

# **DISTRICT SURVEY REPORT OF UDALGURI DISTRICT, ASSAM**

**FOR SAND MINING OR RIVERBED MINING  
AND  
MINOR MINERALS OTHER THAN SAND  
MINING OR RIVERBED MINING**



**Submitted by:-  
Udalguri District Level Committee  
For  
District Survey Report of Udalguri District, Assam**

Recommended to the SEIAA for approval of  
the DSR of Udalguri District.


Member  
SEAC : Assam

  
Member  
SEAC : Assam

Member  
SEAC : Assam


  
Member  
SEAC : Assam

  
Member  
SEAC : Assam

  
Member  
SEAC : Assam

  
Member Secretary  
SEAC : Assam  
MOEF & CC, GOI

  
Chairman  
SEAC : Assam  
MOEF & CC, GOI

  
Barnalee Nath  
Jt. Director, DGM.



## Acknowledgment

The office of the Divisional Forest Officer, Dhansiri Forest Division, Udalguri is highly grateful to Shri Akash Deep, IAS, Principal Secretary BTC, Kokrajhar cum Chairperson District Survey Report (DSR) Committee, Udalguri District and all other Members of the Committee. We are also thankful to all the concerned officers and staff of the office of the Principal Secretary BTC, Kokrajhar for providing all the support needed to complete the District Survey report for Udalguri District.

The Divisional Forest Officer, Udalguri appreciates the contribution of Range Forest Officers, Beat Forest officers, Frontline Staff of this Division, drivers on duty and local people, who directly or indirectly helped in carrying out the field studies.

This is an in-house prepared Final District Survey Report wherein we acknowledge the help of CPC Environment Solution Pvt. Ltd. Guwahati, Assam-781012 (our knowledge Partner) and its staff members who helped in shaping the report.



Divisional Forest Officer,  
Dhansiri Forest Division, Udalguri  
Cum  
Member Secretary DSR Committee, Udalguri  
Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC


## FOREWORD

In Pursuance to the Gazette Notification, published by Ministry of Environment, Forest, and Climate Change (MoEF&CC), the Government of India, Notification No. S. O. 141(E) Appendix-X, Dated 15/01/2016 and S.O. 3611 (E) New Delhi 25th July 2018 laid procedure for preparation of District Survey Report of Sand mining or river bed mining. The notification and guidelines suggest the preparation of District Survey Report for the better management of the Sand and Gravel extraction. The main purpose of District Survey Report (DSR) is "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". This District survey report of South Udaiguri District, Assam State has been prepared as per the guidelines and notification, for the better management of Sand, Gravel and Boulder Mining.

Monitoring Guidelines for Sand Mining (EMGSM) January 2020, issued by the 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 from time to time as well as the requirement specified in AMMCR, 2013.

The main objective of the preparation of District Survey Report (as per the Sustainable Sand Mining Guideline) is to ensure the following:

- a. Identification of areas of aggradations or deposition where mining can be allowed;
- b. 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;
- c. Identification of mineral wealth in the district;
- d. Identification of areas where no mining zone.

  
Divisional Forest Officer,  
Dhansiri Forest Division  
Udaiguri, BTC



### Certificate


Certificate This is to certify that this Draft District Survey Report for Ordinary Sand/Gravel/Boulder mineral of Udalguri district is prepared in accordance with the prescribed procedure and format vide MoEF & CC Notification S.O. 141 (E), dated 15.01.2016, MoEF & CC Notification S.O. 3611(E), dated 25.07.2018. And is in accordance with the Sustainable Sand Mining Guidelines - January 2020 published by MoEF & CC. There is no discrepancy in information across all submitted documents including hard copy and soft copy of the submitted District Survey Report and whenever specific permissions are required, we will approach the concerned authorities i.e. State Level Expert Appraisal Committee (SEAC), Assam / State Level Environment Impact Assessment Authority (SEIAA). The information furnished in the Draft District Survey Report is true and correct to the best of our knowledge /findings.




**Member  
SEIAA, Assam**



**Chairman  
State Level Environment Impact  
Assessment Authority, Assam.  
Bamunimaidam, Ghty-21**



**Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC**



**Member Secretary  
State Level Environment Impact  
Assessment Authority, Assam.  
Bamunimaidam, Ghty-21**



**BODOLAND TERRITORIAL COUNCIL  
OFFICE OF THE DIVISIONAL FOREST OFFICER: DHANSIRI FOREST DIVISION  
UDALGURI**

Memo No. B DDU/DSR/ 366-69

date. 19-02-2025

To,

The Member Secretary  
SEAC, Assam  
Bamunimaidam, Guwahati-21

Sub: - Request for considering the Final draft District Survey Report (DSR) of Dhansiri Forest Division, Udalguri District for appraisal/evaluation in SEAC meeting and submission of Demand Draft of INR 2 Lakhs as appraisal fees-regarding

Ref: - Your Office letter No. SEAC.249/2014/pt/302, dtd. 23/12/2024.

Sir,

With reference to the subject cited above, I have the honour to inform you that, the District Survey Report (DSR) Committee held a meeting on 18/02/2025 in the Conference Hall of the Principal Secretary, BTC, wherein the draft DSR for Udalguri District was placed in presence of the Chairman and other members of the committee for review and finalization by the Divisional Forest Officer, Dhansiri Forest Division, Udalguri with assistance from CPC Environment Solutions.

The committee thoroughly reviewed the draft DSR (District Survey Report) and after being fully satisfied with the same has accepted and approved for placing the final copy of draft DSR before the members of SEAC, Assam. (Copy of the Minutes of the Meeting enclosed)


It is pertinent to mention here that in terms of the order of the Hon'ble National Green Tribunal on the original application No. 05/2025/EZ, Atanu Borthakur [Applicant (s)] VS Union of Ors [Respondent (s)] dtd. 17/01/2025 all mining activities in the District of Udalguri has been ceased by the District Commissioner, Udalguri vide his office order dtd. 27/01/2025, in compliance of the order of the Hon'ble Green Tribunal, Eastern Zone Bench, Kolkata.

In view of the above, as the District caters to the need of minor minerals irrespective of Govt. projects being executed in the District and other neighboring Districts and also individual demands your goodself is requested to enlist the same at an early date as per convenience thereby allowing us to make a power point presentation on salient points before Hon'ble Committee Members, as there is a huge opportunity of scientific mining in the district on development and revenue of the State.

It is also prayed that the prepared demand draft of INR Rs. 2 lakhs as appraisal fees may kindly be allowed to be submitted on the date before start of the presentation.

This is for favour of your kind information and necessary action.

Yours faithfully

  
19/02/2025  
Divisional Forest Officer,  
Dhansiri Forest Division, Udalguri



Copy to: -

1. The Chairman, SEAC, Assam, for favour of his kind information.
2. The Principal Secretary, BTC cum Chairperson, DSR Committee, Udalguri District for favour of his kind information.
3. The Spl. Chief Secretary (Forest) to the Govt. of Assam, Environment & Forest Deptt., E-Block, Janta Bhawan, Dispur, Guwahati-6, for favour of his kind information.


  
19/02/2025  
Divisional Forest Officer,  
Dhansiri Forest Division, Udalguri

Memo No. A/DDU/DSR/ 227-28

date. 19-02-2025

Copy to: -

1. The Principal Chief Conservator of Forest & Head of Forest Force, Assam, Aranya Bhawan, Panjabari, Guwahati-37, for favour of his kind information.
2. The Additional Principal Chief Conservator of Forest cum Council Head of the Department, BTC, Kokrajhar, for favour of his kind information. He is requested to take up the matter with the Principal Secretary, BTC, Kokrajhar, for payment of the processing fee by way of Demand Draft/RTGS favouring Member Secretary SEIAA, Assam as already communicated vide this office letter No.A/DDU/DSR/1277 dtd. 27/12/2024. (copy enclosed)

  
19/02/2025  
Divisional Forest Officer,  
Dhansiri Forest Division, Udalguri

**Minutes of Meeting of the District Survey Report Committee, Udalguri held on 18/02/2025  
regarding Review and Finalization of the Draft District Survey Report  
(DSR) for Udalguri District**

Date: 18/02/2025

Time: 12.30 P.M

Venue: BTC Secretariat Complex Bodofa Nwgr, Kokrajhar

**Members Present:**

1. Principal Secretary, BTC – *Chairman*
2. Circle Officer, Sadar, Udalguri – *Member*
3. Divisional Forest Officer, Dhansiri Forest Division, Udalguri – *Member Secretary*
4. Executive Engineer, Water Resource, Udalguri – *Member*
5. Regional Officer, Pollution Control Board, Assam, Tezpur – *Member*
6. Assistant Geologist, Directorate of Geology and Mining, Assam – *Member*

**Agenda:**

Review and finalization of the draft District Survey Report (DSR) for Udalguri District prepared with assistance from CPC, Environmental Solutions and decision on submission to SEAC, Assam.

**Discussion:**

**1. Presentation of Draft DSR:**

- The Member Secretary presented the draft District Survey Report (DSR) prepared by the committee with technical assistance from CPC, Environmental Solutions.
- The report was thoroughly reviewed by the members of the Committee.

**2. Observation and Feedback:**

- The committee thoroughly reviewed the draft District Survey Report (DSR) and noted with satisfaction that the report has incorporated all necessary instructions, guidelines, and recommendations provided during the pre-appraisal meetings held by the SEAC for other districts.
- It was observed that the draft DSR aligns with the prescribed format and standards, ensuring compliance with regulatory requirements.
- Minor suggestions for enhancing the clarity of certain sections were provided, which were acknowledged by the Member Secretary for necessary update before submission.

**3. Decision and Submission to SEAC:**

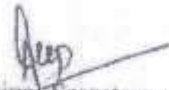
- Considering the urgent need to finalize the DSR, the committee decided to place the draft DSR before the State Expert Appraisal Committee (SEAC), Assam, for appraisal.



**Resolution:**


- The draft DSR, prepared by the committee with assistance from CPC, Environmental Solutions, was approved by the members for submission to SEAC, Assam.
- The Member Secretary was instructed by the Chairman to ensure all necessary arrangements for the submission and presentation of the draft DSR before SEAC.

*Meeting Adjourned: The meeting concluded with the vote of thanks from the Chair.*



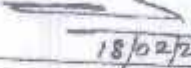
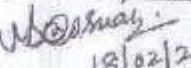
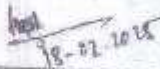


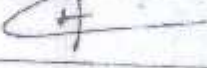
  
Principal Secretary cum  
Chairperson District Survey Committee,  
Udalguri, Dist-Udalguri

Copy for kind information to:

1. Circle Officer, Sadar, Udalguri – *Member*
2. Divisional Forest Officer, Dhansiri Forest Division, Udalguri – *Member Secretary*
3. Executive Engineer, Water Resource, Udalguri – *Member*
4. Regional Officer, Pollution Control Board, Assam, Tezpur – *Member*
5. Assistant Geologist, Directorate of Geology and Mining, Assam – *Member*

  
Principal Secretary cum  
Chairperson District Survey Committee,  
Udalguri, Dist-Udalguri

Attendance sheet of the meeting of the District Survey Report Committee, Udalguri held on 18/02/2025 at 12.30 pm in the conference hall Principal Secretary BTC, Kokrajhar regarding review and finalization of the draft District Survey Report (DSR) for Udalguri District.

| Sl No. | Name & Designation   | Mobile No. | Signature   |
|--------|--|------------|---|
| 1      | Shri Akash Deep, IAS Principal Secretary,<br>BTC, Kokrajhar          |            |                |
| 2      | Shri Sujit Baglari, ACS Secretary BTC,<br>Kokrajhar                  |            |                |
| 3      | Mustafa Ali Ahmed DFO Dhanu<br>Din, Udalguri                         |            |                |
| 4      | Neemita Deka Borkuta,<br>Aesth Geologist, BGM Assam.                 |            | 18/02/25<br>   |
| 5      | Upul Arunkar, AEE Udalguri NR Division<br>Udalguri                   |            | 18-02-2025<br> |
| 6      | Pratik Chandra Boro AEE<br>RLO: Tezpur Pollution Control Board/Assam | 995624177  |               |
| 7      | Sunaj Chetry, AE<br>PCBA, RLO Tezpur                                 | 7005367290 |              |
| 8      | Himmoni Mili. ACS  | 900404301  |              |
| 9      |  |            |   |
| 10     |  |            |   |
| 11     |  |            |   |
| 12     |  |            |   |
| 13     |  |            |   |
| 14     |  |            |   |
| 15     |  |            |   |




Memo No. B/DDU/DSR/ 352-57

date: 19-02-2025

Copy forwarded for kind information to: -

1. The Secretary (Forest) BTC, Kokrajhar
2. The District Commissioner, Udalguri
3. The Executive Engineer, Water Resource Division, Udalguri - Member
4. The Circle Officer, Sadar Udalguri - Member
5. The Regional Officer, Pollution Control Board Assam, Tezpur - Member
6. The Asstt. Geologist for Udalguri District, under Directorate of Geology and Mining, Assam - Member

  
19/02/2025  
Divisional Forest Officer,  
Dhansiri Forest Division, Udalguri  
cum  
Member Secretary, District Survey  
Report Committee, Udalguri

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## PREFACE


The need for a District Survey Report (DSR) has been mandated by the Ministry of Environment, Forest, and Climate Change (MoEF&CC) through Notification No. 125 (Extraordinary, Part II Section 3, Sub-section ii), S.O. 141 (E), dated 15th January 2016. This notification introduced amendments to the EIA Notification 2006, aimed at improving legislative control. As part of these changes, district-level committees were introduced, and the preparation of DSRs became a requirement.

Subsequently, Notification No. 3611 (E), dated 25th July 2018, expanded the DSR's scope to include "Minerals Other than Sand" and provided a specific format for its preparation. The DSR's purpose is to identify areas with mineral potential where mining activities can be permitted, as well as to flag areas where mining should be restricted due to proximity to infrastructure, erosion-prone zones, or environmentally sensitive regions.

The preparation of the DSR involves both primary and secondary data collection. Primary data includes site inspections, surveys, and ground truthing, while secondary data comes from authenticated sources and satellite imagery studies. The secondary data covers information such as the district profile and other relevant activities like census data, socio-economic development related data and other research oriented data purchased from different Govt. and non-Govt. organization to accelerate the project work.

The District Survey Report (DSR) of Udaguri District has been prepared following the guidelines of the Ministry of Environment, Forests and Climate Change (MoEF&CC), Government of India. This report aligns with the MoEF&CC Notification S.O.-1533(E) dated 14th September 2006 and subsequent notification S.O. 141(E) dated 15th January 2016. It aims to ensure the scientific and systematic utilization of natural resources for the benefit of present and future generations. Furthermore, MoEF&CC's notification S.O. 3611(E) dated 25th July 2018 recommends the format for preparing the DSR.

The main objective of the DSR is to identify areas of aggradation where mining can be allowed, and areas of erosion where mining should be restricted. It also involves the calculation of the annual replenishment rate to maintain ecological balance. Additionally, the DSR includes assessing the development potential of in-situ minor minerals.

  
Divisional Forest Officer,  
Dhansiri Forest Division  
Udaguri, BTC





# 1. Introduction

## 1.1 Location and Geographical Area

Udalguri is a district in Assam which shares an international border with Bhutan and also a state border with Arunachal Pradesh at its North. The district was carved out from Darrang district on 14 June, 2004 as one of the four districts under Bodoland Territorial Council. Its neighbouring districts are Sonitpur at its East, Tamulpurat its West and Darrang at its South. Udalguri is easily communicable through road and rail. The district covers an area of 1,985.68 sq. kms.

## 1.2 Administrative Units

The district headquarters of Udalguri district is Udalguri town.

The district has two (2) Sub-divisions viz Bhergaon and Udalguri. These subdivisions are further divided into five (5) Revenue Circles viz. Udalguri, Mazbat, Harisinga, Kalaigaon and Khoirabari. The district is divided into two sub- divisions: Udalguri and Bhergaon. *These two sub-divisions are further divided into 9 revenue circles having a total of 800 Villages. Revenue Circle wise distribution of villages are as follows- Udalguri having 226 Villages, Mazbat having 138 Villages, Harsinga having 203 Villages , Kalaigaon (Part) having 77 Villages, Khoirabari (Part) having 84 Villages, Dalgaon (Part) having 46 Villages, Patharighat (Part) having 1 Village, Mangaldoi (Part) having 6 Villages and Dhekiajuli (Part) having 19 Villages. There are 3 Towns (2 statutory towns and 1 census towns) in this district, namely-- Kalaigaon Town Part (CT), Tangla (TC) and Udalguri (TC).*

**Table 1.1: Administrative setup of Udalguri District**

|   |                                     |        |
|---|-------------------------------------|--------|
| Geographical Area                           | 1,985.68 sq. kms.                   |        |
| Population                                  | 8, 31,668 according to 2011 census. |        |
|   | Male                                | 421617 |
|   | Female                              | 410051 |
| Distance of District Hq. from State capital | 140 kms.                            |        |

  
Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC



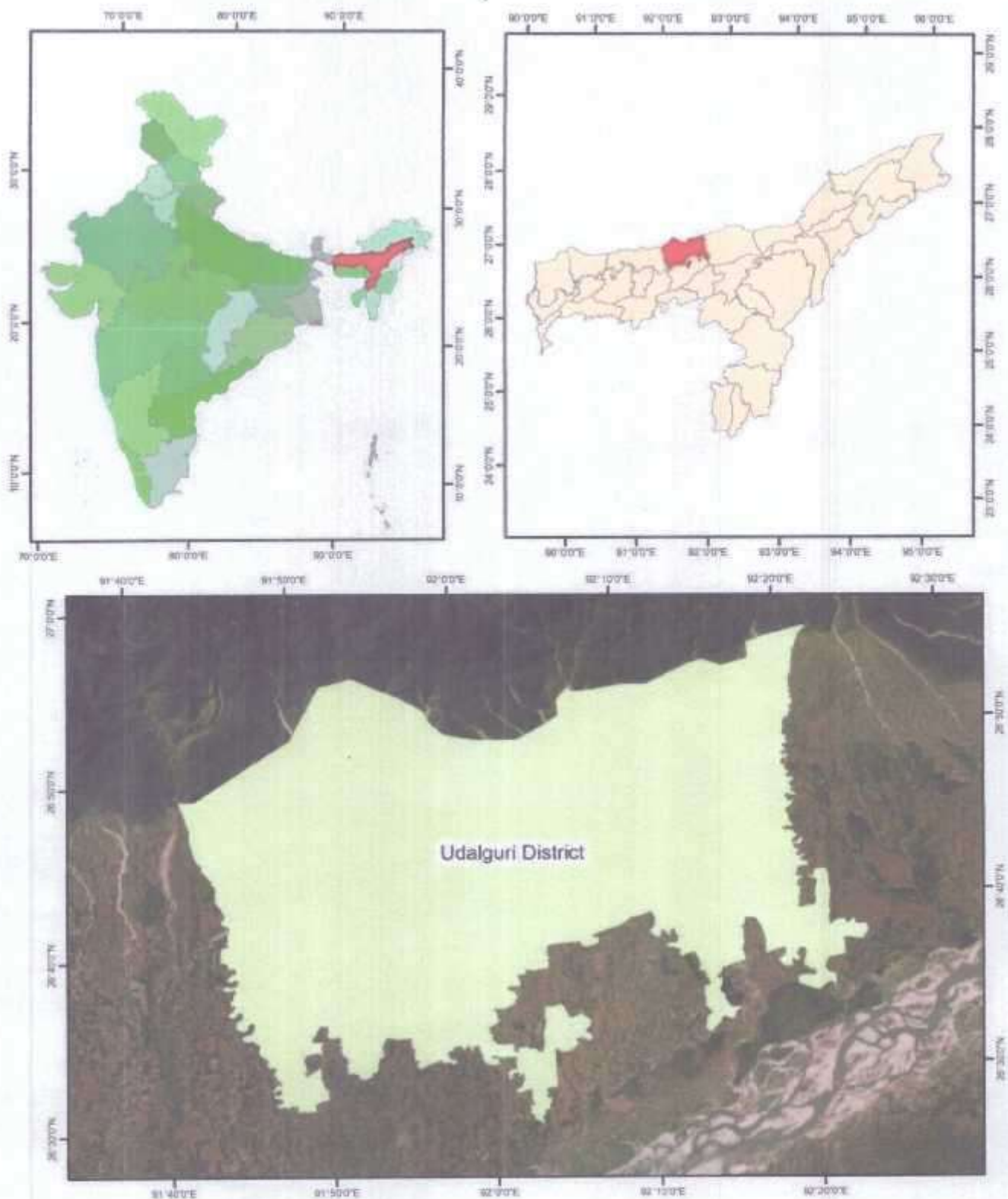
|                         |            |   |
|-------------------------|------------|---|
| Headquarter             | Udalguri   |   |
| District Boundaries     | North -    | Neighboring country Bhutan and Arunachal Pradesh state. |
|                         | East -     | Sonitpur District.                                      |
|                         | West -     | Tamulpur District.                                      |
|                         | South -    | Darrang District.                                       |
| District sub- divisions | 2          |   |
|                         | Udalguri   |   |
|                         | Bhergaon   |   |
| Revenue Circles         | 5          |   |
|                         | Udalguri   |   |
|                         | Majbat     |   |
|                         | Harisinga  |   |
|                         | Kalaigaon  |   |
|                         | Khoirabari |   |
| Development Blocks      | 11         |   |
| Literacy                | 74%        |   |

Source: <https://udalguri.assam.gov.in/about-us/district-profile>



  
 Divisional Forest Officer,  
 Dhansiri Forest Division  
 Udalguri, BTC





**Map 1.1: Location Map of Udalgori district**

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### 1.3 Connectivity


Since, the district is located at the centre of North Bank of the State, it is facilitating as a traffic corridor to the upper and northern districts of the state that are further extending to other N.E. states viz. Arunachal Pradesh and Nagaland. The district is well connected by road and rail. The national highway NH-52 passes through the district. North East Frontier Railways have its railway station at district head quarter i.e. at Udalguri. Dispur, the capital of Assam is at a distance of 140 km by roads from Udalguri town

Udalguri railway station is a railway station on Rangiya–Murkongselek section under Rangiya railway division of Northeast Frontier Railway zone. This railway station is situated at Odalguri town in Udalguri district in the Indian state of Assam. Udalguri Railway Station (ULG) is a small station located in the Udalguri district of Assam. It serves as a vital link for travelers in the region. The station has 3 platforms and provides basic amenities such as waiting rooms and a refreshment stall.

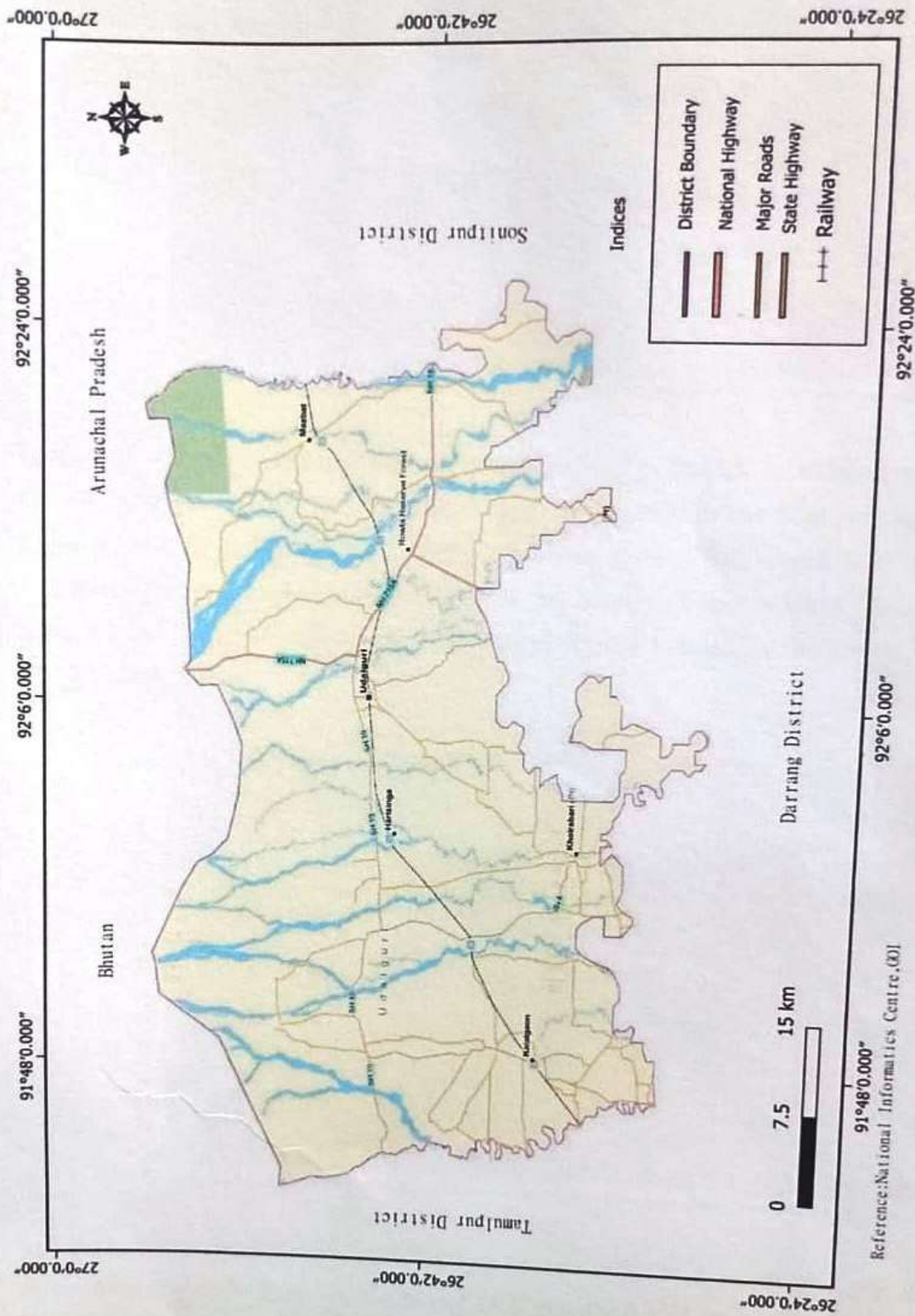
By Air: The Lokapriya Gopinath Bordoloi Airport in Borjhor, Guwahati is 140 km far from the headquarter of the district, and the Saloni Airport of Tezpur is about 100 kms away from Udalgiri.

Since, the district is located at the centre of North Bank of the State, it is facilitating as a traffic corridor to the upper and northern districts of the state that are further extending to other N.E. states viz. Arunachal Pradesh and Nagaland. The district is well connected by road and rail. The national highway NH-52 passes through the district. North East Frontier Railways have its railway station at district head quarter i.e. at Udalguri. Dispur, the capital of Assam is at a distance of 140 km by roads from Udalguri town.



  
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Map 1.2: Connectivity Map of Udalguri district (reference: NIC National Informatics Center)

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District Survey Report (DSR) of Udalguri District



#### 1.4 ASI Monuments of Udalguridistrict



This site is known as **Atrimunir Ashram**, located in Suklai, Atherikhat of Udalguri district, BTC, Assam. The ashram (hermitage) is named after the Sage Atri, son of Lord Brahma. Atri is one of the Saptarishis or seven great Vedic sages. The Ashram is surrounded by tea garden which enhances the beauty of the Ashram. This is a holy place where Yagya is performed in the Yagya Kunda located in the dry pond in the ashram every year.



The **Bhanga Borua Devalaya** is an important temple located close to the Bhanga Borua ME School, in Khoirabari block of Udalguri district of Assam. The temple has a large number of stone sculptures and architectural members including parts of door jambs, which are worshiped by the local community. Remains of bricks are also noticed in and around the temple premise which must have been part of some ancient structural remains. The stone sculptures and architectural members include images of Ganesha, Vishnu, Yoni peeth, Shivalinga, pedestals, pillars etc. Depiction of two elephants in a door jamb is noteworthy.





**Damraputa Shiva temple or Damraputa Rajohua Naamghar** is located in Bhanga Borua of Udalguri district. The temple or Namghar was established in 1845 and since then the place has been an important holy place in the locality. The temple houses a beautiful image of Vishnu with Pala style of iconographic features along with a decorated stone door panel. Potsherds are seen scattered on the surface of the temple premise.



**Dewalkhanda Shiva Temple** is located some 3 km east of Mazbat in Udalguri. The temple houses some fine pieces of architectural members such as door jamb with keertimukha, pillar base, lintels, dressed stones, Nagashakha, Shivalinga and Yonipeetha. The present day temple is of elongated pyramidal shape. Pradip Sarma, in his book "Holy Shrines of Assam" opines that these ruins are of 12th century CE.



  
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**Dhanshrighat Anchalik Shiva Mandir** is located on the bank of the river Dhanshri, close to the Dhanshri Bridge in Balisiha Jangal in Udalguri. This is an important place for worship for the locals.



**Hirimba Bathou Temple or Hirimba Bathou Thansali** is an iconic temple located at Chinakona village near Khoirabari in Udalguri. This is a centre of Bodo culture, religion, beliefs, traditions, rites and rituals. Apart from the grand architecture of the temple, some beautiful sculptures depicting Bodo rituals have been installed in the temple premise to signify the cultural affinity.

  
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**Ishwar Deulpur Devalaya** is located in Beghapara area of Bornagaon in Udalguridistrict. The garbhagriha of the temple is an underground chamber of octagonal shape made of bricks. A Shivalinga is placed at the base of the chamber and worshiped by the locals. Sacrificial swords of various shapes and sizes are also recorded at the temple. A large water tank is located close to the temple.



**Jorapukhuri** is an archaeological site in Hatigarh area of Udalguri District. This site has a good number of stone architectural members and dressed stones carved with geometric and floral designs. These include door jambs with depiction of divine deities, pillars, angasikhara etc. belonging to 10th - 12th centuries CE. The word Jorapukhuri is derived from the Assamese words, 'jora' and 'pukhuri', meaning two tanks in the area. The site is protected by the Directorate of Archaeology, Govt. of Assam.

  
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**Madhab Gohain Shiva Temple** is located close to the Madhab Gohain ME School in Mazbat block of Udalguri district. Maheswar Neog in his book "Pabitra Assam" writes that the ancient structure of the temple collapsed in the 1897 earthquake. The temple has a Shivalinga which is worshiped by the locals. An annual mela is held in Shiva Chaturdashi. A few architectural members including pieces of door jambs are seen in the temple premise.



**Mahamuni Devalaya** is located in Mahaliapara area of Mazbat in Udalguri. It is believed to be established in the year 1569 CE. This Garbhagriha of the temple has a unique structure, possibly influenced by the Buddhist tradition. Apart from regular worship and visit of a large number of devotees, the Buddha Purnima is celebrated in a large manner every year.

  
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**Mukteshwari Devalaya** is located in Adala village in Ambagaon of Udalguri district. The temple is associated with the legend of Sati Behula or Beula. The region is believed to be the capital of the Shahe Raja, the father of Beula and the birthplace of Beula. Beula's husband Lakhinder was the son of Chand Sadagar who was a businessman. It is also believed that Chand Sadagar tied his boat in upland near the Kalindi River. Beula was cursed at this temple to be a widow; however, Beula could bring her dead husband back to life with her devotion to Ma Manasa, the goddess of snakes. Presently there are three temples, namely Manasha, Shiva and Vishnu at the premise of the Mukteshwari Devalaya. Several sacrificial swords are found at the temple. A major attraction is the old banyan tree at the temple.



**Muradeo Devalaya or Muradeor Devalaya** is located in Deorgaon in Kobirali area of Udalguri. The temple is believed to be constructed by king Naranarayan who was the last ruler of the undivided Koch dynasty of Kamata Kingdom. The legend attached to the temple narrates that Ma Kamakhya beheaded the priest named Kendukalai with a slap and the severed head fell at this place which was the birthplace of the priest. Later, the king Naranarayan constructed the temple in memory of his priest. The Garbhagriha of the temple is built with bricks and a stone door jamb having Ganesha at the Lalatabimba.

Architectural members such as door jambs depicting a kalasha, flanked by two lions, several Shivalingas, pedestals, amalaka are found at the temple. Human sacrificial swords are also recorded at the temple.



**Nolkhamra Devalaya** is located in Nolkhamra area of Udalguri. It is an important temple, believed to be constructed by the Koch king Naranarayan. The temple has a few architectural members.



**Routa Satra or Rowta Satra** is located in Routa area of Udalguri. It is a Vaishnavite institution. The rectangular prayer-hall known as the Namghar depicts the Dashavatara (ten incarnations) of Lord Vishnu and stories related to Lord Krishna in relief.



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**Tamreshwar Devalaya** is one of the most important archaeological sites of Assam, located in Deuriapara in Khoirabari of Udalgori district. The site has a brick-built mandapa with a floor of stone, large number of sculptures, temple ruins, architectural members, pillars, a water tank known as Gajhidhowa Pukhuri and a Garbhagriha with a Shivalinga. The ruins can be considered as part of one or several temples of the early medieval period, belonging to 10th to 12th century CE. The copperplate inscription issued by Ahom king Gaurinath Simha (1780-1795) records the land grant given to Rudreshwar and Tamreshwar Devalaya.

It is a protected site by the Directorate of Archaeology, Govt. of Assam. A museum is constructed in the temple premise to display the archaeological remains including door jambs, sculptures, decorated architectural members etc.

*Source: Archaeological Survey of India*



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### 1.5: Forest (Reserve Forest, National park/ Sanctuary & respective ESZ)

**Bornadi Wildlife Sanctuary** is a 26.22-square-kilometre (10.12 sq mi) wildlife sanctuary situated on the foothills of Himalayas bordering Bhutan in the north and is situated in Udalguri district & Baksa District of Assam. This sanctuary is named after the river Bornadi which flows on its western border. It is 30 km (19 mi) from Tangla town and 130 km (81 mi) from Guwahati. The sanctuary was established in 1980 to protect the hispid hare (*Caprolagus hispidus*) and pigmy hog (*Porcula salvania*). Pretty approachable at about 11 km out of library point, the sanctuary is home to many birds such as The White Capped Water Redstart and the Red Billed Blue Magpie. If you are lucky you can also spot some animals including panther, deer, Himalayan goat and even a leopard at times.

### 1.6: Need for DSR

In pursuance to the Gazette Notification, Ministry of Environment, Forest, and Climate Change (MoEF&CC), the Government of India Notification No. S.O. 141 (E) Appendix- X, dated 15.01.2016 & S.O. 3611 (E) New Delhi, 25.07.2018 laid procedure for preparation of District Survey Report of sand mining or river bed mining. Apart from other aspects, it categorically mentions that - District Survey Report for sand mining shall be prepared before the auction/ e-auction/ grant of the mining lease/ Letter of Intent (LoI) by Mining department or department dealing the mining activity in respective states. District Survey Report is to be prepared in such a way that it not only identifies the mineral-bearing area but also define the mining and no mining zones considering various environmental and social factors. Ministry of Environment, Forests and Climate Change (MoEF&CC) has released guidelines to monitor and check illegal sand mining in the country Sustainable Sand Management Guidelines (SSMG), 2016 focuses on the management of sand mining.

The main objectives of these Guidelines include environmentally sustainable and socially responsible mining; conservation of the river equilibrium and its natural environment by protection and restoration of the ecological system; avoiding pollution of river water; and prevention of depletion of ground water reserves. The Guidelines explain the deleterious impacts of indiscrete mining and provides the guidelines for sustainable sand and gravel mining. It lays down the structure of district survey report and provides recommendations for river bed mining, off- channel or floodplain extraction, extraction methods and reclamation plans. It highlights the impact of marine sand mining on marine biodiversity. It also discusses the legal regime relating to mining of minor minerals. The Guidelines talk about management of mining in cluster and post-flood sand deposits on agricultural field of farmers. It lays down the standard environmental conditions for sand mining and the procedure for monitoring system for sustainable sand mining. 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 from time to time as well as the requirement specified in AMMCR, 2013.

### 1.7: Sand Mining Guidelines

In order to ensure sustainable and systematic sand mining with monitored protection of the environment, the guidelines laid down in the following documents are followed:

As per the guidelines prescribed in above said documents, special attention has been given to the following aspects:


1. The permanent boundary pillars need to be erected after the 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 both sides of the bank shall not be more than '100 meters.
2. Proper channelization of rivers is to be carried out so as to avoid the possibility of flooding and to maintain the flow of rivers
3. The mining plan should include the original ground level (OGL), available from the District Survey Report (DSR) and to be recorded at an interval not more than 10 m x 10 m along and across the length of the river. The area of aggradations/ deposition needs to be ascertained by comparing the level difference between the OGL and water level.
4. Riverbed sand mining shall be restricted within the central 3/4th width of the river/ rivulet or 7.5 meters (inward) from river banks but up to 10% of the width of the river. The central 3/4th part of the river need to be identified on a map, out of which the area of deposition/aggradations needs to be identified. The remaining 1/4th area needs to be marked as 'no mining zone.
5. The sediment sampling should include the bed material and bed material load before, during and after the extraction period. The above exercise by DSR require four surveys i.e. 1st survey in the month of April, 2nd survey at the time of closing of mines for monsoon, 3rd survey needs to be carried out after monsoon to know the quantum of material deposited/replenished and the 4th survey to be carried out at the end of march to know the quantum of material excavated. The above information will be available in District Survey Report (DSR).
6. The particle size distribution and bulk density of deposited material are required to be assessed by a NABL- recognized laboratory.
7. Depth of mining should be restricted to 3 meters and distance from the bank should be 1/4th at the river width and should not be less than 7.5 meters. Alternatively, the distance from the bank should be 3 meters or 10% of the river width, whichever is less.
8. Demarcation of the mining area with pillars and geo referencing should be done prior to the start of the mining operation.
9. A buffer distance/ un-mined block of 50 meters after every block of 1000 meters over which mining is undertaken, shall be maintained.





10. Sand may be extracted across the entire active channel during the dry season only. No sand mining during the monsoon session, as defined in DSR or IMD for each state.
11. Sand shall not be extracted up to a distance of 1 km from major bridges and highways on both sides, or five (5) times the span of a bridge/ public civil structure (including water intake points) on the up-stream side and ten (10) times the span of such bridge on the down-stream side, subjected to a minimum of 250 meters on the upstream side and 500 meters on the downstream side.
12. Sand shall not be allowed to be extracted where erosion may occur, such as, at the concave bank.
13. River mining from outside should not affect rivers. No mining shall be permitted in an area up to a width of 100 meters from the active edge of the embankments or distance prescribed by irrigation department. The mining from area outside river bed shall be permitted subject to a condition that a safety margin of two (2) meters shall be maintained above the groundwater level while undertaking mining operation.
14. Sand shall not be extracted within 200 to 500 meters from any crucial hydraulic structure such as pumping station, water intake.
15. All the sand- carrying vehicles (from source to destination) are to be tracked through GPS or RFID. There should be one entry and exit point for trucks/dumpers. The Project Proponent should carry out effective monitoring of the same. In case of vehicle breakdown, the validity of the transport permit can be extended by State Authority, if so required. In compliance of sand mining guidelines and to adhere to the rule under the Assam Minor Mineral Concession Rules, 2013 there will be provision of installation of weigh- bridge and fitting of GPS in all vehicles carrying minor minerals which are to be treated as violation and breach of agreement. No mining activities shall be allowed without installation of weigh bridge by the mineral concession holders and without fitting of GPS in the vehicles by the vehicle owners involved in transportation of minor minerals in future.

The District Survey Report for minor minerals is prepared with an aim to demarcate the areas which are prone to erosion or degradation, along with details of eco sensitive zones and other areas where mining is to be prohibited as per MoEF&CC, 2018 and relevant provisions. When blasting is involved, no mining within a distance of 200 m from the boundary line of any railway line reservoir, tank bund, canal, or other public works and public structures or any public road or building whereas, when no blasting is involved, minimum distance of 50 m is defined (*Honourable NGT Order before Principal Bench in the*


  
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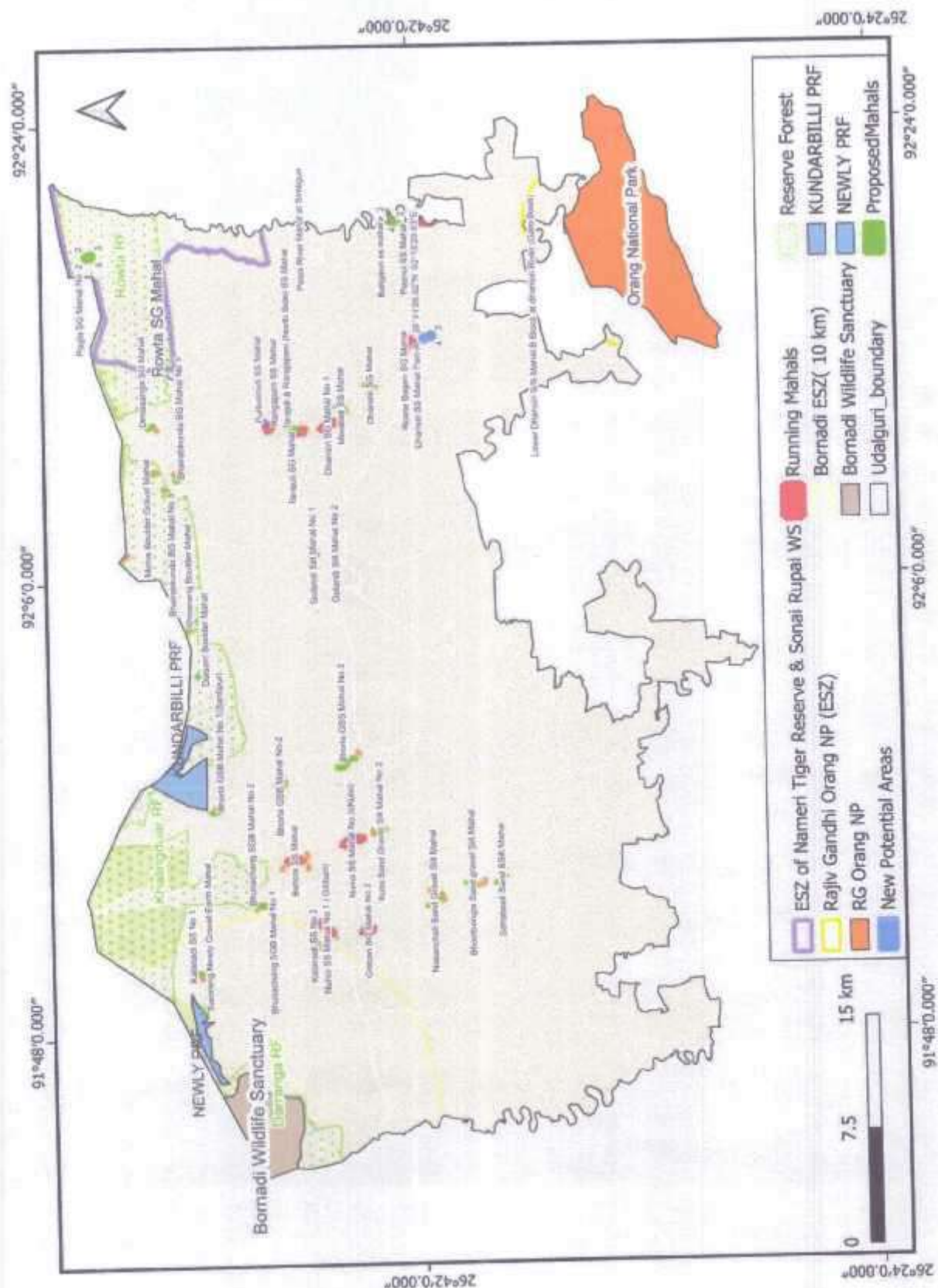




| Mining Type |                               | Minimum Distance | Locations   |
|-------------|-------------------------------|------------------|---|
| A.          | When Blasting is not involved | 100 m            | Residential/ Public buildings, Inhabited sites, Protected monuments, Heritage sites, National / State Highway, District roads, Public roads, Railway line/ area, Ropeway or Ropeway trestle or station, Bridges, Dams, Reservoirs, River, Canals, or Lakes or Tanks, or any other locations to be considered by States. |
| B.          | When Blasting is involved     | 200 m **         |   |



  
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Map 1.3: Map Showing Protected Areas, Reserve forest, Running and Proposed Mining permit/contrat Areas of Udalguri District.

Source: <https://moef.gov.in>, Dept. of forest(Assam)

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District Survey Report (DSR) of Udalguri District





## 2. Over view of mining activity in Udalguri district

Assam, a resource- rich state in India, is endowed with valuable minerals such as coal, limestone, and various minor minerals like sand, gravel, and boulders. These resources significantly contribute to the state's economy through royalties and employment generation. The state government has adopted a structured approach to regulating and managing the mining sector to balance resource utilization with environmental conservation.

In Udalguri district collection of sand, gravel, boulder, earth, silt etc. from riverbed is considered as one of the main minor mineral sources of the district. These materials are primarily used for civil construction purposes.

Table 2.1: Mineral-wise leases in Udalguri District

| Sl No | River    | No. of Lease | Minerals         |              |               |      |         |                        |                      |                     |             |              |
|-------|----------|--------------|------------------|--------------|---------------|------|---------|------------------------|----------------------|---------------------|-------------|--------------|
|       |          |              | Boulder & Gravel | Sand & Stone | Sand & Gravel | Silt | Boulder | Sand, Gravel & Boulder | Sand, Gravel & Stone | Sand, Gravel & Silt | Sand & Silt | Gravel Earth |
| 1     | Dhansiri | 12           | 2                | 10           | 0             | 0    | 0       | 0                      | 0                    | 0                   | 0           | 0            |
| 2     | Monai    | 1            | 0                | 1            | 0             | 0    | 0       | 0                      | 0                    | 0                   | 0           | 0            |
| 3     | Dimasang | 1            | 0                | 0            | 1             | 0    | 0       | 0                      | 0                    | 0                   | 0           | 0            |
| 4     | Rowta    | 2            | 0                | 2            | 0             | 0    | 0       | 0                      | 0                    | 0                   | 0           | 0            |
| 5     | Pagla    | 1            | 0                | 0            | 1             | 0    | 0       | 0                      | 0                    | 0                   | 0           | 0            |
| 6     | Pasnoi   | 4            | 0                | 2            | 0             | 0    | 0       | 0                      | 0                    | 0                   | 2           | 0            |
| 7     | Golondi  | 2            | 0                | 0            | 0             | 2    | 0       | 0                      | 0                    | 0                   | 0           | 0            |
| 8     | Khowrang | 1            | 0                | 0            | 0             | 0    | 1       | 0                      | 0                    | 0                   | 0           | 0            |
| 9     | Bhorla   | 3            | 0                | 0            | 0             | 0    | 0       | 2                      | 1                    | 0                   | 0           | 0            |
| 10    | Kulsi    | 3            | 0                | 2            | 0             | 0    | 0       | 0                      | 0                    | 1                   | 0           | 0            |
| 11    | Nunoi    | 7            | 0                | 1            | 1             | 0    | 0       | 2                      | 0                    | 2                   | 1           | 0            |
| 12    | Kalanadi | 2            | 0                | 2            | 0             | 0    | 0       | 0                      | 0                    | 0                   | 0           | 0            |
| 13    | Samrang  | 1            | 0                | 0            | 0             | 0    | 0       | 0                      | 0                    | 0                   | 0           | 1            |
| 14    | Daisam   | 1            | 0                | 0            | 0             | 0    | 1       | 0                      | 0                    | 0                   | 0           | 0            |

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### 3. List of existing mining leases of Udalguri district

Details of List of existing mining leases of the districts are furnished in the following table:

**Table 3.1: Boulder & Gravel Mine Leases**

| Sl No | Mine Name                                  | River          | Lease Area in Ha |
|-------|--|----------------|------------------|
| 1     | Bhairabkunda BG Mahal No.1                 | Dhansiri River | 4.64 Ha          |
| 2     | Bhairabkunda BG Mahal No.3                 | Dhansiri River | 4.85 Ha          |
| 3     | Bhairabkunda Boulder and Sand Gravel Mahal | Dhansiri River | 4.81             |

**Table 3.2: Sand & Stone Mine Leases**

| Sl No | Mine Name                                  | River          | Lease Area in Ha |
|-------|--|----------------|------------------|
| 1     | Tarajuli & Rangapani (North Side) SS Mahal | Dhansiri River | 4.52 Ha          |
| 2     | Rangapani SS Mahal                         | Dhansiri River | 4.00 Ha          |
| 3     | Dhansiri SS Mahal Part-A (Balisiya Jangal) | Dhansiri River | 4.31 Ha          |
| 4     | Dhansiri ( Balisiya Jargaon) SS Mahal      | Dhansiri River | 4.85 Ha          |
| 5     | Lower Dhansiri SS Mahal Part-B             | Dhansiri River | 4.88 Ha          |
| 6     | Merebil SS Mahal                           | Rowta River    | 4.16 Ha          |
| 7     | Beltoia SS Mahal                           | Kulsi River    | 3.80 Ha          |
| 8     | Nunoi SS Mahal No.3 ( Kulsi)               | Kulsi River    | 3.70 Ha          |
| 9     | Nunoi SS Mahal No.1 (Gitibari)             | Nunoi River    | 4.90 Ha          |
| 10    | Kalanadi SS No.1                           | Kalanadi River | 4.50 Ha          |
| 11    | Kalanadi SS No.2                           | Kalanadi River | 3.30 Ha          |
| 12    | Dhansiri SG Mahal                          | Dhansiri River | 4.61 ha          |
| 13    | Tarajuli SG Mahal                          | Dhansiri River | 4.80 Ha          |
| 14    | Dhansiri SG Mahal No.1                     | Dhansiri River | 4.48 Ha          |
| 15    | Rowta Bagan SG Mahal                       | Dhansiri River | 4.50 Ha          |
| 16    | Pasnoi River Village Samugaon              | Pasnoi river   | 4.85 ha          |

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|    |                        |                |         |
|----|------------------------|----------------|---------|
| 17 | Pasnoi River Simliguri | Pasnoi river   | 4.09 ha |
| 18 | Purobkhuti S.S. Mahal  | Dhansiri River | 4.98 ha |

**Table 3.3: Sand & Gravel Mine Leases**

| SI No | Mine Name              | River          | Lease Area in Ha |
|-------|------------------------|----------------|------------------|
| 1     | Dimasang SG Mahal      | Dimasang River | 4.81 Ha          |
| 2     | Pagla SG Mahal No.2    | Pagla River    | 4.80 ha          |
| 3     | Gitibari SG Mahal No.2 | Nunoi River    | 4.40 Ha          |

**Table 3.4: Silt Mine Leases**

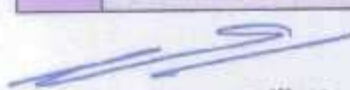
| SI No | Mine Name               | River         | Lease Area in Ha |
|-------|-------------------------|---------------|------------------|
| 1     | Golondi Silt Mahal No.1 | Golondi River | 4.00 Ha          |
| 2     | Golondi Silt Mahal No.2 | Golondi River | 4.70 Ha          |

**Table 3.5: Boulder Mine Leases**

| SI No | Mine Name                  | River          | Lease Area in Ha |
|-------|----------------------------|----------------|------------------|
| 1     | Khowrang Boulder Mahal     | Khowrang River | 4.80 Ha          |
| 2     | Daisam Boulder Mahal       | Daisam River   | 4.90 Ha          |
| 3     | Monai Boulder Gravel Mahal | Monai river    | 3.65 ha          |

**Table 3.6: Sand, Gravel & Boulder Mine Leases**

| SI No | Mine Name                        | River        | Lease Area in Ha |
|-------|----------------------------------|--------------|------------------|
| 1     | Bhorla GSB Mahal No.1 (Santipur) | Bhorla River | 4.90 Ha          |
| 2     | Bhorla GSB Mahal No.2            | Bhorla River | 4.60 Ha          |
| 3     | Bhutiasang SGB Mahal No.1        | Nunoi River  | 4.90 Ha          |
| 4     | Bhutiasang SGB Mahal No.2        | Nunoi River  | 3.50 Ha          |

  
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**Table 3.7: Sand, Gravel & Stone Mine Leases**

| <i>Sl No</i> | <i>Mine Name</i>      | <i>River</i> | <i>Lease Area in Ha</i> |
|--------------|-----------------------|--------------|-------------------------|
| 1            | Bhorla GSS Mahal No.3 | Bhorla River | 3.40 Ha                 |

**Table 3.8: Sand, Gravel & Silt Mine Leases**


| <i>Sl No</i> | <i>Mine Name</i>                   | <i>River</i> | <i>Lease Area in Ha</i> |
|--------------|------------------------------------|--------------|-------------------------|
| 1            | Kulsi Sand Gravel Silt Mahal No.2  | Kulsi River  | 3.29 Ha                 |
| 2            | Nasanchali Sand Gravel Silt Mahal  | Nunoi River  | 4.75 Ha                 |
| 3            | Bhootbangla Sand Gravel Silt Mahal | Nunoi River  | 3.50 Ha                 |

**Table 3.9: Sand & Silt Mine Leases**

| <i>Sl No</i> | <i>Mine Name</i>            | <i>River</i> | <i>Lease Area in Ha</i> |
|--------------|-----------------------------|--------------|-------------------------|
| 1            | Sahabasti Sand & Silt Mahal | Nunoi River  | 3.50 Ha                 |
| 2            | Baligaon SS Mahal           | Pasnoi River | 4.00 Ha                 |
| 3            | PasnoiSSMahal               | Pasnoi River | 3.88Ha                  |

**Table 3.10: Gravel Earth Mine Leases**

| <i>Sl No</i> | <i>Mine Name</i>                 | <i>River</i> | <i>Lease Area in Ha</i> |
|--------------|----------------------------------|--------------|-------------------------|
| 1            | Samrang Newly Gravel Earth Mahal | Samrang      | 4.00 Ha                 |

  
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**Tabel 3.11: Table showing Running Mining permits/contracts areas of Udalguri District**

| Sl. No. | Name of Mahal                  | Location and area of mining lease | Mineral Name  | GPS- Coordinates   |  | Status  |
|---------|--------------------------------|-----------------------------------|---------------|--|--|---------|
|         |                                |                                   |               | Latitude   | Longitude  |         |
| 1       | Tarajuli SG Mahal              | Dhansiri River 4.80Ha             | Sand & Stone  | N-26°46'8.48"<br>N-26°46'9.56"<br>N-26°46'46.25"<br>N-26°46'46.17"       | E-92°11'53.87"<br>E-92°11'27.24"<br>E-92°11'51.96"<br>E-92°11'53.73" | Running |
| 2       | Rangapani SS Mahal             | Dhansiri River 4.00Ha             | Sand & Stone  | N-26°47'17.178"<br>N-26°47'19.258"<br>N-26°47'13.598"<br>N-26°47'10.108" | E-92°12'22.95"<br>E-92°12'17.10"<br>E-92°12'13.03"<br>E-92°12'17.70" | Running |
| 3       | Dhansiri SG Mahal No.1         | Dhansiri River 4.48Ha             | Sand & Stone  | N-26°45'33.01"<br>N-26°45'32.95"<br>N-26°45'2.10"<br>N-26°45'2.43"       | E-92°11'57.31"<br>E-92°11'55.76"<br>E-92°12'12.77"<br>E-92°12'14.29" | Running |
| 4       | Rowta Bagan SG Mahal           | Dhansiri River 4.50 Ha            | Sand & Stone  | N-26°42'09.81"<br>N-26°41'53.58"<br>N-26°41'53.02"<br>N-26°42'07.44"     | E-92°15'10.09"<br>E-92°15'24.32"<br>E-92°15'20.22"<br>E-92°15'09.79" | Running |
| 5       | Pasnoi River Village Samugaon  | Pasnoi River 4.85Ha               | Sand & Stone  | N-26°43'19.97"<br>N-26°43'47.39"<br>N-26°43'23.34"<br>N-26°43'23.91"     | E-92°13'56.86"<br>E-92°13'42.87"<br>E-92°13'35.78"<br>E-92°13'38.22" | Running |
| 6       | Golondi Silt Mahal No. 1       | Golondi River 4.00Ha              | Silt          | N-26°45'17.31"<br>N-26°45'17.08"<br>N-26°44'55.23"<br>N-26°45'54.42"     | E-92°07'1.77"<br>E-92°07'3.38"<br>E-92°07'7.38"<br>E-92°07'5.75"     | Running |
| 7       | Beltola SS Mahal               | Kulsi River 3.80Ha                | Sand & Stone  | N-26°47'11.05"<br>N-26°47'11.02"<br>N-26°46'39.80"<br>N-26°46'39.61"     | E-91°54'53.35"<br>E-91°54'55.20"<br>E-91°54'57.79"<br>E-91°54'59.03" | Running |
| 8       | Nunoi SS Mahal No.3 (Kulsi)    | Kulsi River 3.70Ha                | Sand & Stone  | N-26°45'00.82"<br>N-26°45'00.64"<br>N-26°44'16.32"<br>N-26°44'16.34"     | E-91°55'32.00"<br>E-91°55'31.11"<br>E-91°55'43.89"<br>E-91°55'44.85" | Running |
| 9       | Nunoi SS Mahal No.1 (Gitibari) | Nunoi River 4.90Ha                | Sand & Stone  | N-26°45'3.33"<br>N-26°46'2.63"<br>N-26°45'30.44"<br>N-26°45'29.61"       | E-91°52'29.80"<br>E-91°52'30.73"<br>E-91°51'59.72"<br>E-91°52'1.12"  | Running |
| 10      | Gitibari SG Mahal No.2         | Nunoi River 4.40Ha                | Sand & Gravel | N-26°44'16.91"<br>N-26°44'17.23"<br>N-26°43'55.16"<br>N-26°43'53.85"     | E-91°52'1.65"<br>E-91°52'3.43"<br>E-91°52'10.20"<br>E-91°52'9.10"    | Running |


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**Tabel 3.12: Table showing proposed Mining permits/contracts areas of Udalguri District**

| Sl. No. | Name of Mahal                              | Location and area of mining lease | Mineral Name     | GPS- Coordinates   |  | Status   |
|---------|--|-----------------------------------|------------------|--|--|----------|
|         |  |                                   |                  | Latitude   | Longitude  |          |
| 1       | Bhairabkunda BG Mahal No.1                 | Dhansiri River 4.64Ha             | Boulder & Gravel | N-26°51'19.17"<br>N-26°51'13.78"<br>N-26°51'16.15"<br>N-26°51'10.08" | E-92°10'4.47"<br>E-92°10'11.78"<br>E-92°9'59.30"<br>E-92°10'6.28"    | Proposed |
| 2       | Bhairabkunda BG Mahal No.3                 | Dhansiri River 4.85Ha             | Boulder & Gravel | N-26°51'59.07"<br>N-26°51'52.92"<br>N-26°51'55.12"<br>N-26°51'49.94" | E-92°9'18.58"<br>E-92°9'27.24"<br>E-92°9'13.35"<br>E-92°9'23.39"     | Proposed |
| 3       | Tarajuli & Rangapani (North Side) SS Mahal | Dhansiri River 4.52Ha             | Sand & Stone     | N-26°46'54.00"<br>N-26°46'27.63"<br>N-26°46'27.55"<br>N-26°46'54.02" | E-92°12'11.07"<br>E-92°11'55.37"<br>E-92°12'0.29"<br>E-92°12'7.55"   | Proposed |
| 4       | Dhansiri SG Mahal                          | Dhansiri River 4.81Ha             | Sand & Stone     | N-26°43'46.81"<br>N-26°43'47.39"<br>N-26°43'23.34"<br>N-26°43'23.91" | E-92°13'40.48"<br>E-92°13'42.87"<br>E-92°13'35.78"<br>E-92°13'38.22" | Proposed |
| 5       | Lower Dhansiri SS Mahal part-B             | Dhansiri River 4.88Ha             | Sand & Stone     | N-26°37'12.58"<br>N-26°37'14.51"<br>N-26°37'03.16"<br>N-26°37'04.78" | E-92°15'47.18"<br>E-92°15'51.31"<br>E-92°13'53.35"<br>E-92°15'59.14" | Proposed |
| 6       | Monai Boulder Gravel Mahal                 | Monai River 3.65Ha                | Boulder & Gravel | N-26°52'20.7"<br>N-26°52'20.9"<br>N-26°52'04.1"<br>N-26°32'04.1"     | E-92°10'17.6"<br>E-92°10'20.2"<br>E-92°10'21.0"<br>E-91°55'17.5"     | Proposed |
| 7       | Dimasang SG Mahal                          | Dimasang River 4.81Ha             | Sand & Gravel    | N-26°52'29.79"<br>N-26°52'29.32"<br>N-26°52'07.80"<br>N-26°32'07.28" | E-92°12'11.13"<br>E-92°12'14.27"<br>E-92°12'13.10"<br>E-92°12'10.50" | Proposed |
| 8       | Merebil SS Mahal                           | Rowta River 4.16Ha                | Sand & Stone     | N-26°44'33.06"<br>N-26°44'59.02"                                     | E-92°12'48.03"<br>E-92°12'53.04"                                     | Proposed |
| 9       | Pagla SG Mahal No.2                        | Pagla River 4.80 Ha               | Sand & Gravel    | N-26°54'40.10"<br>N-26°54'40.60"<br>N-26°54'27.98"<br>N-26°54'28.50" | E-92°18'53.20"<br>E-92°18'58.40"<br>E-92°18'56.10"<br>E-92°19'00.67" | Proposed |
| 10      | Pasnoi SS Mahal                            | Pasnoi River 3.88Ha               | Sand & Silt      | N-26°46'56.44"<br>N-26°46'56.21"<br>N-26°46'40.58"<br>N-26°46'39.14" | E-92°19'56.33"<br>E-92°19'58.97"<br>E-92°19'59.48"<br>E-92°19'59.46" | Proposed |
| 11      | Pasnoi River Simliguri                     | Pasnoi River 4.09 Ha              | Sand & Stone     | N-26°51'40.40"<br>N-26°49'32.80"<br>N-26°51'40.10"<br>N-26°49'31.80" | E-92°20'15.20"<br>E-92°19'48.70"<br>E-92°20'18.20"<br>E-92°19'52.20" | Proposed |

  
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|    |                                    |                          |                         |  |  |          |
|----|------------------------------------|--------------------------|-------------------------|--|--|----------|
| 12 | Baligaon SS Mahal                  | Pasnoi River<br>4.00 Ha  | Sand & Silt             | N-26°42'35.51"<br>N-26°42'34.07"<br>N-26°42'45.09"<br>N-26°42'46.48" | E-92°20'05.16"<br>E-92°20'06.77"<br>E-92°20'19.96"<br>E-92°20'17.67" | Proposed |
| 13 | Golondi Silt Mahal No. 2           | Golondi River<br>4.70Ha  | Silt                    | N-26°45'13.08"<br>N-26°45'12.89"<br>N-26°45'57.14"<br>N-26°44'57.45" | E-92°07'03.38"<br>E-92°07'3.38"<br>E-92°07'3.55"<br>E-92°07'6.04"    | Proposed |
| 14 | Khowrang Boulder Mahal             | Khowrang River<br>4.80Ha | Boulder                 | N-26°51'00.4"<br>N-26°51'0.92"<br>N-26°50'40.9"<br>N-26°50'42.29"    | E-92°04'01.5"<br>E-92°04'5.56"<br>E-92°07'27.7"<br>E-92°04'31.62"    | Proposed |
| 15 | Daisam Boulder Mahal               | Daisam River<br>4.90Ha   | Boulder                 | N-26°53'34.40"<br>N-26°53'32.10"<br>N-26°53'23.70"<br>N-26°53'21.80" | E-92°07'3.40"<br>E-92°06'58.50"<br>E-92°07'12.00"<br>E-92°07'6.10"   | Proposed |
| 16 | Bhorla GSB Mahal No.1 (Santipur)   | Bhorla River<br>4.90Ha   | Sand/ Gravel & Boulder  | N-26°50'10.66"<br>N-26°50'9.66"<br>N-26°49'40.50"<br>N-26°49'39.78"  | E-91°56'54.63"<br>E-91°55'52.27"<br>E-91°56'58.36"<br>E-91°57'0.00"  | Proposed |
| 17 | Bhorla GSB Mahal No.2              | Bhorla River<br>4.60Ha   | Sand/ Gravel & Boulder  | N-26°47'38.42"<br>N-26°47'35.55"<br>N-26°47'13.97"<br>N-26°47'14.22" | E-91°57'54.45"<br>E-91°57'57.48"<br>E-91°57'55.56"<br>E-91°57'52.75" | Proposed |
| 18 | Bhorla GSS Mahal No.3              | Bhorla River<br>3.40Ha   | Sand/ Gravel & Stone    | N-26°45'12.07"<br>N-26°45'11.60"<br>N-26°44'25.72"<br>N-26°44'25.74" | E-91°58'35.11"<br>E-91°58'34.71"<br>E-91°58'57.10"<br>E-91°58'57.99" | Proposed |
| 19 | Kulsi Sand Gravel Silt Mahal No.2  | Kulsi River<br>3.29 Ha   | Sand Gravel Silt        | N-26°43'43.67"<br>N-26°43'43.97"<br>N-26°43'20.35"<br>N-26°43'21.24" | E-91°55'55.01"<br>E-91°55'56.14"<br>E-91°56'8.00"<br>E-91°56'9.24"   | Proposed |
| 20 | Bhutiasang SGB Mahal No.1          | Nunoi River<br>4.90Ha    | Sand, Gravel & Boulder  | N-26°48'48.38"<br>N-26°48'48.61"<br>N-26°48'0.19"<br>N-26°48'0.00"   | E-91°53'15.44"<br>E-91°53'14.32"<br>E-91°53'9.21"<br>E-91°53'10.41"  | Proposed |
| 21 | Bhutiasang SGB Mahal No.2          | Nunoi River<br>3.50Ha    | Sand / Gravel & Boulder | N-26°49'12.97"<br>N-26°49'12.66"<br>N-26°48'57.00"<br>N-26°48'59.10" | E-91°53'20.15"<br>E-91°53'22.74"<br>E-91°53'18.50"<br>E-91°53'16.19" | Proposed |
| 22 | Nasanchali Sand Gravel Silt Mahal  | Nunoi River<br>4.75Ha    | Sand , Gravel & Silt    | N-26°41'44.24"<br>N-26°41'44.90"<br>N-26°41'9.75"<br>N-26°41'10.33"  | E-91°53'1.78"<br>E-91°53'2.80"<br>E-91°53'21.47"<br>E-91°53'22.64"   | Proposed |
| 23 | Bhootbangla Sand Gravel Silt Mahal | Nunoi River<br>3.50Ha    | Sand , Gravel & Silt    | N-26°40'12.73"<br>N-26°40'12.61"<br>N-26°39'47.88"<br>N-26°39'46.10" | E-91°53'57.92"<br>E-91°53'56.47"<br>E-91°53'43.28"<br>E-91°53'44.70" | Proposed |
| 24 | Sahabasti Sand & Silt Mahal        | Nunoi River<br>3.50Ha    | Sand & Silt             | N-26°39'1.36"<br>N-26°39'1.59"<br>N-26°38'37.80"<br>N-26°38'37.06"   | E-91°53'53.14"<br>E-91°53'54.42"<br>E-91°54'12.97"<br>E-91°54'12.45" | Proposed |

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|    |                                  |                          |                |  |  |          |
|----|----------------------------------|--------------------------|----------------|--|--|----------|
| 25 | Kalanadi SS No.1                 | Kalanadi River<br>4.50Ha | Sand & Stone   | N-26° 50' 58.31"<br>N-26° 50' 58.82"<br>N-26° 50' 37.79"<br>N-26° 50' 37.64" | E-91° 50' 38.53"<br>E-91° 50' 35.90"<br>E-91° 50' 29.88"<br>E-91° 50' 32.07" | Proposed |
| 26 | Kalanadi SS No.2                 | Kalanadi River<br>3.30Ha | Sand & Stone   | N-26° 46' 24.33"<br>N-26° 46' 25.07"<br>N-26° 46' 4.15"<br>N-26° 46' 4.32"   | E-91° 51' 26.74"<br>E-91° 51' 28.96"<br>E-91° 51' 37.47"<br>E-91° 51' 38.79" | Proposed |
| 27 | Samrang Newly Gravel Earth Mahal | Samrang River<br>4.00Ha  | Gravel & Earth | N-26° 50' 38.92"<br>N-26° 50' 39.58"<br>N-26° 51' 08.52"<br>N-26° 50' 54.47" | E-91° 48' 55.90"<br>E-91° 51' 0.53"<br>E-91° 49' 24.43"<br>E-91° 47' 0.50"   | Proposed |

**Table 3.13: Table showing potential Mining permits/contracts areas of Udalguri District**

| Sl. No. | Name of Mahal                      | Location and area of mining lease | Mineral Name | GPS- Coordinates   |  | Status    |
|---------|------------------------------------|-----------------------------------|--------------|--|--|-----------|
|         |                                    |                                   |              | Latitude   | Longitude  |           |
| 1       | Lower Dhansiri SS Mahal Part-A     | Dhansiri River<br>4.31 Ha         | Sand & Stone | N-26° 41' 26.50"<br>N-26° 41' 26.68"<br>N-26° 41' 09.48"<br>N-26° 41' 8.89"  | E-92° 15' 27.31"<br>E-92° 15' 30.08"<br>E-92° 15' 36.04"<br>E-92° 15' 33.26" | Potential |
| 2       | Dhansiri(BalisiyaJargaon) SS Mahal | DhansiriRiver<br>4.85Ha           | Sand & Stone | N-26° 40' 13.2"<br>N-26° 38' 52.9"<br>N-26° 40' 15.6"<br>N-26° 38' 50.2"     | E-92° 15' 30.4"<br>E-92° 15' 20.5"<br>E-92° 15' 24.0"<br>E-92° 15' 14.4"     | Potential |
| 3       | Rowta SG Mahal                     | Rowta River<br>4.45Ha             | Sand & Stone | N-26° 50' 57.9"<br>N-26° 50' 58.1"<br>N-26° 50' 38.3"<br>N-26° 50' 39.2"     | E-92° 13' 50.5"<br>E-92° 13' 48.2"<br>E-92° 13' 49.5"<br>E-92° 13' 44.5"     | Potential |
| 4       | Purobkhuti S.S. Mahal              | Dhansiri River<br>4.98 Ha         | Sand & Stone | N-26° 47' 46.96"<br>N-26° 47' 43.71"<br>N-26° 47' 52.85"<br>N-26° 47' 44.79" | E-91° 12' 08.64"<br>E-91° 12' 13.79"<br>E-91° 12' 18.56"<br>E-91° 12' 20.19" | Potential |

  
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### **3.1 Summary of Existing, Proposed, and Potential Mining permits/contracts areas in Udalguri District**

The Udalguri District has a total of 10 running mining leases, 27 proposed mining sites, and 4 potential mining site, distributed across multiple river systems. The existing leases, covering 43.43 hectares, are primarily located along the Barnadi and Motonga rivers. The proposed sites, spanning 115.63 hectares, expand mining activities into additional river systems such as Dhansiri, Monai, Dimsang and Rowta. Additionally, four potential mining site has been identified, covering an area of 18.45 hectares, pending further assessment and approval. This site may serve as a future source for sand, gravel, and stone extraction.

The potential mining site represents an opportunity for future resource extraction. However, environmental impact assessments will be required before approval. As mining activities expand, sustainable extraction methods and regulatory oversight will be crucial in preventing ecological damage, ensuring long-term resource availability and environmental conservation.

  
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## 4. Details of Royalty received in the last three years

Table 4.1: District revenue generation District revenue generation in the last three years (in Rs)

| Financial Year | Royalty (Rs) |             |                 | Total revenue (Rs) |
|----------------|--------------|-------------|-----------------|--------------------|
|                | Sand         | Gravel      | Earth/Silt/Clay |                    |
| 2021- 22       | 3909459.40   | 39886552.00 | 762999.90       | 44559011.00        |
| 2022- 23       | 3617857.60   | 24689714.00 | 378878.40       | 28686450.00        |
| 2023-24        | 3016062.00   | 17938956.00 | 277270.00       | 21232288.00        |

Source: Forest Department

## 5. Detail of Production of minor minerals in last three years

Table 5.1: Production of minor minerals mining in the last 3 year

| Financial Year | Production (in cum) |           |                   | Total Production (in cum) |
|----------------|---------------------|-----------|-------------------|---------------------------|
|                | Sand                | Gravel    | Earth/ Silt/ Clay |                           |
| 2023-24        | 20517.43            | 854234.60 | 7922.00           | 882674.03                 |
| 2022-23        | 25841.84            | 123448.57 | 12629.28          | 161919.69                 |
| 2021-22        | 27924.71            | 199432.76 | 25433.33          | 252790.8                  |

Source: Forest Department

  
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## 6. Process of Deposition of Sediments in the rivers of the District of Udalguri

Many rivers originate from the Himalayan and Shivalik regions which supply water in down streams. The greatest sediment yields are generally associated with rivers draining areas of intensive tectonic activity therefore; Himalayan rivers cause tremendous erosion and carry large amounts of sediment. Part of the sediment (sand and gravel) may represent a natural resource for use by society. The potential usefulness of the sediment is enhanced when it is composed of particle sizes found in deposits on the river- bed that would be replenished by newly transported sediment after mining. As such, river deposits become renewable resources, periodically replaced by sediment transport in the river.

Sediments are formed by disintegration and alteration of pre-existing rocks or by precipitation from solution. Partly particles from volcanism and dust particles of celestial origin also contribute. These sediments are transported to various depositional realms by water, wind or glaciers. Mechanical and chemical processes produce sediments which are lithified as sedimentary rocks by overburden pressure, recrystallisation and cementation. During the process of consolidation from sediments to sedimentary rocks, physical and chemical changes are known as diagenesis or diagenetic changes. This whole process of rock decay, sediment transportation, deposition, precipitation and diagenesis takes place at or near the surface of the earth under normal temperature and pressure conditions contrary to igneous or metamorphic rocks where higher degree of temperature and pressure are involved (Sengupta, 2007).

### Weathering:

Weathering is breaking down or wearing down of rocks in situ. Weathering can be biological, chemical or physical.

### Processes of weathering:

There are number of different weathering processes. These processes generally start with water percolating down into joints formed by stress release as the rock comes close to the surface, and are most intense at the surface and in the soil profile. Weathering is the breakdown and alteration of bedrock by mechanical and chemical processes that create a regolith (layer of loose material), which is then available for transport away from the site.

Sediment load can be divided into bed load and suspended load based on the mode of transport. Bed load is transported close to the bed where particles move





by rolling, sliding, or jumping transport in natural rivers is a complicated phenomenon. Its movement is quite uneven in both the transverse and longitudinal directions, which varies considerably. Some sediment particles roll or slide along the bed intermittently and some others state (*hopping or bouncing along the bed*).

Sediment transport is the movement of organic and inorganic particles by water. In general, the greater the flow, the more sediment that will be conveyed. Water flow can be strong enough to suspend particles in the water column as they move downstream, or simply push them along the bottom of a water way. Transported sediment may include mineral matter, chemical sand pollutants, and organic material. Another name for sediment transport is sediment load. The total load includes all particles moving as bed load, suspended load, and wash load. Sediment deposition is the process of settling down of suspended particles to the bottom of a body of water. This settling often occurs when water flow slows down or stops and heavy particles can no longer be supported by the bed turbulence.

Sediment deposition can be found anywhere in a water system, from high mountain streams, to rivers, lakes, delta, floodplains. Sediment transport is critical to understanding how rivers work because it is the set of processes that mediates between the flowing water and the channel boundary. Erosion involves removal and transport of sediment (mainly from the boundary) and deposition involves the transport and placement of sediment on the boundary. Erosion and deposition are what form the channel of any alluvial river as well as the flood plain through which it moves. The amount and size of sediment moving through a river channel are determined by three fundamental controls: competence, capacity and sediment supply. Competence refers to the largest size (diameter) of sediment particle or grain that the flow is capable of moving; it is a hydraulic limitation. If a river is sluggish and moving very slowly it simply may not have the power to mobilize and transport sediment of a given size even though such sediment is available to transport. So a river may be competent or incompetent with respect to a given grain size. If it is incompetent it will not transport sediment of the given size. If it is competent it may transport sediment of that size if such sediment is available (that is, the river is not supply-limited). Capacity refers to the maximum amount of sediment of a given size that a stream can transport in traction as bed load. Given a supply of sediment, capacity depends on channel gradient, discharge and the caliber of the load (the Presence of fines may increase fluid density and increase capacity; the presence of large particles may obstruct the flow and reduce capacity). Capacity transport only occurs when sediment supply is abundant (non-limiting). Sediment supply refers to the amount and size of sediment available for sediment transport. Capacity transport for a given grain size is only achieved if the supply of



that caliber of sediment is not limiting (that is, the maximum amount of sediment in stream is capable of transporting is actually available). Because of these two different potential constraints (hydraulic sand sediment supply) distinction is often made between supply- limited and capacity- limited transport.


Much of the material supplied to a stream is so fine (silt and clay) that provided it can be carried in suspension, almost any flow will transport it. Although there must be an upper limit to the capacity of the stream to transport such fines, it is probably never reached in natural channels and the amount moved is limited in supply. In contrast, transport of coarser material (say, coarser than fine sand) is largely capacity limited.

**Modes of Sediment Transport:** The sediment load of a river is transported in various ways although these distinctions are to some extent arbitrary and not always very practical in the sense that not all of the components can be separated in practice.

The modes are:

1. Dissolved Load.
2. Suspended Load.
3. Intermittent Suspension (Siltation) Load
4. Wash Load
5. Bed Load

The major rivers of the district are Dhansiri, Nunoi, Kalanadi, Suklai, Kulsi, Golondi, Pasnoi, Pagla etc.

  
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## 7. General Profile of Udalguri district

### a) General Information

Udalguri district is one of the thirty five (35) districts of Assam and Udalguri town is the Headquarter of the district. This district is bounded by Bhutan and Arunachal Pradesh in the north, Sonitpur District in the east, Darrang District in the south and Tamulpur district in the west. The district of Udalguri lies between 26°46' and 27°77' North Latitude and 92°08' and 95°15' East Longitude at an altitude of about 345 feet above the mean sea level (MSL). Total geographical area of the district is about 1,852.16 sq. km while the population of the district is 8,32,769 (as per 2011 Census) and density of population is 413 persons per sq. km. Distance of the District Headquarter from the State capital is about 120 km.

Udalguri district also known as Udalguri, is a district in the Bodoland Territorial Region of the state of Assam in Northeastern India. Udalguri town is the headquarters of the district. Earlier, it was a civil sub-division under the erstwhile Darrang district prior to the formation of BTC. But after signing of the Tripartite Peace Agreement on 10th February, 2003 through a Memorandum of Settlement between the Bodo Liberation Tigers, Government of India and the Government of Assam, the Bodoland Territorial Council came into being after amending the Sixth Schedule of the Constitution of India. As a part of the settlement an Autonomous Council called BTAD (*Bodoland Territorial Autonomous District*) was created and Udalguri is now one of Four Districts under BTAD. It was notified as a district, vide Govt Notification No. GAG (B)-137/2002/Pt/117 dated 30-10-2003 and was formally inaugurated as a district on 14-06-2004.

The name Udalguri denotes a place surrounding the Udal tree (Udal, meaning a tree and Guri meaning surrounding area). Some authors are of the opinion that the name of the place became Udalguri as there was a hermitage of a sage named Uddalak Muni. Yet, another source mentions that the word has origins in the Boro language. From the Bodo words *ordla* and *gundri*, the name became *Ordlagundi* > *Ordlagundi* > *Odalguri* > *Udalguri*. Bodo people still pronounce the name as Odalguri. In Bodo language *ordla* means wide and spacious and *gundri* means powdered object.

This district was formed on June 14, 2004 as one of the four districts under the Bodoland Territorial Council. This district was carved out by bifurcating Darrang district. The territory of the present district was earlier Udalguri sub-division of the undivided district. There are Hindu, Christians and Muslim population living together in the district. This was a very peaceful place till mid 80s but various communal clashes took place from time to time. Late Jojaram Sharma was one of



the prominent India freedom fighters from Assam lived here.

According to the 2011 census Udalguri district's population is 8,31,668, an increase of 9.8% over 2001. The literacy rate is 66.6% and the gender ratio is 966. There are 449 inhabitants per square kilometre (1,160/sqmi). Scheduled Castes and Scheduled Tribes make up 4.55% and 32.15% of the population respectively.

The district is multi-ethnic and multi-religious in nature. Bodos form the largest ethnic group in the district with 33.76% of the district's population. Other ethnic groups with significant population are Adivasi community with almost 23.12% and Bengali Muslims with 12% of the district's population. Assamese and Bengali Hindus reside mainly in urban areas. There is also a presence of sizeable Nepalis, peaking Indian Gorkha community with estimated 5% of the district's population thinly scattered across the Udalguri district.

Udalguri is a district in Assam which shares an international border with Bhutan and also a state border with Arunachal Pradesh at its North. The district was carved out from Darrang district on 14 June, 2004 as one of the four districts under Bodoland Territorial Council. Its neighboring districts are Sonitpur at its East, Baksa at its West and Darrang at its South. Udalguri is easily communicable through road and rail.

## History

Till the middle of the nineteenth century at Udalguri and in the entire district Darrang, there were a large number of Bodo people. According to Upendrachandra Guha in his book "Kacharer Itibritta" (p-53) the total Bodo-kachari population during the purana and middle age, in Darrang was 6,39,000. In 1562 A.D. when Koch King Narnarayan invaded the kingdom of Ahom king Sukhamfa or Khura Raja, with a group of 60,000 soldiers, Suklathwaj as its commander-in-chief, he encamped at a place called Tamtumoni in the present Mangaldai sub-division where twelve groups of the tribal people submitted to him. In the same sub-division near Bhairabkunda, Naranarayan ordered for the building of a temple of goddess Durga (at Nolkhamara) and a hill fort. The goddess was installed in the temple and a Dachari was made its priest. He further instructed the Meches and the koches living to the north of the Gosain Kamal Ali to follow their tribal customs. Such acts of Naranarayan were definitely guided by diplomatic motives to search the supports of all the tribes of the reign (History of Koch kingdom 1515-1615 A.D. Nath, p-55). According to the census report Govt. of Bengal in 1881, the total no of Bodo-Kachari tribal people in Darrang was 69,000 out of which 36,468 were under Thana Chatgari and Thana Kalaigaon of Mangaldai sub-division. It should be mentioned that in 1835



the total population of Darrang was 89,519 (Asom Buronji, gait, translated by Senehi Begum, p-260).

In olden days when rivers like Golondi, Khaorong, Doisam, Dhansiri, etc. were full of water, during the monsoon these rivers overflowed to submerge entire Udalguri area leaving full of sands when they became dry. Witnessing that scene, probably the Bodo people named the place as Odalguri or Udalguri a very vast place full of sands. In the middle of the seventeenth century, a Muslim historian Sihaduddin Taliska, came with Mirzomla in Assam, wrote how heavy rainfall was there in those days in Assam. He wrote there was heavy rainfall even during the winter months. So, from his writing we can very easily assume that how dangerous shapes the rivers look during the rainy seasons. From history we come to know that in the middle of the sixteenth century the torrential river Dhansiri was flowing very near to Udalguri. The east-west boundaries at Sadhaka, a Chutia king, installed by the Ahom King Suhungmung or Dihingia Raja (1497-1539 A.D.) in portion of Darrang, were in the east Rowta and on the west river Dhansiri.

From the writings of some scholars, we come to know that from very ancient time, there was route from Udalguri,, Bhairabkunda through the hills Bhutal upto Tibet, China and Afghanistan, Rajmohon Nath in his book- ' *The Background of Assamese Culture*'(p-14) had mentioned that this route was still in use. Sir Edward Gait has also mentioned this route to be the shortest route from Udalguri to Tibet (*Asom Burnaji, Gait: Assamese p-29*).

Through this route, things like Endi cloths, Muga silk, gold, rice, iron, buffalo horns, animal skins, lac were exported from Assam and on the other hand, things like elephant tusk, sulphur, kostori, different colours, silver, rock salt, blankets were imported to Assam. The gate of this route at Bhairabkunda was known as Karipara Duar. The Karipara Duar was under the occupation of Satraja, a Bhutia chief. The hills under his control were under that state of Tawang, and Tawang was under Lash. Regarding the Assamese merchants who make export and import of various good, Dr. Surja Kumar Bhuyan in his book ' *Anglo Assamese Relation 1771-1826*' (p-55) writes- "*The Assamese carried a considerable commerce with neighboring hill tribes and with Tibet and China. The trade with Tibet amount to Rs.200.00 a year. The exports from Assam were lac, muga silk, endi cloth, dry fish and exports from Bhutan consisted of woollen cloths, gold dust, rock salt, cow tail, musk, Chinese silk. The Assamese used to receive from Tibet smoking pipes of Chinese manufacture, woollens and rock salt. A caravan consisting of nearly 20 men used to meet the Assamese merchants at a place near Chauma, at a distance of two months journey from Lash. The Assamese used to receive from Lasha merchants or Khumpa Bhutias as they were called, silver and gold to value of upwards of 70,000 rupees.*"



This route was not only very important from the economic point of view but also from the view point of cultural exchange. Buddhist sromons, Nath, Yogi and Tantriks of various times also used this route very frequently. It is not improbable that in 1205/6 A.D., when Mohomad Bin Bokhtiar came through Kamrup to invade China, Tibet and Turkistan he was sure to use this route. Crossing through Kamrup after several days journey, he reached a wide and open place near below the hills inhabited by the tribal people where there was also a big rampart. He met his defeat from them and had to retreat.

We may assume Raonagar as this place rampart, which is situated at a distance of 13 K.m. to the south of the Bhutan hills and 9 km to the west of Udalguri. The ruins of the rampart covering more than 600 bighas of land and ten big and small tanks inside it are still to be seen to the south of Jkra village. It is to be mentioned that the mention of this rampart is also made in the Padma Purana written by Narayan Deva, a poet laureate of first Dorongi Koch king Balinarayana or Dharamayarayana (1615-1637 A.D.).

In long past, Udalguri meant the consistent of villages like Puronithana, Angragaon and Niz-Udalguri. The present Udalguri town is now situated on the land formed by the deposition of sands by the rivers like Golondi, Khaorong, Daisam, etc. Most probably in long before there was no habitation in the present area of Udalguri. If there was, most of the people left their place for the havoc created by the epidemic diseases like small pox, cholera etc. and also for the frequently occurred heavy flood.

The rivers like Golondi, Khaorong, and Doisam etc. had frequently changed their course forming deep and wide swamps. It is known, there was a very great Swamp near present Kathalguri and Nalbari village extending upto Puroi Goraibari village. Now where the Upendranath Brahma guest house is built, from there upto Barpetia pati and Golondihabi village, there was another big swamp known as 'Halflong', because one Nepali people coming from Halflong used to reside on the bank of that beel. Now where Ramkrishna Mission M.E. School is situated from there extending upto present Sapkhaiti village and kangali bosti here was another great and deep marsh. The marsh was full of poisonous snakes and was known as Sapkhaitibher-marshyland where snakes bite. Present Golma was a spacious place fully covered by the sands of Golondi and Khaorong rivers. Later on when long grasses like 'Kahua, ulu and birina' started growing it became good grazing ground for the Nepali grazers. Both Bolondi and Khaorong rivers were unitedly flowing encircling this grazing ground and why the place became known as Golma the meaning of the word in Nepali language is 'a circular place.'

Exactly from where the outsiders started migrating to Udalguri is not known. It is known that more than hundred years before Maoinashi Chhetry and Chandrabir



Chhetry the grandfather of Mr. Chandramohon Chhetry came to Udalguri. Both of them were the first Nepali people who migrated to Udalguri. Most of the Nepali people who came to Udalguri were grazers who tended openly their herd of cows and buffalo in the vast grazing ground full with thick long grasses. Amongst the some well known grazers of that time, Gokul Dangel lived near present town office, Naropati Dahal lived at the place where there is state Bank, Kripashu Bhandari lived at the place where at present the residence of late Utsale Das is there, Halflong Mohahjan lived at the place where ABSUguest house is there and Jemi Kriki lived in the present Borpetia pati. It is known in 1901 a marwari named Sogonlal Serawgi with his nephew Surajmal Khubchand came at Thana Udalguri village and opened a grocery shop.

During the years 1982-33 the railway was constructed extending from Tangla through Udalguri upto Rangapara. The passenger trains started running from the year 1935. Previously Udalguri Rail station was behind the present Diamond English School. But, probably during the years 1933-34 when Kathalguri and Nalbari villages were washed away by the heavy flood of Golondi river then after the rail station was shifted to its present place. From that time most of the residents of Kathalguri and Nalbari villages left for good to other new places like Bolondihabi, Sapkhaiti, Kapurpura, Badagaon etc. The police station established at Purnithana was shifted to a rented house to the north near Udalguri rail station in 1913. Some of the Bihari coolies who came during the construction of railway had settled at Udalguri for ever.

From the first half of the twenty century other Bodos from the west districts like undivided Goalpara and Kamrup started migrated to Udalguri and in after parts of northern Darrang. Amongst them Sombaru Basumatari and Buja Moshahari in 1930, Daso Boro and Dayarani Brahma in 1935, Asina Basumatari in 1936, Magho Basumatari in 1939 along with others came to Udalguri and they went towards the south, because in the north original Dorongi Bodo residential were there.

The migration of some Assamese people from Nalbari, Barpeta began just after the passenger train started running through Udalguri. It is known, one named Ramchandra Petal had opened his grocery shop in 1935 at Thana Udalguri village. During this period most of the places just near to the south of rail station were occupied by the Bihari, Muslims, so people coming from Barpeta at first used to reside at the place nearly a kilometer away towards the south where they started to build their Namghar during the year 1935-36. The prime business of these newly migrated Assamese people was paddy collection from the village with the help of bullock for exportation the villages with help of bullock cart for exportation to after places.

  
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Since 1947, some Bengali Hindu refugees coming from East Pakistan (now Bangladesh) started to settle around the railway station. Amongst them persons like Dr. Profulla Bose, Dr. Ramcharan De played a great role in the field of medical treatment when at that time there was not a single local doctor gradually a neat portion of place around the railway station and to say entire Sapkhaiti Bher area came under the hold of Bengali people who became business tycoons of Udalguri.

The Independent movement of 1942 had a great influence over Udalguri also. On the 8th October a group of 100 congressmen came to Udalguri to arrange a meeting where the congress leaders of Darrang explained about the purpose of the independent movement. They even went upto Badagoan village where they got obstruction from Monia Mahajan and Bhutial Gaonburha by the instigation of Pobitra Das, the then SDO of Mangaldai.

The Block Development Office (community project office) was established in 1952, and the primary health centre was established in 1954. Prior to the establishment of Udalguri Town L.P. School on the 1st October 1950 and Udalguri M.E. School in the year 1953 it may be said that there was educational atmosphere at Udalguri proper. On the other hand prior to that in far off L.P. Schools were established at Bengbari in 1865 and Dowamokha village in 1893. The Middle English School was established at Borigaon village in 1925 and later it was shifted to Harishinga in 1930. It is known that in March 1868 there were 15 schools in Darrang in connection with Church Mission societies of Tezpur. Amongst these one L.P. School was there at Udalguri. It is not known why that school could not last long. Most probably the place of that L.P. School was there where the present Udalguri Mission L.P. School is running. Around Udalguri after the establishment of L.P. School there were Golma L.P. in 1948, Nalbari Govt. J.B. in 1943 and Gema Bogoribari in 1948, Bahinigaon M.V. School in 1949, Gomagaon M.E. in 1951 and Udalguri High School was in 1956 in the same compound of the M.E. School and later they were amalgamated in 1961.

