yearly compliance report in hard and soft copy.

Sd/-

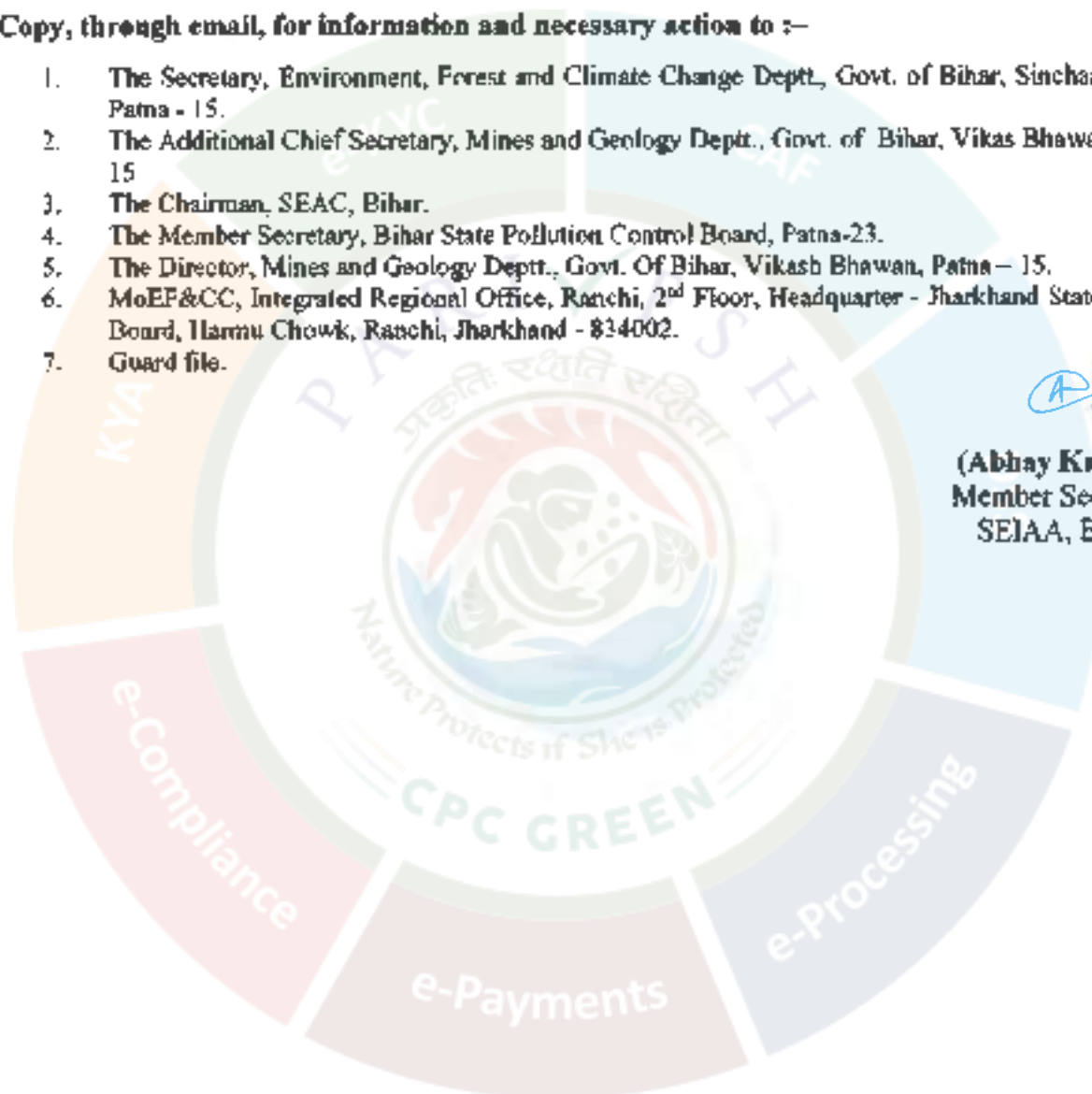
(Abhay Kumar)  
Member-Secretary  
SEIAA, Bihar

Copy, through email, for information and necessary action to :-

1. The Secretary, Environment, Forest and Climate Change Deptt., Govt. of Bihar, Sinchai Bhawan, Patna - 15.
2. The Additional Chief Secretary, Mines and Geology Deptt., Govt. of Bihar, Vikas Bhawan, Patna - 15
3. The Chairman, SEAC, Bihar.
4. The Member Secretary, Bihar State Pollution Control Board, Patna-23.
5. The Director, Mines and Geology Deptt., Govt. Of Bihar, Vikash Bhawan, Patna – 15.
6. MoEF&CC, Integrated Regional Office, Ranchi, 2<sup>nd</sup> Floor, Headquarter - Jharkhand State Housing Board, Harma Chowk, Ranchi, Jharkhand - 834002.
7. Guard file.



(Abhay Kumar)  
Member Secretary,  
SEIAA, Bihar





File No.: SIA/1(a)/2504/2024

Government of India

Ministry of Environment, Forest and Climate Change  
(Issued by the State Environment Impact Assessment  
Authority(SEIAA), BIHAR)

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Dated 11/08/2024



To,

RAKESH CHAUBEY

Rakesh Chaubey, S/O- Sri Ramesh Chandra Chaubey, Add- 89, Canal Road, Jakki Bigha, Dehri, Dist.-  
Rohtas, ROHTAS, BIHAR, 821307  
rccprojects2016@gmail.com

**Subject:** Grant of prior Environmental Clearance (EC) to the proposed Mining Project under the provisions of  
EIA Notification 2006-regarding

**Sir/Madam,**

This is in reference to your application submitted to SEIAA, Bihar vide proposal number  
SIA/BR/MIN/486574/2024 dated 18/07/2024 for grant of prior Environmental Clearance (EC) to the  
project under the provision of the EIA Notification 2006-and as amended thereof.

2. The particulars of the proposal are as below :

|  |   |
|--|---|
| (i) EC Identification No.                  | EC24B0107BR5959022N   |
| (ii) File No.                              | SIA/1(a)/2504/2024  |
| (iii) Clearance Type                       | Fresh EC  |
| (iv) Category                              | B1  |
| (v) Project/Activity Included Schedule No. | 1(a) Mining of minerals   |
| (vii) Name of Project                      | Sand Mining Project, Rohtas Son Block- 3B Sand<br>Ghat of District- Rohtas, State-Bihar |
| (ix) Location of Project (District, State) | ROHTAS, BIHAR   |
| (x) Issuing Authority                      | SEIAA, Bihar  |
| (xii) Applicability of General Conditions  | No  |

3. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1 (Part A, B and C)/ EIA & EMP Reports were submitted to the SEIAA, Bihar for an appraisal by the SEAC under the provision of EIA notification 2006 and its subsequent amendments.

4. The above-mentioned proposal has been considered by SEIAA, Bihar in the meeting held on 05/08/2024. The minutes of the meeting and all the project documents are available on PARIVESH portal which can be accessed from the PARIVESH portal by scanning the QR Code above.

5. Details of the minerals to be mined along with production capacity and the brief on the salient features of the project as submitted by the project proponent in Form 1 (Part A and B) in the reports and as presented during SEIAA are annexed to this EC.
6. The SEIAA, Bihar in its meeting held on 05/08/2024, based on information submitted viz: Form 1 (Part A, B and C), EIA/EMP report etc & clarifications provided by the project proponent and after detailed deliberations on all technical aspects and public hearing issues and compliance thereto furnished by the Project Proponent, recommended the proposal for grant of Environment Clearance under the provision of EIA Notification, 2006 and as amended thereof subject to stipulation of Specific and Standard EC conditions as detailed in the point below.
7. The SEIAA, Bihar has examined the proposal in accordance with the provisions contained in the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and based on the recommendations of the SEAC hereby accords Environment Clearance for the instant proposal to M/s. RAKESH CHAUBEY under the provisions of EIA Notification, 2006 and as amended thereof subject to compliance of the Specific and Standard EC conditions as given in Annexure (2)
8. The SEIAA, Bihar reserves the right to stipulate additional conditions, if found necessary.
9. The Environmental Clearance to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.
10. The PP is under obligation to implement commitments made in the Environment Management Plan, which forms part of this EC.
11. Any appeal against this EC shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.
12. This issue with an approval of the Competent Authority.

## Annexure 2

### Details of the Project

| S. No. | Particulars   | Details  |            |
|--------|---|--|------------|
| a.     | Details of the Project                              | Sand Mining Project, Rohtas Son Block- 3B Sand Ghat of District- Rohtas, State-Bihar |            |
| b.     | Latitude and Longitude of the project site          | 25.04065818002412,84.3350993645375<br>25.04717272007532,84.34418341835809            |            |
| c.     | Land Requirement (in Ha) of the project or activity | Nature of Land involved  | Area in Ha |
|        |   | Non-Forest Land (A)  | 0          |
|        |   | Forest Land (B)  | 0          |
|        |   | Total Land (A+B)   | 37.0       |

| S. No. | Particulars                                       | Details   |
|--------|---|---|
| d.     | Date of Public Consultation                       | Public consultation for the project was held on |
| e.     | Rehabilitation and Resettlement (R&R) involvement | NO  |
| f.     | Project Cost (in lacs)                            | 1836.2  |
| g.     | EMP Cost (in lacs)                                | 15.125  |
| h.     | Employment Details                                |   |

#### Details of Minerals Products & By-products

| Name of the Mineral to be mined | Classification of mineral [Major/Minor] | Production capacity in MTPA | Remarks                             |
|---------------------------------|---|-----------------------------|-------------------------------------|
| Sand                            | Minor                                   | 1.3986                      | 666000 CUM per annum or 1398600 TPA |

**STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY, BIHAR**

F. No.:- SIA/1(a)/2504/2024

**Sub:** Proposed Sand Mining Project on Sone River at "Rohtas Sone Block- 3 B" Sand Ghat, at Mauza:- Nasriganj, Anchal:- Nasriganj, District:- Rohtas, State:- Bihar; Area:- 37.0 Ha. [Total Production Capacity:- 666000 cum per Annum] – Environmental Clearance regarding.

- Reference:-**
1. MoEF&CC ToR Proposal No. - SIA/BR/MIN/464145/2024, MoEF&CC EC Proposal No. - SIA/BR/MIN/486574/2024 & SEIAA File No.:- SIA/1(a)/2504/2024.
  2. Scrutiny fee submission dated 01-03-2024.
  3. ToR issued date 12-03-2024.
  4. Online Final EIA submission dated 18-07-2024.
  5. SEAC meeting held on 29-07-2024 and 30-07-2024 (For EC).
  6. SEIAA meeting held on 05-08-2024 (For EC).

**Sir,**

This has reference to your online application for River Sand Mining by M/s Rakesh Chambey for Mining of Rohtas Sone Block-3 B Sand Ghat on Sone River of District:- Rohtas, State:- Bihar. The details of the projects as mentioned in application are as below:-

| Sl. No.         | Item                    | Details  |                  |
|-----------------|-------------------------|--|------------------|
| 1.              | Name of the project     | Proposed Sand Mining Project on Sone River at "Rohtas Sone Block- 3 B" Sand Ghat |                  |
| 2.              | Area of the project     | 37.0 Ha.   |                  |
| 3.              | Depth of Mining         | 03 Meters  |                  |
| 4.              | Proposed Production     | 666000 cum per Annum   |                  |
| 5.              | Name of River           | Sone River   |                  |
| 6.              | Name of Mineral         | Sand   |                  |
| 7.              | Location of the Project | Mauza:- Nasriganj, Anchal:- Nasriganj, District:- Rohtas, State:- Bihar.         |                  |
| 8.              | Latitude & Longitude    | <b>Geo-Coordinates</b>   |                  |
|                 |                         | <b>Latitude</b>  | <b>Longitude</b> |
|                 |                         | 25° 2' 48.79" N  | 84° 20' 32.75" E |
|                 |                         | 25° 2' 34.41" N  | 84° 20' 39.12" E |
|                 |                         | 25° 2' 49.82" N  | 84° 20' 27.51" E |
|                 |                         | 25° 2' 41.90" N  | 84° 20' 16.73" E |
|                 |                         | 25° 2' 35.30" N  | 84° 20' 9.19" E  |
|                 |                         | 25° 2' 31.25" N  | 84° 20' 6.30" E  |
|                 |                         | 25° 2' 30.38" N  | 84° 20' 8.17" E  |
| 25° 2' 28.79" N | 84° 20' 15.23" E        |  |                  |
| 25° 2' 26.27" N | 84° 20' 20.82" E        |  |                  |

|     |                                  |   |                     |                       |
|-----|----------------------------------|---|---------------------|-----------------------|
| 9.  | Water Requirement                | Domestic Water – 0.71 KLD<br>Dust Suppression – 12.3 KLD<br>Green Development – 5.0 KLD<br>Total Water Requirement – 18.01-18.0 KLD |                     |                       |
| 10. | Manpower                         | 71  |                     |                       |
| 11. | Environment Management Plan Cost | Description   | Capital Cost (Lakh) | Recurring Cost (Lakh) |
|     |                                  | Pollution Control & Dust Suppression  | --                  | 1.5                   |
|     |                                  | Pollution Monitoring  | --                  | 2.0                   |
|     |                                  | Plantation and Salary for one gardener (part time basis)  | 10.00               | 0.5                   |
|     |                                  | Haul Road Maintenance Cost  | 5.125               | 1.5                   |
|     |                                  | <b>Total</b>  | <b>15.125</b>       | <b>5.5</b>            |
| 12. | Project Cost of Project Site     | Total Project Cost - ₹ 18,36,20,000/-   |                     |                       |

### PREMISES OF THE ENVIRONMENTAL CLEARANCE

This Environmental Clearance is being issued on the premises which have been substantiated / described in detail in the format of application along with enclosed affidavits / certificates / undertakings etc. furnished therewith by the project proponent:-

- (i) Information provided, descriptions mentioned are complete, true and actual and no relevant fact has been concealed to obtain Environmental Clearance deceitfully by the project proponent.
- (ii) River Sand Mining shall not be done in rainy Season (mid June to mid October) of each calendar year.
- (iii) The Environmental Clearance holder shall take all possible precautions and safeguards for protection of Environment and control of pollution as well as road safety and mining shall be done in socially responsible manner.

Air, water, Noise pollution and visual impact due to mining operations / extraction / Transportation of mined mineral / over burden etc. shall be kept within prescribed limits in the operational area.

- (iv) Mining shall only be done after obtaining valid mining lease / permit from the competent authorities and operations shall take place only within validity period of lease / permit.

All the provisions made and restrictions imposed as covered in the relevant minor mineral Rule, shall be complied with, particularly regarding EMP.

- (v) *Dept. of Mines & Geology, Govt. of Bihar shall keep a strict vigil in the compliance of relevant provisions of applicable Bihar Minerals (Concession, Prevention of Illegal mining, Transportation and Storage) Rule 2019 and its amendment especially scientific execution of mining plan (as approved by they themselves) and report violations if any is found as well as action taken for the same.*
- (vi) Project Proponent shall submit (to the SEIAA, Bihar, Regional Office of MoEF&CC at Ranchi, Bihar State Pollution Control Board) six monthly compliance report with evidence of the conditions within a fortnight after the end of every six month till validity period of Environmental Clearance.
- (vii) *Environmental Clearance shall be liable to be revoked if furnished information, provided description / Certificates / Affidavits / Undertaking etc. are found false / concocted at any stage of its validity.*
- (viii) *This Environmental Clearance is issued without affecting any court order / statutory other institutions as well as relevant other laws enacted by MoEF&CC, Govt, New Delhi.*
- (ix) Mining and transportation of mined material from mine site to stock yard shall be done in the day time only to avoid noise pollution in the nearby human habitation area.
- (x) No part of the mining area is in a protected or Reserve forest and it also does not fall either within a wildlife protected area or within its eco-sensitive zone.
- (xi) Project Proponent shall intimate SEIAA immediately if there is any change in their official address / E-mail / Ph. No / Cell. no etc failing which communication sent to them on old address shall be considered as delivered.