Previously the only source of entertainment for the people of Udalguri area was 'Yatragan' specially during the puja seasons, people irrespective of sex and age from various villages through together to witness Yatragan for the whole night in the open field under temporary pendal covered by banana leaves. Of course, from time to time some enthusiastic people of Udalguri made theatrical performance hiring female artists from outside the name Bina Das may be mentioned as one of such female artist. So far it is known, for the first time in 1950 persons like Haragobinda Das, Hemchandra Talukdar and others staged a drama named 'Sech Pataka' written by Uma Sarma.

Bhairabkunda being the gate way of the route leading to Tibet and China, Udalguri became strategically a very important place from the period of the Chinese




aggression of 1962. Thousands of Bhutia refugees from Arunachal Pradesh came down from the hills by the same south through the Kariapara Duar. All market sheds of Udalguri weekly market, even the paddy fields nearby were filled up by those refugees. Thousands of plains people fled away on foot from the east by rail road crossing Udalguri daily Paddy fields Gomagaon became full of army bunkers. Trains running towards Rangapara crossing Udalguri were heavily loaded with armaments, tanks and machine guns. People in large groups from villages came daily at Udalguri to witness army personnel, their weapons and refugees. Without having fear in mind for the attack from the Chinese the village people turned Udalguri into a place as if a big fair. The construction of the defense road started from Tamulpur to Bhairabkunda. To speak the truth Udalguri became well-known to the other parts of India from the time of last Chinese aggression.

The Udalguri District is well-connected by roads and railways to other parts of the Assam state. National Highway 52 passes through the district which connects the district to Tezpur and Guwahati. The elevation in the district is approximately 180 m above mean sea level. The district experiences sub-tropical climate with cold winters and semi-dry summers.

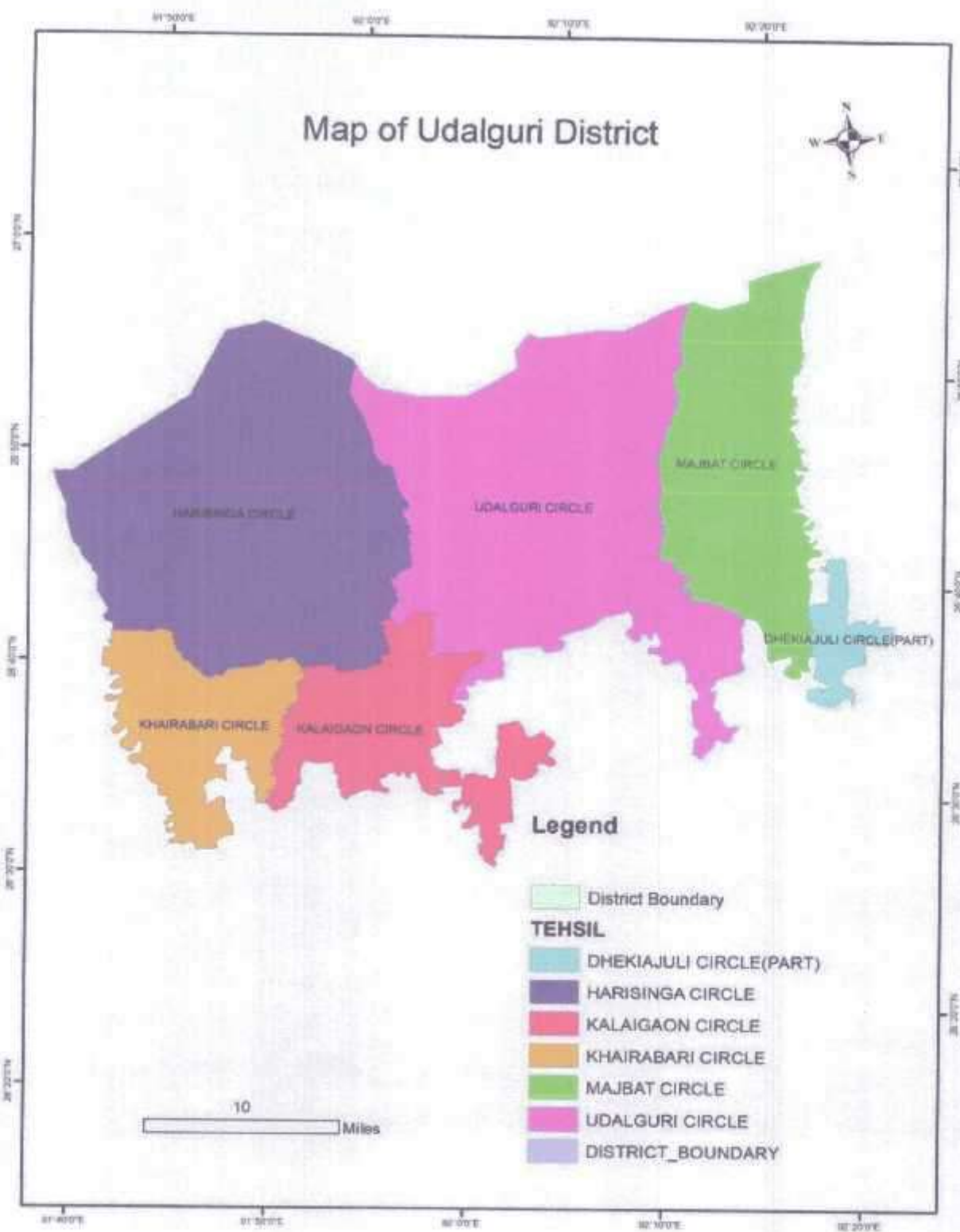
**Table 7.1: Administrative setup of Udalguri District**

|                        |   |
|------------------------|---|
| HeadQuarter            | Udalguri  |
| Division               | NorthAssam  |
| NumberofSub-Divisions  | 2(Udalguri,Bhergaon)                              |
| NumberofRevenueCircles | 5(Udalguri,Majbat,Harisinga,Kalaigaon,Khoirabari) |
| NumberofDevelopBlocks  | 11  |
| GeographicalArea       | 1,985.68 sq.km                                    |
| Literacy               | 74%   |
| Population             | 8,31,668 according to 2011 census.                |
| Male Population        | 421617  |
| FemalePopulation       | 410051  |

  
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**Map 7.1: Administrative map of Udalguri District**

*[Signature]*  
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### ***Udalguri Revenue Circle:***

General Overview of the Circle is as follows:

*Geographical area of the Circle: 531 Sq. K.M.*

*Population of Udalguri Rev. Circle: 211,718 Nos. (as per 2011 census report)*

*No. & Name of Mouza: 6 Nos. (Udalguri, Ambagaon, Barsilajhar, Pub Dalgaon, Pub- Sialmari & Orang)*

*Total No. of Village: 240*

*Nos. Name of N.C. Village: N.C. Kunder Bill.*

*No. of Supervisor of Kananguh: 2*

*Nos No. of L M: 22 Nos*

*No. of PS and names: 2 Nos. (Udalguri & Rowta)*

*No. Of Out Post: 5 Nos. (Bhairabkunda, Ekrabari, Borobazar, Sapmari & Lalpool)*

*No. of P.P : 1 No. (Lowdung)*

*No. and name of the town: 1 Nos (Udalguri), Area : 4.66 Sq. K.M.*

*No. & Name of River: 8 Nos. (Dhansri, Maradhansri, Daipang, Golondi, Sapkhaiti, Chandana, Lakhinadi & Bhorlla)*

*No. of Forest village & area: Nil.*

*No. & name of Tea Garden & area: 3*

*Koramur T.E. Area-388B - 4K - 16Ls*

*Chandana T.E. Area-2785B - 4K- 12Ls*

*Koupati T.E. Area 1363B-0K-05Ls*

*Medical: 2 Nos. (Udalguri & Rowta Hospital)*

*Border: East - Mazbat Circle West - Harisinga Circle North - Bhutan South - Darrang District*

*International Boundary: Bhutan (Total Length - 16.8 km)*

*Inter State Boundary: Arunachal Pradesh*

*Tourist Place: Bhairabkunda Tourist Place.*

Udalguri Revenue Circle is a partially flood affected Circle by nature. The villages affected by flood are situated on the banks of the river/tributaries of the mighty Brahmaputra, via- Dhansiri, Chandana, Golondi etc. descending from Bhutan and Arunachal Pradesh through this Circle and merges in the mighty Brahmaputra.

Being situated at the foothills of Arunachal Pradesh and Bhutan hills, the rivers descending from Bhutan and Arunachal Pradesh, the current of the rivers being very fast,

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it causes wide spread damage and havoc to the villages situated on the banks of these rivers. Deforestation and erosion at the Arunachal Pradesh and Bhutan hills have silted-up the bed of these rivers/ tributaries making the course of the rivers very erratic and volatile. In the past years this Circle and District as a whole experienced high and wide spread flood. Unlike the past, many a roads running parallel to the N.H. 52 acts as a hindrance to the fast flow of the water and the water level swells- up. Most of the rivers frequently change their course and the courses of the rivers are zigzag in nature. Hence, it is very difficult to control the rivers by constructing embankments, dykes etc. to protect flood/ erosion by the concerned department.

### ***Mazbat Revenue Circle:***

Mazbat is a semi-urban area in Mazbat Tehsil in Udalguri District of Assam, India. It is located 36km towards East from district head quarter, Udalguri. The circle is located bordering with the Darrang District.

*Geographical area of the Circle : 341.674 sq km*

*Population of Mazbat Revenue Circle : 1,51,355 (as per census 2011)*

*No & Name of Mouza : 3 Mouzas namely Orang, Udalguri, Borchola*

*Total No. of villages: 168*

*No Tribal Belt : 1, Koloigaon Tribel Belt*

*No of Supervisor Kanango : 1*

*No of Lot : 12*

*No of Gaonburah : 16*

*No & Name of Police Station : 2, Mazbat PS & Orang PS*

*No of Police Station Outpost : 2, Lalpani & Joygapur Outpost*

*No & Name of Town : Mazbat Town, Area 3.32 km<sup>2</sup>*

*Total Govt. Land : 104077B-00K-02L Govt.*

*Land under Encroachment : 72034B - 3K - 12L*

*No. of VGR and Area : 11 Nos. , Area - 4305B-02K-12L*


*Total Ceiling Surplus land : 6979B-04K-12L*

*No of Forest Village : 1, NC Sikaridanga Village*

*No & Name of Hospital : 16*

### ***Languages Spoken:***

Bodo & Assamese are the common local language spoken by the people here. However, Bengali & Bihari are the two other languages spoken in some parts of the Revenue Circle.

  
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### **Connectivity:**

*By road:* The communication facility through roadway is remarkable. The Mazbat Revenue Circle and the villages under the circle's jurisdiction are connected through all the directions. It is linked to the district headquarter through the Udalguri - Rowta - Mazbat Road.

*By rail:* Mazbat and Rowta Bagan Railway Stations are major stations in the circle, linked with multiple minor roads. All stations are located in the Rangiya- Murkongselek extension of the NF Railway Division.

Mazbat Circle is located on the eastern side of the Udalguri District bordering Sonitpur District and West Kameng District of Arunachal Pradesh. Entire Circle area comprises with the three numbers of Mouza namely Orang, Udalguri and Barsola Mouza. The Circle is mostly a rural one and several large Tea-Gardens situated within the Circle Area. The Circle comprises of 168 nos. of Villages. Annual flood are routine and several rivers mainly Pagla, Rowta, Batiamari, Pachnoi and Dhansri rivers are the main the cause.

Mazbat Revenue Circle is usually affected by flashflood coming down from the hills of Bhutan & Arunachal Pradesh when it rains heavily in those areas. There is no major river in this Circle but a number of small rivers and streams flowing down from the north pose a considerable threat of flashflood in the Circle. Though the duration of flashflood is usually is short, the devastation and affect can be tremendous at times washing away of dwelling houses, embankments and cannels, irrigation dams, communication infrastructure, roads & culvers are some of the effects of flashflood experienced in the Mazbat Revenue Circle.

Another serious threat is that during the monsoon due to high current of flowing water, severe erosion takes place affecting thousands of people. The River "Pagla", which is flowing down from Arunachal causes maximum damage to the paddy fields and disruption to the communication system. Therefore, land erosion can be more fatal compared to Flood in Mazbat Revenue Circle. However no Country Boat is available at Mazbat revenue Circle for Search & Rescue Operation. On the other hand there is no irrigation system in every village of Mazbat Revenue Circle.

### **Harisinga Revenue Circle:**

Harisinga revenue circle is situated in Udalguri district of Assam. The approximate distance from the capital of district is around 22km. The Harisinga Rev. Circle office is in Tangla town. As we know that flood is the major problem in Assam due to the seasonal rain occurred during summer. Our state is occupied by two valleys i.e. Brahmaputra valley and Barak valley. Although, the Harisinga Rev. Circle is situated in Brahmaputra valley it

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never witness devastating flood. The aim of the flood action plan is to achieve a long term and sustainable approach for managing the risk of flood to protect the human life and property.

*Geographical area: The district is bounded by Bhutan and west Kameng District of Arunachal Pradesh state in the north, Sonitpur district in the east Darrang district in the south and Baksa district in the west.*

### ***Kalaigaon Revenue Circle:***

Kalaigaon Revenue Circle under Udalguri District is usually affected by flashflood coming down from the hills of Bhutan & Arunachal Pradesh when it rains heavily in those areas. There is no major river in the Circle. Two small rivers namely Noanadi and Kulshi and a few streams flowing down from the north pose a considerable threat of flashflood in some villages falling under the Circle. The flashflood cause devastation and affect can be tremendous at times. Washing away of dwelling houses, breaching of embankments and canals, agricultural loss, communication & infrastructure damage, roads & culvert damages are some of the effects of flashflood being experienced in the Circle.

### ***Khoirabari Revenue Circle:***

Khoirabari revenue circle is located on the south-western part of the Udalguri district, Assam, India. The area of the circle is about 135235B-0K-01Ls. The circle headquarter is located about 42km away from the district headquarter towards south-west. Postal code of the area is 784522. The Circle comprises of 84 nos. of villages within two Mouzas, namely Chinakona and Mazikuchi.

General Overview of the Circle is as follows:

*Establishment: -1988*

*Borders of the Circle: North :- Harisinga Rev. Circle*

*South :- Patharighat Rev. Circle*

*East :- Kalaigaon Rev. Circle*

*West :- Goreswar Rev. Circle*

*No. of Police Station :- 01, Khoirabari Police Station.*

*Total No. Lots :- 13*

*Total No. of Mouza :- 02*

*Total No. of villages :- 84*

*No. of Tribal belt :- 01, Kalaigaon Tribal Belt*

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*Geographical Area*

- I) 136333B-0K- 01 Lessa.
- II) 182.39 Sq. Km.
- III) 18238.68 Hectare.

*Population: - 81209 (As per 2011 Census)*

*Number of Educational Institution: -532 nos. under Khoirabari Education Block Number  
of Health Institution: -16*

***Language Spoken:***

Bodo & Assamese are the common local language spoken by the people here. However, Bengali & Hindi are the two other languages spoken in some parts of the Revenue Circle.

***Connectivity:***

*By road:* The communication facility through roadway is remarkable. The Khoirabari Revenue Circle and the villages under the circle's jurisdiction are connected through all the directions. It is linked to the district headquarter through the Udalguri - Tangla - Tamulpur Road.

*By rail:* Khoirabari Railway Station is situated around 3km away from the Revenue Circle Office and is accessible, linked with multiple minor roads. However, Rangia Jn. Railway station is one of the nearest stations that provide a smooth communication facility to the entire state.

Khoirabari Revenue Circle is a partially flood affected Circle by nature. The villages affected by flood are situated on the banks of the river/tributaries of the mighty Brahmaputra, via- Kalpani, Suklai etc. descending from Bhutan and Arunachal Pradesh through this Circle and merges in the mighty Brahmaputra.

Being situated at the foothills of Arunachal Pradesh and Bhutan hills, the rivers descending from Bhutan and Arunachal Pradesh, the current of the rivers being very fast, it causes wide spread damage and havoc to the villages situated on the banks of these rivers. Deforestation and erosion at the Arunachal Pradesh and Bhutan hills have silted-up the bed of these rivers/ tributaries making the course of the rivers very erratic and volatile. In the past years this Circle and District as a whole experienced high and wide spread flood. Most of the rivers frequently change their course and the courses of the rivers are zigzag in nature. Hence, it is very difficult to control the rivers by constructing embankments, dykes etc. to protect flood/ erosion by the concerned department.

  
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## b) Climatic condition

The district has a sub-tropical humid climate with semi-dry hot summer and cold winter. Agro-climatically, the district falls under the North Bank Plain Zone. During monsoon (May to Early September), heavy rainfall occurs due to south-west monsoon for which the district experiences flood.

The temperature varies between Max 34.5 °C and Min 13.5 °C. Relative humidity ranges between 82% and 88%. The plot of 5 years average month wise rainfall data indicates that the monsoon rainfall pattern is bi-modal in nature. The first monsoon peak rainfall is observed in July and the second peak is in September. The rainfall pattern observed dry during October to May with an average annual rainfall of 692 mm only while June to September was observed as wet period that received the average rainfall of 1273 mm. During last 5 years the annual rainfall varies from 1695mm to 2411.5mm while the normal annual rainfall in the district is 1957.8mm. Due to varied distribution of rainfall, the district suffers from heavy flood during wet period and moisture stress in the dry period.

The climate of the district is characterized by the absence of a dry hot summer season, the highest temperatures being experienced during the south-west monsoon season along with abundant rains and highly humid atmosphere throughout the year. Winter starts from December and ends in February, which is followed by a season of thunder storms, from March to May. Next from June and up to the beginning of October is the season of southwest monsoon and October and November are marked as post-monsoon season. Rainfall, mostly as thundershowers, amounting to about a fifth of the annual rainfall is received in the pre-monsoon months of April and May. The southwest monsoons, arrives over the district by about the beginning of June. The rainfall in the period June to September accounts for about two-thirds of the annual rainfall.

The cold season starts towards the end of November when both day and night temperatures begin to decline. January is the coldest month of the year with the mean daily maximum temperature at about 24°C and the mean daily minimum at 9°C to 11°C. In association with low pressure waves passing eastwards during the winter season, the district experiences cold spells for a day or two when the minimum temperatures may fall below 5°C. Temperature begins to rise from the beginning of March. The rise in temperature continues well into the south-west monsoon season, when temperatures are higher than even in the period March to May. The highest mean daily temperatures experienced in July and August. This together with high humidity (highest during the year) makes the south-west monsoon season rather unpleasant particularly when not raining. With the termination of the monsoon season the weather becomes gradually cooler. The air is highly humid throughout the year, except during the period February to April when the relative humidity are comparatively less (less than 70 percent), particularly in the afternoons. Skies appear heavily clouded to over cast during the south-west monsoon seasons.

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There is a decrease in cloudiness after the withdrawal of the monsoon and during the period December to April, skies remain usually clear or lightly clouded. Winds are light throughout the year except for short spells of strong winds during thunderstorms in the period March to May.

### c) Drainage System

The different rivers flowing through the district serves as the major drainage system for the district. However, during the heavy monsoon season they seem inadequate. Recurrence of flood during monsoon due to heavy rainfall in the district and neighboring Arunachal Pradesh and Bhutan causes loss of crops and other properties almost every year. In recent years the District experienced heavy floods, to be precise, flash floods, due to heavy deforestation towards northern part. The people of the district, who mainly depend on rain water for their cultivations, are often badly affected on one hand by floods and on the other hand by occasional dry spell. Number of perennial streams flow through the district from north to south and join the Brahmaputra River.

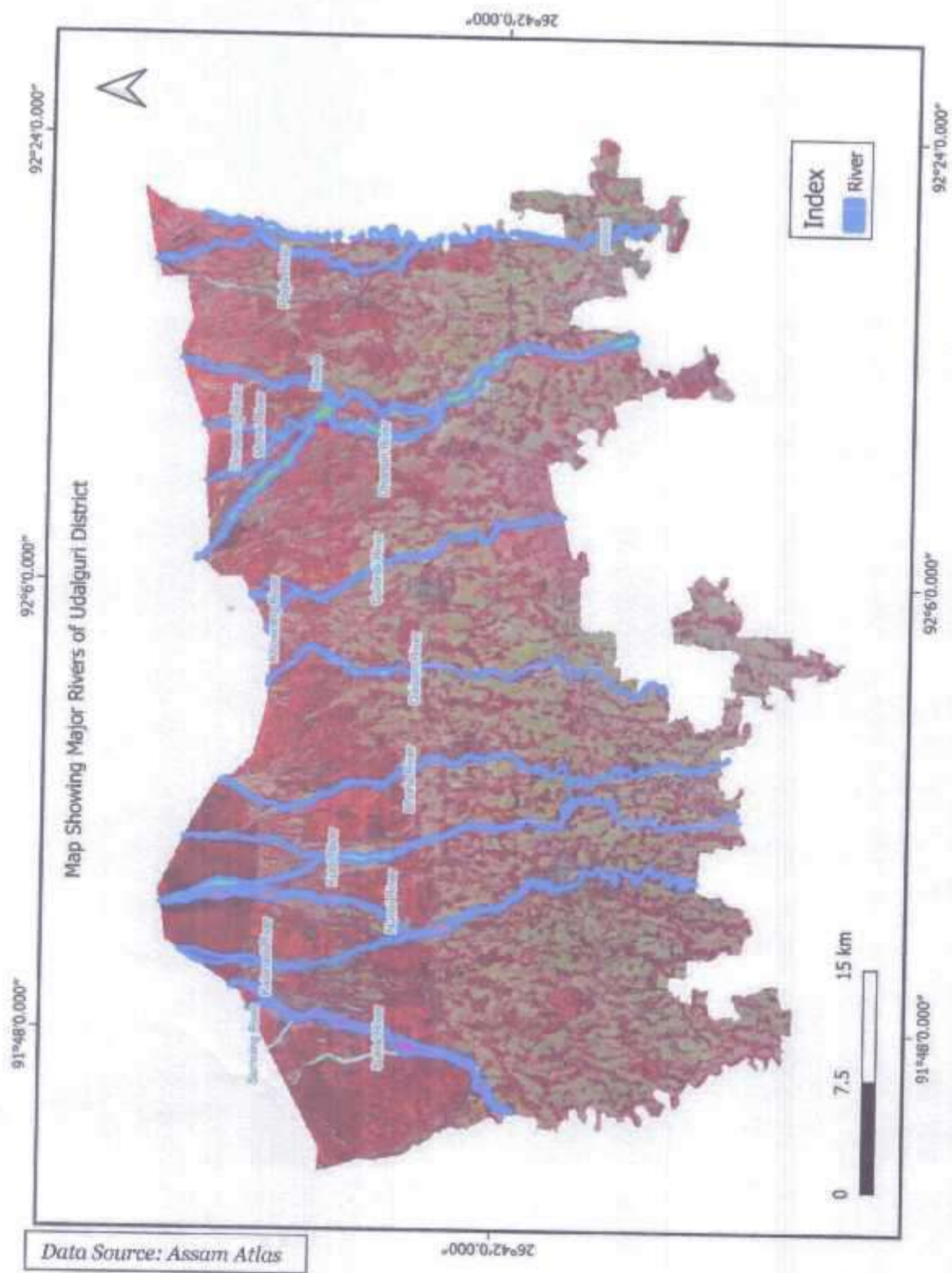
Number of perennial streams flow through the district from north to south and join the Brahmaputra River. The major streams that drain the area are Barnadi, Kulsi, Nunoi, Noanadi, Bega, Mara Dhansiri, Jiya Dhansiri and Pachnai Rivers. Jia Dhansiri River is one of the important tributaries of the river Brahmaputra in Mangaldoi sub-division. It emanates from the Bhutan hills and has an approximate total length of about 80 kilometres from its source to out-fall. Another river is Noanadi, which also originates from the Bhutan hills, and collects some drainage from the hills before reaching the plains. The river Nunoi also has its origin in the Bhutan range of the Himalayas in the Tongsa province at an elevation of about 1220 meters above the mean sea level. After crossing the Bhutan boundary, the river enters the Udalguri district and traverses through Khalingduar forest where it flows through gorges and rapids till it enters the plains near Bhutiachang village. After flowing about 19 kms from Bhutiachang, the river crosses the North Frontier Railway line near Tangla Railway station. Further flowing towards south, in a curve for a distance of 69 kilometres, the Nunoi joins the Brahmaputra at about 16 kms up stream of North- Guwahati. The river Nunoi is approximately 104kms in length and has its catchment area of 504 sq. kms.

  
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**Map 7.2: Drainage map of Udalguri district**

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Rivers flowing through Udalguri district: -


1. Panchnoi river
2. Phuluguri river (Batiamari in upstream and Pagla in the downstream).
3. Dhansiri river -Sub tributaries are Rowtamukh river, Rowta river, Monai river.
4. Golondi river.
5. Sapkhaiti river- Bega river in the downstream.
6. Chandana river -Swarna river in the upstream and Mangaldai river in the downstream.
7. Bhola/Noanadi river- Sub tributaries are Kalyani river, Lakhi river, Bihkhaiti river.
8. Kulsi river -Saktola river in the downstream.
9. Nonoi river-Sub tributaries areKalanadi river, Naika river, Huduma river.
10. Kalpani river. 11. Suklai river-Sub tributaries areChamrang river, Neuli river, Koilakata river.

(Source: Flood Action Plan, Udalguri district, 2024-25)

#### **d) Irrigation**

Though the district receives sufficient rain during monsoon season, but major crops like paddy, jute etc., have to depend on some other sources of water during the major part of the year. The system of Jan or dong to irrigate paddy fields by constructing small canals is still in practice in some part of the district. Some minor irrigation projects like construction of bunds across the streams and rivulets, drainage channels and slit channels etc., are implemented in the district by the government. Lift irrigation with electric pump-sets has also been operated in some parts of the district.

Despite various efforts made in the past, the present status of irrigated agriculture in the district is not satisfactory (compared to the state and the national standard). More and more agricultural land is required to be brought under irrigation on priority basis (there being potentiality), both for increasing production and productivity through intensification of agriculture.

  
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## 8. Land Cover (LC) and Land Use (LU) pattern

Land resource is one the most important and valuable free gift of the nature and its proper utilization by the inhabitants is of great value. Land should be fully used as per its capability. Lack of proper or profitable use means wastage of land resource and it results loss of productivity. It therefore requires proper and timely use of this kind of asset. The following table indicates the pattern of land use under various classification of land in Udalguri District.

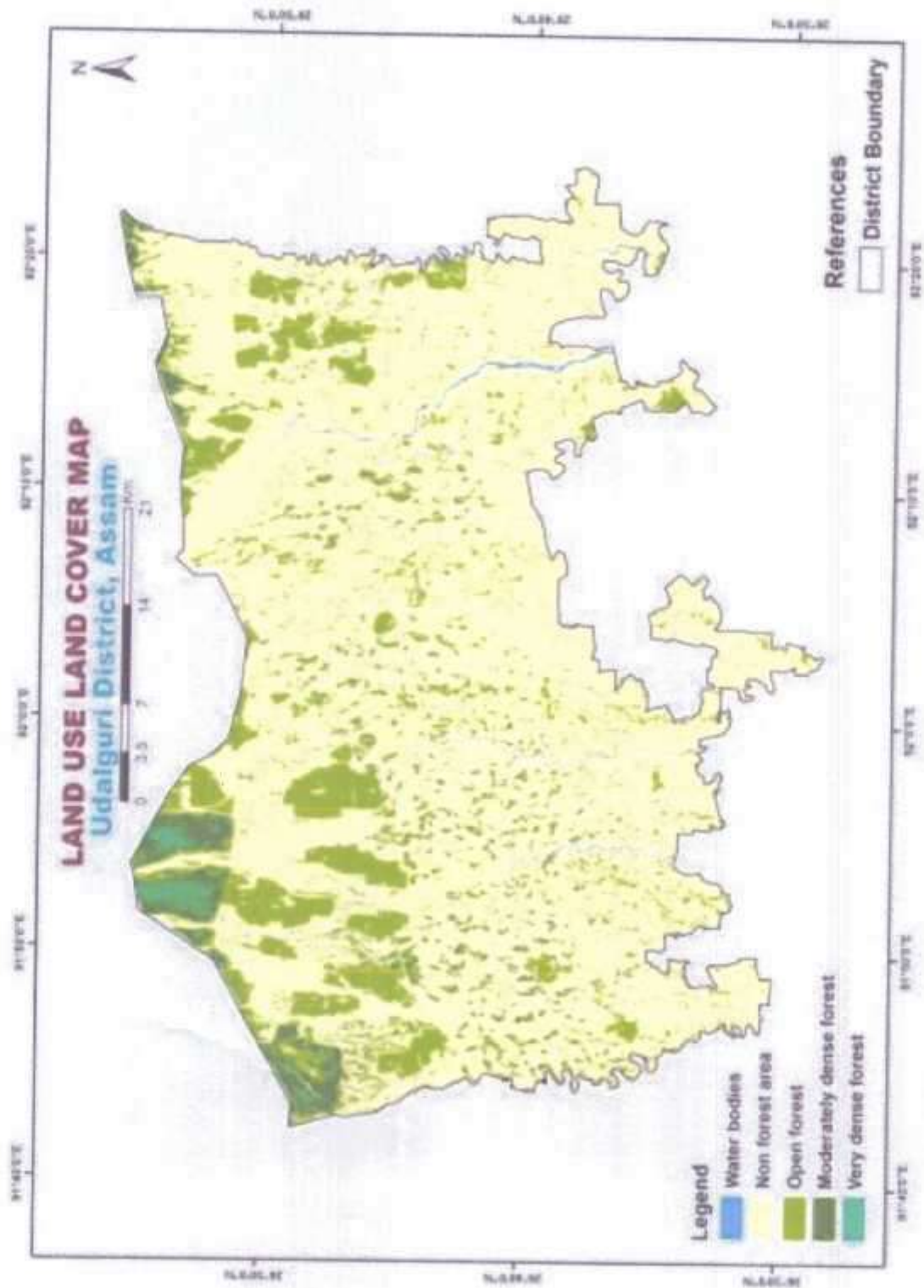
**Table 8.1: Land use Pattern in Udalguri District**

| <i>Sl.N<br/>o.</i> | <i>Land put to different uses</i>                       | <i>Area in hectare</i> |
|--------------------|---|------------------------|
| 1                  | Total Geographical area                                 | 167393                 |
| 2                  | Forest area   | 2240                   |
| 3                  | Land not available for cultivation                      | 3043                   |
| a                  | Land put to non-agricultural uses                       | 2348                   |
| b                  | Barren and un-culturable land                           | 694                    |
| 4                  | Other non-cultivated land excluding fallow land         | 1450                   |
| a                  | Permanent pastures and other grazing land               | 386                    |
| b                  | Land under misc, trees, groves etc. Not included in net | 706                    |
| c                  | Cultivable wasteland                                    | 357                    |
| 5                  | Fallow land   | 112                    |
| a                  | Fallow other than current fallow                        | 70                     |
| b                  | Current fallow  | 42                     |
| 6                  | Net area sown   | 9994                   |
| 7                  | Total cropped area                                      | 159311                 |
| 8                  | Area sown more than once                                | 5936                   |

*Source: Census, 2011*

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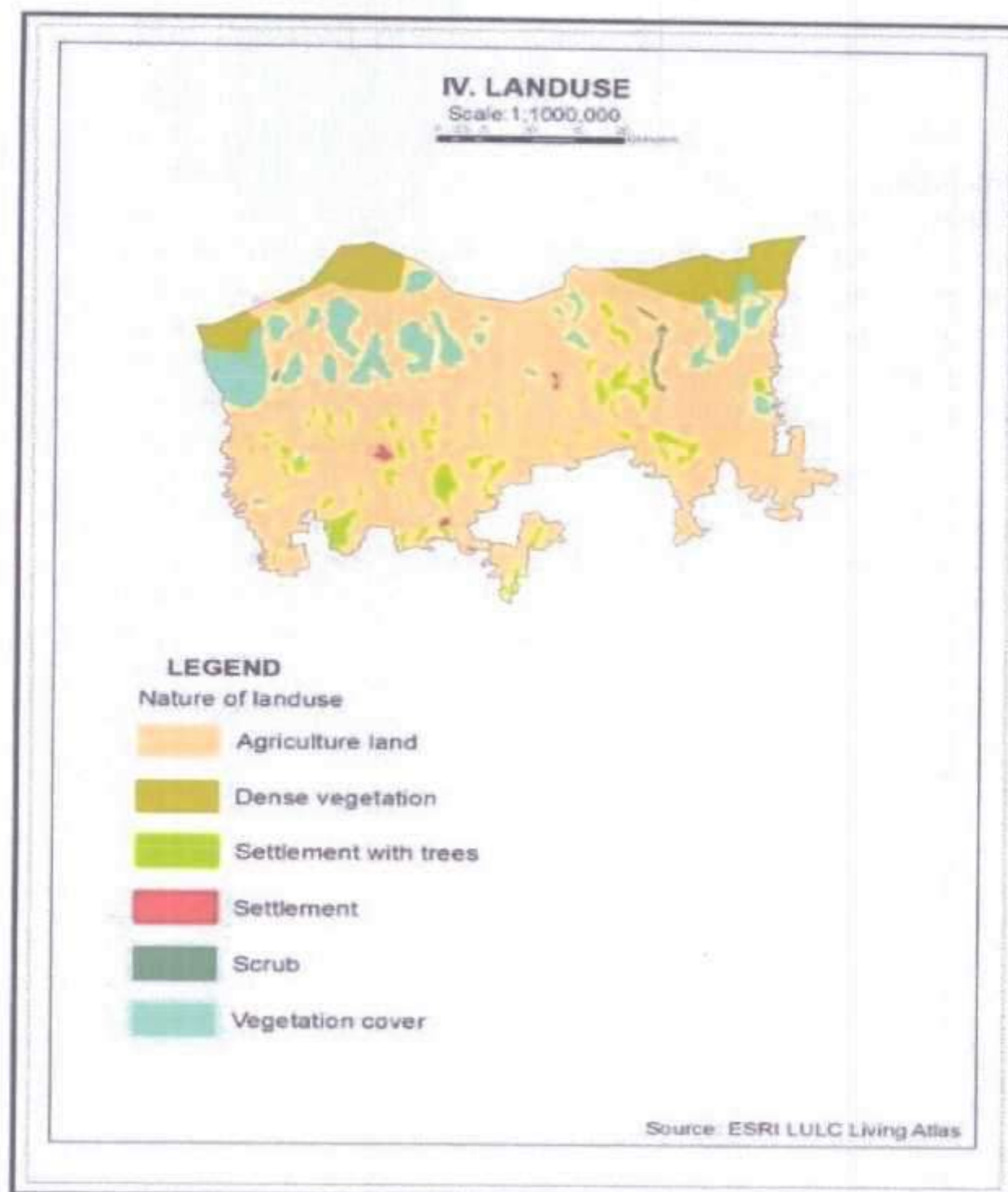
Source: Aquifer Mapping and Management Plan of Udalguri district, Assam

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**Map 8.1: Land use land cover map of Udalguri district**


  
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## 9. Physiography of Udalguri District

The district intersected by numerous hill streams is almost quadrilateral block of alluvial plain. The southern parts of the district are situated on the plains of the Brahmaputra Valley Zone. Major tributaries of the river Brahmaputra viz. Pachnoi, Dhansiri, JiyaDhansiri, Mora Dhansiri, Noa, Kulsi, Dipila and Bornoi, which originate from the foothills of the Himalayan Range flow through the district and they mainly contribute towards the sustenance of the agrarian economy of the district. Northern part of this area is largely covered by tea gardens fringed here and there by villages of ex-tea garden labourers. The northern part of the district is generally hilly areas and the southern part of the district is covered with forest and hillocks.

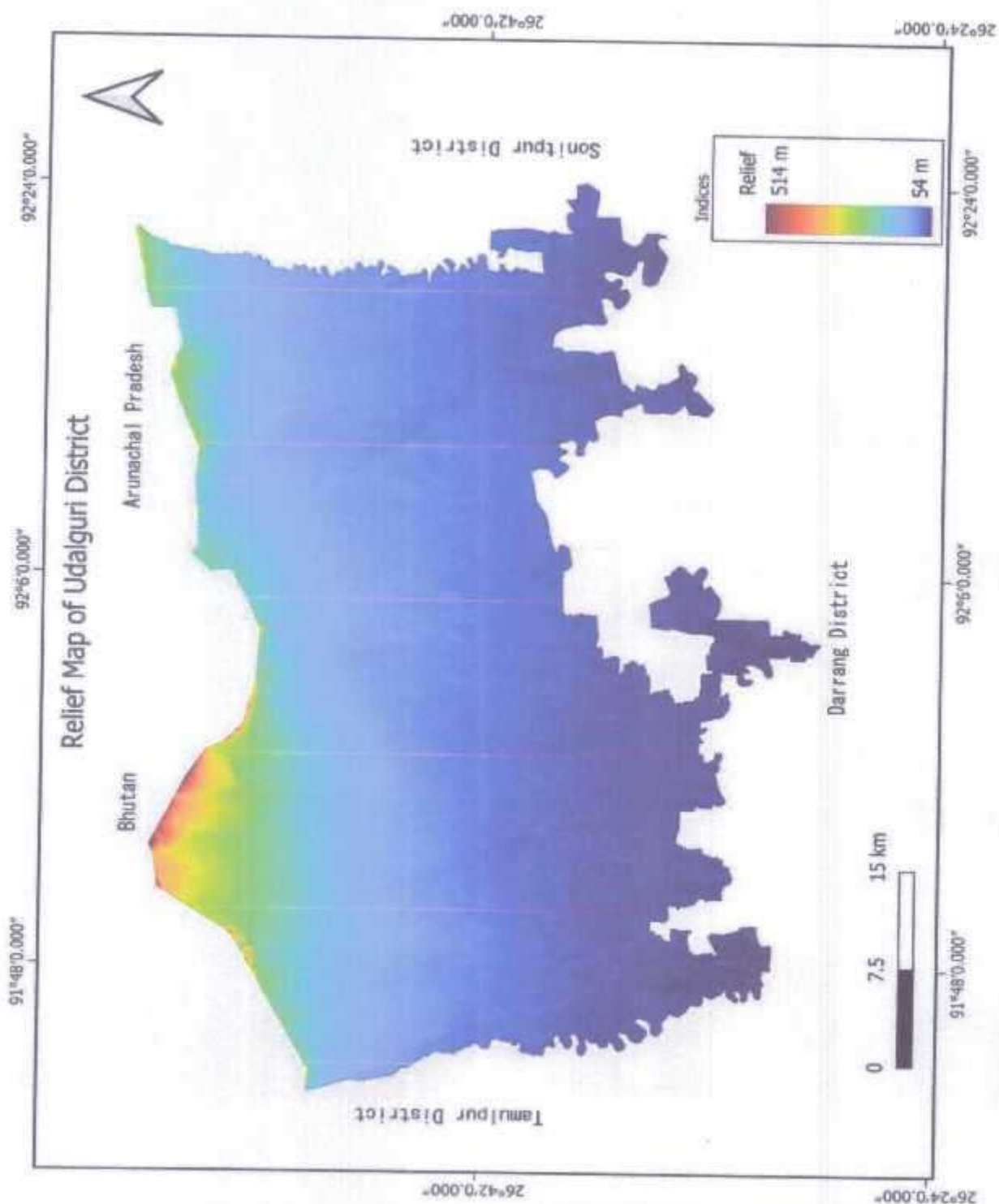
The district forms a part of the vast alluvial plains of Brahmaputra River system. Geomorphologically, it is characterized by the different land forms resulting from a) denudation structural hill and b) alluvial plain. The low mounds/hillocks are covered by a thick lateritic mantle and these are occupied by evergreen mixed forests (Fig.1.2). The alluvial plains comprise of older and newer alluvium. The older alluvium occupies the piedmont zone towards the north of the district bordering Bhutan. The newer alluvium includes sand, gravel, pebble with silt and clay. The district is mostly plain with an area of 1969 sq. km (99.18%) with slope 0 to 20%.

  
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Data Source: SRTM

Map 9.1: Relief Map of Udalguri District

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## 10. Rainfall

The climate of the District is very damp and humid due to heavy rains and high temperature. June and July are the months with highest rainfall. Generally the period from May- end to October is considered as flood season.

The annual rainfall received ranges from 1500 mm to 2600 mm and the annual temperature ranges from 7° to 38.5°C with an average humidity of 75%.


**Table10.1: Annual rainfall (in milimeter) recorded in Udalguri District**

| YEAR | JAN  | FEB  | MAR  | APR   | MAY   | JUN   | JUL   | AUG   | SEP   | OCT   | NOV | DEC  |
|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-----|------|
|      | R/F  | R/F  | R/F  | R/F   | R/F   | R/F   | R/F   | R/F   | R/F   | R/F   | R/F | R/F  |
| 2018 | 0    | 3.1  | 71.6 | 59    | 265.6 | 338.4 | 502.2 | 325.2 | 355   | 63.8  | 7.4 | 23   |
| 2019 | 0    | 49.2 | 33   | 207.6 | 395   | 347.2 | 657.5 | 289.6 | 357.4 | 60.2  | 3.6 | 11.2 |
| 2020 | 13.9 | 26.7 | 28.3 |       | 365.2 | 421.1 | 439.2 | 171.4 | 304.1 | 125   | 1.2 | 0    |
| 2021 | 14.4 | 1.9  | 41.4 | 53.6  | 218.1 | 300.2 | 346.9 | 144.8 | 212.8 | 58.6  | 0.8 | 0    |
| 2022 | 16.4 | 95.7 | 76.6 | 425.2 | 537.8 | 786.7 | 210.4 | 137.4 | 104.4 | 178.6 | 0   | 1.6  |

Source: IMD

### Temperature:

The temperature in the region begins to increase from end of February and reaches highest point during June and July. January is the coldest month of the year. The air is highly humid throughout the year and winds are light in the district. But some of the cyclonic storms and depressions from Bay of Bengal occur in the monsoon and post monsoon periods causes heavy rain. Thunder storms occur during the period from March to May. Fog occurs in the winter months. The complex physical features of this district also contribute a great extent to the occurrence of flood.

  
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## 11. Geology and Mineral Wealth

### (i) Regional Geology:

The Shillong Plateau (approx. 47,614 sq. km) is a Precambrian cratonic block in Northeast India, tectonically separated from the Indian Peninsula. It is bordered by:

- ❖ Dauki Fault to the south (dextral strike-slip fault),
- ❖ Brahmaputra Lineament to the north,
- ❖ Garo-Rajmahal Graben and Dhuburi/Madhupur Lineament to the west,
- ❖ Belt of Schuppen to the east.

This block is made up of high- to medium-grade Paleoproterozoic basement gneisses and schists, which are classified as the Basement Gneissic Group (BGG). These are overlain by Mesoproterozoic metasediments and metavolcanics of the Shillong Group, intruded by Neoproterozoic acidic intrusives such as:

- Myllem pluton
- South Khasi pluton
- Umroi granite
- Nongpoh pluton

The plateau is composed mainly of orthogneiss and paragneiss with the following geological units:

- Banded gneiss (bimodal character)
- Migmatite
- Augen gneiss
- Banded Iron Formation (BIF)
- Amphibolites
- Pyroxene granulite
- Calc granulite
- High-grade sillimanite-bearing metapelite with cordierite, corundum, spinel, sapphirine
- Intrusives like lamprophyre, diorite, granodiorite, mafic intrusions, and pegmatite veins.

  
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Towards the southern boundary of the Shillong Plateau, Cretaceous-Tertiary sedimentary sequences overlay these basement rocks. The plateau also contains an intracratonic basin (approx. 2,500 sq. km) with sedimentary cover.

The Assam Basin to the north represents the cratonic margin with three main tectonic phases:

1. Late Cretaceous to Eocene block faulting and development of a southeasterly dipping shelf.
2. Oligocene uplift and erosion, during which basement faults reactivated.
3. Post-Oligocene phases, marked by sedimentation and structural developments.

The Eocene Sylhet Formation is significant for its varied depositional environments:

- The Lakadong Member (lagoonal environment) contains thin sandstone and interbedded shale and coal.
- The upper part of the Lakadong Formation represents calcareous sandstones formed in a shallow water platform.

#### (A) GNEISSIC COMPLEX:

The rocks of Gneissic Complex are exposed in Assam in the north western extension of the Proterozoic rocks of Meghalaya Plateau. It occupies a large part of the central Assam and few isolated inselbergs jutting out of the Quaternary plains of western Brahmaputra basins. The Gneissic Complex comprises of gneiss, schist, migmatitic granitoid intruded by younger acidic (granite, aplite, pegmatite) and basic (metadolerite, epidiorite, amphibolite) rocks. The granite plutons are often of batholithic dimensions. The predominant rock type of this complex is gneiss, particularly biotite-bearing quartzofeldspathic gneiss.

The rocks of the Gneissic Complex exposed in parts of Goalpara, Kamrup districts and in northern part of North Cachar Hills and Nagaon districts including the isolated inselbergs in the Brahmaputra Basin, mainly consist of biotite, and biotite-hornblende gneisses with bands of granulites and bosses of intrusive granites, pegmatites, quartz veins and minor basic bands. Minor meta-sedimentary bands comprising magnetite-hematite quartzite are associated with the gneiss in some of the isolated outcrops in the vicinity of Chandardinga, Bilasipara and Abhayapuri in the Goalpara district. In Sonaikuchi Reserve Forest area of Nagaon district, two pyroxene gneisses containing scapolite, saphirine and sillimanite-cordierite have been reported.

These rocks have undergone regional metamorphism of amphibolite-granulite facies from place to place and have given rise to gneisses and schists on the one hand and the granulites on the other.

  
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## **(B) SHILLONG GROUP :**

Gneissic Complex is unconformably overlain by Shillong Group of rocks of Meso- Palaeo Proterozoic age. These rocks mainly comprise of conglomerate and metasedimentaries like quartzite- phyllite- schist association. The type section of Shillong Group is found in Meghalaya. In Assam the rocks of Shillong Group outcrop along the northern part of North Cachar Hills district and the western and northern part of the Mikir Hills across the Kopili valley. The structural trend of these rocks is NE- SW with dip varying from low to high angles.

Relict primary sedimentary structures like current bedding, ripple marks and graded bedding are often found within the quartzites. These rocks are metamorphosed to a low green- schist facies. Intrusion by granite plutons in Shillong Group exhibits contact metamorphism which is represented by development of andalusite, garnet and staurolite in the contact zones. The strike continuity of the Gneissic Complex and the Shillong Group across the Kopili valley in a roughly collinear trend suggests the continuity of the rocks from the Meghalaya massif is possibly separated by the Kopili graben.

## **(C) GRANITE PLUTON:**

A number of granite bodies, often of batholithic size transect both Gneissic Complex and Shillong Group. In Mikir Hills area, two types of granite occur:

- a) Non- porphyritic foliated medium to coarse grained pink granite, occurring in the central part of the batholithic mass, and
- b) porphyritic granite encircling the non- porphyritic granite.

In Mikir Hills, around Siliguri area small bodies of amphibolites and metadolerites are seen within schists and quartzites of Shillong Group. These intrusives also occur within granite around Samchampi and along Luhajuri Bajajuri- Tarapung- Barapung nala sections.

## **(D) LOWER GONDWANA GROUP:**

The occurrence of Lower Gondwana rocks was first reported from Assam area by Fox (1934) and later by Fermor (1935). These rocks are exposed in Singrimari area along the Meghalaya border in the extreme western corner of Assam. Though Singrimari (Hallydayganj) village is located within the territorial limits of Meghalaya State, these rocks extend over to the State of Assam. Fox (1934) reported plant fossils and pieces of vitrified coal from these beds, based on which he concluded Gondwana affinity. Acharyya and Ghosh (1968b) grouped the entire sequence into Karharbari Formation (Permian). Banerjee et.al,

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(1977) based on mega and microflora finds in the fossiliferous carbonaceous shale assigned an age equivalent to lower Barakar. De and Boral (1978) further differentiated these sediments lithostratigraphically into the Talchir and Karharbari Formations.

**(a) Talchir Formation:**

The Gondwana succession in the area starts with the boulder conglomerate in the basal part which is well exposed south of Singrimari township at the road junction leading to Mancachar and Tura. The road cutting exposes shale overlying a layer of conglomerate. This sequence can be further traced towards north in the Boldamiri nala where about 10 m alternating sequence of conglomerate and shale is exposed. The shale is khaki green to dirty greenish, silty and micaceous in nature. The boulder conglomerate is greyish brown to dirty grey with subangular to rounded clasts within the silty matrix. The clasts are composed of quartz, quartzite, gneisses and pegmatites which vary in size from pebble to large cobbles of 12 to 15 cm diameter. They are unsorted and do not exhibit stratification nor provide any directional palaeocurrent properties.

**(b) Karharbari Formation:**

The overlying younger sequence is poorly exposed. Best exposures can be studied in the area around of Singrimari Inspection Bungalow (IB). Here thin layers of sandstone and carbonaceous shales with a thick layer of conglomerate capping are exposed. The shale is brownish red to dark grey, highly micaceous and contains well preserved plant impressions. The conglomerate is brownish grey to greenish grey with clasts of vein quartz embedded within a sandy matrix. These clasts show a greater degree of sphericity and roundness and vary in size from small pebble to cobble. Well preserved leaf impressions of *Vertebraria* sp. and *Glossopteris* sp. are within the reddish brown to black micaceous shale which is underlying the coal band.

**(E) ALKALI COMPLEX OF SAMCHAMPI :**

Alkaline mafic-ultramafic-carbonatite complex at Samchampi is emplaced within granitic host rock. The rock types include mainly a variety of syenites which cover large part of the area, mafic rocks which include alkaline pyroxenite, shonkinite, biotite pyroxenite, ultramafics (ijolite, melteigite), apatite-hematite-magnetite rock, carbonatite and cherty rocks. A zone of fenitisation encircles the complex. Carbonatite occurs mainly in the northern and eastern peripheral parts of the complex as dykes. At places, they laterally grade into mafics and ultramafic rocks and occasionally contain partly digested xenoliths of syenites and





mafic-ultramafic rocks. The central part of the complex is occupied by apatite bearing magnetite-hematite rock. The carbonatites are mainly soviet with minor kasenite. Carbonatite bodies with associated rhyolite flows have been located along Brik nala, south of Matikhola Parbat in Mikir Hills.

#### **(F) SYLHET TRAP :**

Patchy occurrences of highly weathered trap rocks presumably belonging to Sylhet suite of Meghalaya have been reported from vicinity of Koilajan, Selvetta and a few other places in Karbi-Anglong district of Assam. The outcrop shows highly weathered and altered chert/olive green trap rocks overlying the gneisses. Sylhet trap are exposed in a narrow 4 km wide and 8 km long strip along the southern margin of Shillong Plateau. In Assam these outcrops are highly weathered. These sporadic outcrops present in the area have small aerial extent and are not possible to plot on the map of attached scale.

#### **(G) JAINTIA GROUP :**

The shelf facies sediments (Jaintia Group) of Eocene age are calcareous and abundantly fossiliferous. They differ markedly from the Eocene shales of the geosyncline (Disang Group) facies.

Jaintia Group is classified into three formations— Kopili Formation, Shella Formation and Langpar Formation (exposed in Meghalaya).

Jaintia Group comprising Shella and overlying Kopili Formations is seen around Garampani area of the North Cachar Hills. It also extends north-easterly along the southern and eastern slopes of the Karbi (Mikir) Hills. These rocks are exposed from the vicinity of Selvetta in west through Dilai Parbat in the east and then through Doigrung further north- east. Workable seams of coal are present in the Sylhet Sandstone Member at Selvetta, Koilajan and Sylhet Limestone Member in Selvetta, Jarapgaon, Koilajan and Nambar areas.

##### **(a) Shella Formation:**

The Shella Formation is well developed with three limestone bands alternating with three interbedded clastic sandstone units. In the basal part of this formation Theria-Cherra Sandstone member has been redesignated as Lower Sylhet Sandstone Member. In Garampani area a single limestone horizon underlain by sandstone represents the base. The limestone designated as Sylhet Limestone Member in Meghalaya is found to be equivalent to Upper Sylhet Limestone Member of the southern scarp of Meghalaya. The underlying unit, Lower

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Sylhet Sandstone Member in Assam represents the facies variant of the underlying limestone/sandstone units exposed along the southern scarp of Khasi and Jaintia Hills, Meghalaya.

**(b) Kopili Formation:**

The Shella Formation is conformably overlain by Kopili Formation, consisting mainly of greyish, usually ferruginous, splintery shales with interbedded sandstone and calcareous marl of variable thickness. The thickness of this formation is about 500 m in the area around Kharungma and exhibits conformable trend similar to that of the underlying Shella Formation.

The rocks of Kopili Formation contain fossils like *Nummulites pengaroensis*, *Globigerina semi involuta* etc. indicative of Upper Eocene age.

**(H) DISANG GROUP :**

Disang Group in Assam is represented by monotonous sequence of dark grey, splintery, shale with thin sandstone interbands. The shale is usually limonite coated. The Disang are predominantly arenaceous in the upper part and exhibit vertical as well as lateral facies change to its overlying Barail Group of rocks.

In Assam, Disang Group is exposed along a narrow strip southwest of Haflong-Disang thrust in the central part of North Cachar Hills. This sequence is exposed from Jatinga valley eastward upto the headwaters of Dhansiri. In the upper part, beds of this sequence are cut-off by a thrust along which these rocks are seen to override the younger Tertiaries. Good exposures of these rocks are seen along the railway cutting and stream sections near Mahur where shales contain streaks of soapstone. In North Cachar Hills, they are highly disturbed by overfolding. West of Jatinga valley, Disang rocks extend as narrow strip along the northern boundary of Cachar district.

In Upper Assam, Disang Group comprises of a thick sequence of alternating splintery shale with thin partings of hard greyish flaggy sandstone and sandy shales. They are generally iron stained, light to dark grey and carry fine streaks of carbonaceous matter. Thin veins of quartz and encrustations of soapstone characterize these shales in south-western part of Patkai Hills. Foraminifera reported from the outcrops south-east of Haflong-Disang thrust suggests the age equivalence to Jaintia (Evans, 1935) Group.

**(I) BARAIL GROUP :**

Barail Group represents a lithological package belonging to the geosynclinal facies. Rocks of this group are exposed along two different strips, in the south-eastern part of North Cachar

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Hills, i.e. to the South of Haflong-Disang Thrust and secondly in parts North of the Cachar and Karbi (Mikir) Hills i.e. to the north of Haflong-Disang Thrust in Upper Assam.

The unclassified shelf facies rocks of Barail Group which overlie the Kopili Formation cover a large area with a gross thickness of about 1000 m. Lithologically they consist of fairly coarse sandstone, shale and carbonaceous shale with streaks of minor seams of coal. Outcrops of Barail Group in this part of the area are seen near Mupa, Langling, Latikhali, ChotaLangher along the LumdingBadarpur railway cuttings of North-East Frontier Railway as well as along road section between Haflong and Garampani-Kopili. The geosynclinal facies of Barail Group in Surma valley and North Cachar Hills are subdivided into Laisong, Jenam and Renji Formations.

The Barail Group contains meagre fossil fauna. However, it contains a fairly rich palynofossil assemblage.

**(a) Laisong Formation:**

It consists of thin bedded greyish sandstone with interbedded thin sandy shale, rare massive sandstone, carbonaceous shales and streaks of coal. The assemblage of Laisong Formation comprises *Cicatricosisporites macrocostatus*, *Polypodiaceae sporites tertiarus*, *Polypodii sporites speciosus*, *P. oligocenicus*, *Palmae pollenites communis*, and *Favitricolporites* complex. The pollen *Tetracolporites paucus*, *Graminidites assaminus*, *Polyadopollenites* sp. appear for the first time and *Eyeripollis naharkotensis* is most abundant in Laisong Formation (Sah. 1974). On the basis of microfauna and palyno-fossil the Laisong Formation has been dated as Auversian-Bartonian.

**(b) Jenam Formation:**

Laisong Formation gradationally passes into argillaceous Jenam Formation comprising mainly of shale, sandy shale, carbonaceous shale with streaks of coal and interbedded hard sandstone. The carbonaceous shales of the Jenam Formation are characterized by the relative increase in the abundance of pteridophytic flora and a decrease in the frequency of angiospermus elements, in particular, *Meyeripollis naharkotensis*. On the basis of microfauna and palyno-fossil the Jenam Formation has been dated as Lattorfian.

**(c) Renji Formation:**

Renji Formation comprises of hard massive sandstone with rare beds of shale and sandy shale. The Renji Formation is distinguished from the former two by the increased frequency of *Cicatricosisporites macrocostatus* and presence of *Polypodii sporites speciosus* and *P. oligocenicus*. On the basis of microfauna and palyno-fossil the Renji Formation has been dated as Chartian.

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In upper Assam, the Barail Group has been classified into 3 formations- Tikak Parbat Formation, Bargolai Formation and Nagaon Sandstone Formation.

(i) *Nagaon Sandstone Formation:*

The lowermost Nagaon Sandstone Formation (=Laisong Formation) consists of fine grained, hard, thin bedded, light to darker grey flaggy sandstone with thin partings of greyish splintery shales and thinly bedded sandy shales.

(ii) *Bargolai Formation:*

The overlying Bargolai Formation is a 900–2500 meter thick sequence comprising of sandstone, clay, clayey sandstone, sandy clay, carbonaceous shale and coal seams. The lower part of the formation is represented by hard sandstone, bluish grey micaceous sandstone with alternating bluish grey clay beds and carbonaceous shales. The top part comprises massive sandstone, overlain by thick alternating assemblage of clay, sandy clay, clayey sandstone, thin ferruginous sandstone and carbonaceous shale with laminae of coaly material and leaf impressions. This formation includes several oil-sand horizons in Upper Assam. It is equivalent to the upper part of Laisong Formation and lower part of Jenam Formation.

(iii) *Tikak Parbat Formation:*

Tikak Parbat Formation which overlies Bargolai Formation comprises of medium to coarse grained light coloured quartzose sandstone with interbedded shale, sandy shales, clays, carbonaceous shale with at least five workable coal seams in the basal part. The carbonaceous shales exhibit leaf impressions. This formation is well exposed in Dilli-Jaipur and Makum coalfield areas in Upper Assam. The base of this formation in Makum coalfield area is defined at the base of the 18 meter thick coal seam in the bottom part of the sequence. This is also the thickest recorded coal seam in Assam. A total of five workable coal seams in the basal 160 m of Tikak Parbat Formation in Namdang area have been recorded. The rocks of this formation strike ENE-WSW with 45° southerly dip near Namdang colliery and 15° near Tirap colliery. It is equivalent to the upper part of Jenam Formation and the lower part of Renji Formations in the North Cachar Hills.

**(J) SURMA GROUP:**

Barail Group is unconformably overlain by Lower Miocene Surma Group, which covers a large area in Surma valley and North Cachar Hills. This group is divided into a lower arenaceous facies (Bhuban Formation) and an upper argillaceous facies (Bokabil

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Formation). Surma Group as a whole is well exposed as inliers in the southern part of the Surma valley and also occupies a strip in the northern part of the valley. In the North Cachar Hills, the rocks of Surma Group occupy a large tract in the vicinity of Maibong and further northeastward upto Lumding. These rocks further continue northwards and are exposed in the south-eastern part of the Karbi (Mikir) Hills, as a narrow strip over the eastern base of the Karbi Hills. These rocks overlap the older horizons like Kopili, Sylhet limestone and metamorphite. The Bokabil Formation includes soft micaceous sandstone, siltstone, shale and clay with occasional intercalation of limestone and fossil wood. Shale samples collected from south of Khumbaman Parbat yielded a moderate assemblage of pteridophytic spore and some angiospermic pollen, which indicate an age range from Oligocene to Miocene. Surma Group in Upper Assam is represented by about 30 to 60 m thick estuarine sandstone, shale and conglomerate unconformably overlying the Barails. Elsewhere the group is missing either due to overlap or by lateral passage of Bokabils into overlying Tipam Group which directly rests over the Barails in the Dilli- Jaipore and Makum coalfield areas.

**(a) Bhuban Formation:**

Bhuban Formation consists of sandstones, sandy shales and conglomerate intervened by shale, sandy shale and lenticular sandstone.

The fossil fauna in Bhuban Formation is extremely rare. Sale (1932) and Sale and Evans (1940) reported occurrence of molluscan fauna namely *Bassilia*, *Cancellaria*, *Hipponyx*, *Isocardia*, *Scutus*, etc, in Early Miocene in Kanchanpur. Biswas (1961) assigned Middle Miocene age on the basis of a few foraminifera exposed in Halflong Dulu-Damchar area. Pascoe (1962), however, assigned Chattian age to the Kanchanpur fauna.

**(b) Bokabil Formation:**

Bokabil Formation consists of shale, sandy shale, siltstone, mudstone and fairly thick lenticular, coarse grained, ferruginous sandstone.

The marine fauna assemblage mainly comprises of lamellibranch, gastropod, cirripidia, actinozoan & echinoids which assign Lower Miocene (Aquitania) age to this formation.

**(K) TIPAM GROUP :**

Tipam Group comprises a lower arenaceous facies Tipam Sandstone Formation and an upper argillaceous facies Girujan Clay Formation. The rocks of Tipam Group are exposed in many areas in the Surma valley. Upper part of the Tipam sequence at many places is found to be eroded away, prior to the deposition of overlying Dupitila Group. However, Girujan Clay is exposed in the hills between Chargola and Longai valleys and the low hills to the east of Jatinga and Cachar district. Rocks of this group are present also in the Labak-Diksha and





Darby-Dwarband areas.

In Assam valley, Tipam Group occupies a 300 km long strip from Langting to Digboi interrupted by small patches of alluvium cover.

(a) Tipam Sandstone Formation:

Tipam Sandstone consists of fairly coarse to gritty false-bedded, ferruginous sandstone interbedded with shale, sandy shale, clay and conglomerate. The sandstone is usually bluish grey to greenish giving a brownish tint on weathering.

(b) Girujan Clay Formation:

The Girujan Clay Formation consists of lacustrine mottled clay, sandy mottled clay, sandy shale and subordinate mottled, coarse to gritty, ferruginous sandstone.

**(L) DUPITILA GROUP :**

Tipam Group is unconformably overlain by the Mio Pliocene Dupitila Group consisting of coarse, loose and ferruginous sand, clay, mottled clay, mottled sandstone and poorly consolidated sand with layers and pockets of pebbles. These beds are well exposed at intervals, as patches over Tipam Group in Cachar and Karimganj districts, forming low mounds in valley areas.

A characteristic lithostratigraphic section is exposed in Surma valley where it attains a thickness of 3300 m and is named as Dupitila Formation. It comprises of sandstone, mottled clay, grit and conglomerate, locally with beds of coal, conglomerate and poorly consolidated sand with layers and pockets of pebbles.

In Upper Assam, Dupitila Group is represented by fluvial Namsang Formation, which consists of coarse, gritty, poorly consolidated sandstone, mottled clay and conglomerate, which at places, is almost entirely composed of pebbles of coal derived from Barail Group. Lignitised fossil wood fragments are abundantly found in this group.

These rocks are devoid of diagnostic fossil fauna and flora, however, fossil wood remains are common but are non-diagnostic. A few indeterminate leaf impressions and reworked Permian Eocene palynofossils are reported.

**(M) DIHING GROUP:**

Dupitila and Namsang Formations are succeeded by fluvial Pliocene deposit named as Dihing Group consisting of thick pebble beds alternating with coarse, soft sandstone, clay, grit and conglomerate containing half decomposed plant remains. The unconformable relationship

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between Dihing and underlying Namsang Formation is well exposed along Dihing river section near Jaipur in Upper Assam. Locally, at the base of the group, there are unconsolidated sands with relatively few pebbles (Dhekiajuli bed in Digboi oil field area).

In Makum coalfields, this group comprises alternating pebble beds, sandstone and clays. The sandstones are gritty to coarse grained, loose ferruginous and generally greyish in colour. Along Margherita thrust, Tipam Sandstone is seen in juxtaposition with the Dihing beds.

In Surma valley, Dupitila Formation is conformably overlain by a sequence of conglomerate, grit, sandstone and clay corresponding possibly to Dihing Group of Upper Assam. These beds, with steep dip are seen near Bishramkandi and Nagar Tea Garden.

Dihing Group is correlated with the Kimi Formation of Siwalik Group exposed in the foothill of Arunachal Himalayas. Recently, characteristic palynofossils like *Corrugatisporites terminalis*, *Polygonacidites frequens* and *Polyporinaglobosa* have been reported.

#### (N) SIWALIK GROUP :

Middle and Upper Siwalik rocks designated as Subansiri and Kimin formations are exposed in Sonitpur district of Assam, along the foot hills of Arunachal Himalaya. The Subansiri Formation is represented in the area by micaceous massive fine to medium grained pale brown sandstone while the Kimin Formation in the area comprises soft, grey sandstone with bands of claystone.

#### (O) QUATERNARY SEDIMENTS:

Dihing Group is unconformably overlain by Quaternary sequence which in the Upper Assam has been described variously by different workers as "Terrace Deposits", "Unstratified Drifts", "Older or High Level Alluvium" or "Red bank Soil". It consists of indurated, yellow, brown or red clay with sand, gravel and boulder deposits. These deposits do not belong to the typical fluvial Quaternary deposits of the Brahmaputra Basin and are possibly weathered derivatives of the underlying older rocks. These deposits, sometimes without much difference from underlying Dihing, cover large tracts along (i) the northern border of the state, (ii) around Digboi and Margherita, (iii) along the southern border of the state facing the Tirap district of Arunachal Pradesh and Nagaland, (iv) in parts of eastern Cachar in the Surma valley, (v) in isolated inliers around Tezpur and Behali areas in Darrang district, and (vi) along the courses of Dhansiri and Kopili Rivers respectively in Sibsagar and Nagaon districts in Assam.

A major part of the area flanking the Brahmaputra River in Lower and Upper Assam is covered by thick Quaternary fluvial sequence. These Quaternary deposits of the Brahmaputra Basin have been classified under four geomorphic units viz., Kaklung





(=Chapar), Sarbhog, Hauli and Barpeta (=Recent) surfaces, each underlain by alluvial formation of the same name, ranging in age from Pleistocene to Recent. Palynological and pedological studies reveal that the Kakulung (Chapar) formation has undergone deep lateritic type of pedogenesis, under a warm humid i.e. tropical to subtropical type climate. The Sarbhog soil is of podzolic type formed under relatively temperate conditions indicating that the time when Sarbhog sediments were deposited, both temperature and humidity had decreased effectively. Thus, these Quaternary deposits record the fluctuations in the climatic regime during the post-glacial times.

The Older Alluvium (Kaklung/ Chapar formation) is exposed near the hills of the granite (Precambrian) in the southern side and as river terrace close to the Himalayan foothills in the northern side. The Younger Alluvium {Hauli& Recent (Barpeta) Formations} is exposed along the present course of Brahmaputra River.

**Table 11.1 : STRATIGRAPHIC SET UP**

| <i>Age</i>                  | <i>Group Name</i> | <i>Formation (Thickness)</i>             | <i>Lithology</i>   |
|-----------------------------|-------------------|--|--|
| Holocene                    | Unclassified      | Newer or Low Level Alluvium              | Sand, silt and clay  |
| Middle to Upper Pleistocene | Unclassified      | Older Alluvium                           | Sand, clay, pebble, gravel and boulder deposit   |
| Unconformity/Tectonic       |                   |  |  |
| Pliocene-Pleistocene        | Siwalik Group     | Kimin Formation                          | Sandstone with claystone   |
|                             |                   | Subansiri                                | Micaceous sandstone  |
| Pliocene                    | Dihing Group      | Dihing Formation (900m)                  | Pebble beds, soft sandy clay, clay, conglomerates, grit and sandstone  |
| Unconformity                |                   |  |  |
| Mio-Pliocene                | Dupitila Group    | Dupitila Formation (Surma Valley: 3300m) | Sandstone, mottled clay, grit and conglomerate; locally with beds of coal, conglomerate and poorly consolidated sandstone with layers and pockets of pebbles |

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|                                   |                             |   |  |
|-----------------------------------|-----------------------------|---|--|
|                                   | Disang Group                |   | Splintery dark grey shale and thin sandstone   |
| Palaeocene-Eocene                 | Jaintia Group               | Kopili Formation                          | Shale, sandstone and marl.   |
|                                   |                             | Shella Formation                          | Sylhet Limestone (Fossiliferous Limestone)<br>Sylhet sandstone<br>Sandstone, clay and thin coal seam           |
|                                   |                             | Langpar Formation (exposed in Meghalaya)  | Calcareous shale, sandstone- limestone   |
|                                   |                             | Unconformity                              |  |
| Cretaceous                        | Alkali Complex of Samchampi |   | Pyroxenite- Serpentinite with abundant development of melilite pyroxene rock, ijolite, syenite and carbonatite |
|                                   |                             | Unconformity                              |  |
| Cretaceous                        |                             | Sylhet Trap (exposed in Meghalaya) (600m) | Basalt, alkali basalt, rhyolite, acid tuff   |
|                                   |                             | Unconformity                              |  |
| Permo-carboniferous               | Lower Gondwana              | Kaharbari Formation                       | Very coarse to coarse grained sandstone with conglomerate lense, shale, carbonaceous shale and coal            |
|                                   |                             | Talchir Formation                         | Basaltillite, conglomerate with sandstone bands, siltstone and shale   |
|                                   |                             | Unconformity                              |  |
| Neo-Proterozoic- Early Palaeozoic | Granite Plutons             |   | Porphyritic coarse granite, pegmatite, aplite, quartz vein traversed by epidiorite dolerite                    |

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|                        |                  |                  |   |
|------------------------|------------------|------------------|---|
|                        |                  | Intrusivecontact |   |
| Palaeo-MesoProterozoic | Shillong Group   | .....            | Quartzite, phyllite, quartz-sericite schist, conglomerate   |
|                        |                  | Unconformity     |   |
| Archaean Proterozoic   | Gneissic Complex | .....            | Complex metamorphic group comprising ortho and para gneisses and schists, migmatites granulites etc. Later intruded by acidic and basic intrusives- |

## (ii) Local geology

Geologically, the district comprises mainly of alluvial deposits of Quaternary age. The Tertiary rocks of Subansiri Formation of Siwalik Group represent the oldest lithounits of the district and composed of sandstone, with calcareous nodules, carbonized wood and coal seam occur as small patches in the northern fringe of the district.

*Subansiri Formation* is thrust and juxtaposed against the Quaternary sediments by the Himalayan Frontal Thrust (HFT) of Sub Himalayan Orogen. The Quaternary sediments have been classified into five morphostratigraphic units, namely Corramore, Chapar, Sorbhog, Hauli and Barpeta formations. Starting from the older to the younger alluvial deposits of Quaternary age, the sediments are highly oxidized to least oxidised semi-consolidated to loosely held and are made up of sand silt and clay with associated cobbles and pebbles. Corramore formation is deposited in the northern fringe towards the foothills part of the district and is composed of boulder, pebble and coarse sand with clay intercalations. Chapar formation is exposed as river terrace deposits in the foothills region in the northern part of the district and composed of highly oxidised dark brown to red brown loamy sand. Sorbhog formation is exposed as high level terrace deposits in the district and composed of oxidised to feebly oxidised sand, silt and clay. The Younger Alluvium (Hauli and Barpeta formations) is exposed along the active river channels as a low lying alluvial plain. Bapeta II represents the present day river course deposits which are undergoing constant erosion and deposition. Dhansiri-Kopili fault trending NW-SE is passing through the district in the southern part.

Geotechnically, Udalguri District has been divided into two morphotectonic units namely alluvial fill in intracratonic linear depression, and cover rocks of frontal belt affected during Himalayan Orogeny. Alluvial fill intracratonic linear depression comprising ~~unconsolidated sand silt boulders~~. This unit has very high permeability with low to medium comprehensive

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strength. These sediments have poor foundation characteristics.

However, cover rocks of frontal belt affected by fold-thrust movement during terminal phase of Himalayan Orogeny composed of sandstone, pebbles boulders have moderate to high permeability with poor foundation characteristics.


**Mineral Resources:** The area is devoid of major mineral resources. The rocks which are found in the form of pebbles, cobbles boulders found in the river channel deposits are used for building material purposes and also as road metal by the local people. Sand deposits from river banks, channels and sand units from older alluvium are used as construction material. The clay beds occurring in the area are used for brick making.

### Geomorphology

- i) Major Physiographic Units- Flood plain & alluvial terrace, inselberg, swamp
- ii) Major Drainage- Panchnoi river, Phuluguri river (Batiamari in upstream and Pagla in the downstream), Dhansiri river -Sub tributaries are Rowtamukh river, Rowta river, Monai river, Golondi river, Sapkhaiti river- Bega river in the downstream, Chandana river -Swarna river in the upstream and Mangaldai river in the downstream, Bhola/Noanadi river- Sub tributaries are Kalyani river, Lakhi river, Bihkhaiti river, Kulsi river -Saktola river in the downstream, Nonoi river-Sub tributaries are Kalanadi river, Naika river, Huduma river, Kalpani river, Suklai river-Sub tributaries are Chamrang river, Neuli river, Koilakata river.

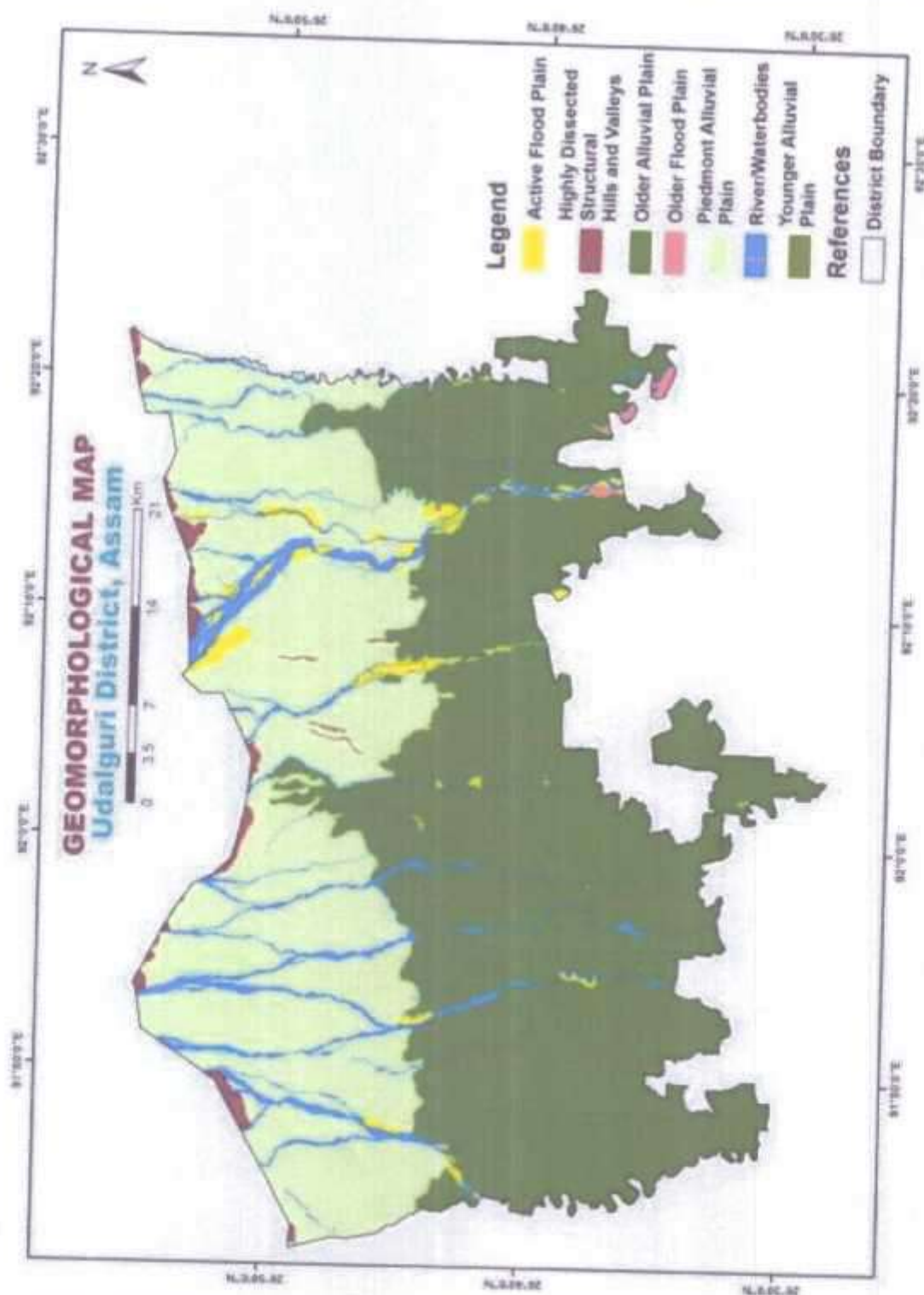
Geomorphologically, the district is divided into the older alluvial plain, older flood plain, active flood plain, highly dissected structural hills and valleys, piedmont, alluvial plain, and younger alluvial plain. The younger alluvial plain covers 53% of the district, followed by the piedmont alluvial plain covering 38% of the district. Older flood plains, Active flood plain, dissected hills and older alluvial plains cover the rest of the district.

The district intersected by numerous hill streams in the northern parts of the district. The southern parts of the district are situated on the plains of the Brahmaputra Valley Zone. The district forms a part of the vast alluvial plains of Brahmaputra River system. Geomorphologically, it is characterized by the different land forms resulting from a) denudation structural hill and b) alluvial plain. The low mounds/hillocks are covered by a thick lateritic mantle and these are occupied by evergreen mixed forests. The alluvial plains comprise of older and newer alluvium. The older alluvium occupies the piedmont zone towards the north of the district bordering Bhutan. The newer alluvium includes sand, gravel, pebble with silt and clay. The district is mostly plain with an area of 1969 sq. km (99.18%) with slope 0 to 20%.

  
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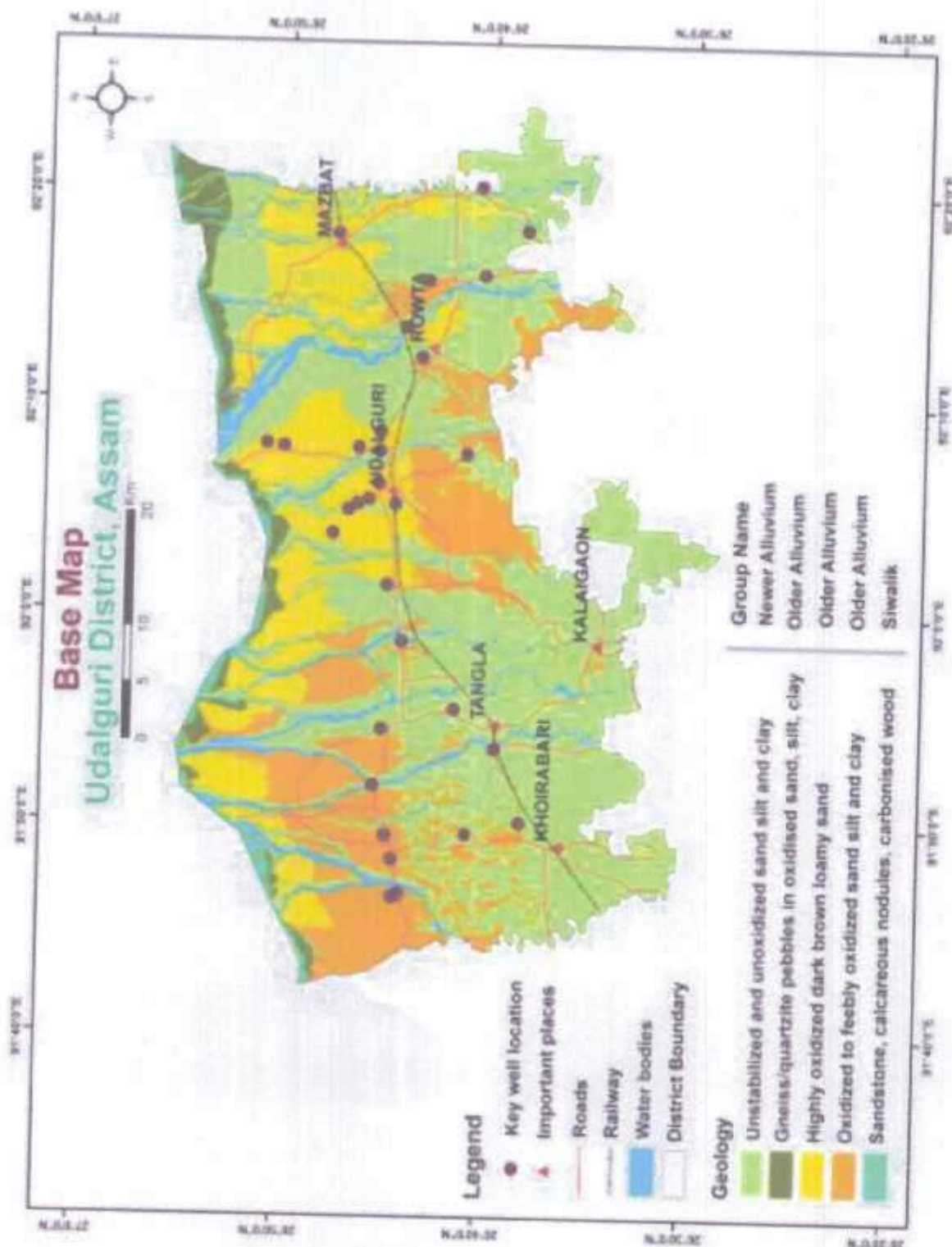
Source: Aquifer Mapping and Management Plan of Udalguri district, Assam

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Source: Aquifer Mapping and Management Plan of Udalguri district, Assam

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Map 11.1.:Resource map of Udalguri District( Source:Geological Survey of India)

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## Soil resources

Accordingly to the National Bureau of soil survey and land use planning, Jorhat Regional Centre in association with the Department of Agriculture, Assam, the soil of the district is mostly deep well drained, coarse loamy skeletal soils occurring on very gently sloping piedmont plain having loamy surface with moderate to severe erosion & slightly flooding associated with moderately deep well drained coarse loamy soils.

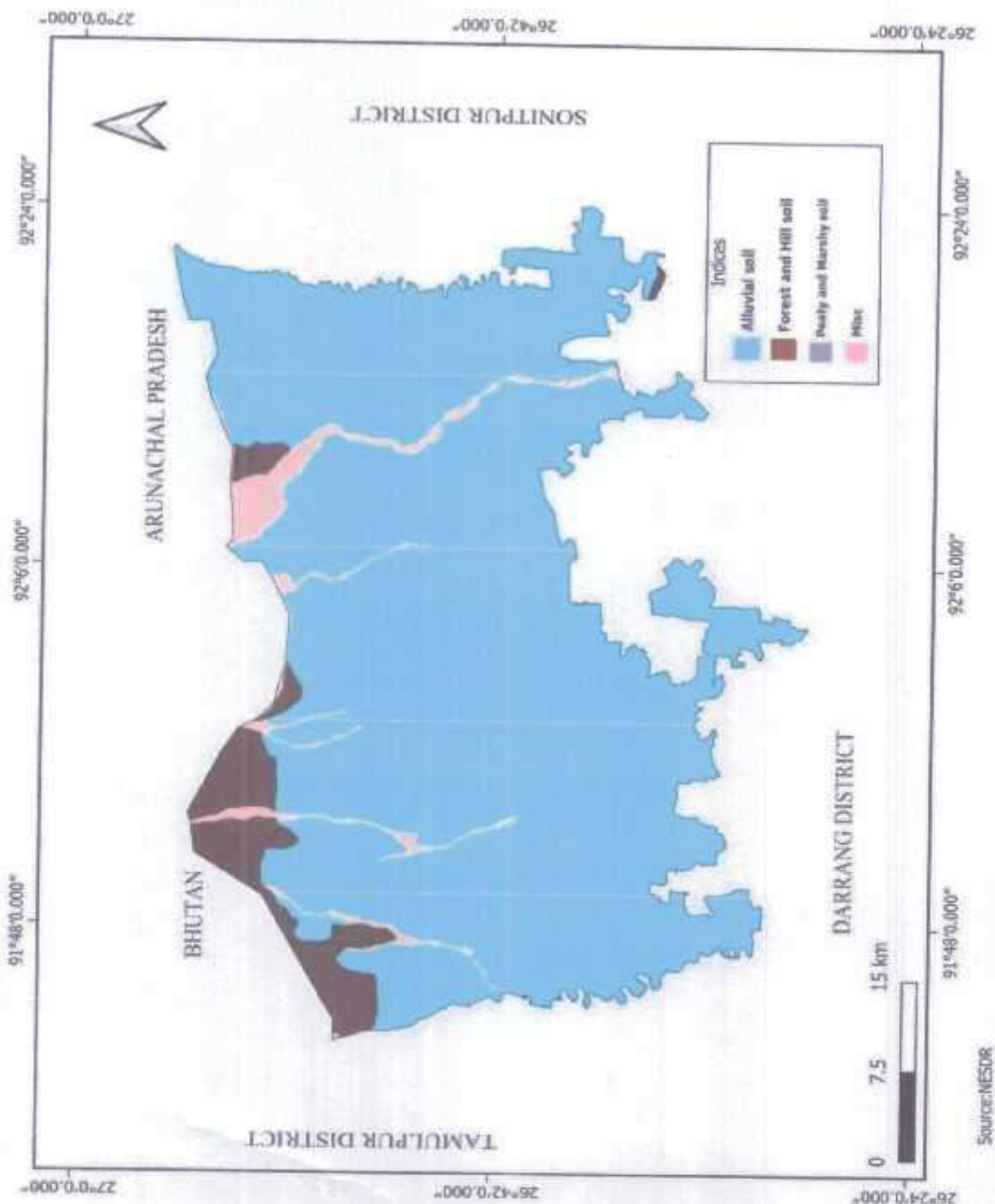
The major part of the soils of the district is acidic in nature. The organic matter content of soil is medium to high. The available N is medium and available P and K is low to medium.

The soils of the district can broadly be classified into the following groups:

- 1) **Red Loamy soils:** These are found in the northern border of the district. This soil type develops in the hill slopes under high rainfall condition. This soil is characterized by low nitrogen, low phosphate and medium to high potash. PH is acidic.
- 2) **Lateritic Soil:** The lateritic soils are the product of high leaching and found in hilly region. Soil PH is acidic due to intensive leaching of bases and formation of clay minerals and ferric hydroxides. The lateritic soils are characterized by brick red to brownish red colour and poor plant nutrient.
- 3) **New Alluvial Soils:** The new alluvial soils are found in the flood plain area and are subjected to occasional floods and consequently receive considerable silt deposit after the flood recedes. These are yellow to yellowish grey in colour and are admixtures of sand, silt and clay in varying proportions. Mineral weathering and geo-chemical changes are nominal. But incipient changes in the top layer have been noticed due to biological activity. Soil PH is feebly alkaline and moderately rich in plant nutrient.
- 4) **Older Alluvial Soil:** It develops at higher levels and practically unaltered alluvium representing a broad spectrum of sand, silt and humus rich clay depending on landform. The soils are comparatively more acidic than the newer alluvial soil and hence more crop sensitive.

  
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Map 11.2 : Soil resource map of Udalguri district(Undivided)

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## Mineral Wealth

Basically, a mineral resource is a concentration or occurrence of solid materials of economic interest in or on the earth's crust in such form so that its presence forms the basis for future i.e., point of view of commercial viability. Mineral Resources bear a reasonable prospect for eventual economic extraction. Mineral Resources are generally sub-divided into geological or inferred resources, indicated reserve and proved reserve.

The geological formation of Udalguri District indicates the presence of minor minerals. The mineral resources of the district whose categorization and estimation have been done are furnished in this section.

**Table 11.2: Total no. mining permit/contract areas in Udalguri district  
(River wise)**

| <i>Sl No</i> | <i>River Name</i> | <i>No. of Leases</i> |
|--------------|-------------------|----------------------|
| 1            | Dhansiri          | 12                   |
| 2            | Monai             | 1                    |
| 3            | Dimasang          | 1                    |
| 4            | Rowta             | 2                    |
| 5            | Pagla             | 1                    |
| 6            | Pasnoi            | 4                    |
| 7            | Golondi           | 2                    |
| 8            | Khowrang          | 1                    |
| 9            | Bhorla            | 3                    |
| 10           | Kulsi             | 3                    |
| 11           | Nunoi             | 7                    |
| 12           | Kalanadi          | 2                    |
| 13           | Samrang           | 1                    |
| 14           | Daisam            |                      |

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**Table 11.3: Mineral-wise mining permit/contract areas in Udalguri District**

| Sl No | River    | No. of Lease | Minerals         |              |               |      |         |                        |                      |                     |             |              |
|-------|----------|--------------|------------------|--------------|---------------|------|---------|------------------------|----------------------|---------------------|-------------|--------------|
|       |          |              | Boulder & Gravel | Sand & Stone | Sand & Gravel | Silt | Boulder | Sand, Gravel & Boulder | Sand, Gravel & Stone | Sand, Gravel & Silt | Sand & Silt | Gravel Earth |
| 1     | Dhansiri | 12           | 2                | 10           | 0             | 0    | 0       | 0                      | 0                    | 0                   | 0           | 0            |
| 2     | Monai    | 1            | 0                | 1            | 0             | 0    | 0       | 0                      | 0                    | 0                   | 0           | 0            |
| 3     | Dimasang | 1            | 0                | 0            | 1             | 0    | 0       | 0                      | 0                    | 0                   | 0           | 0            |
| 4     | Rowta    | 2            | 0                | 2            | 0             | 0    | 0       | 0                      | 0                    | 0                   | 0           | 0            |
| 5     | Pagla    | 1            | 0                | 0            | 1             | 0    | 0       | 0                      | 0                    | 0                   | 0           | 0            |
| 6     | Pasnoi   | 4            | 0                | 2            | 0             | 0    | 0       | 0                      | 0                    | 0                   | 2           | 0            |
| 7     | Golondi  | 2            | 0                | 0            | 0             | 2    | 0       | 0                      | 0                    | 0                   | 0           | 0            |
| 8     | Khowrang | 1            | 0                | 0            | 0             | 0    | 1       | 0                      | 0                    | 0                   | 0           | 0            |
| 9     | Bhorla   | 3            | 0                | 0            | 0             | 0    | 0       | 2                      | 1                    | 0                   | 0           | 0            |
| 10    | Kulsi    | 3            | 0                | 2            | 0             | 0    | 0       | 0                      | 0                    | 1                   | 0           | 0            |
| 11    | Nunoi    | 7            | 0                | 1            | 1             | 0    | 0       | 2                      | 0                    | 2                   | 1           | 0            |
| 12    | Kalanadi | 2            | 0                | 2            | 0             | 0    | 0       | 0                      | 0                    | 0                   | 0           | 0            |
| 13    | Samrang  | 1            | 0                | 0            | 0             | 0    | 0       | 0                      | 0                    | 0                   | 0           | 1            |
| 14    | Daisam   | 1            | 0                | 0            | 0             | 0    | 1       | 0                      | 0                    | 0                   | 0           | 0            |

  
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**(a) District wise detail of river or stream and other sand source**

i) Table 11.a.1: Drainage system with description of main rivers

| S. No. | Name of the river | Area drained (sq. m) | % Area drained in the district |
|--------|-------------------|----------------------|--------------------------------|
| 1      | Dhansiri          | 36100000             | 1.81                           |
| 2      | Monai             | 762000               | 0.04                           |
| 3      | Suklai            | 10140000             | 0.51                           |
| 4      | Pasnoi            | 7830000              | 0.42                           |
| 5      | Golondi           | 7150000              | 0.36                           |
| 6      | Bhorla            | 8170000              | 0.41                           |
| 7      | Kulsi             | 10088400             | 0.50                           |
| 8      | Nunoi             | 12620000             | 0.63                           |
| 9      | Kalanadi          | 6690000              | 0.33                           |
| 10     | Samrang           | 300000               | 0.016                          |
| 11     | Rowta             | 5810000              | 0.31                           |
| 12     | Dimasang          | 747000               | 0.03                           |
| 13     | Pagla             | 4750000              | 0.25                           |
| 14     | Daisam            | 4750000              | 0.25                           |
| 15     | Khowrang          | 395000               | 0.021                          |

Table 11.a.2: Salient features of important rivers and streams

| S. No. | Name of the river | Total length in the District (in km) | Place of origin   |
|--------|-------------------|--------------------------------------|-------------------|
| 1      | Dhansiri          | 46.40                                | Arunachal Pradesh |
| 2      | Monai             | 3.10                                 | Arunachal Pradesh |
| 3      | Suklai            | 23.80                                | Bhutan hills      |
| 4      | Pasnoi            | 31.2                                 | Arunachal Pradesh |
| 5      | Golondi           | 29.20                                | Bhutan hills      |
| 6      | Bhorla            | 45.80                                | Bhutan hills      |
| 7      | Kulsi             | 64.96                                | Bhutan hills      |
| 8      | Nunoi             | 63.70                                | Bhutan hills      |
| 9      | Kalanadi          | 18.26                                | Bhutan hills      |
| 10     | Samrang           | 2.00                                 | Bhutan hills      |

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|    |          |      |                   |
|----|----------|------|-------------------|
| 11 | Rowta    | 21   | Arunachal Pradesh |
| 12 | Dimasang | 5.26 | Arunachal Pradesh |
| 13 | Pagla    | 22.7 | Arunachal Pradesh |

**(b) District wise availability of sand or gravel or aggregate resources**

**iii) Annual deposition**

| Sr No. | Mine Name                                  | River          | Area (Ha) | Area recommended for mineral concession (in sq.m) X depth (m) | Total mineral concession in cum. | Mineable mineral potential (in cum) (60% of total mineral potential) | Mineable mineral potential (in Metric Tonnes) |
|--------|--|----------------|-----------|---|----------------------------------|--|---|
| 1      | Bhairabkunda BG Mahal No.1                 | Dhansiri River | 4.64 ha   | 46400 x 2.0   | 92800                            | 55680<br>Boulder- 16704<br>Gravel- 38976                             | 148665.6<br>Boulder- 44600<br>Gravel- 104066  |
| 2      | Bhairabkunda BG Mahal No.3                 | Dhansiri River | 4.85 ha   | 48500 x 2.0   | 97000                            | 58200<br>Boulder- 17460<br>Gravel- 40740                             | 155394<br>Boulder- 46618<br>Gravel- 108776    |
| 3      | Tarajuli & Rangapani (North Side) SS Mahal | Dhansiri River | 4.52 ha   | 45200 x 2.0   | 90400                            | 54240<br>Sand- 37968<br>Stone- 16272                                 | 144820.8<br>Sand- 101375<br>Stone- 43446      |
| 4      | Tarajuli SG Mahal                          | Dhansiri River | 4.80 ha   | 48000 x 2.0   | 96000                            | 57600<br>Sand- 34560<br>Stone- 23040                                 | 153792<br>Sand- 92275<br>Stone- 61517         |
| 5      | Rangapani SS Mahal                         | Dhansiri River | 4.00 ha   | 40000 x 2.0   | 80000                            | 48000<br>Sand- 33600<br>Stone- 14400                                 | 128160<br>Sand- 89712<br>Stone- 38448         |
| 6      | Dhansiri SG Mahal No.1                     | Dhansiri River | 4.48 ha   | 44800 x 2.0   | 89600                            | 53760<br>Sand- 32256<br>Gravel- 21504                                | 143539<br>Sand- 86124<br>Stone- 57416         |
| 7      | Dhansiri SG Mahal                          | Dhansiri River | 4.12 ha   | 41200 x 2.0   | 82400                            | 49440<br>Sand- 29664<br>Gravel- 19776                                | 132005<br>Sand- 79203<br>Gravel- 52802        |
| 8      | Rowta Bagan SG Mahal                       | Dhansiri River | 4.50 ha   | 45000 x 2.0   | 90000                            | 54000<br>Sand- 32400<br>Gravel- 21600                                | 144180<br>Sand- 86508<br>Gravel- 57672        |

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|    |                                    |                |         |             |       |   |  |
|----|------------------------------------|----------------|---------|-------------|-------|---|--|
| 9  | Lower Dhansiri SS Mahal Part-A     | Dhansiri River | 4.27 ha | 42700 x 2.0 | 85400 | 51240<br>Sand-35868<br>Stone- 15372     | 136811<br>Sand-95768<br>Stone- 4612        |
| 10 | Dhansiri(Balsiyal argaon) SS Mahal | Dhansiri River | 4.85 ha | 48500 x 2.0 | 97000 | 58200<br>Sand- 40740<br>Stone- 17460    | 155394<br>Sand- 108776<br>Stone- 46618     |
| 11 | Lower Dhansiri SSMahal part-B      | Dhansiri River | 4.88 ha | 48800 x 2.0 | 97600 | 58560<br>Sand- 40992<br>Stone-17568     | 156355<br>Sand- 109449<br>Stone- 46907     |
| 12 | Monai Boulder Gravel Mahal         | Monai River    | 0.94 ha | 9400 x 2.0  | 18800 | 11280<br>Boulder- 3384<br>Gravel- 7896  | 30118<br>Boulder- 9035<br>Gravel- 21082    |
| 13 | Dimasang SG Mahal                  | Dimasang River | 4.78 ha | 47800 x 2.0 | 95600 | 57360<br>Sand- 34416<br>Gravel- 22944   | 153151<br>Sand- 91891<br>Gravel- 61260     |
| 14 | Merebil SS Mahal                   | Rowta River    | 4.16 ha | 41600 x 2.0 | 83200 | 49920<br>Sand- 34944<br>Stone- 14976    | 133286.4<br>Sand- 93300<br>Stone- 39986    |
| 15 | Pagla SG Mahal No.2                | Pagla River    | 4.80 ha | 48000 x 2.0 | 96000 | 57600<br>Sand- 34560<br>Gravel- 23040   | 153792<br>Sand- 92275<br>Gravel- 61516     |
| 16 | Pasnoi River Village Samugaon      | Pasnoi River   | 4.81 ha | 48100 x 2.0 | 96200 | 57720<br>Sand- 40404<br>Stone- 17316    | 154112<br>Sand- 107879<br>Stone- 46234     |
| 17 | Pasnoi River Simliguri             | Pasnoi River   | 3.51 ha | 35100 x 2.0 | 70200 | 42120<br>Sand-29484<br>Stone-12636      | 112460<br>Sand-78722<br>Stone-33787        |
| 18 | Baligaon SS Mahal                  | Pasnoi River   | 4.00 ha | 40000 x 2.0 | 80000 | 48000<br>Sand-33600<br>Stone-74400      | 128160<br>Sand-89712<br>Stone-38448        |
| 19 | Golondi Silt Mahal No. 1           | Golondi River  | 4.00 ha | 40000 x 2.0 | 80000 | 48000<br>Silt-48000                     | 94944<br>Silt-76050                        |
| 20 | Golondi Silt Mahal No. 2           | Golondi River  | 2.88 ha | 28800 x 2.0 | 57600 | 34560<br>Silt-34560                     | 68360<br>Silt-68360                        |
| 21 | Khowrang Boulder Mahal             | Khowrang River | 4.80 Ha | 48000 x 2.0 | 96000 | 57600                                   | 153792                                     |
| 22 | Daisam Boulder Mahal               | Khowrang River | 4.90 ha | 49000 x 2.0 | 98000 | 58800<br>Boulder-46080<br>Gravel- 11760 | 156996<br>Boulder- 123034<br>Garvel- 31399 |

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|    |                                   |              |         |             |       |   |  |
|----|-----------------------------------|--------------|---------|-------------|-------|---|--|
| 23 | Bhorla GSB Mahal No.1 (Santipur)  | Bhorla River | 4.90 ha | 49000 x 2.0 | 98000 | 58800<br>Sand- 29400<br>Gravel- 16560<br>Boulder- 11040 | 156996<br>Sand- 78498<br>Gravel- 47099<br>Boulder-31399  |
| 24 | Bhorla GSB Mahal No.2             | Bhorla River | 4.60 ha | 46000 x 2.0 | 92000 | 55200<br>Sand-27600<br>Gravel-16560<br>Boulder- 11040   | 147384<br>Sand- 73692<br>Gravel- 44215<br>Boulder- 29477 |
| 25 | Bhorla GSS Mahal No.3             | Bhorla River | 3.40 ha | 34000 x 2.0 | 68000 | 40800<br>Sand- 20400<br>Gravel- 12240<br>Boulder- 8160  | 108936<br>Sand- 54468<br>Gravel- 32681<br>Boulder- 21787 |
| 26 | Beltola SS Mahal                  | Kulsi River  | 3.80 ha | 38000 x 1.0 | 38000 | 22800<br>Sand- 15960<br>Stone- 6840                     | 60876<br>Sand- 42613<br>Stone- 18263                     |
| 27 | Nunoi SS Mahal No.3 (Kulsi)       | Kulsi River  | 3.70 Ha | 37000 x 1.0 | 37000 | 22200<br>Sand- 15540<br>Stone- 6660                     | 59274<br>Sand- 41492<br>Stone- 17782                     |
| 28 | Kulsi Sand Gravel Silt Mahal No.2 | Kulsi River  | 3.17 Ha | 31700 x 1.0 | 31700 | 19020<br>Sand- 11412<br>Silt- 5706<br>Gravel- 1902      | 50783<br>Sand- 30470<br>Silt- 11286<br>Gravel- 5078      |
| 29 | Bhutiasang SGB Mahal No.1         | Nunoi River  | 4.90 Ha | 49000 x 2.0 | 98000 | 58800<br>Sand- 35280<br>Gravel- 5880<br>Boulder- 17640  | 156996<br>Sand- 94198<br>Gravel- 15700<br>Boulder- 47099 |
| 30 | Bhutiasang SGB Mahal No.2         | Nunoi River  | 3.50 Ha | 35000 x 2.0 | 70000 | 42000<br>Sand- 25200<br>Gravel-4200<br>Boulder- 12600   | 112140<br>Sand- 67284<br>Gravel- 11214<br>Boulder- 33642 |
| 31 | Nunoi SS Mahal No.1 (Gitibari)    | Nunoi River  | 2.47 Ha | 24700 x 2.0 | 49400 | 29640<br>Sand- 20748<br>Stone- 8892                     | 79139<br>Sand- 55397<br>Stone- 23742                     |
| 32 | Gitibari SG Mahal No.2            | Nunoi River  | 4.40 Ha | 44000 x 2.0 | 88000 | 52800<br>Sand- 31680<br>Gravel- 21120                   | 140976<br>Sand- 84586<br>Gravel- 56390                   |

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|    |                                    |                |         |             |       |   |   |
|----|------------------------------------|----------------|---------|-------------|-------|---|---|
| 33 | Nasanchali Sand Gravel Silt Mahal  | Nunoi River    | 4.75 Ha | 47500 x 2.0 | 95000 | 57000<br>Sand- 34200<br>Gravel- 17100<br>Silt- 5700 | 152190<br>Sand- 91314<br>Gravel- 45657<br>Silt- 11275 |
| 34 | Bhootbangla Sand Gravel Silt Mahal | Nunoi River    | 3.45 Ha | 34500 x 2.0 | 69000 | 41400<br>Sand- 24840<br>Gravel- 12420<br>Silt- 4140 | 110538<br>Sand-66323<br>Gravel- 33161<br>Silt- 8189   |
| 35 | Kalanadi SS No.1                   | Kalanadi River | 4.50 Ha | 45000 x 2.0 | 90000 | 54000<br>Sand- 37800<br>Stone- 16200                | 144180<br>Sand- 100926<br>Stone- 43254                |
| 36 | Kalanadi SS No.2                   | Kalanadi River | 3.25 Ha | 32500 x 2.0 | 65000 | 39000<br>Sand- 27300<br>Stone- 11700                | 10413<br>Sand- 72891<br>Stone- 31239                  |
| 37 | Samrang Newly Gravel Earth Mahal   | Samrang River  | 4.00 Ha | 40000 x 2.0 | 80000 | 48000<br>Gravel- 14400<br>Earth- 33600              | 128160<br>Gravel- 38448<br>Earth- 90720               |
| 38 | Rowta SG Mahal                     | Rowta River    | 4.45 Ha | 44500 x 2.0 | 89000 | 53400<br>Gravel- 16020<br>Sand- 37380               | 142578<br>Gravel- 42773<br>Sand- 99805                |
| 39 | Purobkhuti S.S. Mahal              | Dhansiri River | 4.98 Ha | 49800 x 2.0 | 99600 | 59760<br>Sand- 41832<br>Stone- 17928                | 159559<br>Sand- 111691<br>Stone- 47868                |

*\*Considering Depth 1m (for Kulsi River) & 2m, Sp. Gr. 2.67 for Sand, Gravel & Boulder  
Considering Depth 1m (for Kulsi River) & 2m, Sp. Gr. 1.978 for Silt & for ordinary earth Sp.  
Gr. is 2.7*

ii) Mineral potential of Udalguri district

| Boulder (cum) | Gravel/ stone (cum) | Earth (cum) | Sand (cum) | Silt (cum) | Total mineable mineral potential (cum) |
|---------------|---------------------|-------------|------------|------------|--|
| 201708 cum    | 638318 cum          | 33600 cum   | 962028 cum | 98106 cum  | 1933760 cum                            |

- Treat Boulder separately.
- 'Stone' is to be included within Gravel.
- Calculation of % of different attributes is entirely based on field speculation.

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## Details of Rivers

### NO MINING ZONE:

As per the Enforcement and 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. No mining zone has been marked for an area up to a width of 100 meters from the active edge of embankments. Also, the concave side of the river is marked as no mining zone, as mining in this area will affect the course of river in future and will erode the river bank.

Sand and gravel shall not be extracted 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 (Enforcement & Monitoring Guidelines for Sand Mining Ministry of Environment, Forest and Climate change January, 2020).

  
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### **Major Rivers:**

**Nonoi River:** Erosion is the major problem in both banks of river Nonoi. In the rainy season the river carries a huge discharge with very high velocity due to the steep gradient and causes severe erosion on its either bank. There are numbers of tea Estates along this riverbank which earn sufficient revenue to our states. The Bhutiachang Tea Estate, Panery T.E., Kasubil T.E are the adjacent tea estates of Nonoi river which are threatened by the bank erosion. Jalukbari; Ward No.-1 of Tangla Town; Netaji M.E. School, Tangla; Nepalimandir (Kukura kata), are the erosion reaches which had been threatening the very old Tangla Town. Galabasti, Dakhin Gariajhar, Hirapara villages are also suffering bank erosion for last few years. The Nonoi embankment for length of 16.00 km on its both banks is under Udalguri W.R. SubDivision has also been suffering under erosion at villages Dalaipara, Jengcrajher, Tiapukhuri etc. A boulder dam was constructed in the year of 2008-09 for length of 1300 m to close the avulsion of Nonoi to Kulshik. This dam had been carrying a very a good performance during last four years from the devastation of flood in the large area from Panery to N.H.-52. But it is seen necessary of maintenance the boulder apron by very nominal expenditure to save the huge loss of land and property including probable loss cattle and other animals.

**Suklai:** The Suklai River is in the extreme west of the district Udalguri. An embankment was constructed in the left bank and part of right bank by District Rural Development authority, Udalguri protected the adjacent villages i.e Dahalahabi, Natun basti etc, in this year the flood water damaged the embankment causing severe devastation.

**Samrang:** Samrang is the tributary of Suklai River. Avulsion of Samrang River had been causing severe devastation in the downstream for last few years. In this year on 25th to 30th May the river flood water severely damaged the villages Bholatar No. 1, 2, 3 coming out through avulsed portion.

### **Jia Dhansiri:**


Jia Dhansiri River is one of the main tributaries of the river Brahmaputra in Mangaldoi sub-division. It emanates from the Bhutan hills and has an approximate total length of about 80 kilometres from its source to out-fall.

  
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### Monai River

| Sl No | Description   | Area in Ha. | Percentage of Total area (In %) | Cumulative % |
|-------|---|-------------|---------------------------------|--------------|
| 1     | River area  | 76.2        | 100                             | 100          |
| 2     | Area granted for mining   | 3.65        | 4.79                            | 4.79         |
| 3     | No of lease not recommended for future Quarry Lease grant due extracted 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 | 2.71        | 3.55                            | 3.55         |
| 4     | Area not recommended for future Quarry Lease grant due to 100 m Buffer from any railway line or bridge  | 0.0         | 0.0                             | 0.0          |
| 5     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the outer periphery of the defined limits of any village, habitation, National Highway, State highway and other roads   | 0.0         | 0.0                             | 0.0          |
| 6     | Area not recommended for future Quarry Lease grant due to non-availability of un-mined block 50 meters width after every block of 1,000 meters over which is undertaken or at such distance as may be directed by the competent authority   | 0.0         | 0.0                             | 0.0          |
| 7     | Area not recommended for future Quarry Lease grant due to 100 m Buffer Local Minor Check Dam  | 0.0         | 0.0                             | 0.0          |
| 8     | Area not recommended for future Quarry Lease grant due to 500 m buffer from the irrigation Structure/ Reservoir & Submergence Area  | 0.0         | 0.0                             | 0.0          |
| 9     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Canal/ Tank/ Lake   | 0.0         | 0.0                             | 0.0          |
| 10    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Ropeway or ropeway trestle or station   | 0.0         | 0.0                             | 0.0          |
| 11    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Heritage site, Protected monuments  | 0.0         | 0.0                             | 0.0          |
| 12    | Area not recommended for future Quarry Lease grant due to Eco-sensitive Zone  | 0.0         | 0.0                             | 0.0          |
| 13    | Applicability of Cluster (Other lease within 500 meter radius   | 0.0         | 0.0                             | 0.0          |

  
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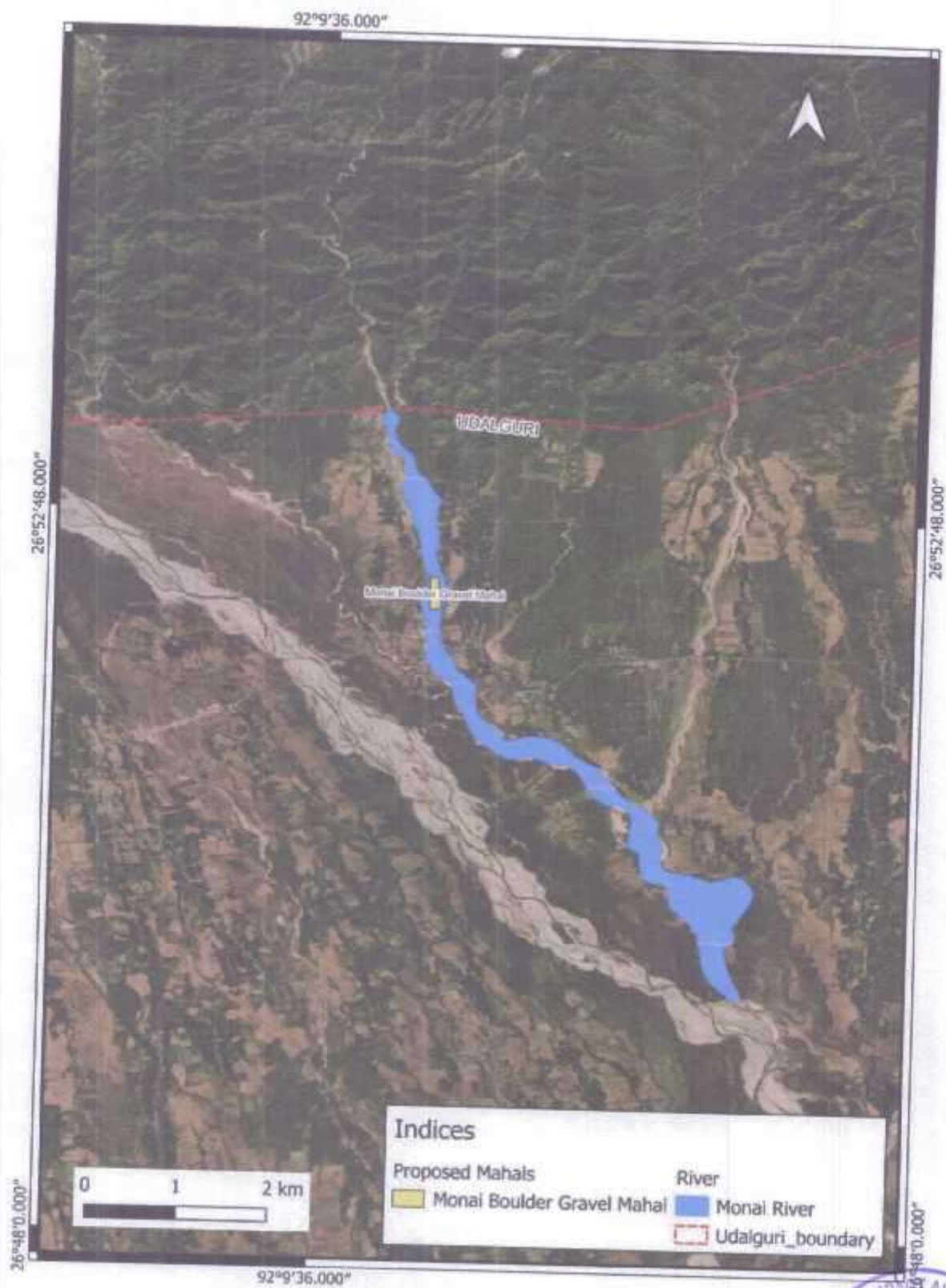
Table showing mining permit/contract area Monai River

| Sl. No | Name of the mines          | Area (in ha) | Geolocation   |               | Mineral Name     | Existing/ proposed |
|--------|----------------------------|--------------|---------------|---------------|------------------|--------------------|
| 1.     | Monai Boulder Gravel Mahal | 3.65 Ha      | N-26°52'20.7" | E-92°10'17.6" | Boulder & Gravel | Proposed           |
|        |                            |              | N-26°52'20.9" | E-92°10'20.2" |                  |                    |
|        |                            |              | N-26°52'04.1" | E-92°10'21.0" |                  |                    |
|        |                            |              | N-26°32'04.1" | E-91°55'17.5" |                  |                    |

  
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Map 11.3 Buffer map of mining permit/contract areas of Khowrang River



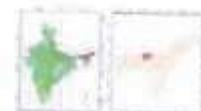
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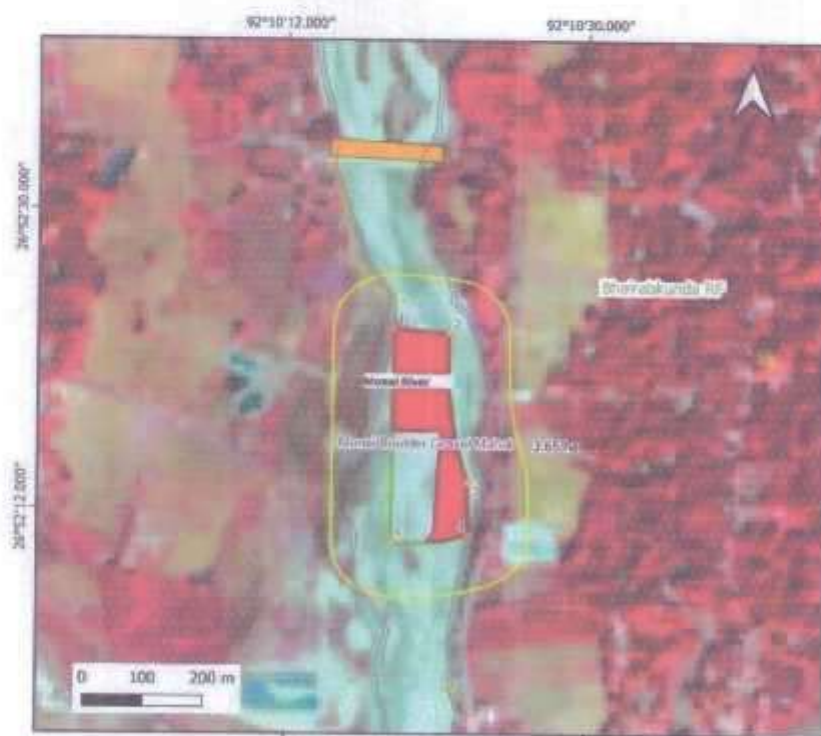






| points | lat        | long       |
|--------|------------|------------|
| 1      | 26°52'23"N | 92°10'18"E |
| 2      | 26°52'23"N | 92°10'22"E |
| 3      | 26°52'34"N | 92°10'23"E |
| 4      | 26°52'11"N | 92°10'23"E |
| 5      | 26°52'10"N | 92°10'18"E |

| Indices |                                      |
|---------|--------------------------------------|
|         | Buffer-100 m                         |
|         | Reserved Forest                      |
|         | Project Area                         |
|         | Bridge                               |
|         | River                                |
|         | approach road                        |
|         | No mining zone (Bridge/Road-2.71 ha) |
|         | Berm-7.5 m                           |



| points | lat        | long       |
|--------|------------|------------|
| 1      | 26°52'23"N | 92°10'18"E |
| 2      | 26°52'23"N | 92°10'22"E |
| 3      | 26°52'34"N | 92°10'23"E |
| 4      | 26°52'11"N | 92°10'23"E |
| 5      | 26°52'10"N | 92°10'18"E |

| Indices |                                      |
|---------|--------------------------------------|
|         | Buffer-100 m                         |
|         | Reserved Forest                      |
|         | Project Area                         |
|         | Bridge                               |
|         | River                                |
|         | approach road                        |
|         | No mining zone (Bridge/Road-2.71 ha) |
|         | Berm-7.5 m                           |

Data Source: LISS-IV Resolution: 5.8 m

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### Dimasang River

| Sl No | Description   | Area in Ha. | Percentage of Total area (In %) | Cumulative % |
|-------|---|-------------|---------------------------------|--------------|
| 1     | River area  | 74.7        | 100                             | 100          |
| 2     | Area granted for mining   | 4.81        | 6.43                            | 6.43         |
| 3     | No of lease not recommended for future Quarry Lease grant due extracted 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 | 0.0         | 0.0                             | 0.0          |
| 4     | Area not recommended for future Quarry Lease grant due to 100 m Buffer from any railway line or bridge  | 0.0         | 0.0                             | 0.0          |
| 5     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the outer periphery of the defined limits of any village, habitation, National Highway, State highway and other roads   | 0.0         | 0.0                             | 0.0          |
| 6     | Area not recommended for future Quarry Lease grant due to non-availability of un-mined block 50 meters width after every block of 1,000 meters over which is undertaken or at such distance as may be directed by the competent authority   | 0.0         | 0.0                             | 0.0          |
| 7     | Area not recommended for future Quarry Lease grant due to 100 m Buffer Local Minor Check Dam  | 0.0         | 0.0                             | 0.0          |
| 8     | Area not recommended for future Quarry Lease grant due to 500 m buffer from the Irrigation Structure/ Reservoir & Submergence Area  | 0.0         | 0.0                             | 0.0          |
| 9     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Canal/ Tank/ Lake   | 0.0         | 0.0                             | 0.0          |
| 10    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Ropeway or ropeway trestle or station   | 0.0         | 0.0                             | 0.0          |
| 11    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Heritage site, Protected monuments  | 0.0         | 0.0                             | 0.0          |
| 12    | Area not recommended for future Quarry Lease grant due to Eco-sensitive Zone  | 0.0         | 0.0                             | 0.0          |
| 13    | Applicability of Cluster (Other lease within 500 meter radius   | 0.0         | 0.0                             | 0.0          |
| 14    | No mining zone due to Berm  | 0.026       | 0.03                            | 0.03         |

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Table showing mining permit/contract area Dimasang River

| Sl. No | Name of the mines | Area (in ha) | Geolocation    |                | Mineral Name  | Existing/proposed |
|--------|-------------------|--------------|----------------|----------------|---------------|-------------------|
| 1.     | Dimasang SG Mahal | 4.81 Ha      | N-26°52'29.79" | E-92°12'11.13" | Sand & Gravel | Proposed          |
|        |                   |              | N-26°52'29.32" | E-92°12'14.27" |               |                   |
|        |                   |              | N-26°52'07.80" | E-92°12'13.10" |               |                   |
|        |                   |              | N-26°32'07.28" | E-92°12'10.50" |               |                   |

  
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Map 11.4 Buffer map of mining permit/contract areas of Dimasang River

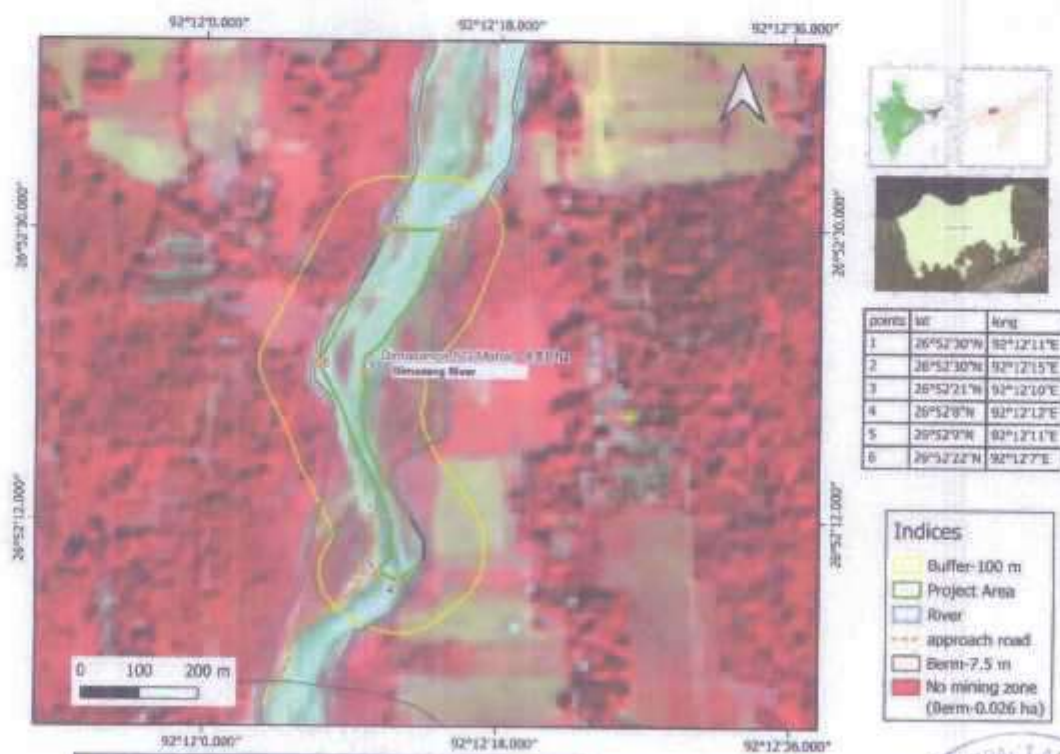


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Data Source: LISS-IV Resolution: 5.8 m

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Dhansiri Forest Division  
Udalguri, BTC



### Kulsi River

| Sl No | Description   | Area in Ha. | Percentage of Total area (In %) | Cumulative % |
|-------|---|-------------|---------------------------------|--------------|
| 1     | River area  | 1009        | 100                             | 100          |
| 2     | Area granted for mining   | 10.79       | 1.06                            | 1.06         |
| 3     | No of lease not recommended for future Quarry Lease grant due extracted 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 | 0.12        | 0.01                            | 0.01         |
| 4     | Area not recommended for future Quarry Lease grant due to 100 m Buffer from any railway line or bridge  | 0.0         | 0.0                             | 0.0          |
| 5     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the outer periphery of the defined limits of any village, habitation, National Highway, State highway and other roads   | 0.0         | 0.0                             | 0.0          |
| 6     | Area not recommended for future Quarry Lease grant due to non-availability of un-mined block 50 meters width after every block of 1,000 meters over which is undertaken or at such distance as may be directed by the competent authority   | 0.0         | 0.0                             | 0.0          |
| 7     | Area not recommended for future Quarry Lease grant due to 100 m Buffer Local Minor Check Dam  | 0.0         | 0.0                             | 0.0          |
| 8     | Area not recommended for future Quarry Lease grant due to 500 m buffer from the Irrigation Structure/ Reservoir & Submergence Area  | 0.0         | 0.0                             | 0.0          |
| 9     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Canal/ Tank/ Lake   | 0.0         | 0.0                             | 0.0          |
| 10    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Ropeway or ropeway trestle or station   | 0.0         | 0.0                             | 0.0          |
| 11    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Heritage site, Protected monuments  | 0.0         | 0.0                             | 0.0          |
| 12    | Area not recommended for future Quarry Lease grant due to Eco-sensitive Zone  | 0.0         | 0.0                             | 0.0          |
| 13    | Applicability of Cluster (Other lease within 500 meter radius   | 0.0         | 0.0                             | 0.0          |


  
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Table showing mining permit/contract area Kulsi River

| Sl. No | Name of the mines                  | Area (in ha) | Geolocation      |                  | Mineral Name     | Existing/proposed |
|--------|------------------------------------|--------------|------------------|------------------|------------------|-------------------|
| 1.     | Beltola SS Mahal                   | 3.80 Ha      | N-26° 47' 11.05" | E-91° 54' 53.35" | Sand & Stone     | Running           |
|        |                                    |              | N-26° 47' 11.02" | E-91° 54' 55.20" |                  |                   |
|        |                                    |              | N-26° 46' 39.80" | E-91° 54' 57.79" |                  |                   |
|        |                                    |              | N-26° 46' 39.61" | E-91° 54' 59.03" |                  |                   |
| 2.     | Nunoi SS Mahal No.3 (Kulsi)        | 3.70 Ha      | N-26° 45' 00.82" | E-91° 55' 32.00" | Sand & Stone     | Running           |
|        |                                    |              | N-26° 45' 00.64" | E-91° 55' 31.11" |                  |                   |
|        |                                    |              | N-26° 44' 16.32" | E-91° 55' 43.89" |                  |                   |
|        |                                    |              | N-26° 44' 16.34" | E-91° 55' 44.85" |                  |                   |
| 3.     | Kulsi Sand Grave I Silt Mahal No.2 | 3.29 Ha      | N-26° 43' 43.67" | E-91° 55' 55.01" | Sand Gravel Silt | Proposed          |
|        |                                    |              | N-26° 43' 43.97" | E-91° 55' 56.14" |                  |                   |
|        |                                    |              | N-26° 43' 20.35" | E-91° 56' 8.00"  |                  |                   |
|        |                                    |              | N-26° 43' 21.24" | E-91° 56' 9.24"  |                  |                   |

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Map 11.5 Buffer map of mining permit/contract areas of Kulsi River



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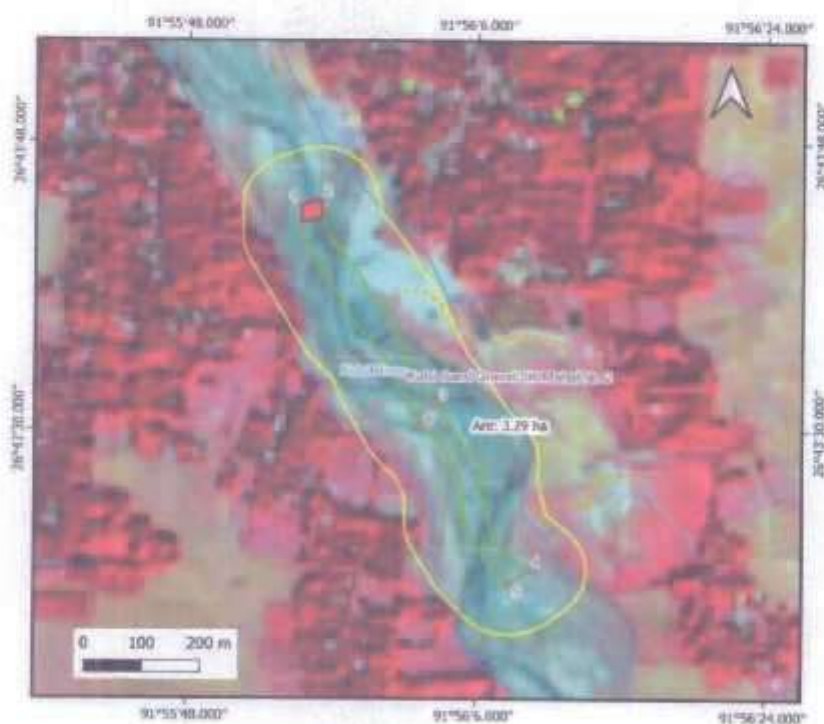




| points | lat        | long       |
|--------|------------|------------|
| 1      | 26°43'44"N | 91°55'55"E |
| 2      | 26°43'44"N | 91°55'56"E |
| 3      | 26°43'37"N | 91°56'3"E  |
| 4      | 26°43'21"N | 91°56'0"E  |
| 5      | 26°43'20"N | 91°56'3"E  |
| 6      | 26°43'30"N | 91°56'3"E  |

**Indices**

- Buffer-100 m
- Project Area
- River
- approach road
- No Mining Zone- 0.12 ha (Bridge)



| points | lat        | long       |
|--------|------------|------------|
| 1      | 26°43'44"N | 91°55'55"E |
| 2      | 26°43'44"N | 91°55'56"E |
| 3      | 26°43'37"N | 91°56'3"E  |
| 4      | 26°43'21"N | 91°56'0"E  |
| 5      | 26°43'20"N | 91°56'3"E  |
| 6      | 26°43'30"N | 91°56'3"E  |

**Indices**

- Buffer-100 m
- Project Area
- River
- approach road
- No Mining Zone- 0.12 ha (Bridge)

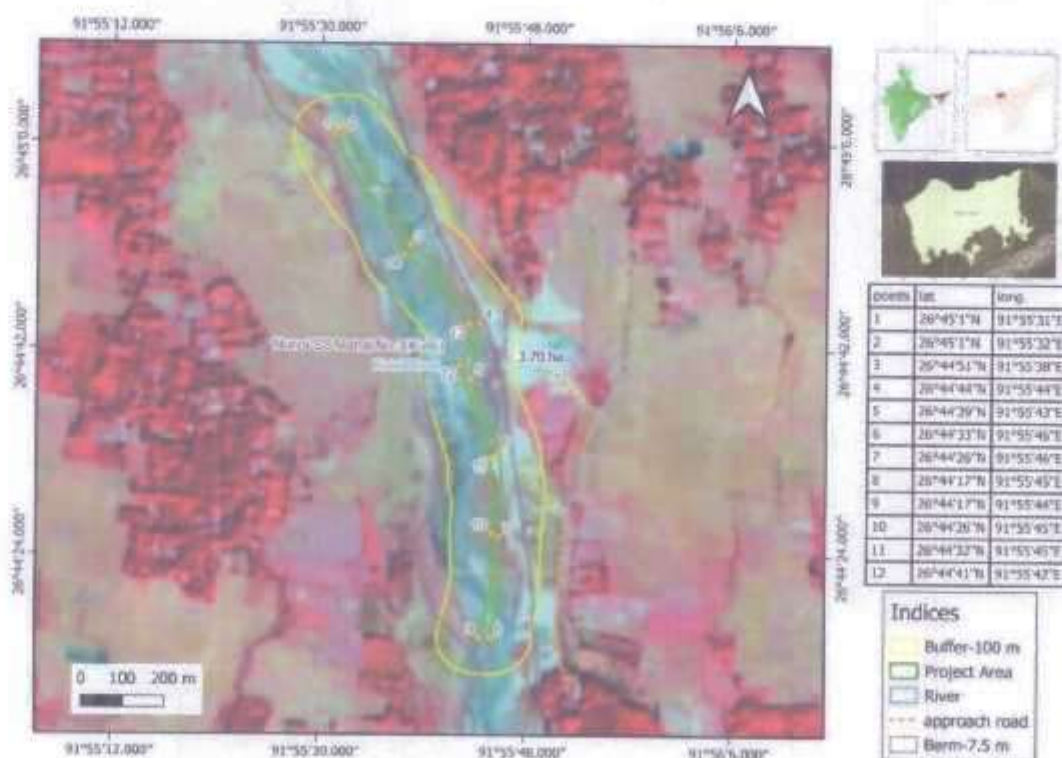
Data Source: LISS-IV, Resolution: 5.8 m

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Data Source: LISS-IV, Resolution: 5,8 m

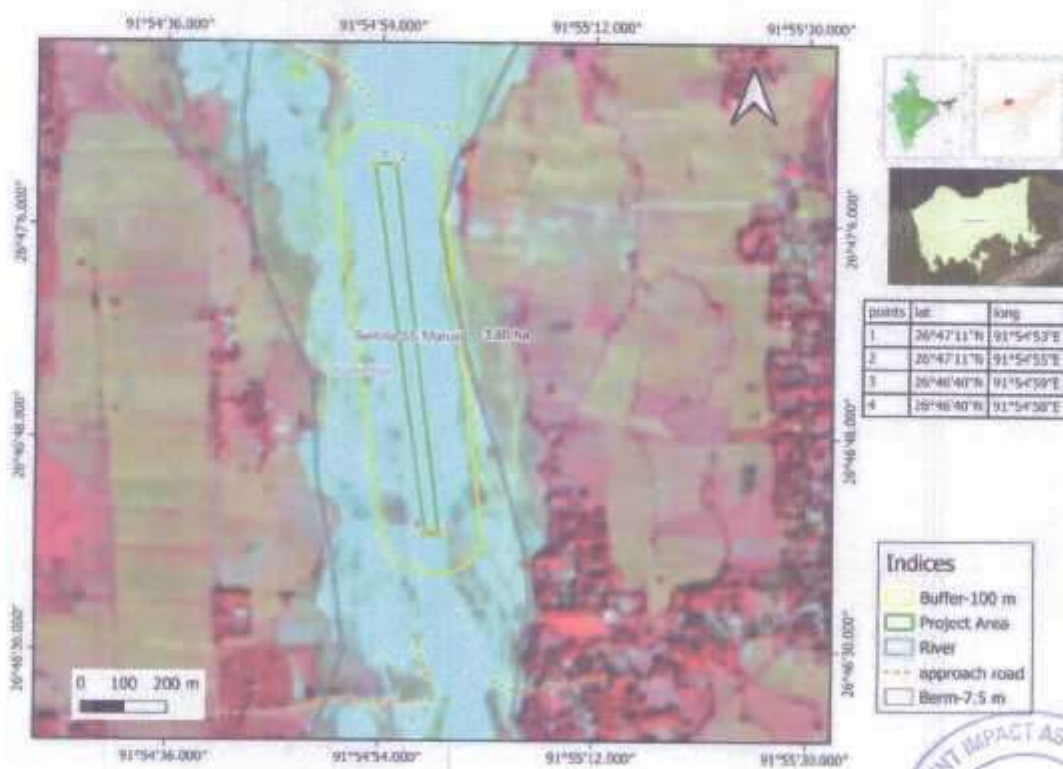
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District Survey Report (DSR) of Udalguri District

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Data Source: LISS-IV, Resolution: 5.8 m

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### Bhorla River


| Sl No | Description   | Area in Ha. | Percentage of Total area (In %) | Cumulative % |
|-------|---|-------------|---------------------------------|--------------|
| 1     | River area  | 817         | 100                             | 100          |
| 2     | Area granted for mining   | 12.9        | 1.57                            | 1.57         |
| 3     | No of lease not recommended for future Quarry Lease grant due extracted 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 | 0.0         | 0.0                             | 0.0          |
| 4     | Area not recommended for future Quarry Lease grant due to 100 m Buffer from any railway line or bridge  | 0.0         | 0.0                             | 0.0          |
| 5     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the outer periphery of the defined limits of any village, habitation, National Highway, State highway and other roads   | 0.0         | 0.0                             | 0.0          |
| 6     | Area not recommended for future Quarry Lease grant due to non-availability of un-mined block 50 meters width after every block of 1,000 meters over which is undertaken or at such distance as may be directed by the competent authority   | 0.0         | 0.0                             | 0.0          |
| 7     | Area not recommended for future Quarry Lease grant due to 100 m Buffer Local Minor Check Dam  | 0.0         | 0.0                             | 0.0          |
| 8     | Area not recommended for future Quarry Lease grant due to 500 m buffer from the irrigation Structure/ Reservoir & Submergence Area  | 0.0         | 0.0                             | 0.0          |
| 9     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Canal/ Tank/ Lake   | 0.0         | 0.0                             | 0.0          |
| 10    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Ropeway or ropeway trestle or station   | 0.0         | 0.0                             | 0.0          |
| 11    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Heritage site, Protected monuments  | 0.0         | 0.0                             | 0.0          |
| 12    | Area not recommended for future Quarry Lease grant due to Eco-sensitive Zone  | 0.0         | 0.0                             | 0.0          |
| 13    | Applicability of Cluster (Other lease within 500 meter radius   | 0.0         | 0.0                             | 0.0          |

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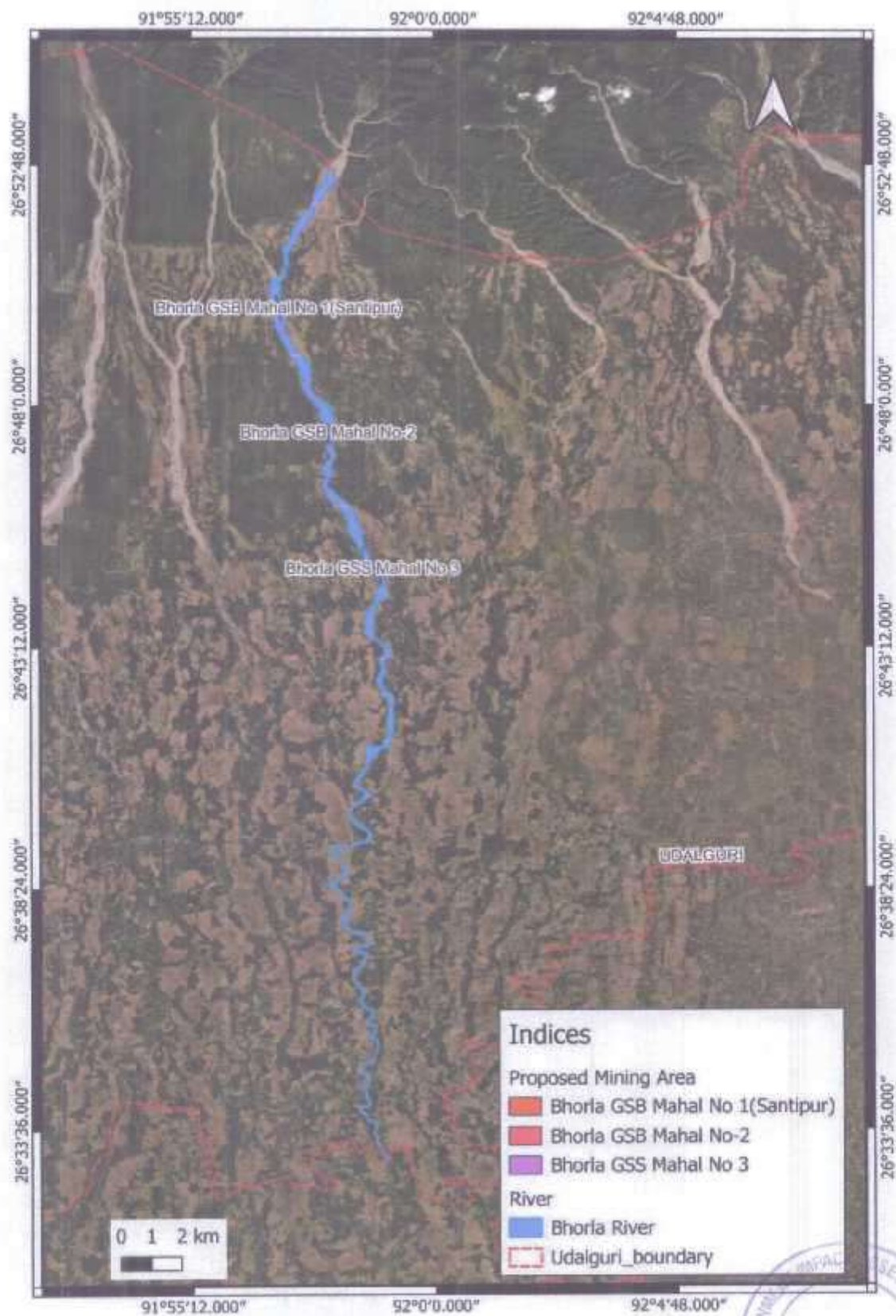
Table showing mining permit/contract area Bhorla River

| Sl. No | Name of the mines                | Area (in ha) | Geolocation  |  | Mineral Name           | Existing/proposed |
|--------|----------------------------------|--------------|--|--|------------------------|-------------------|
| 1.     | Bhorla GSB Mahal No.1 (Santipur) | 4.90 Ha      | N-26°50'10.66"<br>N-26°50'9.66"<br>N-26°49'40.50"<br>N-26°49'39.78"  | E-91°56'54.63"<br>E-91°55'52.27"<br>E-91°56'58.36"<br>E-91°57'0.00"  | Sand/ Gravel & Boulder | Proposed          |
| 2.     | Bhorla GSB Mahal No.2            | 4.60 Ha      | N-26°47'38.42"<br>N-26°47'35.55"<br>N-26°47'13.97"<br>N-26°47'14.22" | E-91°57'54.45"<br>E-91°57'57.48"<br>E-91°57'55.56"<br>E-91°57'52.75" | Sand/ Gravel & Boulder | Proposed          |
| 3.     | Bhorla GSS Mahal No.3            | 3.40 Ha      | N-26°45'12.07"<br>N-26°45'11.60"<br>N-26°44'25.72"<br>N-26°44'25.74" | E-91°58'35.11"<br>E-91°58'34.71"<br>E-91°58'57.10"<br>E-91°58'57.99" | Sand/ Gravel & Stone   | Proposed          |

  
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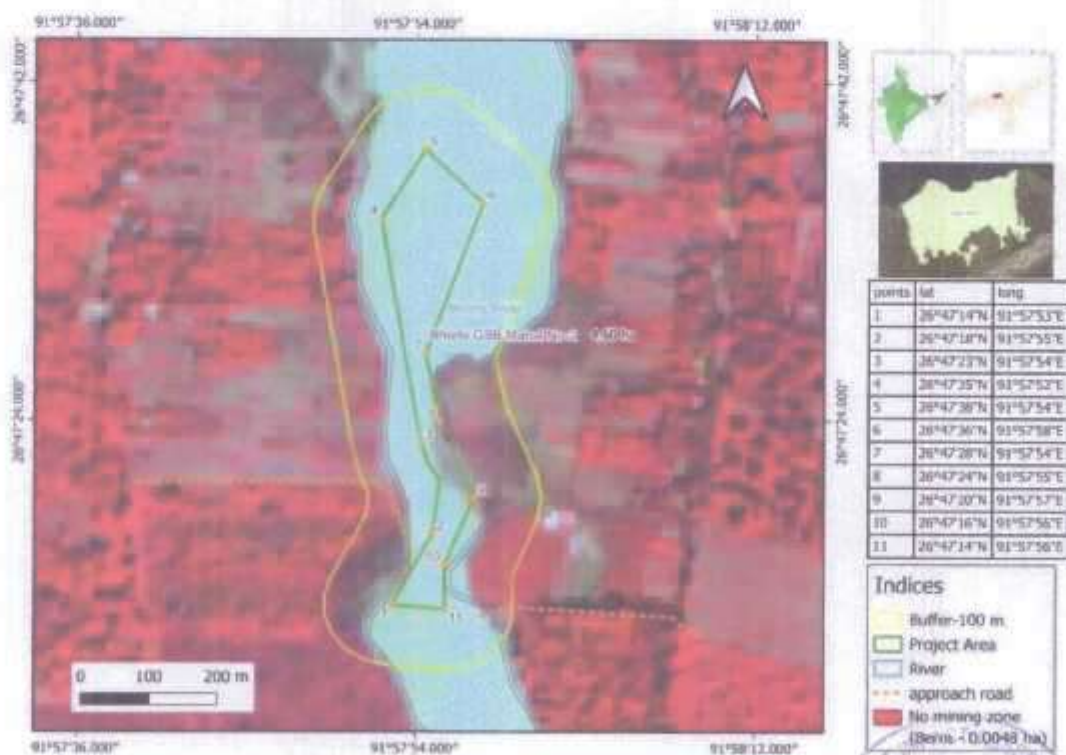


Map 11.6 Buffer map of mining permit/contract areas of Bhorla River



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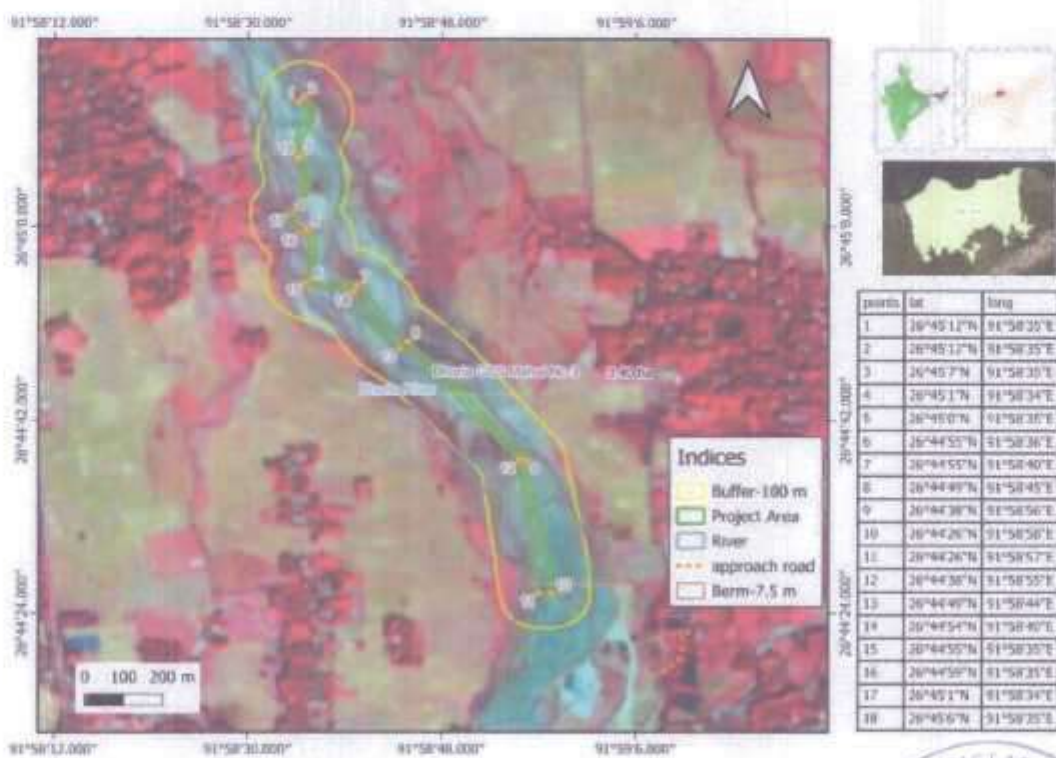


Data Source: LISS-IV, Resolution: 5.8 m

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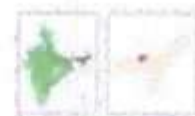
Data Source: LISS-IV Resolution: 5.8 m

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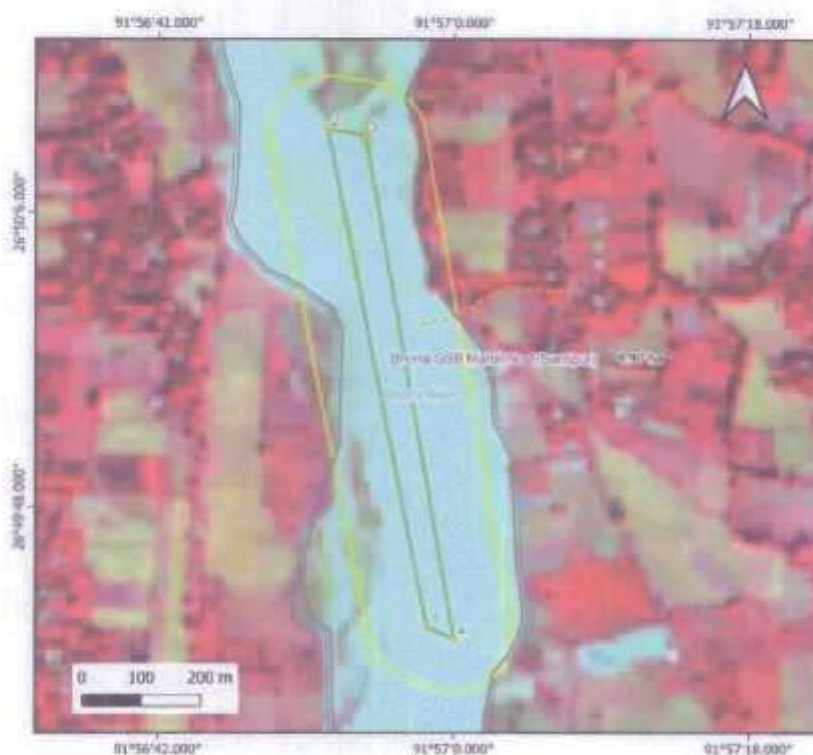




| points | lat          | long       |
|--------|--------------|------------|
| 1      | 28°49'41.7"N | 91°56'58"E |
| 2      | 28°50'11.7"N | 91°56'52"E |
| 3      | 28°50'11.7"N | 91°56'55"E |
| 4      | 28°49'40.7"N | 91°57'0"E  |

**Indices**

- Buffer-100 m
- Project Area
- River
- approach road




| points | lat          | long       |
|--------|--------------|------------|
| 1      | 28°49'41.7"N | 91°56'58"E |
| 2      | 28°50'11.7"N | 91°56'52"E |
| 3      | 28°50'11.7"N | 91°56'55"E |
| 4      | 28°49'40.7"N | 91°57'0"E  |

**Indices**

- Buffer-100 m
- Project Area
- River
- approach road

Data Source: LISS-IV, Resolution: 5.8 m

  
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Ph: 7086020945/9435152896/9395005840

E-mail: contact@rnt.in | reliantfoundation2018@gmail.com, Website : www.rnt.in

Discipline: Mechanical Testing

Group: Building Materials

Date of issue of Report: 30-12-2024

| TEST REPORT |                          |   |
|-------------|--------------------------|---|
| 1           | Name of Client:          | The Divisional Forest Officer, Dhanstri Division, Udalguri.                                 |
| 2           | Name of project:         | District Survey Report, Udalguri District   |
| 3           | Type of sample:          | Sand & Gravel   |
| 4           | Condition of Sample:     | OK  |
| 5           | Date of Sample Received: | 16-12-2024  |
| 6           | Source of Material:      | Bhorla River  |
| 7           | Location:                | Benghari  |
| 8           | Test Sample Supplied by: | Customer  |
| 9           | Test Done at :           | " At the Laboratory located in the basement of our premises at the above mentioned address" |

Test Results : Next Page

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E-mail: contact@rint.in ; reliantfoundation2018@gmail.com, Website : www.rint.in

Discipline: Mechanical Testing  
Test Report No: 2412164321-1  
Sample ID: DFC/DDU/241216/SG

Group: Building Materials

Name of Test: Gradation  
Type of Sample: Sand & Gravel  
Source: Bhorla River


Test Method: IS 2386-Part-I-1963  
(Reaffirmed 2021)  
Date of testing: 20-12-2024 to 26-12-2024  
Environmental Conditions during test:  
Temperature : 21.9°C, Humidity: 65%

| TEST RESULTS       |                      |                        |                          |              |
|--------------------|----------------------|------------------------|--------------------------|--------------|
| Is Sieve Size (mm) | Weight Retained (gm) | % Weight Retained (gm) | Cumulative % of Retained | % of Passing |
| 100                | 0                    | 0.00                   | 0.00                     | 100.00       |
| 75                 | 0                    | 0.00                   | 0.00                     | 100.00       |
| 20                 | 796                  | 39.80                  | 39.80                    | 60.20        |
| 4.75               | 277                  | 13.85                  | 53.65                    | 46.35        |
| 0.075              | 921                  | 46.05                  | 99.70                    | 0.30         |
| Pan                | 6                    |                        |                          |              |
| Total              | 2000                 |                        |                          |              |

% Boulder = 0.00 %  
% Gravel = 53.65 %  
% Sand = 46.05 %  
% Silt = 0.30 %

  
Authorised Signatory

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Divisional Forest Officer,  
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E-mail: contact@rnt.in, reliantfoundation2018@gmail.com, Website: www.rnt.in

Discipline: Mechanical Testing

Group: Building Materials


Date of issue of Report: 30-12-2024

| TEST REPORT |                          |   |
|-------------|--------------------------|---|
| 1           | Name of Client:          | The Divisional Forest Officer, Dhansiri Division, Udalguri                                  |
| 2           | Name of project:         | District Survey Report, Udalguri District   |
| 3           | Type of sample:          | Sand & Gravel   |
| 4           | Condition of Sample:     | OK  |
| 5           | Date of Sample Received: | 16-12-2024  |
| 6           | Source of Material:      | Bharla River  |
| 7           | Location:                | Bengbari  |
| 8           | Test Sample supplied by: | Customer  |
| 9           | Test Done at:            | " At the Laboratory located in the basement of our premises at the above mentioned address" |

Test Results: Next Page

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Divisional Forest Officer,  
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District Survey Report (DSR) of Udalguri District | 107







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Ph: 7086020945/9435192896/9395005840

E-mail: contact@rlnt.in, reliantfoundation2018@gmail.com, Website: www.rlnt.in

Discipline: Mechanical Testing  
Test Report No: 2412164321-2  
Sample ID: DFO/DDU/241216/SG

Group: Building Materials

1. Name of Test: Specific Gravity

Test Method: IS 2386-Part-III-1963  
(Reaffirmed 2021)

Type of Sample: Sand & Gravel

Date of testing: 21-12-2024 to 23-12-2024

Source: Bhoria River

Environmental Conditions during test:

Temperature : 22.0°C, Humidity: 68%

| TEST RESULTS |   |   |  |                                  |                              |
|--------------|---|---|--|----------------------------------|------------------------------|
| Sl. No.      | Weight of Saturated Surface Dry Sample (gm) | Weight of Pycnometer containing Sample & filled with Distilled Water (gm) | Weight of Pycnometer filled with Water only (gm) | Weight of Oven Dried Sample (gm) | Specific Gravity [D/A-(B-C)] |
|              | A   | B   | C  | D                                |                              |
| 1            | 610.5                                       | 2087.0  | 1706.5   | 607.0                            | 2.64                         |

Remarks : Calculations are As per IS:2386-Part-III-1963 Reaffirmed 2021, Clause No. 2.4.3, No limits Specified. Test Results are Satisfactory.

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Ph: 7086020945/9435192896/9395005840

E-mail: contact@rint.in ; reliantfoundation2018@gmail.com, Website : www.rint.in

Discipline: Mechanical Testing  
Test Report No: 2412164323-1  
Sample ID: DR00TR01/241216/04

Group: Building Materials

Date of issue of Report: 30-12-2024

| TEST REPORT |                          |  |
|-------------|--------------------------|--|
| 1           | Name of Client:          | The Divisional Forest Officer, Dhansiri Division, Udalguri                                   |
| 2           | Name of project:         | District Survey Report, Udalguri District  |
| 3           | Type of sample:          | Sand & Gravel  |
| 4           | Condition of Sample:     | OK   |
| 5           | Date of Sample Received: | 16-12-2024   |
| 6           | Source of Material:      | Bhorla River   |
| 7           | Location:                | Benghari   |
| 8           | Test Sample Supplied by: | Customer   |
| 9           | Test Done at :           | " At the Laboratory located in the basement of our premises at the above mentioned address." |

1. Name of Test: Bulk Density of Sand & Gravel  
Type of Test: Loose  
Source: Bhorla River

Test Method: IS 2386-Part III:1963 (Reaffirmed 2021)

Date of testing: 23-12-2024 to 23-12-2024

Environmental Conditions during test:

Temperature : 21.4°C , Humidity: 67%

| TEST RESULTS |   |                                       |   |
|--------------|---|---------------------------------------|---|
| Sample       | Weight of Aggregate to fill the Mould<br>in (Kg)<br>(A) | Volume of Mould<br>in (Litres)<br>(B) | Bulk Density<br>in (Kg/Litres)<br>(A/B) |
| 1            | 21.940  | 15.379                                | 1.55                                    |

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Divisional Forest Officer,  
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District Survey Report (DSR) of Udalguri District | 1/19





### Nunoi River

| Sl No | Description   | Area in Ha. | Percentage of Total area (In %) | Cumulative % |
|-------|---|-------------|---------------------------------|--------------|
| 1     | River area  | 1262        | 100                             | 100          |
| 2     | Area granted for mining   | 29.45       | 2.33                            | 2.33         |
| 3     | No of lease not recommended for future Quarry Lease grant due extracted 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 | 2.43        | 0.19                            | 0.19         |
| 4     | Area not recommended for future Quarry Lease grant due to 100 m Buffer from any railway line or bridge  | 0.0         | 0.0                             | 0.0          |
| 5     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the outer periphery of the defined limits of any village, habitation, National Highway, State highway and other roads and within 7.5 m from river edge.   | 3.55        | 0.28                            | 0.28         |
| 6     | Area not recommended for future Quarry Lease grant due to non-availability of un-mined block 50 meters width after every block of 1,000 meters over which is undertaken or at such distance as may be directed by the competent authority   | 0.0         | 0.0                             | 0.0          |
| 7     | Area not recommended for future Quarry Lease grant due to 100 m Buffer Local Minor Check Dam  | 0.0         | 0.0                             | 0.0          |
| 8     | Area not recommended for future Quarry Lease grant due to 500 m buffer from the irrigation Structure/ Reservoir & Submergence Area  | 0.0         | 0.0                             | 0.0          |
| 9     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Canal/ Tank/ Lake   | 0.0         | 0.0                             | 0.0          |
| 10    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Ropeway or ropeway trestle or station   | 0.0         | 0.0                             | 0.0          |
| 11    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Heritage site, Protected monuments  | 0.0         | 0.0                             | 0.0          |
| 12    | Area not recommended for future Quarry Lease grant due to Eco-sensitive Zone  | 0.0         | 0.0                             | 0.0          |
| 13    | Applicability of Cluster (Other lease within 500 meter radius   | 0.0         | 0.0                             | 0.0          |

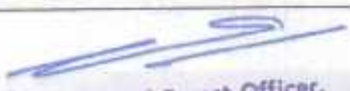
  
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 Dhansiri Forest Division  
 Udaiguri, BTC



Table showing mining permit/contract area Nunoi River

| Sl. No | Name of the mines                  | Area (in ha) | Geolocation      |                  | Mineral Name            | Existing/proposed |
|--------|------------------------------------|--------------|------------------|------------------|-------------------------|-------------------|
| 1.     | Nunoi SS Mahal No.1 (Gitibari)     | 4.90 Ha      | N-26° 45' 3.33"  | E-91° 52' 29.80" | Sand & Stone            | Running           |
|        |                                    |              | N-26° 46' 2.63"  | E-91° 52' 30.73" |                         |                   |
|        |                                    |              | N-26° 45' 30.44" | E-91° 51' 59.72" |                         |                   |
|        |                                    |              | N-26° 45' 29.61" | E-91° 52' 1.12"  |                         |                   |
| 2.     | Gitibari SG Mahal No.2             | 4.40 Ha      | N-26° 44' 16.91" | E-91° 52' 1.65"  | Sand & Gravel           | Running           |
|        |                                    |              | N-26° 44' 17.23" | E-91° 52' 3.43"  |                         |                   |
|        |                                    |              | N-26° 43' 55.16" | E-91° 52' 10.20" |                         |                   |
|        |                                    |              | N-26° 43' 53.85" | E-91° 52' 9.10"  |                         |                   |
| 3.     | Bhutiasang SGB Mahal No.1          | 4.90 Ha      | N-26° 48' 48.38" | E-91° 53' 15.44" | Sand, Gravel & Boulder  | Proposed          |
|        |                                    |              | N-26° 48' 48.61" | E-91° 53' 14.32" |                         |                   |
|        |                                    |              | N-26° 48' 0.19"  | E-91° 53' 9.21"  |                         |                   |
|        |                                    |              | N-26° 48' 0.00"  | E-91° 53' 10.41" |                         |                   |
| 4.     | Bhutiasang SGB Mahal No.2          | 3.50 Ha      | N-26° 49' 12.97" | E-91° 53' 20.15" | Sand / Gravel & Boulder | Proposed          |
|        |                                    |              | N-26° 49' 12.66" | E-91° 53' 22.74" |                         |                   |
|        |                                    |              | N-26° 48' 57.00" | E-91° 53' 18.50" |                         |                   |
|        |                                    |              | N-26° 48' 59.10" | E-91° 53' 16.19" |                         |                   |
| 5.     | Nasanchali Sand Gravel Silt Mahal  | 4.75 Ha      | N-26° 41' 44.24" | E-91° 53' 1.78"  | Sand , Gravel & Silt    | Proposed          |
|        |                                    |              | N-26° 41' 44.90" | E-91° 53' 2.80"  |                         |                   |
|        |                                    |              | N-26° 41' 9.75"  | E-91° 53' 21.47" |                         |                   |
|        |                                    |              | N-26° 41' 10.33" | E-91° 53' 22.64" |                         |                   |
| 6.     | Bhootbangla Sand Gravel Silt Mahal | 3.50 Ha      | N-26° 40' 12.73" | E-91° 53' 57.92" | Sand , Gravel & Silt    | Proposed          |
|        |                                    |              | N-26° 40' 12.61" | E-91° 53' 56.47" |                         |                   |
|        |                                    |              | N-26° 39' 47.88" | E-91° 53' 43.28" |                         |                   |
|        |                                    |              | N-26° 39' 46.10" | E-91° 53' 44.70" |                         |                   |
| 7.     | Sahabasti Sand & Silt Mahal        | 3.50 Ha      | N-26° 39' 1.36"  | E-91° 53' 53.14" | Sand & Silt             | Proposed          |
|        |                                    |              | N-26° 39' 1.59"  | E-91° 53' 54.42" |                         |                   |
|        |                                    |              | N-26° 38' 37.80" | E-91° 54' 12.97" |                         |                   |
|        |                                    |              | N-26° 38' 37.06" | E-91° 54' 12.45" |                         |                   |

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Map 11.7: Buffer map of mining permit/contract areas of Nunoi River



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| Poles | Lat        | Long       |
|-------|------------|------------|
| 1     | 20°39'3"N  | 91°53'53"E |
| 2     | 20°39'3"N  | 91°53'55"E |
| 3     | 20°38'38"N | 91°54'13"E |
| 4     | 20°38'37"N | 91°54'12"E |

Sahabadi Sand & SRI Mahal  
Area: 3.50 ha

- Indices**
- Project Area
  - Berm ( 7.5 m)
  - Buffer ( 100 m)
  - River
  - No Zone Settlement



| Poles | Lat        | Long       |
|-------|------------|------------|
| 1     | 20°39'3"N  | 91°53'53"E |
| 2     | 20°39'3"N  | 91°53'55"E |
| 3     | 20°38'38"N | 91°54'13"E |
| 4     | 20°38'37"N | 91°54'12"E |

Sahabadi Sand & SRI Mahal  
Area: 3.50 ha

- Indices**
- Project Area
  - Berm ( 7.5 m)
  - Buffer ( 100 m)
  - River
  - No Zone Settlement

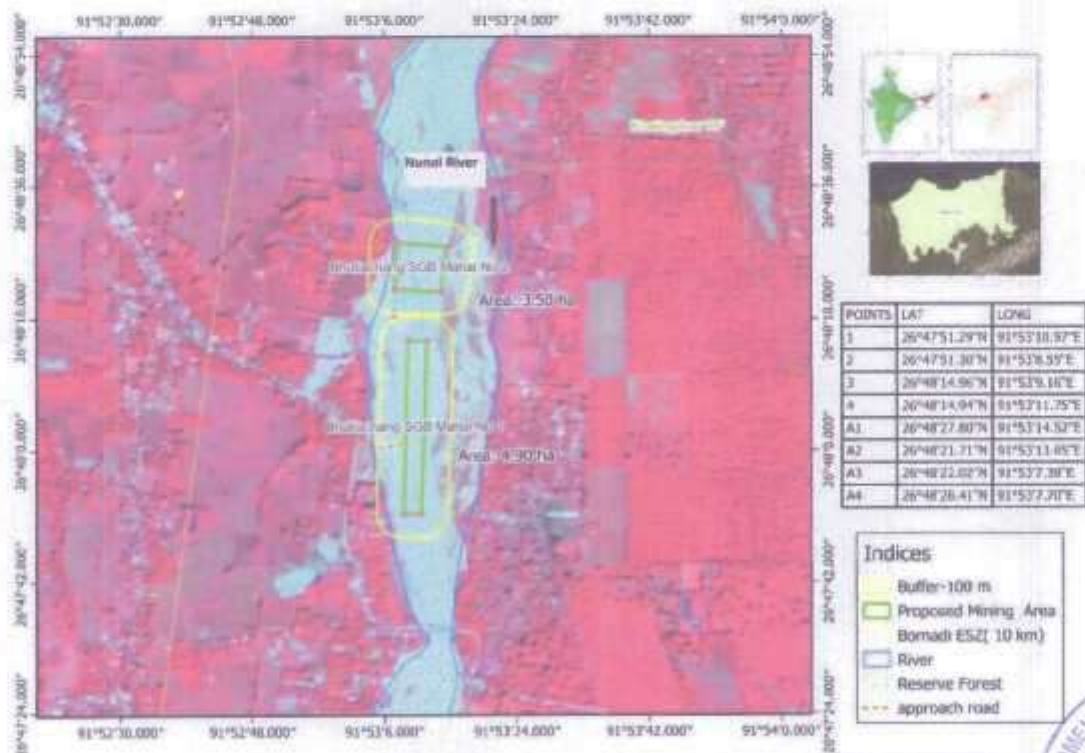
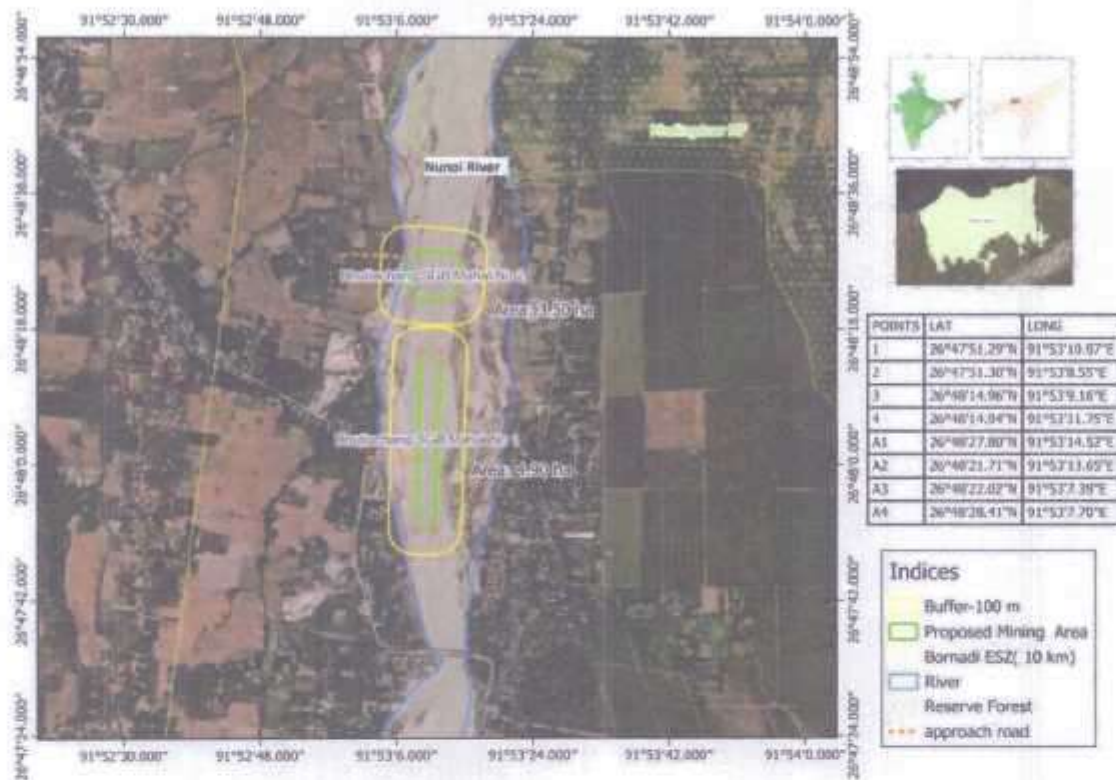
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District Survey Report (DSR) of Udalgi District





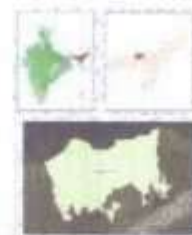


Data Source: LISS-IV, Resolution: 5.8 m

Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC

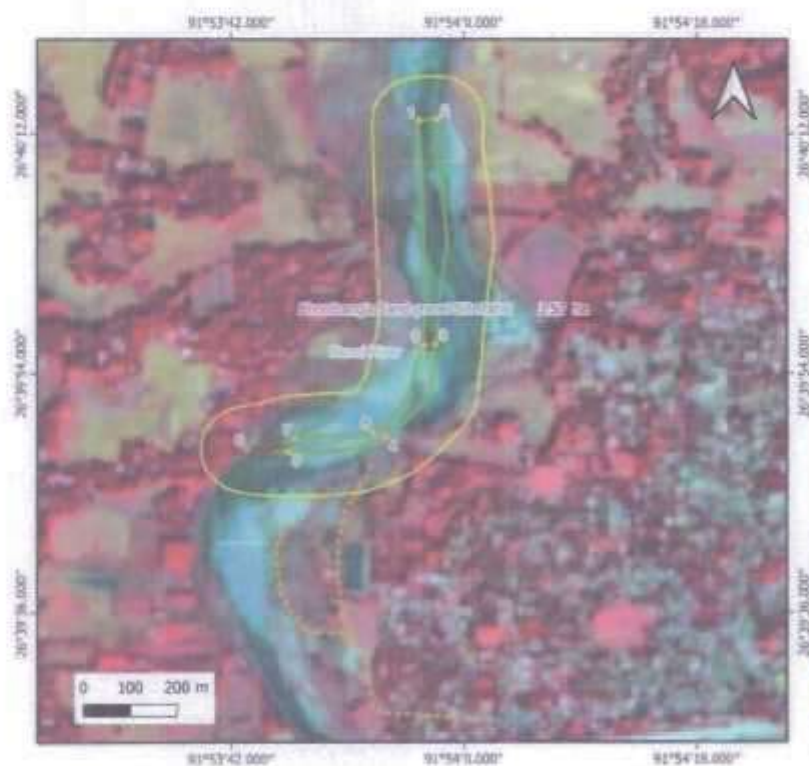
District Survey Report (DSR) of Udalguri District

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| points | lat        | long       |
|--------|------------|------------|
| 1      | 26°40'12"N | 91°53'57"E |
| 2      | 26°40'12"N | 91°53'58"E |
| 3      | 26°39'56"N | 91°53'58"E |
| 4      | 26°39'49"N | 91°53'54"E |
| 5      | 26°39'46"N | 91°53'46"E |
| 6      | 26°39'46"N | 91°53'43"E |
| 7      | 26°39'46"N | 91°53'47"E |
| 8      | 26°39'50"N | 91°53'53"E |
| 9      | 26°39'56"N | 91°53'57"E |

| Indices |  |
|---------|--|
|         | Buffer-100 m                                   |
|         | Project Area                                   |
|         | River  |
|         | approach road                                  |
|         | No mining zone<br>(Settlement/Berm - 0.055 ha) |
|         | Berm-7.5 m                                     |



| points | lat        | long       |
|--------|------------|------------|
| 1      | 26°40'12"N | 91°53'57"E |
| 2      | 26°40'12"N | 91°53'58"E |
| 3      | 26°39'56"N | 91°53'58"E |
| 4      | 26°39'49"N | 91°53'54"E |
| 5      | 26°39'46"N | 91°53'46"E |
| 6      | 26°39'46"N | 91°53'43"E |
| 7      | 26°39'46"N | 91°53'47"E |
| 8      | 26°39'50"N | 91°53'53"E |
| 9      | 26°39'56"N | 91°53'57"E |

| Indices |  |
|---------|--|
|         | Buffer-100 m                                   |
|         | Project Area                                   |
|         | River  |
|         | approach road                                  |
|         | No mining zone<br>(Settlement/Berm - 0.055 ha) |
|         | Berm-7.5 m                                     |

Data Source: LISS-IV, Resolution: 5.8 m

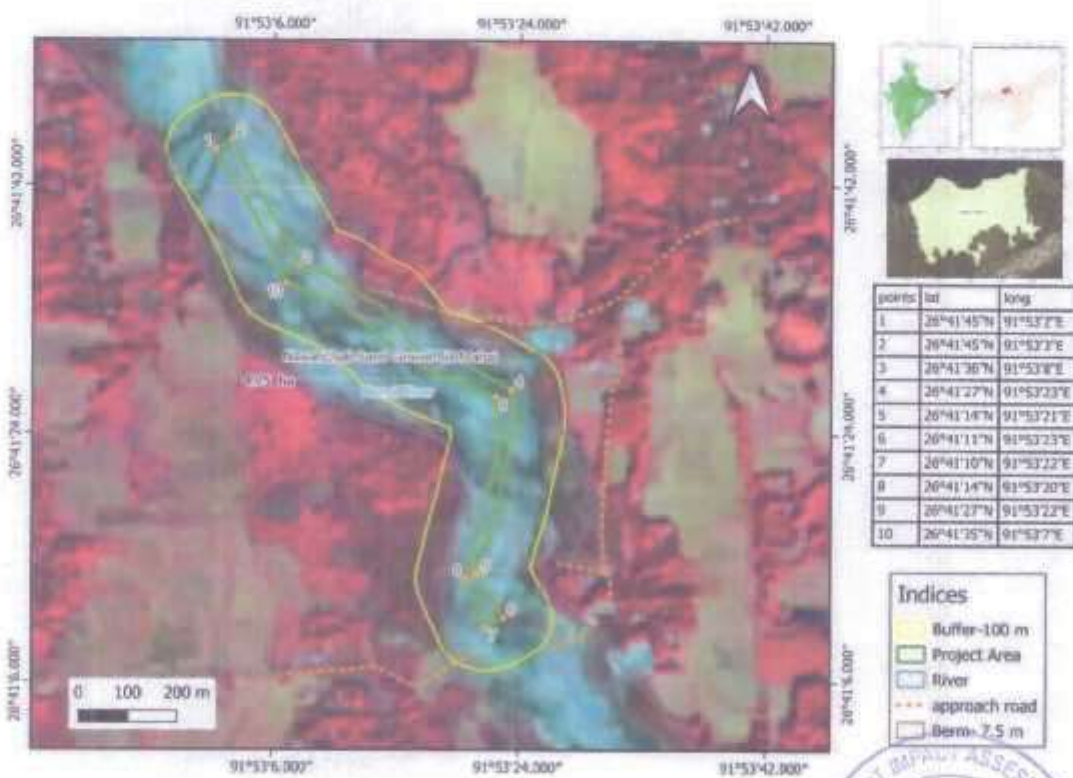
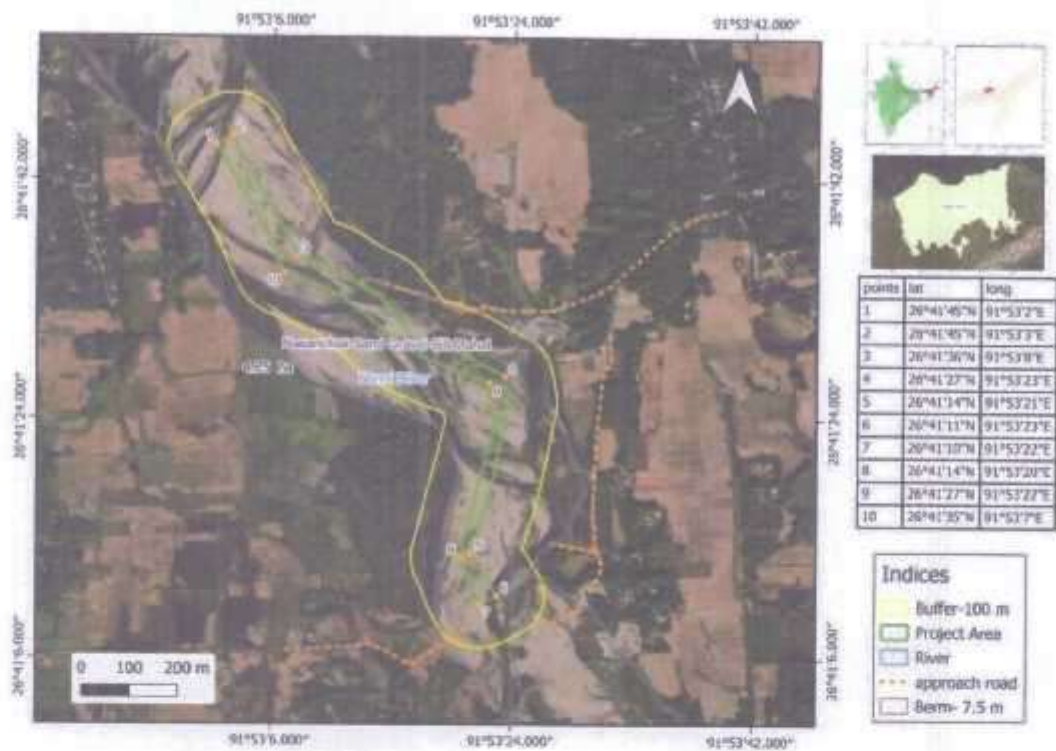
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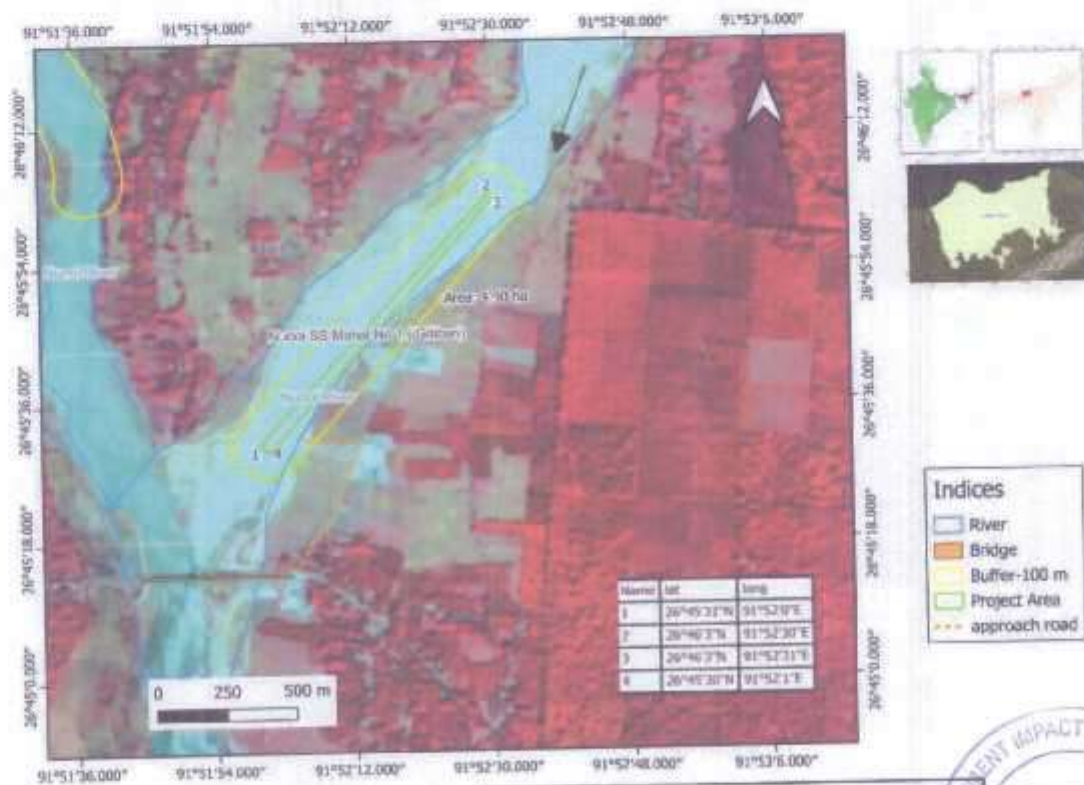
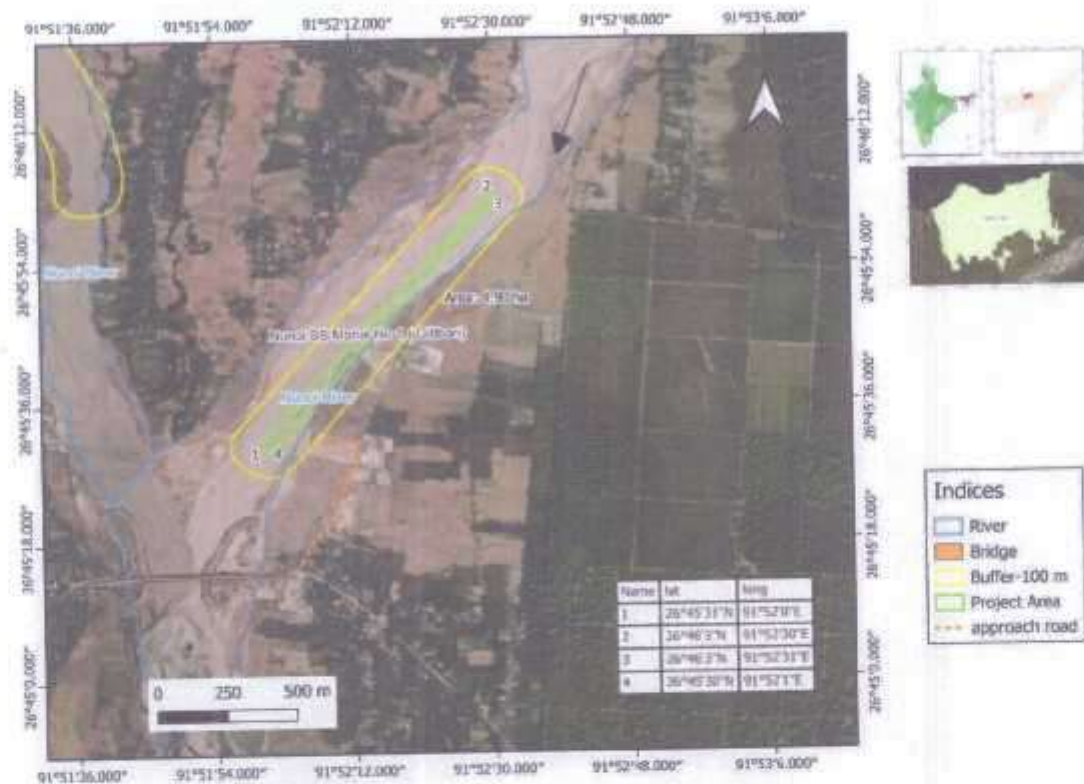






Data Source: LISS-IV, Resolution: 5.8 m

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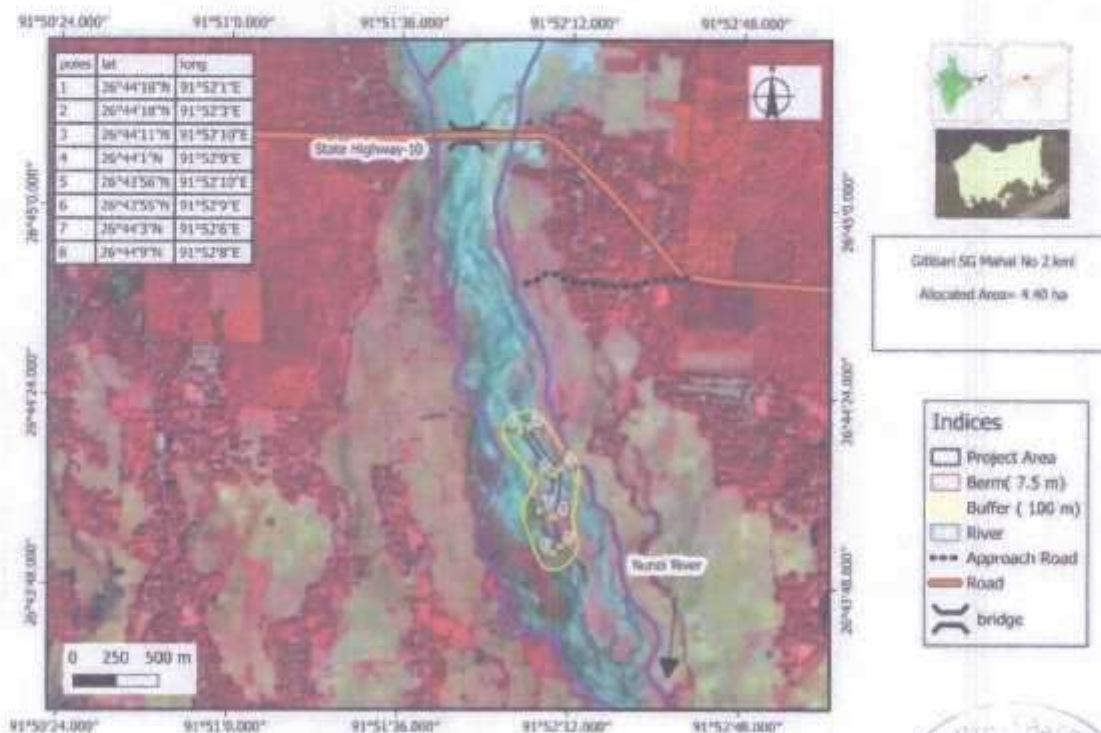
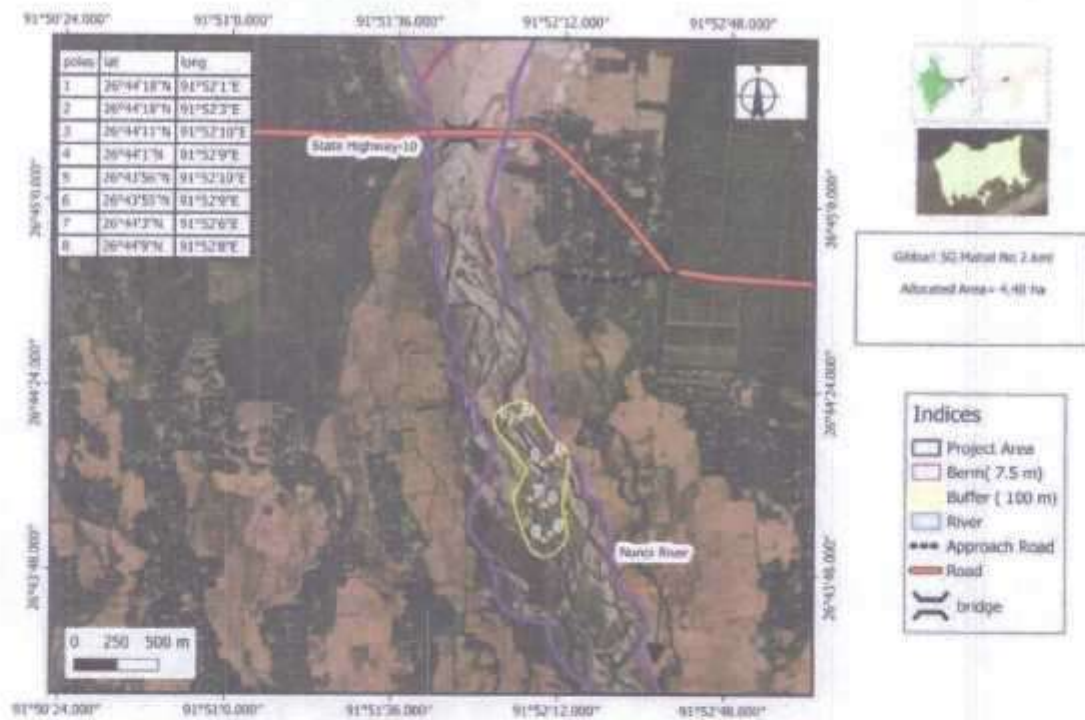
Data Source: LISS-IV Resolution: 5.8 m

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Data Source: LISS-IV Resolution: 5.8 m

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Ahomgaon, Garchuk, Guwahati- 781035 (Assam)

Ph: 7086020845/9435102896/9395005840

E-mail: contact@rint.in, reliantfoundation2018@gmail.com, Website : www.rint.in

Discipline: Mechanical Testing

Group: Building Materials


Date of issue of Report: 30-12-2024

| TEST REPORT |                          |  |
|-------------|--------------------------|--|
| 1           | Name of Client:          | The Divisional Forest Officer, Dhansiri Division, Udalguri                                   |
| 2           | Name of project:         | District Survey Report, Udalguri District  |
| 3           | Type of sample:          | Sand, Gravel & Silt  |
| 4           | Condition of Sample:     | Ok   |
| 5           | Date of Sample Received: | 16-12-2024   |
| 6           | Source of Material:      | Namoi River  |
| 7           | Location:                | Umar gejer kuchi   |
| 8           | Test Sample Supplied by: | Customer   |
| 9           | Test Done at :           | " At the Laboratory located in the basement of our premises at the above mentioned address." |

Test Results : Next Page

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Ph: 7086020945/9435192895/9395005840

E-mail: contact@rnt.in, reliantfoundation2018@gmail.com, Website: www.rnti.in

Discipline: Mechanical Testing  
Test Report No: 2412160029-1  
Sample ID: DFO/DDU:241216-SGS

Group: Building Materials

Name of Test: Gradation  
Type of Sample: Sand, Gravel & Silt  
Source: Nunoi River

Test Method: IS 2386-Part-I-1963  
(Reaffirmed 2021)  
Date of testing: 23-12-2024 to 23-12-2024  
Environmental Conditions during test:  
Temperature: 22.0°C, Humidity: 66%

| TEST RESULTS       |                      |                        |                          |              |
|--------------------|----------------------|------------------------|--------------------------|--------------|
| Is Sieve Size (mm) | Weight Retained (gm) | % Weight Retained (gm) | Cumulative % of Retained | % of Passing |
| 300                | 0                    | 0.00                   | 0.00                     | 100.00       |
| 75                 | 0                    | 0.00                   | 0.00                     | 100.00       |
| 20                 | 784                  | 37.70                  | 37.70                    | 62.30        |
| 4.75               | 471                  | 23.55                  | 61.25                    | 38.75        |
| 0.075              | 580                  | 29.00                  | 90.25                    | 9.75         |
| Pan                | 195                  |                        |                          |              |
| Total              | 2000                 |                        |                          |              |

% Boulder = 0.00 %  
% Gravel = 61.25 %  
% Sand = 29.00 %  
% Silt = 9.75 %



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Divisional Forest Officer,  
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E-mail: contact@rint.in, reliantfoundation2018@gmail.com, Website : www.rint.in

Discipline: Mechanical Testing

Group: Building Materials

Date of issue of Report: 30-12-2024

| TEST REPORT |                          |  |
|-------------|--------------------------|--|
| 1           | Name of Client:          | The Divisional Forest Officer, Dhansiri Division, Udalgori                                   |
| 2           | Name of project:         | District Survey Report, Udalgori District  |
| 3           | Type of sample:          | Sand, Gravel & Silt  |
| 4           | Condition of Sample:     | OK   |
| 5           | Date of Sample Received: | 16-12-2024   |
| 6           | Source of Material:      | Namsi River  |
| 7           | Location:                | Uthar gejer kuchi  |
| 8           | Test Sample Supplied by: | Customer   |
| 9           | Test Done at :           | " At the Laboratory located in the basement of our premises at the above mentioned address " |

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Test Results :Next Page



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Ph: 7086020945/ 9435192896/ 9395005840

E-mail: contact@rlnt.in ; reliantfoundation2018@gmail.com, Website : www.rlnt.in

Discipline: Mechanical Testing  
Test Report No: 2412160029-2  
Sample ID: DFO/DDU/241216/SGS

Group: Building Materials

1. Name of Test: **Specific Gravity**

Test Method: IS 2386-Part-III-1963  
(Reaffirmed 2021)

Type of Sample: **Sand , Gravel & Silt**

Date of testing: 24-12-2024 to 26-12-2024

Source: **Nunoi River**

Environmental Conditions during test:


Temperature : 20.7°C , Humidity: 73%

| TEST RESULTS |   |   |  |                                  |                              |
|--------------|---|---|--|----------------------------------|------------------------------|
| Sl. No.      | Weight of Saturated Surface Dry Sample (gm) | Weight of Pycnometer containing Sample & filled with Distilled Water (gm) | Weight of Pycnometer filled with Water only (gm) | Weight of Oven Dried Sample (gm) | Specific Gravity [D/A-(B-C)] |
|              | A   | B   | C  | D                                |                              |
| 1            | 615.0                                       | 2094.0  | 1706.5   | 610.5                            | 2.68                         |

Remarks : Calculations are As per IS:2386-Part-III -1963 Reaffirmed 2021 ,Clause No. 2.4.3, No limits Specified. Test Results are Satisfactory.