#### **A. Specific Condition**

1. The Project Proponent shall obtain all necessary clearance/ permission from all concerned departments before commencement of mining works.
2. **The Environmental Clearance will be valid for mine lease period subject to a ceiling of 5 years.**
3. The project proponent before starting any activity /preparation of ground, on the leased area shall demarcate his lease hold by RCC pillars erected at the cost of lease holder after certification of the mining officer. On each pillar Geo-Coordinate and fore bearing/ back

bearing shall be written with permanent paint mark as described in the mining plan. All the pillars should remain intact at same geo-coordinate. Establishment/ labeling of Benchmark at each pillars or ground control points.

4. Extraction of sand beyond annual production capacity is not permitted.
5. The project proponent shall limit the sand mining upto 3 meters (three meters) depth. Mining should be done by semi-mechanised method without using any heavy machine, preferably by manual excavation.
6. Extraction will be carried out up to a maximum depth of 03 meter from surface of mineral deposit and not less than one meter from the water level of the River channel whichever is earlier.
7. No mining shall be carried out in the areas prominently used by wild animals (birds and reptiles) for nesting. Restricted working hours-Sand mining operation has to be carried out between 6 am to 7 pm.
8. No mining shall be carried out in 3 meter wide strip from the river bank in a River flood plain and within flowing/live water channel.
9. To maintain the safety and stability of Riverbanks, 3 meter or 10% of the width of the River whichever is more will be left intact as "No Mining Zone".
10. No stream shall be diverted for the purpose of sand mining. No natural water course and / or water reservoirs shall be obstructed due to mining operations.
11. The pollution due to transportation load on the environment will be effectively controlled & water sprinkling will also be done regularly. Vehicles with PUC only will be allowed to ply. The mineral transportation shall be carried out through covered vehicles / trucks only and the vehicle shall not be overloaded. Project should obtain 'PUC' certificate for all the vehicles from authorized pollution testing centre.
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13. Rubbish burial shall not be done in the Rivers.
14. Adequate steps shall be taken to check soil erosion and control of debris flow etc. by constructing engineering structures.

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15. Mining activity shall not be done for mine lease where mining can cause danger to site of flood protection works, places of cultural, religious, historical, and archaeological importance.
16. The approach road from loading point upto main road shall be properly developed with proper width and geometry required for safe movement of traffic by lease holder at his own cost.
17. Main haulage road in the mine shall be provided with permanent water sprinklers and other roads shall be regularly wetted with water tankers fitted with sprinklers.
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19. The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No. 22-65/2017-JA.III dated 1st May 2018, as applicable, regarding Corporate Environment Responsibility.
20. Project Proponent shall appoint a Monitoring committee to monitor the replenishment study, traffic management, levels of production, river Bank erosion and maintenance of Road etc.
21. Project Proponent shall submit the annual replenishment report certified by an authorized agency. In case the replenishment is lower than the approved rate of production, then the mining activity / production levels shall be decreased / stopped accordingly till the replenishment is completed.
22. Regular monitoring of the flow rate of the springs and seasonal stream flowing in and around the mine lease shall be carried out and records maintained. Regular monitoring of water quality upstream and downstream of water bodies shall be carried out and record of monitoring data should be maintained and submitted to the SEIAA, Bihar, Regional office, Ranchi, Central Ground water Authority, Regional Director, Central Ground water Board, State Pollution Control Board and Central Pollution Control Board.
23. The project proponent shall abide by the Hon'ble Supreme Court order dated 08.01.2020 [Writ Petition 9 (s) (Civil No. (s) 114/2014)]. Proposal of re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land

to a condition which is fit for growth of fodder, flora, fauna etc. In compliance to the direction dated 8<sup>th</sup> January, 2020 of Hon'ble Supreme Court in Writ Petitioner(s) Civil No. 114/2014, Common Cause Vs Union of India & Ors.

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25. Project Proponent will adhere to all applicable provisions of Sustainable Sand Mining Management Guidelines 2016 and Enforcement & Monitoring Guidelines for Sand Mining, 2020 (EMGSM – 2020) issued by Ministry of Environment, Forest and Climate Change, Government of India. In case, any ambiguity or variation between the provision of both these document arises, the provision made in "Enforcement and Monitoring Guidelines for Sand Mining – 2020" shall prevail.
26. All specific and general conditions which are of public concern at large shall be permanently displayed at a prominent place for public along with address and contact details of authority where the violation of EC conditions can be reported.
27. Project proponent shall erect a signboard on his project site and display information regarding name of the project, No. & date of validity period of EC, annual production capacity of the mineral and other relevant information for the general public.

#### **E. General condition**

1. No stacking of sand is allowed on road side of any public road including national highways/ State highways.
2. No labour camp shall be allowed in riverbed.
3. Provision shall be made for housing labour with all necessary infrastructure and facilities (outside mining Block and river-bed) such as fuel for cooking, toilets / mobile toilets, safe drinking water, First-Aid facilities, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
4. Labour & Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers shall be undertaken periodically to observe any adverse health impact due to exposure to dust and take corrective measures, if needed.
5. The Project Proponent shall make arrangements for safe drinking water, first aid facility along With anti-venom injection, in case of emergency for the workers.

6. The project proponent shall maintain register for production and dispatch of mineral and submit periodic return (six-monthly) to the SEIAA, Bihar / Regional Office of Ministry of Environment, Forest and Climate Change, Government of India, Ranchi. If the remaining period of lease is for less than a year, the Project Proponent shall submit a monthly return of production.
7. The EC holder shall keep a correct account of quantity of mineral mined out, dispatched from the mine, mode of transport, registration number of vehicle and mine plan. This should be produced before officers of Central and State Government for inspection whenever asked for.
8. Regular monitoring of ground water table shall be carried out at the upstream and depth of water available in the adjoining dug-well.
9. Monitoring of Ambient Air Quality, Water Quality & Noise Quality shall be carried out as per the Notification, as amended from time to time by the Central Pollution Control Board. Water sprinkling should be increased at places of loading and unloading points & transfer points to reduce all sorts of fugitive emissions.
10. The funds earmarked for environmental protection measures should be kept in a separate bank account and should not be diverted for other purpose. Year-wise expenditure should be reported to the SEIAA, Bihar.
11. The Project proponent shall provide all necessary logistic support to the authorized officer of this authority as and when required. They will facilitate and assist the authority in site inspection and monitoring.
12. All the provisions made and restrictions imposed as envisaged in the Bihar Minor Mineral Rule, shall be complied with; particularly regarding Environment Management and payment of compensation to the affected land owner(s).
13. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Bihar.
14. The Ministry / SEIAA may alter / modify the above conditions or stipulate any additional condition(s) in the interest of environment.
15. Concealing of factual data or submission of false / fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal/suspension of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.

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16. The instruction contained herein above regarding air and noise pollution and details of mining proposals shall be displayed on Signboard in Hindi for the public information.
17. The SEIAA may impose additional conditions in the interest of Environment & Ecology whenever it becomes necessary to do so.
18. Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under section 16 of the National Green Tribunal Act, 2010.

**C. Special Conditions**

1. The proposed plantation consisting of mixture of indigenous and fast growing species of trees must be done and proper care must be taken. Plantation of a minimum of 5 feet tall plants must be done in the 1<sup>st</sup> year of lease period itself and properly maintained till the validity of Environmental Clearance and preserve the existing trees at the proposed site.
2. The Project Proponent shall execute and conduct measurable CER activities like facilities for drinking water supply, infrastructure creation, solar power, Rain Water Harvesting, Solid Waste Management Facilities, sanitation, essential furniture's for the local government schools and Anganwadi Kendra. A display board of the CER activities must be fixed for the information to the public. The Project Proponent has to intimate the concerned District Magistrate and the concerned district level officers of the concerned departments for record and information, with copy marked to the Bihar State Pollution Control Board (BSPCB), Patna.
3. Under the Corporate Environment Responsibilities the modalities of all expenditure on skill development programme need to be done in consultation with and guidance of Bihar Skill Development Mission, with intimation to the concerned District Magistrate, State Environment Impact Assessment Authority and Bihar State Pollution Control Board, Patna.
4. Project Proponent has to fix display board on each mining site mentioning thereupon various activities to be done under Environment Management Plan (EMP).
5. The Project Proponent must maintain nearby existing ponds if any.
6. Proper care should to be taken during transportation of sand from the sand mining site by covering the loaded sand. There should be a freeboard of atleast 3 inches from the body level of the vehicle, so that the sand doesn't get spilled over on the road and doesn't affect the air quality as well.

*CV*

7. The Project Proponent to install lightning arrestor in the area concerned to protect the inhabitants from hazards like lightning.
8. The Proponent must submit untreated high resolution satellite images with stereoscopic 3D view from the National Remote Sensing Centre (NRSC), Hyderabad for the month of June and December every year, along with the respective half-yearly compliance report in hard and soft copy.
9. Temporary Extraction path (Iron bridge / Hume pipe) constructed for local transport from the mining site should be compulsorily dismantled before the onset of rainy season (1<sup>st</sup> July). So that natural flow of water through the active river channel may not get disturbed.

Sd/-

(Abhay Kumar)  
Member-Secretary  
SEIAA, Bihar

Copy, through email, for information and necessary action to :-

1. The Secretary, Environment, Forest and Climate Change Deptt., Govt. of Bihar, Sinchai Bhawan, Patna - 15.
2. The Additional Chief Secretary, Mines and Geology Deptt., Govt. of Bihar, Vikas Bhawan, Patna - 15
3. The Chairman, SEAC, Bihar.
4. The Member Secretary, Bihar State Pollution Control Board, Patna-23.
5. The Director, Mines and Geology Deptt., Govt. Of Bihar, Vikash Bhawan, Patna - 15.
6. MnFF&CC, Integrated Regional Office, Ranchi, 2<sup>nd</sup> Floor, Headquarter - Jharkhand State Housing Board, Harmu Chowk, Ranchi, Jharkhand - 834002.
7. Guard file.

(Abhay Kumar)  
Member Secretary,  
SEIAA, Bihar

ENVIRONMENTAL  
CLEARANCE

**Government of India**  
**Ministry of Environment, Forest and Climate Change**  
**(Issued by the State Environment Impact Assessment**  
**Authority(SEIAA), BIHAR)**

To,

The -1

PREM SINGH

S/O Radhey Shyam Singh, 100, Arya Nagar Ranchi Patna Road, Near  
Patratu Chowk, PS- Sadar, Hazaribag, Jharkhand-825301. -825301

**Subject:** Grant of Environmental Clearance (EC) to the proposed Project Activity  
under the provision of EIA Notification 2006-regarding

Sir/Madam,

This is in reference to your application for Environmental Clearance (EC)  
in respect of project submitted to the SEIAA vide proposal number  
SIA/BR/MIN/439058/2023 dated 14 Aug 2023. The particulars of the environmental  
clearance granted to the project are as below.

- |   |   |
|---|---|
| 1. EC Identification No.                      | EC23B001BR181126  |
| 2. File No.                                   | SIA/1(a)/2258/2023  |
| 3. Project Type                               | New   |
| 4. Category                                   | B   |
| 5. Project/Activity including<br>Schedule No. | 1(a) Mining of minerals   |
| 6. Name of Project                            | for Proposed Sand Mining Project of Area<br>99.80 Ha at Rohtas Sone Ghat 04 on<br>Sone River of District-Rohtas State-Bihar |
| 7. Name of Company/Organization               | PREM SINGH  |
| 8. Location of Project                        | BIHAR   |
| 9. TOR Date                                   | N/A   |

The project details along with terms and conditions are appended herewith from page  
no 2 onwards.

Date: 22/09/2023

(e-signed)  
**Mr. Sudhir Kumar**  
**Member Secretary**  
**SEIAA - (BIHAR)**

*Note: A valid environmental clearance shall be one that has EC identification  
number & E-Sign generated from PARIVESH. Please quote identification  
number in all future correspondence.*

*This is a computer generated cover page.*

PARIVESH

*(Pro-Active and Responsive Facilitation by Interactive,  
and Virtuous Environmental Single-Window Hub)*



**STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY, BIHAR**

F. No.:- SIA/1(a)/2258/2023

**Sub:** Proposed Sand Mining Project on Sone River at "Rohtas Sone 04" Sand Ghat, at Mauza:- Amiyawar, Block:- Nasriganj, District:- Rohtas, State:- Bihar; Area:- 99.80 Ha [Total Production Capacity:- 1796400 cum per Annum] - Environmental Clearance regarding.

- Reference:-**
1. MoEF&CC ToR Proposal No. - SIA/BR/MIN/413662/2023, MoEF&CC EC Proposal No. - SIA/BR/MIN/439058/2023 & SEIAA File No.:- SIA/1(a)/2258/2023.
  2. Scrutiny fee submission dated 25-01-2023.
  3. ToR issued date 31-01-2023.
  4. Final EIA submission dated 21-08-2023.
  5. SEAC meeting held on 25-08-2023 (For EC).
  6. SEIAA meeting held on 08-09-2023 and 09-09-2023 (For EC).

Sir,

This has reference to your online application for River Sand Mining by M/s **Ganpati Fuels** for Mining of **Rohtas Sone 04** Sand Ghat on Sone River of District:- Rohtas, State:- Bihar. The details of the projects as mentioned in application are as below:-

| Sl. No. | Item                    | Details  |
|---------|-------------------------|--|
| 1.      | Name of the project     | Proposed Sand Mining Project on Sone River at "Rohtas Sone 04" Sand Ghat   |
| 2.      | Area of the project     | 99.80 Ha   |
| 3.      | Proposed Production     | 1796400 cum per Annum  |
| 4.      | Name of River           | Sone River   |
| 5.      | Name of Mineral         | Sand   |
| 6.      | Location of the Project | Mauza:- Amiyawar, Block:- Nasriganj, District:- Rohtas, State:- Bihar.   |
| 7.      | Latitude & Longitude    | Corner 1 - 25° 02' 03.685" N 84° 19' 43.381" E<br>Corner 2 - 25° 01' 35.211" N 84° 18' 59.389" E<br>Corner 3 - 25° 01' 52.347" N 84° 18' 39.796" E<br>Corner 4 - 25° 01' 53.956" N 84° 18' 44.121" E<br>Corner 5 - 25° 01' 58.219" N 84° 18' 49.420" E<br>Corner 6 - 25° 02' 01.059" N 84° 18' 52.878" E<br>Corner 7 - 25° 02' 05.294" N 84° 18' 55.883" E |

|     |                                  |   |                             |                               |
|-----|----------------------------------|---|-----------------------------|-------------------------------|
|     |                                  | Corner 8 - 25° 02' 09.741" N 84° 19' 02.421" E<br>Corner 9 - 25° 02' 10.816" N 84° 19' 05.789" E<br>Corner 10 - 25° 02' 12.191" N 84° 19' 11.009" E<br>Corner 11 - 25° 02' 12.294" N 84° 19' 14.919" E<br>Corner 12 - 25° 02' 09.225" N 84° 19' 16.081" E<br>Corner 13 - 25° 02' 08.344" N 84° 19' 18.267" E<br>Corner 14 - 25° 02' 08.405" N 84° 19' 25.728" E<br>Corner 15 - 25° 02' 07.319" N 84° 19' 32.317" E<br>Corner 16 - 25° 02' 07.250" N 84° 19' 37.160" E<br>Corner 17 - 25° 02' 08.055" N 84° 19' 40.547" E<br>Corner 18 - 25° 02' 03.685" N 84° 19' 43.381" E |                             |                               |
| 8.  | Water Requirement                | Domestic Water - 1.140 KLD<br>Dust Suppression - 5.0 KLD<br>Green Development - 2.994 KLD<br>Total Water Requirement - 9.134 KLD  |                             |                               |
| 9.  | Manpower                         | 114   |                             |                               |
| 10. | Environment Management Plan Cost | <b>Description</b>  | <b>Capital Cost (Lakhs)</b> | <b>Recurring Cost (Lakhs)</b> |
|     |                                  | Pollution Control & Dust Suppression  | Nil                         | 3.0                           |
|     |                                  | Pollution Monitoring  | --                          | 2.0                           |
|     |                                  | Plantation and Salary for one gardener (part time basis)  | 3.0                         | 1.0                           |
|     |                                  | Haul Road Maintenance Road  | 1.5                         | 1.44                          |
|     |                                  | Occupational health and Safety of the workers   | 1.0                         | 3.0                           |
|     |                                  | CER Budget (PH Commitment)  | 5.0                         | --                            |
|     |                                  | <b>Total</b>  | <b>10.50</b>                | <b>10.44</b>                  |
| 11. | Project Cost of Project Site     | Total Project Cost - ₹ 30,64,06,000/-   |                             |                               |

### PREMISES OF THE ENVIRONMENTAL CLEARANCE

This Environmental Clearance is being issued on the premises which have been substantiated / described in detail in the format of application along with enclosed affidavits / certificates / undertakings etc. furnished therewith by the project proponent:-

- (i) Information provided, descriptions mentioned are complete, true and actual and no relevant fact has been concealed to obtain Environmental Clearance deceitfully by the project proponent.

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- (ii) River Sand Mining shall not be done in rainy Season (mid June to mid October) of each calendar year.
- (iii) The Environmental Clearance holder shall take all possible precautions and safeguards for protection of Environment and control of pollution as well as road safety and mining shall be done in socially responsible manner.

Air, water, Noise pollution and visual impact due to mining operations / extraction / Transportation of mined mineral / over burden etc. shall be kept within prescribed limits in the operational area.

- (iv) Mining shall only be done after obtaining valid mining lease / permit from the competent authorities and operations shall take place only within validity period of lease / permit. All the provisions made and restrictions imposed as covered in the relevant minor mineral Rule, shall be complied with, particularly regarding EMP.
- (v) *Dept. of Mines & Geology, Govt. of Bihar shall keep a strict vigil in the compliance of relevant provisions of applicable Bihar Minerals (Concession, Prevention of Illegal mining, Transportation and Storage) Rule 2019 and its amendment especially scientific execution of mining plan (as approved by them themselves) and report violations if any is found as well as action taken for the same.*
- (vi) Project Proponent shall submit (to the SEIAA, Bihar, Regional Office of MoEF&CC at Ranchi, Bihar State Pollution Control Board) six monthly compliance report with evidence of the conditions within a fortnight after the end of every six month till validity period of Environmental Clearance.
- (vii) *Environmental Clearance shall be liable to be revoked if furnished information, provided description / Certificates / Affidavits / Undertaking etc. are found false / concocted at any stage of its validity.*
- (viii) *This Environmental Clearance is issued without affecting any court order / statutory other institutions as well as relevant other laws enacted by MoEF&CC, Govt. New Delhi.*
- (ix) Mining and transportation of mined material from mine site to stock yard shall be done in the day time only to avoid noise pollution in the nearby human habitation area.

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- (x) No part of the mining area is in a protected or Reserve forest and it also does not fall either within a wildlife protected area or within its eco-sensitive zone.
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**C. Special Conditions**

1. Plantation consisting of mixture of indigenous and fast growing species of trees must be done and proper care must be taken. Plantation of a minimum of 5 feet tall plants must be done in the 1<sup>st</sup> year of lease period and properly maintained till the validity of Environmental Clearance.
2. The Project Proponent shall execute and conduct measurable CER activities like facilities for drinking water supply, infrastructure creation, solar power, Rain Water Harvesting, Solid Waste Management Facilities, sanitation, essential furnitures for the local government schools and Anganwadi Kendra. A display board must be placed for the information to the public (with intimation to the concerned District Magistrate and the concerned district level officers of the concerned departments).
3. The Project Proponent must maintain existing ponds nearby, if any.
4. The Proponent must submit untreated high resolution satellite images with stereoscopic 3D view from the National Remote Sensing Centre (NRSC), Hyderabad for the month of June and December every year, along with the respective half-yearly compliance report in hard and soft copy.

Sd/-

(Sudhir Kumar)  
Member-Secretary  
SEIAA, Bihar

**Copy, through email, for information and necessary action to :-**

1. The Secretary, Environment, Forest and Climate Change Deptt., Govt. of Bihar, Sinchai Bhawan, Patna - 15.
2. The Additional Chief Secretary, Mines and Geology Deptt., Govt. of Bihar, Vikas Bhawan, Patna - 15
3. The Chairman, SEAC, Bihar.
4. The Member Secretary, Bihar State Pollution Control Board, Patna-23.
5. The Director, Mines and Geology Deptt., Govt. Of Bihar, Vikash Bhawan, Patna - 15.
6. MoEF&CC, Integrated Regional Office, Ranchi, 2<sup>nd</sup> Floor, Headquarter - Jharkhand State Housing Board, Harmu Chowk, Ranchi, Jharkhand - 834002.
7. Guard file.

  
(Sudhir Kumar)  
Member Secretary,  
SEIAA, Bihar



Government of India  
Ministry of Environment, Forest and Climate Change  
(Issued by the State Environment Impact Assessment  
Authority (SEIAA), BIHAR)

To,

The -1

SANJAY KUMAR

M/s- Jai Mata Dee & Maa Sita Construction  
prop- Sanjay Kumar

S/O-Lala Bahadur Rai

Village- Khairhi, po- Pachpokhri, Ps- Baghaila, District- Rohtas, Bihar-  
802217 -802217

**Subject:** Grant of Environmental Clearance (EC) to the proposed Project Activity under the provision of EIA Notification 2006-regarding

Sir/Madam,

This is in reference to your application for Environmental Clearance (EC) in respect of project submitted to the SEIAA vide proposal number SIA/BR/MIN/443913/2023 dated 12 Sep 2023. The particulars of the environmental clearance granted to the project are as below.

|  |  |
|--|--|
| 1. EC Identification No.                   | EC23B001BR181750   |
| 2. File No.                                | SIA/1(a)/2329/2023   |
| 3. Project Type                            | New  |
| 4. Category                                | B  |
| 5. Project/Activity including Schedule No. | 1(a) Mining of minerals  |
| 6. Name of Project                         | Sand Mining Project of Area 86.4 Ha at Sand Block-05 Ghat on Son River of District-Rohtas of State-Bihar |
| 7. Name of Company/Organization            | SANJAY KUMAR   |
| 8. Location of Project                     | BIHAR  |
| 9. TOR Date                                | N/A  |

The project details along with terms and conditions are appended herewith from page no 2 onwards.

Date: 20/10/2023

(e-signed)  
Mr. Sudhir Kumar  
Member Secretary  
SEIAA - (BIHAR)

*Note: A valid environmental clearance shall be one that has EC identification number & E-Sign generated from PARIVESH. Please quote identification number in all future correspondence.*

*This is a computer generated cover page.*



**STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY, BIHAR**  
**F. No.:- SIA/1(a)/2329/2023**

**Sub:** Proposed Sand Mining Project on Son River at "Sand Blocks - 05" Sand Ghat, at Mauza:- Sabdala, Block:- Nasriganj, District:- Rohtas, State:- Bihar; Area:- 86.40 Ha [Total Production Capacity:- 1555200 cum per Annum] - Environmental Clearance regarding.

- Reference:-**
1. MoEF&CC ToR Proposal No. - SIA/BR/MIN/413692/2023, MoEF&CC EC Proposal No. - SIA/BR/MIN/443913/2023 & SEIAA File No.:- SIA/1(a)/2329/2023.
  2. Scrutiny fee submission dated 15-03-2023.
  3. ToR issued date 24-03-2023.
  4. Final EIA submission dated 18-09-2023.
  5. SEAC meeting held on 22-09-2023 and 23-09-2023 (For EC).
  6. SEIAA meeting held on 09-10-2023 and 10-10-2023 (For EC).

**Sir,**

This has reference to your online application for River Sand Mining by M/s Jai Mata Dee & Maa Sita Construction for Mining of Sand Block - 05 Sand Ghat on Sone River of District:- Rohtas, State:- Bihar. The details of the projects as mentioned in application are as below:-

| Sl. No. | Item                    | Details  |
|---------|-------------------------|--|
| 1.      | Name of the project     | Proposed Sand Mining Project on Sone River at "Sand Block - 05" Sand Ghat  |
| 2.      | Area of the project     | 86.40 Ha   |
| 3.      | Proposed Production     | 1555200 cum per Annum  |
| 4.      | Name of River           | Sone River   |
| 5.      | Name of Mineral         | Sand   |
| 6.      | Location of the Project | Mauza:- Sabdala, Block:- Nasriganj, District:- Rohtas, State:- Bihar.  |
| 7.      | Latitude & Longitude    | 25° 01' 46.592" N 84° 18' 36.959" E<br>25° 01' 52.341" N 84° 18' 39.793" E<br>25° 01' 52.347" N 84° 18' 39.796" E<br>25° 01' 52.288" N 84° 18' 39.864" E<br>25° 01' 52.220" N 84° 18' 39.941" E<br>25° 01' 52.158" N 84° 18' 40.013" E<br>25° 01' 51.923" N 84° 18' 40.281" E<br>25° 01' 51.875" N 84° 18' 40.336" E |

25° 01' 51.658" N 84° 18' 40.584" E  
 25° 01' 44.481" N 84° 18' 48.790" E  
 25° 01' 44.441" N 84° 18' 48.835" E  
 25° 01' 44.432" N 84° 18' 48.846" E  
 25° 01' 44.424" N 84° 18' 48.855" E  
 25° 01' 44.343" N 84° 18' 48.948" E  
 25° 01' 44.342" N 84° 18' 48.948" E  
 25° 01' 44.294" N 84° 18' 49.003" E  
 25° 01' 44.266" N 84° 18' 49.036" E  
 25° 01' 44.251" N 84° 18' 49.053" E  
 25° 01' 44.213" N 84° 18' 49.096" E  
 25° 01' 44.189" N 84° 18' 49.124" E  
 25° 01' 44.173" N 84° 18' 49.142" E  
 25° 01' 44.142" N 84° 18' 49.177" E  
 25° 01' 44.115" N 84° 18' 49.208" E  
 25° 01' 44.084" N 84° 18' 49.244" E  
 25° 01' 44.063" N 84° 18' 49.267" E  
 25° 01' 44.048" N 84° 18' 49.285" E  
 25° 01' 44.007" N 84° 18' 49.332" E  
 25° 01' 43.963" N 84° 18' 49.383" E  
 25° 01' 43.940" N 84° 18' 49.408" E  
 25° 01' 43.893" N 84° 18' 49.462" E  
 25° 01' 43.874" N 84° 18' 49.484" E  
 25° 01' 43.828" N 84° 18' 49.537" E  
 25° 01' 43.811" N 84° 18' 49.556" E  
 25° 01' 43.756" N 84° 18' 49.619" E  
 25° 01' 43.737" N 84° 18' 49.641" E  
 25° 01' 43.709" N 84° 18' 49.673" E  
 25° 01' 43.689" N 84° 18' 49.696" E  
 25° 01' 43.659" N 84° 18' 49.729" E  
 25° 01' 43.632" N 84° 18' 49.761" E  
 25° 01' 43.616" N 84° 18' 49.779" E  
 25° 01' 43.587" N 84° 18' 49.812" E  
 25° 01' 43.566" N 84° 18' 49.836" E  
 25° 01' 43.548" N 84° 18' 49.856" E  
 25° 01' 43.532" N 84° 18' 49.875" E  
 25° 01' 43.504" N 84° 18' 49.907" E  
 25° 01' 43.477" N 84° 18' 49.937" E  
 25° 01' 43.472" N 84° 18' 49.943" E  
 25° 01' 43.432" N 84° 18' 49.989" E  
 25° 01' 43.410" N 84° 18' 50.015" E  
 25° 01' 43.394" N 84° 18' 50.033" E  
 25° 01' 43.353" N 84° 18' 50.079" E  
 25° 01' 43.315" N 84° 18' 50.123" E  
 25° 01' 43.302" N 84° 18' 50.138" E  
 25° 01' 43.265" N 84° 18' 50.180" E  
 25° 01' 43.250" N 84° 18' 50.198" E  
 25° 01' 43.212" N 84° 18' 50.241" E  
 25° 01' 43.177" N 84° 18' 50.281" E  
 25° 01' 43.152" N 84° 18' 50.309" E  
 25° 01' 43.123" N 84° 18' 50.343" E  
 25° 01' 43.097" N 84° 18' 50.373" E

25° 01' 43.068" N 84° 18' 50.405" E  
 25° 01' 43.039" N 84° 18' 50.439" E  
 25° 01' 43.002" N 84° 18' 50.481" E  
 25° 01' 42.982" N 84° 18' 50.503" E  
 25° 01' 42.964" N 84° 18' 50.524" E  
 25° 01' 42.937" N 84° 18' 50.555" E  
 25° 01' 42.914" N 84° 18' 50.581" E  
 25° 01' 42.877" N 84° 18' 50.623" E  
 25° 01' 42.861" N 84° 18' 50.642" E  
 25° 01' 42.858" N 84° 18' 50.646" E  
 25° 01' 42.832" N 84° 18' 50.676" E  
 25° 01' 42.824" N 84° 18' 50.684" E  
 25° 01' 42.792" N 84° 18' 50.721" E  
 25° 01' 42.748" N 84° 18' 50.771" E  
 25° 01' 42.721" N 84° 18' 50.802" E  
 25° 01' 42.666" N 84° 18' 50.865" E  
 25° 01' 42.646" N 84° 18' 50.887" E  
 25° 01' 42.597" N 84° 18' 50.944" E  
 25° 01' 42.571" N 84° 18' 50.974" E  
 25° 01' 42.546" N 84° 18' 51.003" E  
 25° 01' 42.496" N 84° 18' 51.059" E  
 25° 01' 42.472" N 84° 18' 51.087" E  
 25° 01' 42.411" N 84° 18' 51.157" E  
 25° 01' 42.399" N 84° 18' 51.171" E  
 25° 01' 42.383" N 84° 18' 51.189" E  
 25° 01' 42.325" N 84° 18' 51.255" E  
 25° 01' 42.305" N 84° 18' 51.278" E  
 25° 01' 42.257" N 84° 18' 51.333" E  
 25° 01' 42.237" N 84° 18' 51.356" E  
 25° 01' 42.235" N 84° 18' 51.358" E  
 25° 01' 42.199" N 84° 18' 51.399" E  
 25° 01' 42.168" N 84° 18' 51.434" E  
 25° 01' 42.149" N 84° 18' 51.457" E  
 25° 01' 42.090" N 84° 18' 51.524" E  
 25° 01' 42.077" N 84° 18' 51.538" E  
 25° 01' 42.020" N 84° 18' 51.604" E  
 25° 01' 41.899" N 84° 18' 51.742" E  
 25° 01' 41.874" N 84° 18' 51.770" E  
 25° 01' 41.761" N 84° 18' 51.899" E  
 25° 01' 41.756" N 84° 18' 51.905" E  
 25° 01' 41.725" N 84° 18' 51.941" E  
 25° 01' 41.589" N 84° 18' 52.097" E  
 25° 01' 41.585" N 84° 18' 52.101" E  
 25° 01' 41.476" N 84° 18' 52.226" E  
 25° 01' 41.424" N 84° 18' 52.286" E  
 25° 01' 41.407" N 84° 18' 52.305" E  
 25° 01' 41.347" N 84° 18' 52.373" E  
 25° 01' 41.338" N 84° 18' 52.384" E  
 25° 01' 41.260" N 84° 18' 52.473" E  
 25° 01' 41.223" N 84° 18' 52.515" E  
 25° 01' 41.144" N 84° 18' 52.605" E  
 25° 01' 41.131" N 84° 18' 52.620" E