  
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Divisional Forest Officer,  
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District Survey Report (DSR) of Udalguri District

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Ph: 7086020945/9435192896/9395005840

E-mail: contact@rint.in ; reliantfoundation2018@gmail.com, Website : www.rint.in

Discipline: Mechanical Testing  
Test Report No: 2412190029-3  
Sample ID: DFO/DDU/241216/SGS

Group: Building Materials

Date of issue of Report: 30-12-2024

| TEST REPORT |                          |   |
|-------------|--------------------------|---|
| 1           | Name of Client:          | The Divisional Forest Officer, Dhansiri Division, Udalguri                                  |
| 2           | Name of project:         | District Survey Report, Udalguri District   |
| 3           | Type of sample:          | Sand, Gravel & Silt   |
| 4           | Condition of Sample:     | OK  |
| 5           | Date of Sample Received: | 16-12-2024  |
| 6           | Source of Material:      | Nunoi River   |
| 7           | Location:                | Uttar gejer kuchi   |
| 8           | Test Sample Supplied by: | Customer  |
| 9           | Test Done at :           | " At the Laboratory located in the basement of our premises at the above mentioned address" |

1. Name of Test: Bulk Density of Sand , Gravel & Silt  
Type of Test: Loose  
Source: Nunoi River

Test Method: IS 2386-Part III-1963 (Reaffirmed 2021)

Date of testing: 24-12-2024 to 24-12-2024

Environmental Conditions during test:

Temperature : 21.8°C , Humidity: 66%

| TEST RESULTS |   |                                      |  |
|--------------|---|--------------------------------------|--|
| Sample       | Weight of Aggregate to fill the Mould<br>in (Kg)<br>(A) | Volume of Mould<br>in (litre)<br>(B) | Bulk Density<br>in (Kg/litre)<br>(A/B) |
| 1            | 23.950  | 15.379                               | 1.56                                   |

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Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC


District Survey Report (DSR) of Udalguri District

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### Kalanadi River

| Sl No | Description   | Area in Ha. | Percentage of Total area (In %) | Cumulative % |
|-------|---|-------------|---------------------------------|--------------|
| 1     | River area  | 669         | 100                             | 100          |
| 2     | Area granted for mining   | 7.80        | 1.16                            | 1.16         |
| 3     | No of lease not recommended for future Quarry Lease grant due extracted 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 | 0.0         | 0.0                             | 0.0          |
| 4     | Area not recommended for future Quarry Lease grant due to 100 m Buffer from any railway line or bridge  | 0.0         | 0.0                             | 0.0          |
| 5     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the outer periphery of the defined limits of any village, habitation, National Highway, State highway and other roads   | 0.048       | 0.007                           | 0.007        |
| 6     | Area not recommended for future Quarry Lease grant due to non-availability of un-mined block 50 meters width after every block of 1,000 meters over which is undertaken or at such distance as may be directed by the competent authority   | 0.0         | 0.0                             | 0.0          |
| 7     | Area not recommended for future Quarry Lease grant due to 100 m Buffer Local Minor Check Dam  | 0.0         | 0.0                             | 0.0          |
| 8     | Area not recommended for future Quarry Lease grant due to 500 m buffer from the irrigation Structure/ Reservoir & Submergence Area  | 0.0         | 0.0                             | 0.0          |
| 9     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Canal/ Tank/ Lake   | 0.0         | 0.0                             | 0.0          |
| 10    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Ropeway or ropeway trestle or station   | 0.0         | 0.0                             | 0.0          |
| 11    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Heritage site, Protected monuments  | 0.0         | 0.0                             | 0.0          |
| 12    | Area not recommended for future Quarry Lease grant due to Eco-sensitive Zone  | 0.0         | 0.0                             | 0.0          |
| 13    | Applicability of Cluster (Other lease within 500 meter radius   | 0.0         | 0.0                             | 0.0          |

  
 Divisional Forest Officer,  
 Dhansiri Forest Division  
 Udalguri, BTC

District Survey Report (DSR) of Udalguri District |

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Table showing mining permit/contract area Kalanadi River

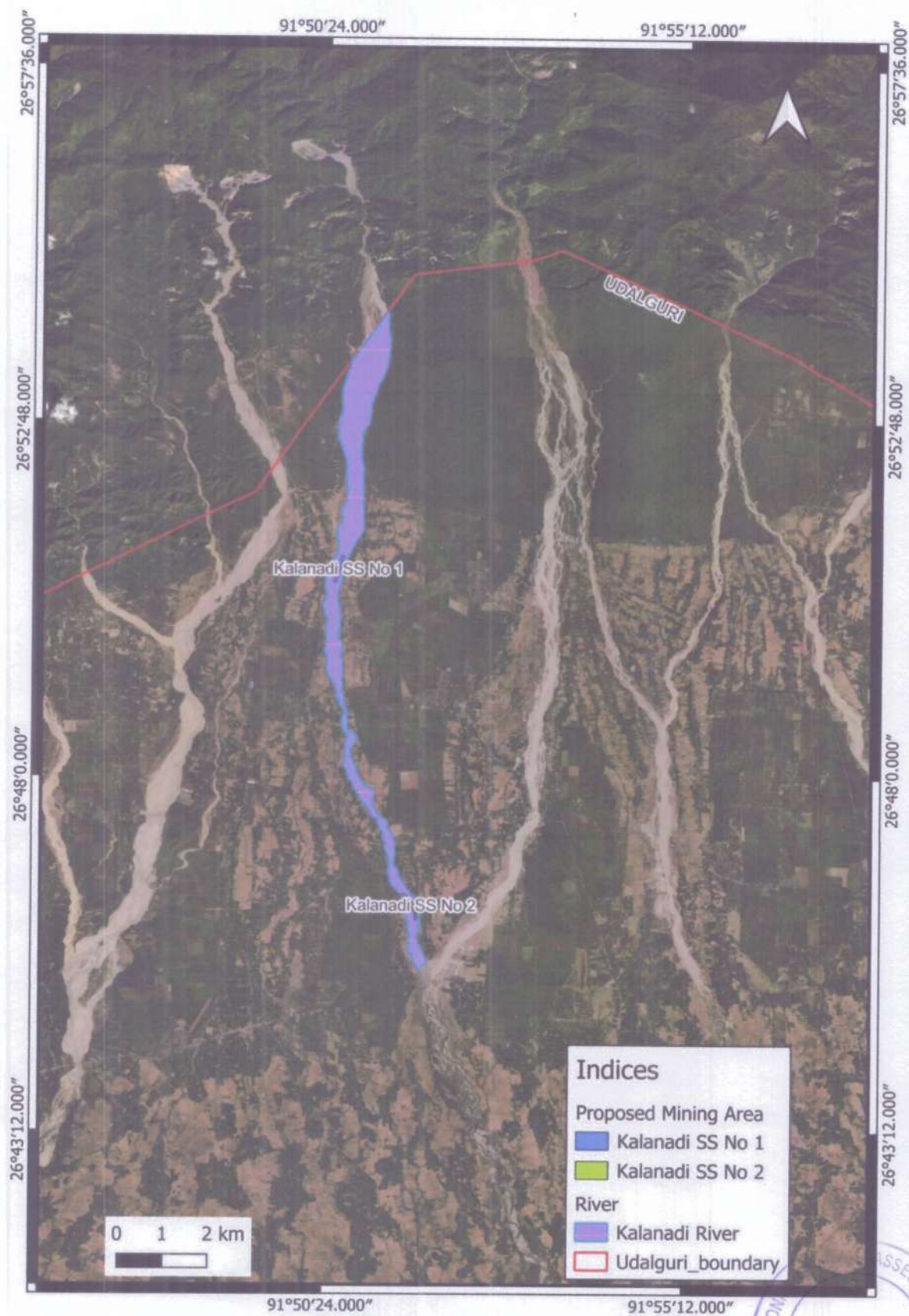
| Sl. No | Name of the mines | Area (in ha) | Geo location     |                  | Mineral Name | Existing/proposed |
|--------|-------------------|--------------|------------------|------------------|--------------|-------------------|
| 1.     | Kalanadi SS No.1  | 4.50 Ha      | N-26° 50' 58.31" | E-91° 50' 38.53" | Sand & Stone | Proposed          |
|        |                   |              | N-26° 50' 58.82" | E-91° 50' 35.90" |              |                   |
|        |                   |              | N-26° 50' 37.79" | E-91° 50' 29.88" |              |                   |
|        |                   |              | N-26° 50' 37.64" | E-91° 50' 32.07" |              |                   |
| 2.     | Kalanadi SS No.2  | 3.30 Ha      | N-26° 46' 24.33" | E-91° 51' 26.74" | Sand & Stone | Proposed          |
|        |                   |              | N-26° 46' 25.07" | E-91° 51' 28.96" |              |                   |
|        |                   |              | N-26° 46' 4.15"  | E-91° 51' 37.47" |              |                   |
|        |                   |              | N-26° 46' 4.32"  | E-91° 51' 38.79" |              |                   |

  
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Dhansiri Forest Division  
Udalguri, BTC





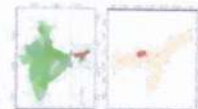
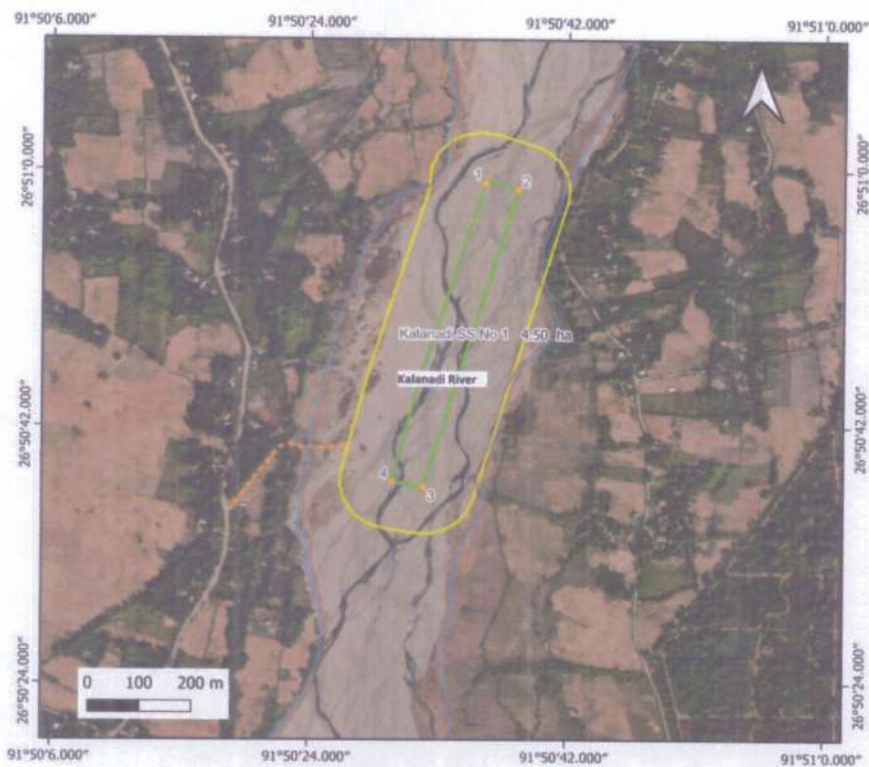
Map 11.8: Buffer map of mining permit/contract areas of Kalanadi River



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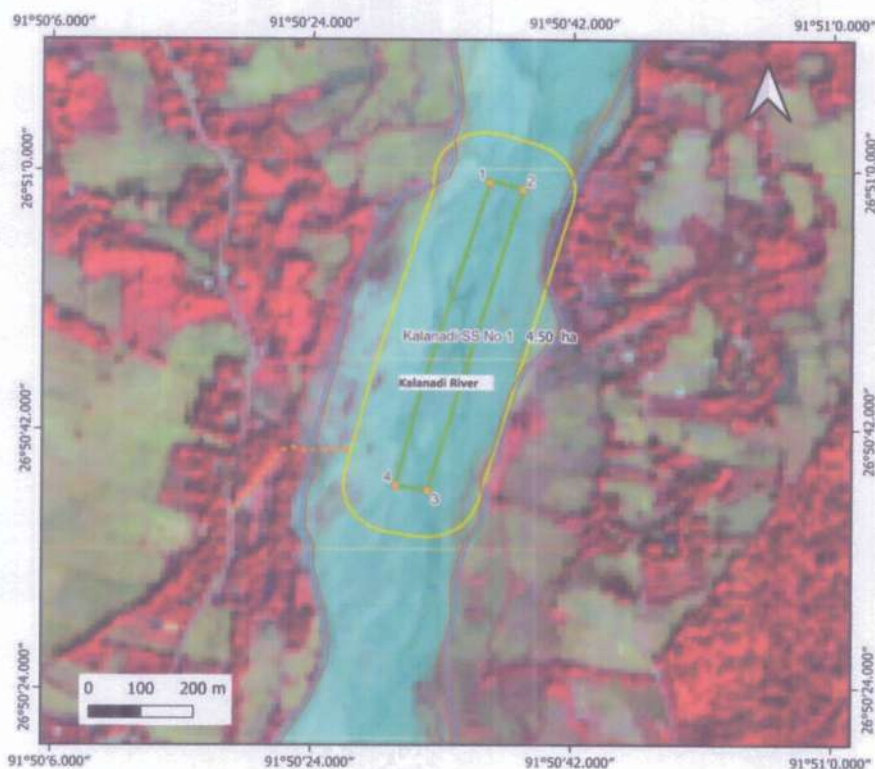




| points | lat        | long       |
|--------|------------|------------|
| 1      | 26°50'59"N | 91°50'36"E |
| 2      | 26°50'59"N | 91°50'39"E |
| 3      | 26°50'38"N | 91°50'32"E |
| 4      | 26°50'38"N | 91°50'30"E |

#### Indices

- Buffer-100 m
- Project Area
- River
- approach road
- Berm-7.5 m



| points | lat        | long       |
|--------|------------|------------|
| 1      | 26°50'59"N | 91°50'36"E |
| 2      | 26°50'59"N | 91°50'39"E |
| 3      | 26°50'38"N | 91°50'32"E |
| 4      | 26°50'38"N | 91°50'30"E |

#### Indices

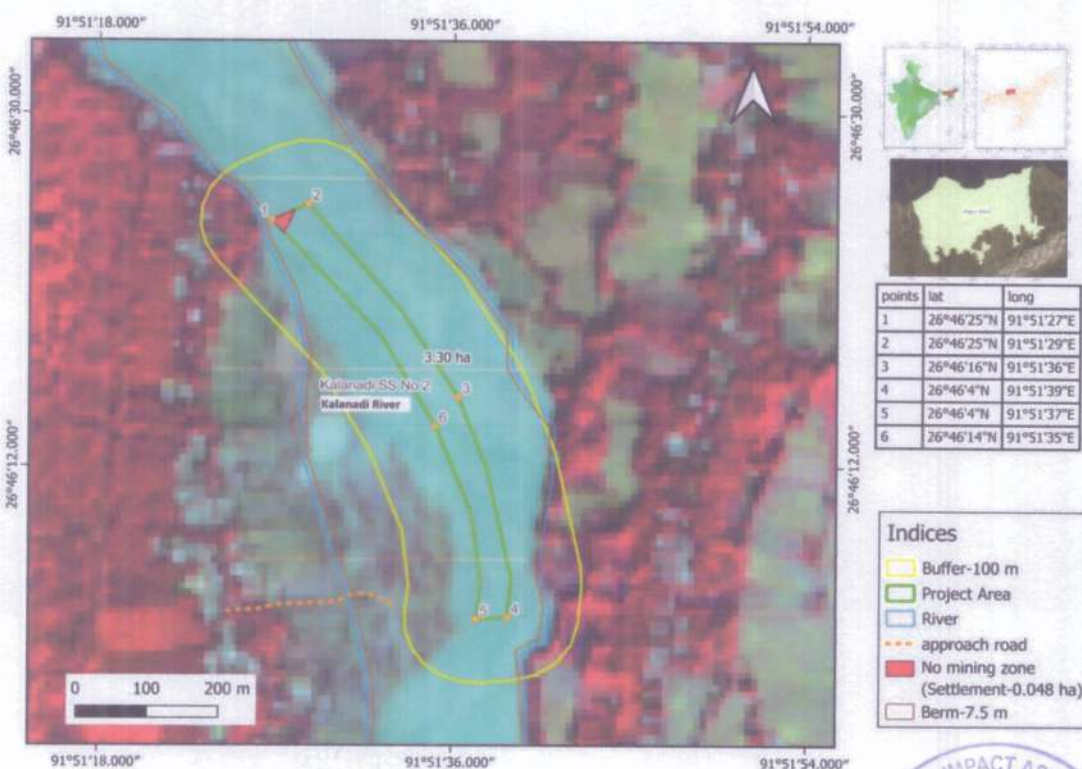
- Buffer-100 m
- Project Area
- River
- approach road
- Berm-7.5 m

Data Source: LISS-IV, Resolution: 5.8 m

*[Signature]*  
 Divisional Forest Officer,  
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Data Source: LISS-IV, Resolution: 5.8 m

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### Golondi River

| Sl No | Description   | Area in Ha. | Percentage of Total area (In %) | Cumulative % |
|-------|---|-------------|---------------------------------|--------------|
| 1     | River area  | 715         | 100                             | 100          |
| 2     | Area granted for mining   | 13.50       | 1.88                            | 1.88         |
| 3     | No of lease not recommended for future Quarry Lease grant due extracted 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 | 1.82        | 0.25                            | 0.25         |
| 4     | Area not recommended for future Quarry Lease grant due to 100 m Buffer from any railway line or bridge  | 0.0         | 0.0                             | 0.0          |
| 5     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the outer periphery of the defined limits of any village, habitation, National Highway, State highway and other roads   | 0.0         | 0.0                             | 0.0          |
| 6     | Area not recommended for future Quarry Lease grant due to non-availability of un-mined block 50 meters width after every block of 1,000 meters over which is undertaken or at such distance as may be directed by the competent authority   | 0.0         | 0.0                             | 0.0          |
| 7     | Area not recommended for future Quarry Lease grant due to 100 m Buffer Local Minor Check Dam  | 0.0         | 0.0                             | 0.0          |
| 8     | Area not recommended for future Quarry Lease grant due to 500 m buffer from the irrigation Structure/ Reservoir & Submergence Area  | 0.0         | 0.0                             | 0.0          |
| 9     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Canal/ Tank/ Lake   | 0.0         | 0.0                             | 0.0          |
| 10    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Ropeway or ropeway trestle or station   | 0.0         | 0.0                             | 0.0          |
| 11    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Heritage site, Protected monuments  | 0.0         | 0.0                             | 0.0          |
| 12    | Area not recommended for future Quarry Lease grant due to Eco-sensitive Zone  | 0.0         | 0.0                             | 0.0          |
| 13    | Applicability of Cluster (Other lease within 500 meter radius   | 0.0         | 0.0                             | 0.0          |

  
Divisional Forest Officer,  
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Table showing mining permit/contract area Golondi River

| Sl. No | Name of the mines        | Area (in ha) | Geolocation      |                 | Mineral Name | Existing/proposed |
|--------|--------------------------|--------------|------------------|-----------------|--------------|-------------------|
| 1.     | Golondi Silt Mahal No. 1 | 4.00 Ha      | N-26° 45' 17.31" | E-92° 07' 1.77" | Silt         | Running           |
|        |                          |              | N-26° 45' 17.08" | E-92° 07' 3.38" |              |                   |
|        |                          |              | N-26° 44' 55.23" | E-92° 07' 7.38" |              |                   |
|        |                          |              | N-26° 45' 54.42" | E-92° 07' 5.75" |              |                   |
| 2.     | Golondi Silt Mahal No. 2 | 4.70 Ha      | N-26° 45' 13.08" | E-92° 07' 0.38" | Silt         | Proposed          |
|        |                          |              | N-26° 45' 12.89" | E-92° 07' 3.38" |              |                   |
|        |                          |              | N-26° 45' 57.14" | E-92° 07' 3.55" |              |                   |
|        |                          |              | N-26° 44' 57.45" | E-92° 07' 6.04" |              |                   |

  
 Divisional Forest Officer,  
 Dhansiri Forest Division  
 Udalguri, BTC

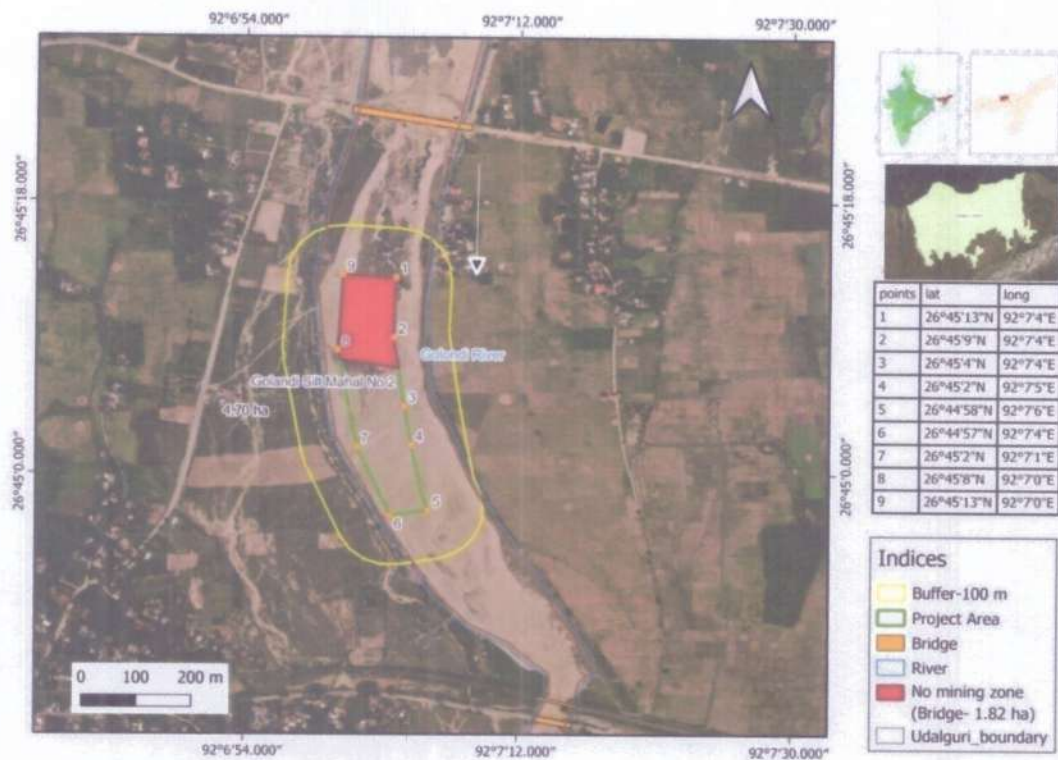


Map 11.9: Buffer map of mining permit/contract areas of Golondi River



*[Signature]*  
 Divisional Forest Officer,  
 Dhansiri Forest Division  
 Udalguri, BTC

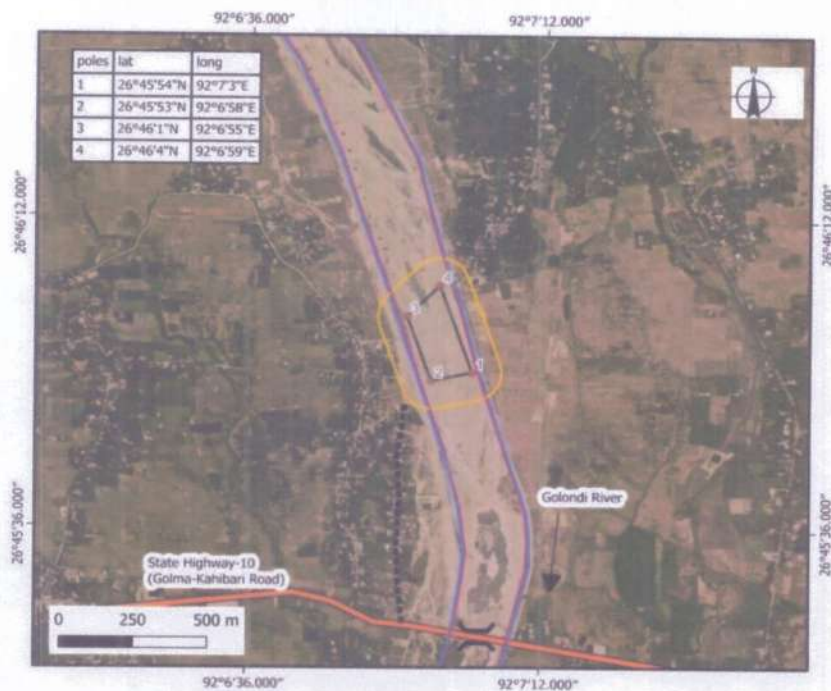




Data Source: LISS-IV, Resolution: 5.8 m

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Dhansiri Forest Division  
Udalguri, BTC

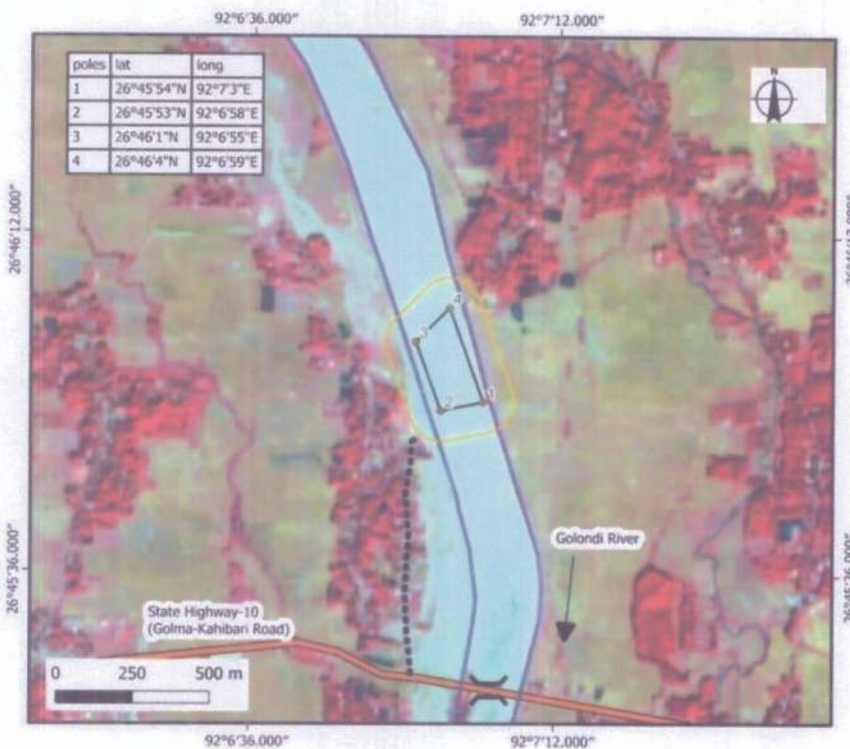




Golandi Silt Mahal No 1  
Allocated Area= 4 ha

#### Indices

- Project Area
- Berm( 7.5 m)
- Buffer ( 100 m)
- River
- Approach Road
- Road
- bridge



Golandi Silt Mahal No 1  
Allocated Area= 4 ha

#### Indices

- Project Area
- Berm( 7.5 m)
- Buffer ( 100 m)
- River
- Approach Road
- Road
- bridge

Data Source: LISS-IV, Resolution: 5.8 m

Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC







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Reliant House; Sun Polo colony, Dipar Boro Path

Ahomgaon, Garchuk, Guwahati- 781035 (Assam)

Ph: 7086020945/9435192896/9395005840

E-mail: contact@rflnt.in ; reliantfoundation2018@gmail.com. Website : www.rflnt.in

Discipline: Mechanical Testing

Group: Building Materials

Date of issue of Report: 30-12-2024

| TEST REPORT                |   |
|----------------------------|---|
| 1 Name of Client:          | The Divisional Forest Officer, Dhansiri Division, Udaiguri                                  |
| 2 Name of project:         | District Survey Report, Udaiguri District   |
| 3 Type of sample:          | Slit  |
| 4 Condition of Sample:     | OK  |
| 5 Date of Sample Received: | 16-12-2024  |
| 6 Source of Material:      | Golondi River   |
| 7 Location:                | Kathalguri  |
| 8 Test Sample Supplied by: | Customer  |
| 9 Test Done at:            | "At the Laboratory located in the basement of our premises at the above mentioned address." |

Test Results :Next Page

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Divisional Forest Officer,  
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Ph: 7086020945/9435192896/9395005840

E-mail: contact@rlnt.in : reliantfoundation2018@gmail.com Website : www.rlnt.in

Discipline: Mechanical Testing  
Test Report No: 2412167702-1  
Sample ID: DFO/DDU/241216-SGS

Group: Building Materials

1. Name of Test: Specific Gravity

Test Method: IS 2386-Part-III-1963  
(Reaffirmed 2021)

Type of Sample: Silt

Date of testing: 19-12-2024 to 21-12-2024

Source: Golondi River


Environmental Conditions during test:  
Temperature : 21.0°C , Humidity: 72%

| TEST RESULTS |   |   |  |                                  |                              |
|--------------|---|---|--|----------------------------------|------------------------------|
| Sl. No.      | Weight of Saturated Surface Dry Sample (gm) | Weight of Pycnometer containing Sample & filled with Distilled Water (gm) | Weight of Pycnometer filled with Water only (gm) | Weight of Oven Dried Sample (gm) | Specific Gravity [D/A-(B-C)] |
|              | A   | B   | C  | D                                |                              |
| 1            | 535.0                                       | 2044.0  | 1706.5   | 531.0                            | 2.69                         |

Remarks : Calculations are As per IS:2386-Part -III -1963 Reaffirmed 2021 ,Clause No. 2.4.3, No limits Specified. Test Results are Satisfactory.

  
Authorized Signatory

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Divisional Forest Officer,  
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Udalguri, BTC

District Survey Report (DSR) of Udalguri District |


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### Dhansiri River

| Sl No | Description   | Area in Ha. | Percentage of Total area (In %) | Cumulative % |
|-------|---|-------------|---------------------------------|--------------|
| 1     | River area  | 3610        | 100                             | 100          |
| 2     | Area granted for mining   | 55.62       | 1.54                            | 1.54         |
| 3     | No of lease not recommended for future Quarry Lease grant due extracted 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 | 5.43        | 0.15                            | 0.15         |
| 4     | Area not recommended for future Quarry Lease grant due to 100 m Buffer from any railway line or bridge  | 0.0         | 0.0                             | 0.0          |
| 5     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the outer periphery of the defined limits of any village, habitation, National Highway, State highway and other roads   | 0.0         | 0.0                             | 0.0          |
| 6     | Area not recommended for future Quarry Lease grant due to non-availability of un-mined block 50 meters width after every block of 1,000 meters over which is undertaken or at such distance as may be directed by the competent authority   | 0.0         | 0.0                             | 0.0          |
| 7     | Area not recommended for future Quarry Lease grant due to 100 m Buffer Local Minor Check Dam  | 0.0         | 0.0                             | 0.0          |
| 8     | Area not recommended for future Quarry Lease grant due to 500 m buffer from the irrigation Structure/ Reservoir & Submergence Area  | 0.0         | 0.0                             | 0.0          |
| 9     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Canal/ Tank/ Lake   | 0.0         | 0.0                             | 0.0          |
| 10    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Ropeway or ropeway trestle or station   | 0.0         | 0.0                             | 0.0          |
| 11    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Heritage site, Protected monuments  | 0.0         | 0.0                             | 0.0          |
| 12    | Area not recommended for future Quarry Lease grant due to Eco-sensitive Zone  | 0.0         | 0.0                             | 0.0          |
| 13    | Applicability of Cluster (Other lease within 500 meter radius   | yes         | -                               | -            |

  
Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC





**Table showing mining permit/contract area Dhansiri River**

| Sl. No | Name of the mines                          | Area (in ha) | Geolocation  |  | Mineral Name     | Existing/proposed |
|--------|--|--------------|--|--|------------------|-------------------|
| 1      | Tarajuli SG Mahal                          | 4.80 Ha      | N-26°46'8.48"<br>N-26°46'9.56"<br>N-26°46'46.25"<br>N-26°46'46.17"           | E-92°11'53.87"<br>E-92°11'27.24"<br>E-92°11'51.96"<br>E-92°11'53.73"         | Sand & Stone     | Running           |
| 2      | Rangapani SS Mahal                         | 4.00 Ha      | N-26°47'17.178"<br>N-26°47'19.258"<br>N-26°47'13.598"<br>N-26°47'10.108"     | E-92°12'22.95"<br>E-92°12'17.10"<br>E-92°12'13.03"<br>E-92°12'17.70"         | Sand & Stone     | Running           |
| 3      | Dhansiri SG Mahal No.1                     | 4.48 Ha      | N-26° 45' 33.01"<br>N-26° 45' 32.95"<br>N-26° 45' 2.10"<br>N-26° 45' 2.43"   | E-92° 11' 57.31"<br>E-92° 11' 55.76"<br>E-92° 12' 12.77"<br>E-92° 12' 14.29" | Sand & Stone     | Running           |
| 4      | Rowta Bagan SG Mahal                       | 4.50 Ha      | N-26° 42' 09.81"<br>N-26° 41' 53.58"<br>N-26° 41' 53.02"<br>N-26° 42' 07.44" | E-92° 15' 10.09"<br>E-92° 15' 24.32"<br>E-92° 15' 20.22"<br>E-92° 15' 09.79" | Sand & Stone     | Running           |
| 5      | Bhairabkunda BG Mahal No.1                 | 4.64 Ha      | N-26°51'19.17"<br>N-26°51'13.78"<br>N-26°51'16.15"<br>N-26°51'10.08"         | E-92°10'4.47"<br>E-92°10'11.78"<br>E-92°9'59.30"<br>E-92°10'6.28"            | Boulder & Gravel | Proposed          |
| 6      | Bhairabkunda BG Mahal No.3                 | 4.85 Ha      | N-26°51'59.07"<br>N-26°51'52.92"<br>N-26°51'55.12"<br>N-26°51'49.94"         | E-92°9'18.58"<br>E-92°9'27.24"<br>E-92°9'13.35"<br>E-92°9'23.39"             | Boulder & Gravel | Proposed          |
| 7      | Tarajuli & Rangapani (North Side) SS Mahal | 4.52 Ha      | N-26° 46' 54.00"<br>N-26° 46' 27.63"<br>N-26° 46' 27.55"<br>N-26° 46' 54.02" | E-92° 12' 11.07"<br>E-92° 11' 55.37"<br>E-92° 12' 0.29"<br>E-92° 12' 7.55"   | Sand & Stone     | Proposed          |
| 8      | Dhansiri SG Mahal                          | 4.81 Ha      | N-26°43'46.81"<br>N-26°43'47.39"<br>N-26°43'23.34"<br>N-26°43'23.91"         | E-92°13'40.48"<br>E-92°13'42.87"<br>E-92°13'35.78"<br>E-92°13'38.22"         | Sand & Stone     | Proposed          |
| 9      | Lower Dhansiri SS Mahal part- B            | 4.88 Ha      | N-26°37'12.58"<br>N-26°37'14.51"<br>N-26°37'03.16"<br>N-26°37'04.78"         | E-92°15'47.18"<br>E-92°15'51.31"<br>E-92°13'53.35"<br>E-92°15'59.14"         | Sand & Stone     | Proposed          |
| 10     | Lower Dhansiri SS Mahal Part-A             | 4.31 Ha      | N-26° 41' 26.50"<br>N-26° 41' 26.68"<br>N-26° 41' 09.48"<br>N-26° 41' 8.89"  | E-92° 15' 27.31"<br>E-92° 15' 30.08"<br>E-92° 15' 36.04"<br>E-92° 15' 33.26" | Sand & Stone     | Potential         |
| 11     | Dhansiri (Balisiya Jargaon) SS Mahal       | 4.85 Ha      | N-26° 40' 13.2"<br>N-26° 38' 52.9"<br>N-26° 40' 15.6"<br>N-26° 38' 50.2"     | E-92° 15' 30.4"<br>E-92° 15' 20.5"<br>E-92° 15' 24.0"<br>E-92° 15' 14.4"     | Sand & Stone     | Potential         |
| 12     | Purobkhuti S.S. Mahal                      | 4.98 Ha      | N-26°47'46.96"<br>N-26°47'43.71"<br>N-26°47'52.85"<br>N-26°47'44.79"         | E-91°12'08.64"<br>E-91°12'13.79"<br>E-91°12'18.56"<br>E-91°12'20.19"         | Sand & Stone     | Potential         |

Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC

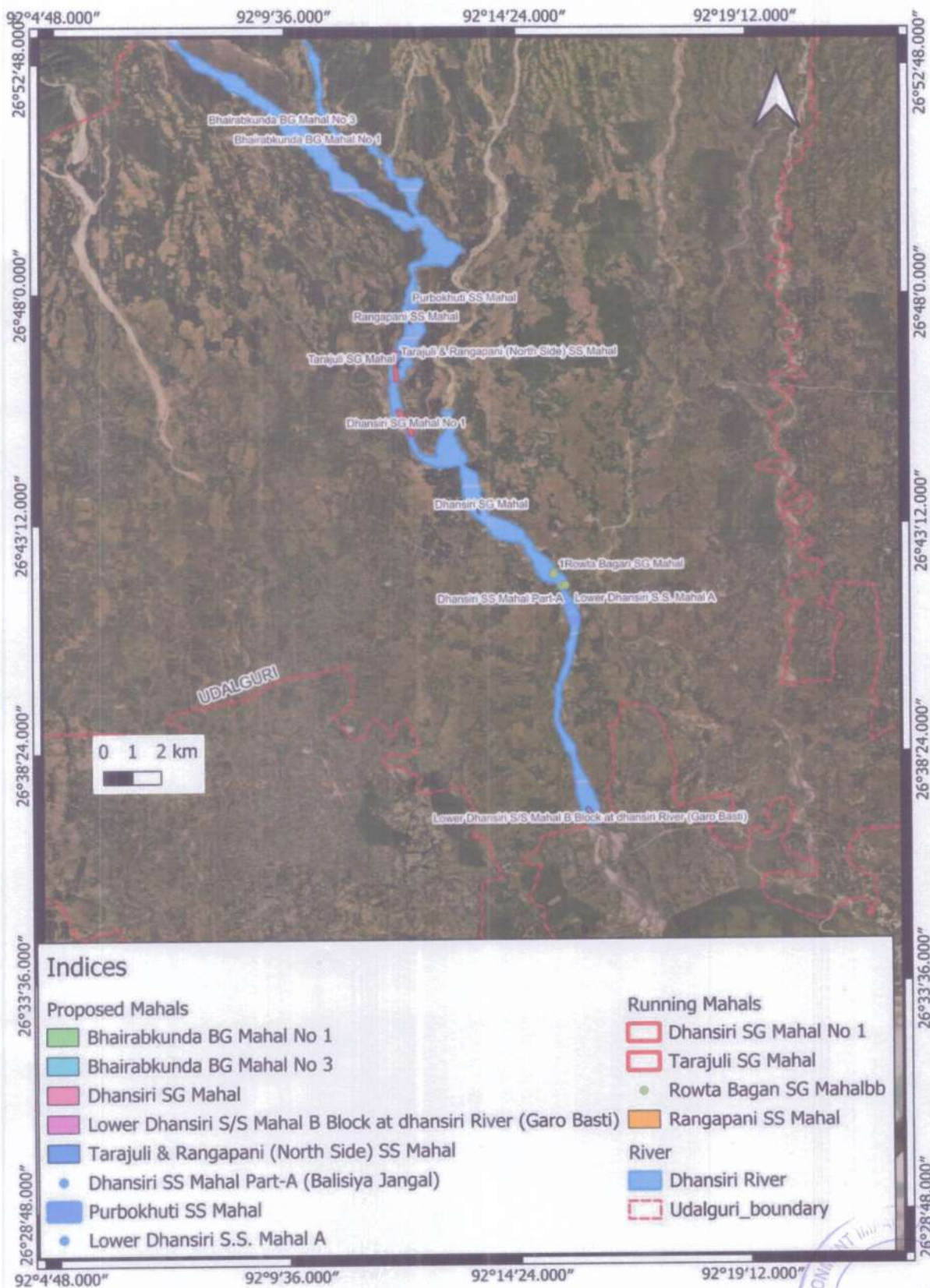
District Survey Report (DSR) of Udalguri District

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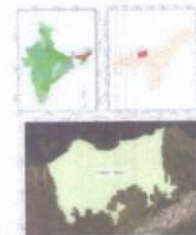


Map 11.10: Buffer map of mining permit/contract areas of Dhansiri River



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Dhansiri Forest Division  
Udalguri, BTC

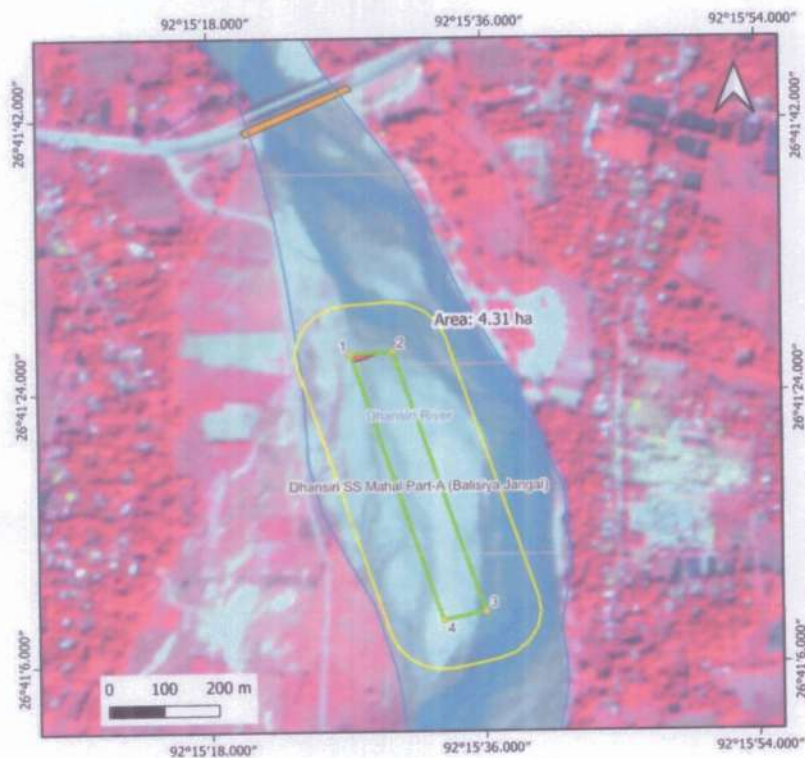




| points | lat            | long           |
|--------|----------------|----------------|
| 1      | 26°41'26.50\"N | 92°15'27.31\"E |
| 2      | 26°41'26.68\"N | 92°15'30.08\"E |
| 3      | 26°41'9.48\"N  | 92°15'36.04\"E |
| 4      | 26°41'8.89\"N  | 92°15'33.26\"E |

#### Indices

- Buffered-100 m
- River
- Project Area
- No Mining Zone- 0.04 ha (bridge)
- Bridge



| points | lat            | long           |
|--------|----------------|----------------|
| 1      | 26°41'26.50\"N | 92°15'27.31\"E |
| 2      | 26°41'26.68\"N | 92°15'30.08\"E |
| 3      | 26°41'9.48\"N  | 92°15'36.04\"E |
| 4      | 26°41'8.89\"N  | 92°15'33.26\"E |

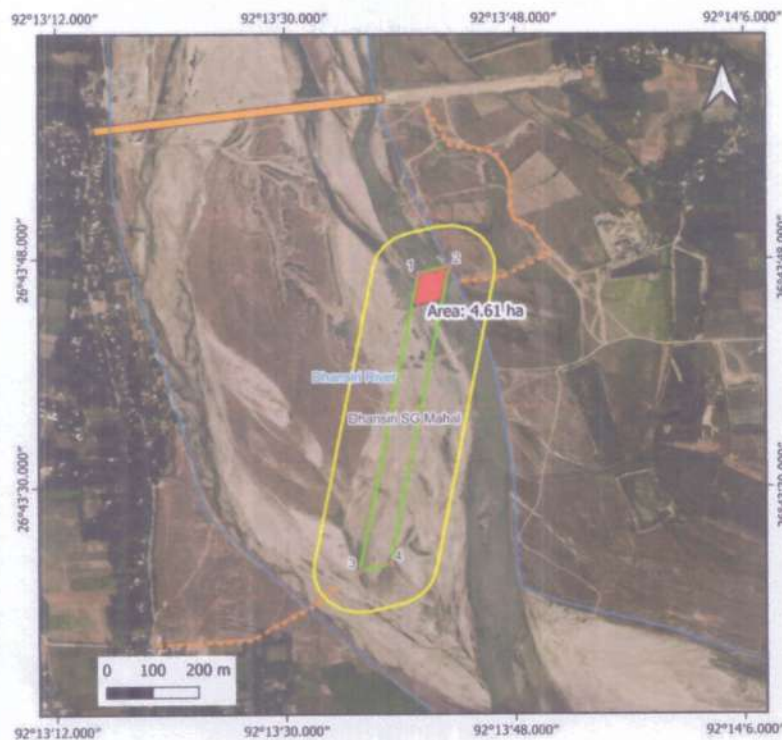
#### Indices

- Buffered-100 m
- River
- Project Area
- No Mining Zone- 0.04 ha (bridge)
- Bridge



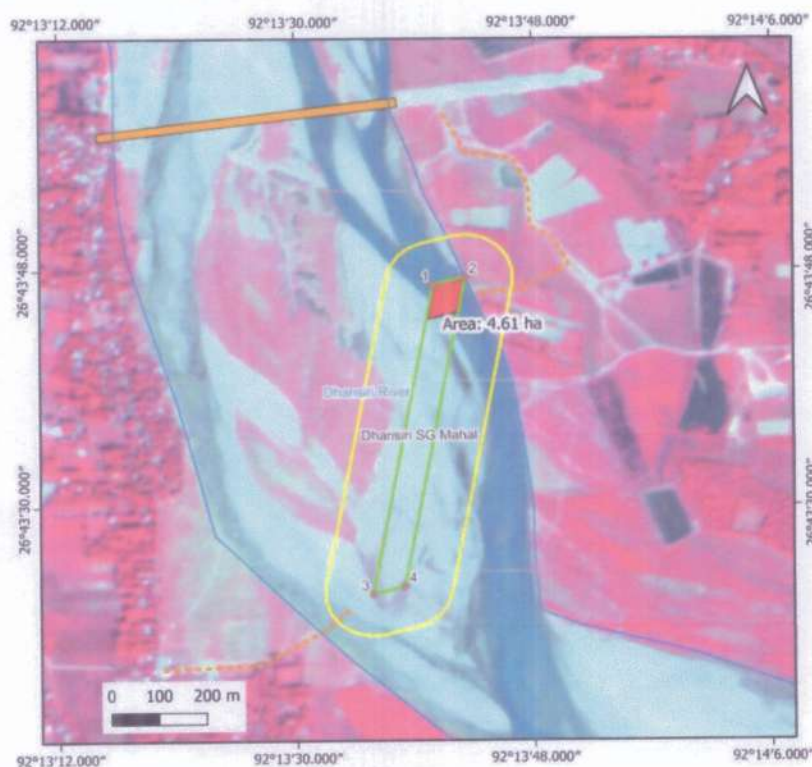
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Udalgori, BTC





| points | lat           | long          |
|--------|---------------|---------------|
| 1      | 26°43'46.81"N | 92°13'40.48"E |
| 2      | 26°43'47.39"N | 92°13'42.87"E |
| 3      | 26°43'23.34"N | 92°13'35.78"E |
| 4      | 26°43'23.91"N | 92°13'38.22"E |

| Indices |                                  |
|---------|----------------------------------|
|         | Buffer-100 m                     |
|         | Project Area                     |
|         | River                            |
|         | No mining zone- 0.49 ha (Bridge) |
|         | Bridge                           |
|         | approach road                    |



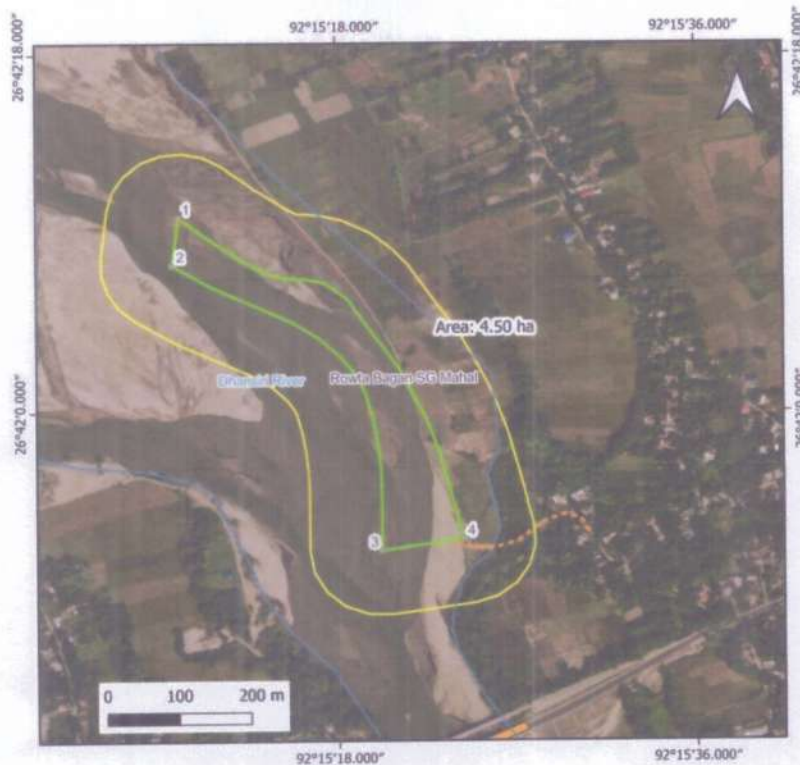
| points | lat           | long          |
|--------|---------------|---------------|
| 1      | 26°43'46.81"N | 92°13'40.48"E |
| 2      | 26°43'47.39"N | 92°13'42.87"E |
| 3      | 26°43'23.34"N | 92°13'35.78"E |
| 4      | 26°43'23.91"N | 92°13'38.22"E |

| Indices |                                  |
|---------|----------------------------------|
|         | Buffer-100 m                     |
|         | Project Area                     |
|         | River                            |
|         | No mining zone- 0.49 ha (Bridge) |
|         | Bridge                           |
|         | approach road                    |

Data Source: LISS-IV Resolution: 5.8 m

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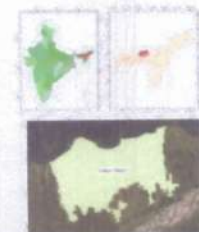
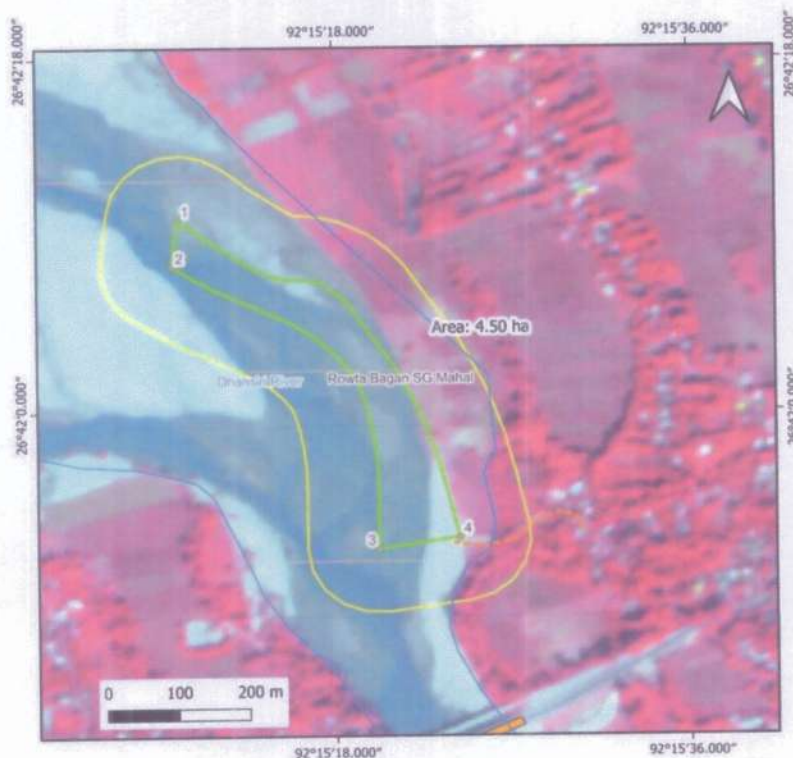




| points | lat            | long           |
|--------|----------------|----------------|
| 1      | 26°42'9.81\"N  | 92°15'10.09\"E |
| 2      | 26°42'7.44\"N  | 92°15'9.79\"E  |
| 3      | 26°41'53.02\"N | 92°15'20.22\"E |
| 4      | 26°41'53.58\"N | 92°15'24.32\"E |

#### Indices

- River
- Buffer-100 m
- Project Area
- Bridge
- approach road



| points | lat            | long           |
|--------|----------------|----------------|
| 1      | 26°42'9.81\"N  | 92°15'10.09\"E |
| 2      | 26°42'7.44\"N  | 92°15'9.79\"E  |
| 3      | 26°41'53.02\"N | 92°15'20.22\"E |
| 4      | 26°41'53.58\"N | 92°15'24.32\"E |

#### Indices

- River
- Buffer-100 m
- Project Area
- Bridge
- approach road

Data Source: LISS-IV Resolution: 5.8 m

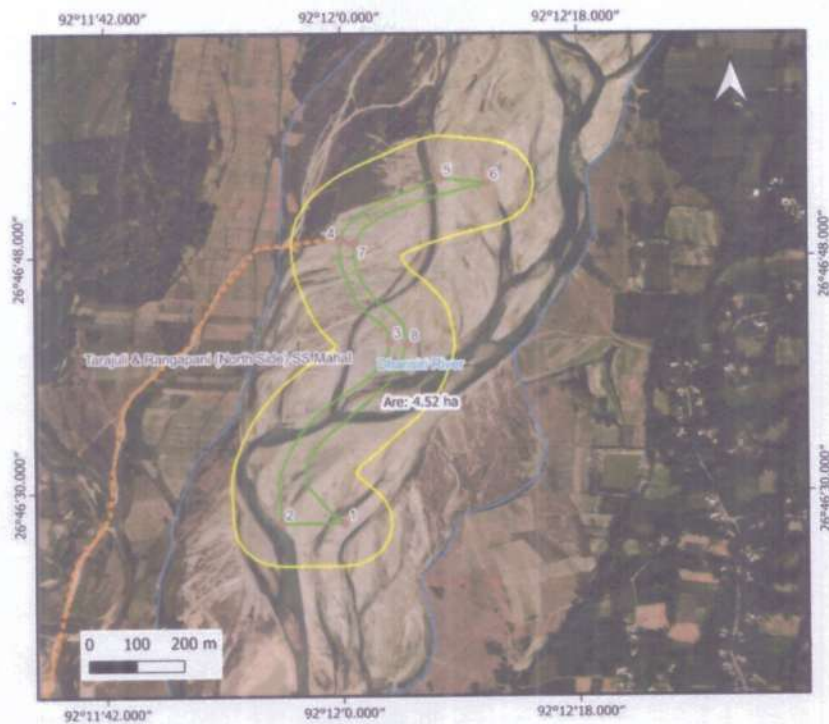
Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC

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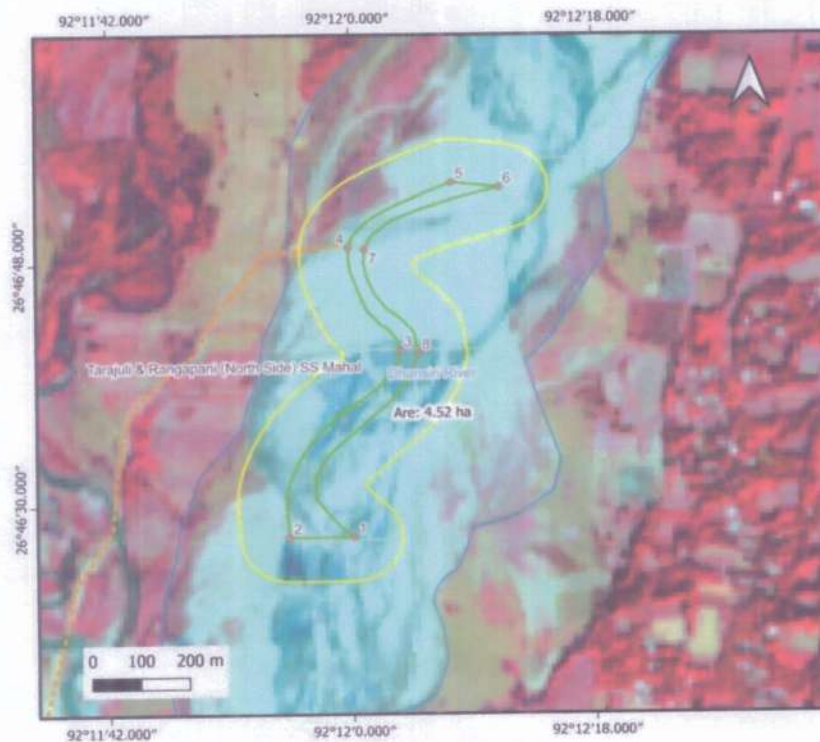






| points | lat         | long        |
|--------|-------------|-------------|
| 6      | 26°46'54\"N | 92°12'11\"E |
| 5      | 26°46'54\"N | 92°12'8\"E  |
| 4      | 26°46'49\"N | 92°12'0\"E  |
| 3      | 26°46'42\"N | 92°12'4\"E  |
| 2      | 26°46'28\"N | 92°11'55\"E |
| 1      | 26°46'28\"N | 92°12'0\"E  |
| 8      | 26°46'41\"N | 92°12'5\"E  |

| Indices |               |
|---------|---------------|
|         | Buffer-100 m  |
|         | Project Area  |
|         | River         |
|         | approach road |



| points | lat         | long        |
|--------|-------------|-------------|
| 6      | 26°46'54\"N | 92°12'11\"E |
| 5      | 26°46'54\"N | 92°12'8\"E  |
| 4      | 26°46'49\"N | 92°12'0\"E  |
| 3      | 26°46'42\"N | 92°12'4\"E  |
| 2      | 26°46'28\"N | 92°11'55\"E |
| 1      | 26°46'28\"N | 92°12'0\"E  |
| 8      | 26°46'41\"N | 92°12'5\"E  |

| Indices |               |
|---------|---------------|
|         | Buffer-100 m  |
|         | Project Area  |
|         | River         |
|         | approach road |

Data Source: LISS-IV, Resolution: 5.8 m

Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC





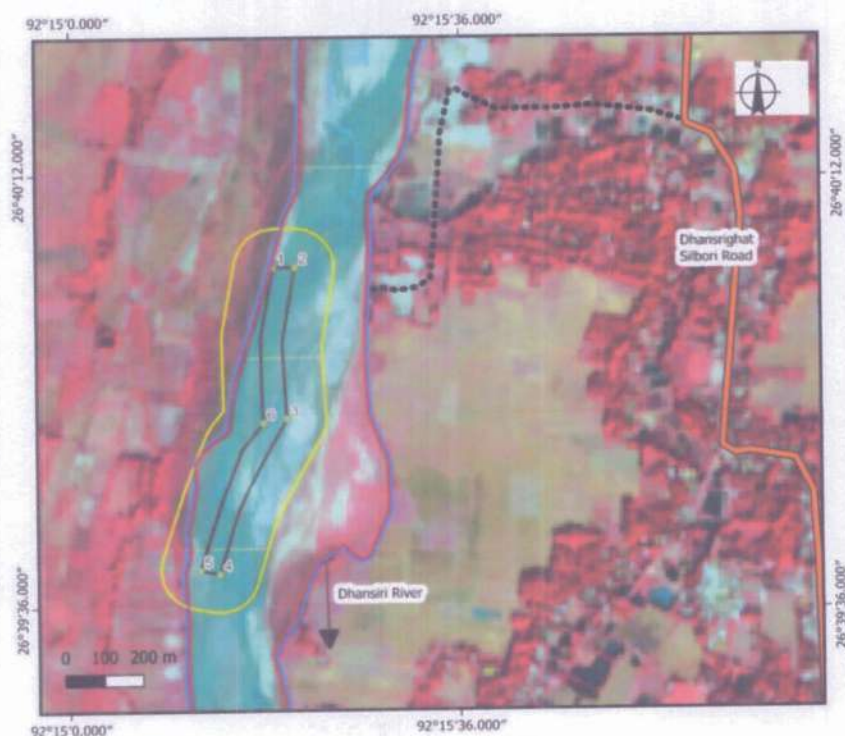


| Name | lat         | long        |
|------|-------------|-------------|
| 1    | 26.66787545 | 92.25522898 |
| 2    | 26.66788388 | 92.25579093 |
| 3    | 26.66438473 | 92.25557758 |
| 4    | 26.66079664 | 92.25383983 |
| 5    | 26.66088211 | 92.25333642 |
| 6    | 26.66428715 | 92.25497010 |

Dhansiri (Balsiya Jaragaon) SS Mahal  
Allocated Area: 4.85 ha

#### Indices

- Project Area
- Berm ( 7.5 m )
- Buffer ( 100 m )
- River
- Approach Road
- Road



| Name | lat         | long        |
|------|-------------|-------------|
| 1    | 26.66787545 | 92.25522898 |
| 2    | 26.66788388 | 92.25579093 |
| 3    | 26.66438473 | 92.25557758 |
| 4    | 26.66079664 | 92.25383983 |
| 5    | 26.66088211 | 92.25333642 |
| 6    | 26.66428715 | 92.25497010 |

Dhansiri (Balsiya Jaragaon) SS Mahal  
Allocated Area: 4.85 ha

#### Indices

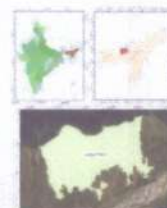
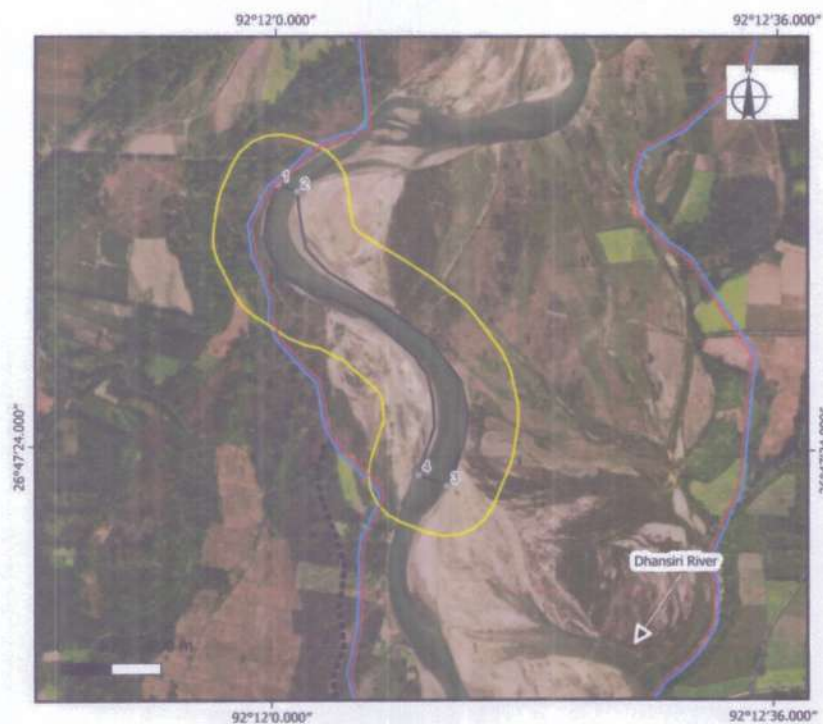
- Project Area
- Berm ( 7.5 m )
- Buffer ( 100 m )
- River
- Approach Road
- Road

Data Source: LISS-IV, Resolution: 5.8 m

*[Signature]*  
Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC



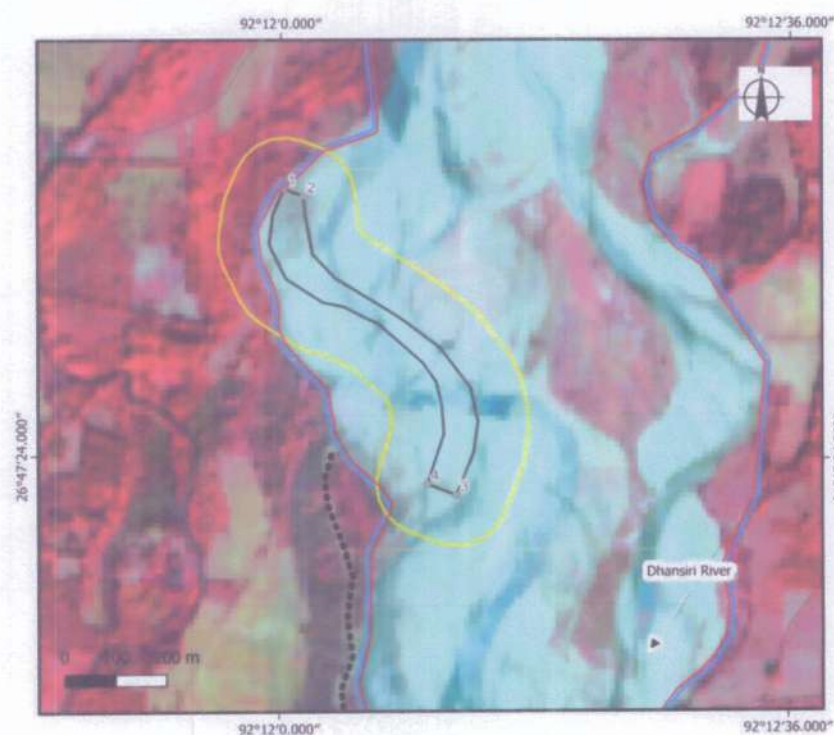




| Poles | Lat         | Long        |
|-------|-------------|-------------|
| 1     | 26°47'41\"N | 92°12'0\"E  |
| 2     | 26°47'41\"N | 92°12'2\"E  |
| 3     | 26°47'22\"N | 92°12'12\"E |
| 4     | 26°47'22\"N | 92°12'10\"E |

Rangapani SS Mahal  
Area: 4 ha

- Indices**
- Project Area
  - Berm( 7.5 m)
  - Buffer ( 100 m)
  - River
  - Approach Road



| Poles | Lat         | Long        |
|-------|-------------|-------------|
| 1     | 26°47'41\"N | 92°12'0\"E  |
| 2     | 26°47'41\"N | 92°12'2\"E  |
| 3     | 26°47'22\"N | 92°12'12\"E |
| 4     | 26°47'22\"N | 92°12'10\"E |

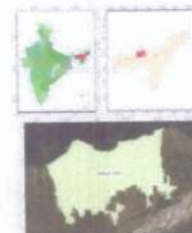
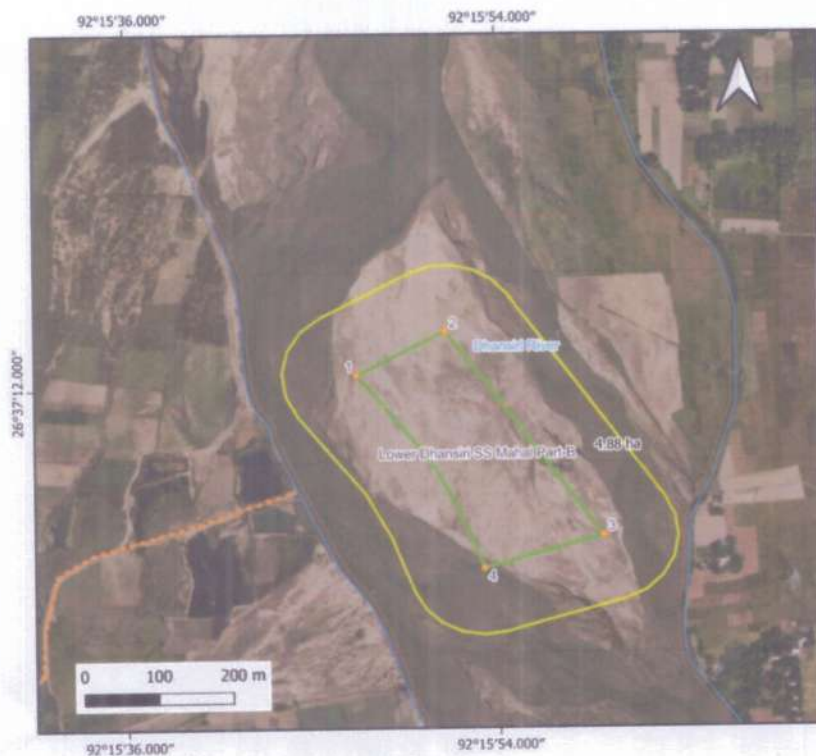
Rangapani SS Mahal  
Area: 4 ha

- Indices**
- Project Area
  - Berm( 7.5 m)
  - Buffer ( 100 m)
  - River
  - Approach Road

Data Source: LISS-IV Resolution: 5.8 m

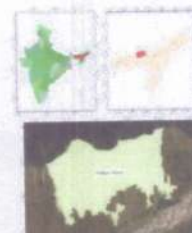
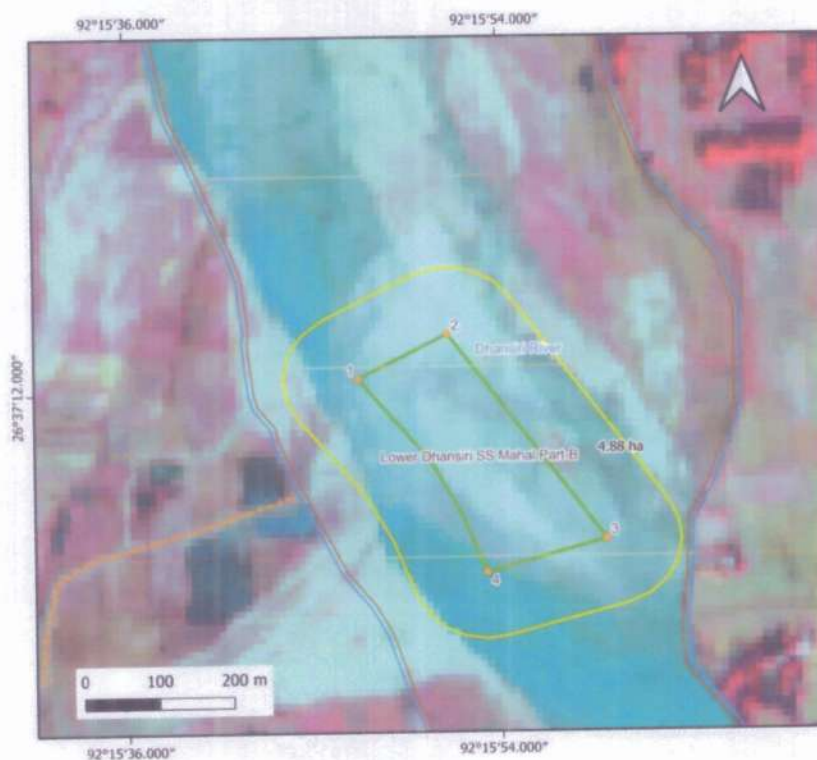
  
Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC





| points | lat         | long        |
|--------|-------------|-------------|
| 1      | 26°37'13\"N | 92°15'47\"E |
| 2      | 26°37'15\"N | 92°15'52\"E |
| 3      | 26°37'5\"N  | 92°15'59\"E |
| 4      | 26°37'3\"N  | 92°15'53\"E |

- Indices**
- Buffer-100 m
  - Project Area
  - River
  - approach road
  - Berm-7.5 m



| points | lat         | long        |
|--------|-------------|-------------|
| 1      | 26°37'13\"N | 92°15'47\"E |
| 2      | 26°37'15\"N | 92°15'52\"E |
| 3      | 26°37'5\"N  | 92°15'59\"E |
| 4      | 26°37'3\"N  | 92°15'53\"E |

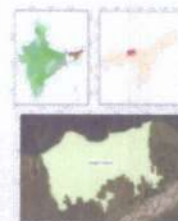
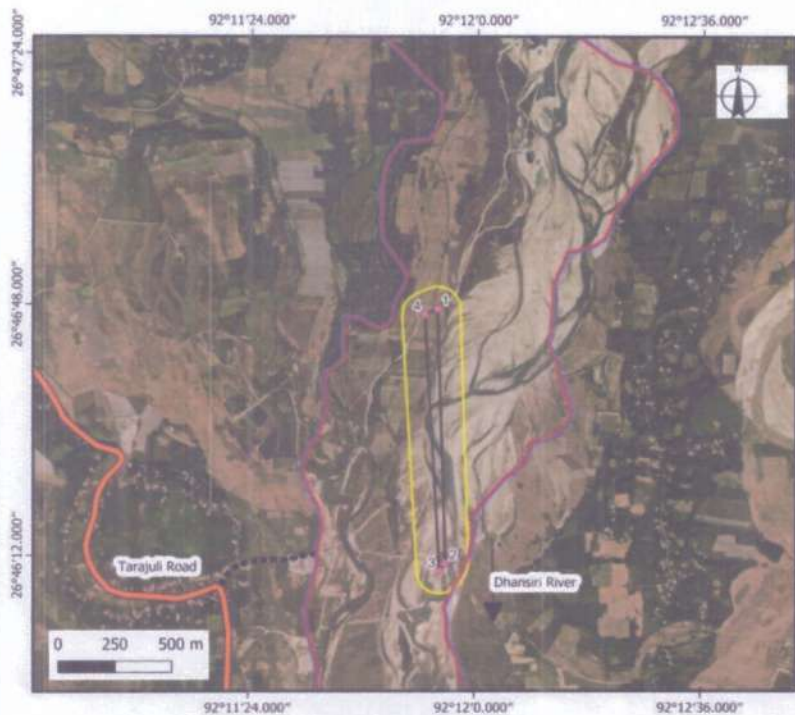
- Indices**
- Buffer-100 m
  - Project Area
  - River
  - approach road
  - Berm-7.5 m

Data Source: LISS-IV Resolution: 5.8 m

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Udalguri, BTC

District Survey Report (DSR) of Udalguri District



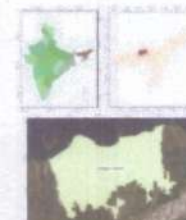


| poles | lat         | long        |
|-------|-------------|-------------|
| 1     | 26.77992157 | 92.19830520 |
| 2     | 26.76979481 | 92.19871507 |
| 3     | 26.76947299 | 92.19845244 |
| 4     | 26.77968857 | 92.19774273 |

Tarajuli SG Mahal  
Allocated Area= 4.80 ha

#### Indices

- Project Area
- Berm ( 7.5 m)
- Buffer ( 100 m)
- River
- Approach Road
- Road



| poles | lat         | long        |
|-------|-------------|-------------|
| 1     | 26.77992157 | 92.19830520 |
| 2     | 26.76979481 | 92.19871507 |
| 3     | 26.76947299 | 92.19845244 |
| 4     | 26.77968857 | 92.19774273 |

Tarajuli SG Mahal  
Allocated Area= 4.80 ha

#### Indices

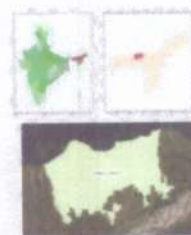
- Project Area
- Berm ( 7.5 m)
- Buffer ( 100 m)
- River
- Approach Road
- Road

Data Source: LISS-IV, Resolution: 5.8 m

Divisional Forest Officer,  
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Udalguri, BTC



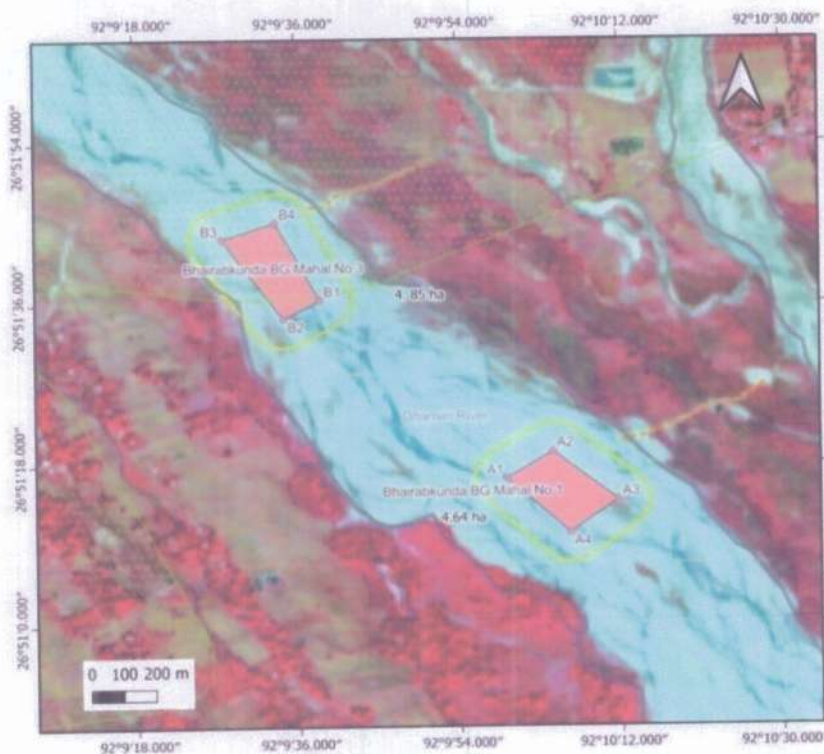




| points | lat         | long        |
|--------|-------------|-------------|
| A1     | 26.85453355 | 92.16648398 |
| A2     | 26.85537220 | 92.16791048 |
| A3     | 26.85384227 | 92.16993071 |
| A4     | 26.85282682 | 92.16842239 |
| B1     | 26.86010544 | 92.16073463 |
| B2     | 26.85953047 | 92.15960375 |
| B3     | 26.86201586 | 92.15769576 |
| B4     | 26.86254032 | 92.15937183 |

#### Indices

- Berm-7.5 m
- Buffer-100 m
- Reserved Forest
- Project Area
- River
- approach road



| points | lat         | long        |
|--------|-------------|-------------|
| A1     | 26.85453355 | 92.16648398 |
| A2     | 26.85537220 | 92.16791048 |
| A3     | 26.85384227 | 92.16993071 |
| A4     | 26.85282682 | 92.16842239 |
| B1     | 26.86010544 | 92.16073463 |
| B2     | 26.85953047 | 92.15960375 |
| B3     | 26.86201586 | 92.15769576 |
| B4     | 26.86254032 | 92.15937183 |

#### Indices

- Berm-7.5 m
- Buffer-100 m
- Reserved Forest
- Project Area
- River
- approach road

Data Source: LISS-IV Resolution: 5.8 m

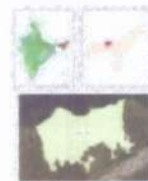
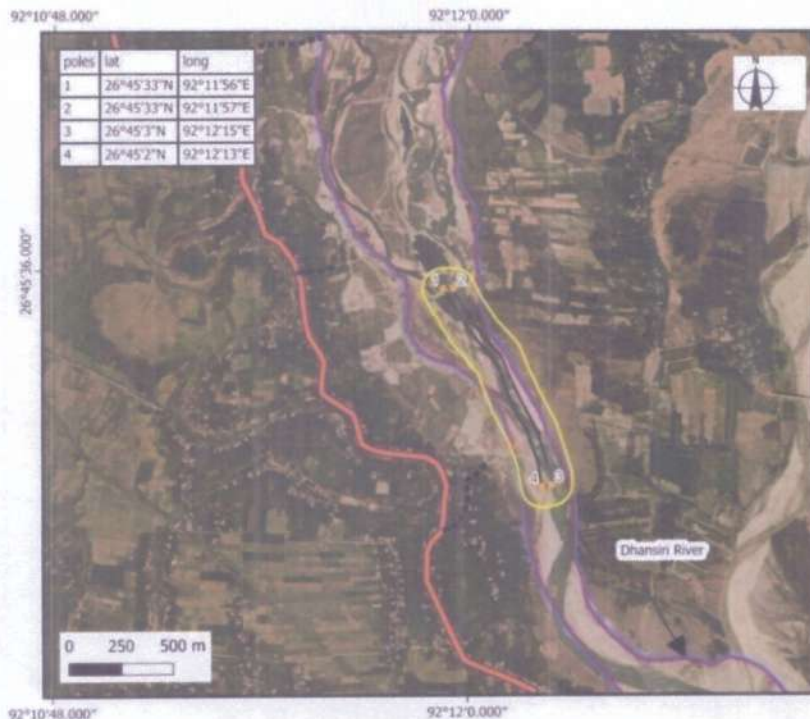
Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC

District Survey Report (DSR) of Udalguri District

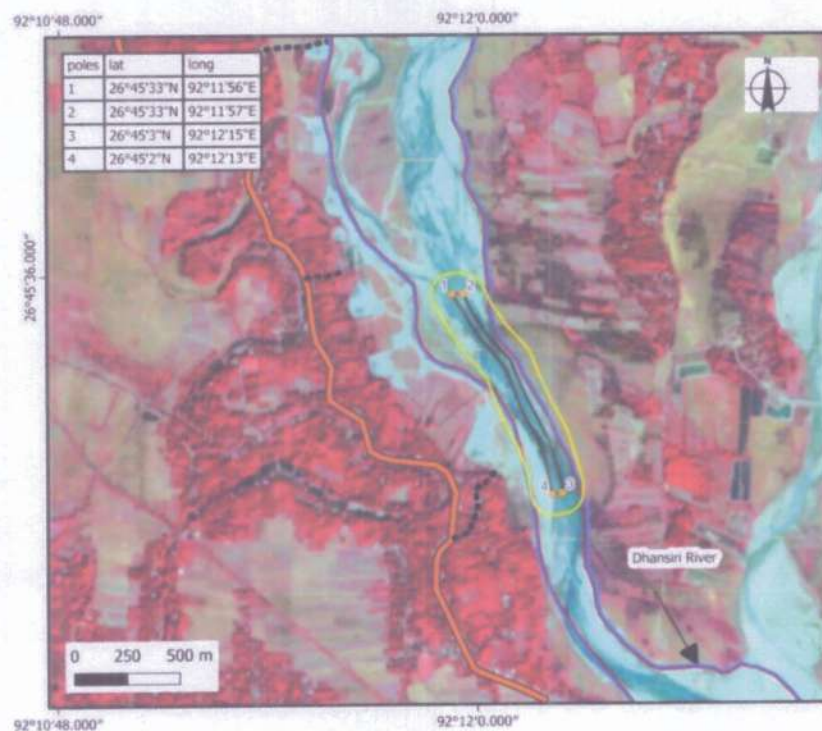
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Dhansiri SG Mahal No 1  
Allocated Area= 4.48 ha



Dhansiri SG Mahal No 1  
Allocated Area= 4.48 ha

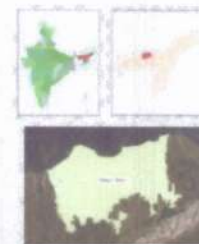


Data Source: LISS-IV Resolution: 5.8 m

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Dhansiri Forest Division  
Udalguri, BTC

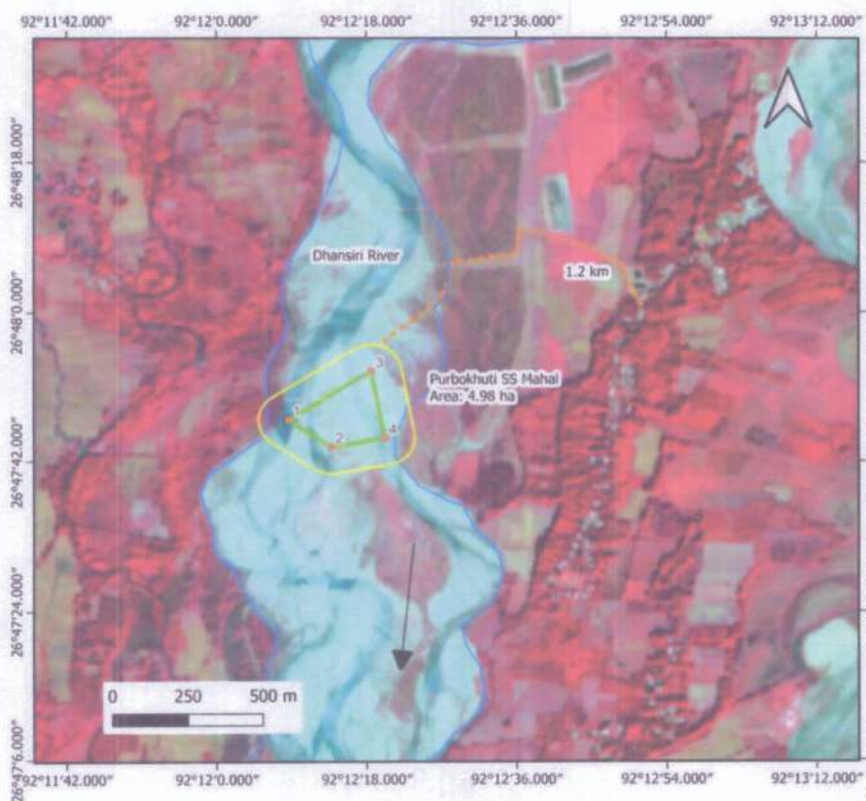






| points | lat            | long           |
|--------|----------------|----------------|
| 1      | 26°47'46.96\"N | 92°12'8.64\"E  |
| 2      | 26°47'43.71\"N | 92°12'13.79\"E |
| 3      | 26°47'52.85\"N | 92°12'18.56\"E |
| 4      | 26°47'44.79\"N | 92°12'20.19\"E |

| Indices |               |
|---------|---------------|
|         | Buffer-100 m  |
|         | Project Area  |
|         | River         |
|         | approach road |



| points | lat            | long           |
|--------|----------------|----------------|
| 1      | 26°47'46.96\"N | 92°12'8.64\"E  |
| 2      | 26°47'43.71\"N | 92°12'13.79\"E |
| 3      | 26°47'52.85\"N | 92°12'18.56\"E |
| 4      | 26°47'44.79\"N | 92°12'20.19\"E |

| Indices |               |
|---------|---------------|
|         | Buffer-100 m  |
|         | Project Area  |
|         | River         |
|         | approach road |

Data Sou

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Udalguri, BTC







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Ph: 7086020945/ 9435192896/ 9395005840

E-mail: contact@rnt.in ; reliantfoundation2018@gmail.com, Website : www.rnt.in

Discipline: Mechanical Testing

Group: Building Materials

Date of issue of Report: 22-09-2024

| TEST REPORT |                          |   |
|-------------|--------------------------|---|
| 1           | Name of Client:          | The Divisional Forest Officer, Dhansiri Division, Udalguri                                  |
| 2           | Name of project:         | District Survey Report, Udalguri District   |
| 3           | Type of sample:          | Sand & Gravel   |
| 4           | Condition of Sample:     | Ok  |
| 5           | Date of Sample Received: | 12-09-2024  |
| 6           | Source of Material:      | Dhansiri River  |
| 7           | Location:                | Sesapani  |
| 8           | Test Sample Supplied by: | Customer  |
| 9           | Test Done at :           | " At the Laboratory located in the basement of our premises at the above mentioned address" |

Test Results :Next Page

Page: 1 of 2



  
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Ph: 7086020945/9435192896/9395005840

E-mail: contact@rnt.in ; reliantfoundation2018@gmail.com, Website : www.rnt.in

Discipline: Mechanical Testing  
Test Report No: 2409126637-1  
Sample ID: DFO/DDU/240912/SG

Group: Building Materials


Name of Test: Gradation  
Type of Sample: Sand & Gravel  
Source: Dhansiri River

Test Method: IS 2386-Part-I-1963  
(Reaffirmed 2021)  
Date of testing: 14-09-2024 to 14-09-2024  
Environmental Conditions during test:  
Temperature : 26.9°C , Humidity: 67%

| TEST RESULTS       |                      |                        |                          |              |
|--------------------|----------------------|------------------------|--------------------------|--------------|
| Is Sieve Size (mm) | Weight Retained (gm) | % Weight Retained (gm) | Cumulative % of Retained | % of Passing |
| 300                | 0                    | 0.00                   | 0.00                     | 100.00       |
| 75                 | 0                    | 0.00                   | 0.00                     | 100.00       |
| 20                 | 806                  | 40.30                  | 40.30                    | 59.70        |
| 4.75               | 492                  | 24.60                  | 64.90                    | 35.10        |
| 0.075              | 695                  | 34.75                  | 99.65                    | 0.35         |
| Pan                | 7                    |                        |                          |              |
| Total              | 2000                 |                        |                          |              |

% Boulder = 0.00 %  
% Gravel = 64.90 %  
% Sand = 34.75 %  
% Silt = 0.35 %

  
Authorized Signatory  
Page: 2 of 2

  
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Udalguri, BTC







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E-mail: contact@rint.in ; reliantfoundation2018@gmail.com, Website : [www.rint.in](http://www.rint.in)

Discipline: Mechanical Testing

Group: Building Materials


Date of issue of Report: 22-09-2024

| TEST REPORT |                          |   |
|-------------|--------------------------|---|
| 1           | Name of Client:          | The Divisional Forest Officer, Dhansiri Division, Udalguri                                  |
| 2           | Name of project:         | District Survey Report, Udalguri District   |
| 3           | Type of sample:          | Sand & Gravel   |
| 4           | Condition of Sample:     | Ok  |
| 5           | Date of Sample Received: | 12-09-2024  |
| 6           | Source of Material:      | Dhansiri River  |
| 7           | Location:                | Sesapani  |
| 8           | Test Sample Supplied by: | Customer  |
| 9           | Test Done at:            | " At the Laboratory located in the basement of our premises at the above mentioned address" |

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Ph: 7086020945/9435192896/9395005840

E-mail: contact@rnt.in ; reliantfoundation2018@gmail.com, Website : www.rnt.in

Discipline: Mechanical Testing  
Test Report No: 2409126637-2  
Sample ID: DFO/DDU/240912/SG

Group: Building Materials

1. Name of Test: Specific Gravity

Test Method: IS 2386-Part-III-1963  
(Reaffirmed 2021)

Type of Sample: Sand & Gravel

Date of testing: 16-09-2024 to 18-09-2024

Source: Dhansiri River

Environmental Conditions during test:


Temperature : 27.5°C , Humidity: 60%

| TEST RESULTS |   |   |  |                                  |                              |
|--------------|---|---|--|----------------------------------|------------------------------|
| Sl. No.      | Weight of Saturated Surface Dry Sample (gm) | Weight of Pycnometer containing Sample & filled with Distilled Water (gm) | Weight of Pycnometer filled with Water only (gm) | Weight of Oven Dried Sample (gm) | Specific Gravity [D/A-(B-C)] |
|              | A   | B   | C  | D                                |                              |
| 1            | 525.0                                       | 2036.0  | 1706.5   | 521.0                            | 2.66                         |

Remarks : Calculations are As per IS:2386-Part -III -1963 Reaffirmed 2021 ,Clause No. 2.4.3, No limits Specified. Test Results are Satisfactory.