25° 01' 41.090" N 84° 18' 52.667" E  
25° 01' 41.049" N 84° 18' 52.714" E  
25° 01' 41.026" N 84° 18' 52.740" E  
25° 01' 40.903" N 84° 18' 52.880" E  
25° 01' 40.893" N 84° 18' 52.893" E  
25° 01' 40.848" N 84° 18' 52.944" E  
25° 01' 40.805" N 84° 18' 52.993" E  
25° 01' 40.793" N 84° 18' 53.007" E  
25° 01' 40.704" N 84° 18' 53.109" E  
25° 01' 40.685" N 84° 18' 53.131" E  
25° 01' 40.659" N 84° 18' 53.159" E  
25° 01' 40.569" N 84° 18' 53.263" E  
25° 01' 40.493" N 84° 18' 53.350" E  
25° 01' 40.380" N 84° 18' 53.479" E  
25° 01' 40.240" N 84° 18' 53.639" E  
25° 01' 40.036" N 84° 18' 53.872" E  
25° 01' 39.950" N 84° 18' 53.970" E  
25° 01' 39.797" N 84° 18' 54.146" E  
25° 01' 39.601" N 84° 18' 54.369" E  
25° 01' 39.372" N 84° 18' 54.631" E  
25° 01' 39.239" N 84° 18' 54.783" E  
25° 01' 39.232" N 84° 18' 54.791" E  
25° 01' 39.097" N 84° 18' 54.946" E  
25° 01' 38.919" N 84° 18' 55.149" E  
25° 01' 38.723" N 84° 18' 55.373" E  
25° 01' 38.678" N 84° 18' 55.425" E  
25° 01' 38.634" N 84° 18' 55.475" E  
25° 01' 38.506" N 84° 18' 55.621" E  
25° 01' 38.314" N 84° 18' 55.841" E  
25° 01' 38.120" N 84° 18' 56.062" E  
25° 01' 38.117" N 84° 18' 56.066" E  
25° 01' 37.727" N 84° 18' 56.512" E  
25° 01' 37.649" N 84° 18' 56.601" E  
25° 01' 37.635" N 84° 18' 56.617" E  
25° 01' 37.441" N 84° 18' 56.840" E  
25° 01' 36.715" N 84° 18' 57.670" E  
25° 01' 36.707" N 84° 18' 57.679" E  
25° 01' 36.359" N 84° 18' 58.076" E  
25° 01' 35.800" N 84° 18' 58.715" E  
25° 01' 35.638" N 84° 18' 58.901" E  
25° 01' 35.347" N 84° 18' 59.233" E  
25° 01' 35.211" N 84° 18' 59.389" E  
25° 01' 35.216" N 84° 18' 59.362" E  
25° 01' 28.716" N 84° 18' 49.942" E  
25° 01' 26.977" N 84° 18' 47.413" E  
25° 01' 24.634" N 84° 18' 44.945" E  
25° 01' 18.196" N 84° 18' 38.029" E  
25° 01' 14.704" N 84° 18' 34.315" E  
25° 01' 10.631" N 84° 18' 30.007" E  
25° 01' 24.844" N 84° 18' 10.701" E  
25° 01' 26.724" N 84° 18' 06.129" E  
25° 01' 32.007" N 84° 18' 06.085" E

|     |                                  |   |                            |                              |
|-----|----------------------------------|---|----------------------------|------------------------------|
|     |                                  | 25° 01' 39.915" N 84° 18' 09.993" E<br>25° 01' 37.396" N 84° 18' 14.946" E<br>25° 01' 35.454" N 84° 18' 21.138" E<br>25° 01' 36.265" N 84° 18' 26.553" E<br>25° 01' 46.592" N 84° 18' 36.959" E |                            |                              |
| 8.  | Water Requirement                | Domestic Water – 6.0 KLD<br>Dust Suppression – 6.0 KLD<br>Green Development – 4.3s KLD<br>Total Water Requirement – 16.3 KLD  |                            |                              |
| 9.  | Manpower                         | 195   |                            |                              |
| 10. | Environment Management Plan Cost | <b>Description</b>  | <b>Capital Cost (Lakh)</b> | <b>Recurring Cost (Lakh)</b> |
|     |                                  | Pollution Control & Dust Suppression  | Nil                        | 5.0                          |
|     |                                  | Pollution Monitoring  | --                         | 2.0                          |
|     |                                  | Plantation and Salary for one gardener (part time basis)  | 1.72                       | 1.0                          |
|     |                                  | Haul Road Maintenance Cost  | 3.0                        | 1.5                          |
| 11. | Project Cost of Project Site     | <b>Total</b>  | <b>20.20</b>               | <b>9.50</b>                  |
|     |                                  | Total Project Cost - 29210800/-   |                            |                              |

### PREMISES OF THE ENVIRONMENTAL CLEARANCE

This Environmental Clearance is being issued on the premises which have been substantiated / described in detail in the format of application along with enclosed affidavits / certificates / undertakings etc. furnished therewith by the project proponent:-

- (i) Information provided, descriptions mentioned are complete, true and actual and no relevant fact has been concealed to obtain Environmental Clearance deceitfully by the project proponent.
- (ii) River Sand Mining shall not be done in rainy Season (mid June to mid October) of each calendar year.
- (iii) The Environmental Clearance holder shall take all possible precautions and safeguards for protection of Environment and control of pollution as well as road safety and mining shall be done in socially responsible manner.

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Air, water, Noise pollution and visual impact due to mining operations / extraction / Transportation of mined mineral / over burden etc. shall be kept within prescribed limits in the operational area.

- (iv) Mining shall only be done after obtaining valid mining lease / permit from the competent authorities and operations shall take place only within validity period of lease / permit. All the provisions made and restrictions imposed as covered in the relevant minor mineral Rule, shall be complied with, particularly regarding EMP.
- (v) *Dept. of Mines & Geology, Govt. of Bihar shall keep a strict vigil in the compliance of relevant provisions of applicable Bihar Minerals (Concession, Prevention of Illegal mining, Transportation and Storage) Rule 2019 and its amendment especially scientific execution of mining plan (as approved by them themselves) and report violations if any is found as well as action taken for the same.*
- (vi) Project Proponent shall submit (to the SEIAA, Bihar, Regional Office of MoEF&CC at Ranchi, Bihar State Pollution Control Board) six monthly compliance report with evidence of the conditions within a fortnight after the end of every six month till validity period of Environmental Clearance.
- (vii) *Environmental Clearance shall be liable to be revoked if furnished information, provided description / Certificates / Affidavits / Undertaking etc. are found false / concocted at any stage of its validity.*
- (viii) *This Environmental Clearance is issued without affecting any court order / statutory other institutions as well as relevant other laws enacted by MoEF&CC, GoI, New Delhi.*
- (ix) Mining and transportation of mined material from mine site to stock yard shall be done in the day time only to avoid noise pollution in the nearby human habitation area.
- (x) No part of the mining area is in a protected or Reserve forest and it also does not fall either within a wildlife protected area or within its eco-sensitive zone.
- (xi) Project Proponent shall intimate SEIAA immediately if there is any change in their official address / E-mail / Ph. No / Cell. no etc failing which communication sent to them on old address shall be considered as delivered.

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A. Specific Condition

1. The Project Proponent shall obtain all necessary clearance/ permission from all concerned departments before commencement of mining works.
2. **The Environmental Clearance will be valid for mine lease period subject to a ceiling of 5 years.**
3. The project proponent before starting any activity /preparation of ground, on the leased area shall demarcate his lease hold by RCC pillars erected at the cost of lease holder after certification of the mining officer. On each pillar Geo-Coordinate and fore bearing/ back bearing shall be written with permanent paint mark as described in the mining plan. All the pillars should remain intact at same geo-coordinate. Establishment/ labeling of Benchmark at each pillars or ground control points.
4. Extraction of sand beyond annual production capacity is not permitted.
5. The Project Proponent should undertake the sand mining limited to 03 meter (three meter) depth by semi-mechanised method (without using any heavy machine), preferably by manual excavation.
6. Extraction will be carried out up to a maximum depth of 03 meters from surface of mineral deposit and not less than one meter from the water level of the River channel whichever is earlier.
7. No mining shall be carried out in the areas prominently used by wild animals (birds and reptiles) for nesting. Restricted working hours-Sand mining operation has to be carried out between 6 am to 7 pm.
8. No mining shall be carried out in 3 meter wide strip from the river bank in a River flood plain and within flowing/live water channel.
9. To maintain the safety and stability of Riverbanks, 3 meter or 10% of the width of the River whichever is more will be left intact as "No Mining Zone".
10. No stream shall be diverted for the purpose of sand mining. No natural water course and / or water reservoirs shall be obstructed due to mining operations.
11. The pollution due to transportation load on the environment will be effectively controlled & water sprinkling will also be done regularly. Vehicles with PUCC only will be allowed to ply. The mineral transportation shall be carried out through covered vehicles / trucks only and the

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- vehicle shall not be overloaded. Project should obtain 'PUC' certificate for all the vehicles from authorized pollution testing centre.
12. The stacking area of mined-out sand which shall be situated near the mining site within a fenced area from all sides to avoid being spread in the nearby areas by high winds and the height of stacking should not exceed 2 meter. Transportation shall be confined to day time only that is from sunrise to sunset, to avoid inconvenience to local population in anyway.
  13. Rubbish burial shall not be done in the Rivers.
  14. Adequate steps shall be taken to check soil erosion and control of debris flow etc. by constructing engineering structures.
  15. Mining activity shall not be done for mine lease where mining can cause danger to site of flood protection works, places of cultural, religious, historical, and archaeological importance.
  16. The approach road from loading point upto main road shall be properly developed with proper width and geometry required for safe movement of traffic by lease holder at his own cost.
  17. Main haulage road in the mine shall be provided with permanent water sprinklers and other roads shall be regularly wetted with water tankers fitted with sprinklers.
  18. Transportation of the Minerals by road passing through the village shall not be allowed. A 'bypass' road should be constructed (say, leaving a gap of at least 200 meters) for the purpose of transportation of the minerals so that the impact of sound, dust and accidents could be mitigated. The Project Proponent shall bear the cost towards the widening and strengthening of existing public road-network in case the same is proposed to be used for the Project. No road movement should be allowed on existing village road network without appropriately increasing the carrying capacity of such roads.
  19. The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No. 22-65/2017-IA.III dated 1st May 2018, as applicable, regarding Corporate Environment Responsibility.
  20. Project Proponent shall appoint a Monitoring committee to monitor the replenishment study, traffic management, levels of production, river Bank erosion and maintenance of Road etc.
  21. Project Proponent shall submit the annual replenishment report certified by an authorized agency. In case the replenishment is lower than the approved rate of production, then the

mining activity / production levels shall be decreased / stopped accordingly till the replenishment is completed.

22. Regular monitoring of the flow rate of the springs and seasonal stream flowing in and around the mine lease shall be carried out and records maintained. Regular monitoring of water quality upstream and downstream of water bodies shall be carried out and record of monitoring data should be maintained and submitted to the SEIAA, Bihar, Regional office, Ranchi, Central Ground water Authority, Regional Director, Central Ground water Board, State Pollution Control Board and Central Pollution Control Board.
23. The project proponent shall abide by the Hon'ble Supreme Court order dated 08.01.2020 [Writ Petition 9 (s) (Civil No. (s) 114/2014)]. Proposal of re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. In compliance to the direction dated 8<sup>th</sup> January, 2020 of Hon'ble Supreme Court in Writ Petitioner(s) Civil No. 114/2014, Common Cause Vs Union of India & Ors.
24. The individual sand ghat-miner will take appropriate measures to avoid parking of empty / loaded vehicles on nearest highway/ public roads to avoid traffic congestion.
25. Project Proponent will adhere to all applicable provisions of Sustainable Sand Mining Management Guidelines 2016 and Enforcement & Monitoring Guidelines for Sand Mining, 2020 (EMGSM - 2020) issued by Ministry of Environment, Forest and Climate Change, Government of India. In case, any ambiguity or variation between the provision of both these document arises, the provision made in "Enforcement and Monitoring Guidelines for Sand Mining - 2020" shall prevail.
26. All specific and general conditions which are of public concern at large shall be permanently displayed at a prominent place for public along with address and contact details of authority where the violation of EC conditions can be reported.
27. Project proponent shall erect a signboard on his project site and display information regarding name of the project, No. & date of validity period of EC, annual production capacity of the mineral and other relevant information for the general public.

**B. General condition**

1. No stacking of sand is allowed on road side of any public road including national highways/  
State highways.

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No labour camp shall be allowed in riverbed.

Provision shall be made for housing labour with all necessary infrastructure and facilities (outside mining Block and river-bed) such as fuel for cooking, toilets / mobile toilets, safe drinking water, First-Aid facilities, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.

4. Labour & Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers shall be undertaken periodically to observe any adverse health impact due to exposure to dust and take corrective measures, if needed.
5. The Project Proponent shall make arrangements for safe drinking water, first aid facility along With anti-venom injection, in case of emergency for the workers.
6. The project proponent shall maintain register for production and dispatch of mineral and submit periodic return (six-monthly) to the SEIAA, Bihar / Regional Office of Ministry of Environment, Forest and Climate Change, Government of India, Ranchi. If the remaining period of lease is for less than a year, the Project Proponent shall submit a monthly return of production.
7. The EC holder shall keep a correct account of quantity of mineral mined out, dispatched from the mine, mode of transport, registration number of vehicle and mine plan. This should be produced before officers of Central and State Government for inspection whenever asked for.
8. Regular monitoring of ground water table shall be carried out at the upstream and depth of water available in the adjoining dug-well.
9. Monitoring of Ambient Air Quality, Water Quality & Noise Quality shall be carried out as per the Notification, as amended from time to time by the Central Pollution Control Board. Water sprinkling should be increased at places of loading and unloading points & transfer points to reduce all sorts of fugitive emissions.
10. The funds earmarked for environmental protection measures should be kept in a separate bank account and should not be diverted for other purpose. Year-wise expenditure should be reported to the SEIAA, Bihar.

b

11. The Project proponent shall provide all necessary logistic support to the authorized officer of this authority as and when required. They will facilitate and assist the authority in site inspection and monitoring.
12. All the provisions made and restrictions imposed as envisaged in the Bihar Minor Mineral Rule, shall be complied with; particularly regarding Environment Management and payment of compensation to the affected land owner(s).
13. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Bihar.
14. The Ministry / SEIAA may alter / modify the above conditions or stipulate any additional condition(s) in the interest of environment.
15. Concealing of factual data or submission of false / fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal/suspension of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
16. The instruction contained herein above regarding air and noise pollution and details of mining proposals shall be displayed on Signboard in Hindi for the public information.
17. The SEIAA may impose additional conditions in the interest of Environment & Ecology whenever it becomes necessary to do so.
18. Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under section 16 of the National Green Tribunal Act, 2010.

**C. Special Conditions**

1. The proposed plantation consisting of mixture of indigenous and fast growing species of trees must be done and proper care must be taken to ensure 100% survival. Plantation of a minimum of 5 feet tall plants must be done in the 1<sup>st</sup> year of lease period and properly maintained till the validity of Environmental Clearance.
2. The Project Proponent shall execute and conduct measurable Corporate Environment Responsibility (CER) activities like facilities for drinking water supply, infrastructure creation, solar power, Rain Water Harvesting, Solid Waste Management Facilities, sanitation, essential furnitures for the local government schools and Anganwadi Kendra. A display board must be

*B*


(577)

- placed for the information to the public (with intimation to the concerned District Magistrate and the concerned district level officers of the concerned departments).
3. The Project Proponent must maintain existing ponds nearby, if any.
  4. Proper care should to be taken during transportation of sand from the sand mining site. There should be freeboard of atleast 03 inches from the body level of the vehicle, so that the sand doesn't get spilled on the road and doesn't affect the air quality as well.
  5. The Proponent must submit untreated high resolution satellite images with stereoscopic 3D view from the National Remote Sensing Center (NRSC), Hyderabad for the month of June and December every year, along with the respective half-yearly compliance report in hard and soft copy.

Sd/-  
**(Sudhir Kumar)**  
 Member-Secretary  
 SEIAA, Bihar

**Copy, through email, for information and necessary action to :-**

1. The Secretary, Environment, Forest and Climate Change Deptt., Govt. of Bihar, Sinchai Bhawan, Patna - 15.
2. The Additional Chief Secretary, Mines and Geology Deptt., Govt. of Bihar, Vikas Bhawan, Patna - 15
3. The Chairman, SEAC, Bihar.
4. The Member Secretary, Bihar State Pollution Control Board, Patna-23.
5. The Director, Mines and Geology Deptt., Govt. Of Bihar, Vikash Bhawan, Patna - 15.
6. MoEF&CC, Integrated Regional Office, Ranchi, 2<sup>nd</sup> Floor, Headquarter - Jharkhand State Housing Board, Harmu Chowk, Ranchi, Jharkhand - 834002.
7. Guard file.

  
**(Sudhir Kumar)**  
 Member Secretary,  
 SEIAA, Bihar

Signature Not Verified  
 Digitally signed by: M. Sudhir Kumar  
 Designation: Member Secretary  
 Date and Time: 10/20/2023 4:55:25 PM



ENVIRONMENTAL  
CLEARANCE



Government of India  
Ministry of Environment, Forest and Climate Change  
(Issued by the State Environment Impact Assessment  
Authority(SEIAA), BIHAR)

To,

The -1  
UMA SINGH

Sarveshwari Bhawan, Near Sadanath MAhadev Mandir, P.O-Gutwa, P.S-  
Nagri, Kathal More Ranchi, District - Jharkhand, 835303. -835303

**Subject:** Grant of Environmental Clearance (EC) to the proposed Project Activity  
under the provision of EIA Notification 2006-regarding

Sir/Madam,

This is in reference to your application for Environmental Clearance (EC)  
in respect of project submitted to the SEIAA vide proposal number  
SIA/BR/MIN/440720/2023 dated 18 Aug 2023. The particulars of the environmental  
clearance granted to the project are as below.

- |   |   |
|---|---|
| 1. EC Identification No.                      | EC23B001BR164234  |
| 2. File No.                                   | SIA/1(a)/2276/2023  |
| 3. Project Type                               | New   |
| 4. Category                                   | B   |
| 5. Project/Activity including<br>Schedule No. | 1(a) Mining of minerals   |
| 6. Name of Project                            | Proposed Sand Mining Project of Area<br>46.6 Hectare at Rohtas Sone Ghat 06 on<br>Sone River of District-Rohtas State-Bihar |
| 7. Name of Company/Organization               | UMA SINGH   |
| 8. Location of Project                        | BIHAR   |
| 9. TOR Date                                   | N/A   |

The project details along with terms and conditions are appended herewith from page  
no 2 onwards.

Date: 22/09/2023

(e-signed)  
Mr. Sudhir Kumar  
Member Secretary  
SEIAA - (BIHAR)

*Note: A valid environmental clearance shall be one that has EC identification  
number & E-Sign generated from PARIVESH. Please quote identification  
number in all future correspondence.*

*This is a computer generated cover page.*

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(Pro-Active and Responsive Facilitation by Interactive,  
and Virtuous Environmental Single-Window Hub)



**STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY, BIHAR**F. No.:- SIA/1(a)/2276/2023

**Sub:** Proposed Sand Mining Project on Sone River at "Rohtas Sone 06" Sand Ghat, at Mauza:- Sabdala, Block:- Nasriganj, District:- Rohtas, State:- Bihar; Area:- 46.60 Ha [Total Production Capacity:- 838800 cum per Annum] - Environmental Clearance regarding.

- Reference:-**
1. MoEF&CC ToR Proposal No. - SIA/BR/MIN/415803/2023, MoEF&CC EC Proposal No. - SIA/BR/MIN/440720/2023 & SEIAA File No.:- SIA/1(a)/2276/2023.
  2. Scrutiny fee submission dated 31-01-2023.
  3. ToR issued date 03-02-2023.
  4. Final EIA submission dated 21-08-2023.
  5. SEAC meeting held on 25-08-2023 (For EC).
  6. SEIAA meeting held on 08-09-2023 and 09-09-2023 (For EC).

**Sir,**

This has reference to your online application for River Sand Mining by M/s B. D. Enterprises for Mining of Rohtas Sone 06 Sand Ghat on Sone River of District:- Rohtas, State:- Bihar. The details of the projects as mentioned in application are as below:-

| Sl. No. | Item                    | Details   |
|---------|-------------------------|---|
| 1.      | Name of the project     | Proposed Sand Mining Project on Sone River at "Rohtas Sone 06" Sand Ghat  |
| 2.      | Area of the project     | 46.60 Ha  |
| 3.      | Proposed Production     | 838800 cum per Annum  |
| 4.      | Name of River           | Sone River  |
| 5.      | Name of Mineral         | Sand  |
| 6.      | Location of the Project | Mauza:- Sabdala, Block:- Nasriganj, District:- Rohtas, State:- Bihar.   |
| 7.      | Latitude & Longitude    | Corner 1 - 25° 01' 12.428" N 84° 18' 08.340" E<br>Corner 2 - 25° 01' 23.424" N 84° 18' 12.521" E<br>Corner 3 - 25° 01' 23.489" N 84° 18' 12.542" E<br>Corner 4 - 25° 01' 23.488" N 84° 18' 12.542" E<br>Corner 5 - 25° 01' 23.093" N 84° 18' 13.080" E<br>Corner 6 - 25° 01' 21.985" N 84° 18' 14.584" E<br>Corner 7 - 25° 01' 21.916" N 84° 18' 14.678" E<br>Corner 8 - 25° 01' 21.383" N 84° 18' 15.402" E<br>Corner 9 - 25° 01' 19.506" N 84° 18' 17.952" E<br>Corner 10 - 25° 01' 17.303" N 84° 18' 20.944" E |

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|     |                                  |   |                             |                               |
|-----|----------------------------------|---|-----------------------------|-------------------------------|
|     |                                  | Corner 11 - 25° 01' 15.897" N 84° 18' 22.854" E<br>Corner 12 - 25° 01' 12.561" N 84° 18' 27.386" E<br>Corner 13 - 25° 01' 11.818" N 84° 18' 28.395" E<br>Corner 14 - 25° 01' 10.828" N 84° 18' 29.740" E<br>Corner 15 - 25° 01' 10.652" N 84° 18' 29.979" E<br>Corner 16 - 25° 01' 10.631" N 84° 18' 30.007" E<br>Corner 17 - 25° 01' 10.546" N 84° 18' 29.890" E<br>Corner 18 - 25° 01' 03.926" N 84° 18' 22.554" E<br>Corner 19 - 25° 00' 53.820" N 84° 18' 18.995" E<br>Corner 20 - 25° 00' 42.704" N 84° 18' 15.067" E<br>Corner 21 - 25° 00' 45.770" N 84° 18' 13.252" E<br>Corner 22 - 25° 00' 51.086" N 84° 18' 09.800" E<br>Corner 23 - 25° 00' 52.528" N 84° 18' 04.952" E<br>Corner 24 - 25° 00' 56.121" N 84° 18' 02.452" E<br>Corner 25 - 25° 01' 04.997" N 84° 18' 02.664" E<br>Corner 26 - 25° 01' 08.334" N 84° 18' 05.578" E<br>Corner 27 - 25° 01' 12.428" N 84° 18' 08.340" E |                             |                               |
| 8.  | Water Requirement                | Domestic Water – 0.53 KLD<br>Dust Suppression – 5.0 KLD<br>Green Development – 1.39 KLD<br>Total Water Requirement – 6.92 KLD   |                             |                               |
| 9.  | Manpower                         | 53  |                             |                               |
| 10. | Environment Management Plan Cost | <b>Description</b>  | <b>Capital Cost (lakhs)</b> | <b>Recurring Cost (lakhs)</b> |
|     |                                  | Pollution Control & Dust Suppression  | Nil                         | 3.0                           |
|     |                                  | Pollution Monitoring  | --                          | 2.0                           |
|     |                                  | Plantation and Salary for one gardener (Part time basis)  | 1.40                        | 1.0                           |
|     |                                  | Haul road Maintenance Cost  | 1.5                         | 1.44                          |
|     |                                  | Occupational Health and Safety of the workers   | 1.0                         | 3.0                           |
|     |                                  | CER Budget (PH Commitment)  | 8.5                         | --                            |
|     |                                  | <b>Grand Total</b>  | <b>12.4</b>                 | <b>10.44</b>                  |
| 11. | Project Cost of Project Site     | Total Project Cost - ` 34,44,14,000/-   |                             |                               |

### PREMISES OF THE ENVIRONMENTAL CLEARANCE

This Environmental Clearance is being issued on the premises which have been substantiated / described in detail in the format of application along with enclosed affidavits / certificates / undertakings etc. furnished therewith by the project proponent:-

- (i) Information provided, descriptions mentioned are complete, true and actual and no relevant fact has been concealed to obtain Environmental Clearance deceitfully by the project proponent.
- (ii) River Sand Mining shall not be done in rainy Season (mid June to mid October) of each calendar year.
- (iii) The Environmental Clearance holder shall take all possible precautions and safeguards for protection of Environment and control of pollution as well as road safety and mining shall be done in socially responsible manner.

Air, water, Noise pollution and visual impact due to mining operations / extraction / Transportation of mined mineral / over burden etc. shall be kept within prescribed limits in the operational area.

- (iv) Mining shall only be done after obtaining valid mining lease / permit from the competent authorities and operations shall take place only within validity period of lease / permit. All the provisions made and restrictions imposed as covered in the relevant minor mineral Rule, shall be complied with, particularly regarding EMP.
- (v) *Dept. of Mines & Geology, Govt. of Bihar shall keep a strict vigil in the compliance of relevant provisions of applicable Bihar Minerals (Concession, Prevention of Illegal mining, Transportation and Storage) Rule 2019 and its amendment especially scientific execution of mining plan (as approved by them themselves) and report violations if any is found as well as action taken for the same.*
- (vi) Project Proponent shall submit (to the SEIAA, Bihar, Regional Office of MoEF&CC at Ranchi, Bihar State Pollution Control Board) six monthly compliance report with evidence of the conditions within a fortnight after the end of every six month till validity period of Environmental Clearance.
- (vii) *Environmental Clearance shall be liable to be revoked if furnished information, provided description / Certificates / Affidavits / Undertaking etc. are found false / concocted at any stage of its validity.*
- (viii) *This Environmental Clearance is issued without affecting any court order / statutory other institutions as well as relevant other laws enacted by MoEF&CC, GoI, New Delhi.*
- (ix) Mining and transportation of mined material from mine site to stock yard shall be done in the day time only to avoid noise pollution in the nearby human habitation area.

- (x) No part of the mining area is in a protected or Reserve forest and it also does not fall either within a wildlife protected area or within its eco-sensitive zone.
- (xi) Project Proponent shall intimate SEIAA immediately if there is any change in their official address / E-mail / Ph. No / Cell. no etc failing which communication sent to them on old address shall be considered as delivered.

A. Specific Condition

1. The Project Proponent shall obtain all necessary clearance/ permission from all concerned departments before commencement of mining works.
2. The Environmental Clearance will be valid for mine lease period subject to a ceiling of 5 years.
3. The project proponent before starting any activity /preparation of ground, on the leased area shall demarcate his lease hold by RCC pillars erected at the cost of lease holder after certification of the mining officer. On each pillar Geo-Coordinate and fore bearing/ back bearing shall be written with permanent paint mark as described in the mining plan. All the pillars should remain intact at same geo-coordinate. Establishment/ labeling of Benchmark at each pillars or ground control points.
4. Extraction of sand beyond annual production capacity is not permitted.
5. The Project Proponent should undertake the sand mining limited to 03 meter (three meter) depth by semi-mechanised method (without using any heavy machine), preferably by manual excavation.
6. Extraction will be carried out up to a maximum depth of 3 meters from surface of mineral deposit and not less than one meter from the water level of the River channel whichever is earlier.
7. No mining shall be carried out in the areas prominently used by wild animals (birds and reptiles) for nesting. Restricted working hours-Sand mining operation has to be carried out between 6 am to 7 pm.
8. No mining shall be carried out in 3 meter wide strip from the river bank in a River flood plain and within flowing/live water channel.

9. To maintain the safety and stability of Riverbanks, 3 meter or 10% of the width of the River whichever is more will be left intact as "No Mining Zone".
10. No stream shall be diverted for the purpose of sand mining. No natural water course and / or water reservoirs shall be obstructed due to mining operations.
11. The pollution due to transportation load on the environment will be effectively controlled & water sprinkling will also be done regularly. Vehicles with PUC only will be allowed to ply. The mineral transportation shall be carried out through covered vehicles / trucks only and the vehicle shall not be overloaded. Project should obtain 'PUC' certificate for all the vehicles from authorized pollution testing centre.
12. The stacking area of mined-out sand which shall be situated near the mining site within a fenced area from all sides to avoid being spread in the nearby areas by high winds and the height of stacking should not exceed 2 meter. Transportation shall be confined to day time only that is from sunrise to sunset, to avoid inconvenience to local population in anyway.
13. Rubbish burial shall not be done in the Rivers.
14. Adequate steps shall be taken to check soil erosion and control of debris flow etc. by constructing engineering structures.
15. Mining activity shall not be done for mine lease where mining can cause danger to site of flood protection works, places of cultural, religious, historical, and archaeological importance.
16. The approach road from loading point upto main road shall be properly developed with proper width and geometry required for safe movement of traffic by lease holder at his own cost.
17. Main haulage road in the mine shall be provided with permanent water sprinklers and other roads shall be regularly wetted with water tankers fitted with sprinklers.
18. Transportation of the Minerals by road passing through the village shall not be allowed. A 'bypass' road should be constructed (say, leaving a gap of at least 200 meters) for the purpose of transportation of the minerals so that the impact of sound, dust and accidents could be mitigated. The Project Proponent shall bear the cost towards the widening and strengthening of existing public road-network in case the same is proposed to be used for the Project. No road movement should be allowed on existing village road network without appropriately increasing the carrying capacity of such roads.