  
Authorised Signatory

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Divisional Forest Officer,  
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Udalguri, BTC

District Survey Report (DSR) of Udalguri District |

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Ph: 7086020945/9435192896/9395005840

E-mail: contact@rlnt.in ; reliantfoundation2018@gmail.com, Website : www.rlnt.in

Discipline: Mechanical Testing  
Test Report No: 2409126637-3  
Sample ID: DFOTDDU/240912/SG

Group: Building Materials

Date of issue of Report: 22-09-2024

| TEST REPORT |                          |   |
|-------------|--------------------------|---|
| 1           | Name of Client:          | The Divisional Forest Officer, Dhansiri Division, Udalguri                                  |
| 2           | Name of project:         | District Survey Report, Udalguri District   |
| 3           | Type of sample:          | Sand & Gravel   |
| 4           | Condition of Sample:     | OK  |
| 5           | Date of Sample Received: | 12-09-2024  |
| 6           | Source of Material:      | Dhansiri River  |
| 7           | Location:                | Sesapani  |
| 8           | Test Sample Supplied by: | Customer  |
| 9           | Test Done at :           | " At the Laboratory located in the basement of our premises at the above mentioned address" |

1. Name of Test: Bulk Density of Sand & Gravel  
Type of Test: Loose  
Source: Dhansiri River

Test Method: IS 2386-Part-III-1963 (Reaffirmed 2021)

Date of testing: 19-09-2024 to 19-09-2024

Environmental Conditions during test:

Temperature : 27.1°C , Humidity: 64%

| TEST RESULTS |   |                                      |  |
|--------------|---|--------------------------------------|--|
| Sample       | Weight of Aggregate to fill the Mould<br>in (Kg)<br>(A) | Volume of Mould<br>in (Litre)<br>(B) | Bulk Density<br>in (Kg/Litre)<br>[A/B] |
| 1            | 23.580  | 15.379                               | 1.53                                   |

Page: 1 of 1



  
Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC


District Survey Report (DSR) of Udalguri District |

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### Samrang River

| Sl No | Description   | Area in Ha. | Percentage of Total area (In %) | Cumulative % |
|-------|---|-------------|---------------------------------|--------------|
| 1     | River area  | 30          | 100                             | 100          |
| 2     | Area granted for mining   | 4.0         | 13.33                           | 13.33        |
| 3     | No of lease not recommended for future Quarry Lease grant due extracted 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 | 0.0         | 0.0                             | 0.0          |
| 4     | Area not recommended for future Quarry Lease grant due to 100 m Buffer from any railway line or bridge  | 0.0         | 0.0                             | 0.0          |
| 5     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the outer periphery of the defined limits of any village, habitation, National Highway, State highway and other roads   | 0.0         | 0.0                             | 0.0          |
| 6     | Area not recommended for future Quarry Lease grant due to non-availability of un-mined block 50 meters width after every block of 1,000 meters over which is undertaken or at such distance as may be directed by the competent authority   | 0.0         | 0.0                             | 0.0          |
| 7     | Area not recommended for future Quarry Lease grant due to 100 m Buffer Local Minor Check Dam  | 0.0         | 0.0                             | 0.0          |
| 8     | Area not recommended for future Quarry Lease grant due to 500 m buffer from the irrigation Structure/ Reservoir & Submergence Area  | 0.0         | 0.0                             | 0.0          |
| 9     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Canal/ Tank/ Lake   | 0.0         | 0.0                             | 0.0          |
| 10    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Ropeway or ropeway trestle or station   | 0.0         | 0.0                             | 0.0          |
| 11    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Heritage site, Protected monuments  | 0.0         | 0.0                             | 0.0          |
| 12    | Area not recommended for future Quarry Lease grant due to Eco-sensitive Zone  | 0.0         | 0.0                             | 0.0          |
| 13    | Applicability of Cluster (Other lease within 500 meter radius   | 0.0         | 0.0                             | 0.0          |

  
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Dhansiri Forest Division  
Udalguri, BTC

District Survey Report (DSR) of Udalguri District





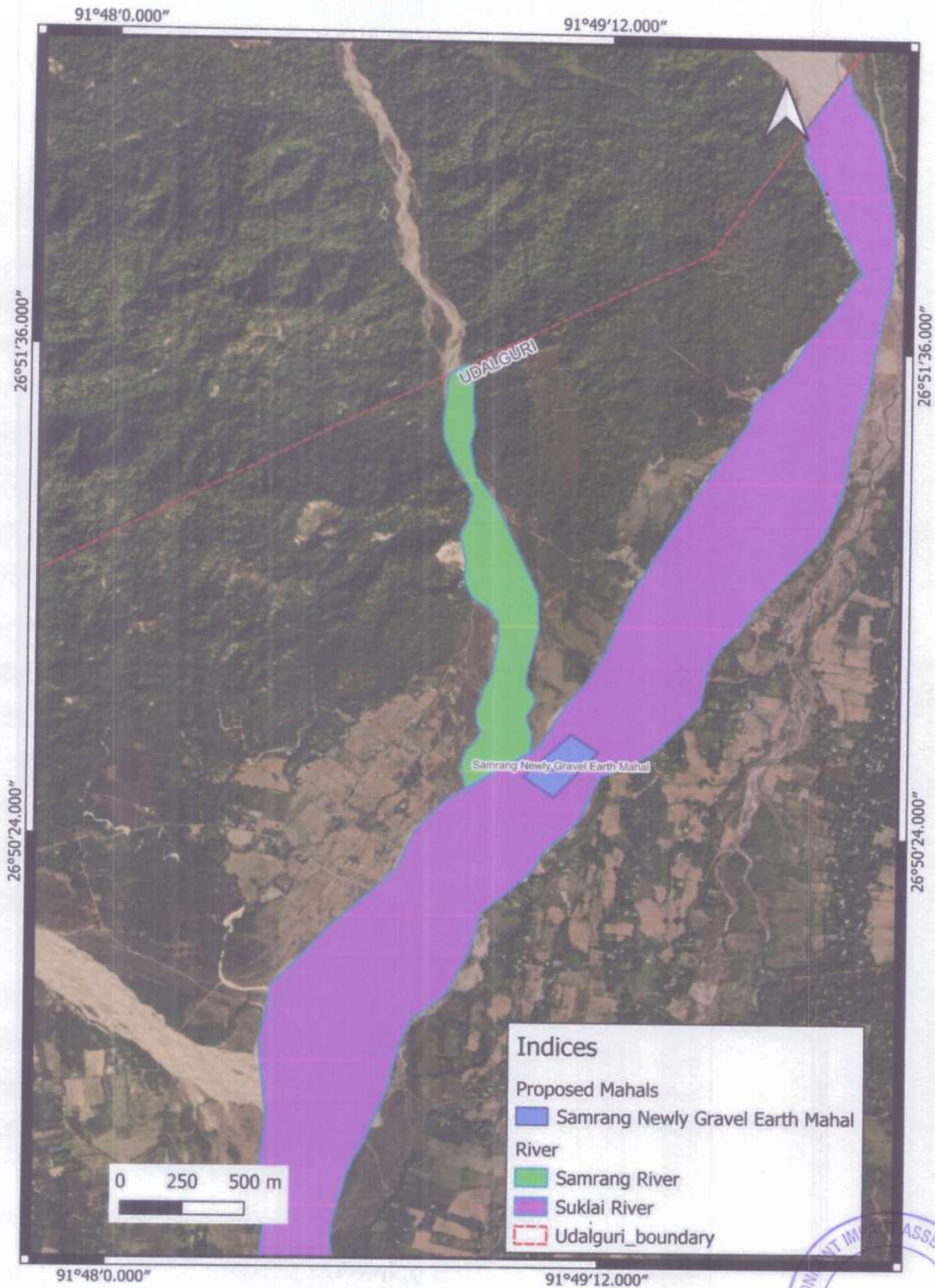
Table showing mining permit/contract area Samrang River

| Sl. No | Name of the mines                      | Area (in ha) | Geolocation  |   | Mineral Name   | Existing/proposed |
|--------|--|--------------|--|---|----------------|-------------------|
| 1.     | Samrang<br>Newly Gravel<br>Earth Mahal | 4.00<br>Ha   | N-26°50'38.92"<br>N-26°50'39.58"<br>N-26°51'08.52"<br>N-26°50'54.47" | E-91°48'55.90"<br>E-91°51'0.53"<br>E-91°49'24.43"<br>E-91°479'0.50" | Gravel & Earth | Proposed          |



  
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Dhansiri Forest Division  
Udalguri, BTC

Map 1111: Buffer map of mining permit/contract areas of Samrang River



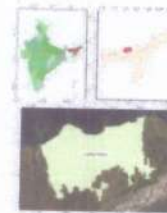
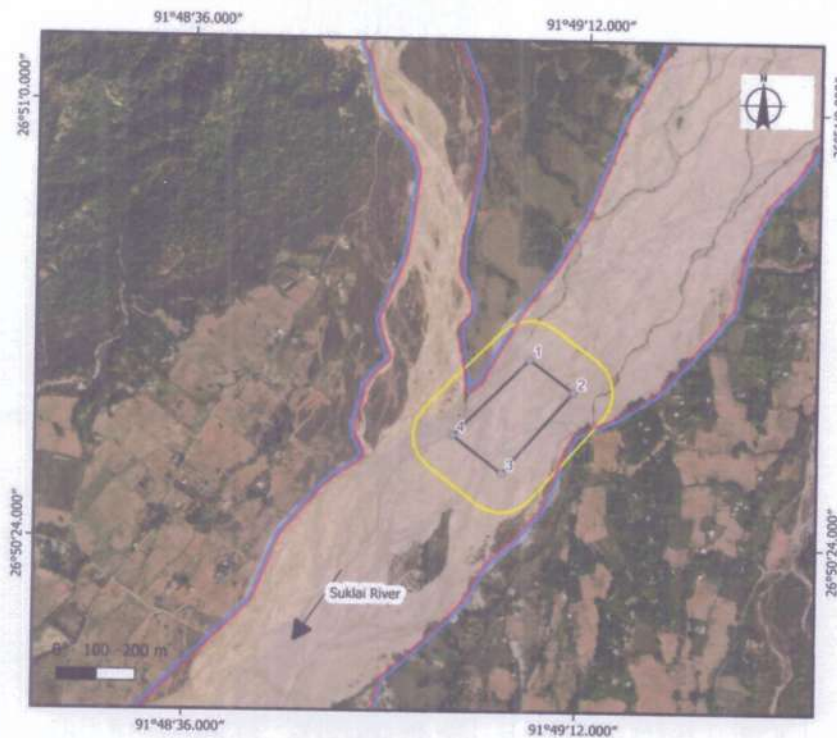
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Dhansiri Forest Division  
Udaiguri, BTC

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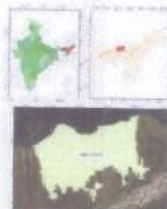
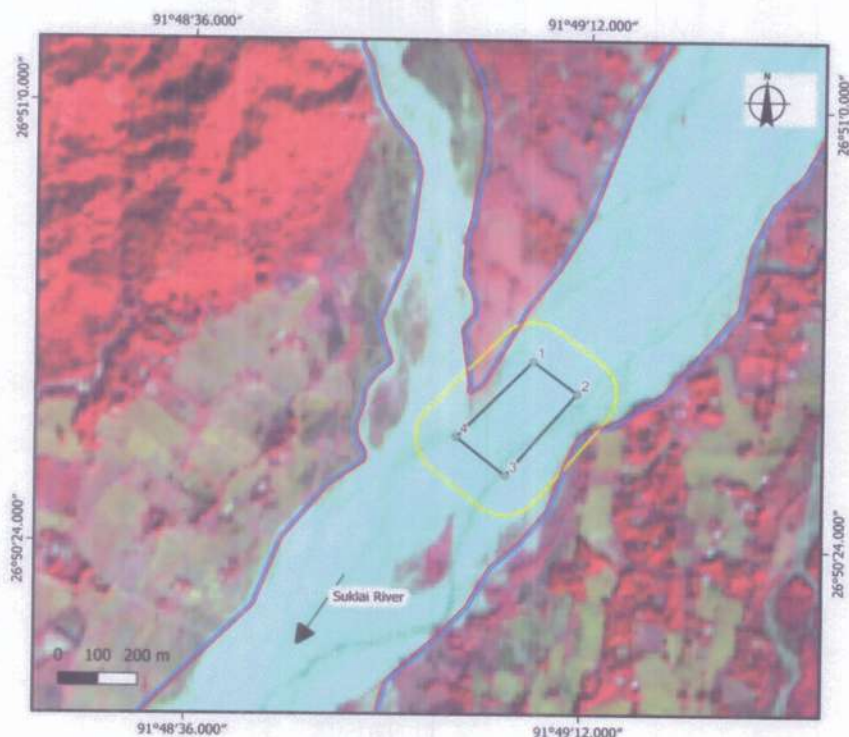


| Poles | Lat         | Long        |
|-------|-------------|-------------|
| 1     | 26°50'39\"N | 91°49'7\"E  |
| 2     | 26°50'37\"N | 91°49'11\"E |
| 3     | 26°50'30\"N | 91°49'5\"E  |
| 4     | 26°50'33\"N | 91°49'0\"E  |

Samrang Newly Gravel Earth Mahal  
Area: 4.85 ha

#### Indices

- Project Area
- Berm( 7.5 m)
- Buffer ( 100 m)
- River




| Poles | Lat         | Long        |
|-------|-------------|-------------|
| 1     | 26°50'39\"N | 91°49'7\"E  |
| 2     | 26°50'37\"N | 91°49'11\"E |
| 3     | 26°50'30\"N | 91°49'5\"E  |
| 4     | 26°50'33\"N | 91°49'0\"E  |

Samrang Newly Gravel Earth Mahal  
Area: 4.85 ha

#### Indices

- Project Area
- Berm( 7.5 m)
- Buffer ( 100 m)
- River

Data Source: LISS-IV Resolution: 5.8 m

  
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Dhansiri Forest Division  
Udalguri, BTC

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Ph: 7086020945/ 9435192896/ 9395005840

E-mail: contact@rint.in ; reliantfoundation2018@gmail.com, Website : www.rint.in

Discipline: Mechanical Testing

Group: Building Materials

Date of issue of Report: 30-12-2024

| TEST REPORT |                          |   |
|-------------|--------------------------|---|
| 1           | Name of Client:          | The Divisional Forest Officer, Dhansiri Division, Udalguri                                  |
| 2           | Name of project:         | District Survey Report, Udalguri District   |
| 3           | Type of sample:          | Sand, Gravel & Earth  |
| 4           | Condition of Sample:     | Ok  |
| 5           | Date of Sample Received: | 16-12-2024  |
| 6           | Source of Material:      | Samrang River   |
| 7           | Location:                | Samrang   |
| 8           | Test Sample Supplied by: | Customer  |
| 9           | Test Done at :           | " At the Laboratory located in the basement of our premises at the above mentioned address" |

Test Results :Next Page

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Dhansiri Forest Division  
Udalguri, BTC







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E-mail: [contact@rnt.in](mailto:contact@rnt.in) ; [reliantfoundation2018@gmail.com](mailto:reliantfoundation2018@gmail.com), Website : [www.rfnt.in](http://www.rfnt.in)

Discipline: Mechanical Testing  
Test Report No: 2412161544-1  
Sample ID: DFO/DDU/241216/SGS

Group: Building Materials

Name of Test: Gradation  
Type of Sample : Sand, Gravel & Earth  
Source: Samrang River


Test Method: IS 2386-Part-I-1963  
(Reaffirmed 2021)  
Date of testing: 26-12-2024 to 26-12-2024  
Environmental Conditions during test:  
Temperature : 21.5°C , Humidity: 69%

| TEST RESULTS       |                      |                        |                          |              |
|--------------------|----------------------|------------------------|--------------------------|--------------|
| Is Sieve Size (mm) | Weight Retained (gm) | % Weight Retained (gm) | Cumulative % of Retained | % of Passing |
| 300                | 0                    | 0.00                   | 0.00                     | 100.00       |
| 75                 | 0                    | 0.00                   | 0.00                     | 100.00       |
| 20                 | 639                  | 31.95                  | 31.95                    | 68.05        |
| 4.75               | 330                  | 16.50                  | 48.45                    | 51.55        |
| 0.075              | 785                  | 39.25                  | 87.70                    | 12.30        |
| Pan                | 246                  |                        |                          |              |
| Total              | 2000                 |                        |                          |              |

% Boulder = 0.00 %  
% Gravel = 48.45 %  
% Sand = 39.25 %  
% Earth = 12.30 %

  
Authorised Signatory

Page: 2 of 2

  
Divisional Forest Officer,  
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Udalguri, BTC

District Survey Report (DSR) of Udalguri District

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E-mail: contact@rint.in ; reliantfoundation2018@gmail.com, Website : www.rint.in

Discipline: Mechanical Testing

Group: Building Materials

Date of issue of Report: 30-12-2024

| TEST REPORT |                          |   |
|-------------|--------------------------|---|
| 1           | Name of Client:          | The Divisional Forest Officer, Dhansiri Division, Udalguri                                  |
| 2           | Name of project:         | District Survey Report, Udalguri District   |
| 3           | Type of sample:          | Sand, Gravel & Earth  |
| 4           | Condition of Sample:     | Ok  |
| 5           | Date of Sample Received: | 16-12-2024  |
| 6           | Source of Material:      | Samrang River   |
| 7           | Location:                | Samrang   |
| 8           | Test Sample Supplied by: | Customer  |
| 9           | Test Done at :           | " At the Laboratory located in the basement of our premises at the above mentioned address" |

Test Results :Next Page

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Ph: 7086020945/9435192896/9395005840

E-mail: contact@rnt.in ; reliantfoundation2018@gmail.com. Website : www.rnt.in

Discipline: Mechanical Testing  
Test Report No: 2412161544-2  
Sample ID: DFO/DDU/241216/SGS

Group: Building Materials

1. Name of Test: Specific Gravity

Test Method: IS 2386-Part-III-1963  
(Reaffirmed 2021)

Type of Sample: Sand, Gravel & Earth

Date of testing: 26-12-2024 to 28-12-2024


Source: Samrang River

Environmental Conditions during test:  
Temperature : 21.0°C , Humidity: 70%

| TEST RESULTS |   |   |  |                                  |                              |
|--------------|---|---|--|----------------------------------|------------------------------|
| Sl. No.      | Weight of Saturated Surface Dry Sample (gm) | Weight of Pycnometer containing Sample & filled with Distilled Water (gm) | Weight of Pycnometer filled with Water only (gm) | Weight of Oven Dried Sample (gm) | Specific Gravity [D/A-(B-C)] |
|              | A   | B   | C  | D                                |                              |
| 1            | 580.0                                       | 2072.0  | 1706.5   | 576.0                            | 2.69                         |

Remarks : Calculations are As per IS:2386-Part-III-1963 Reaffirmed 2021 ,Clause No. 2.4.3, No limits Specified. Test Results are Satisfactory.

  
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Page: 2 of 2

  
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Ph: 7086020945/9435192896/9395005840

E-mail: contact@rint.in ; reliantfoundation2018@gmail.com. Website : www.rint.in

Discipline: Mechanical Testing  
Test Report No: 2412161544-2  
Sample ID: DFO/DDU/241216/SGS

Group: Building Materials

Date of issue of Report: 30-12-2024

| TEST REPORT |                          |   |
|-------------|--------------------------|---|
| 1           | Name of Client:          | The Divisional Forest Officer, Dhansiri Division, Udalgori                                  |
| 2           | Name of project:         | District Survey Report, Udalgori District   |
| 3           | Type of sample:          | Sand, Gravel & Earth  |
| 4           | Condition of Sample:     | Ok  |
| 5           | Date of Sample Received: | 16-12-2024  |
| 6           | Source of Material:      | Samrang River   |
| 7           | Location:                | Samrang   |
| 8           | Test Sample Supplied by: | Customer  |
| 9           | Test Done at:            | " At the Laboratory located in the basement of our premises at the above mentioned address" |

1. Name of Test: Bulk Density of Sand , Gravel & Earth  
Type of Test: Loose  
Source: Samrang River

Test Method: IS 2386-Part-III-1963 (Reaffirmed 2021)

Date of testing: 26-12-2024 to 26-12-2024

Environmental Conditions during test:

Temperature: 21.3°C , Humidity: 68%

| TEST RESULTS |   |                                |                                  |
|--------------|---|--------------------------------|----------------------------------|
| Sample       | Weight of Aggregate to fill the Mould in (Kg) (A) | Volume of Mould in (Litre) (B) | Bulk Density in (Kg/Litre) [A/B] |
| 1            | 24.510  | 15.379                         | 1.59                             |

Page: 1 of 1



  
Divisional Forest Officer,  
Dhansiri Forest Division  
Udalgori, BTC

District Survey Report (DSR) of Udalgori District


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### Rowta River

| Sl No | Description   | Area in Ha. | Percentage of Total area (In %) | Cumulative % |
|-------|---|-------------|---------------------------------|--------------|
| 1     | River area  | 581         | 100                             | 100          |
| 2     | Area granted for mining   | 8.61        | 1.48                            | 1.48         |
| 3     | No of lease not recommended for future Quarry Lease grant due extracted 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 | 0.0         | 0.0                             | 0.0          |
| 4     | Area not recommended for future Quarry Lease grant due to 100 m Buffer from any railway line or bridge  | 0.0         | 0.0                             | 0.0          |
| 5     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the outer periphery of the defined limits of any village, habitation, National Highway, State highway and other roads   | 0.0         | 0.0                             | 0.0          |
| 6     | Area not recommended for future Quarry Lease grant due to non-availability of un-mined block 50 meters width after every block of 1,000 meters over which is undertaken or at such distance as may be directed by the competent authority   | 0.0         | 0.0                             | 0.0          |
| 7     | Area not recommended for future Quarry Lease grant due to 100 m Buffer Local Minor Check Dam  | 0.0         | 0.0                             | 0.0          |
| 8     | Area not recommended for future Quarry Lease grant due to 500 m buffer from the irrigation Structure/ Reservoir & Submergence Area  | 0.0         | 0.0                             | 0.0          |
| 9     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Canal/ Tank/ Lake   | 0.0         | 0.0                             | 0.0          |
| 10    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Ropeway or ropeway trestle or station   | 0.0         | 0.0                             | 0.0          |
| 11    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Heritage site, Protected monuments  | 0.0         | 0.0                             | 0.0          |
| 12    | Area not recommended for future Quarry Lease grant due to Eco-sensitive Zone  | 0.0         | 0.0                             | 0.0          |
| 13    | Applicability of Cluster (Other lease within 500 meter radius   | 0.0         | 0.0                             | 0.0          |

  
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 Udalguri, BTC


District Survey Report (DSR) of Udalguri District

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Table showing mining permit/contract area Rowta River

| Sl. No | Name of the mines | Area (in ha) | Geolocation  |  | Mineral Name | Existing/proposed |
|--------|-------------------|--------------|--|--|--------------|-------------------|
| 1.     | Merebil SS Mahal  | 4.16 Ha      | N-26° 44' 33.06"<br>N-26° 44' 59.02"                                     | E-92° 12' 48.03"<br>E-92° 12' 53.04"                                     | Sand & Stone | Proposed          |
| 2.     | Rowta SG Mahal    | 4.45 Ha      | N-26° 50' 57.9"<br>N-26° 50' 58.1"<br>N-26° 50' 38.3"<br>N-26° 50' 39.2" | E-92° 13' 50.5"<br>E-92° 13' 48.2"<br>E-92° 13' 49.5"<br>E-92° 13' 44.5" | Sand & Stone | Potential         |

  
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District Survey Report (DSR) of Udalguri District





Map 11.12: Buffer map of mining permit/contract areas of Rowta River



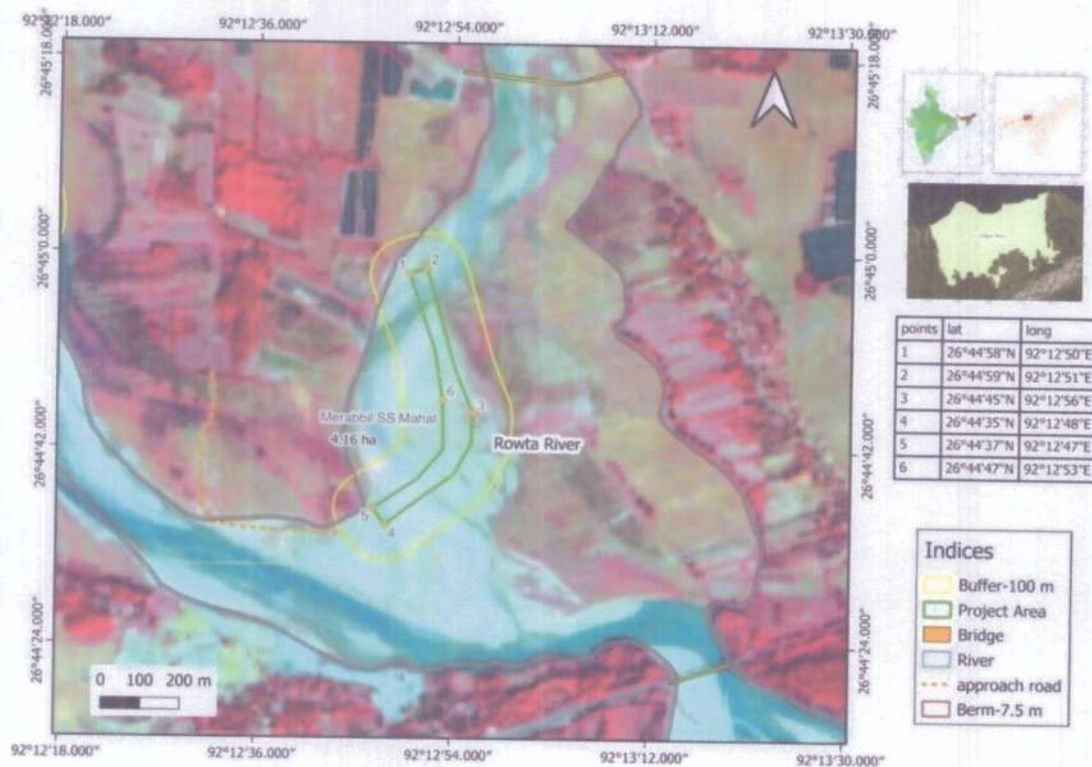
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Udalguri, BTC

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Data Source: LISS-IV Resolution: 5.8 m

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### Pasnoi River

| Sl No | Description   | Area in Ha. | Percentage of Total area (In %) | Cumulative % |
|-------|---|-------------|---------------------------------|--------------|
| 1     | River area  | 783         | 100                             | 100          |
| 2     | Area granted for mining   | 16.82       | 2.14                            | 2.14         |
| 3     | No of lease not recommended for future Quarry Lease grant due extracted 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 | 0.58        | 0.05                            | 0.05         |
| 4     | Area not recommended for future Quarry Lease grant due to 100 m Buffer from any railway line or bridge  | 0.0         | 0.0                             | 0.0          |
| 5     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the outer periphery of the defined limits of any village, habitation, National Highway, State highway and other roads   | 3.88        | 0.33                            | 0.33         |
| 6     | Area not recommended for future Quarry Lease grant due to non-availability of un-mined block 50 meters width after every block of 1,000 meters over which is undertaken or at such distance as may be directed by the competent authority   | 0.0         | 0.0                             | 0.0          |
| 7     | Area not recommended for future Quarry Lease grant due to 100 m Buffer Local Minor Check Dam  | 0.0         | 0.0                             | 0.0          |
| 8     | Area not recommended for future Quarry Lease grant due to 500 m buffer from the irrigation Structure/ Reservoir & Submergence Area  | 0.0         | 0.0                             | 0.0          |
| 9     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Canal/ Tank/ Lake   | 0.0         | 0.0                             | 0.0          |
| 10    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Ropeway or ropeway trestle or station   | 0.0         | 0.0                             | 0.0          |
| 11    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Heritage site, Protected monuments  | 0.0         | 0.0                             | 0.0          |
| 12    | Area not recommended for future Quarry Lease grant due to Eco-sensitive Zone  | 0.0         | 0.0                             | 0.0          |
| 13    | Applicability of Cluster (Other lease within 500 meter radius   | 0.0         | 0.0                             | 0.0          |

  
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District Survey Report (DSR) of Udalguri District

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Table showing mining permit/contract area Pasnoi River

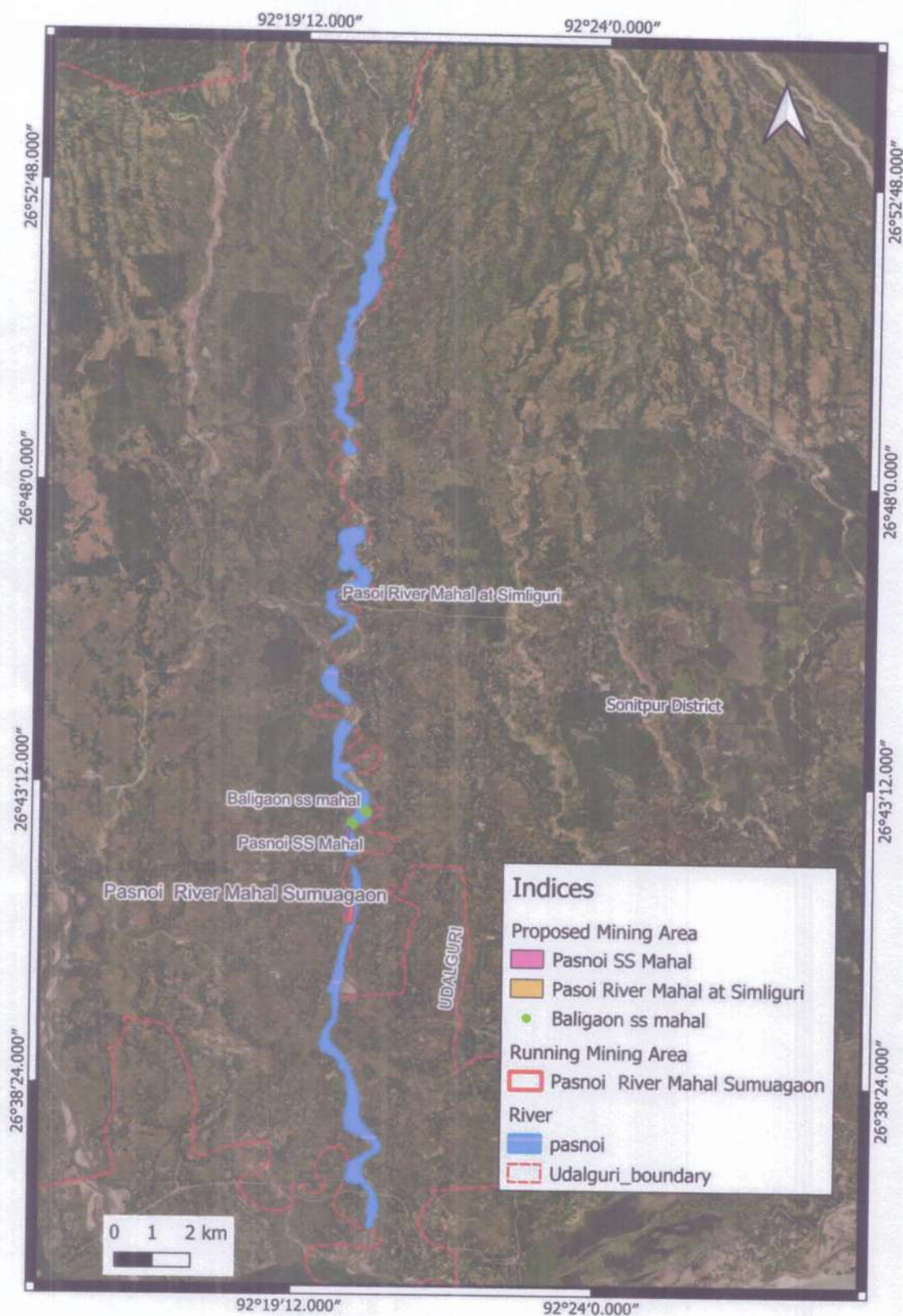
| Sl. No | Name of the mines             | Area (in ha) | Geolocation  |  | Mineral Name | Existing/proposed |
|--------|-------------------------------|--------------|--|--|--------------|-------------------|
| 1.     | Pasnoi River Village Samugaon | 4.85 Ha      | N-26°43'19.97"<br>N-26°43'47.39"<br>N-26°43'23.34"<br>N-26°43'23.91" | E-92°13'56.86"<br>E-92°13'42.87"<br>E-92°13'35.78"<br>E-92°13'38.22" | Sand & Stone | Running           |
| 2.     | Pasnoi SS Mahal               | 3.88 Ha      | N-26°46'56.44"<br>N-26°46'56.21"<br>N-26°46'40.58"<br>N-26°46'39.14" | E-92°19'56.33"<br>E-92°19'58.97"<br>E-92°19'59.48"<br>E-92°19'59.46" | Sand & Silt  | Proposed          |
| 3.     | Pasnoi River Simliguri        | 4.09 Ha      | N-26°51'40.40"<br>N-26°49'32.80"<br>N-26°51'40.10"<br>N-26°49'31.80" | E-92°20'15.20"<br>E-92°19'48.70"<br>E-92°20'18.20"<br>E-92°19'52.20" | Sand & Stone | Proposed          |
| 4.     | Baligaon SS Mahal             | 4.00 Ha      | N-26°42'35.51"<br>N-26°42'34.07"<br>N-26°42'45.09"<br>N-26°42'46.48" | E-92°20'05.16"<br>E-92°20'06.77"<br>E-92°20'19.96"<br>E-92°20'17.67" | Sand & Silt  | Proposed          |

  
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Dhansiri Forest Division  
Udalguri, BTC



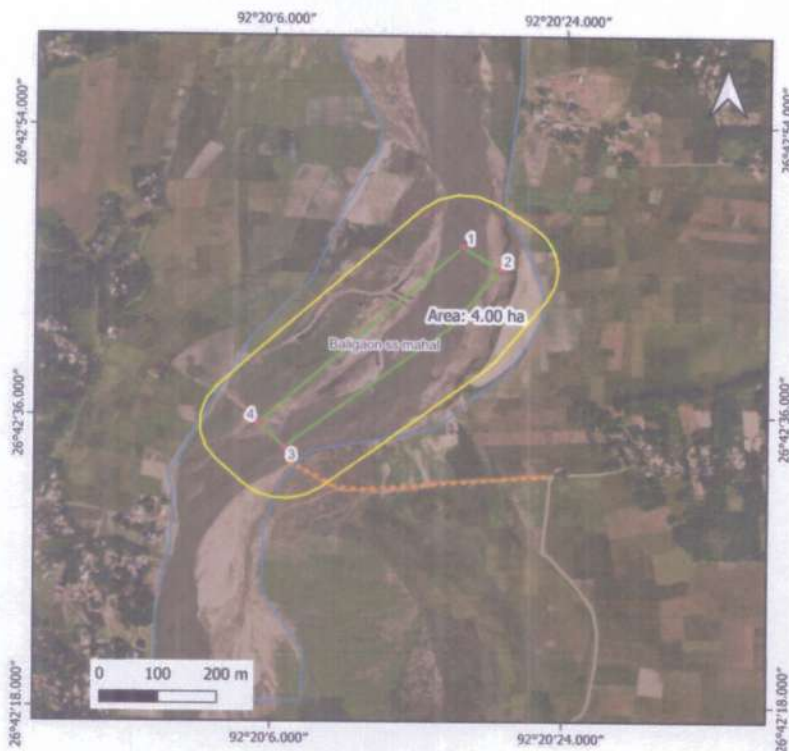


Map 11.13: Buffer map of mining permit/contract areas of Pasnoi River



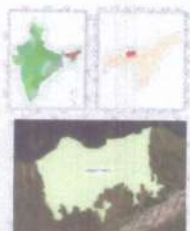
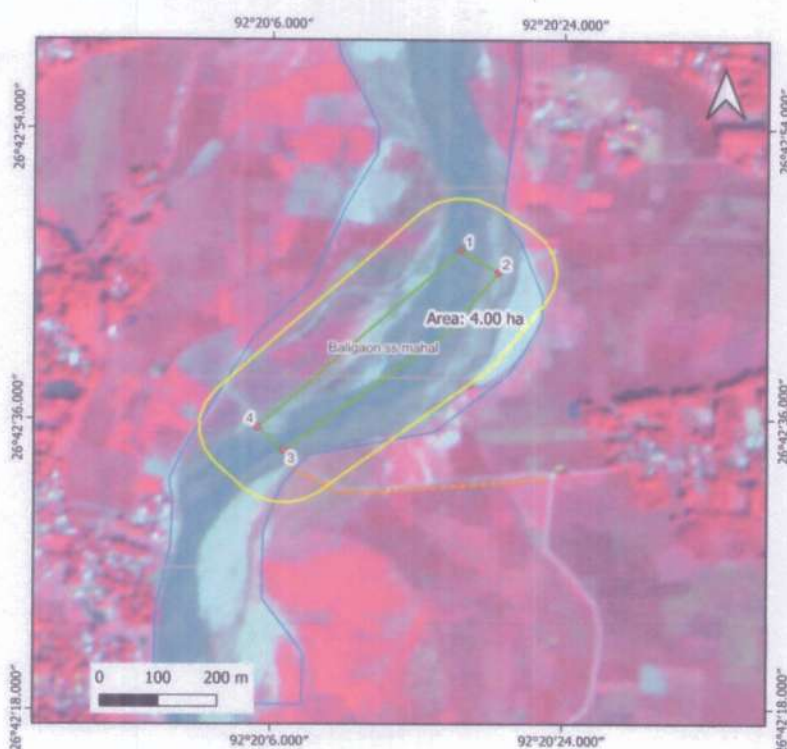
Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC





| points | lat            | long           |
|--------|----------------|----------------|
| 1      | 26°42'46.48\"N | 92°20'17.67\"E |
| 2      | 26°42'45.09\"N | 92°20'19.96\"E |
| 3      | 26°42'34.07\"N | 92°20'6.77\"E  |
| 4      | 26°42'35.51\"N | 92°20'5.16\"E  |

| Indices |               |
|---------|---------------|
|         | Buffer-100 m  |
|         | River         |
|         | Project Area  |
|         | approach road |



| points | lat            | long           |
|--------|----------------|----------------|
| 1      | 26°42'46.48\"N | 92°20'17.67\"E |
| 2      | 26°42'45.09\"N | 92°20'19.96\"E |
| 3      | 26°42'34.07\"N | 92°20'6.77\"E  |
| 4      | 26°42'35.51\"N | 92°20'5.16\"E  |

| Indices |               |
|---------|---------------|
|         | Buffer-100 m  |
|         | River         |
|         | Project Area  |
|         | approach road |

Data Source: LISS-IV Resolution: 5.8 m

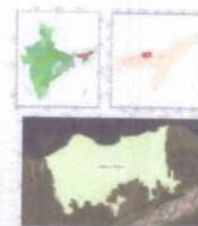
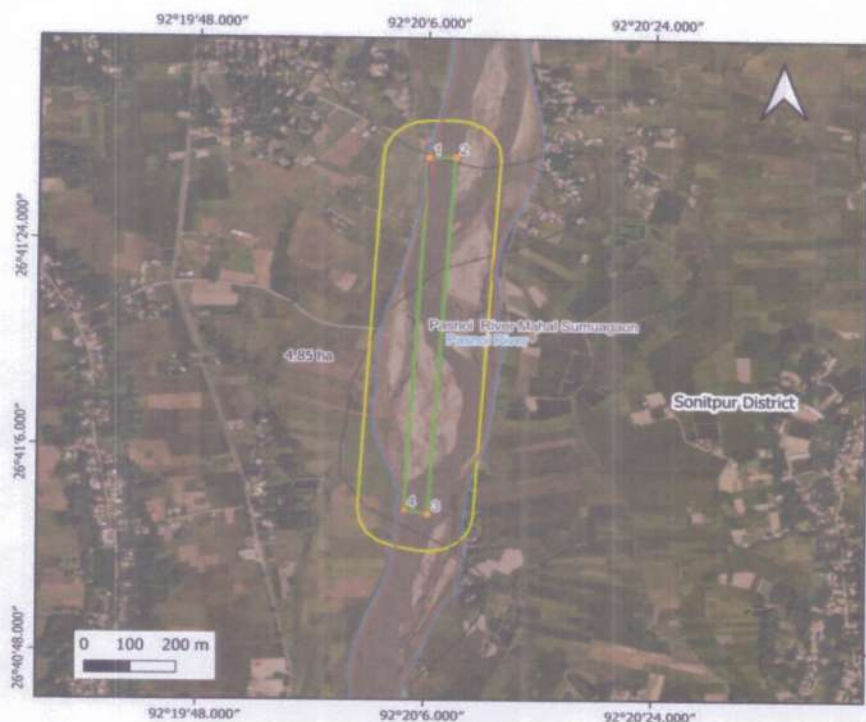
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Dhansiri Forest Division  
Udalguri, BTC

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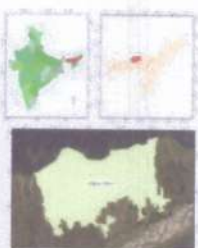
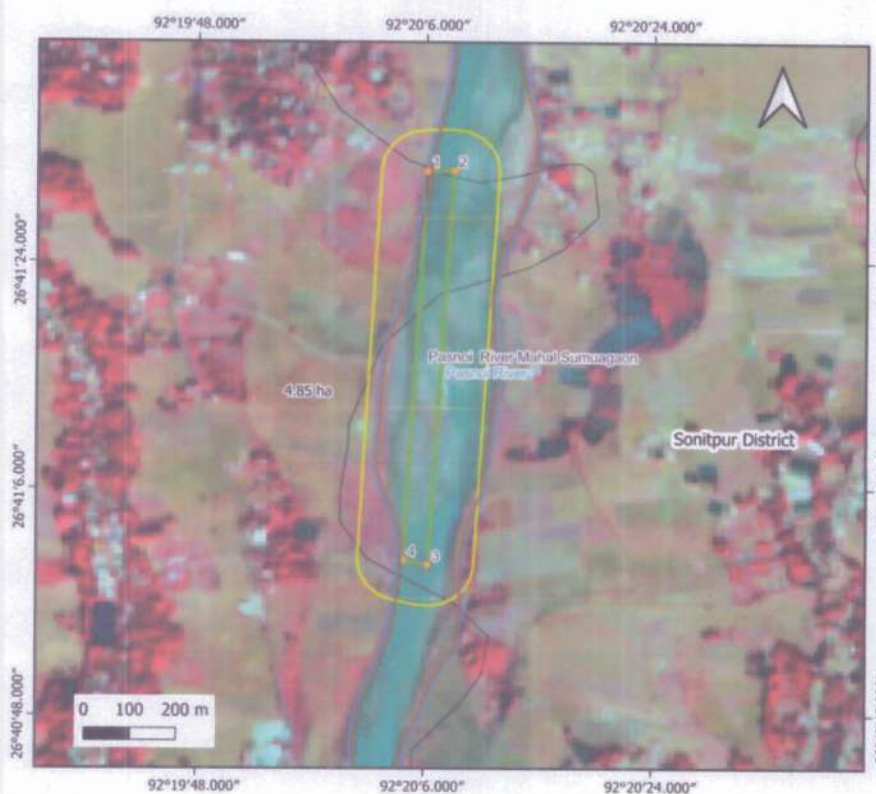




| points | lat        | long      |
|--------|------------|-----------|
| 1      | 26°41'31"N | 92°20'6"E |
| 2      | 26°41'31"N | 92°20'8"E |
| 3      | 26°41'0"N  | 92°20'6"E |
| 4      | 26°41'0"N  | 92°20'4"E |

#### Indices

- Buffer-100 m
- Project Area
- River
- No mining zone (Berm-0.038 ha)
- Berm-7.5 m
- Udalguri\_boundary



| points | lat        | long      |
|--------|------------|-----------|
| 1      | 26°41'31"N | 92°20'6"E |
| 2      | 26°41'31"N | 92°20'8"E |
| 3      | 26°41'0"N  | 92°20'6"E |
| 4      | 26°41'0"N  | 92°20'4"E |

#### Indices

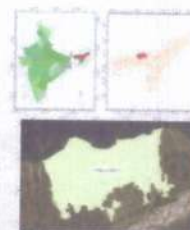
- Buffer-100 m
- Project Area
- River
- No mining zone (Berm-0.038 ha)
- Berm-7.5 m
- Udalguri\_boundary

Data Source: LISS-IV, Resolution: 5.8 m

*[Signature]*  
 Divisional Forest Officer,  
 Dhansiri Forest Division  
 Udalguri, BTC



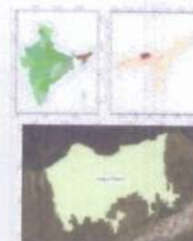
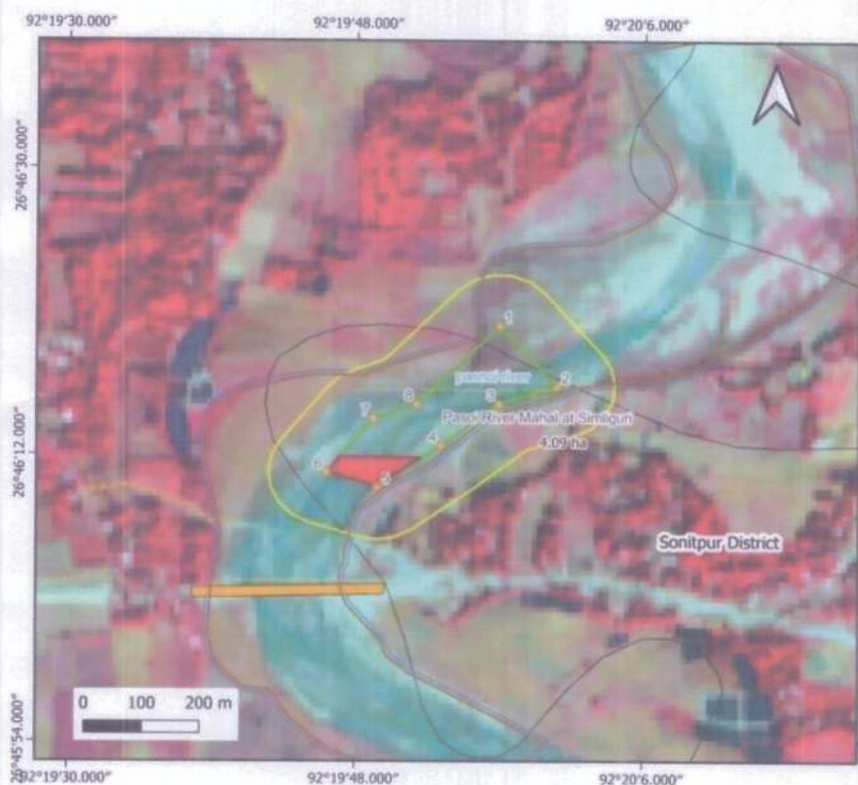




| points | lat        | long       |
|--------|------------|------------|
| 1      | 26°46'20"N | 92°19'57"E |
| 2      | 26°46'16"N | 92°20'1"E  |
| 3      | 26°46'15"N | 92°19'57"E |
| 4      | 26°46'13"N | 92°19'53"E |
| 5      | 26°46'10"N | 92°19'49"E |
| 6      | 26°46'11"N | 92°19'46"E |
| 7      | 26°46'14"N | 92°19'49"E |
| 8      | 26°46'15"N | 92°19'52"E |

#### Indices

- Buffer-100 m
- Project Area
- Bridge
- River
- approach road
- No mining zone (Bridge-0.58 ha)
- Udalguri boundary



| points | lat        | long       |
|--------|------------|------------|
| 1      | 26°46'20"N | 92°19'57"E |
| 2      | 26°46'16"N | 92°20'1"E  |
| 3      | 26°46'15"N | 92°19'57"E |
| 4      | 26°46'13"N | 92°19'53"E |
| 5      | 26°46'10"N | 92°19'49"E |
| 6      | 26°46'11"N | 92°19'46"E |
| 7      | 26°46'14"N | 92°19'49"E |
| 8      | 26°46'15"N | 92°19'52"E |

#### Indices

- Buffer-100 m
- Project Area
- Bridge
- River
- approach road
- No mining zone (Bridge-0.58 ha)
- Udalguri boundary

Data Source: LISS-IV, Resolution: 5.8 m

Divisional Forest Officer,  
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Udalguri, BTC

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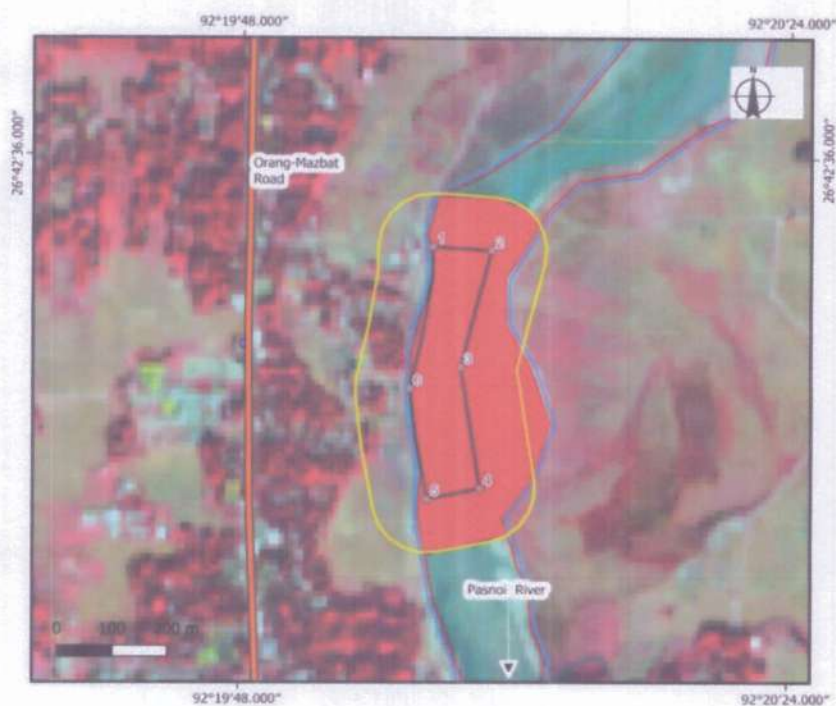


| Poles | Lat         | Long        |
|-------|-------------|-------------|
| 1     | 26°42'31\"N | 92°20'1\"E  |
| 2     | 26°42'30\"N | 92°20'4\"E  |
| 3     | 26°42'23\"N | 92°20'2\"E  |
| 4     | 26°42'16\"N | 92°20'4\"E  |
| 5     | 26°42'15\"N | 92°20'0\"E  |
| 6     | 26°42'22\"N | 92°19'59\"E |

Pasnoi SS Mahal  
Area: 3.88 ha

#### Indices

- Project Area
- Berm ( 7.5 m )
- Buffer ( 100 m )
- River
- No Zone
- Road



| Poles | Lat         | Long        |
|-------|-------------|-------------|
| 1     | 26°42'31\"N | 92°20'1\"E  |
| 2     | 26°42'30\"N | 92°20'4\"E  |
| 3     | 26°42'23\"N | 92°20'2\"E  |
| 4     | 26°42'16\"N | 92°20'4\"E  |
| 5     | 26°42'15\"N | 92°20'0\"E  |
| 6     | 26°42'22\"N | 92°19'59\"E |

Pasnoi SS Mahal  
Area: 3.88 ha

#### Indices

- Project Area
- Berm ( 7.5 m )
- Buffer ( 100 m )
- River
- No Zone
- Road

Data Source: LISS-IV Resolution: 5.8 m

Divisional Forest Officer,  
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Ph: 7086020945/ 9435192896/ 9395005840

E-mail: contact@rlnt.in ; reliantfoundation2018@gmail.com, Website : www.rlnt.in

Discipline: Mechanical Testing

Group: Building Materials

Date of issue of Report: 30-12-2024

| TEST REPORT |                          |   |
|-------------|--------------------------|---|
| 1           | Name of Client:          | The Divisional Forest Officer, Dhansiri Division, Udalguri                                  |
| 2           | Name of project:         | District Survey Report, Udalguri District   |
| 3           | Type of sample:          | Sand, Gravel & Slit   |
| 4           | Condition of Sample:     | Ok  |
| 5           | Date of Sample Received: | 16-12-2024  |
| 6           | Source of Material:      | Pasnoi River  |
| 7           | Location:                | Simliguri   |
| 8           | Test Sample Supplied by: | Customer  |
| 9           | Test Done at :           | " At the Laboratory located in the basement of our premises at the above mentioned address" |

Test Results :Next Page

Page: 1 of 2



  
Divisional Forest Officer,  
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Ph: 7086020945/9435192896/9395005840

E-mail: contact@rlnt.in ; reliantfoundation2018@gmail.com, Website : www.rlnt.in

Discipline: Mechanical Testing  
Test Report No: 2412165419-1  
Sample ID: DFO/DDU/241216/SGS

Group: Building Materials

Name of Test: **Gradation**  
Type of Sample : **Sand , Gravel & Silt**  
Source: **Pasnoi River**


Test Method: IS 2386-Part-I-1963  
(Reaffirmed 2021)  
Date of testing: 18-12-2024 to 18-12-2024  
Environmental Conditions during test:  
Temperature : 22.5°C , Humidity: 64%

| TEST RESULTS       |                      |                        |                          |              |
|--------------------|----------------------|------------------------|--------------------------|--------------|
| Is Sieve Size (mm) | Weight Retained (gm) | % Weight Retained (gm) | Cumulative % of Retained | % of Passing |
| 300                | 0                    | 0.00                   | 0.00                     | 100.00       |
| 75                 | 0                    | 0.00                   | 0.00                     | 100.00       |
| 20                 | 738                  | 36.90                  | 36.90                    | 63.10        |
| 4.75               | 434                  | 21.70                  | 58.60                    | 41.40        |
| 0.075              | 669                  | 33.45                  | 92.05                    | 7.95         |
| Pan                | 159                  |                        |                          |              |
| Total              | 2000                 |                        |                          |              |

% Boulder = 0.00 %  
% Gravel = 58.60 %  
% Sand = 33.45 %  
% Silt = 7.95 %

  
Authorized Signatory

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Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC

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Reliant House: Sun Polo colony, Dipar Boro Path

Ahomgaon, Garchuk, Guwahati- 781035 (Assam)

Ph: 7086020945/ 9435192896/ 9395005840

E-mail: contact@rint.in ; reliantfoundation2018@gmail.com, Website : www.rint.in

Discipline: Mechanical Testing

Group: Building Materials

Date of issue of Report: 30-12-2024

| TEST REPORT |                          |  |
|-------------|--------------------------|--|
| 1           | Name of Client:          | The Divisional Forest Officer, Dhansiri Division, Udalguri                                   |
| 2           | Name of project:         | District Survey Report, Udalguri District  |
| 3           | Type of sample:          | Sand, Gravel & Silt  |
| 4           | Condition of Sample:     | Ok   |
| 5           | Date of Sample Received: | 16-12-2024   |
| 6           | Source of Material:      | Pasnoi River   |
| 7           | Location:                | Simliguri  |
| 8           | Test Sample Supplied by: | Customer   |
| 9           | Test Done at:            | " At the Laboratory located in the basement of our premises at the above mentioned address " |

Test Results : Next Page

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Ph: 7086020945/9435192896/9395005840

E-mail: contact@rlnt.in ; reliantfoundation2018@gmail.com, Website : www.rlnt.in

Discipline: Mechanical Testing  
Test Report No: 2412165419-2  
Sample ID: DFO/DDU/241216/SGS

Group: Building Materials

1. Name of Test: Specific Gravity

Test Method: IS 2386-Part-III-1963  
(Reaffirmed 2021)

Type of Sample: Sand, Gravel & Silt

Date of testing: 17-12-2024 to 19-12-2024

Source: Pasnai River


Environmental Conditions during test:  
Temperature : 21.5°C, Humidity: 70%

| TEST RESULTS |   |   |  |                                  |                              |
|--------------|---|---|--|----------------------------------|------------------------------|
| Sl. No.      | Weight of Saturated Surface Dry Sample (gm) | Weight of Pycnometer containing Sample & filled with Distilled Water (gm) | Weight of Pycnometer filled with Water only (gm) | Weight of Oven Dried Sample (gm) | Specific Gravity [D/A-(B-C)] |
|              | A   | B   | C  | D                                |                              |
| I            | 560.5                                       | 2058.0  | 1706.5   | 557.0                            | 2.67                         |

Remarks : Calculations are As per IS:2386-Part-III -1963 Reaffirmed 2021 ,Clause No. 2.4.3, No limits Specified. Test Results are Satisfactory.

  
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Ahomgaon, Garchuk, Guwahati- 781035 (Assam)

Ph: 7086020945/ 9435192896/ 9395005840

E-mail: contact@rint.in ; reliantfoundation2018@gmail.com, Website : www.rint.in

Discipline: Mechanical Testing  
Test Report No: 2412165419.3  
Sample ID: DFO/DDU/241216/SGS

Group: Building Materials

Date of issue of Report: 30-12-2024

| TEST REPORT |                          |   |
|-------------|--------------------------|---|
| 1           | Name of Client:          | The Divisional Forest Officer, Dhansiri Division, Udalguri                                  |
| 2           | Name of project:         | District Survey Report, Udalguri District   |
| 3           | Type of sample:          | Sand, Gravel & Silt   |
| 4           | Condition of Sample:     | Ok  |
| 5           | Date of Sample Received: | 16-12-2024  |
| 6           | Source of Material:      | Pasnoi River  |
| 7           | Location:                | Simliguri   |
| 8           | Test Sample Supplied by: | Customer  |
| 9           | Test Done at :           | " At the Laboratory located in the basement of our premises at the above mentioned address" |

1. Name of Test: Bulk Density of Sand , Gravel & Silt  
Type of Test: Loose  
Source: Pasnoi River

Test Method: IS 2386-Part-III-1963 (Reaffirmed 2021)

Date of testing: 18-12-2024 to 18-12-2024

Environmental Conditions during test:

Temperature : 22.5°C, Humidity: 64%

| TEST RESULTS |   |                                      |  |
|--------------|---|--------------------------------------|--|
| Sample       | Weight of Aggregate to fill the Mould<br>in (Kg)<br>(A) | Volume of Mould<br>in (Litre)<br>(B) | Bulk Density<br>in (Kg/Litre)<br>[A/B] |
| 1            | 24.250  | 15.379                               | 1.58                                   |

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Divisional Forest Officer,  
Dhansiri Forest Division  
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### Pagla River

| Sl No | Description   | Area in Ha. | Percentage of Total area (In %) | Cumulative % |
|-------|---|-------------|---------------------------------|--------------|
| 1     | River area  | 475         | 100                             | 100          |
| 2     | Area granted for mining   | 4.80        | 1.01                            | 1.01         |
| 3     | No of lease not recommended for future Quarry Lease grant due extracted 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 | 0.0         | 0.0                             | 0.0          |
| 4     | Area not recommended for future Quarry Lease grant due to 100 m Buffer from any railway line or bridge  | 0           | 0                               | 0.0          |
| 5     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the outer periphery of the defined limits of any village, habitation, National Highway, State highway and other roads   | 0.0         | 0.0                             | 0.0          |
| 6     | Area not recommended for future Quarry Lease grant due to non-availability of un-mined block 50 meters width after every block of 1,000 meters over which is undertaken or at such distance as may be directed by the competent authority   | 0.0         | 0.0                             | 0.0          |
| 7     | Area not recommended for future Quarry Lease grant due to 100 m Buffer Local Minor Check Dam  | 0.0         | 0.0                             | 0.0          |
| 8     | Area not recommended for future Quarry Lease grant due to 500 m buffer from the irrigation Structure/ Reservoir & Submergence Area  | 0.0         | 0.0                             | 0.0          |
| 9     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Canal/ Tank/ Lake   | 0.0         | 0.0                             | 0.0          |
| 10    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Ropeway or ropeway trestle or station   | 0.0         | 0.0                             | 0.0          |
| 11    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Heritage site, Protected monuments  | 0.0         | 0.0                             | 0.0          |
| 12    | Area not recommended for future Quarry Lease grant due to Eco-sensitive Zone  | 0.0         | 0.0                             | 0.0          |
| 13    | Applicability of Cluster (Other lease within 500 meter radius   | 0.0         | 0.0                             | 0.0          |

  
 Divisional Forest Officer,  
 Dhansiri Forest Division  
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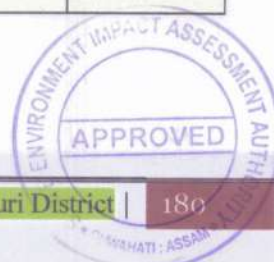


Table showing mining permit/contract area Pagla River

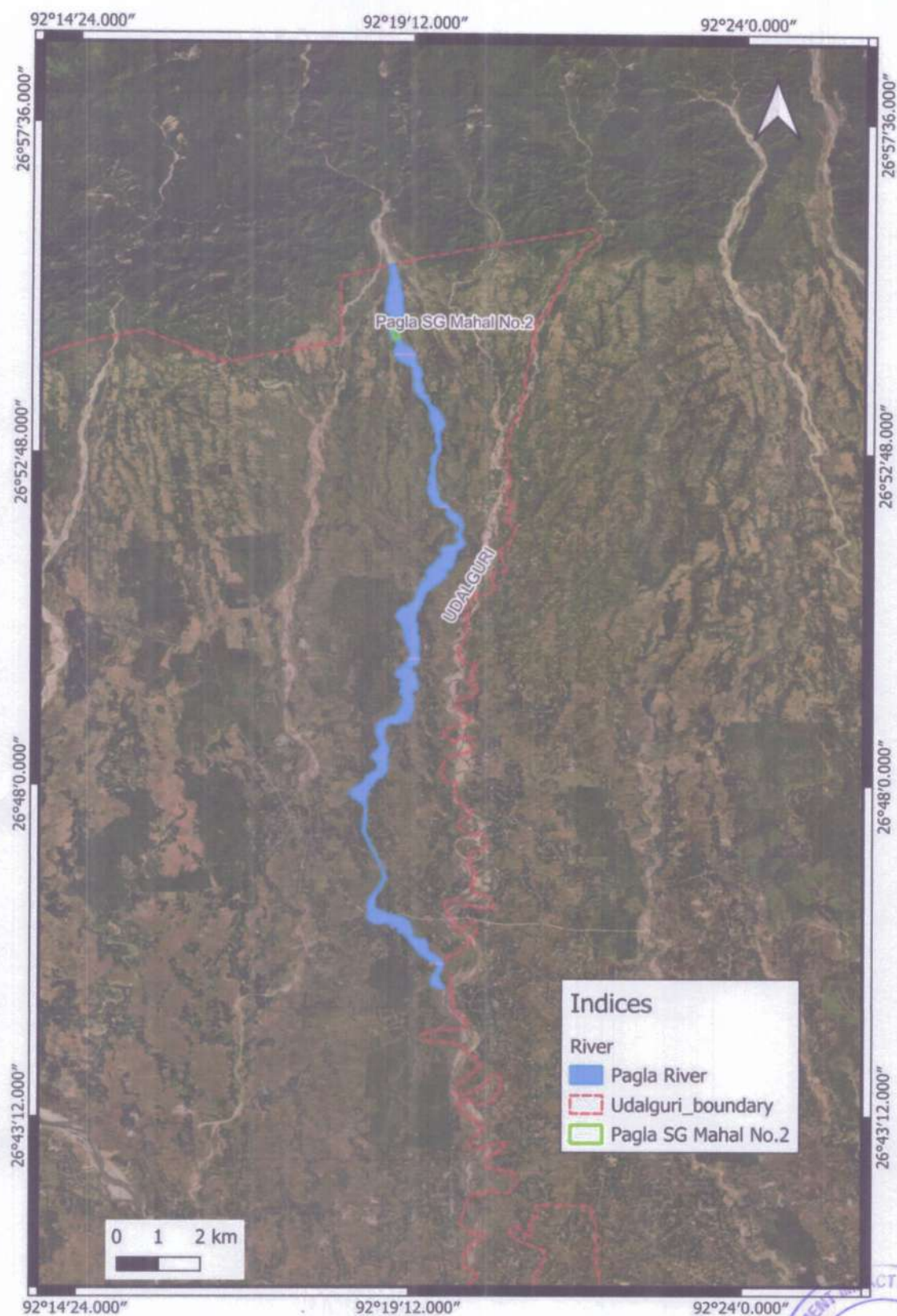
| Sl. No | Name of the mines   | Area (in ha) | Geolocation  |  | Mineral Name  | Existing/proposed |
|--------|---------------------|--------------|--|--|---------------|-------------------|
| 1.     | Pagla SG Mahal No.2 | 4.80 Ha      | N-26°54'40.10"<br>N-26°54'40.60"<br>N-26°54'27.98"<br>N-26°54'28.50" | E-92°18'53.20"<br>E-92°18'58.40"<br>E-92°18'56.10"<br>E-92°19'00.67" | Sand & Gravel | Proposed          |

  
Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC





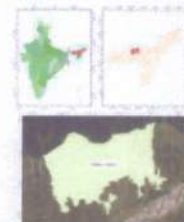
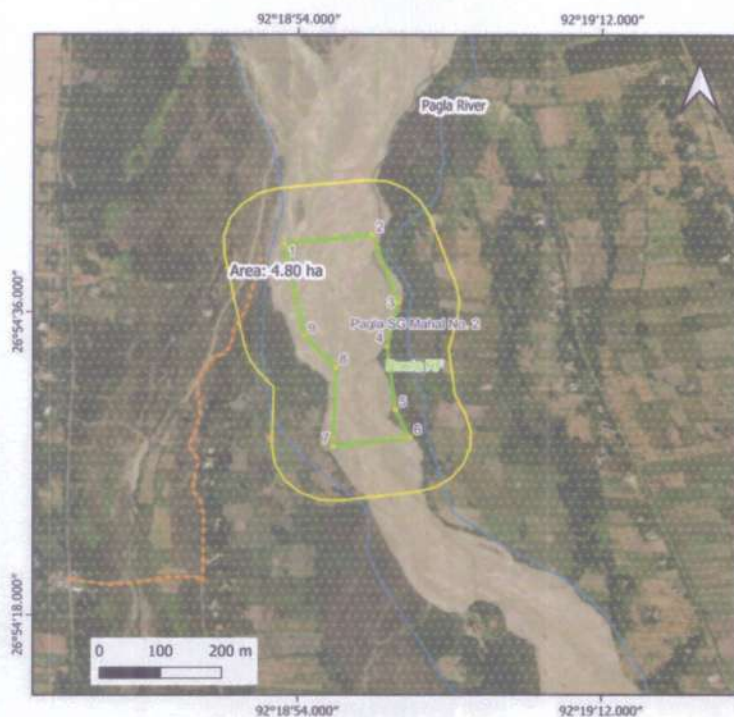
Map 11.14 Buffer map of mining permit/contract areas of Pagla River



Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC

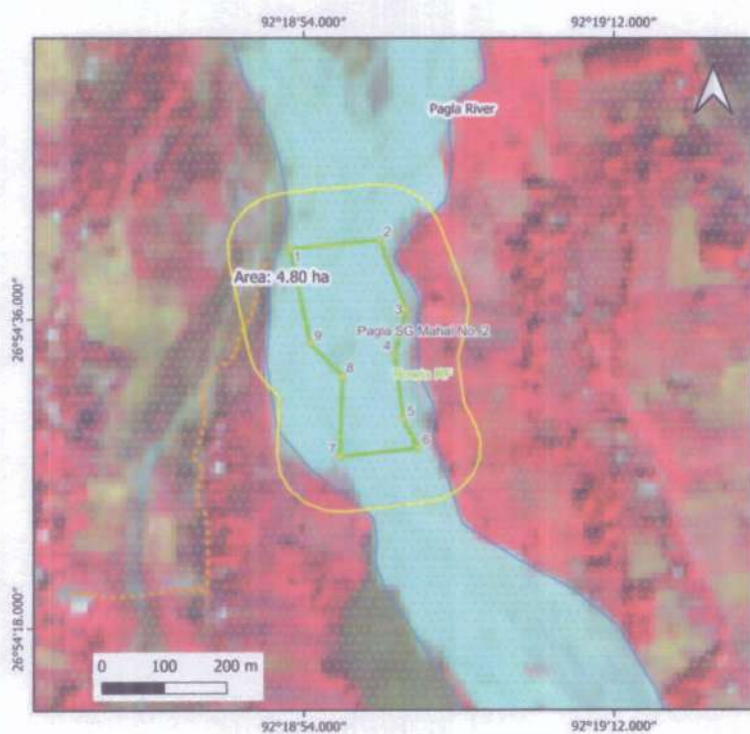






| points | lat           | long          |
|--------|---------------|---------------|
| 1      | 26°54'40.10"N | 92°18'53.20"E |
| 2      | 26°54'40.60"N | 92°18'58.40"E |
| 3      | 26°54'36.57"N | 92°18'59.95"E |
| 4      | 26°54'33.96"N | 92°18'59.27"E |
| 5      | 26°54'30.18"N | 92°18'59.79"E |
| 6      | 26°54'28.51"N | 92°19'0.67"E  |
| 7      | 26°54'27.98"N | 92°18'56.10"E |
| 8      | 26°54'32.68"N | 92°18'56.25"E |
| 9      | 26°54'34.56"N | 92°18'54.40"E |

| Indices |                                    |
|---------|------------------------------------|
|         | Buffer-100 m                       |
|         | River                              |
|         | Reserved Forest                    |
|         | Project Area                       |
|         | Area under                         |
|         | Sonal Rupai Wildlife Sanctuary ESZ |
|         | approach road                      |
|         | Area under Nameri National Park    |



| points | lat           | long          |
|--------|---------------|---------------|
| 1      | 26°54'40.10"N | 92°18'53.20"E |
| 2      | 26°54'40.60"N | 92°18'58.40"E |
| 3      | 26°54'36.57"N | 92°18'59.95"E |
| 4      | 26°54'33.96"N | 92°18'59.27"E |
| 5      | 26°54'30.18"N | 92°18'59.79"E |
| 6      | 26°54'28.51"N | 92°19'0.67"E  |
| 7      | 26°54'27.98"N | 92°18'56.10"E |
| 8      | 26°54'32.68"N | 92°18'56.25"E |
| 9      | 26°54'34.56"N | 92°18'54.40"E |

| Indices |                                    |
|---------|------------------------------------|
|         | Buffer-100 m                       |
|         | River                              |
|         | Reserved Forest                    |
|         | Project Area                       |
|         | Area under                         |
|         | Sonal Rupai Wildlife Sanctuary ESZ |
|         | approach road                      |
|         | Area under Nameri National Park    |

Data Source: LISS-IV Resolution: 5.8 m

Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC

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### Daisam River

| Sl No | Description   | Area in Ha. | Percentage of Total area (In %) | Cumulative % |
|-------|---|-------------|---------------------------------|--------------|
| 1     | River area  | 475         | 100                             | 100          |
| 2     | Area granted for mining   | 4.90        | 1.03                            | 1.03         |
| 3     | No of lease not recommended for future Quarry Lease grant due extracted 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 | 0.0         | 0.0                             | 0.0          |
| 4     | Area not recommended for future Quarry Lease grant due to 100 m Buffer from any railway line or bridge  | 0.0         | 0.0                             | 0.0          |
| 5     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the outer periphery of the defined limits of any village, habitation, National Highway, State highway and other roads   | 0.0         | 0.0                             | 0.0          |
| 6     | Area not recommended for future Quarry Lease grant due to non-availability of un-mined block 50 meters width after every block of 1,000 meters over which is undertaken or at such distance as may be directed by the competent authority   | 0.0         | 0.0                             | 0.0          |
| 7     | Area not recommended for future Quarry Lease grant due to 100 m Buffer Local Minor Check Dam  | 0.0         | 0.0                             | 0.0          |
| 8     | Area not recommended for future Quarry Lease grant due to 500 m buffer from the irrigation Structure/ Reservoir & Submergence Area  | 0.0         | 0.0                             | 0.0          |
| 9     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Canal/ Tank/ Lake   | 0.0         | 0.0                             | 0.0          |
| 10    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Ropeway or ropeway trestle or station   | 0.0         | 0.0                             | 0.0          |
| 11    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Heritage site, Protected monuments  | 0.0         | 0.0                             | 0.0          |
| 12    | Area not recommended for future Quarry Lease grant due to Eco-sensitive Zone  | 0.0         | 0.0                             | 0.0          |
| 13    | Applicability of Cluster (Other lease within 500 meter radius   | 0.0         | 0.0                             | 0.0          |



  
Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC

Table showing mining permit/contract area Daisam River

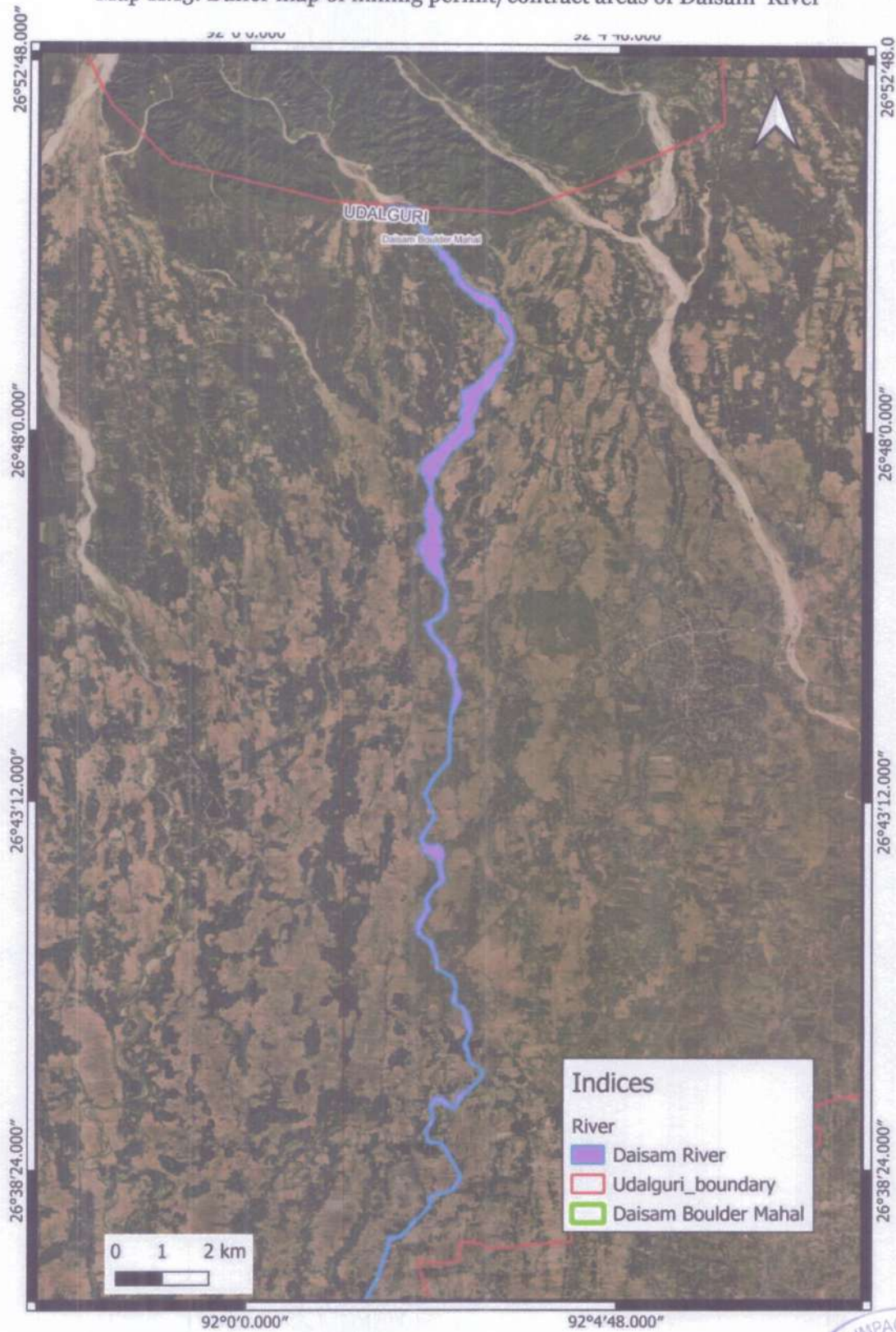
| Sl. No | Name of the mines    | Area (in ha) | Geolocation      |                  | Mineral Name | Existing/proposed |
|--------|----------------------|--------------|------------------|------------------|--------------|-------------------|
| 1.     | Daisam Boulder Mahal | 4.90 Ha      | N-26° 53' 34.40" | E-92° 07' 3.40"  | Boulder      | Proposed          |
|        |                      |              | N-26° 53' 32.10" | E-92° 06' 58.50" |              |                   |
|        |                      |              | N-26° 53' 23.70" | E-92° 07' 12.00" |              |                   |
|        |                      |              | N-26° 53' 21.80" | E-92° 07' 6.10"  |              |                   |

  
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Dhansiri Forest Division  
Udalguri, BTC





Map 11.15: Buffer map of mining permit/contract areas of Daisam River



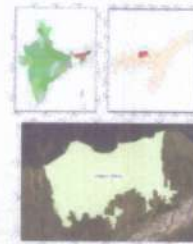
Divisional Forest Officer,  
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Udalguri, BTC

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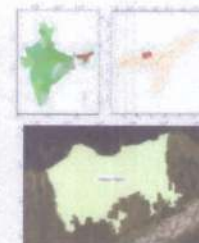
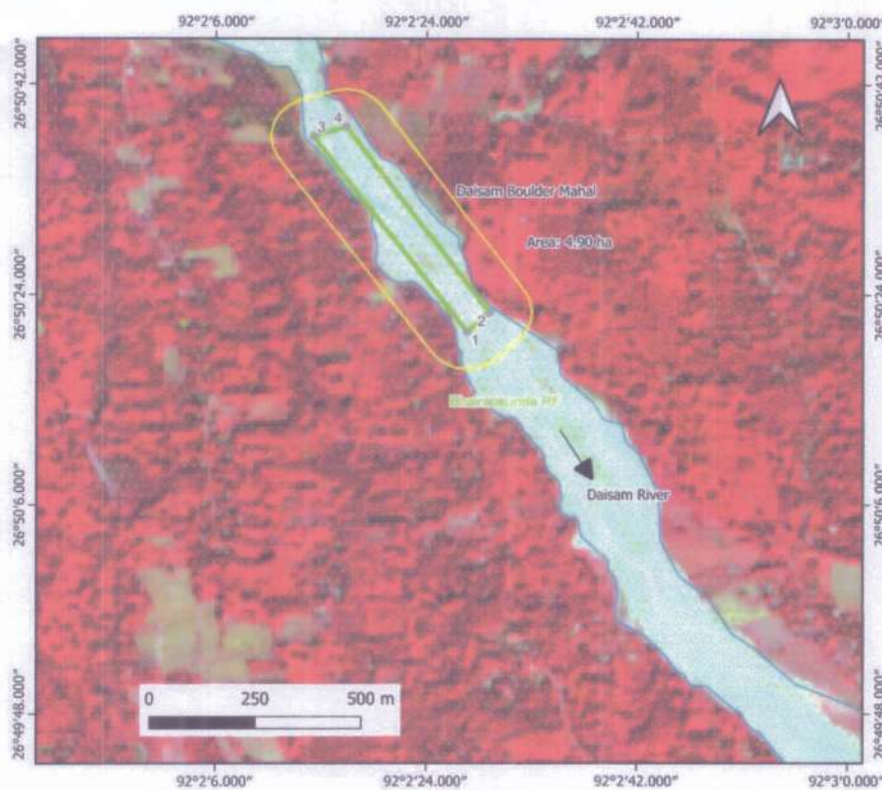




| points | lat           | long         |
|--------|---------------|--------------|
| 1      | 26°50'20.84"N | 92°2'27.49"E |
| 2      | 26°50'22.49"N | 92°2'29.41"E |
| 3      | 26°50'37.52"N | 92°2'14.31"E |
| 4      | 26°50'38.33"N | 92°2'17.12"E |

#### Indices

- Buffer-100 m
- Project Area
- River
- Reserve Forest



| points | lat           | long         |
|--------|---------------|--------------|
| 1      | 26°50'20.84"N | 92°2'27.49"E |
| 2      | 26°50'22.49"N | 92°2'29.41"E |
| 3      | 26°50'37.52"N | 92°2'14.31"E |
| 4      | 26°50'38.33"N | 92°2'17.12"E |