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19. The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No. 22-65/2017-IA.III dated 1st May 2018, as applicable, regarding Corporate Environment Responsibility.
20. Project Proponent shall appoint a Monitoring committee to monitor the replenishment study, traffic management, levels of production, river Bank erosion and maintenance of Road etc.
21. Project Proponent shall submit the annual replenishment report certified by an authorized agency. In case the replenishment is lower than the approved rate of production, then the mining activity / production levels shall be decreased / stopped accordingly till the replenishment is completed.
22. Regular monitoring of the flow rate of the springs and seasonal stream flowing in and around the mine lease shall be carried out and records maintained. Regular monitoring of water quality upstream and downstream of water bodies shall be carried out and record of monitoring data should be maintained and submitted to the SEIAA, Bihar, Regional office, Ranchi, Central Ground water Authority, Regional Director, Central Ground water Board, State Pollution Control Board and Central Pollution Control Board.
23. The project proponent shall abide by the Hon'ble Supreme Court order dated 08.01.2020 [Writ Petition 9 (s) (Civil No. (s) 114/2014)]. Proposal of re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. In compliance to the direction dated 8<sup>th</sup> January, 2020 of Hon'ble Supreme Court in Writ Petitioner(s) Civil No. 114/2014, Common Cause Vs Union of India & Ors.
24. The individual sand ghat-miner will take appropriate measures to avoid parking of empty / loaded vehicles on nearest highway/ public roads to avoid traffic congestion.
25. Project Proponent will adhere to all applicable provisions of Sustainable Sand Mining Management Guidelines 2016 and Enforcement & Monitoring Guidelines for Sand Mining, 2020 (EMGSM – 2020) issued by Ministry of Environment, Forest and Climate Change, Government of India. In case, any ambiguity or variation between the provision of both these document arises, the provision made in "Enforcement and Monitoring Guidelines for Sand Mining – 2020" shall prevail.
26. All specific and general conditions which are of public concern at large shall be permanently displayed at a prominent place for public along with address and contact details of authority where the violation of EC conditions can be reported.

27. Project proponent shall erect a signboard on his project site and display information regarding name of the project, No. & date of validity period of EC, annual production capacity of the mineral and other relevant information for the general public.

**B. General condition**

1. No stacking of sand is allowed on road side of any public road including national highways/ State highways.
2. No labour camp shall be allowed in riverbed.
3. Provision shall be made for housing labour with all necessary infrastructure and facilities (outside mining Block and river-bed) such as fuel for cooking, toilets / mobile toilets, safe drinking water, First-Aid facilities, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
4. Labour & Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers shall be undertaken periodically to observe any adverse health impact due to exposure to dust and take corrective measures, if needed.
5. The Project Proponent shall make arrangements for safe drinking water, first aid facility along With anti-venom injection, in case of emergency for the workers.
6. The project proponent shall maintain register for production and dispatch of mineral and submit periodic return (six-monthly) to the SEIAA, Bihar / Regional Office of Ministry of Environment, Forest and Climate Change, Government of India, Ranchi. If the remaining period of lease is for less than a year, the Project Proponent shall submit a monthly return of production.
7. The EC holder shall keep a correct account of quantity of mineral mined out, dispatched from the mine, mode of transport, registration number of vehicle and mine plan. This should be produced before officers of Central and State Government for inspection whenever asked for.
8. Regular monitoring of ground water table shall be carried out at the upstream and depth of water available in the adjoining dug-well.
9. Monitoring of Ambient Air Quality, Water Quality & Noise Quality shall be carried out as per the Notification, as amended from time to time by the Central Pollution Control Board. Water

(495)

sprinkling should be increased at places of loading and unloading points & transfer points to reduce all sorts of fugitive emissions.

10. The funds earmarked for environmental protection measures should be kept in a separate bank account and should not be diverted for other purpose. Year-wise expenditure should be reported to the SEIAA, Bihar.
11. The Project proponent shall provide all necessary logistic support to the authorized officer of this authority as and when required. They will facilitate and assist the authority in site inspection and monitoring.
12. All the provisions made and restrictions imposed as envisaged in the Bihar Minor Mineral Rule, shall be complied with; particularly regarding Environment Management and payment of compensation to the affected land owner(s).
13. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Bihar.
14. The Ministry / SEIAA may alter / modify the above conditions or stipulate any additional condition(s) in the interest of environment.
15. Concealing of factual data or submission of false / fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal/suspension of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
16. The instruction contained herein above regarding air and noise pollution and details of mining proposals shall be displayed on Signboard in Hindi for the public information.
17. The SEIAA may impose additional conditions in the interest of Environment & Ecology whenever it becomes necessary to do so.
18. Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under section 16 of the National Green Tribunal Act, 2010.

**C. Special Conditions**

1. Plantation consisting of mixture of indigenous and fast growing species of trees must be done and proper care must be taken. Plantation of a minimum of 5 feet tall plants must be done in the 1<sup>st</sup> year of lease period and properly maintained till the validity of Environmental Clearance.

2. The Project Proponent shall execute and conduct measurable CER activities like facilities for drinking water supply, infrastructure creation, solar power, Rain Water Harvesting, Solid Waste Management Facilities, sanitation, essential furnitures for the local government schools and Anganwadi Kendra. A display board must be placed for the information to the public (with intimation to the concerned District Magistrate and the concerned district level officers of the concerned departments).
3. The Project Proponent must maintain existing ponds nearby, if any.
4. The Proponent must submit untreated high resolution satellite images with stereoscopic 3D view from the National Remote Sensing Centre (NRSC), Hyderabad for the month of June and December every year, along with the respective half-yearly compliance report in hard and soft copy.

Sd/-

(Sudhir Kumar)  
Member-Secretary  
SEIAA, Bihar

**Copy, through email, for information and necessary action to :-**

1. The Secretary, Environment, Forest and Climate Change Deptt., Govt. of Bihar, Sinchai Bhawan, Patna - 15.
2. The Additional Chief Secretary, Mines and Geology Deptt., Govt. of Bihar, Vikas Bhawan, Patna - 15
3. The Chairman, SEAC, Bihar.
4. The Member Secretary, Bihar State Pollution Control Board, Patna-23.
5. The Director, Mines and Geology Deptt., Govt. Of Bihar, Vikash Bhawan, Patna - 15.
6. MoEF&CC, Integrated Regional Office, Ranchi, 2<sup>nd</sup> Floor, Headquarter - Jharkhand State Housing Board, Harmu Chowk, Ranchi, Jharkhand - 834002.
7. Guard file.

(Sudhir Kumar)  
Member Secretary,  
SEIAA, Bihar

Signature Not Verified

Digitally signed by Mr. Sudhir  
Kumar  
Member Secretary  
Date: 9/22/2023 5:37:59 PM  
Page 10 of 10

ENVIRONMENTAL  
CLEARANCE

**Government of India**  
**Ministry of Environment, Forest and Climate Change**  
**(Issued by the State Environment Impact Assessment**  
**Authority(SEIAA), BIHAR)**

To,

The CEO  
 MOR MUKAT MARKETING PRIVATE LIMITED  
 Plot No. 388/389, Near Biscuit Factory More, Nasriganj, Danapur Patna -  
 800012

**Subject:** Grant of Environmental Clearance (EC) to the proposed Project Activity under the provision of EIA Notification 2006-regarding

Sir/Madam,

This is in reference to your application for Environmental Clearance (EC) in respect of project submitted to the SEIAA vide proposal number SIA/BR/MIN/440645/2023 dated 17 Aug 2023. The particulars of the environmental clearance granted to the project are as below.

|  |   |
|--|---|
| 1. EC Identification No.                   | EC23B001BR158011  |
| 2. File No.                                | SIA/1(a)/2085/2022  |
| 3. Project Type                            | New   |
| 4. Category                                | B   |
| 5. Project/Activity including Schedule No. | 1(a) Mining of minerals   |
| 6. Name of Project                         | Proposed Sand Mining Project of Area 98.8 Ha at Rohtas Ghat 07 on Son River of District- Rohtas State-Bihar |
| 7. Name of Company/Organization            | MOR MUKAT MARKETING PRIVATE LIMITED   |
| 8. Location of Project                     | BIHAR   |
| 9. TOR Date                                | N/A   |

The project details along with terms and conditions are appended herewith from page no 2 onwards.

Date: 01/12/2023

(e-signed)  
 Mr. Sudhir Kumar  
 Member Secretary  
 SEIAA - (BIHAR)

*Note: A valid environmental clearance shall be one that has EC identification number & E-Sign generated from PARIVESH. Please quote identification number in all future correspondence.*

*This is a computer generated cover page.*

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 and Virtuous Environmental Single-Window Hub)*



**STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY, BIHAR**

F. No.:- SIA/1(a)/2085/2022

**Sub:** Proposed Sand Mining Project on Sone River at "Rohtas Sone 07" Sand Ghat, at Mauza:- Panduri, Block:- Nasriganj, District:- Rohtas, State:- Bihar; Area:- 98.8 Ha. [Total Production Capacity:- 17,78,400 cum per Annum] - Environmental Clearance regarding.

- Reference:-**
1. MoEF&CC ToR Proposal No. - SIA/BR/MIN/411824/2022, MoEF&CC EC Proposal No. - SIA/BR/MIN/440645/2023 & SEIAA File No.:- SIA/1(a)/2085/2022.
  2. Scrutiny fee submission dated 30-12-2022.
  3. ToR issued date 11-01-2023.
  4. Final EIA submission dated 21-08-2023.
  5. SEAC meeting held on 08-11-2023 (For EC).
  6. SEIAA meeting held on 24-11-2023 (For EC).

Sir,

This has reference to your online application for River Sand Mining by M/s Mor Mukut Marketing Private Limited for Mining of Rohtas Sone 07 Sand Ghat on Sone River of District:- Rohtas, State:- Bihar. The details of the projects as mentioned in application are as below:-

| Sl. No. | Item                    | Details  |                   |
|---------|-------------------------|--|-------------------|
| 1.      | Name of the project     | Proposed Sand Mining Project on Sone River at "Rohtas Sone 07" Sand Ghat |                   |
| 2.      | Area of the project     | 98.8 Ha.   |                   |
| 3.      | Depth of Mining         | 03 Meter   |                   |
| 4.      | Proposed Production     | 1778400 cum per Annum  |                   |
| 5.      | Name of River           | Sone River   |                   |
| 6.      | Name of Mineral         | Sand   |                   |
| 7.      | Location of the Project | Mauza:- Panduri, Block:- Nasriganj, District:- Rohtas, State:- Bihar.    |                   |
| 8.      | Latitude & Longitude    | <b>Geo-Coordinates</b>   |                   |
|         |                         | <b>Latitude</b>  | <b>Longitude</b>  |
|         |                         | 25° 00' 40.624" N  | 84° 17' 36.948" E |
|         |                         | 25° 00' 44.718" N  | 84° 17' 46.269" E |
|         |                         | 25° 00' 27.781" N  | 84° 17' 56.722" E |
|         |                         | 25° 00' 22.421" N  | 84° 17' 56.974" E |
|         |                         | 25° 00' 14.648" N  | 84° 17' 56.702" E |
|         |                         | 25° 00' 12.639" N  | 84° 17' 54.794" E |
|         |                         | 25° 00' 11.518" N  | 84° 17' 52.472" E |

|     |                                  |   |                            |                              |
|-----|----------------------------------|---|----------------------------|------------------------------|
|     |                                  | 25° 00' 09.054" N   | 84° 17' 46.710" E          |                              |
|     |                                  | 25° 00' 13.392" N   | 84° 17' 34.051" E          |                              |
|     |                                  | 25° 00' 11.009" N   | 84° 17' 33.054" E          |                              |
|     |                                  | 24° 59' 59.452" N   | 84° 17' 42.591" E          |                              |
|     |                                  | 24° 59' 57.077" N   | 84° 17' 41.231" E          |                              |
|     |                                  | 24° 59' 53.210" N   | 84° 17' 31.227" E          |                              |
|     |                                  | 24° 59' 48.960" N   | 84° 17' 27.242" E          |                              |
|     |                                  | 24° 59' 49.685" N   | 84° 17' 25.082" E          |                              |
|     |                                  | 25° 00' 00.121" N   | 84° 17' 24.647" E          |                              |
|     |                                  | 25° 00' 09.528" N   | 84° 17' 25.786" E          |                              |
|     |                                  | 25° 00' 13.563" N   | 84° 17' 22.836" E          |                              |
|     |                                  | 25° 00' 02.702" N   | 84° 17' 12.755" E          |                              |
|     |                                  | 24° 59' 59.700" N   | 84° 17' 09.176" F          |                              |
|     |                                  | 24° 59' 53.623" N   | 84° 17' 06.305" E          |                              |
|     |                                  | 24° 59' 51.512" N   | 84° 17' 05.506" E          |                              |
|     |                                  | 24° 59' 49.687" N   | 84° 17' 04.649" E          |                              |
|     |                                  | 24° 59' 56.216" N   | 84° 16' 57.186" E          |                              |
|     |                                  | 24° 59' 59.153" N   | 84° 16' 59.023" F          |                              |
|     |                                  | 24° 59' 59.065" N   | 84° 17' 02.338" E          |                              |
|     |                                  | 25° 00' 03.749" N   | 84° 17' 10.813" E          |                              |
|     |                                  | 25° 00' 09.274" N   | 84° 17' 13.146" E          |                              |
|     |                                  | 25° 00' 15.277" N   | 84° 17' 20.252" E          |                              |
|     |                                  | 25° 00' 22.175" N   | 84° 17' 27.931" E          |                              |
|     |                                  | 25° 00' 28.601" N   | 84° 17' 35.140" E          |                              |
|     |                                  | 25° 00' 36.965" N   | 84° 17' 34.147" E          |                              |
|     |                                  | 25° 00' 40.624" N   | 84° 17' 36.948" E          |                              |
| 9.  | Water Requirement                | Domestic Water – 1.13 KLD<br>Dust Suppression – 5.0 KLD<br>Green Development – 2.96 KLD<br>Total Water Requirement - 9.09 KLD |                            |                              |
| 10. | Manpower                         | 113   |                            |                              |
| 11. | Environment Management Plan Cost | <b>Description</b>  | <b>Capital Cost (Lakh)</b> | <b>Recurring Cost (Lakh)</b> |
|     |                                  | Pollution Control & Dust Suppression  | Nil                        | 3.0                          |
|     |                                  | Pollution Monitoring  | --                         | 2.0                          |
|     |                                  | Plantation and Salary for one gardener (part time basis)  | 2.96                       | 1.0                          |
|     |                                  | Haul Road Maintenance Cost  | 1.5                        | 1.44                         |
|     |                                  | Occupational Health and Safety of the workers   | 1.0                        | 3.0                          |
|     |                                  | CER Budget (PH Commitment)  | 11.0                       | --                           |
|     |                                  | <b>Grand Total</b>  | <b>16.46</b>               | <b>10.44</b>                 |
| 12. | Project Cost of Project Site     | Total Project Cost - ₹ 33,80,12,000/-   |                            |                              |

## PREMISES OF THE ENVIRONMENTAL CLEARANCE

This Environmental Clearance is being issued on the premises which have been substantiated / described in detail in the format of application along with enclosed affidavits / certificates / undertakings etc. furnished therewith by the project proponent:-

- (i) Information provided, descriptions mentioned are complete, true and actual and no relevant fact has been concealed to obtain Environmental Clearance deceitfully by the project proponent.
- (ii) River Sand Mining shall not be done in rainy Season (mid June to mid October) of each calendar year.
- (iii) The Environmental Clearance holder shall take all possible precautions and safeguards for protection of Environment and control of pollution as well as road safety and mining shall be done in socially responsible manner.

Air, water, Noise pollution and visual impact due to mining operations / extraction / Transportation of mined mineral / over burden etc. shall be kept within prescribed limits in the operational area.

- (iv) Mining shall only be done after obtaining valid mining lease / permit from the competent authorities and operations shall take place only within validity period of lease / permit. All the provisions made and restrictions imposed as covered in the relevant minor mineral Rule, shall be complied with, particularly regarding EMP.
- (v) *Dept. of Mines & Geology, Govt. of Bihar shall keep a strict vigil in the compliance of relevant provisions of applicable Bihar Minerals (Concession, Prevention of Illegal mining, Transportation and Storage) Rule 2019 and its amendment especially scientific execution of mining plan (as approved by them themselves) and report violations if any is found as well as action taken for the same.*
- (vi) Project Proponent shall submit (to the SEIAA, Bihar, Regional Office of MoEF&CC at Ranchi, Bihar State Pollution Control Board) six monthly compliance report with evidence of the conditions within a fortnight after the end of every six month till validity period of Environmental Clearance.
- (vii) *Environmental Clearance shall be liable to be revoked if furnished information, provided description / Certificates / Affidavits / Undertaking etc are found false / concocted at any stage of its validity.*

- (viii) *This Environmental Clearance is issued without affecting any court order / statutory other institutions as well as relevant other laws enacted by MoEF&CC, Govt, New Delhi.*
- (ix) Mining and transportation of mined material from mine site to stock yard shall be done in the day time only to avoid noise pollution in the nearby human habitation area.
- (x) No part of the mining area is in a protected or Reserve forest and it also does not fall either within a wildlife protected area or within its eco-sensitive zone.
- (xi) Project Proponent shall intimate SEIAA immediately if there is any change in their official address / E-mail / Ph. No / Cell. no etc failing which communication sent to them on old address shall be considered as delivered.

**A. Specific Condition**

1. The Project Proponent shall obtain all necessary clearance/ permission from all concerned departments before commencement of mining works.
2. **The Environmental Clearance will be valid for mine lease period subject to a ceiling of 5 years.**
3. The project proponent before starting any activity /preparation of ground, on the leased area shall demarcate his lease hold by RCC pillars erected at the cost of lease holder after certification of the mining officer. On each pillar Geo-Coordinate and fore bearing/ back bearing shall be written with permanent paint mark as described in the mining plan. All the pillars should remain intact at same geo-coordinate. Establishment/ labeling of Benchmark at each pillars or ground control points.
4. Extraction of sand beyond annual production capacity is not permitted.
5. The Project Proponent should undertake the sand mining limited to 03 meters (three meters) depth by semi-mechanised method (without using any heavy machine), preferably by manual excavation.
6. Extraction will be carried out up to a maximum depth of 03 meters from surface of mineral deposit and not less than one meter from the water level of the River channel whichever is earlier.
7. No mining shall be carried out in the areas prominently used by wild animals (birds and reptiles) for nesting. Restricted working hours-Sand mining operation has to be carried out between 6 am to 7 pm.

8. No mining shall be carried out in 3 meter wide strip from the river bank in a River flood plain and within flowing/live water channel.
9. To maintain the safety and stability of Riverbanks, 3 meter or 10% of the width of the River whichever is more will be left intact as "No Mining Zone".
10. No stream shall be diverted for the purpose of sand mining. No natural water course and / or water reservoirs shall be obstructed due to mining operations.
11. The pollution due to transportation load on the environment will be effectively controlled & water sprinkling will also be done regularly. Vehicles with PUC only will be allowed to ply. The mineral transportation shall be carried out through covered vehicles / trucks only and the vehicle shall not be overloaded. Project should obtain 'PUC' certificate for all the vehicles from authorized pollution testing centre.
12. The stacking area of mined-out sand which shall be situated near the mining site within a fenced area from all sides to avoid being spread in the nearby areas by high winds and the height of stacking should not exceed 2 meter. Transportation shall be confined to day time only that is from sunrise to sunset, to avoid inconvenience to local population in anyway.
13. Rubbish burial shall not be done in the Rivers.
14. Adequate steps shall be taken to check soil erosion and control of debris flow etc. by constructing engineering structures.
15. Mining activity shall not be done for mine lease where mining can cause danger to site of flood protection works, places of cultural, religious, historical, and archaeological importance.
16. The approach road from loading point upto main road shall be properly developed with proper width and geometry required for safe movement of traffic by lease holder at his own cost.
17. Main haulage road in the mine shall be provided with permanent water sprinklers and other roads shall be regularly wetted with water tankers fitted with sprinklers.
18. Transportation of the Minerals by road passing through the village shall not be allowed. A 'bypass' road should be constructed (say, leaving a gap of at least 200 meters) for the purpose of transportation of the minerals so that the impact of sound, dust and accidents could be mitigated. The Project Proponent shall bear the cost towards the widening and strengthening of existing public road-network in case the same is proposed to be used for the Project. No road movement should be allowed on existing village road network without appropriately increasing the carrying capacity of such roads.

19. The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No. 22-65/2017-IA.III dated 1st May 2018, as applicable, regarding Corporate Environment Responsibility.
20. Project Proponent shall appoint a Monitoring committee to monitor the replenishment study, traffic management, levels of production, river Bank erosion and maintenance of Road etc.
21. Project Proponent shall submit the annual replenishment report certified by an authorized agency. In case the replenishment is lower than the approved rate of production, then the mining activity / production levels shall be decreased / stopped accordingly till the replenishment is completed.
22. Regular monitoring of the flow rate of the springs and seasonal stream flowing in and around the mine lease shall be carried out and records maintained. Regular monitoring of water quality upstream and downstream of water bodies shall be carried out and record of monitoring data should be maintained and submitted to the SEIAA, Bihar, Regional office, Ranchi, Central Ground water Authority, Regional Director, Central Ground water Board, State Pollution Control Board and Central Pollution Control Board.
23. The project proponent shall abide by the Hon'ble Supreme Court order dated 08.01.2020 [Writ Petition 9 (s) (Civil No. (s) 114/2014)]. Proposal of re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. In compliance to the direction dated 8<sup>th</sup> January, 2020 of Hon'ble Supreme Court in Writ Petitioner(s) Civil No. 114/2014, Common Cause Vs Union of India & Ors.
24. The individual sand ghat-miner will take appropriate measures to avoid parking of empty / loaded vehicles on nearest highway/ public roads to avoid traffic congestion.
25. Project Proponent will adhere to all applicable provisions of Sustainable Sand Mining Management Guidelines 2016 and Enforcement & Monitoring Guidelines for Sand Mining, 2020 (EMGSM – 2020) issued by Ministry of Environment, Forest and Climate Change, Government of India. In case, any ambiguity or variation between the provision of both these document arises, the provision made in "Enforcement and Monitoring Guidelines for Sand Mining – 2020" shall prevail.
26. All specific and general conditions which are of public concern at large shall be permanently displayed at a prominent place for public along with address and contact details of authority where the violation of EC conditions can be reported.

27. Project proponent shall erect a signboard on his project site and display information regarding name of the project, No. & date of validity period of EC, annual production capacity of the mineral and other relevant information for the general public.

**B. General condition**

1. No stacking of sand is allowed on road side of any public road including national highways/ State highways.
2. No labour camp shall be allowed in riverbed.
3. Provision shall be made for housing labour with all necessary infrastructure and facilities (outside mining Block and river-bed) such as fuel for cooking, toilets / mobile toilets, safe drinking water, First-Aid facilities, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
4. Labour & Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers shall be undertaken periodically to observe any adverse health impact due to exposure to dust and take corrective measures, if needed.
5. The Project Proponent shall make arrangements for safe drinking water, first aid facility along With anti-venom injection, in case of emergency for the workers.
6. The project proponent shall maintain register for production and dispatch of mineral and submit periodic return (six-monthly) to the SEIAA, Bihar / Regional Office of Ministry of Environment, Forest and Climate Change, Government of India, Ranchi. If the remaining period of lease is for less than a year, the Project Proponent shall submit a monthly return of production.
7. The EC holder shall keep a correct account of quantity of mineral mined out, dispatched from the mine, mode of transport, registration number of vehicle and mine plan. This should be produced before officers of Central and State Government for inspection whenever asked for.
8. Regular monitoring of ground water table shall be carried out at the upstream and depth of water available in the adjoining dug-well.
9. Monitoring of Ambient Air Quality, Water Quality & Noise Quality shall be carried out as per the Notification, as amended from time to time by the Central Pollution Control Board. Water

sprinkling should be increased at places of loading and unloading points & transfer points to reduce all sorts of fugitive emissions.

10. The funds earmarked for environmental protection measures should be kept in a separate bank account and should not be diverted for other purpose. Year-wise expenditure should be reported to the SEIAA, Bihar.
11. The Project proponent shall provide all necessary logistic support to the authorized officer of this authority as and when required. They will facilitate and assist the authority in site inspection and monitoring.
12. All the provisions made and restrictions imposed as envisaged in the Bihar Minor Mineral Rule, shall be complied with; particularly regarding Environment Management and payment of compensation to the affected land owner(s).
13. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Bihar.
14. The Ministry / SEIAA may alter / modify the above conditions or stipulate any additional condition(s) in the interest of environment.
15. Concealing of factual data or submission of false / fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal/suspension of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986
16. The instruction contained herein above regarding air and noise pollution and details of mining proposals shall be displayed on Signboard in Hindi for the public information.
17. The SEIAA may impose additional conditions in the interest of Environment & Ecology whenever it becomes necessary to do so.
18. Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under section 16 of the National Green Tribunal Act, 2010.

**C. Special Conditions**

1. The proposed plantation consisting of mixture of indigenous and fast growing species of trees must be done and proper care must be taken to ensure 100% survival. Plantation of a minimum of 5 feet tall plants must be done in the 1<sup>st</sup> year of lease period and properly maintained till the validity of Environmental Clearance.

2. The Project Proponent shall execute and conduct measurable Corporate Environment Responsibility (CER) activities like facilities for drinking water supply, infrastructure creation, solar power, Rain Water Harvesting, Solid Waste Management Facilities, sanitation, essential furnitures for the local government schools and Anganwadi Kendra. A display board must be placed for the information to the public (with intimation to the concerned District Magistrate and the concerned district level officers of the concerned departments).
3. The Project Proponent must maintain existing ponds nearby, if any.
4. Proper care should to be taken during transportation of sand from the sand mining site. There should be freeboard of atleast 03 inches from the body level of the vehicle, so that the sand doesn't get spilled on the road and doesn't affect the air quality as well.
5. The Proponent must submit untreated high resolution satellite images with stereoscopic 3D view from the National Remote Sensing Centre (NRSC), Hyderabad for the month of June and December every year, along with the respective half-yearly compliance report in hard and soft copy.

Sd/-

(Sudhir Kumar)  
Member-Secretary  
SEIAA, Bihar

**Copy, through email, for information and necessary action to :-**

1. The Secretary, Environment, Forest and Climate Change Deptt., Govt. of Bihar, Sinchai Bhawan, Patna - 15.
2. The Additional Chief Secretary, Mines and Geology Deptt., Govt. of Bihar, Vikas Bhawan, Patna - 15
3. The Chairman, SEAC, Bihar.
4. The Member Secretary, Bihar State Pollution Control Board, Patna-23.
5. The Director, Mines and Geology Deptt., Govt. Of Bihar, Vikash Bhawan, Patna - 15.
6. MoEF&CC, Integrated Regional Office, Ranchi, 2<sup>nd</sup> Floor, Headquarter - Jharkhand State Housing Board, Harnu Chowk, Ranchi, Jharkhand - 834002.
7. Guard file.

  
(Sudhir Kumar)  
Member Secretary,  
SEIAA, Bihar



File No.: SIA/ 1(a)/2521(Amend.)/2024  
 Government of India  
 Ministry of Environment, Forest and Climate Change  
 (Issued by the State Environment Impact Assessment Authority(SEIAA),  
 BIHAR)



\*\*\*

Dated 25/04/2024



To,

Anand Singh  
 UMA ASSOCIATES INFRATECH DEVELOPERS PRIVATE LIMITED  
 Village- Jahanabad, Post Thana- Kudra, Kaimur (Bhabua), Bihar, S 20/56-10-2, F/2/3, Sonal Sadan,  
 Mall Road Cantonment, VARANASI, UTTAR PRADESH, 00000, 221002  
 umaassociates17@gmail.com

Subject:

Amendment in Environmental Clearance (EC) 16/03/2024 granted to the project under the provision of the EIA Notification 2006 -regarding.

Sir/Madam,

This is in reference to your application submitted to SEIAA vide proposal number SIA/BR/MIN/466249/2024 dated 16/03/2024 for grant of an amendment in prior Environmental Clearance (EC) to the project under the provision of the EIA Notification 2006-and as amended thereof.

2. The particulars of the proposal are as below :

|  |  |
|--|--|
| (i) EC Identification No.                      | EC24B0107BR5119301A  |
| (ii) File No.                                  | SIA/ 1(a)/2521(Amend.)/2024  |
| (iii) Clearance Type                           | Amendment in EC  |
| (iv) Category                                  | B1   |
| (v) Schedule No./ Project Activity             | 1(a) Mining of minerals  |
| (vii) Name of Project                          | Proposed Sand Mining Project of Area 97.4 Ha at Rohtas Sone Ghat 17 on Sone River of District-Rohtas State-Bihar |
| (viii) Location of Project (District, State)   | ROHTAS, BIHAR  |
| (ix) Issuing Authority                         | SEIAA, Bihar   |
| (x) EC Date                                    | 14/11/2023   |
| (xii) Applicability of General Conditions      | NO   |
| (xiii) Status of implementation of the project |  |

1. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1(Part A, B and C)/ EIA & EMP Reports were submitted to the SEIAA for an appraisal by the State Environment Impact Assessment

- Authority (SEIAA), Bihar under the provision of EIA notification 2006 and its subsequent amendments.
2. The above-mentioned proposal has been considered by State Environment Impact Assessment Authority (SEIAA) in the meeting held on 14/04/2024. The minutes of the meeting and all the project documents are available on PARIVESH portal which can be accessed from the PARIVESH portal by scanning the QR Code above or through the following web link [click here](#).
  3. The brief about the reasons for an amendment requested along with comparison table illustrating the details of amendments are annexed to this letter.
  4. The brief about the reasons for an amendment requested along with comparison table illustrating the details of amendments are annexed to this letter. The SEIAA, in its meeting held on 14/04/2024, based on information & clarifications provided by the project proponent and after detailed deliberations recommended the proposal for grant of amendment in Environment Clearance under the provision of EIA Notification, 2006 and as amended thereof.
  5. The SEIAA, Bihar has examined the proposal in accordance with the extant provisions of the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and based on the recommendations of the State Environment Impact Assessment Authority (SEIAA), Bihar hereby accords amendment in Environment Clearance dated 14/11/2023 for the instant proposal to M/s. Anand Singh under the provisions of EIA Notification, 2006 and as amended thereof subject to compliance of EC conditions, general instructions and Special conditions issued vide EC letter dated 14/11/2023 and EC identification number EC23B001BR150644.
  6. This issues with the approval of the Competent Authority.

## Annexure 1

## Specific EC Conditions for (Mining Of Minerals)

## 1. Additional Specific Condition

| S. No | EC Conditions  |
|-------|--|
| 1.1   | <p><b>A. Specific Condition</b></p> <ol style="list-style-type: none"> <li>1. The Project Proponent shall obtain all necessary clearance/ permission from all concerned departments before commencement of mining works.</li> <li>2. The Environmental Clearance will be valid for mine lease period subject to a ceiling of 5 years.</li> <li>3. The project proponent before starting any activity /preparation of ground, on the leased area shall demarcate his lease hold by RCC pillars erected at the cost of lease holder after certification of the mining officer. On each pillar Geo-Coordinate and fore bearing/ back bearing shall be written with permanent paint mark as described in the mining plan. All the pillars should remain intact at same geo-coordinate. Establishment/ labeling of Benchmark at each pillars or ground control points.</li> <li>4. Extraction of sand beyond annual production capacity is not permitted.</li> <li>5. The Project Proponent should undertake the sand mining limited to 03 meters (three meter) depth by semi-mechanised method (without using any heavy machine), preferably by manual excavation.</li> <li>6. Extraction will be carried out up to a maximum depth of 03 meters from surface of mineral deposit and not less than one meter from the water level of the River channel whichever is earlier.</li> <li>7. No mining shall be carried out in the areas prominently used by wild animals (birds and reptiles) for nesting. Restricted working hours-Sand mining operation has to be carried out between 6 am to 7 pm.</li> <li>8. No mining shall be carried out in 3 meter wide strip from the river bank in a River flood plain and within flowing/live water channel.</li> <li>9. To maintain the safety and stability of Riverbanks, 3 meter or 10% of the width of the River whichever is more will be left intact as "No Mining Zone".</li> <li>10. No stream shall be diverted for the purpose of sand mining. No natural water course and / or</li> </ol> |

## EC Conditions

S. No

water reservoirs shall be obstructed due to mining operations.