#### Indices

- Buffer-100 m
- Project Area
- River
- Reserve Forest

Data Source: LISS-IV Resolution: 5.8 m

Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC

District Survey Report (DSR) of Udalguri District


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### Khowrang River

| Sl No | Description   | Area in Ha. | Percentage of Total area (In %) | Cumulative % |
|-------|---|-------------|---------------------------------|--------------|
| 1     | River area  | 39.5        | 100                             | 100          |
| 2     | Area granted for mining   | 4.80        | 12.15                           | 12.15        |
| 3     | No of lease not recommended for future Quarry Lease grant due extracted 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 | 0.0         | 0.0                             | 0.0          |
| 4     | Area not recommended for future Quarry Lease grant due to 100 m Buffer from any railway line or bridge  | 0           | 0                               | 0.0          |
| 5     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the outer periphery of the defined limits of any village, habitation, National Highway, State highway and other roads   | 0.0         | 0.0                             | 0.0          |
| 6     | Area not recommended for future Quarry Lease grant due to non-availability of un-mined block 50 meters width after every block of 1,000 meters over which is undertaken or at such distance as may be directed by the competent authority   | 0.0         | 0.0                             | 0.0          |
| 7     | Area not recommended for future Quarry Lease grant due to 100 m Buffer Local Minor Check Dam  | 0.0         | 0.0                             | 0.0          |
| 8     | Area not recommended for future Quarry Lease grant due to 500 m buffer from the irrigation Structure/ Reservoir & Submergence Area  | 0.0         | 0.0                             | 0.0          |
| 9     | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Canal/ Tank/ Lake   | 0.0         | 0.0                             | 0.0          |
| 10    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Ropeway or ropeway trestle or station   | 0.0         | 0.0                             | 0.0          |
| 11    | Area not recommended for future Quarry Lease grant due to 100 m buffer from the Heritage site, Protected monuments  | 0.0         | 0.0                             | 0.0          |
| 12    | Area not recommended for future Quarry Lease grant due to Eco-sensitive Zone  | 0.0         | 0.0                             | 0.0          |
| 13    | Applicability of Cluster (Other lease within 500 meter radius   | 0.0         | 0.0                             | 0.0          |


  
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Udalguri, BTC

District Survey Report (DSR) of Udalguri District |



Table showing mining permit/contract area Khowrang River

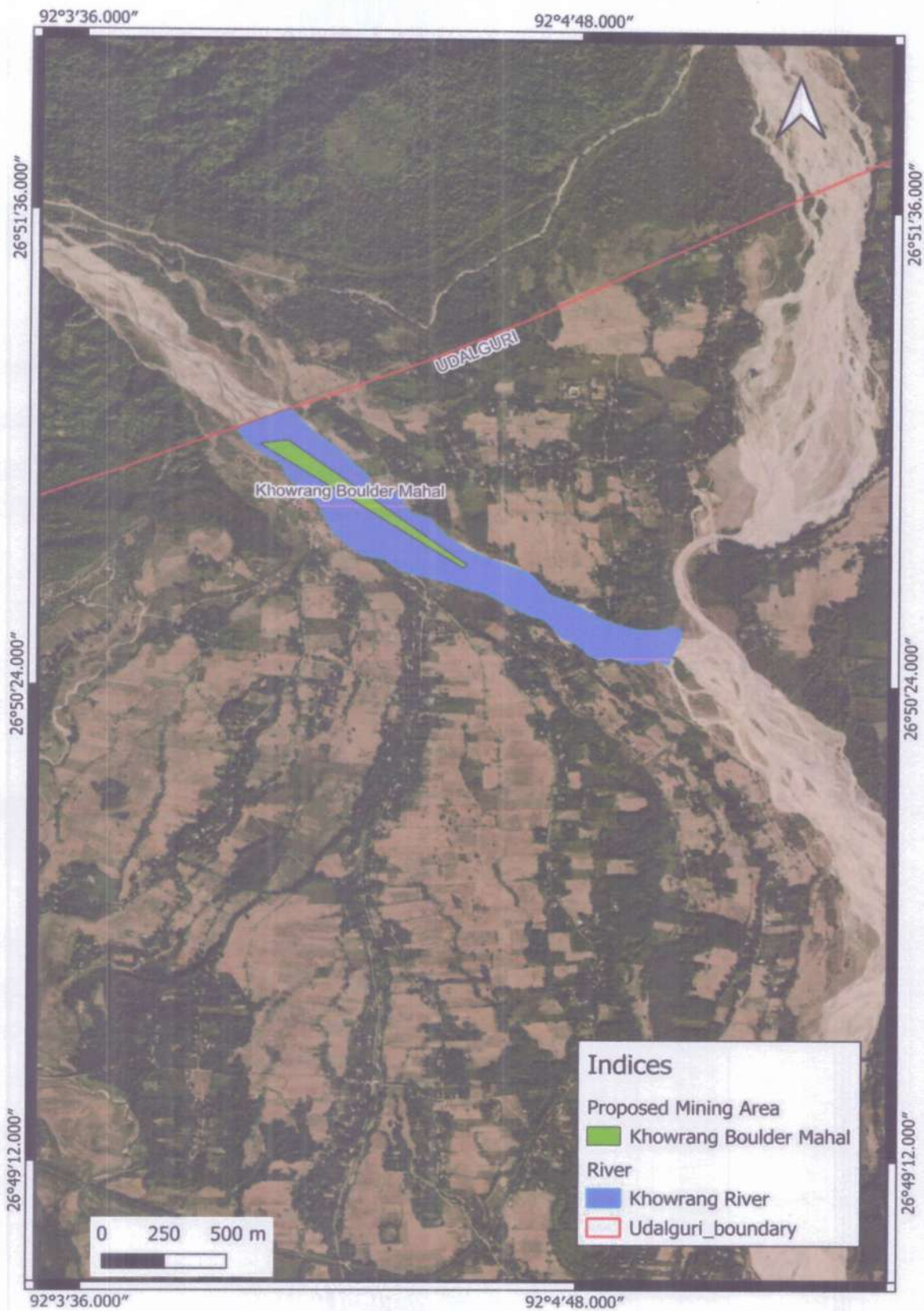
| Sl. No | Name of the mines      | Area (in ha) | Geolocation      |                  | Mineral Name | Existing/<br>proposed |
|--------|------------------------|--------------|------------------|------------------|--------------|-----------------------|
| 1.     | Khowrang Boulder Mahal | 4.80 Ha      | N-26° 51' 00.4"  | E-92° 04' 01.5"  | Boulder      | Proposed              |
|        |                        |              | N-26° 51' 0.92"  | E-92° 04' 5.56"  |              |                       |
|        |                        |              | N-26° 50' 40.9"  | E-92° 07' 27.7"  |              |                       |
|        |                        |              | N-26° 50' 42.29" | E-92° 04' 31.62" |              |                       |

  
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Udalguri, BTC





Map 11.16: Buffer map of mining permit/contract areas of Khowrang River



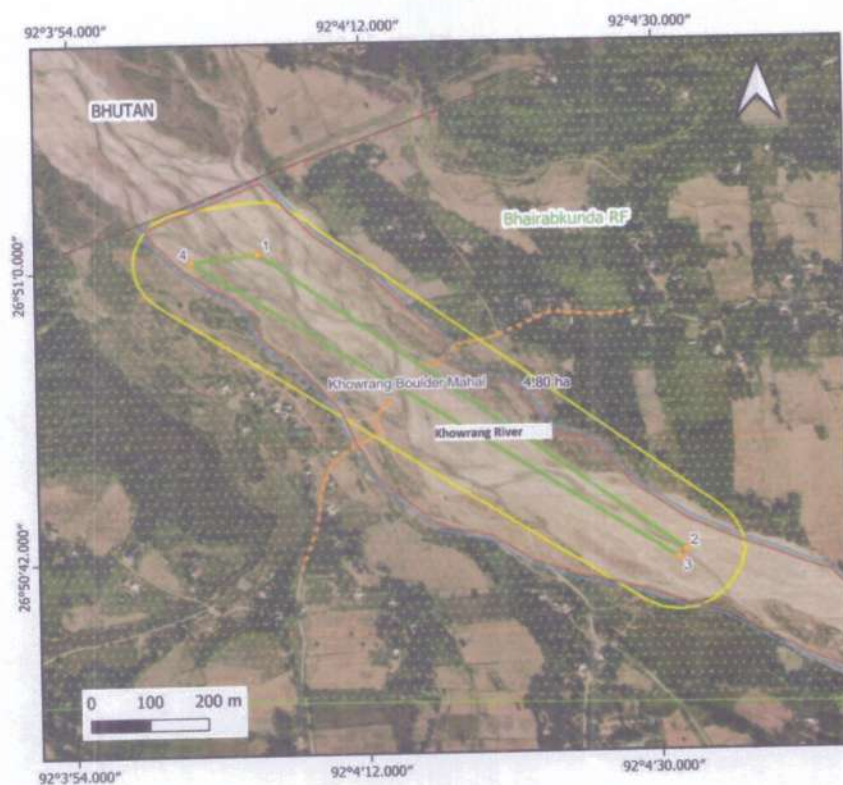
Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC

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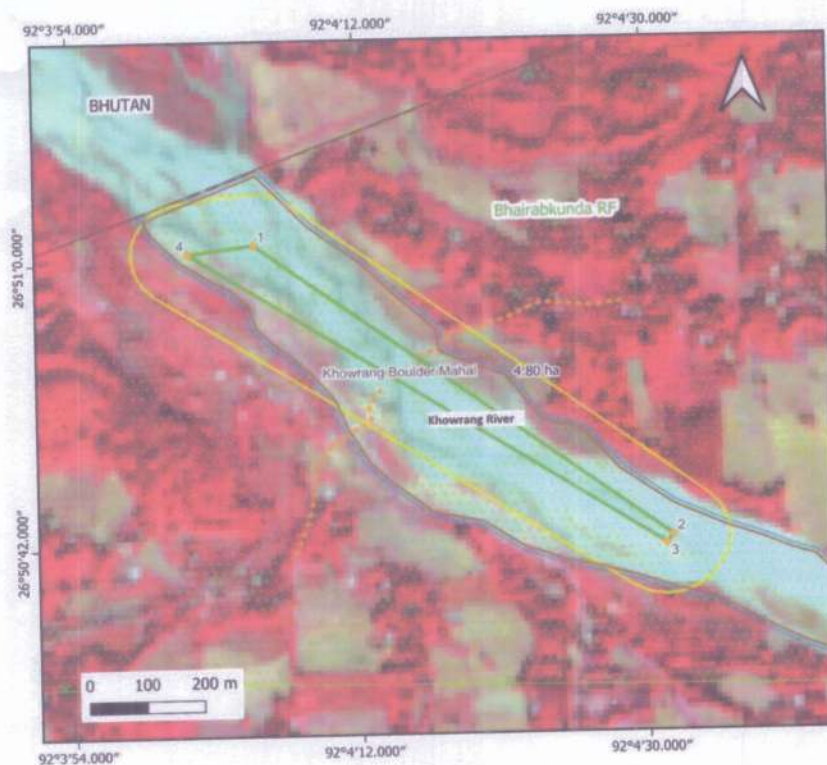






| points | lat        | long      |
|--------|------------|-----------|
| 1      | 26°51'1"N  | 92°4'6"E  |
| 2      | 26°50'42"N | 92°4'32"E |
| 3      | 26°50'42"N | 92°4'31"E |
| 4      | 26°51'1"N  | 92°4'1"E  |

| Indices |                     |
|---------|---------------------|
|         | Buffer-100 m        |
|         | Reserved Forest     |
|         | Project Area        |
|         | River               |
|         | approach road       |
|         | Udalguri_boundary   |
|         | India-Bhutan Border |



| points | lat        | long      |
|--------|------------|-----------|
| 1      | 26°51'1"N  | 92°4'6"E  |
| 2      | 26°50'42"N | 92°4'32"E |
| 3      | 26°50'42"N | 92°4'31"E |
| 4      | 26°51'1"N  | 92°4'1"E  |

| Indices |                     |
|---------|---------------------|
|         | Buffer-100 m        |
|         | Reserved Forest     |
|         | Project Area        |
|         | River               |
|         | approach road       |
|         | Udalguri_boundary   |
|         | India-Bhutan Border |

Data Source: LISS-IV Resolution: 5.8 m

Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC

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**Table showing environmental sensitivity and no mining zones of mining projects of Udalguri districts**

| SL NO. | LEASE NAME                                  | AREA ALLOTTED | AREA UNDER NO MINING ZONE DUE TO |                         |            |         |                |       | AREA TO BE REDUCED BY | FORMATION OF CLUSTER | COURT CASE IF ANY | AREA TO BE REDUCED TO |
|--------|---|---------------|----------------------------------|-------------------------|------------|---------|----------------|-------|-----------------------|----------------------|-------------------|-----------------------|
|        |   |               | Habitat/ road /railway           | Heritage site/ monument | Meandering | Bridge  | ESZ/ RF        | Berm  |                       |                      |                   |                       |
| 1      | Bhairabkund aBG Mahal No.1                  | 4.64 ha       | No                               | No                      | No         | No      | No             | No    |                       | No                   | No                | No                    |
| 2      | Bhairabkund aBG Mahal No.3                  | 4.85 ha       | No                               | No                      | No         | No      | YES (RF)       | No    |                       | No                   | No                | No                    |
| 3      | Tarajuli & Rangapani (North Side ) SS Mahal | 4.52 ha       | No                               | No                      | No         | No      | No             | No    |                       | Yes                  | No                | No                    |
| 4      | Tarajuli SG Mahal                           | 4.80 ha       | No                               | No                      | No         | No      | No             | No    |                       | Yes                  | No                | No                    |
| 5      | Rangapani SS Mahal                          | 4.0 ha        | No                               | No                      | No         | No      | No             | No    |                       | No                   | No                | No                    |
| 6      | Dhansiri SG Mahal No.1                      | 4.48 ha       | No                               | No                      | No         | No      | No             | No    |                       | No                   | No                | No                    |
| 7      | Dhansiri SG Mahal                           | 4.61 ha       | No                               | No                      | No         | 0.49 ha | No             | No    | 0.49 ha               | No                   | No                | 4.12                  |
| 8      | Rowta Bagan SG Mahal                        | 4.50 ha       | No                               | No                      | No         | No      | No             |       |                       | No                   | No                | No                    |
| 9      | Lower Dhansiri SS Mahal part-B              | 4.88 ha       | No                               | No                      | No         | No      | No             |       |                       | No                   | No                | No                    |
| 10     | Monai Boulder Gravel Mahal                  | 3.65 ha       | No                               | No                      | No         | 2.71 ha | Yes (RF)       | No    | 2.71 ha               | No                   | No                | 0.94                  |
| 11     | Dimasang SG Mahal                           | 4.81 ha       | No                               | No                      | No         | No      | No             | 0.026 | 0.026                 | No                   | No                | 4.78                  |
| 12     | Merebil SS Mahal                            | 4.16 ha       | No                               | No                      | No         | No      | No             | No    | No                    | No                   | No                | No                    |
| 13     | Pagla SG Mahal No.2                         | 4.80 ha       | No                               | No                      | No         | No      | Yes (RF & ESZ) | No    | No                    | No                   | No                | No                    |

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|    |                                   |         |         |    |    |         |          |       |         |     |    |       |
|----|-----------------------------------|---------|---------|----|----|---------|----------|-------|---------|-----|----|-------|
| 14 | Pasnoi SS Mahal                   | 3.88 ha | 3.88 ha | No | No | No      | No       | No    | 3.88 ha | Yes | No | 0     |
| 15 | PasnoiRiverVillage Samugaon       | 4.85 ha | No      | No | No | No      | No       | 0.038 | 0.038   | No  | No | 4.812 |
| 16 | Pasnoi River Mahal Simliguri      | 4.09 ha | No      | No | No | 0.58 ha | No       | No    | 0.58 ha | No  | No | 3.51  |
| 17 | Baligaon SS Mahal                 | 4.0 ha  | No      | No | No | No      | No       | No    | No      | Yes | No | No    |
| 18 | Golondi Silt Mahal No. 1          | 4.0 ha  | No      | No | No | No      | No       | No    | No      | No  | No | No    |
| 19 | Golondi Silt Mahal No. 2          | 4.70 ha | No      | No | No | 1.82 ha | No       | No    | 1.82 ha | No  | No | 2.88  |
| 20 | KhowrangBoulder Mahal             | 4.80 ha | No      | No | No | No      | Yes (RF) |       | No      | No  | No | No    |
| 21 | Daisam Boulder Mahal              | 4.90 ha | No      | No | No | 4.90 ha | Yes (RF) |       | 4.90 ha | No  | No | No    |
| 22 | Bhorla GSB Mahal No.1 (Santipur)  | 4.90 ha | No      | No | No | No      | No       | No    | No      | No  | No | No    |
| 23 | Bhorla GSB Mahal No.2             | 4.60 ha | No      | No | No | No      | No       | No    | No      | No  | No | No    |
| 24 | Bhorla GSS Mahal No.3             | 3.40 ha | No      | No | No | No      | No       | No    | No      | No  | No | No    |
| 25 | Beltola SS Mahal                  | 3.80 ha | No      | No | No | No      | No       | No    | No      | No  | No | No    |
| 26 | Nunoi SS Mahal No.3 (Kulsi)       | 3.70 ha | No      | No | No | No      | No       | No    | No      | No  | No | No    |
| 27 | Kulsi Sand Gravel Silt Mahal No.2 | 3.29 ha | No      | No | No | No      | No       | No    | No      | No  | No | No    |
| 28 | Bhutiasang SGB Mahal No.1         | 4.90 ha | No      | No | No | No      | No       | No    | No      | Yes | No | No    |
| 29 | Bhutiasang SGB Mahal No.2         | 3.50 ha | No      | No | No | No      | No       | No    | No      | Yes | No | No    |
| 30 | Nunoi SS Mahal No.1 (Gitibari)    | 4.90 ha | No      | No | No | No      | No       | No    | No      | No  | No | No    |
| 31 | Gitibari SG Mahal No.2            | 4.40 ha | No      | No | No | No      | No       | No    | No      | No  | No | No    |
| 32 | Nasanchali Sand Gravel Silt Mahal | 4.75 ha | No      | No | No | No      | No       | No    | No      | No  | No | No    |

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|    |  |         |          |    |    |    |              |  |              |    |    |      |
|----|--|---------|----------|----|----|----|--------------|--|--------------|----|----|------|
| 33 | Bhootbangla<br>Sand Gravel<br>Silt Mahal | 3.50 ha | 0.055 ha | No | No | No | No           |  | 0.05<br>5 ha | No | No | 3.45 |
| 34 | Sahabasti<br>Sand & Silt<br>Mahal        | 3.50 ha | 3.50 ha  | No | No | No | No           |  | 3.50<br>ha   | No | No | 0    |
| 35 | Kalanadi SS<br>No.1                      | 4.50 ha | No       | No | No | No | Yes<br>(ESZ) |  |              | No | No |      |
| 36 | Kalanadi SS<br>No.2                      | 3.30 ha | 0.048 ha | No | No | No | Yes<br>(ESZ) |  | 0.04<br>8 ha | No | No | 3.25 |
| 37 | SamrangNew<br>ly Gravel<br>Earth Mahal   | 4.85 ha | No       | No | No | No | Yes<br>(ESZ) |  |              | No | No |      |

  
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## 12. Replenishment Study

### 12.1 Replenishment of Sediments in Udalguri District, Assam

Replenishment refers to the natural renewal of sediments in rivers, driven by erosion, sediment transport, and deposition. This process, especially relevant during the Indian monsoon, is essential for maintaining the balance in fluvial systems. In Udalguri District, Assam, rivers like Suklai, Kulsi, Nunoi etc. play critical roles in sediment redistribution.


#### Natural Processes and Monsoonal Influence

Rivers carry and deposit sediment during periods of high flow, typically during the monsoon season. As rainwater erodes upstream rocks, the sediment is transported downstream, replenishing deposits of sand, gravel, and boulders in lower segments. In the Himalayan River systems the steep upper reaches of the Rivers provide abundant sediment supply, which is deposited downstream where river gradients flatten out.

**River Dynamics in Udalguri District:** The sediment transportation and deposition patterns vary depending on river characteristics, such as gradient and flow velocity. In Udalguri District, where rivers are steep in the upstream and have relatively flat gradients in the lower ridges, sediment tends to accumulate. This process creates essential deposits of sand that are critical for local construction industries. These deposits, however, are naturally replenished at a rate dependent on the volume of sediment transported annually.

#### Methodology employed for Replenishment Assessment

This report presents an assessment of sediment replenishment in Udalguri District, Assam, by evaluating temporal changes in sediment deposition and erosion. . The analysis uses a combination of geospatial techniques, including satellite imagery from LISS-IV, elevation data from ICESat-2, and SRTM- DEM based elevation difference methods. The key objective is to provide an overview of the sediment replenishment process, determine sediment deposition patterns, and evaluate the sustainability of sediment extraction activities.

  
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## **1. Data Sources and Methodology**

### **1.1 Data Sources**

1. LISS-IV Imagery [2023-(March-April to September-November)]: Used for temporal analysis of sediment deposition and erosion across the river and sandbar regions.
2. ICESat-2 ATLo3/ATLo8 Data: Altimetry data from ICESat-2 satellite was used to measure changes in elevation over time (<https://openaltimetry.earthdatacloud.nasa.gov>)
3. SRTM based satellite image: Contours generated from SRTM based satellite images were used for comparative analysis to assess elevation changes.

### **1.2 Methodology**

The methodology for assessing sediment replenishment involved the following detailed steps:

#### **1.2.1. Data Acquisition and Preprocessing**

**A. Study of Sandbar Elevation Change Using ICESat-2:** For the elevation change analysis, pre- and post-monsoon ICESat-2 ATLo8 photon data were selected to determine changes in sediment elevation during the peak sediment transport periods. The pre-monsoon data (early 2021-24) and post-monsoon data (late 2021-24) were used to capture the seasonal dynamics in sediment deposition and erosion.

The photon data from ICESat-2 were analyzed to determine elevation differences at specific locations, focusing on sandbars and riverbanks in proximity to the location of existing mines. Elevation points were filtered to remove noise and extract relevant ground-level information. Limitation of ICESat-2 is the limited availability of data. So for this analysis, areas in proximity to the location of existing mines were selected to provide a targeted evaluation of sediment changes.

**Elevation Difference Calculation:** The elevation differences were calculated by determining the average changes in elevation for each selected area.



  
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Table12.1: Table showing details of ICESat-2 Data

| River Name     | Season        | ICESat-2<br>Track No: | Date of Pass |
|----------------|---------------|-----------------------|--------------|
| Bhorla River   | Pre-Monsoon   | 172                   | 01-04-2023   |
|                | Post- Monsoon | 172                   | 30-12-2023   |
|                |               |                       |              |
| Golondi River  | Pre-Monsoon   | 881                   | 17-02-2022   |
|                | Post- Monsoon | 881                   | 18-08-2022   |
|                |               |                       |              |
| Kulsi River    | Pre-Monsoon   | 172                   | 01-04-2023   |
|                | Post- Monsoon | 172                   | 30-12-2023   |
|                |               |                       |              |
| Suklai River   | Pre-Monsoon   | 1384                  | 24-03-2021   |
|                | Post- Monsoon | 1384                  | 22-12-2021   |
|                |               |                       |              |
| Nunoi River    | Pre-Monsoon   | 172                   | 01-04-2023   |
|                | Post- Monsoon | 172                   | 30-12-2023   |
|                |               |                       |              |
| Dhansiri River | Pre-Monsoon   | 614                   | 24-03-2021   |
|                | Post- Monsoon | 614                   | 22-12-2021   |

  
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Fig 1: Showing Photons from ATLAS sensor in the study area (pre-monsoon)

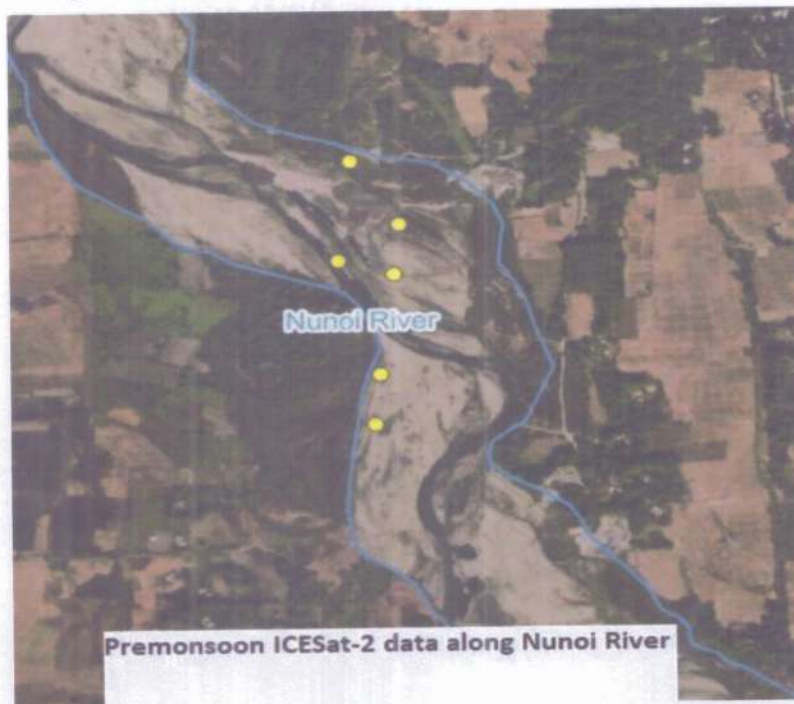
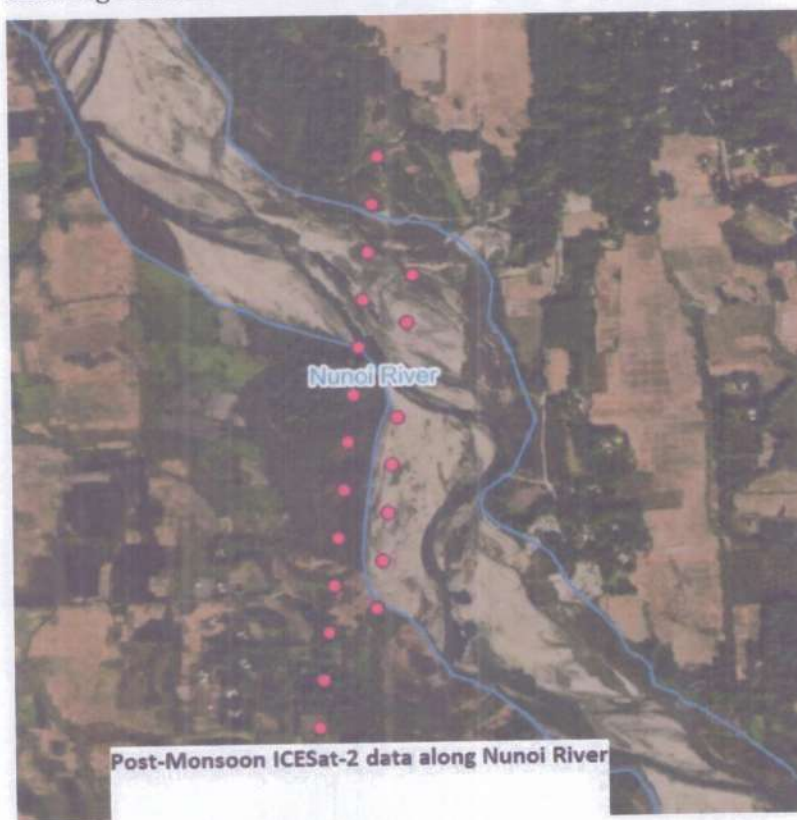



Fig 2: Showing Photons from ATLAS sensor in the study area (post-monsoon)



  
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## 12.2 Results:

### Elevation Change Analysis Using ICESat-2 Land Data.

| River Name     | Pre-monsoon<br>Sediment<br>Height(m) | Post-monsoon<br>Sediment<br>Height(m) | Average<br>Difference(m) |
|----------------|--------------------------------------|---------------------------------------|--------------------------|
| Bhorla River   | 136.89                               | 137.41                                | 0.52                     |
|                |                                      |                                       |                          |
| Suklai River   | 67.1                                 | 68.2                                  | 1.1                      |
|                |                                      |                                       |                          |
| Nunoi River    | 83.1                                 | 84.0                                  | 0.90                     |
|                |                                      |                                       |                          |
| Kulsi River    | 114.72                               | 114.23                                | - 0.49                   |
|                |                                      |                                       |                          |
| Dhansiri River | 123.26                               | 123.50                                | 0.24                     |
|                |                                      |                                       |                          |
| Golondi        | 83.45                                | 83.62                                 | 0.17                     |

**Elevation Gain:** Analysis showed an average increase of 0.52 meters in sediment elevation between pre-monsoon and post-monsoon data along Bhorla River. Moreover Suklai River showed average increase of sediment of 1.1 m. Besides Nunoi, Kulsi, Dhansiri and Golondi River showed elevation increase of 0.90 m - 0.49 m, 0.24 and 0.17 m respectively. The observed elevation gains reflect the natural sediment deposition dynamics in the region, driven by monsoonal hydrology. Kulsi River showed negative replenishment which may be due to change in river dynamics and needs further study. Other rivers exhibited substantial gains, indicating active natural sediment replenishment processes.

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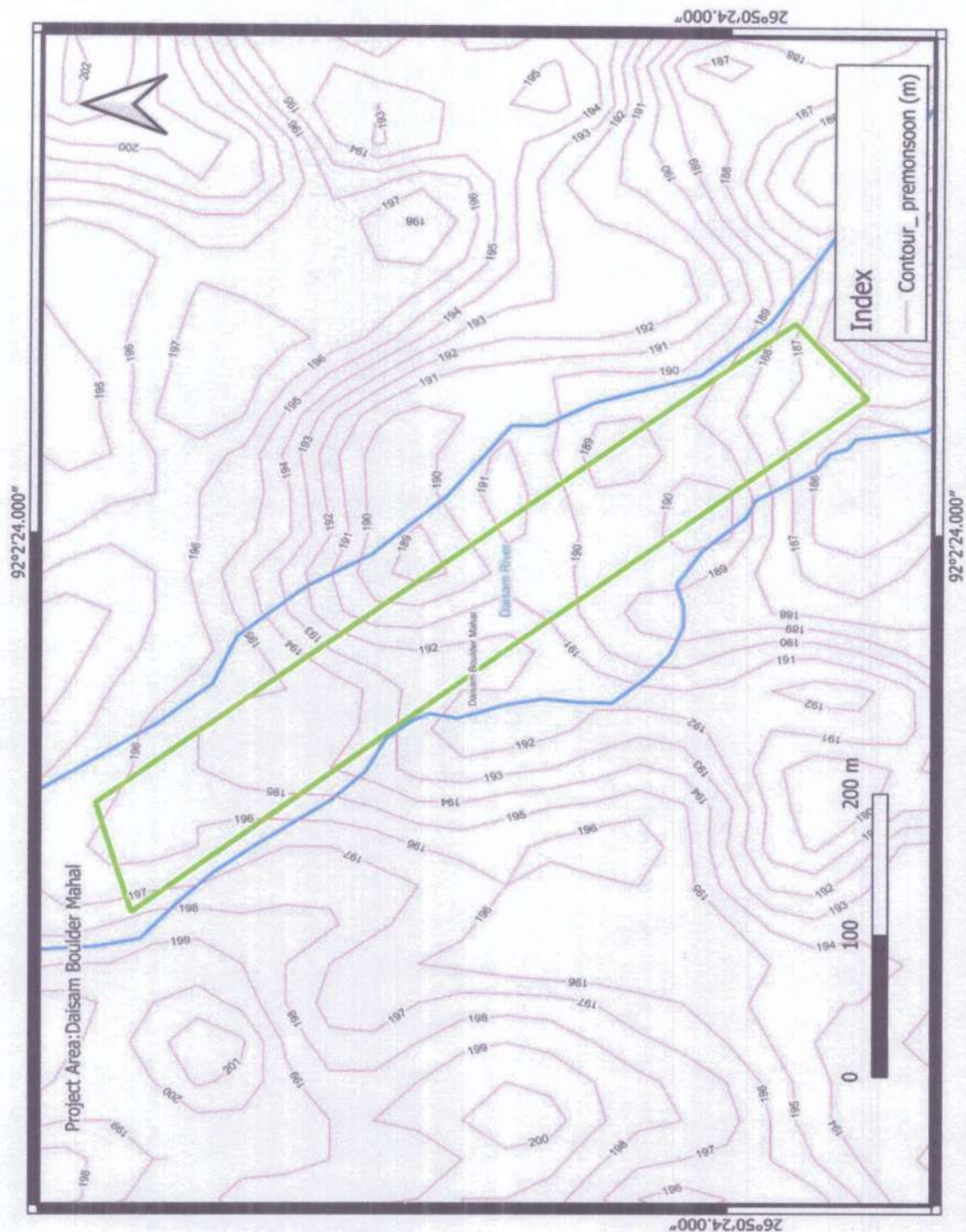
**B. Contour Map Generation:** DEMs were created from SRTM based Satellite Data and contours were generated using Qgis software to create 1-meter intervals for the year 2023. Necessary gap filling of elevation data were made by interpolation with ICESat-2 elevation data.

| Sl. No | Name of River | Average Difference of contour between Pre and post Monsoon(m) |
|--------|---------------|---|
| 1      | Dhansiri      | 1   |
| 2      | Monai         | 1   |
| 3      | Dimasang      | 1   |
| 4      | Rowta         | 1   |
| 5      | Pagla         | 1   |
| 6      | Pasnoi        | 1   |
| 7      | Golondi       | 1   |
| 8      | Khowrang      | 1   |
| 9      | Bhorla        | 1   |
| 10     | Kulsi         | 1   |
| 11     | Nunoi         | 1   |
| 12     | Kalanadi      | 1   |
| 13     | Samrang       | 1   |
| 14     | Daisam        | 1   |

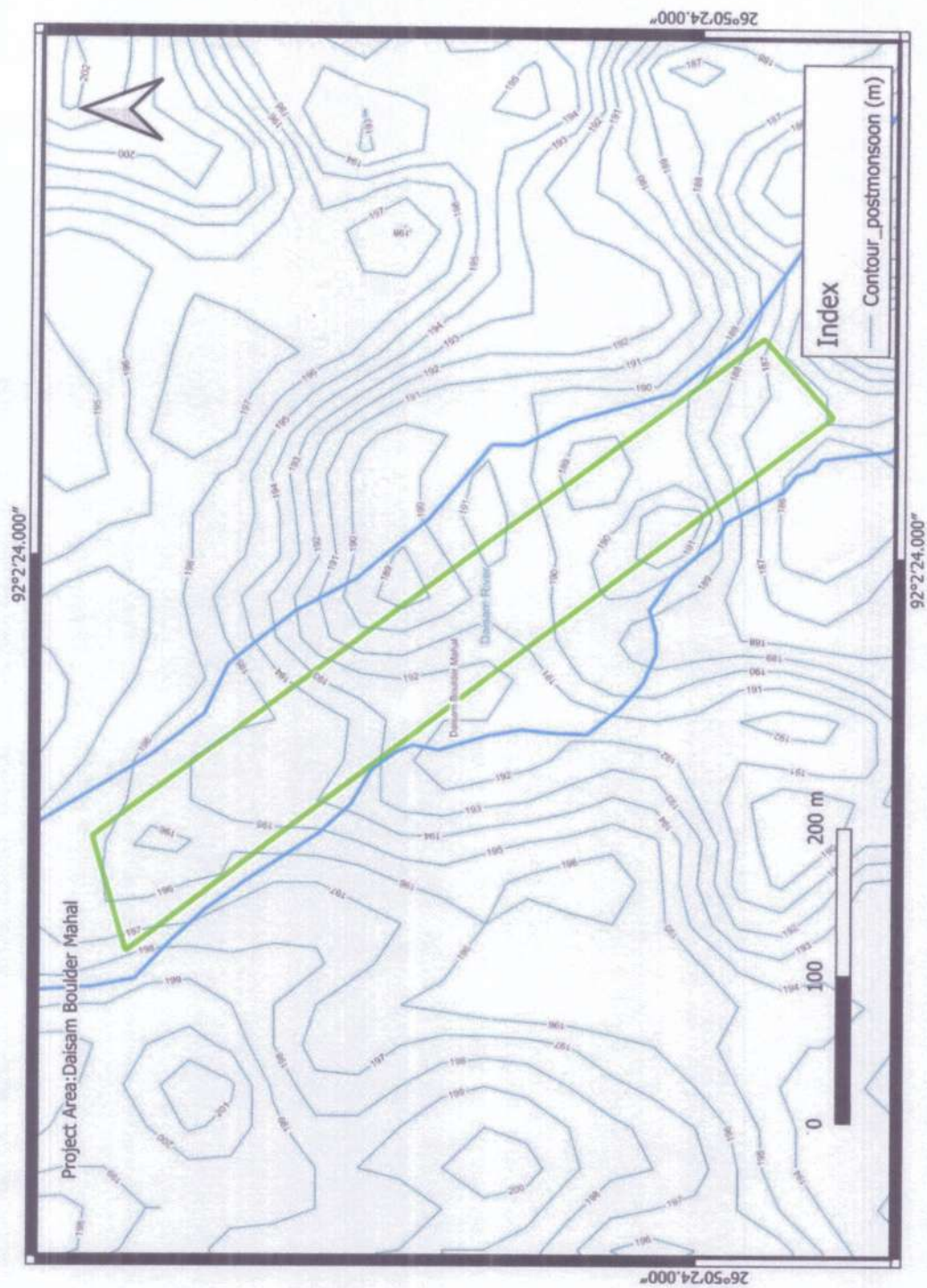
  
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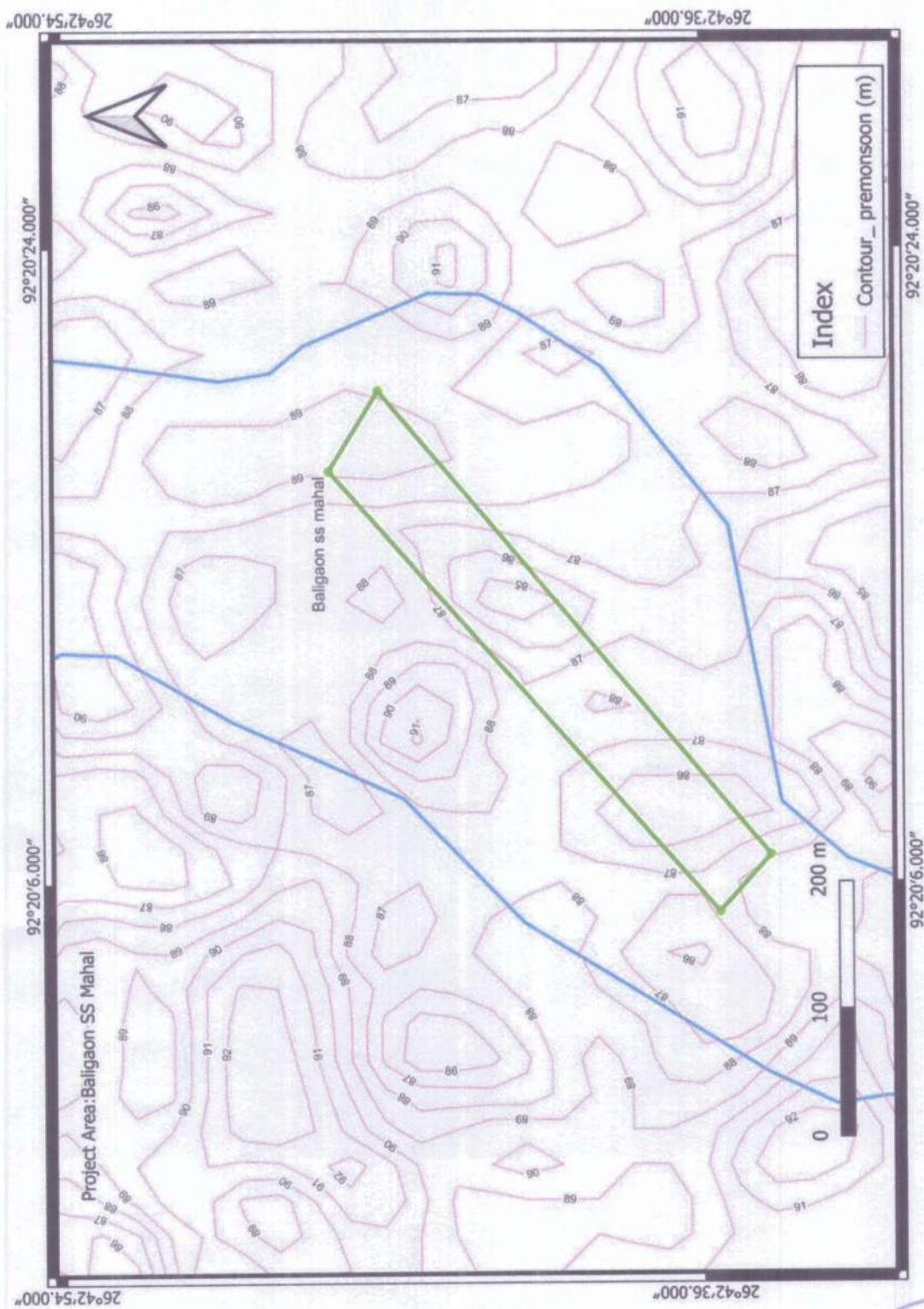