11. The pollution due to transportation load on the environment will be effectively controlled & water sprinkling will also be done regularly. Vehicles with PUC only will be allowed to ply. The mineral transportation shall be carried out through covered vehicles / trucks only and the vehicle shall not be overloaded. Project should obtain 'PUC' certificate for all the vehicles from authorized pollution testing centre.

12. The stacking area of mined-out sand which shall be situated near the mining site within a fenced area from all sides to avoid being spread in the nearby areas by high winds and the height of stacking should not exceed 2 meter. Transportation shall be confined to day time only that is from sunrise to sunset, to avoid inconvenience to local population in anyway.

13. Rubbish burial shall not be done in the Rivers.

14. Adequate steps shall be taken to check soil erosion and control of debris flow etc. by constructing engineering structures.

15. Mining activity shall not be done for mine lease where mining can cause danger to site of flood protection works, places of cultural, religious, historical, and archaeological importance.

16. The approach road from loading point upto main road shall be properly developed with proper width and geometry required for safe movement of traffic by lease holder at his own cost.

17. Main haulage road in the mine shall be provided with permanent water sprinklers and other roads shall be regularly wetted with water tankers fitted with sprinklers.

18. Transportation of the Minerals by road passing through the village shall not be allowed. A 'bypass' road should be constructed (say, leaving a gap of at least 200 meters) for the purpose of transportation of the minerals so that the impact of sound, dust and accidents could be mitigated. The Project Proponent shall bear the cost towards the widening and strengthening of existing public road-network in case the same is proposed to be used for the Project. No road movement should be allowed on existing village road network without appropriately increasing the carrying capacity of such roads.

19. The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No. 22-65/2017-IA.III dated 1st May 2018, as applicable, regarding Corporate Environment Responsibility.

20. Project Proponent shall appoint a Monitoring committee to monitor the replenishment study, traffic management, levels of production, river Bank erosion and maintenance of Road etc.

21. Project Proponent shall submit the annual replenishment report certified by an authorized agency. In case the replenishment is lower than the approved rate of production, then the mining activity / production levels shall be decreased / stopped accordingly till the replenishment is completed.

22. Regular monitoring of the flow rate of the springs and seasonal stream flowing in and around the mine lease shall be carried out and records maintained. Regular monitoring of water quality upstream and downstream of water bodies shall be carried out and record of monitoring data should be maintained and submitted to the SEIAA, Bihar, Regional office, Ranchi, Central Ground water Authority, Regional Director, Central Ground water Board, State Pollution Control Board and Central Pollution Control Board.

23. The project proponent shall abide by the Hon'ble Supreme Court order dated 08.01.2020 [Writ Petition 9 (s) (Civil No. (s) 114/2014)]. Proposal of re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. In compliance to the direction dated 8<sup>th</sup> January, 2020 of Hon'ble Supreme Court in Writ Petitioner(s) Civil No. 114/2014, Common Cause Vs Union of India & Ors.

24. The individual sand ghat-miner will take appropriate measures to avoid parking of empty / loaded vehicles on nearest highway/ public roads to avoid traffic congestion.

25. Project Proponent will adhere to all applicable provisions of Sustainable Sand Mining Management Guidelines 2016 and Enforcement & Monitoring Guidelines for Sand Mining, 2020 (EMGSM - 2020) issued by Ministry of Environment, Forest and Climate Change, Government of

## EC Conditions

S. No

India. In case, any ambiguity or variation between the provision of both these document arises, the provision made in "Enforcement and Monitoring Guidelines for Sand Mining - 2020" shall prevail.

26. All specific and general conditions which are of public concern at large shall be permanently displayed at a prominent place for public along with address and contact details of authority where the violation of EC conditions can be reported.

27. Project proponent shall erect a signboard on his project site and display information regarding name of the project, No. & date of validity period of EC, annual production capacity of the mineral and other relevant information for the general public.

**B. General condition**

1. No stacking of sand is allowed on road side of any public road including national highways/ State highways.
2. No labour camp shall be allowed in riverbed.
3. Provision shall be made for housing labour with all necessary infrastructure and facilities (outside mining Block and river-bed) such as fuel for cooking, toilets / mobile toilets, safe drinking water, First-Aid facilities, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
4. Labour & Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers shall be undertaken periodically to observe any adverse health impact due to exposure to dust and take corrective measures, if needed.
5. The Project Proponent shall make arrangements for safe drinking water, first aid facility along With anti-venom injection, in case of emergency for the workers.
6. The project proponent shall maintain register for production and dispatch of mineral and submit periodic return (six-monthly) to the SEIAA, Bihar / Regional Office of Ministry of Environment, Forest and Climate Change, Government of India, Ranchi. If the remaining period of lease is for less than a year, the Project Proponent shall submit a monthly return of production.
7. The EC holder shall keep a correct account of quantity of mineral mined out, dispatched from the mine, mode of transport, registration number of vehicle and mine plan. This should be produced before officers of Central and State Government for inspection whenever asked for.
8. Regular monitoring of ground water table shall be carried out at the upstream and depth of water available in the adjoining dug-well.
9. Monitoring of Ambient Air Quality, Water Quality & Noise Quality shall be carried out as per the Notification, as amended from time to time by the Central Pollution Control Board. Water sprinkling should be increased at places of loading and unloading points & transfer points to reduce all sorts of fugitive emissions.
10. The funds earmarked for environmental protection measures should be kept in a separate bank account and should not be diverted for other purpose. Year-wise expenditure should be reported to the SEIAA, Bihar.
11. The Project proponent shall provide all necessary logistic support to the authorized officer of this authority as and when required. They will facilitate and assist the authority in site inspection and monitoring.
12. All the provisions made and restrictions imposed as envisaged in the Bihar Minor Mineral Rule, shall be complied with; particularly regarding Environment Management and payment of compensation to the affected land owner(s).
13. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Bihar.
14. The Ministry / SEIAA may alter / modify the above conditions or stipulate any additional condition(s) in the interest of environment.
15. Concealing of factual data or submission of false / fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal/suspension of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
16. The instruction contained herein above regarding air and noise pollution and details of mining

| S. No | EC Conditions   |
|-------|---|
|       | <p>proposals shall be displayed on Signboard in Hindi for the public information.</p> <p>17. The SEIAA may impose additional conditions in the interest of Environment &amp; Ecology whenever it becomes necessary to do so.</p> <p>Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under section 16 of the National Green Tribunal Act, 2010.</p> |

## 2. Specific Condition

| S. No | EC Conditions   |
|-------|---|
| 2.1   | <p>(a) The proposed plantation consisting of mixture of indigenous and fast growing species of trees must be done and proper care must be taken to ensure 100% survival. Plantation of a minimum of 5 feet tall plants must be done in the 1<sup>st</sup> year of lease period and properly maintained till the validity of Environmental Clearance. (b) The Project Proponent shall execute and conduct measurable Corporate Environment Responsibility (CER) activities like facilities for drinking water supply, infrastructure creation, solar power, Rain Water Harvesting, Solid Waste Management Facilities, sanitation, essential furnitures for the local government schools and Anganwadi Kendras. A display board must be placed for the information to the public (with intimation to the concerned District Magistrate and the concerned district level officers of the concerned departments). (c) Under the Corporate Environment Responsibilities the modalities of all expenditure on skill development programme need to be done in consultation with and guidance of Bihar Skill Devolvement Mission, with intimation to the concerned District Magistrate, State Environment Impact Assessment Authority and Bihar State Pollution Control Board, Patna. (d) Project Proponent has to fix display board on each mining site mentioning thereupon various activities to be done under Environment Management Plan (EMP). (e) The Project Proponent should do the sand mining limited to 03 meters (three meters) depth by semi-mechanised method (without using any heavy machine), preferably by manual excavation. (f) The Project Proponent must maintain existing ponds nearby, if any. (g) Proper care should to be taken during transportation of sand from the sand mining site. There should be freeboard of atleast 03 inches from the body level of the vehicle, so that the sand doesn't get spilled on the road and doesn't affect the air quality as well. (h) Observing the increase in the number of deaths due to lightning in Bihar, the SEIAA resolved to direct the Project Proponent to install lightning arrestor in the area concerned to protect the inhabitants from hazards like lightning. (i) The Proponent must submit untreated high resolution satellite images with stereoscopic 3D view from the National Remote Sensing Center (NRSC), Hyderabad for the month of June and December every year, along with the respective half-yearly compliance report in hard and soft copy.</p> |

**STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY, BIHAR**

F. No.:- SIA/1(a)/2521 (Amend.)/2024

**Sub:** Amendment in Environmental Clearance regarding change in company name i.e. M/s Uma Associates to M/s Uma Associates Infratech Developers Private Limited.

- Reference:-**
1. MoEF&CC ToR Proposal No. - SIA/BR/MIN/415718/2023, MoEF&CC EC Proposal No. - SIA/BR/MIN/443423/2023, MoEF&CC Amendment IN EC Proposal No.- SIA/BR/MIN/466249/2024, & SEIAA File No.:- SIA/1(a)/2521 (Amend.)/2024.
  2. Scrutiny fee submission dated 04-03-2024 (For Amendment).
  3. SEAC meeting held on 06-04-2024 (For Amendment EC).
  4. SEIAA meeting held on 14-04-2023 (For Amendment EC).

**Sir,**

This has reference to your online application for River Sand Mining by M/s **Uma Associates Infratech Developers Private Limited** for Mining of **Rohtas Sone 17 Sand Ghat** on Sone River of District:- Rohtas, State:- Bihar. The details of the projects as mentioned in application are as below:-

| Sl. No. | Item                    | Details  |
|---------|-------------------------|--|
| 1.      | Name of the project     | Proposed Sand Mining Project on Sone River at "Rohtas Sone 17" Sand Ghat |
| 2.      | Area of the project     | 97.40 Ha.  |
| 3.      | Depth of Mining         | 03 Meter   |
| 4.      | Proposed Production     | 1753200 cum per Annum  |
| 5.      | Name of River           | Sone River   |
| 6.      | Name of Mineral         | Sand   |
| 7.      | Location of the Project | Mauza:- Sikaria, Block:- Dehri, District:- Rohtas, State:- Bihar.        |

1. The name of the company change i.e. M/s Uma Associates to M/s Uma Associates Infratech Developers Private Limited.
2. The rest EC conditions shall remain unchanged in the issued EC (EC Identification No. - EC23B001BR150644), File No. - SIA/1(a)/2285/2023 Date of Issue EC - 14/11/2023.

*(Signature)*

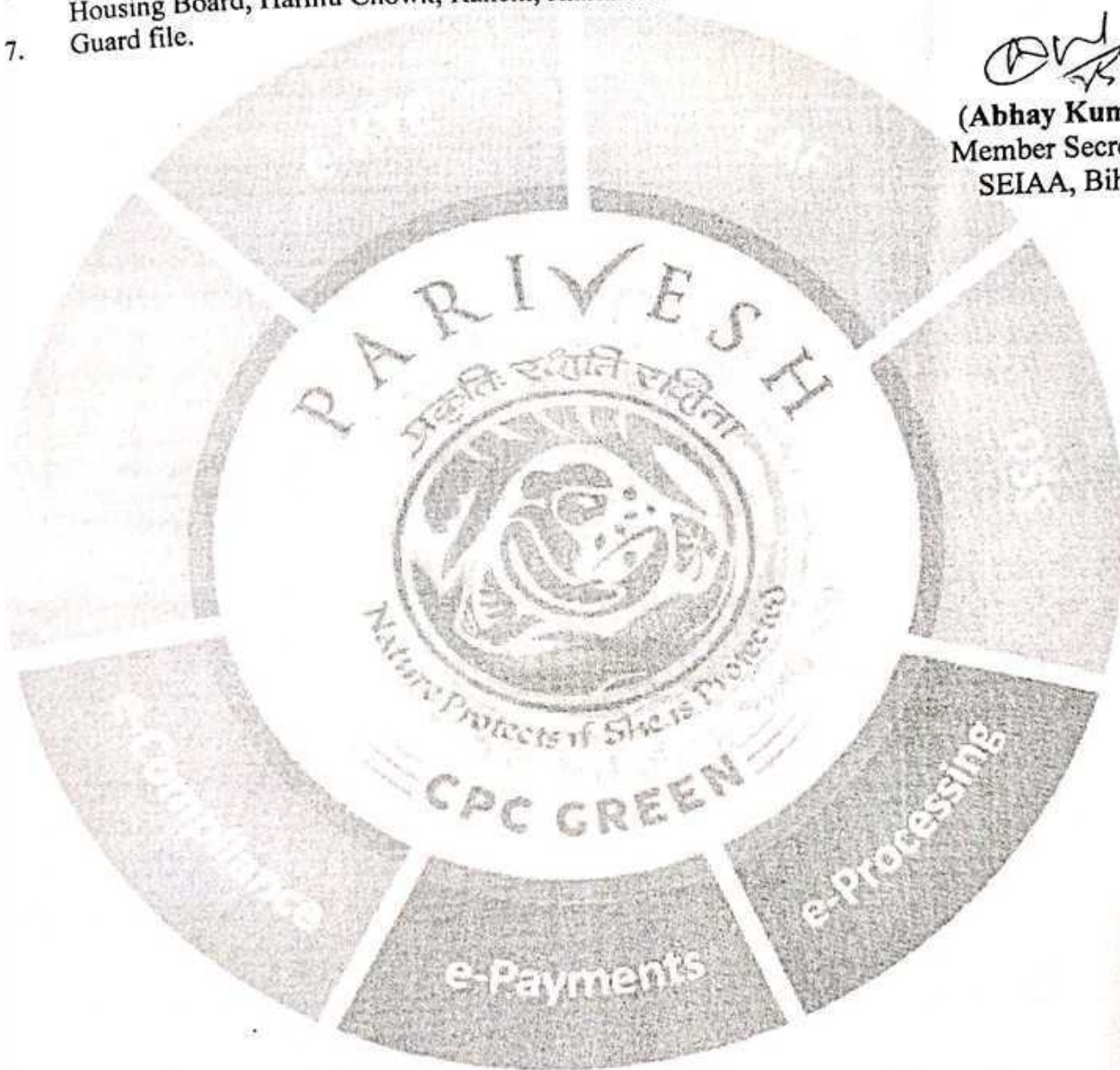
Sd/-  
**(Abhay Kumar)**  
Member Secretary  
SEIAA, Bihar

y, through email, for information and necessary action to :-

1. The Secretary, Environment, Forest and Climate Change Deptt., Govt. of Bihar, Sinchai Bhawan, Patna - 15.
2. The Additional Chief Secretary, Mines and Geology Deptt., Govt. of Bihar, Vikas Bhawan, Patna - 15
3. The Chairman, SEAC, Bihar.
4. The Member Secretary, Bihar State Pollution Control Board, Patna-23.
5. The Director, Mines and Geology Deptt., Govt. Of Bihar, Vikash Bhawan, Patna - 15.
6. MoEF&CC, Integrated Regional Office, Ranchi, 2<sup>nd</sup> Floor, Headquarter - Jharkhand State Housing Board, Harmu Chowk, Ranchi, Jharkhand - 834002.
7. Guard file.

*(Handwritten Signature)*  
25/04/24

(Abhay Kumar)  
Member Secretary,  
SEIAA, Bihar



Validity unknown

Digitally Signed by : Shri Abhay Kumar IFS  
Member Secretary, SEIAA

Date: 25/04/2024