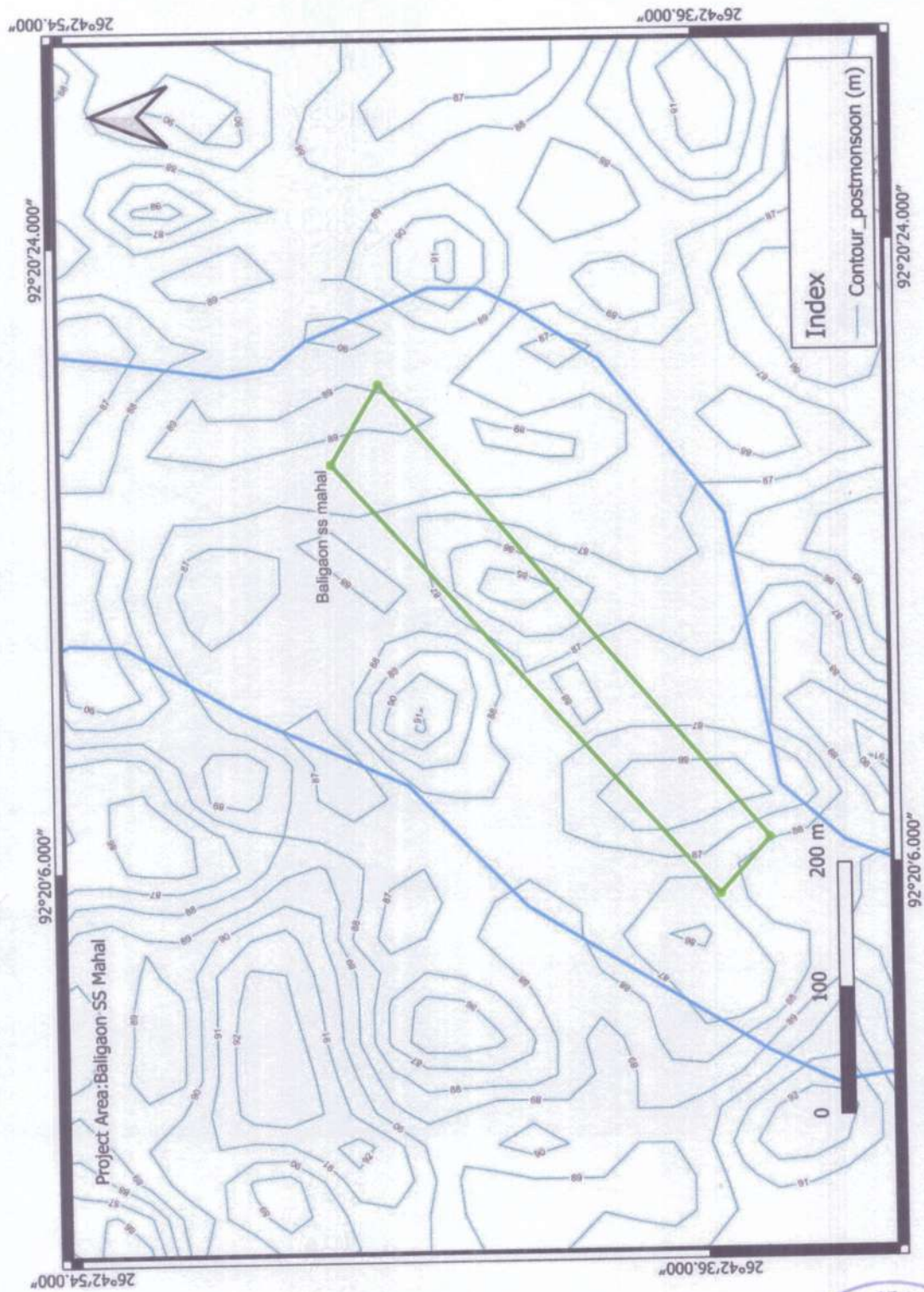




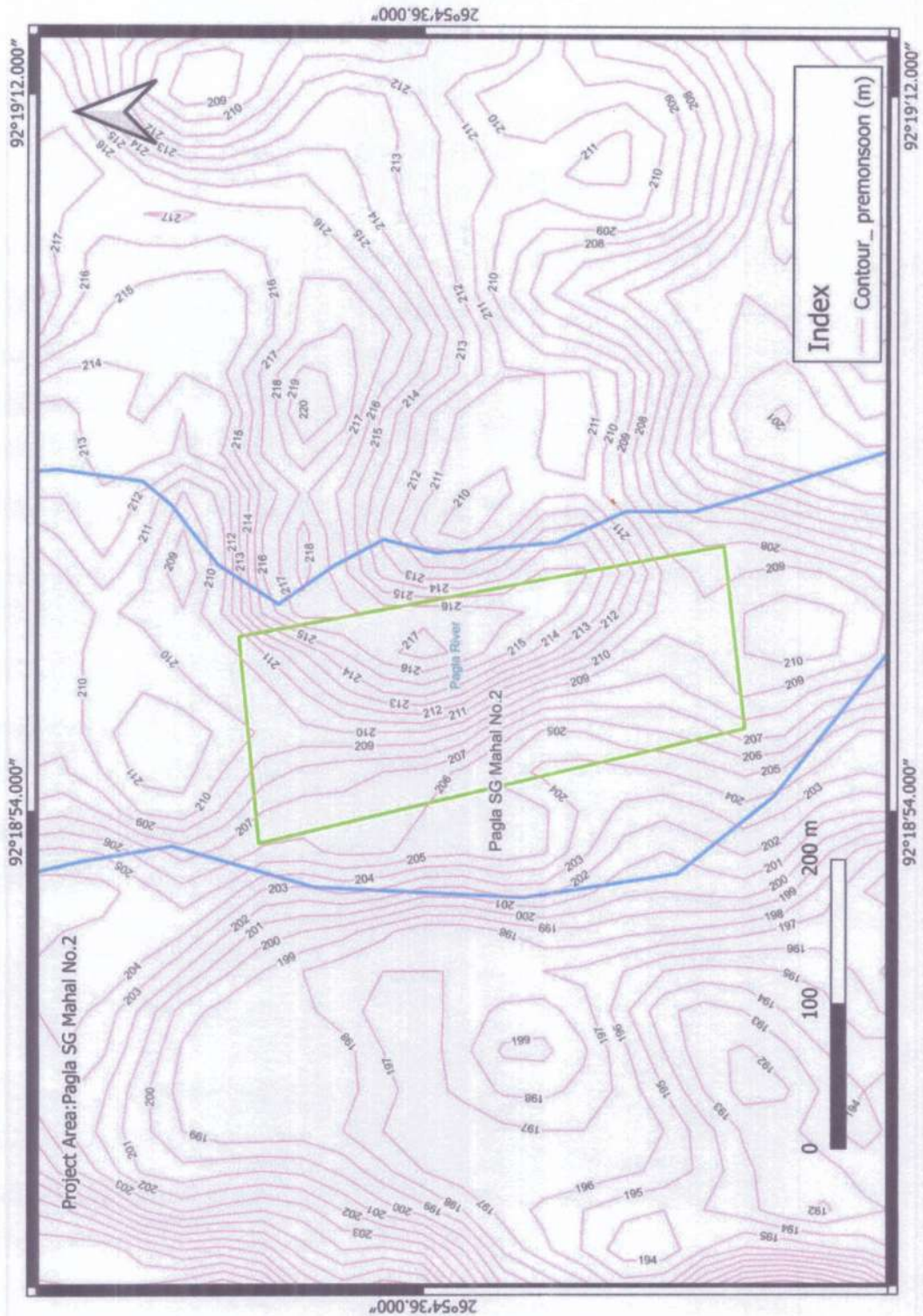




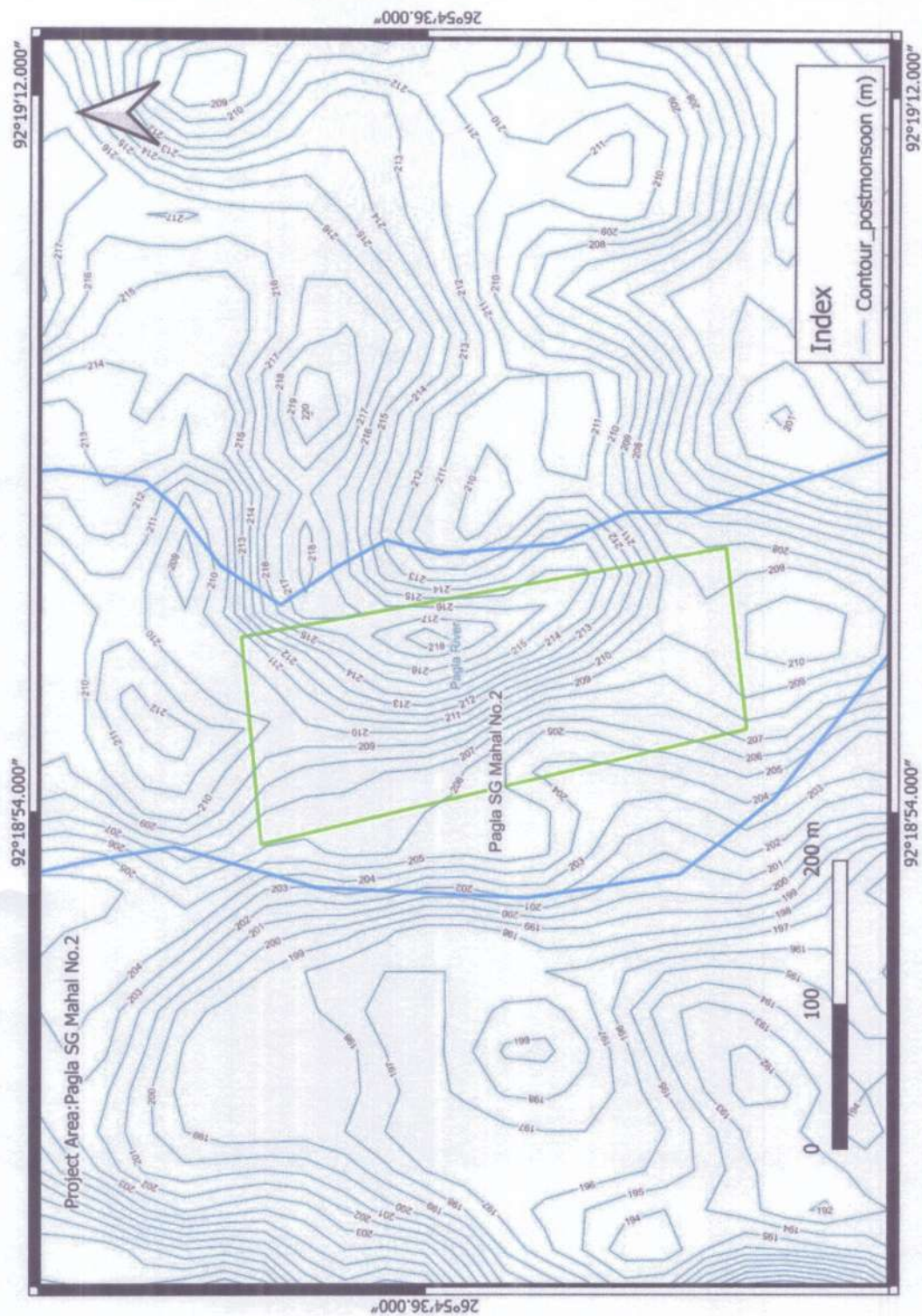




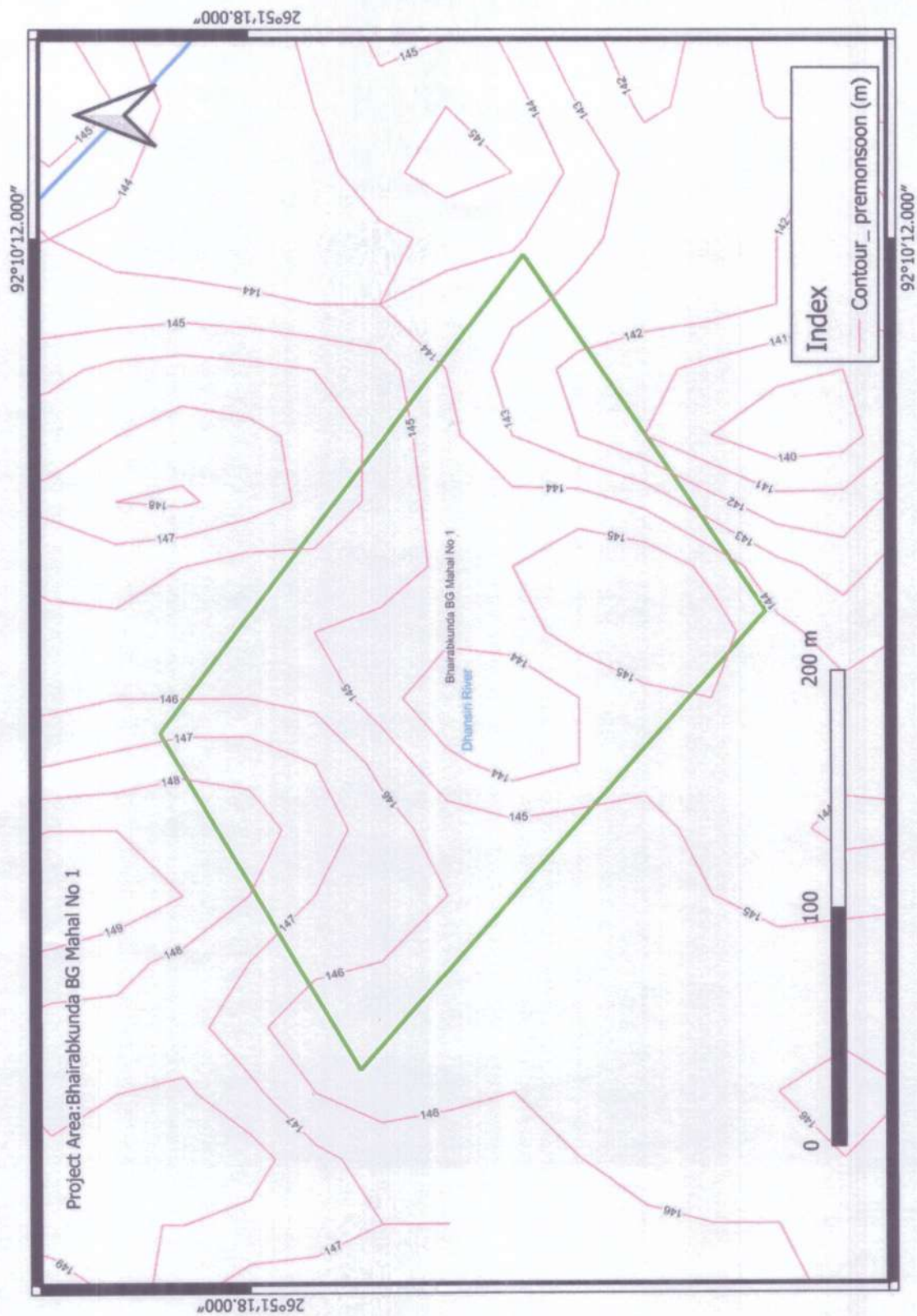




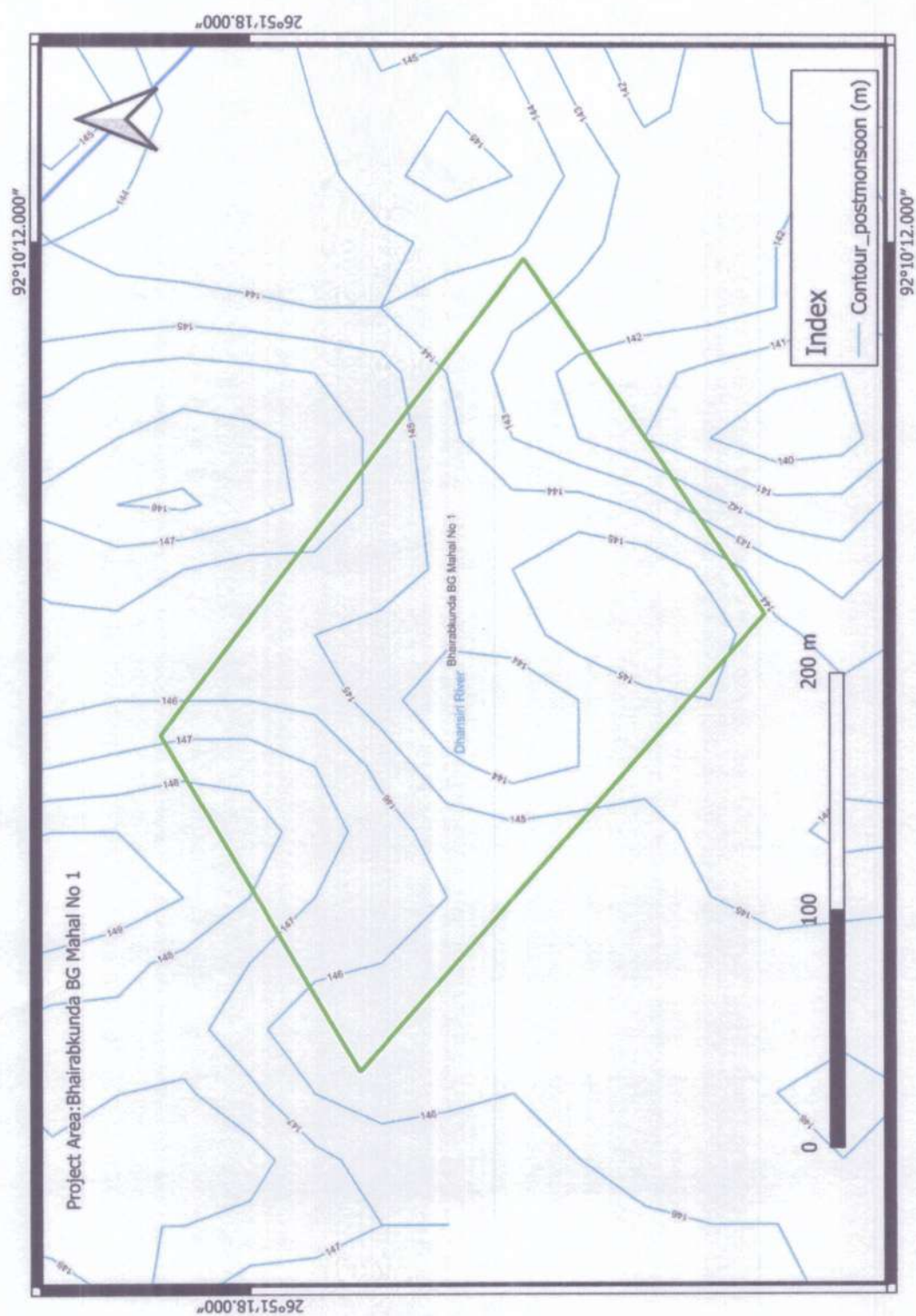


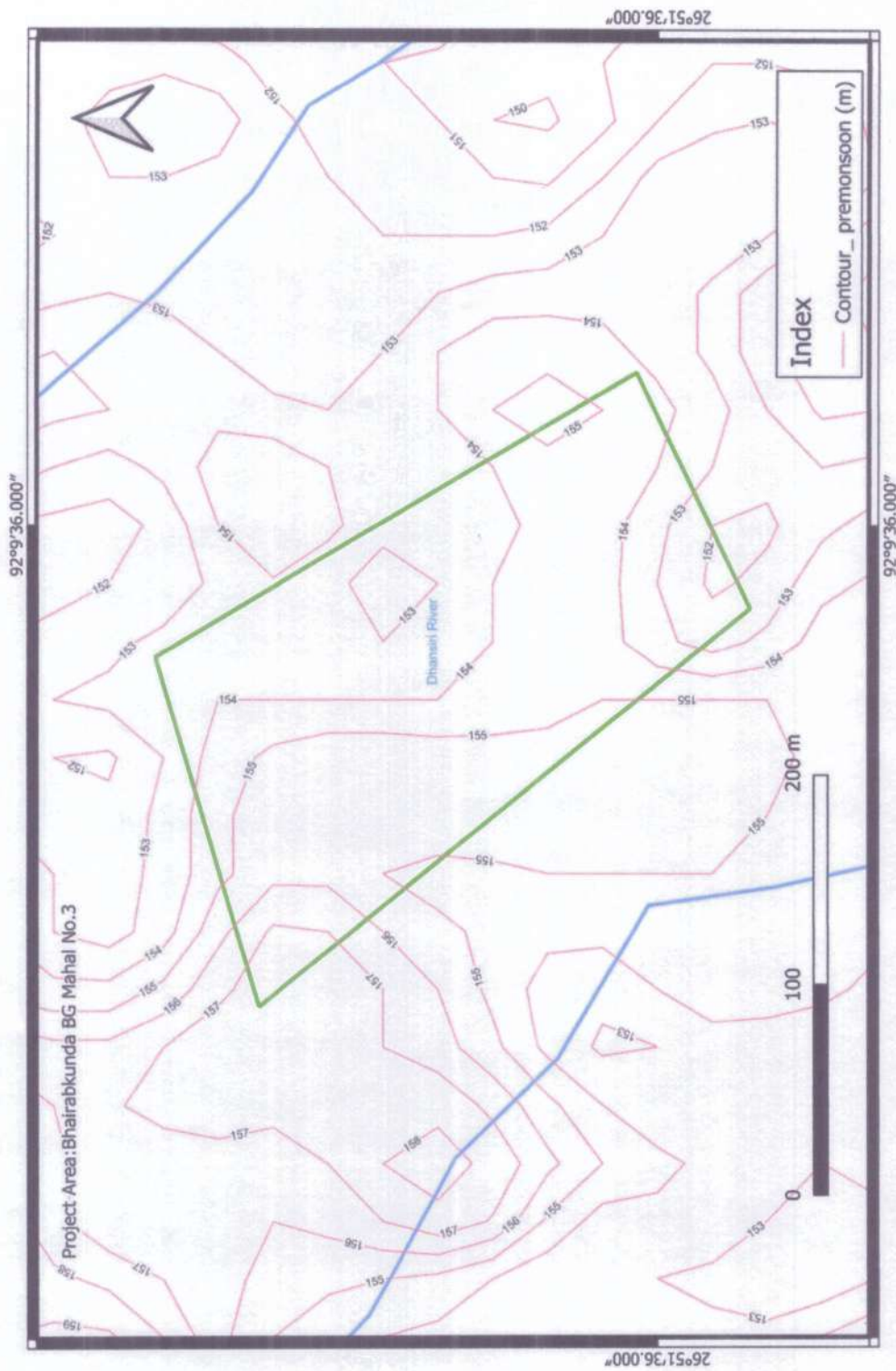




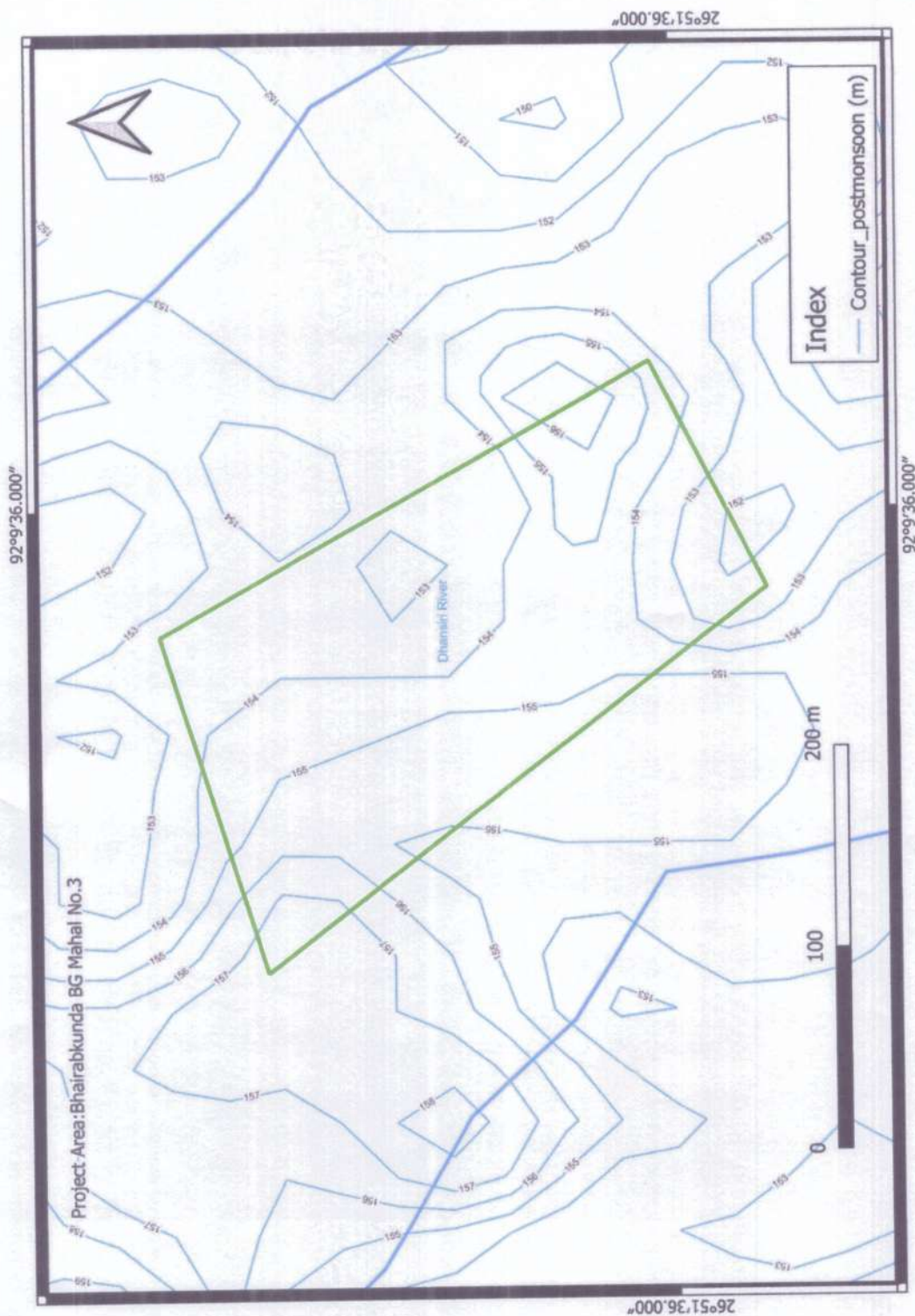




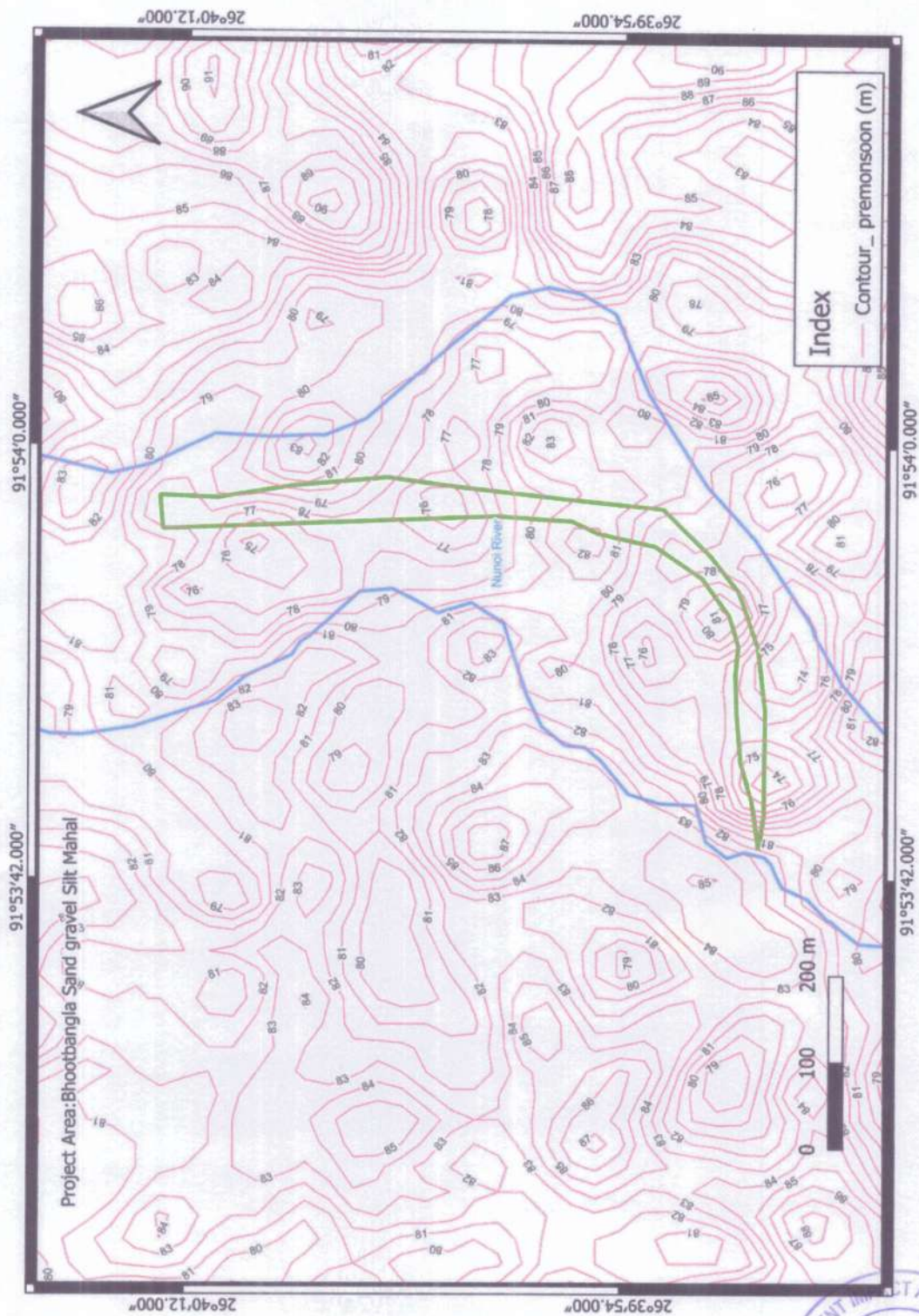




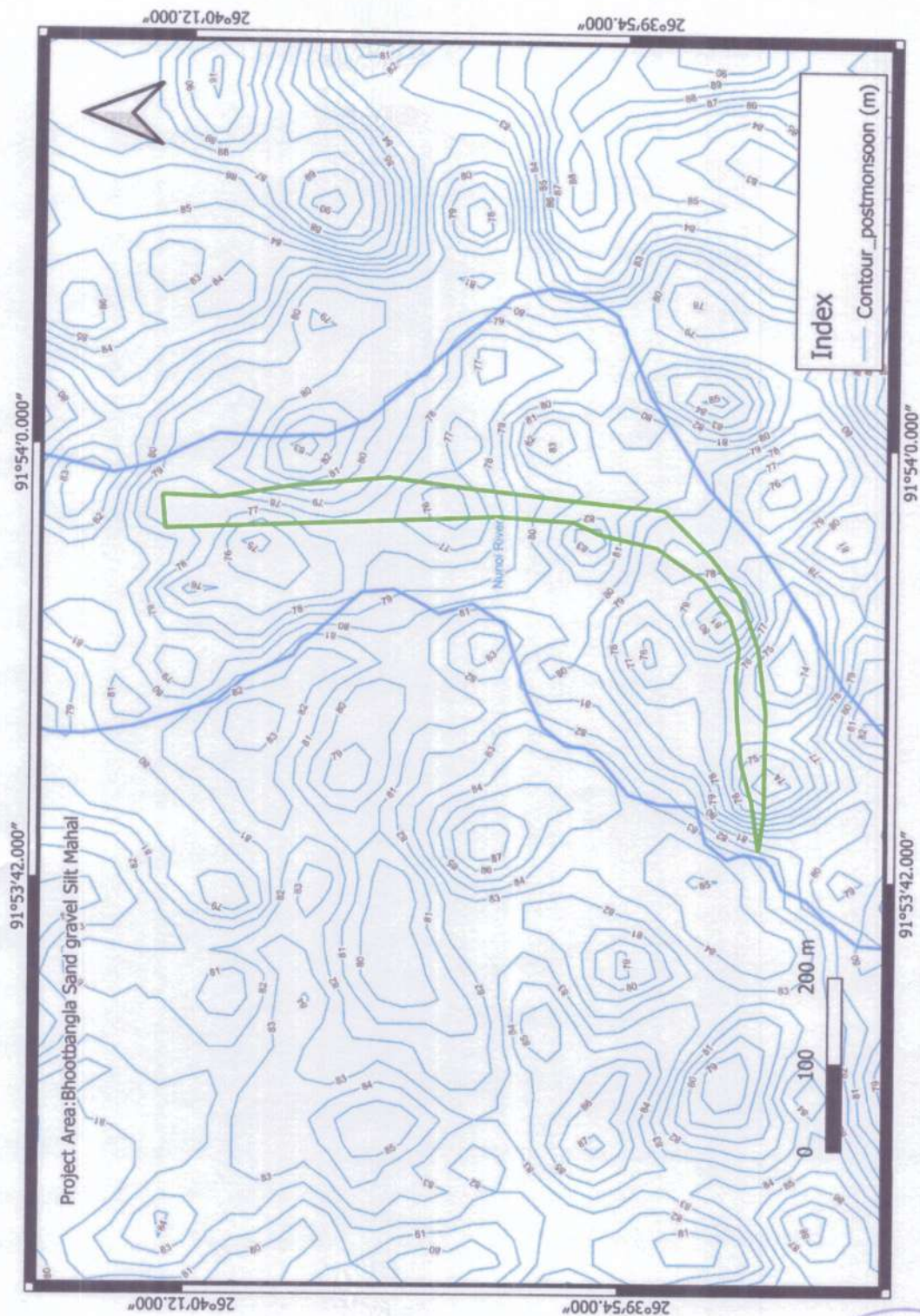








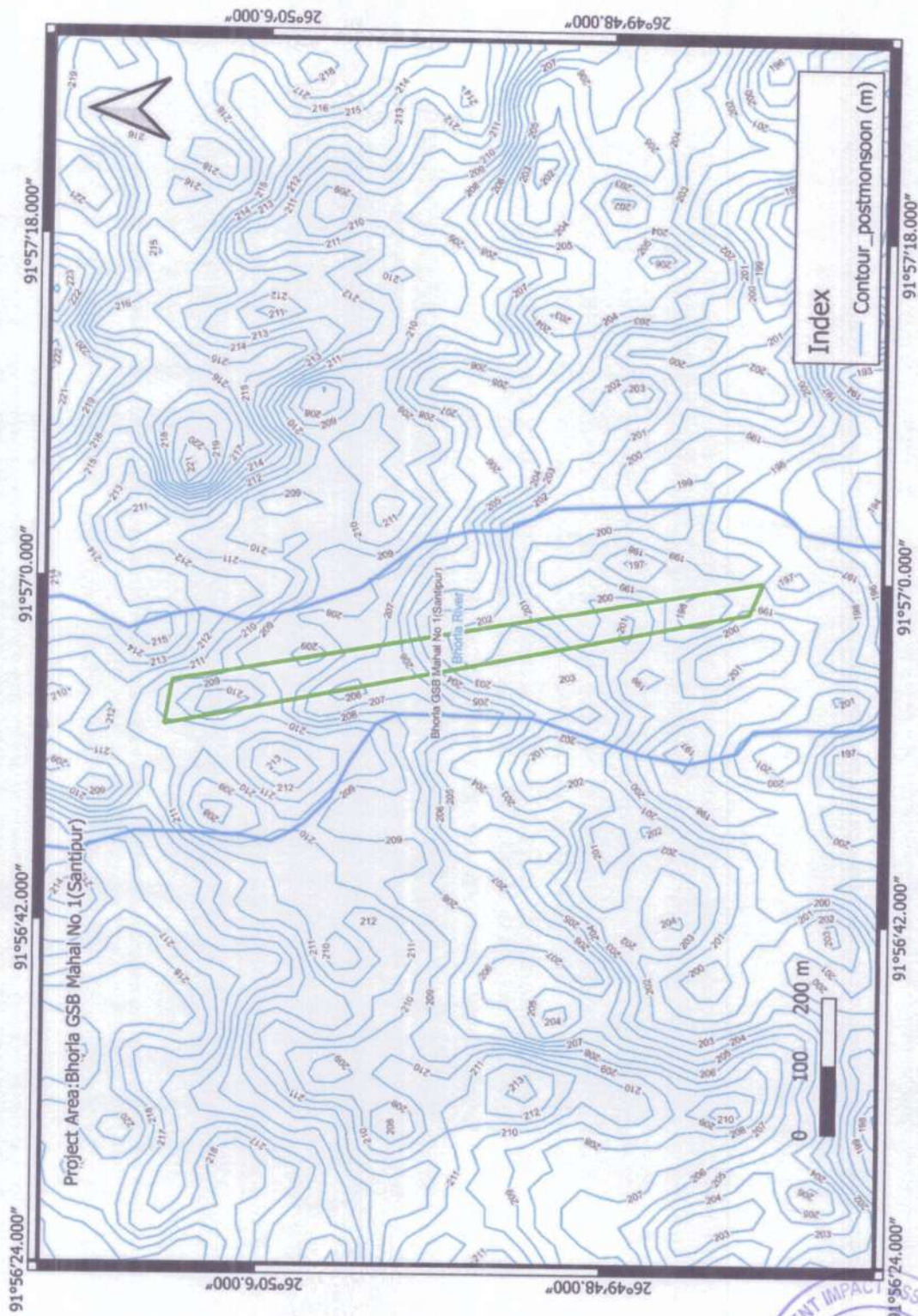




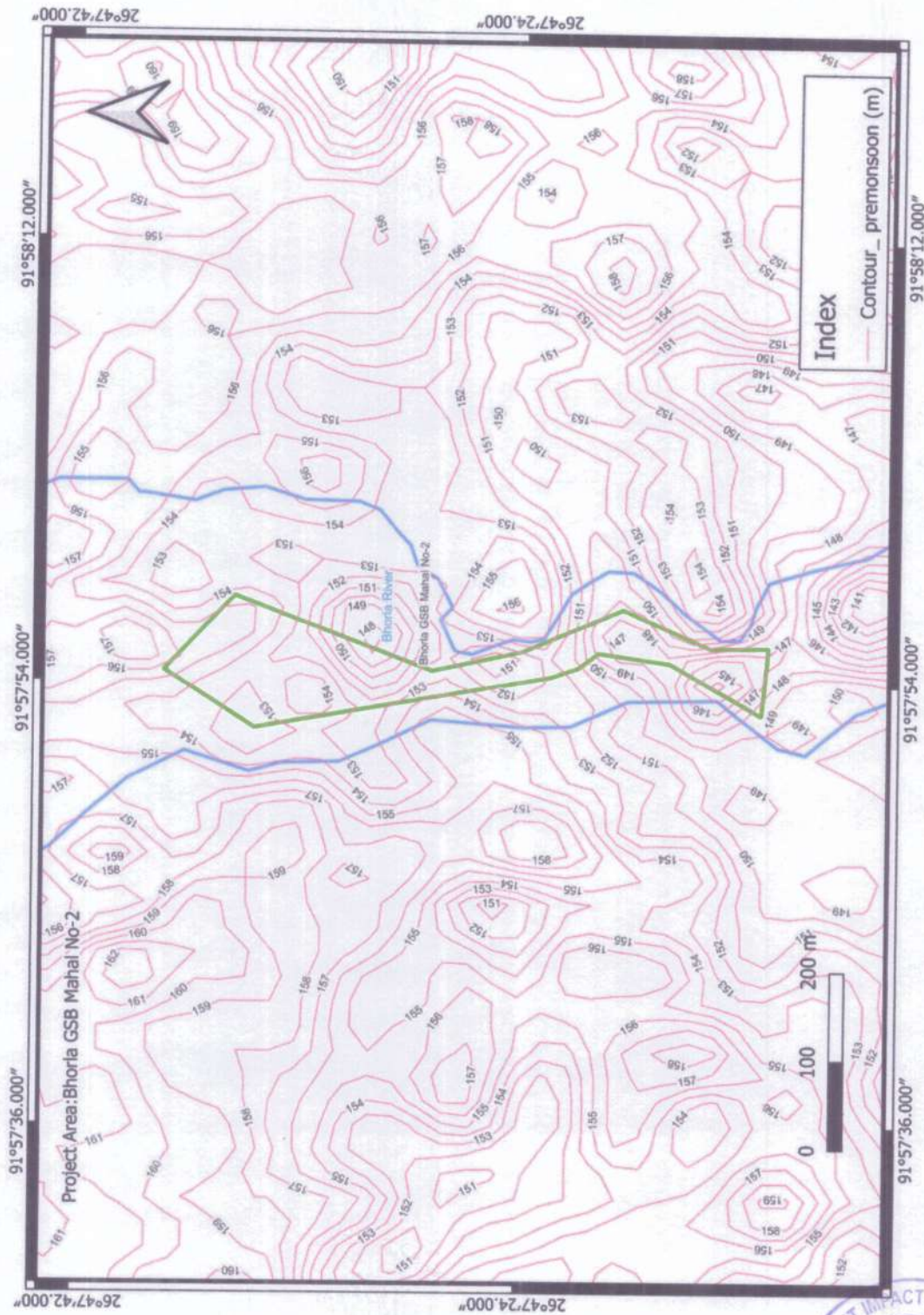




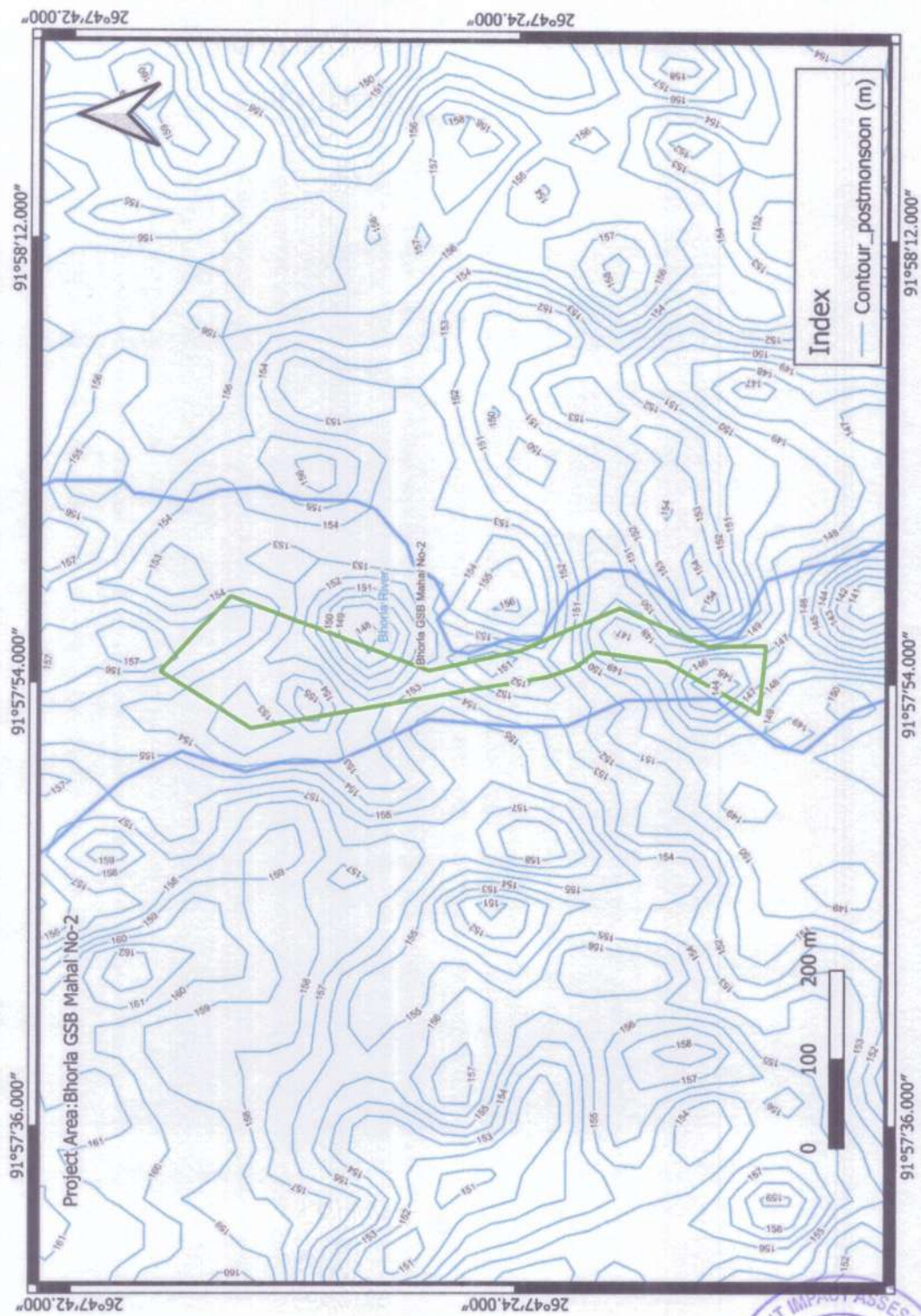




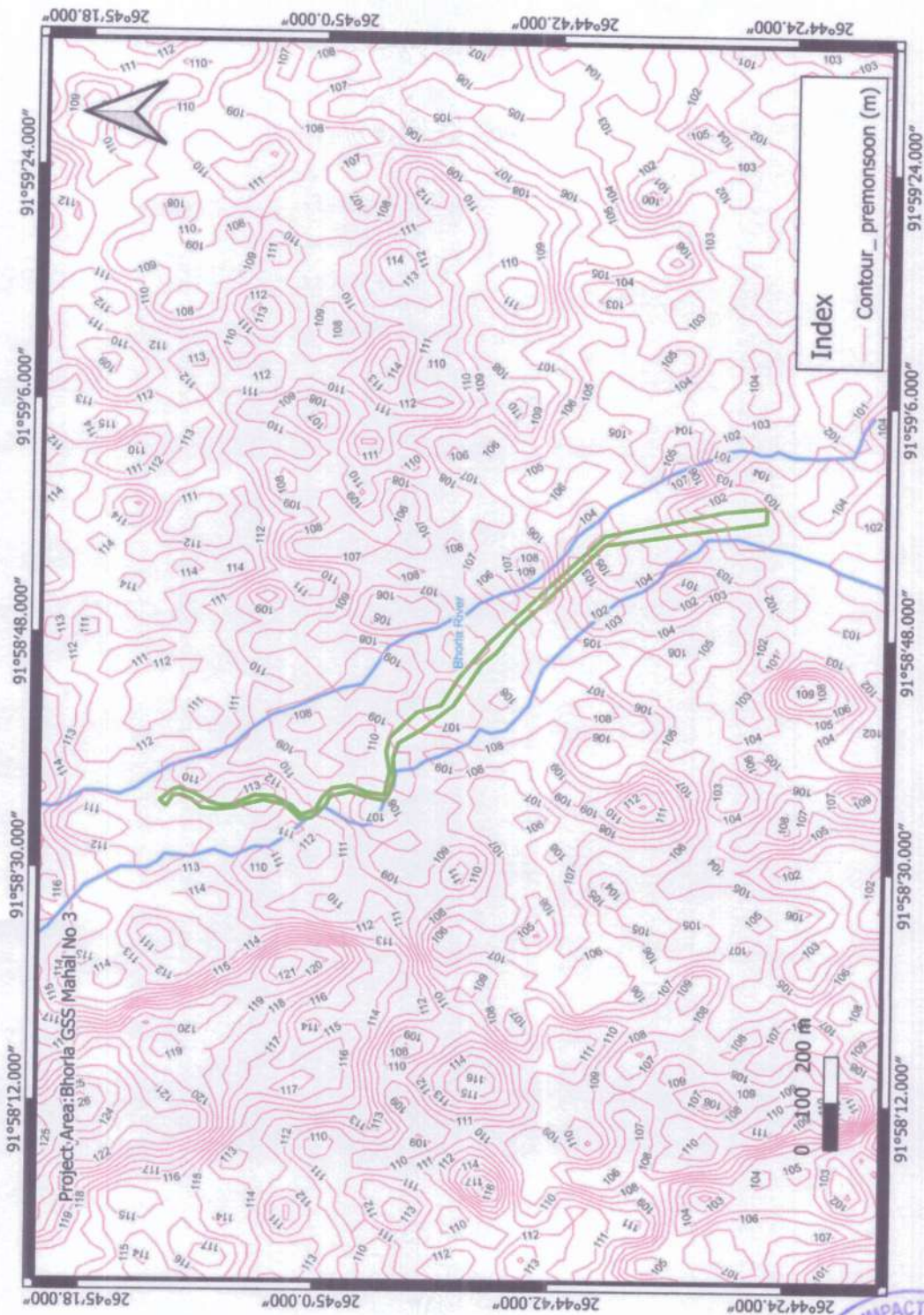




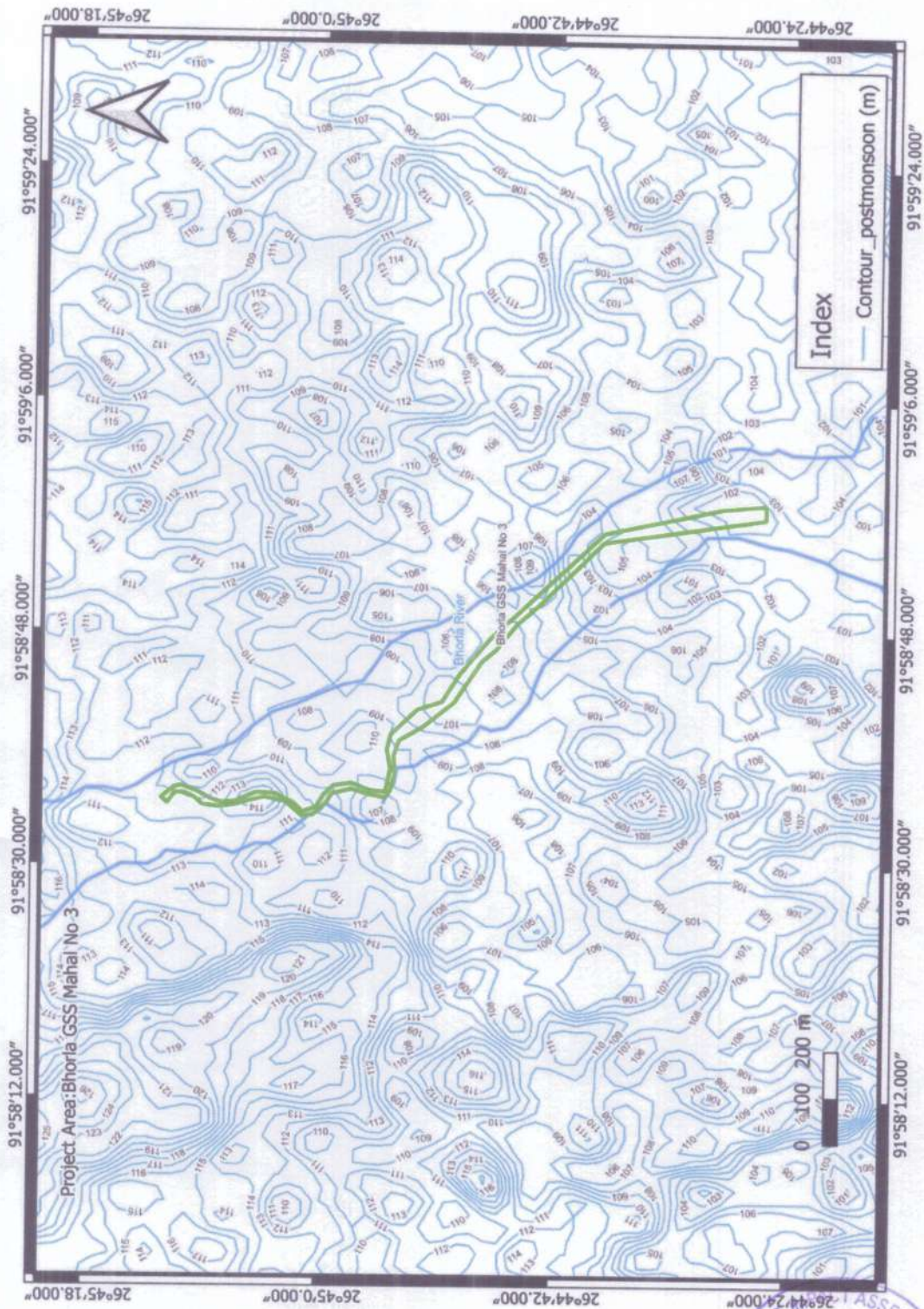




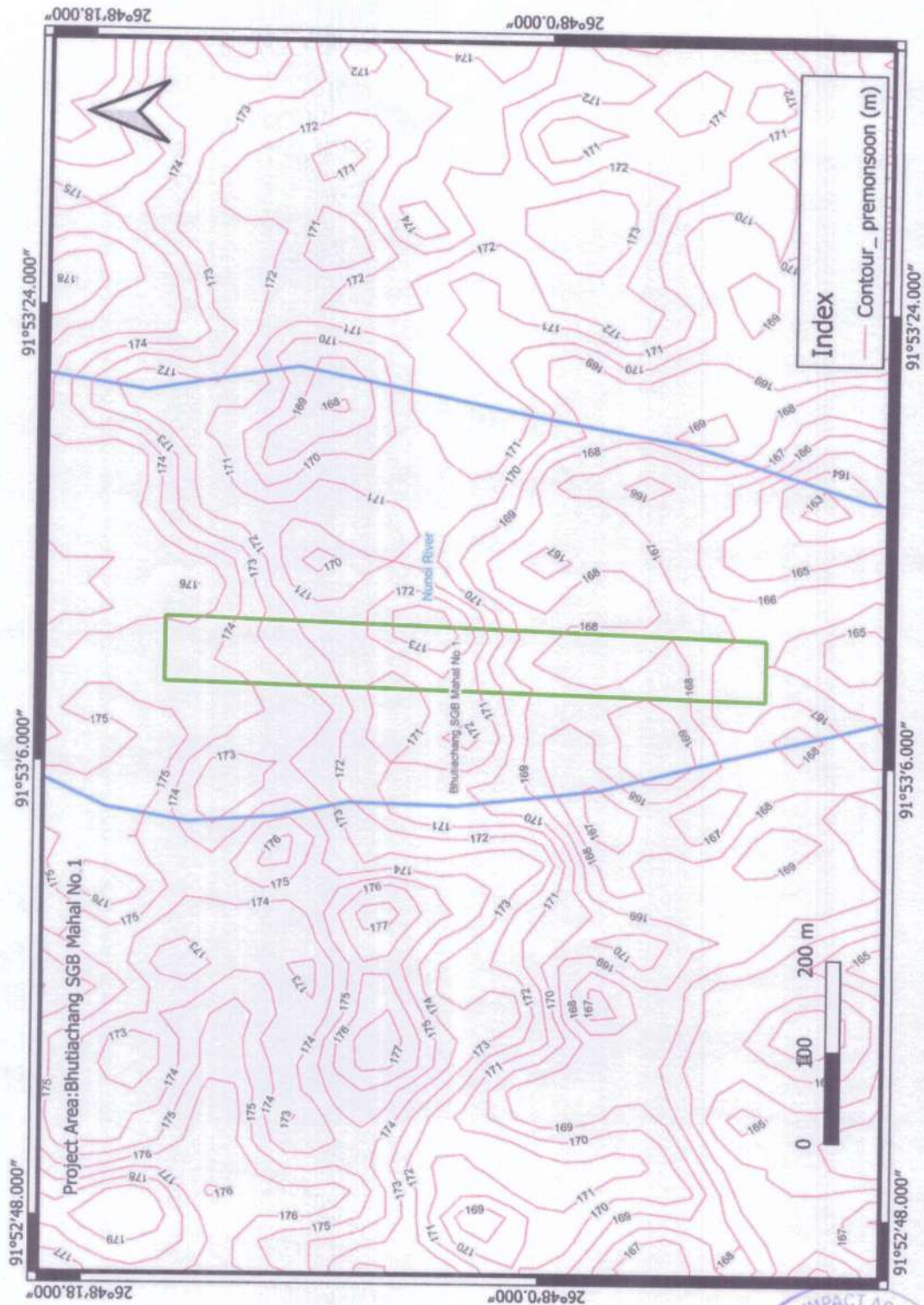




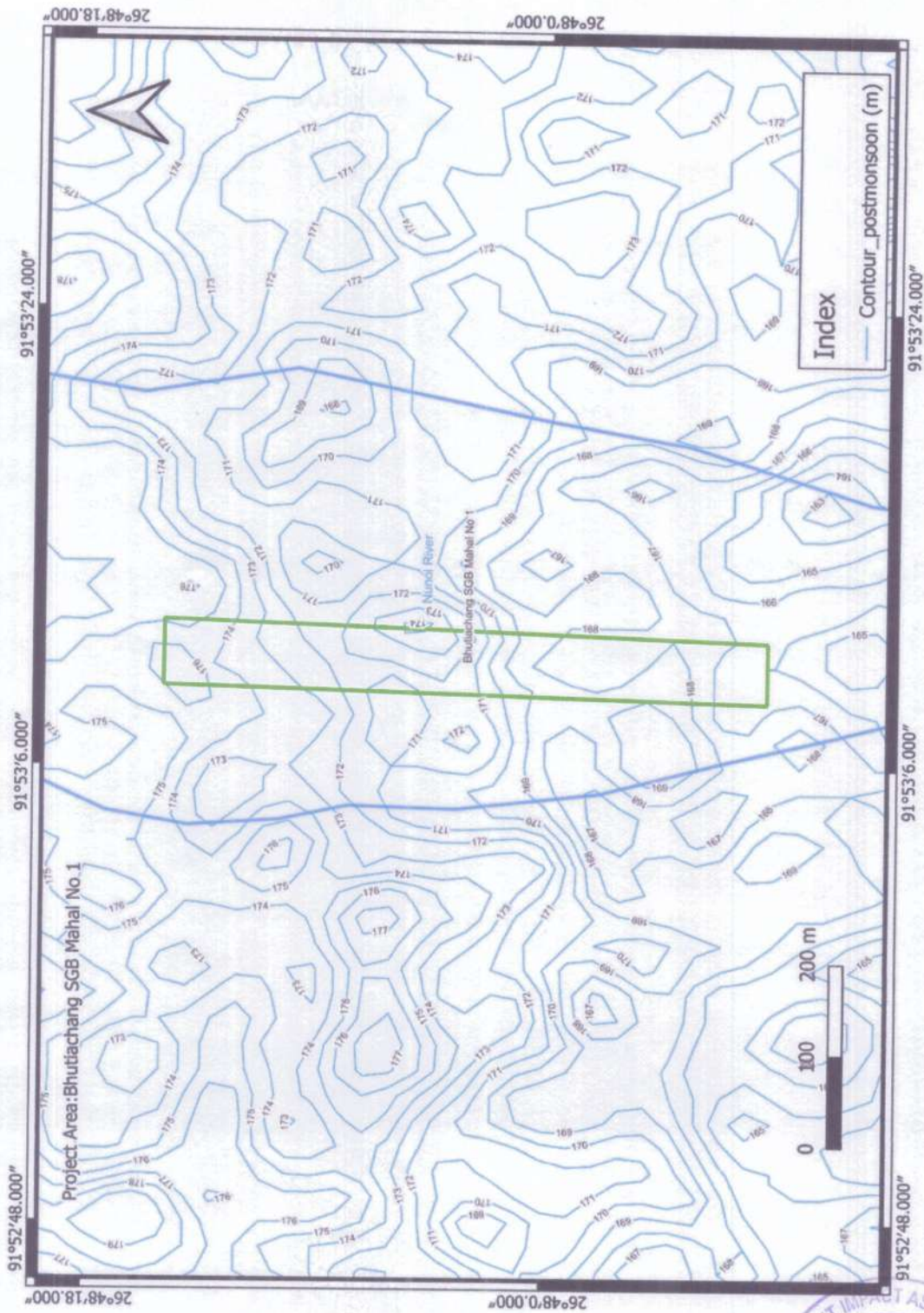


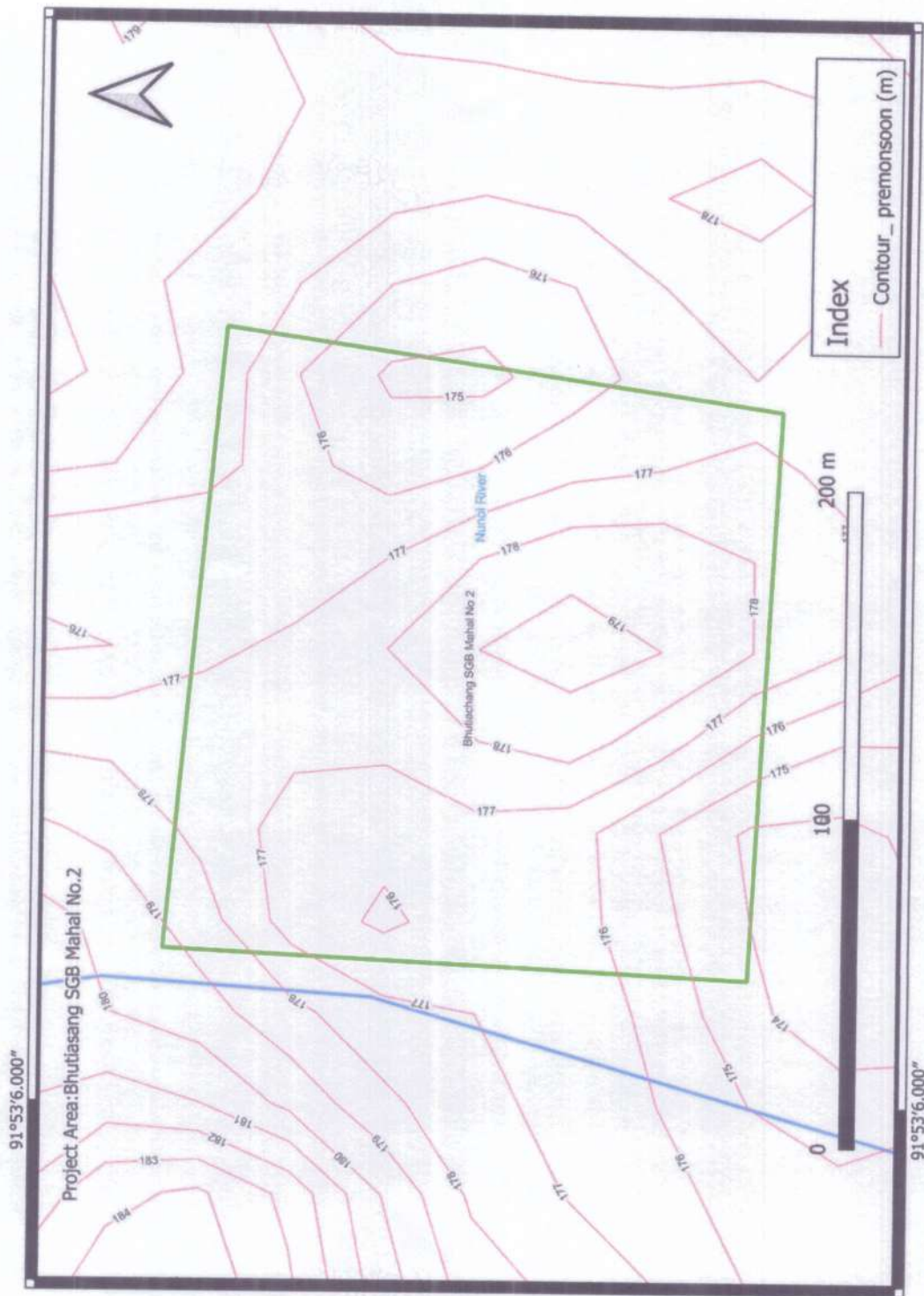




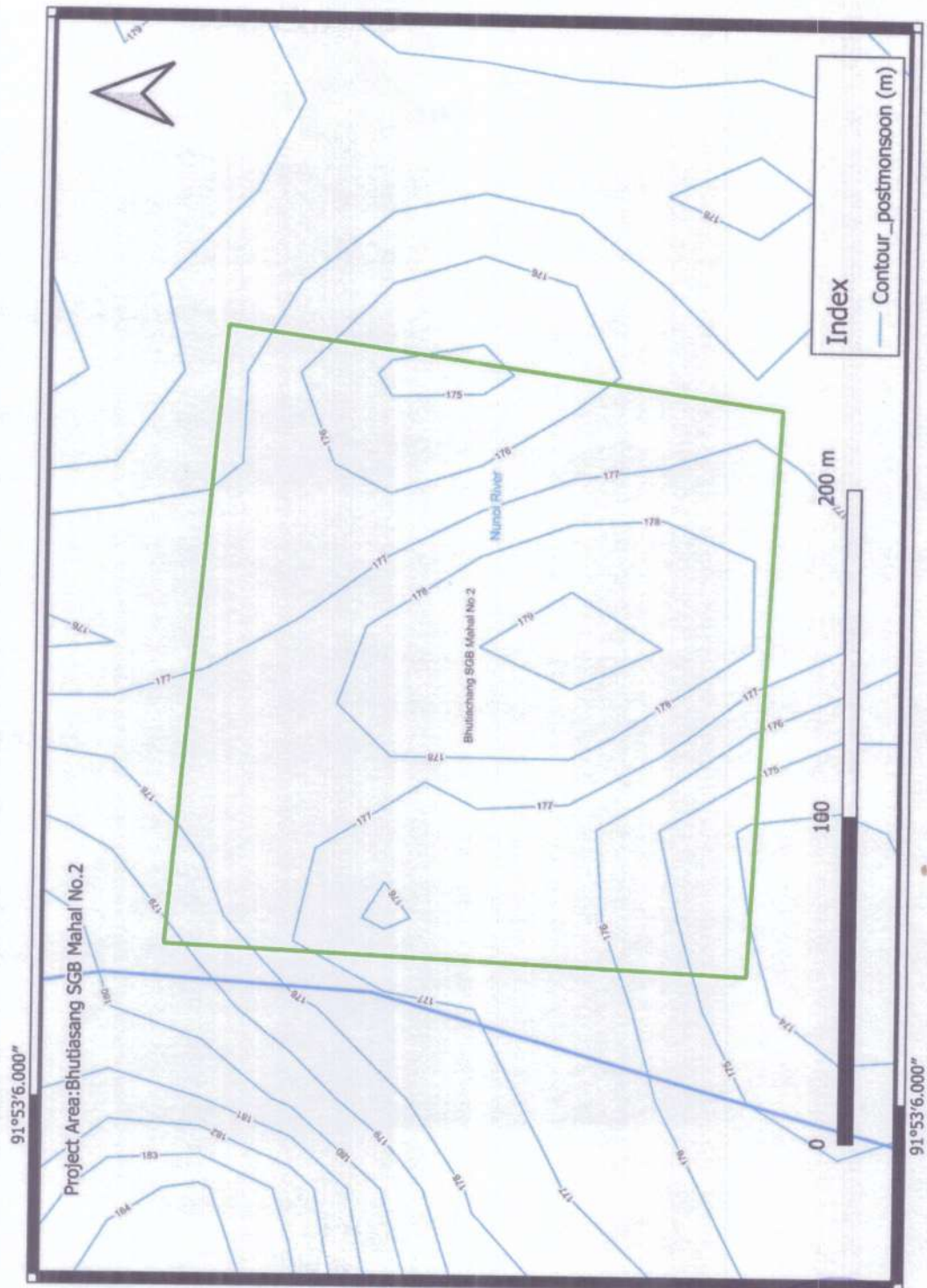








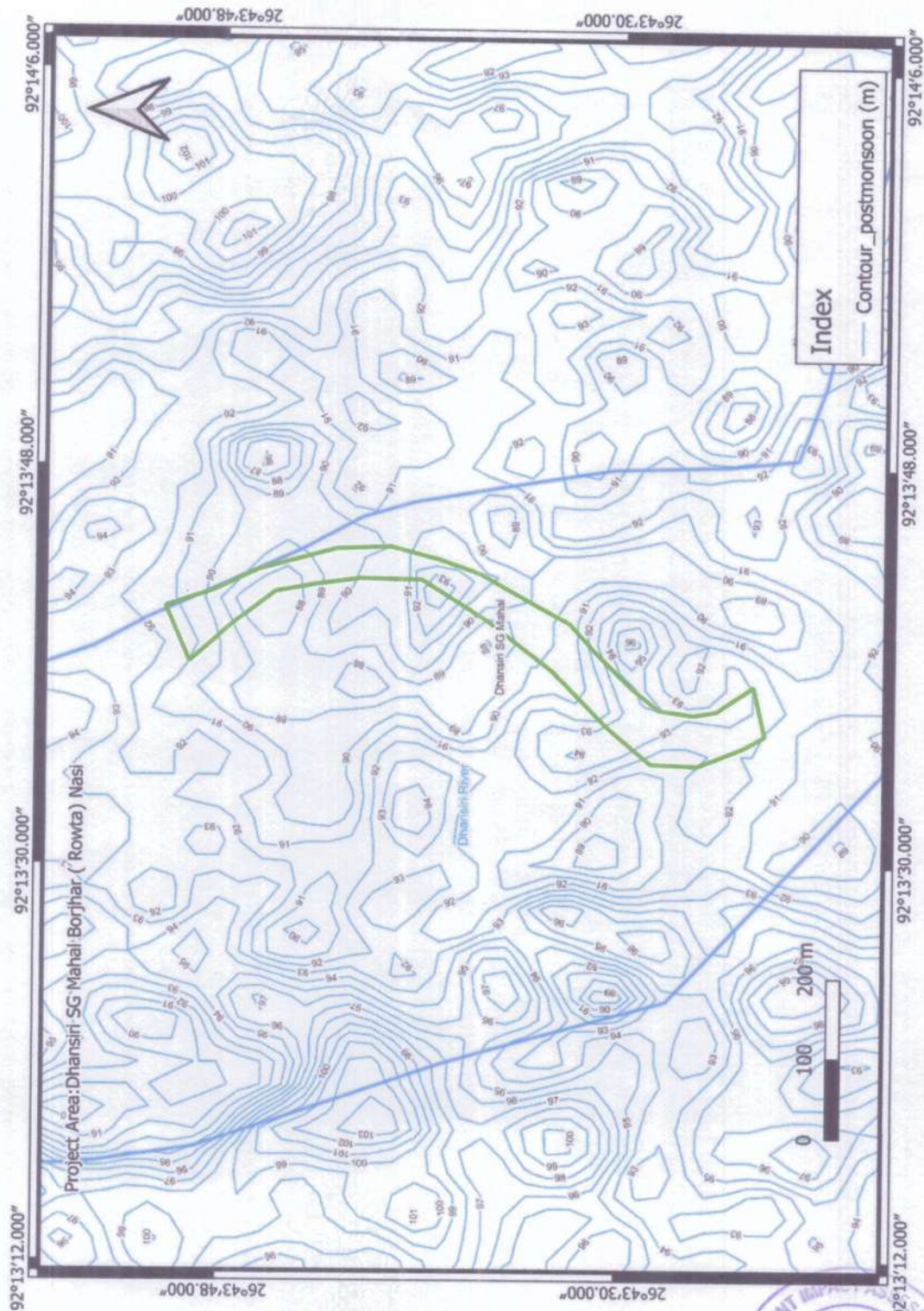




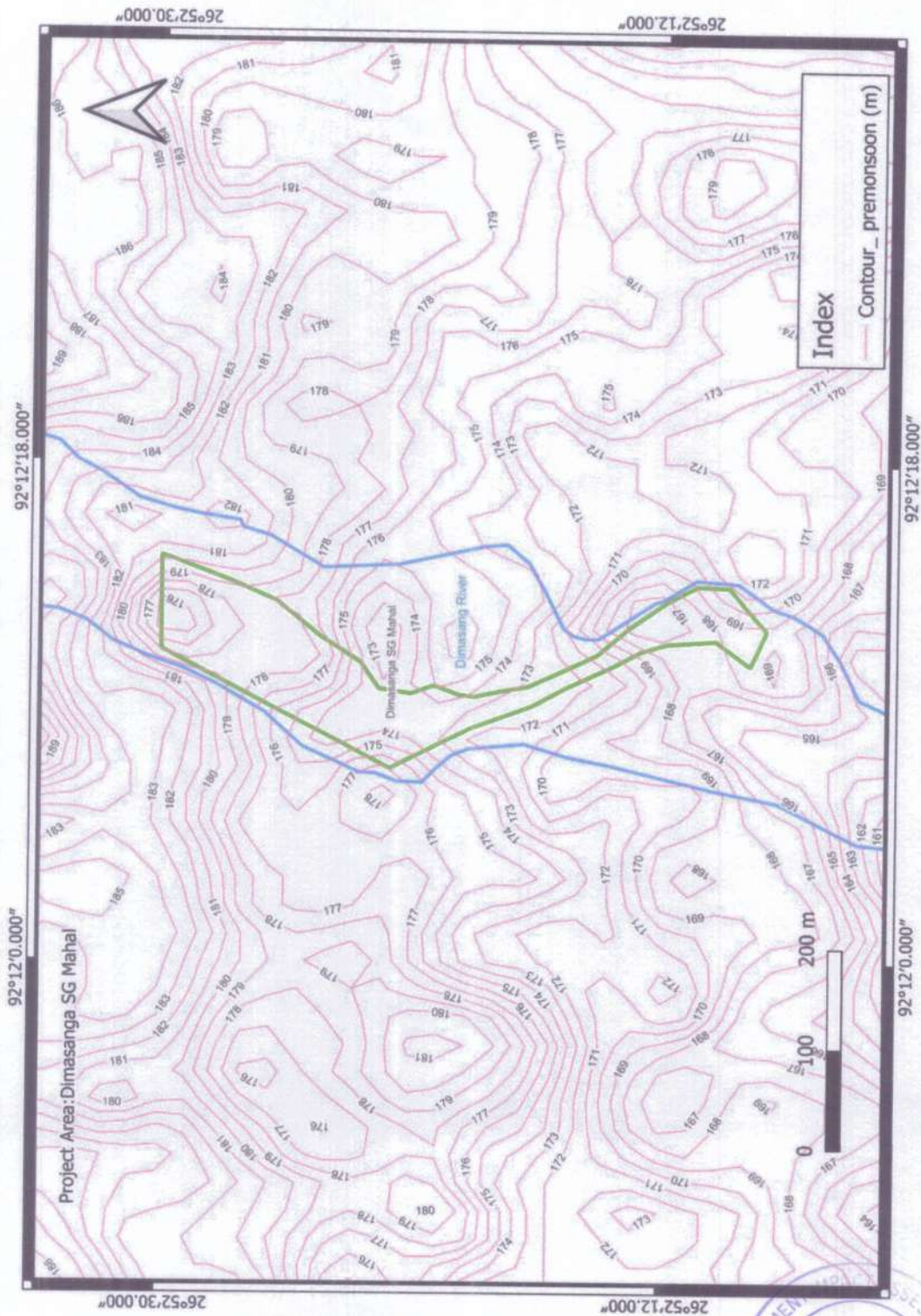




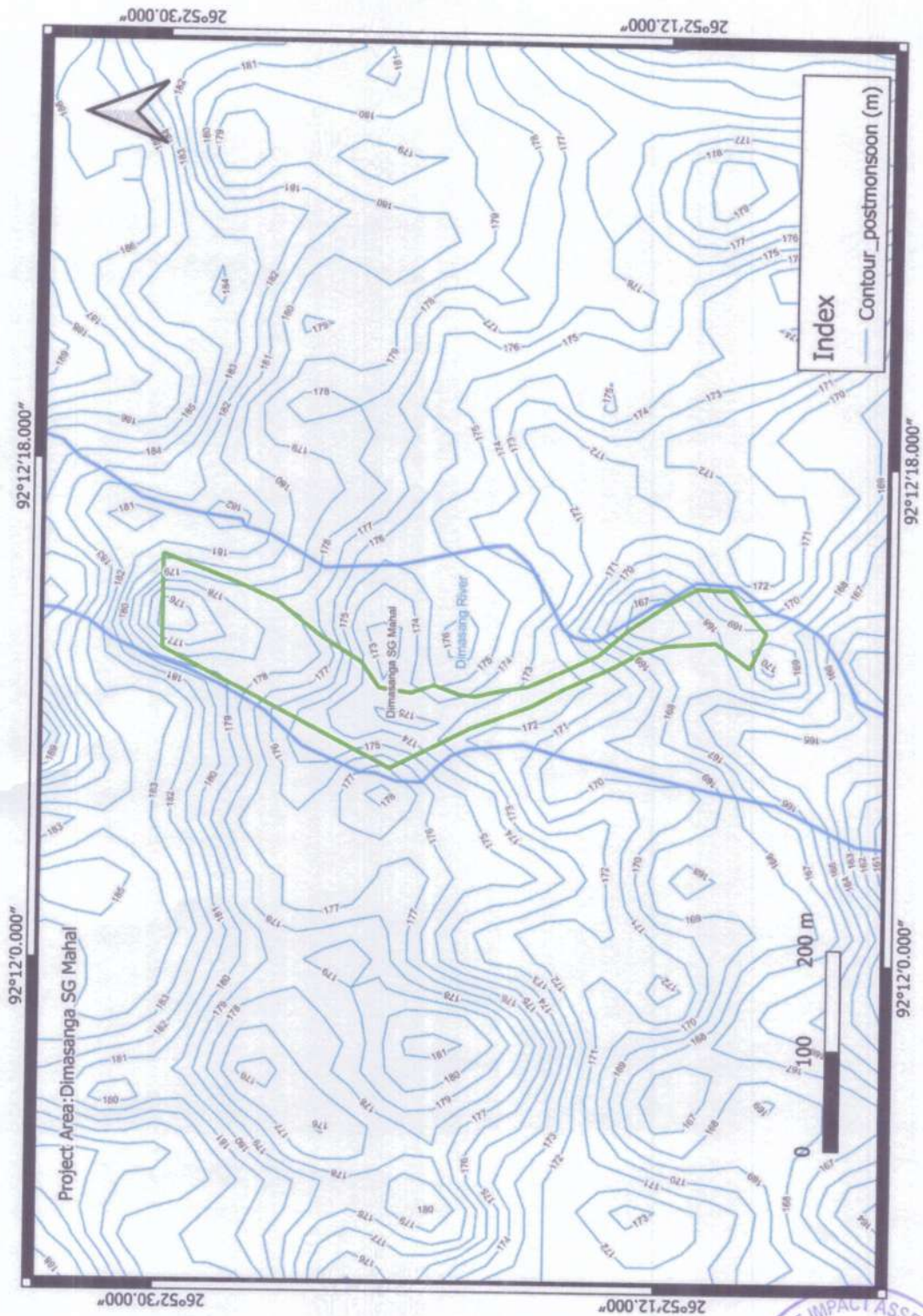




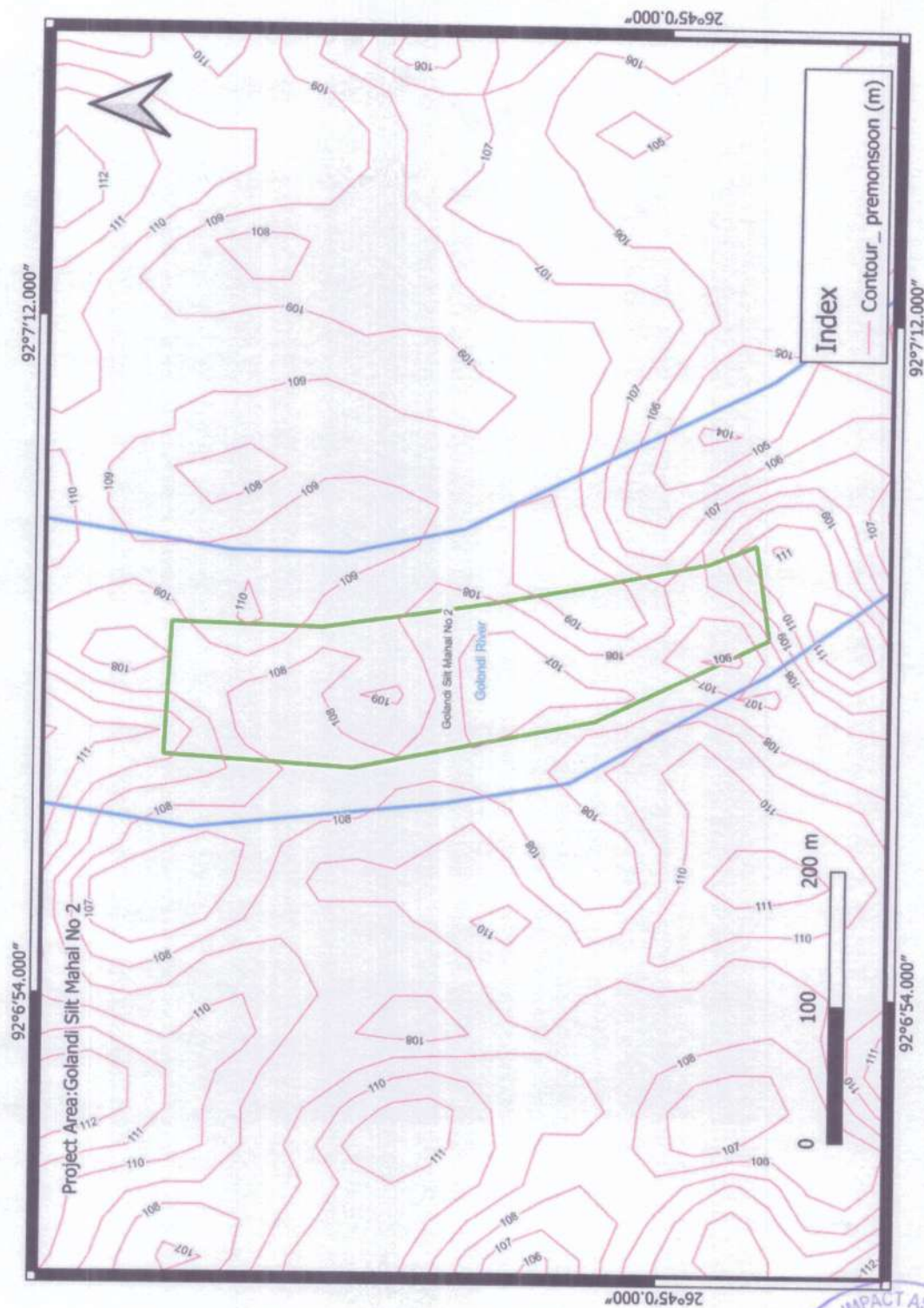








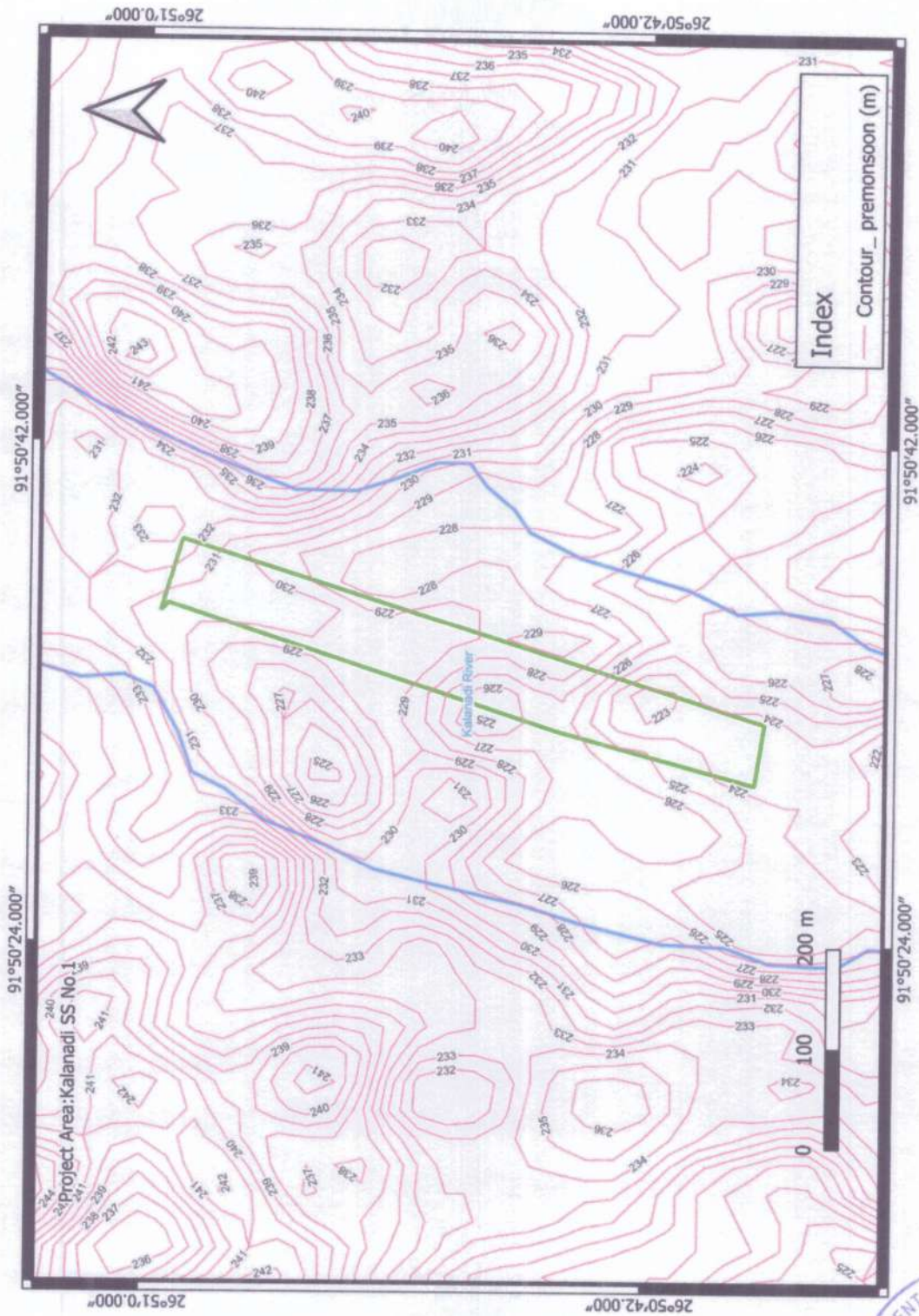








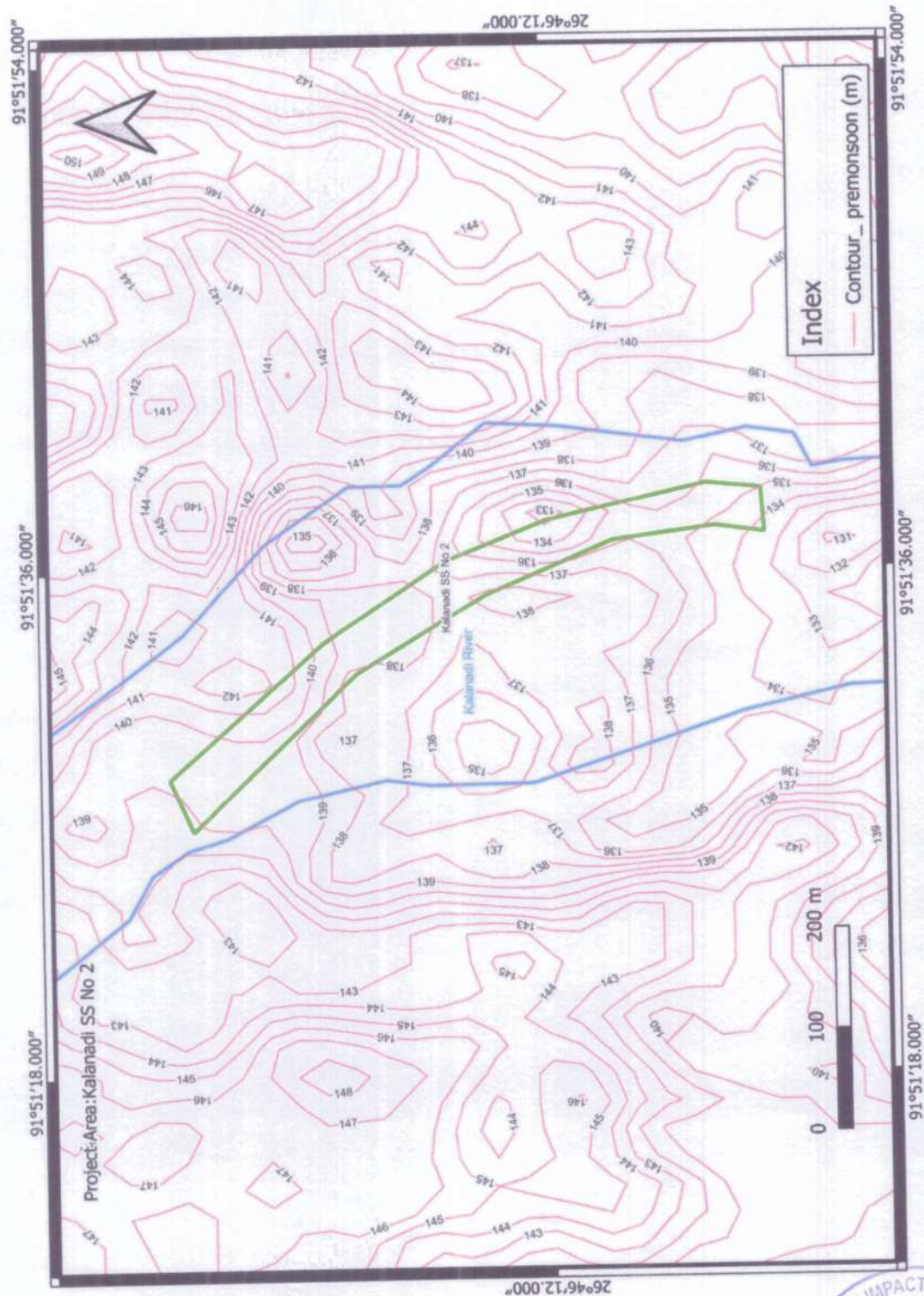








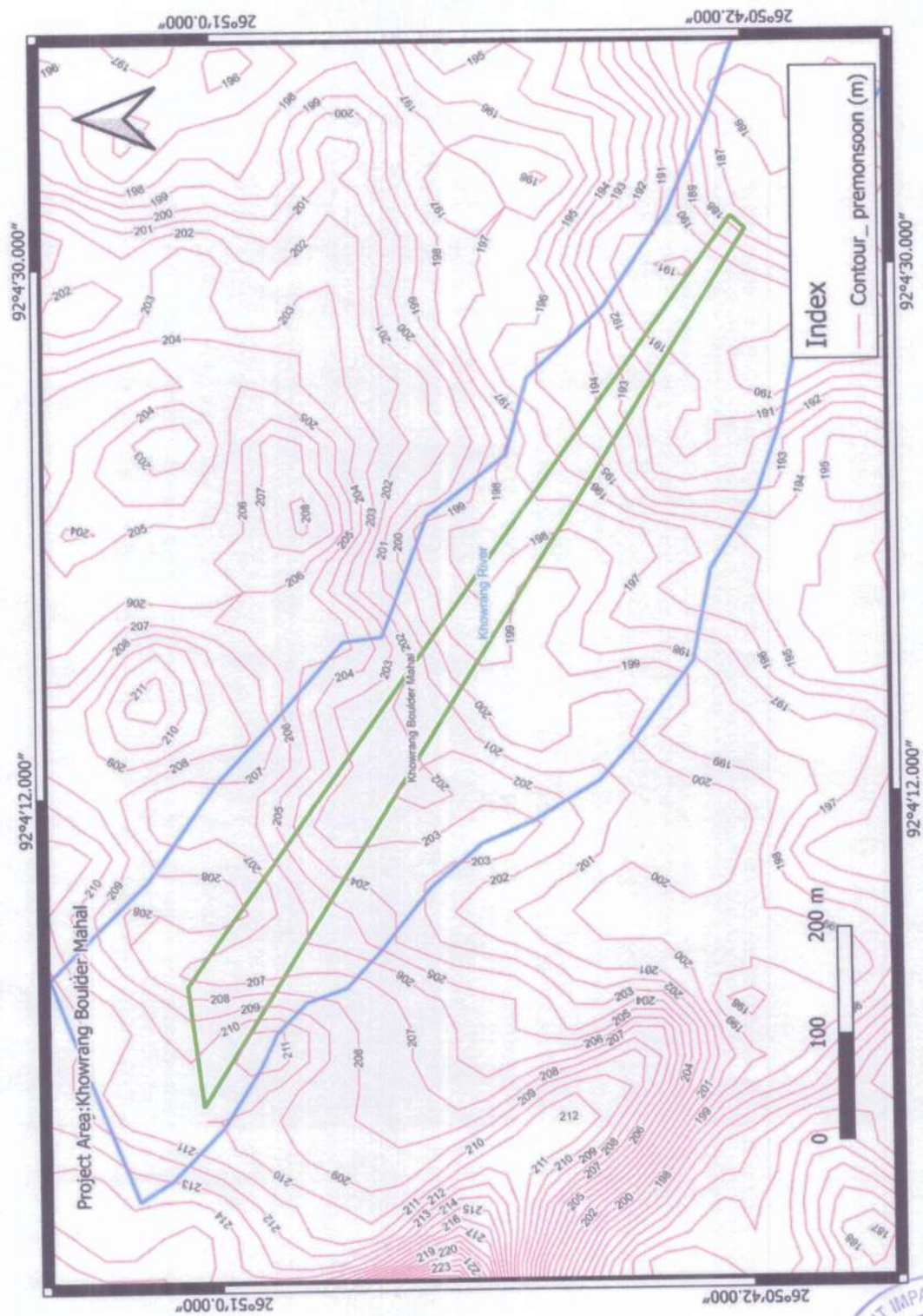




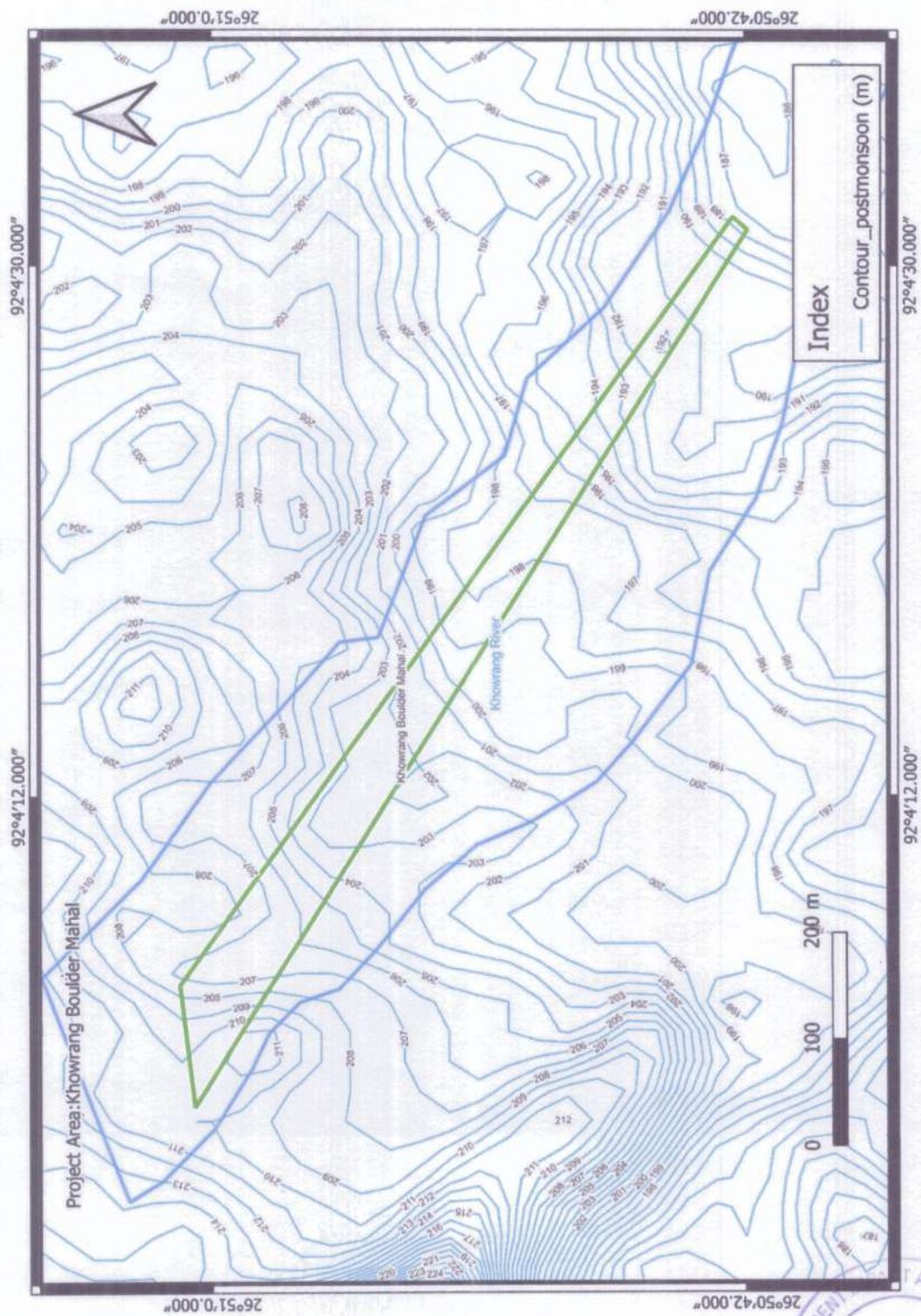




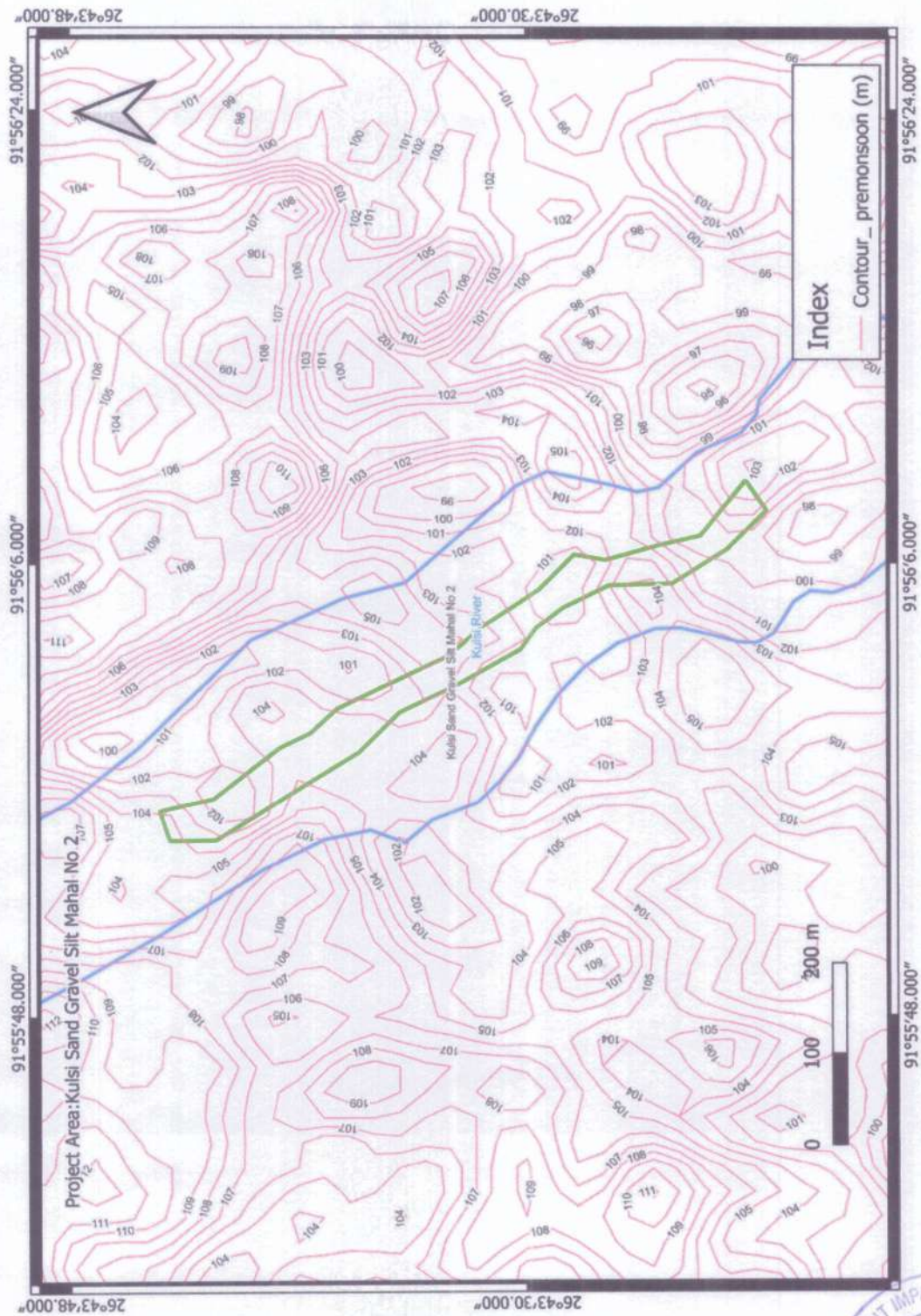




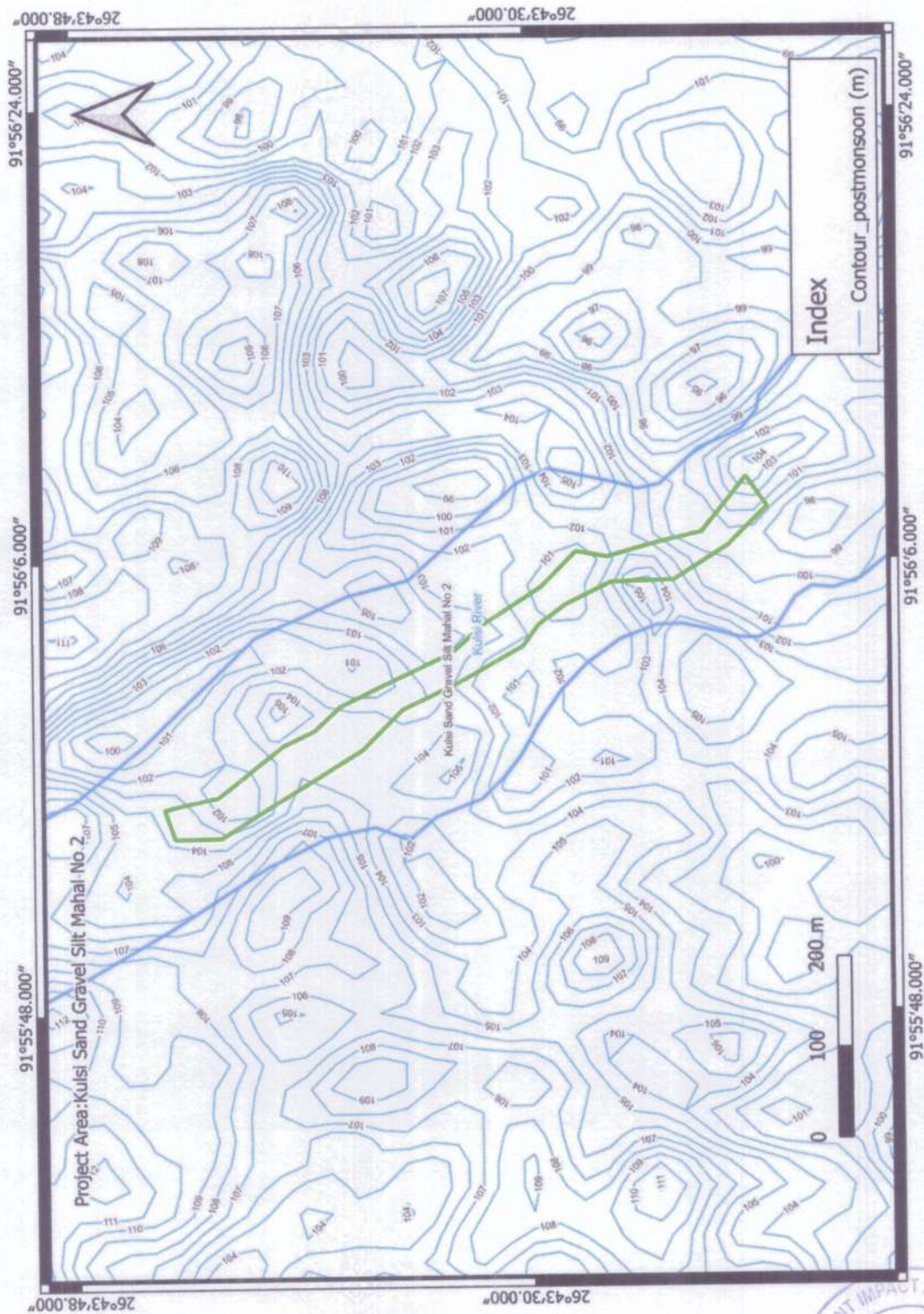




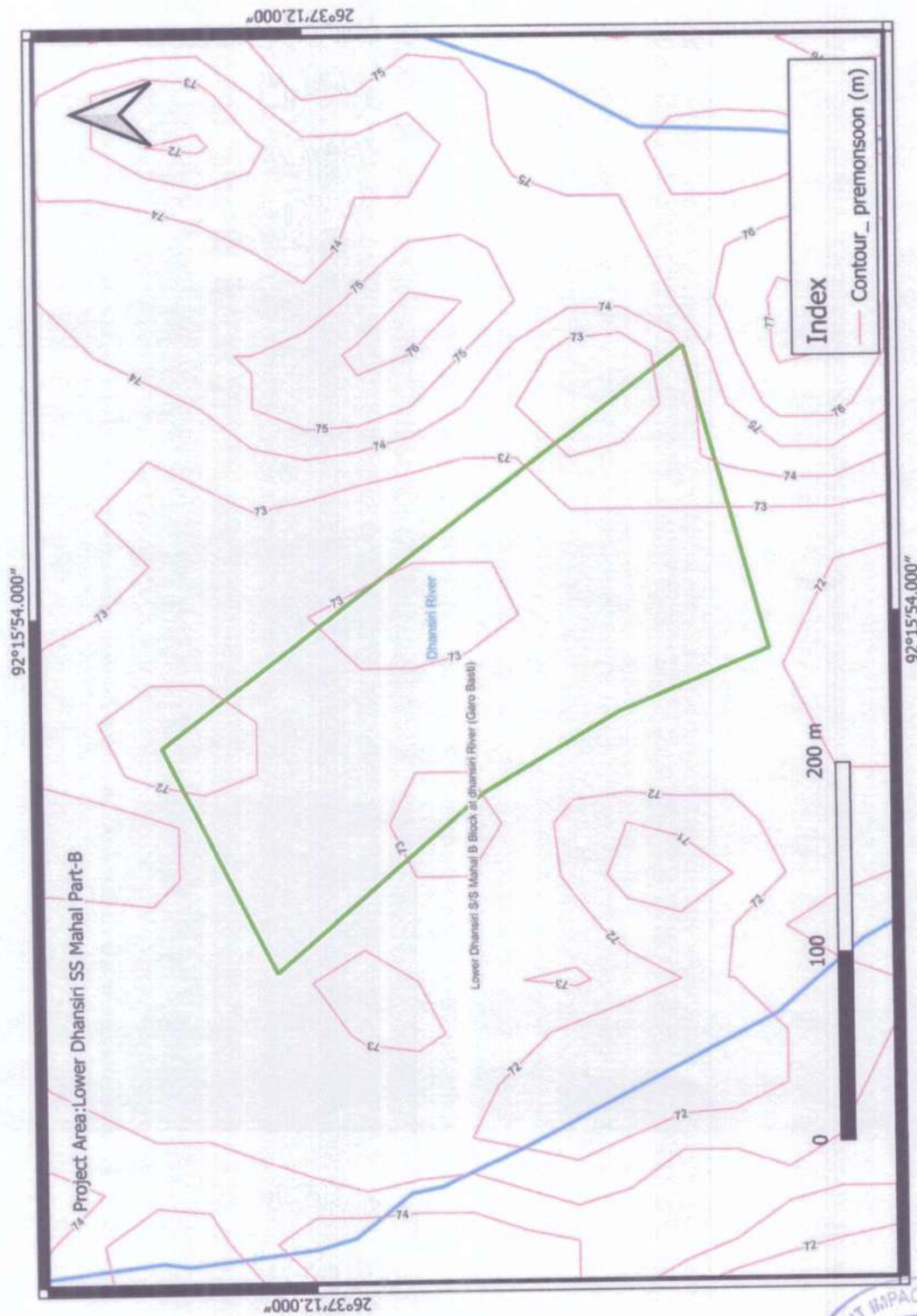




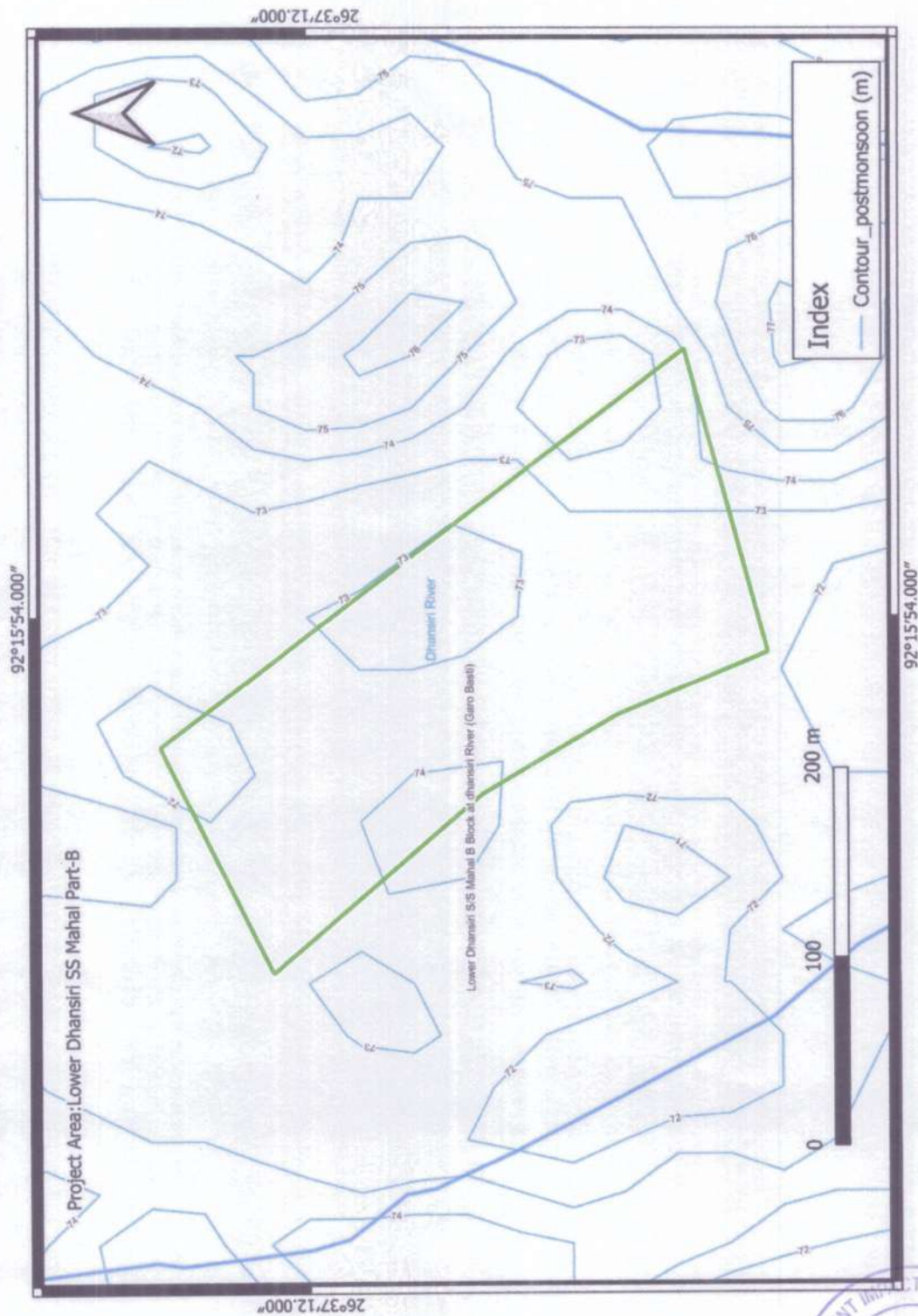




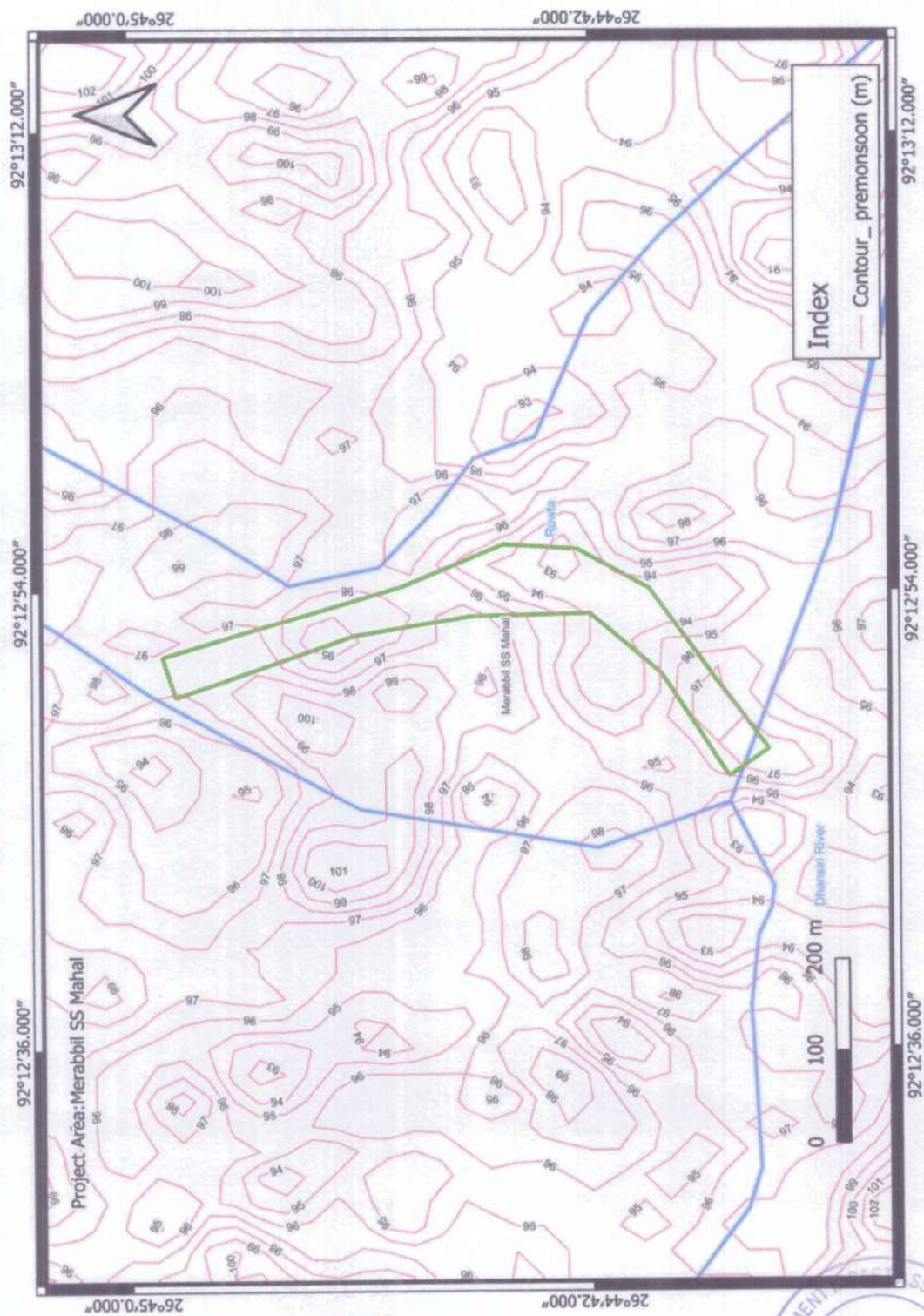




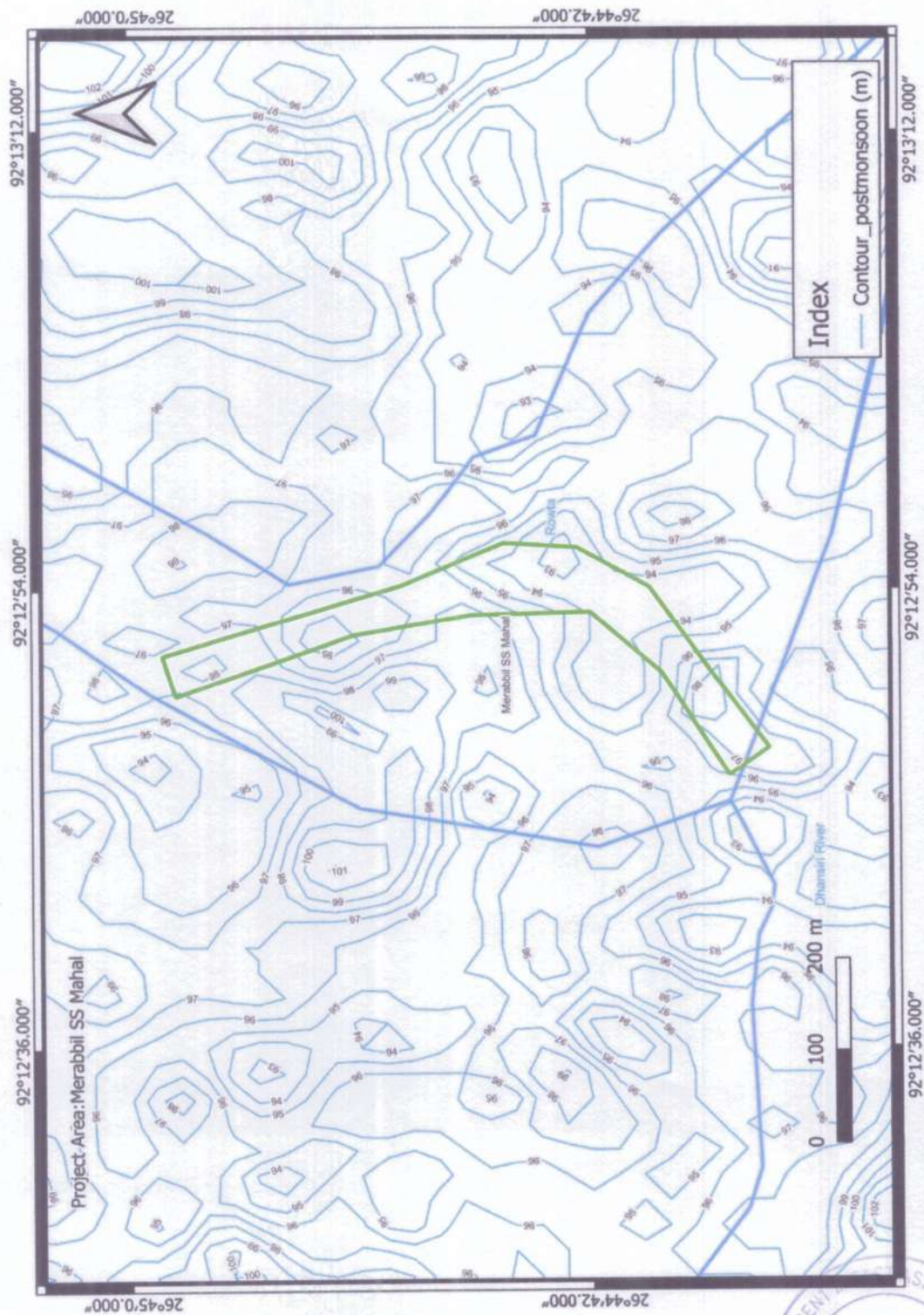




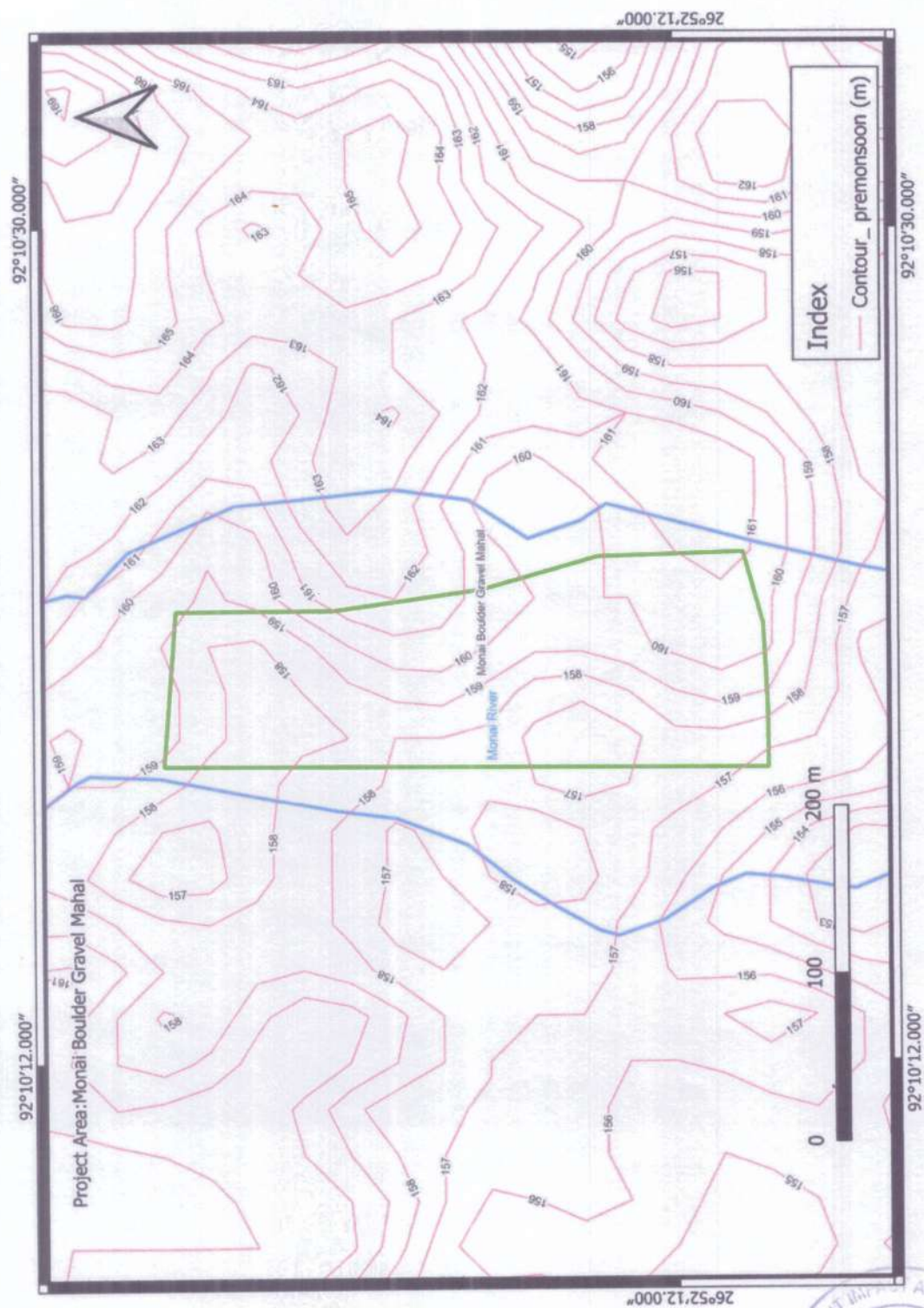




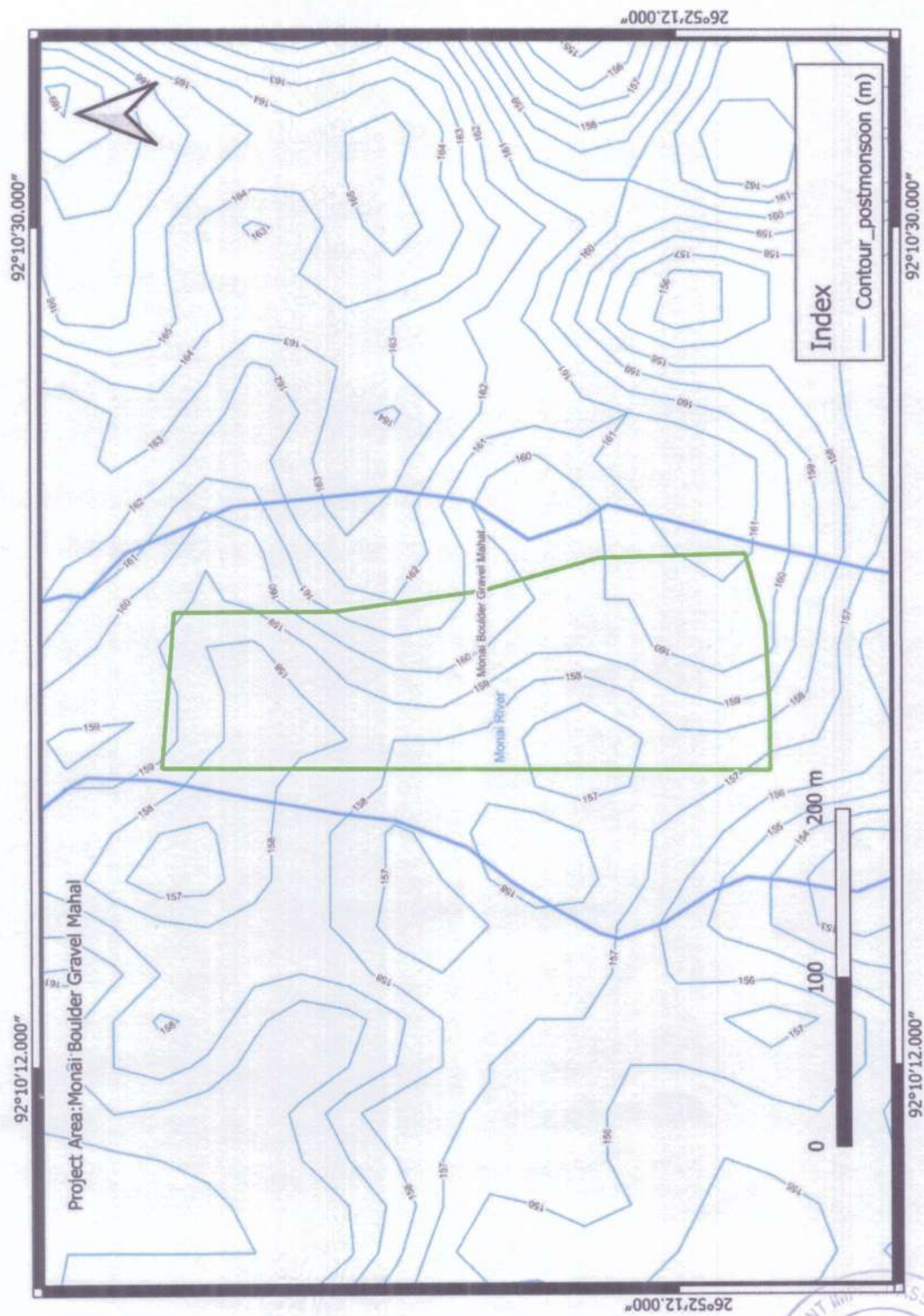




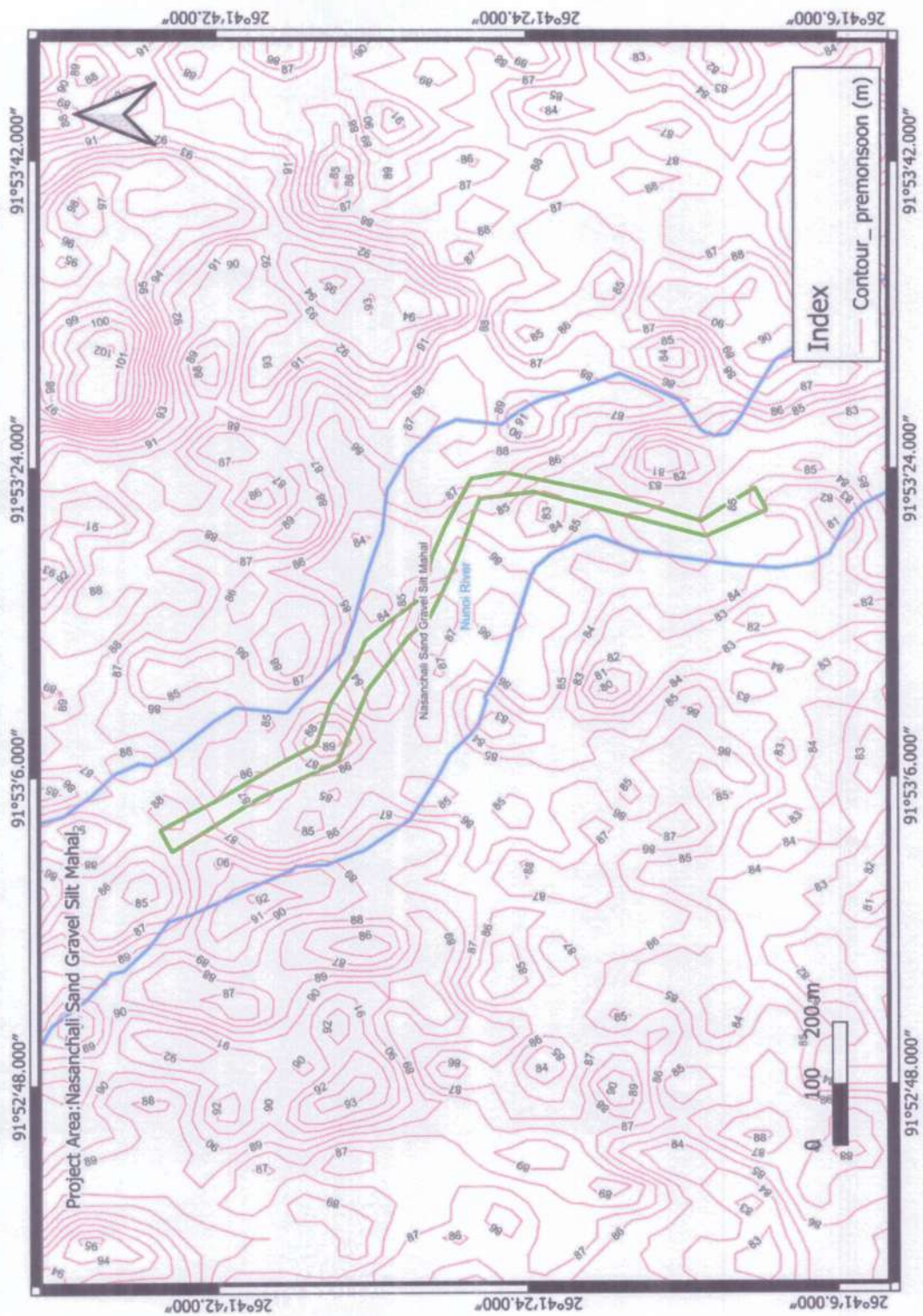




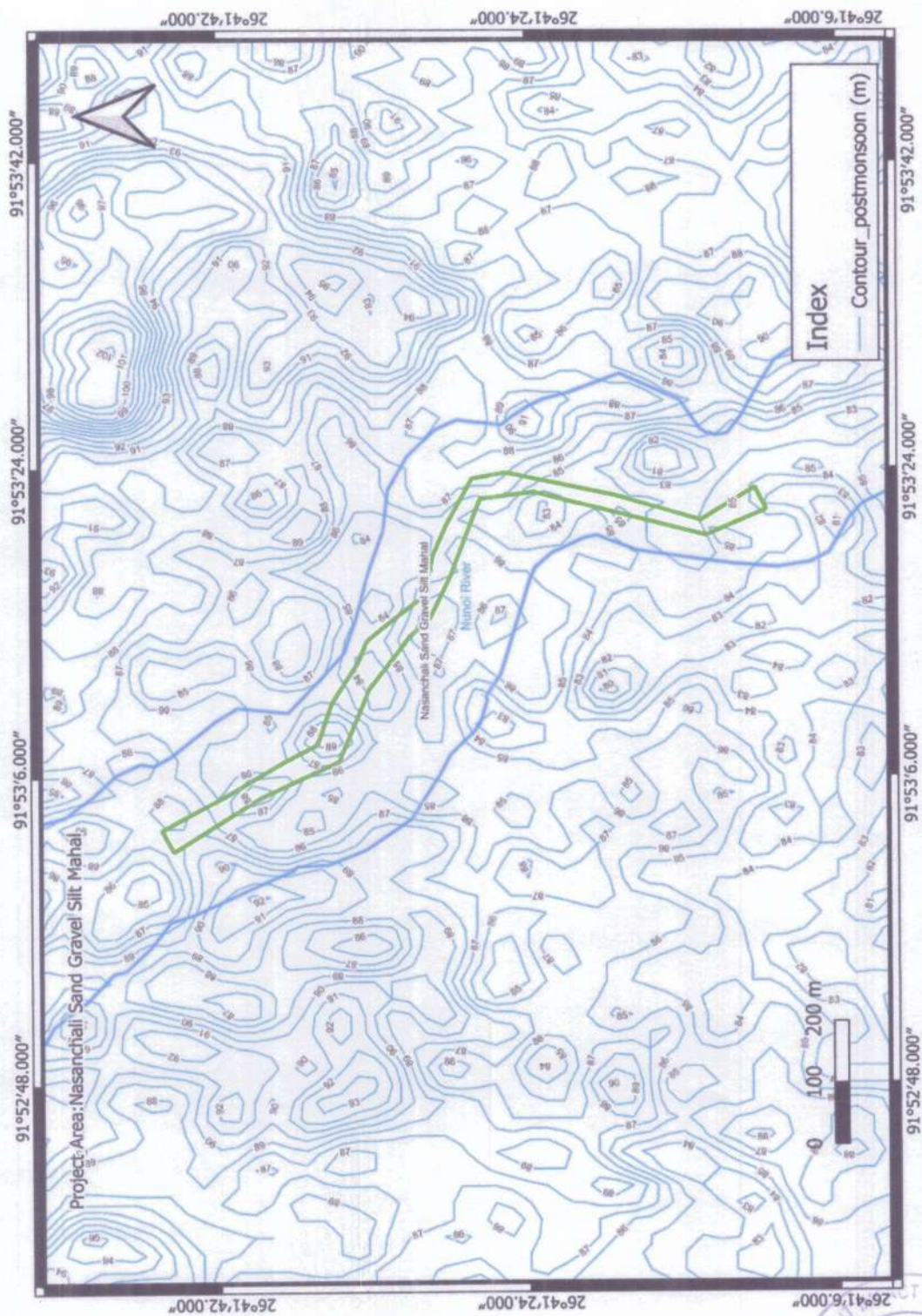




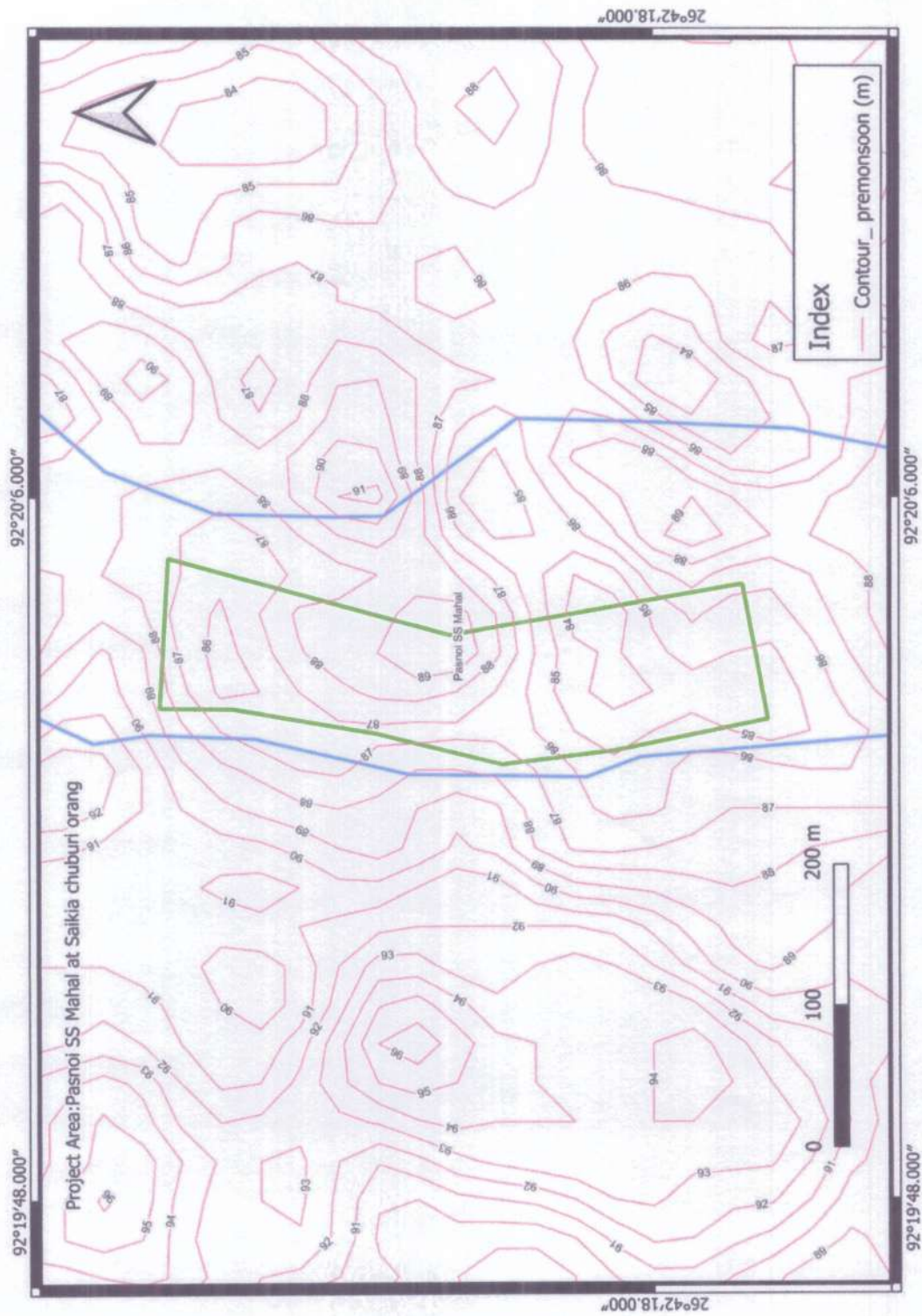




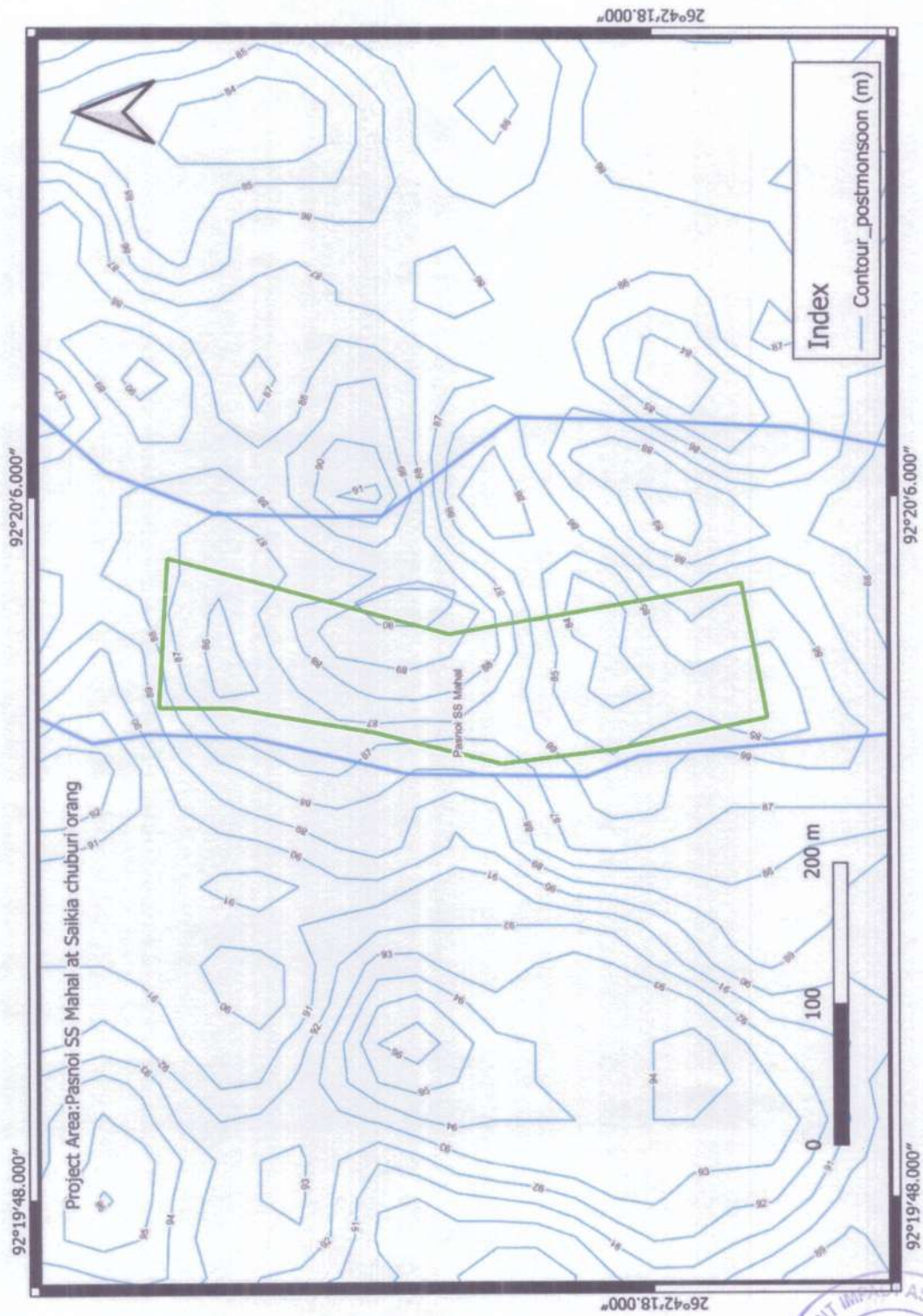


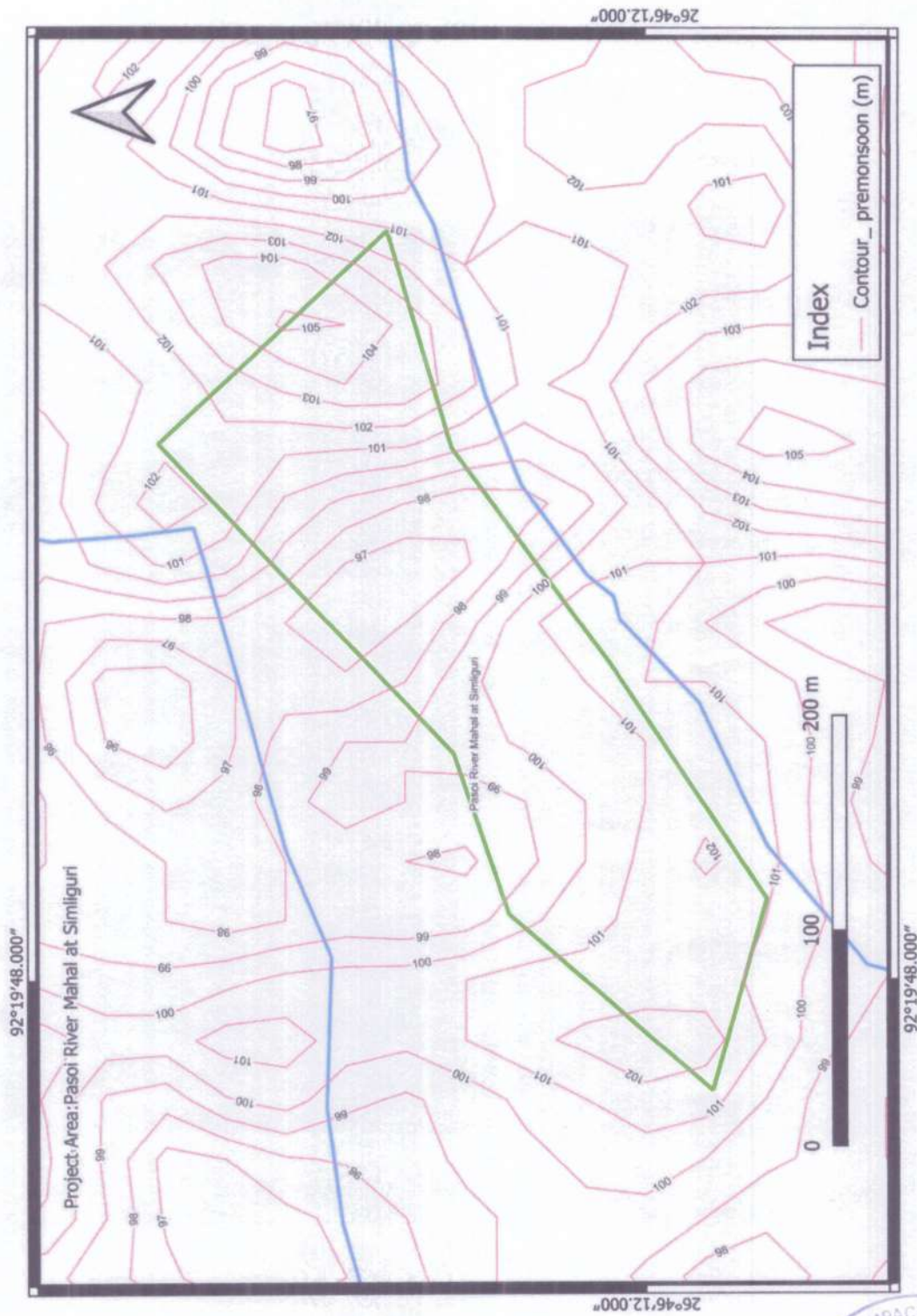




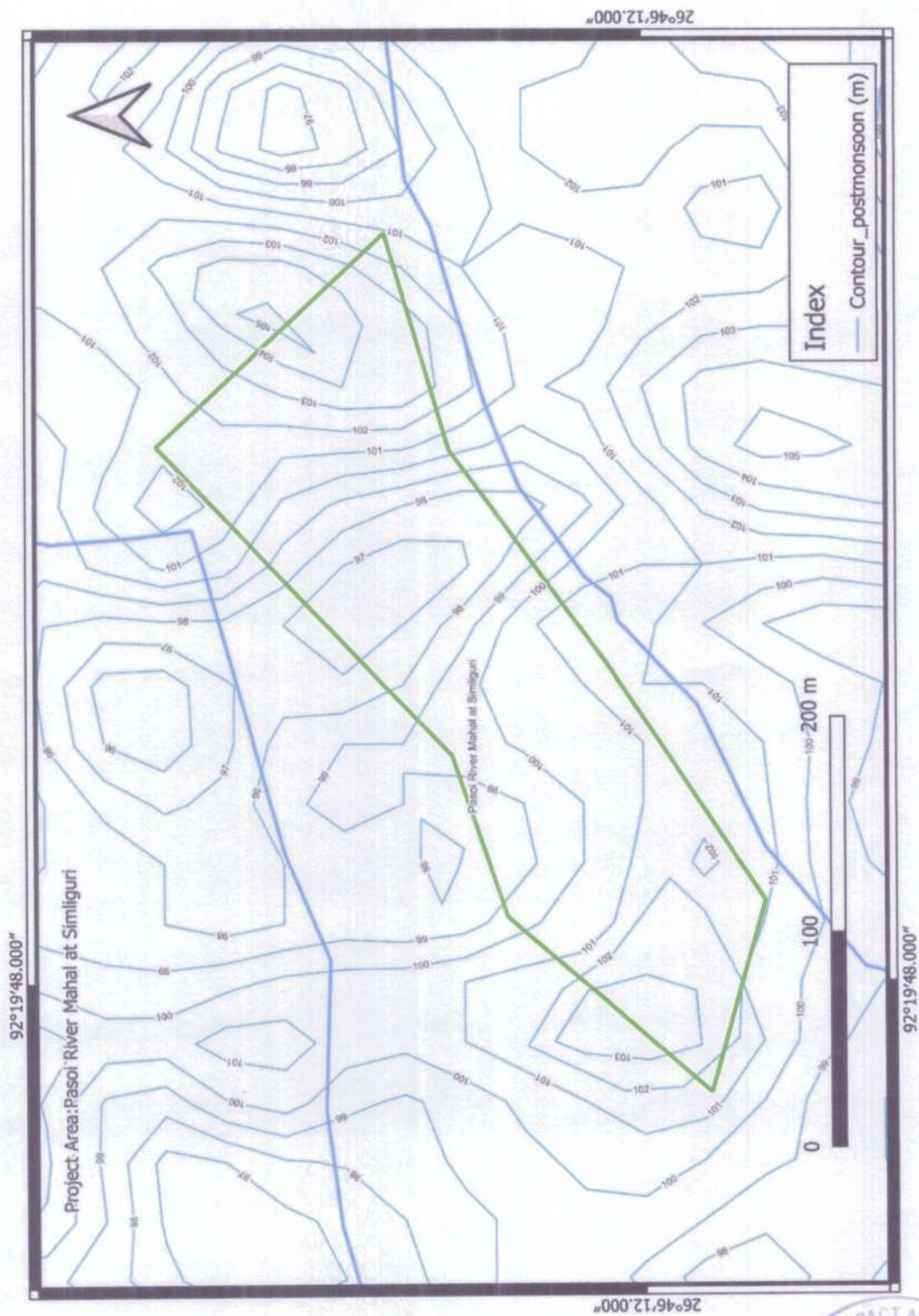




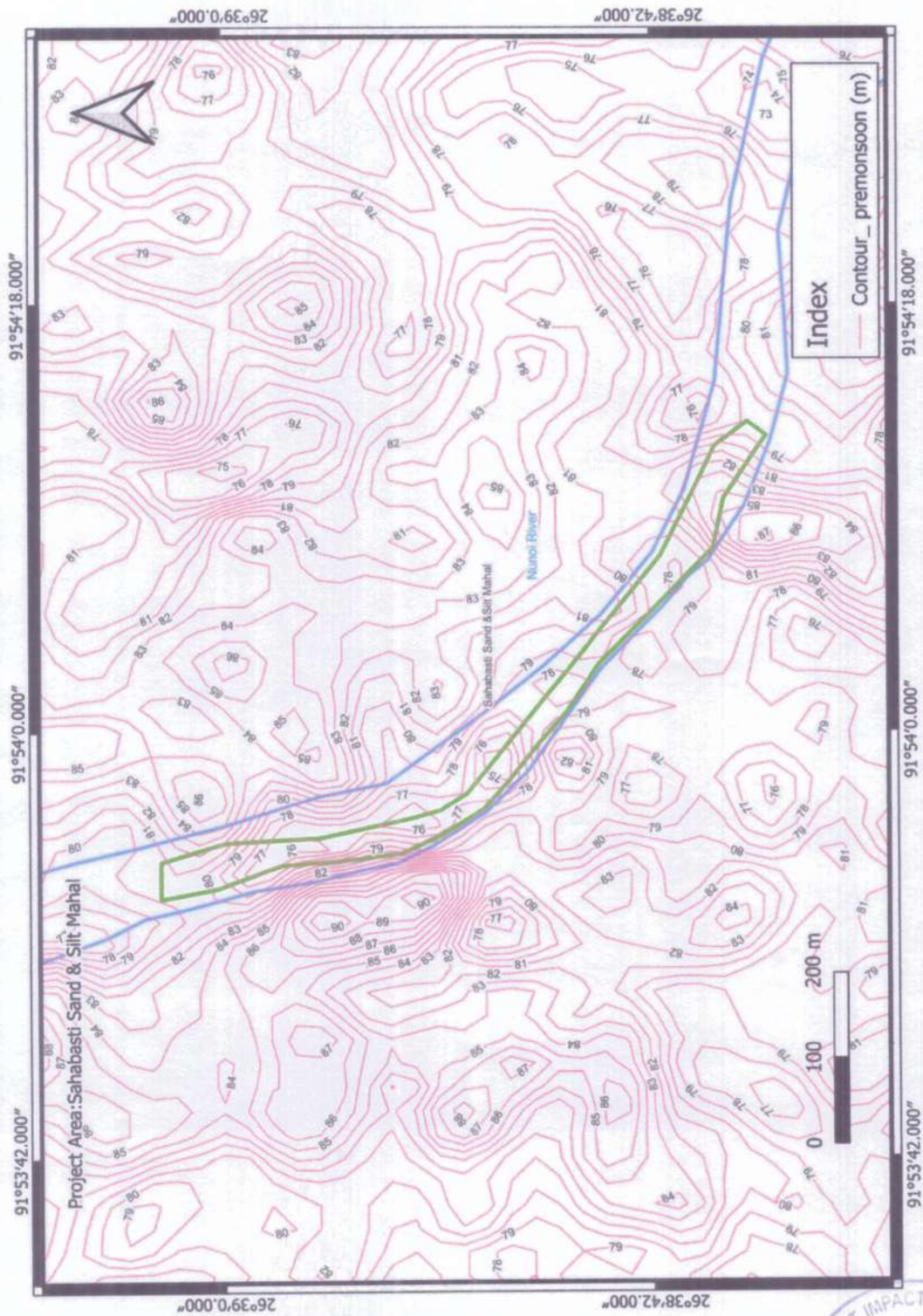










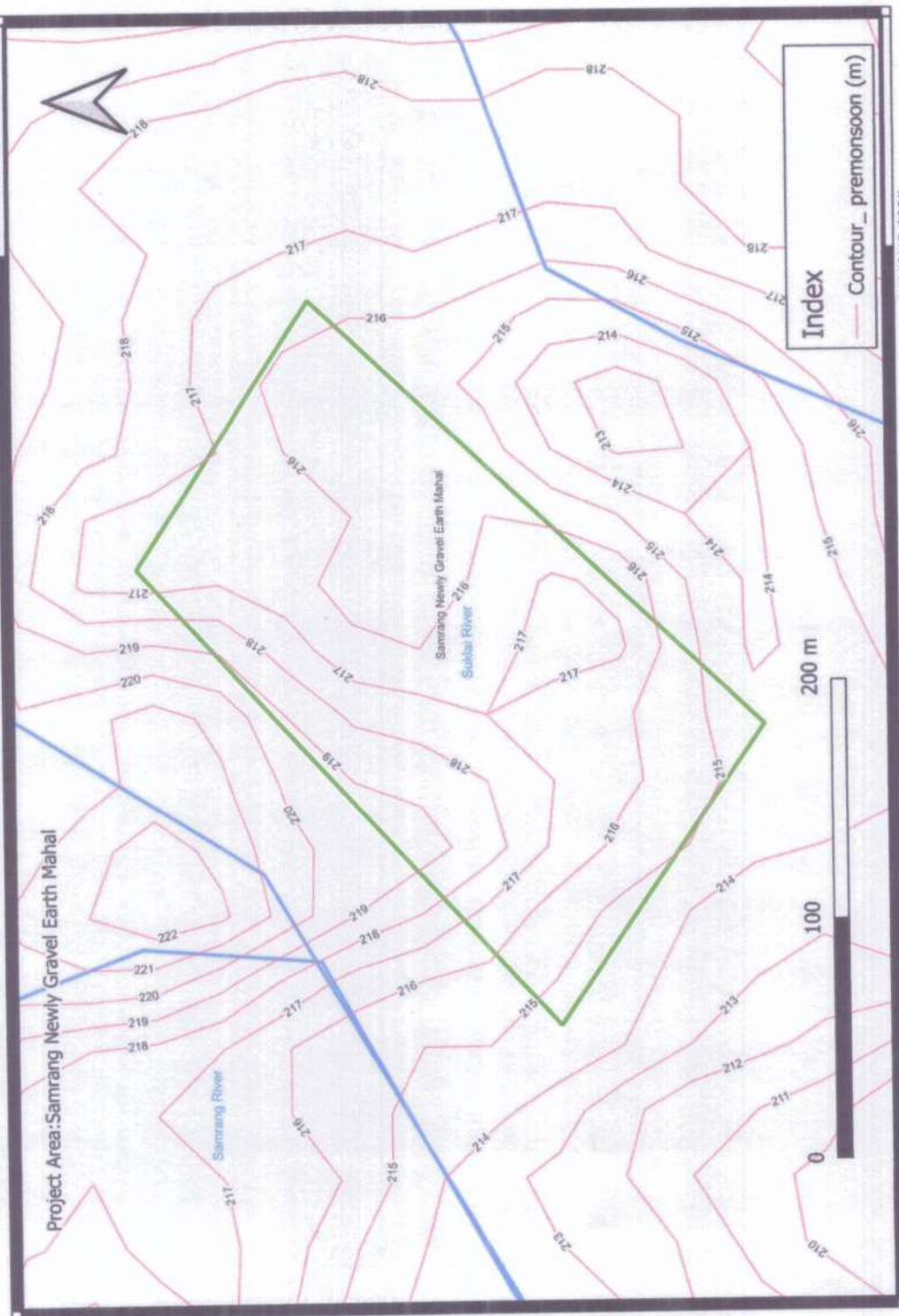








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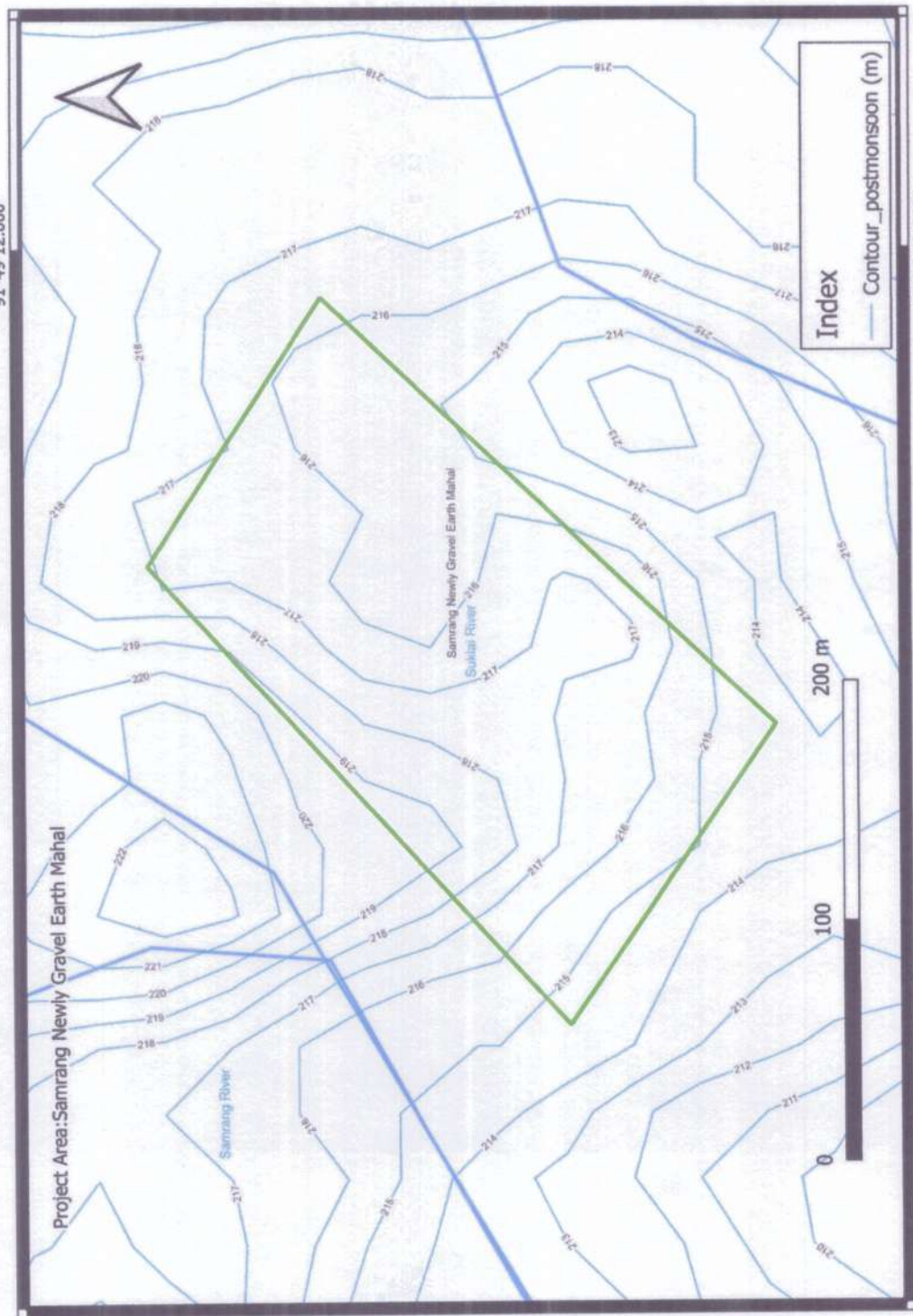


91°49'12.000"





91°49'12.000"



91°49'12.000"

Project Area: Samrang Newly Gravel Earth Mahal

Samrang Newly Gravel Earth Mahal

Sukia River

Samrang River

200 m

100

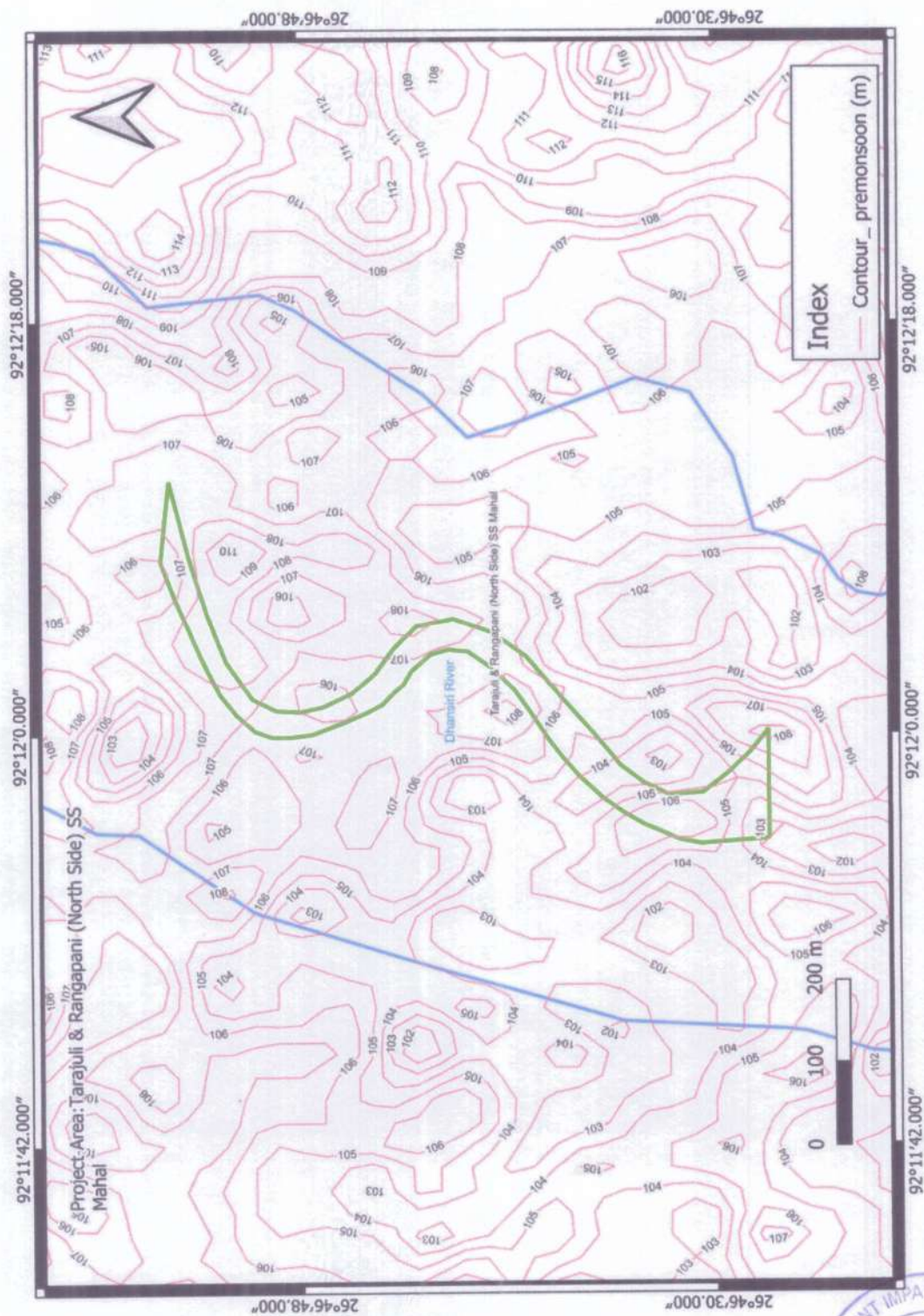
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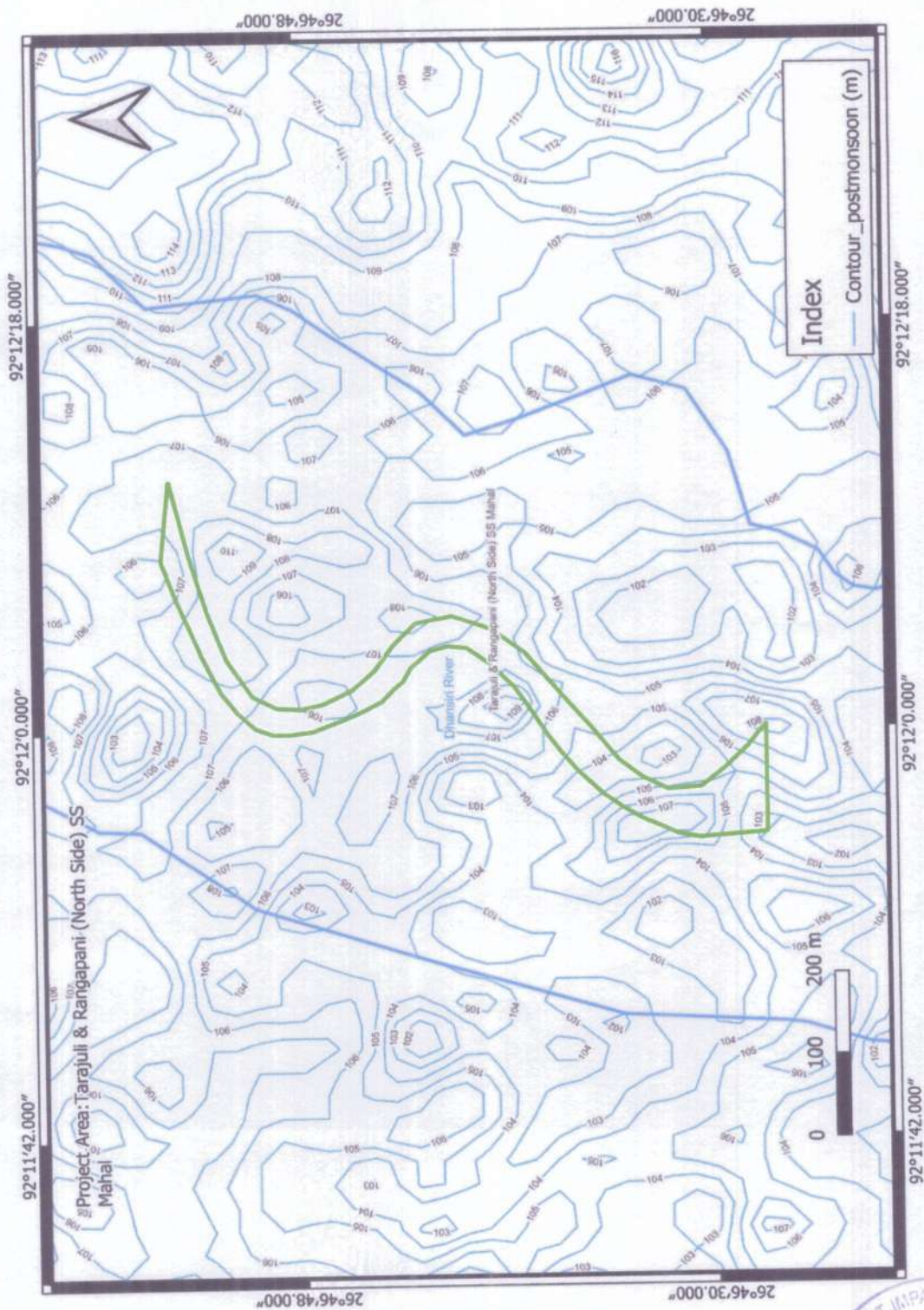
Contour\_postmonsoon (m)



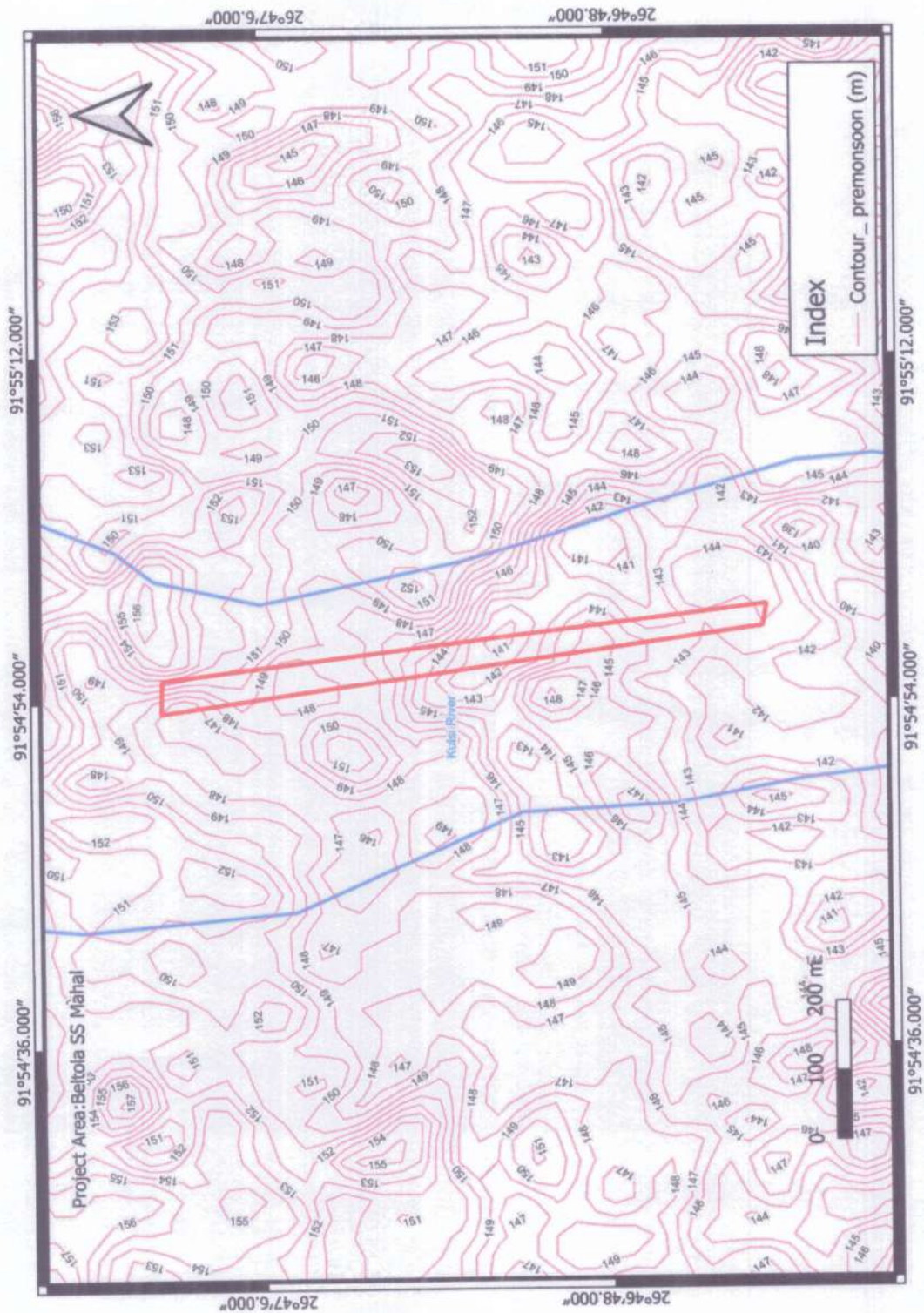








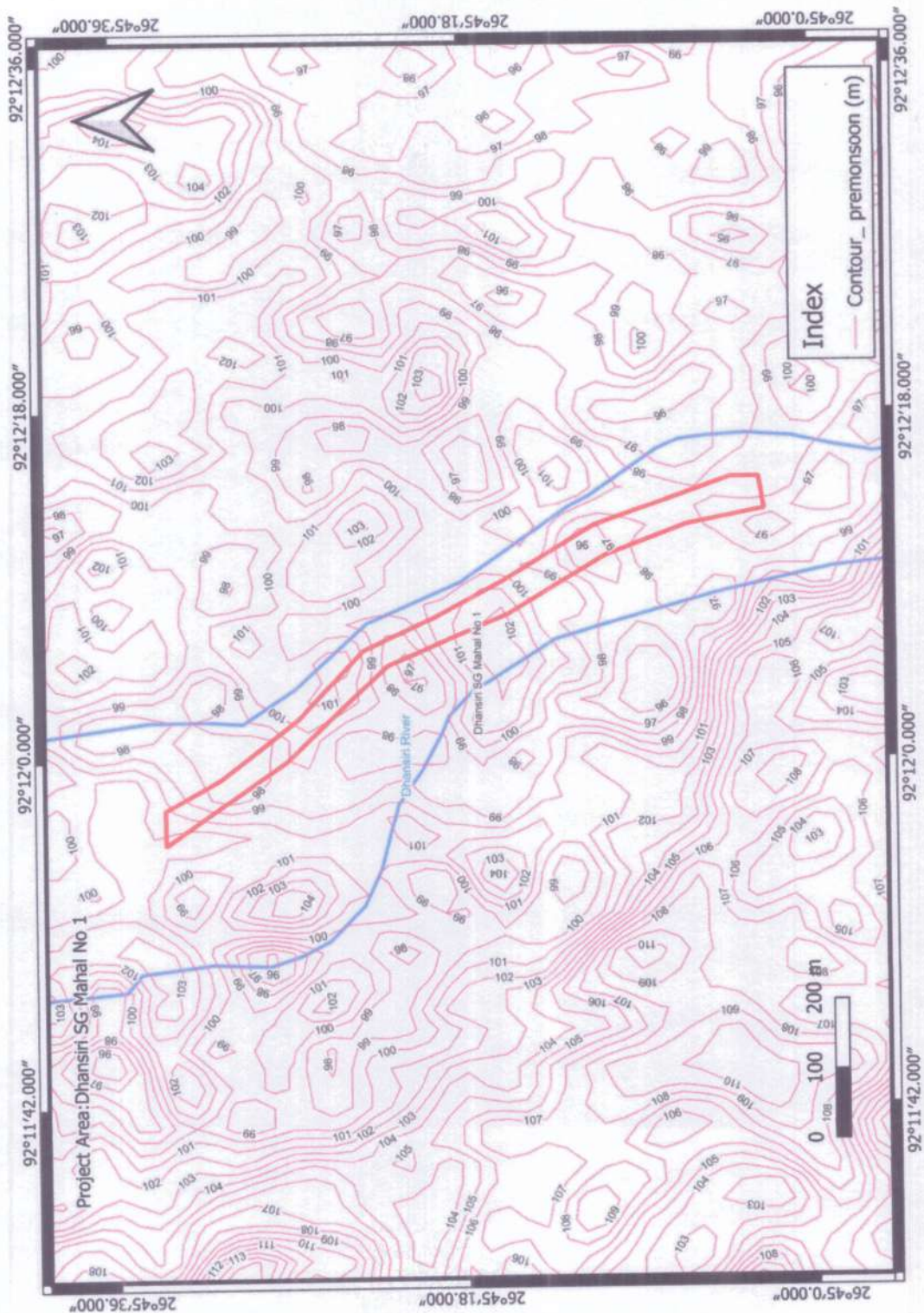




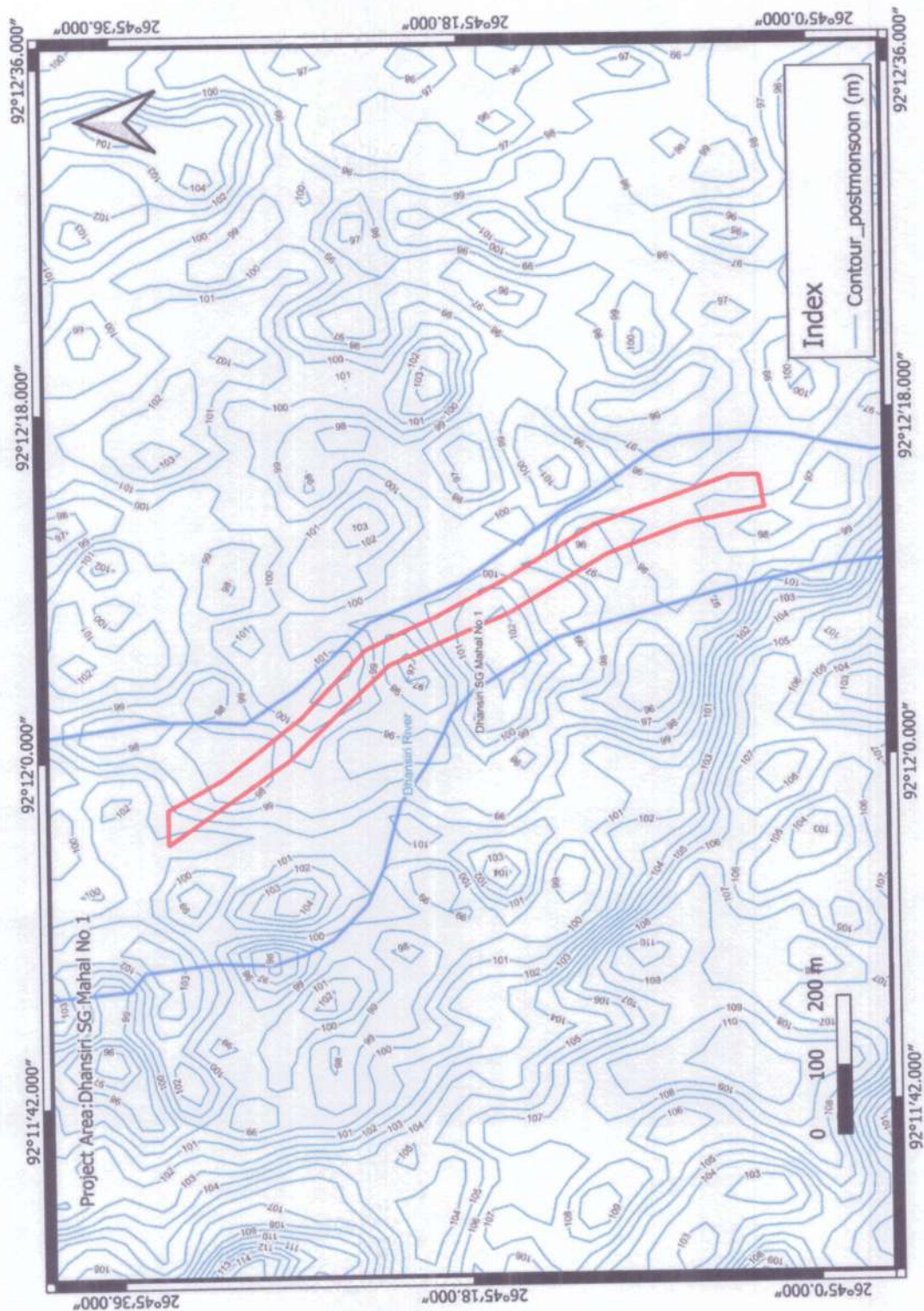




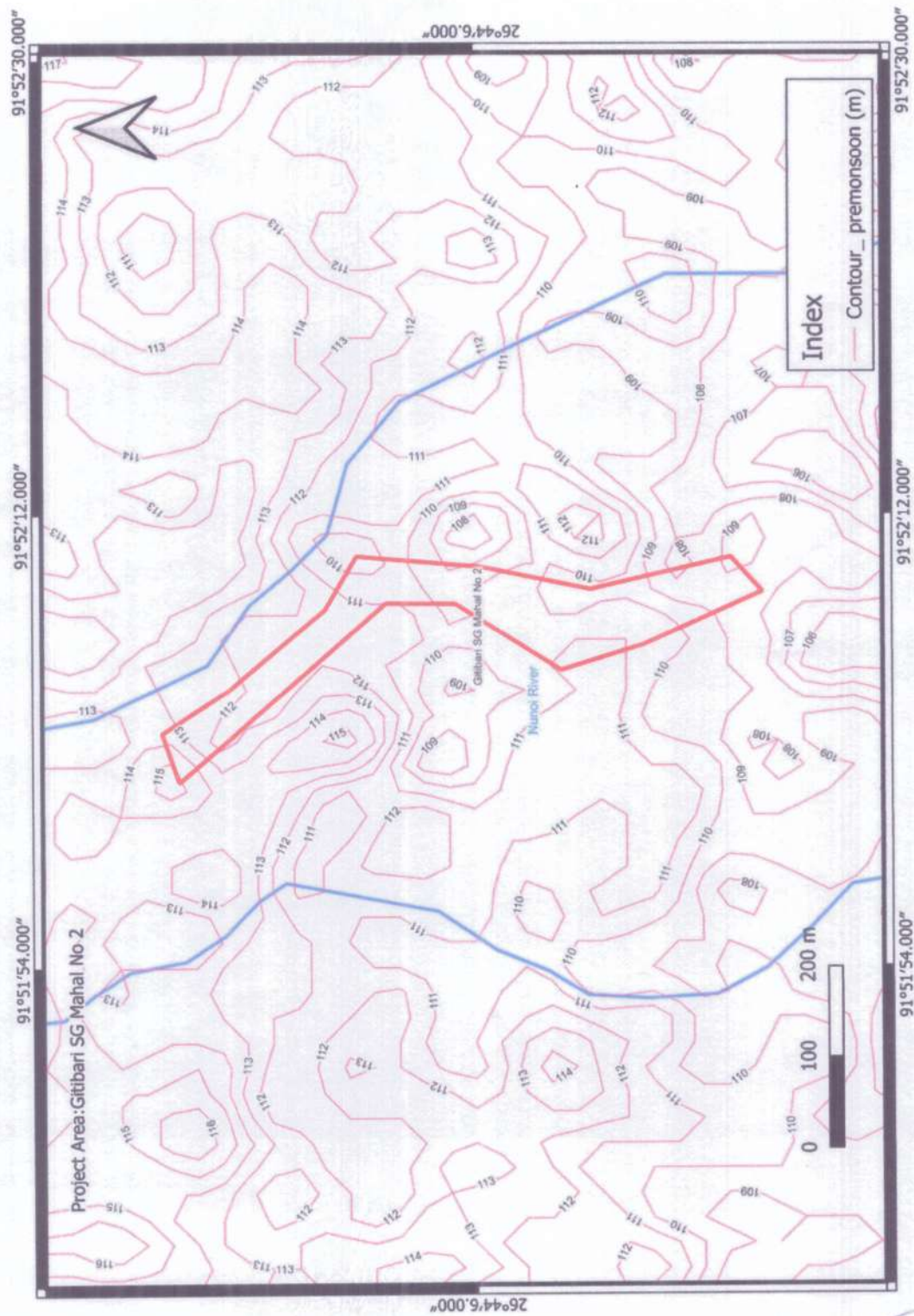




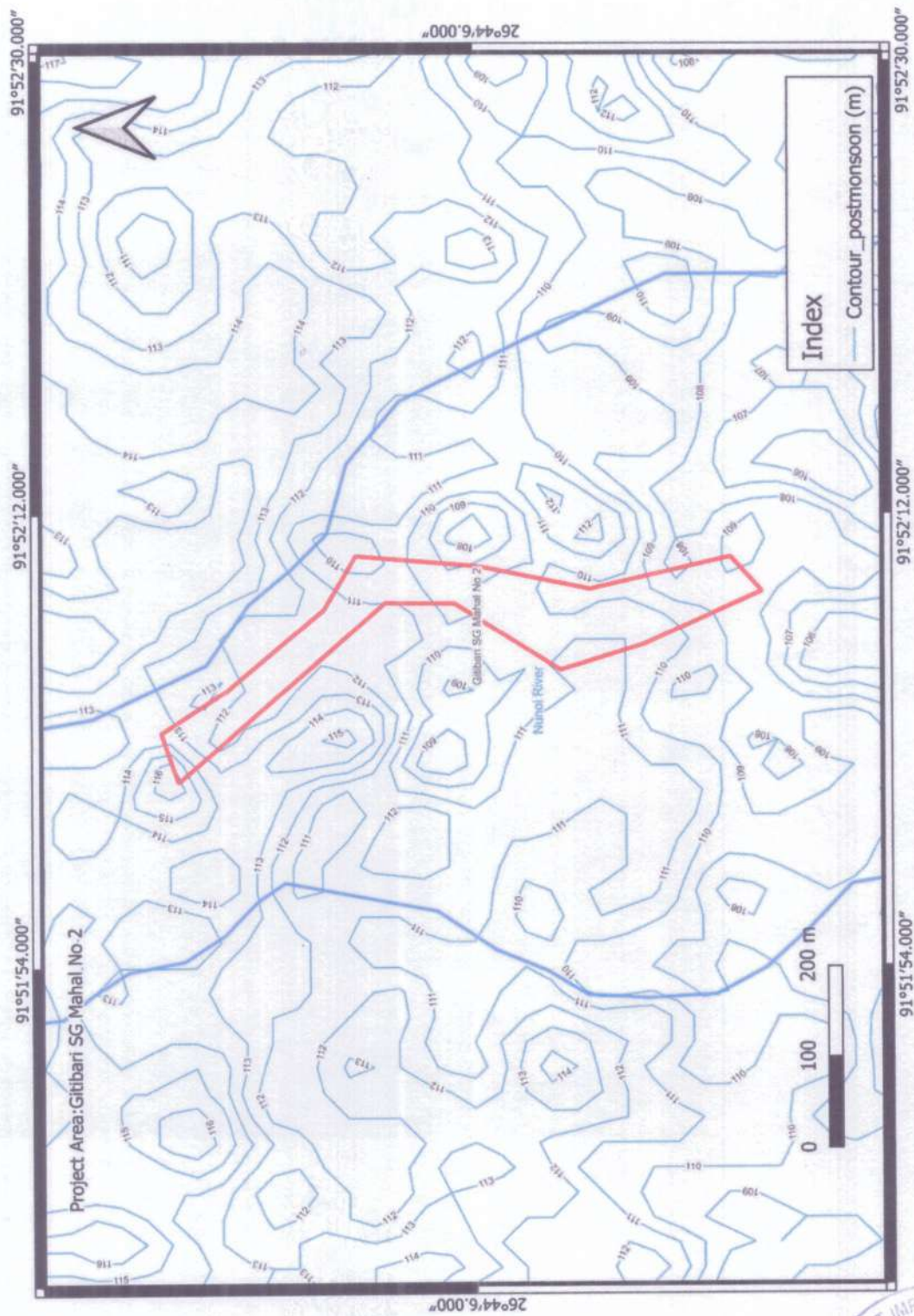




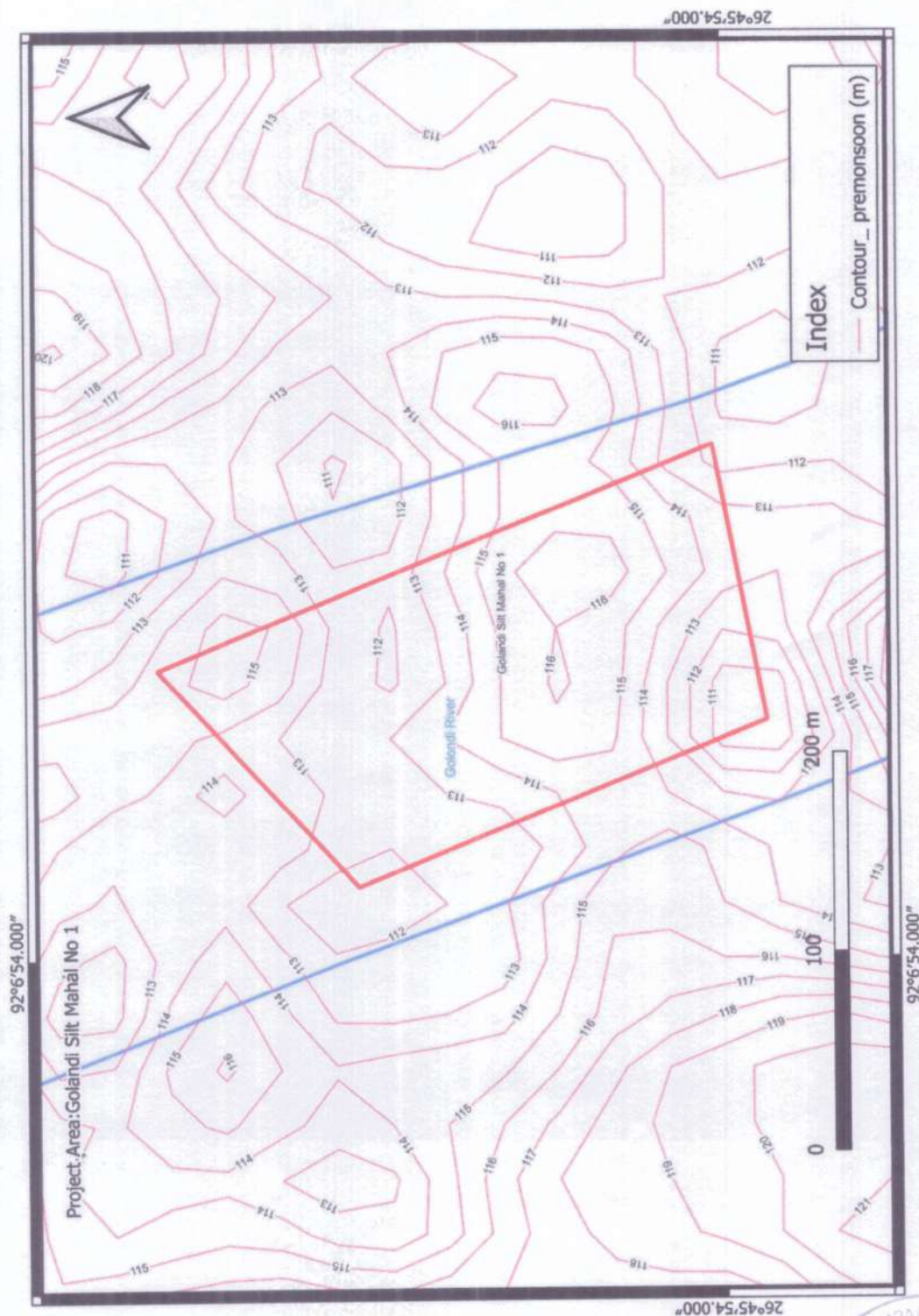




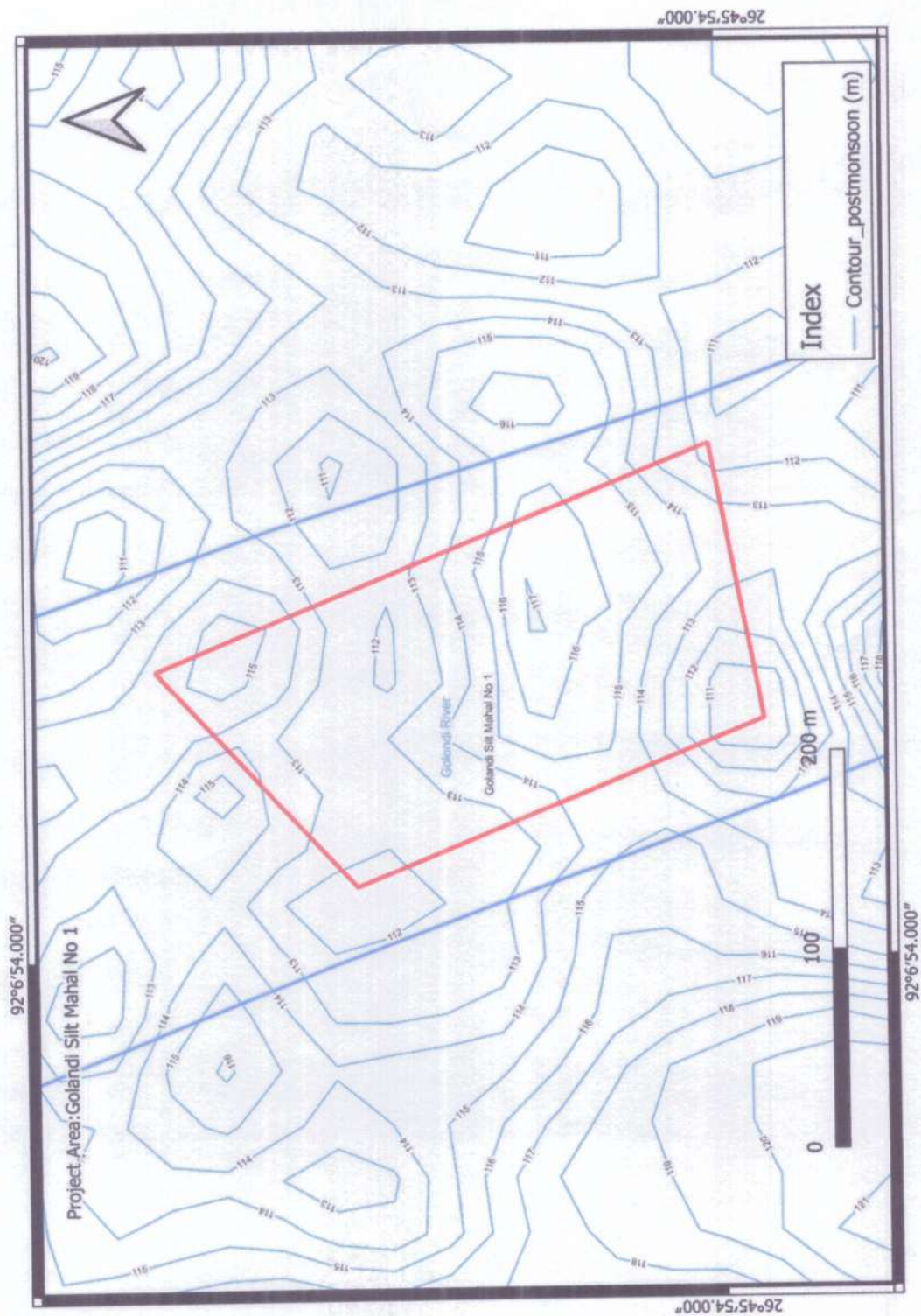




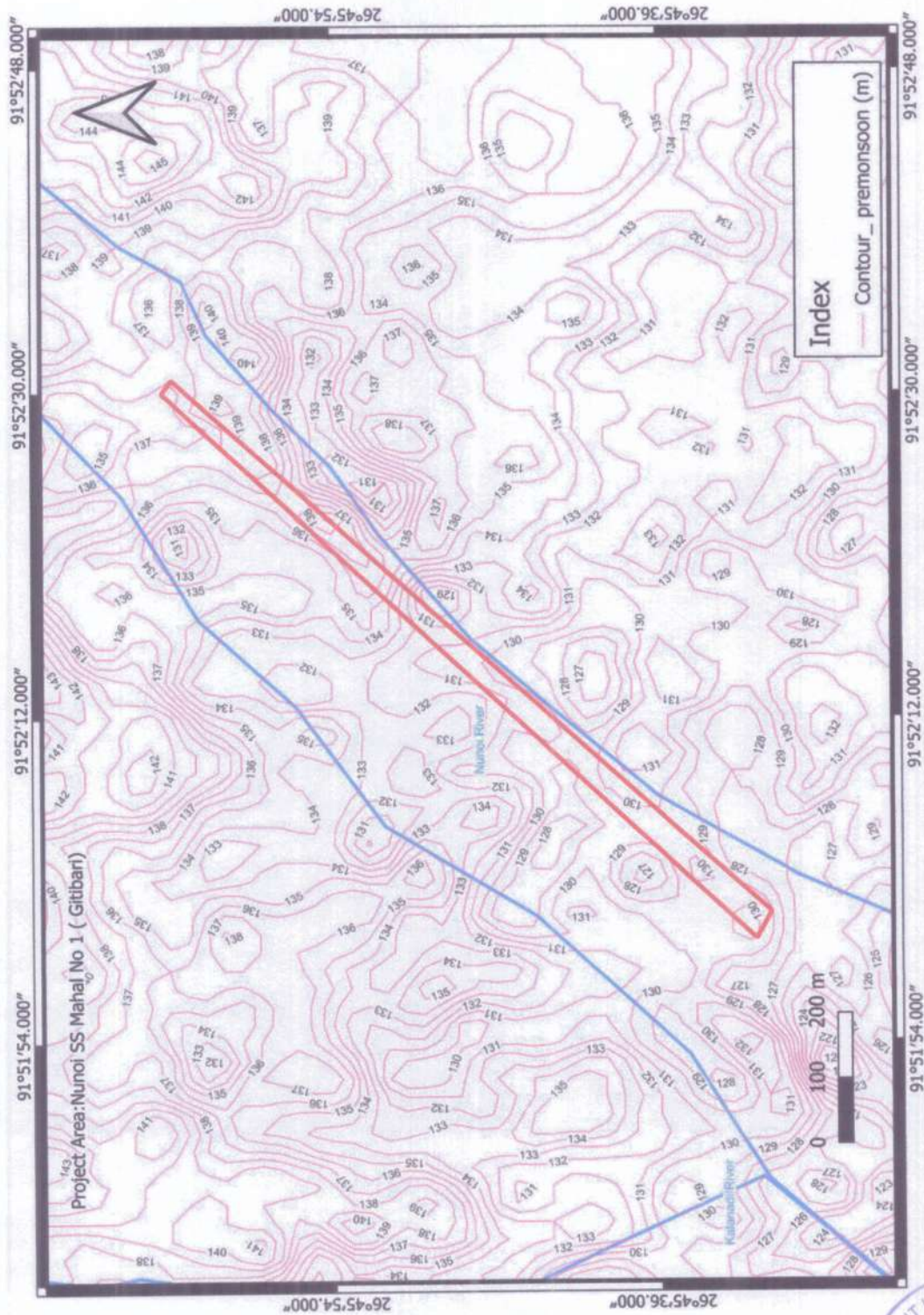




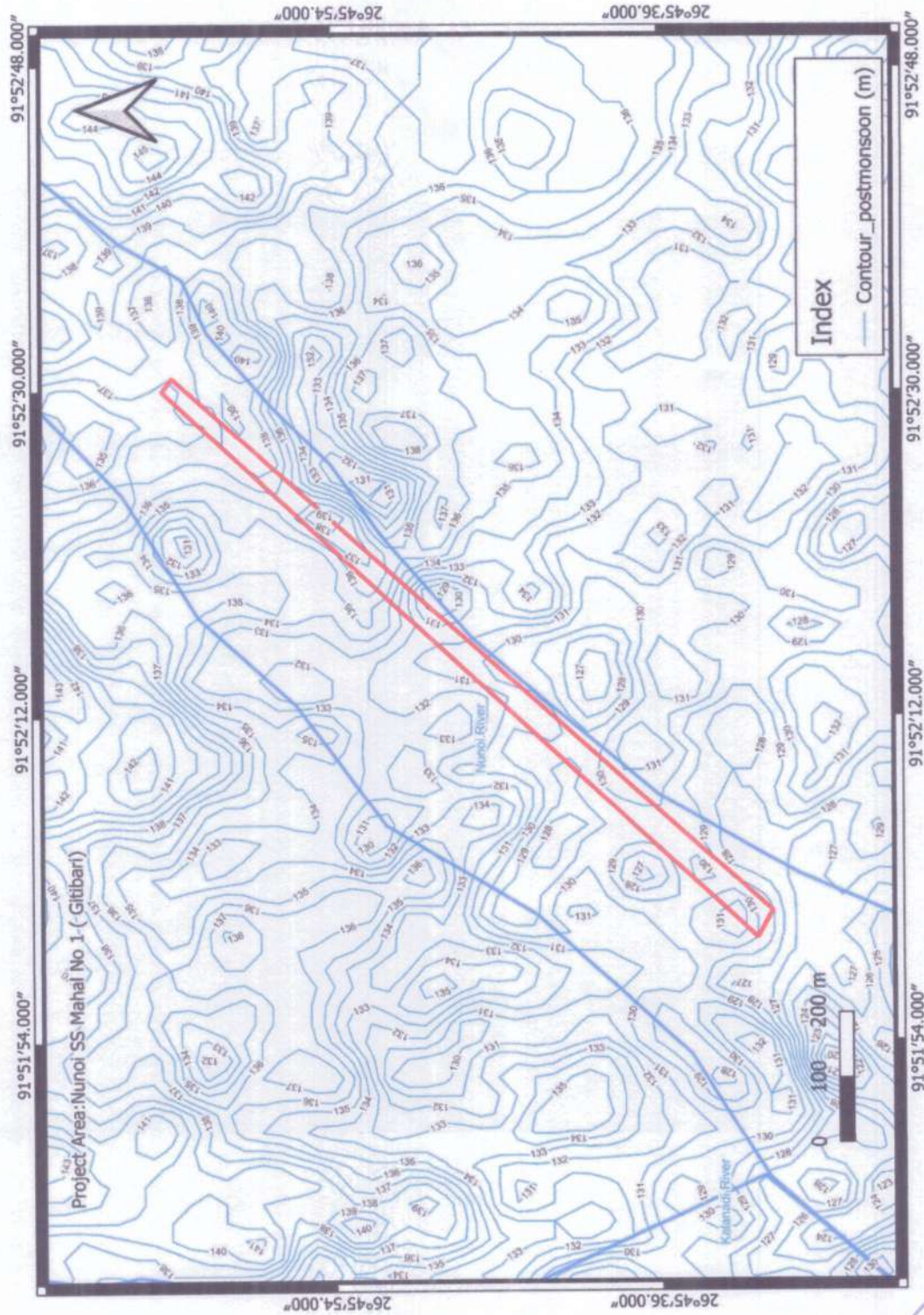




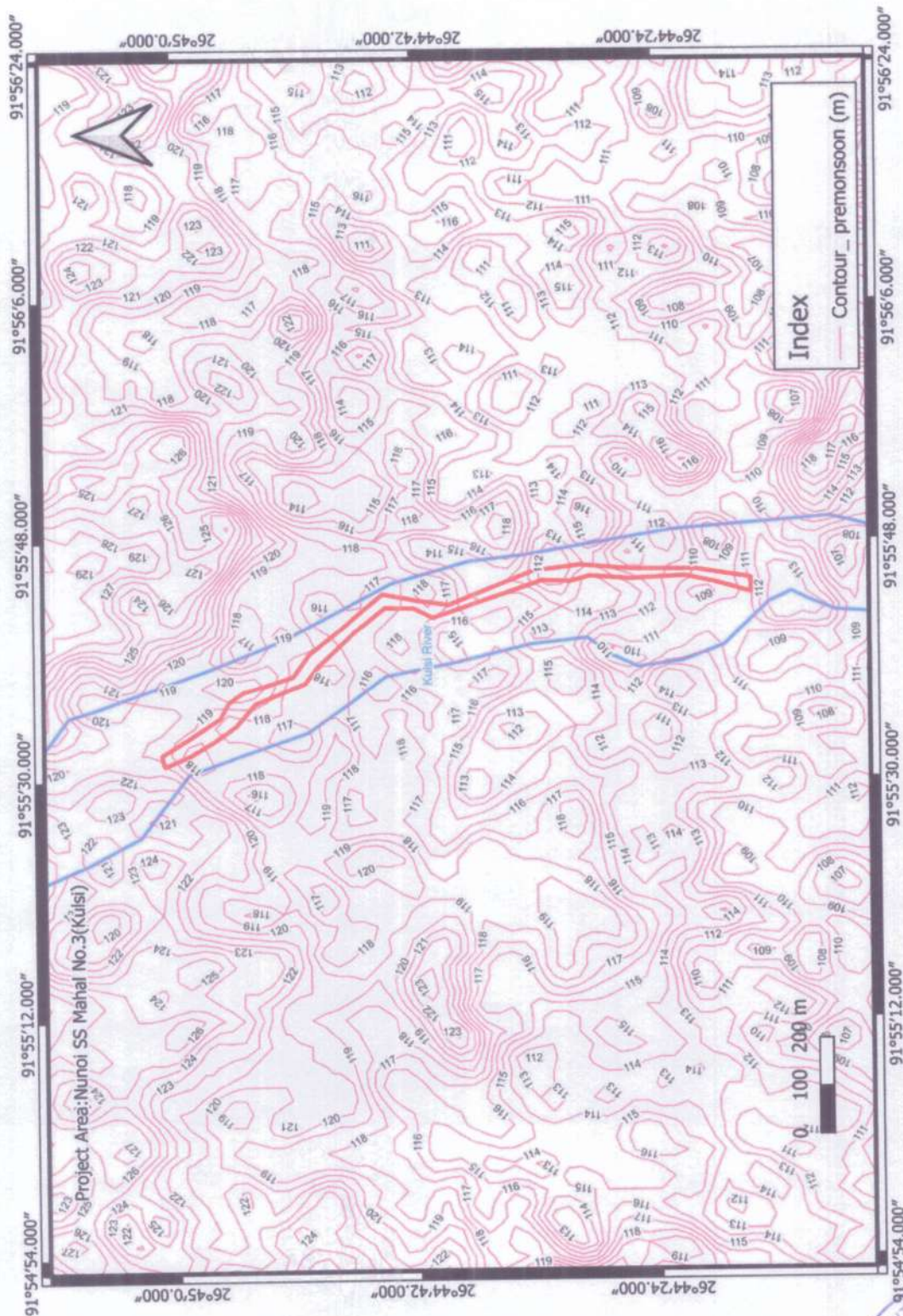




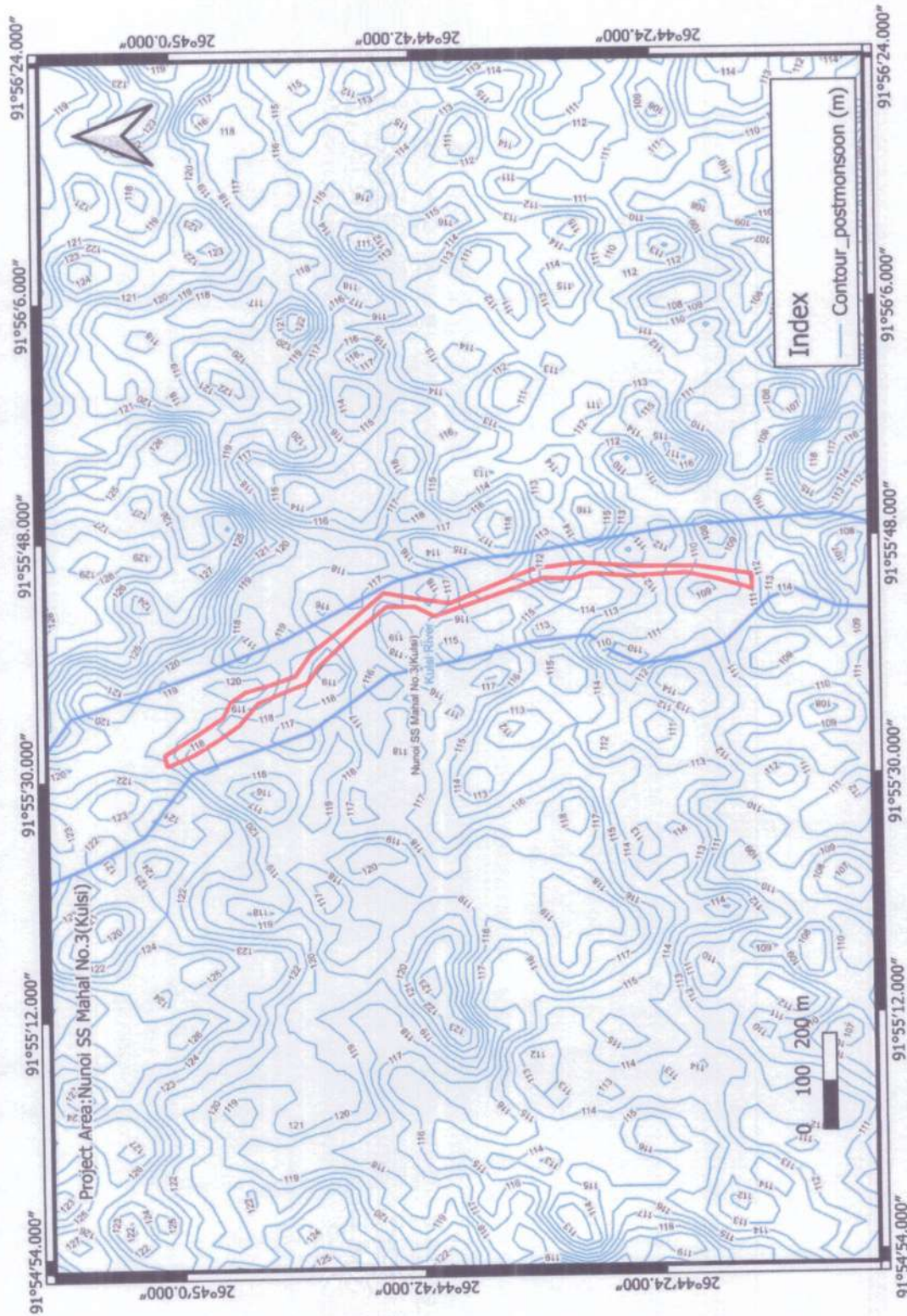




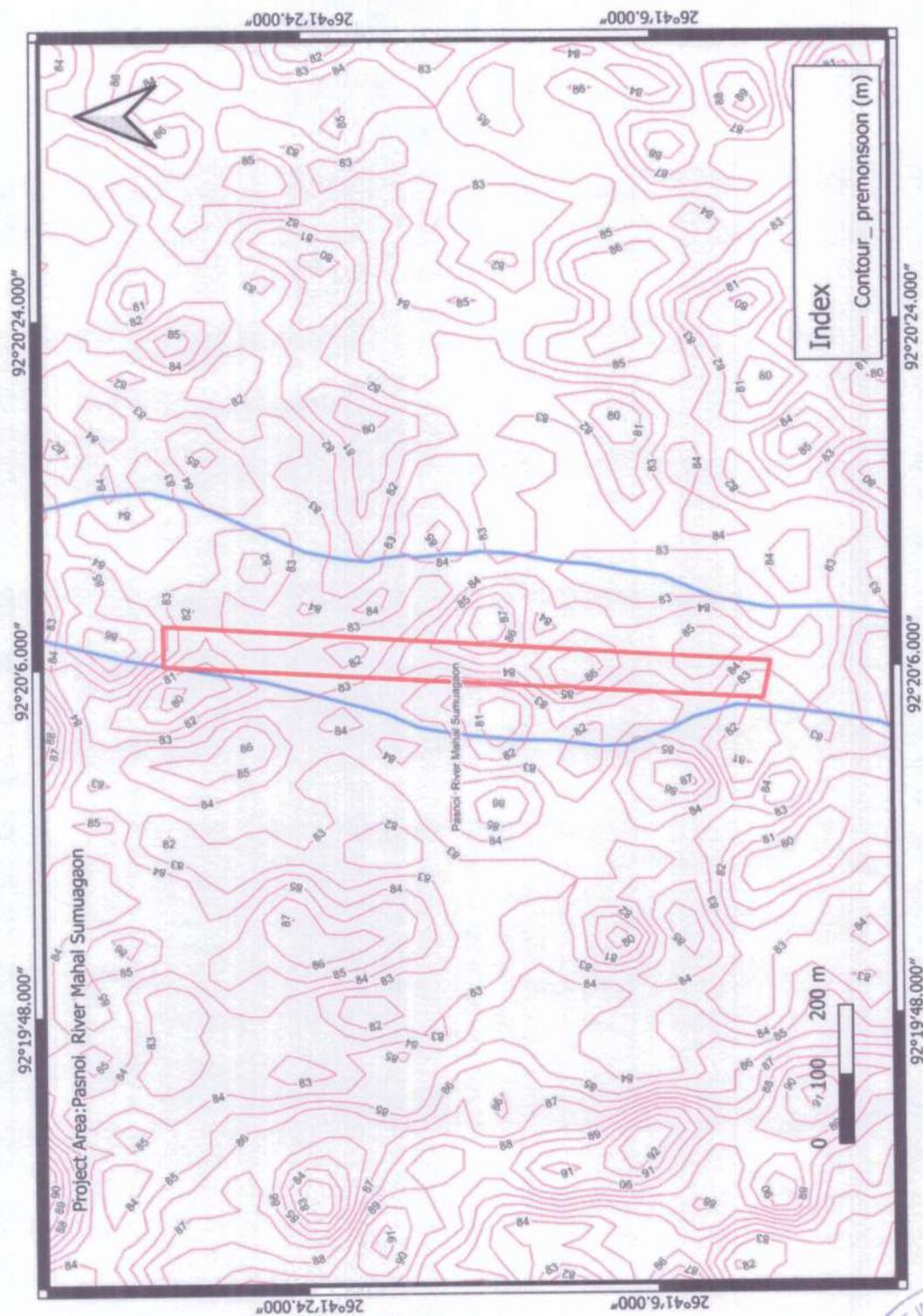




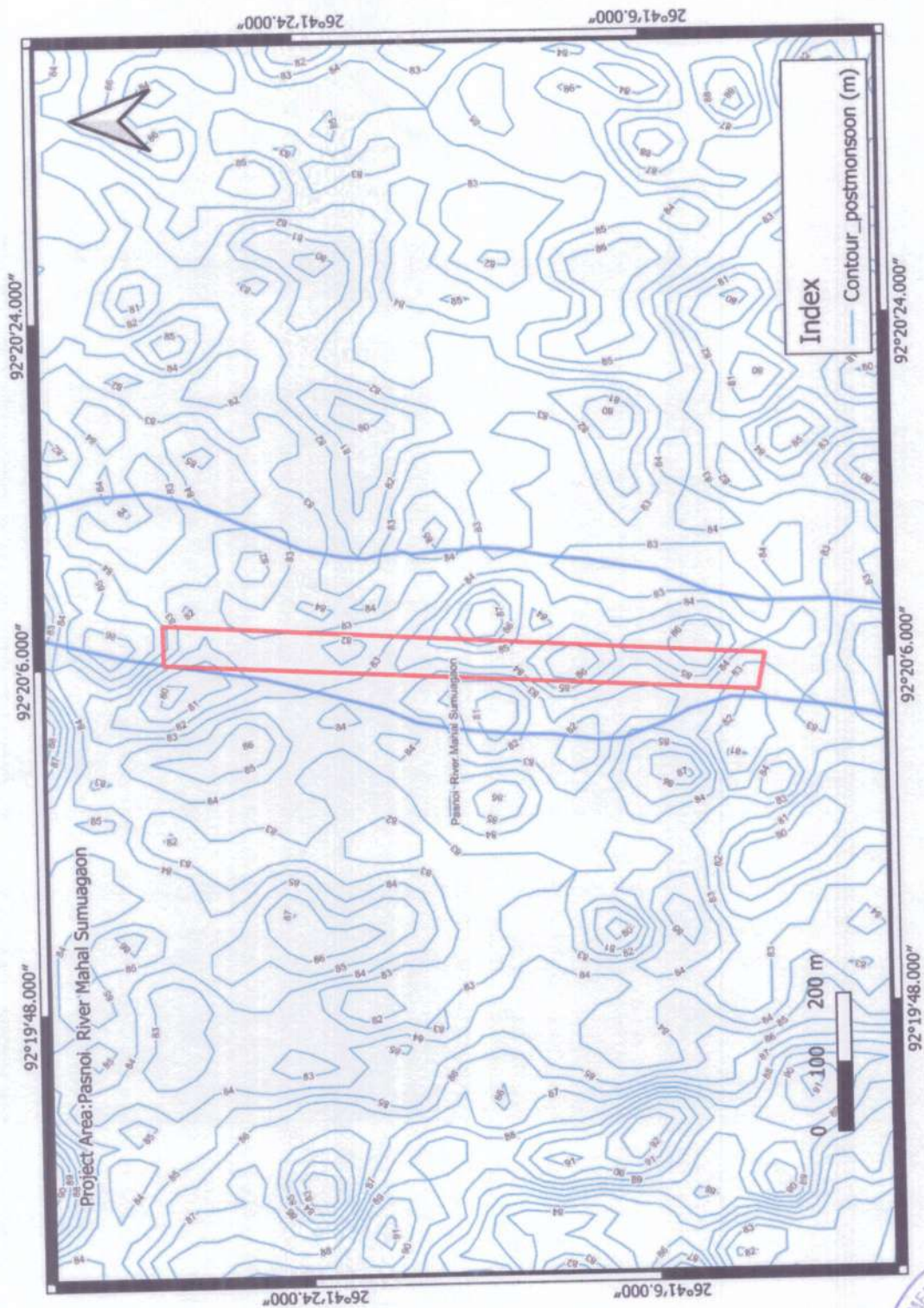




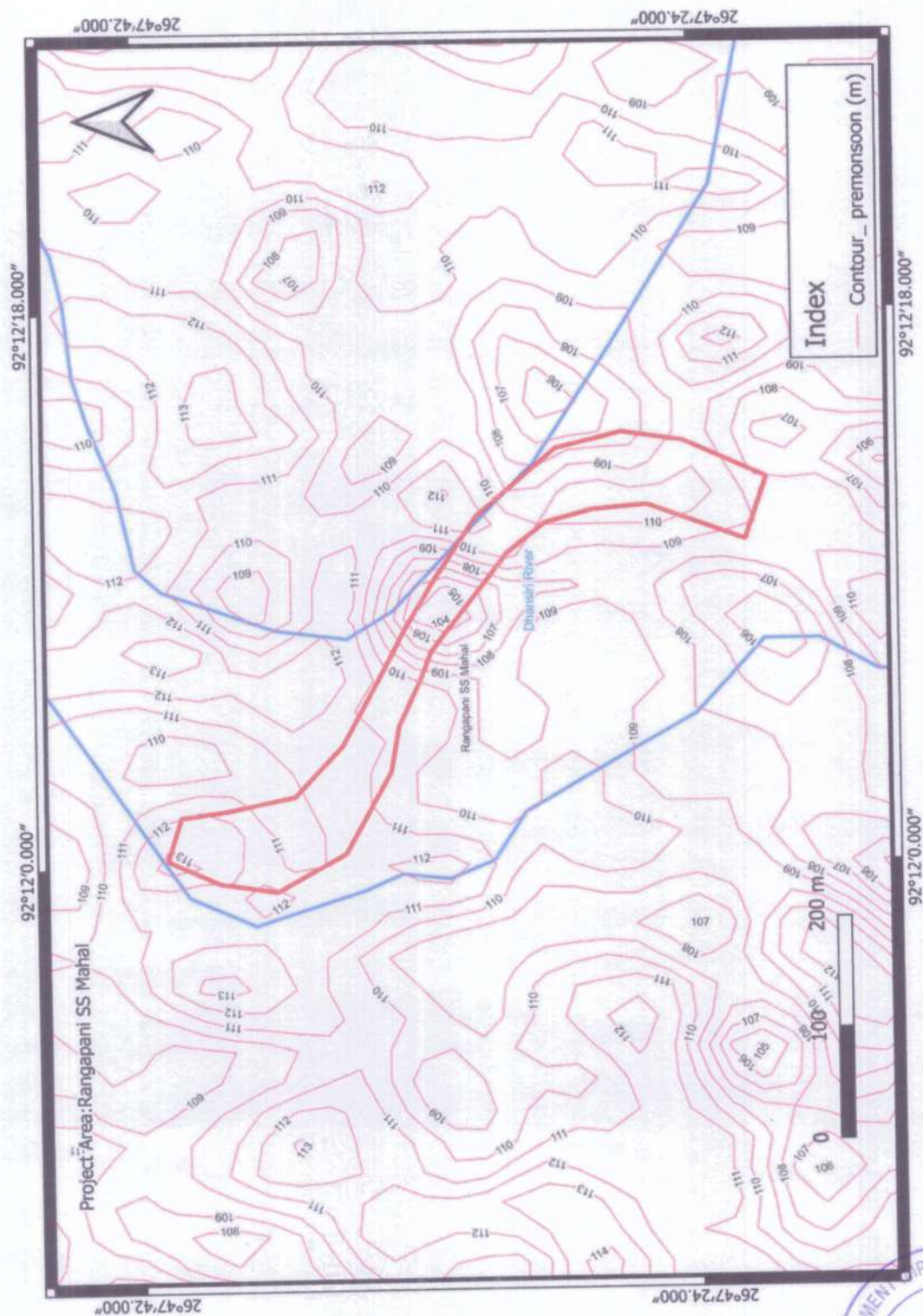




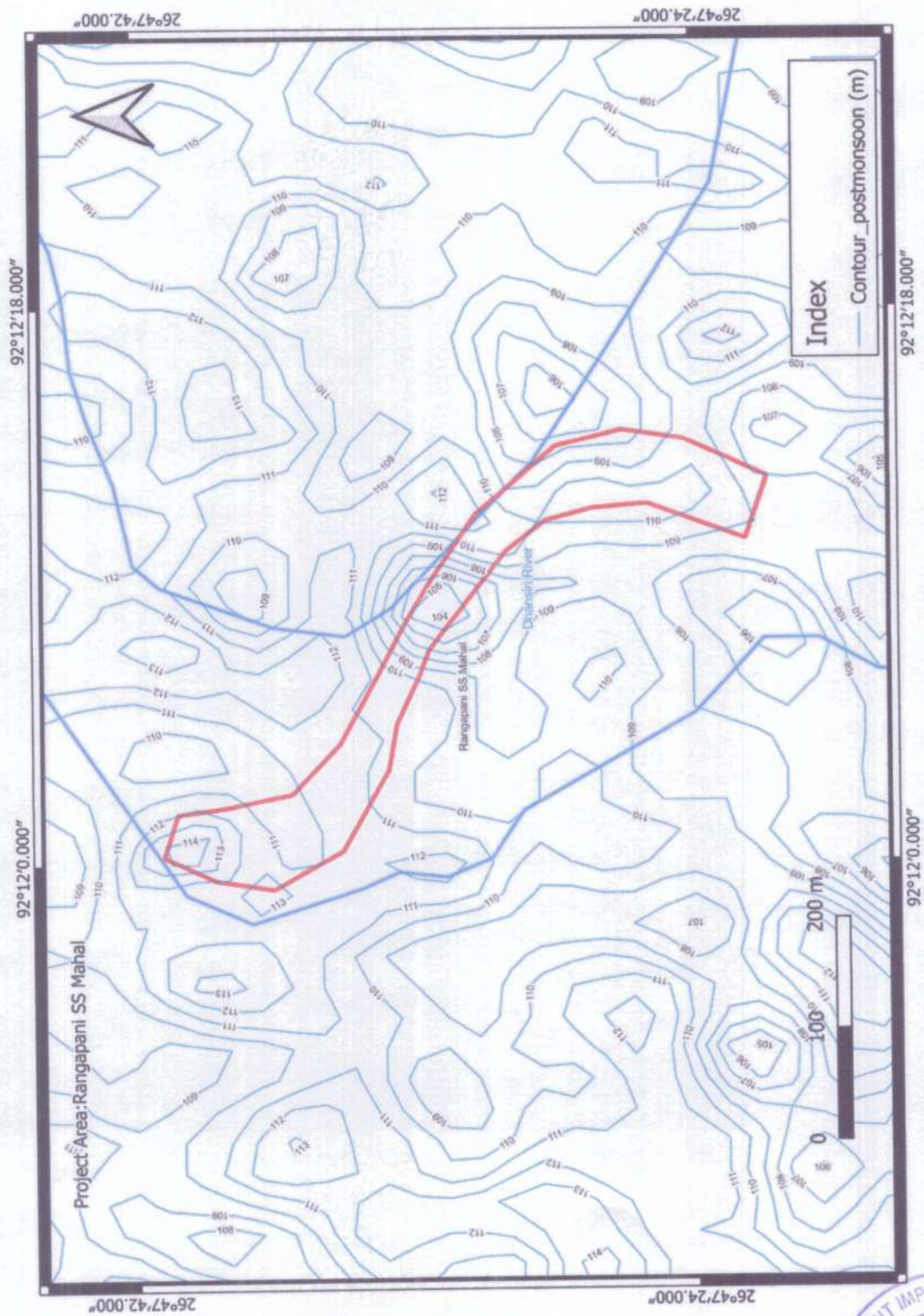




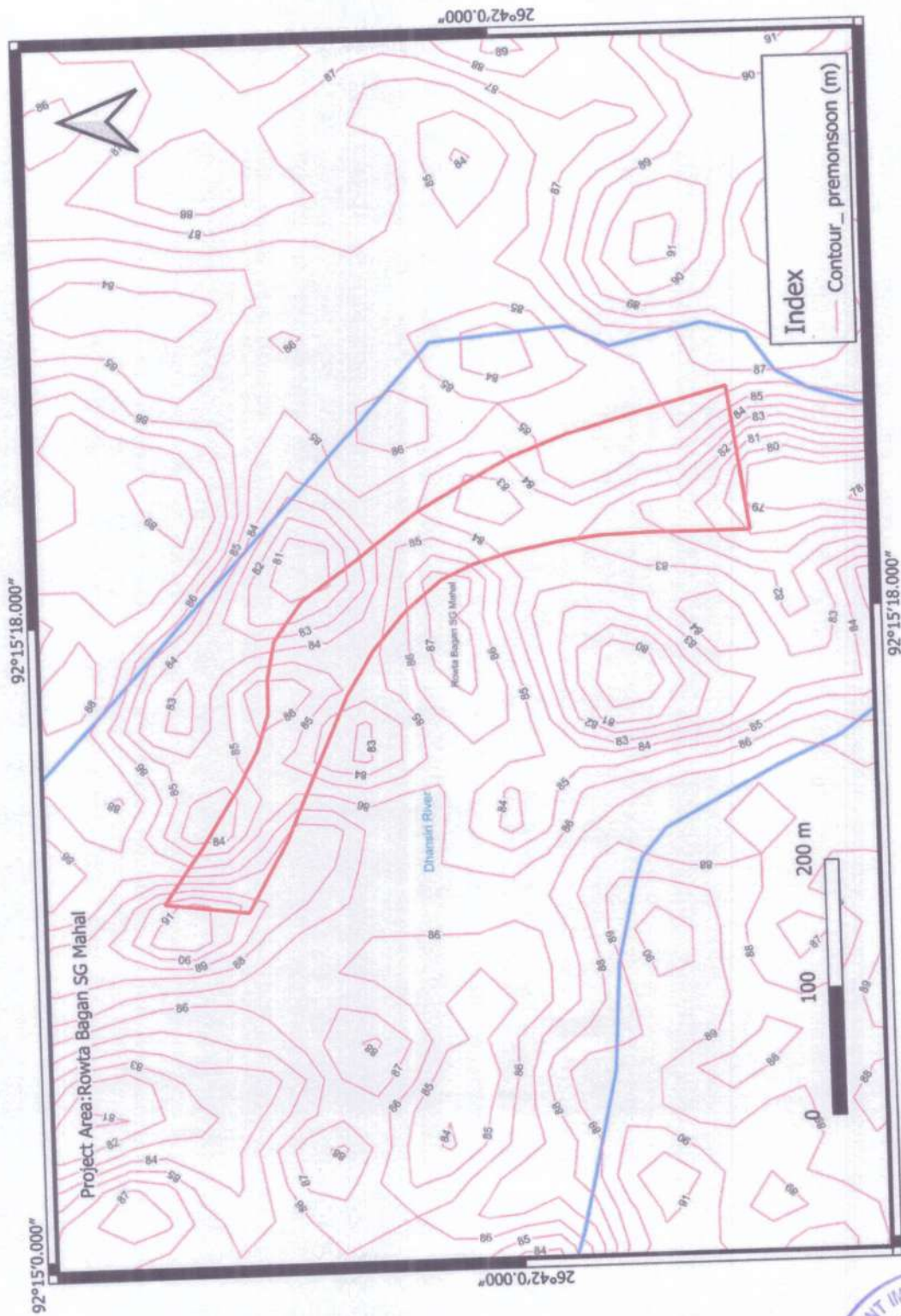




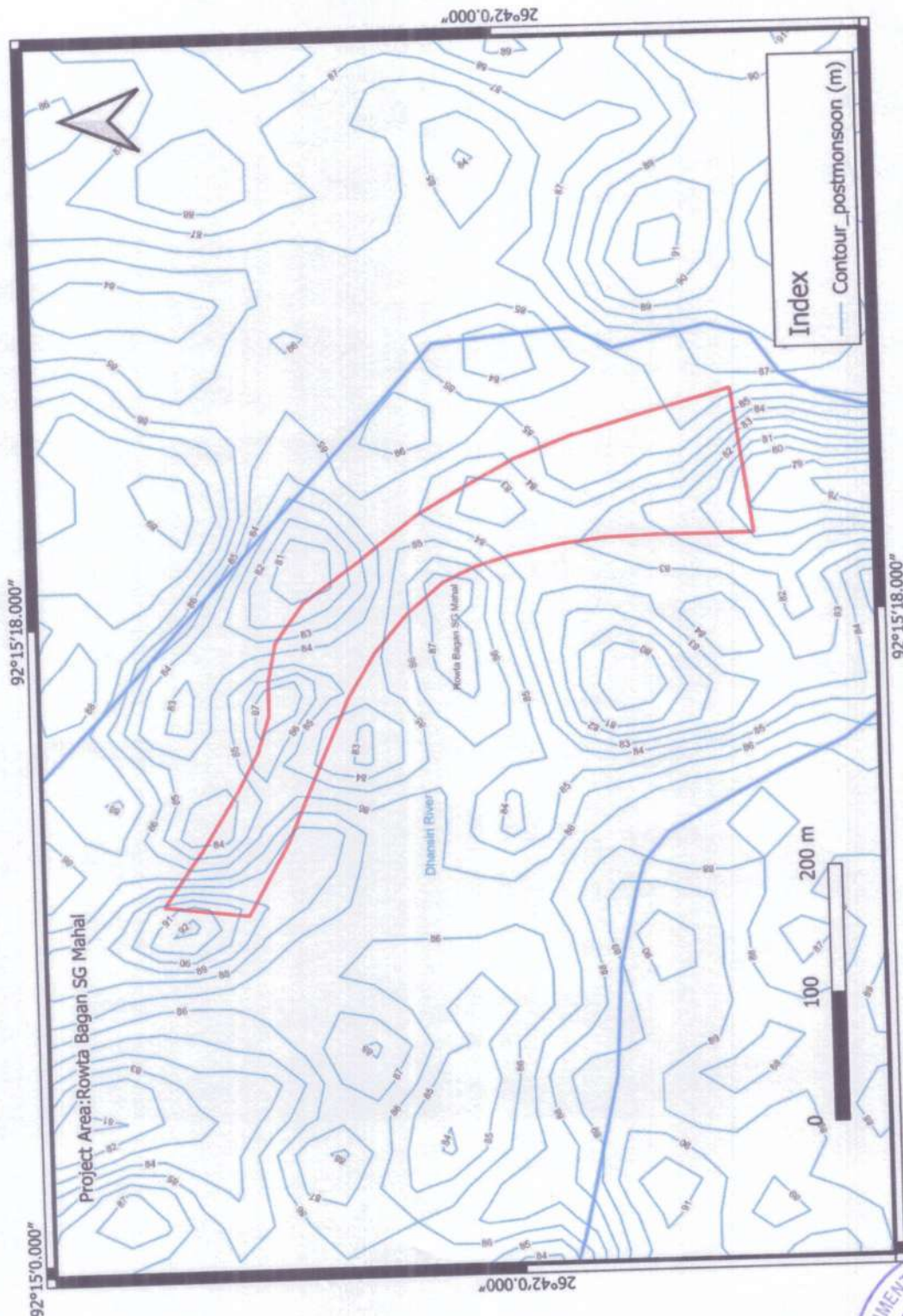




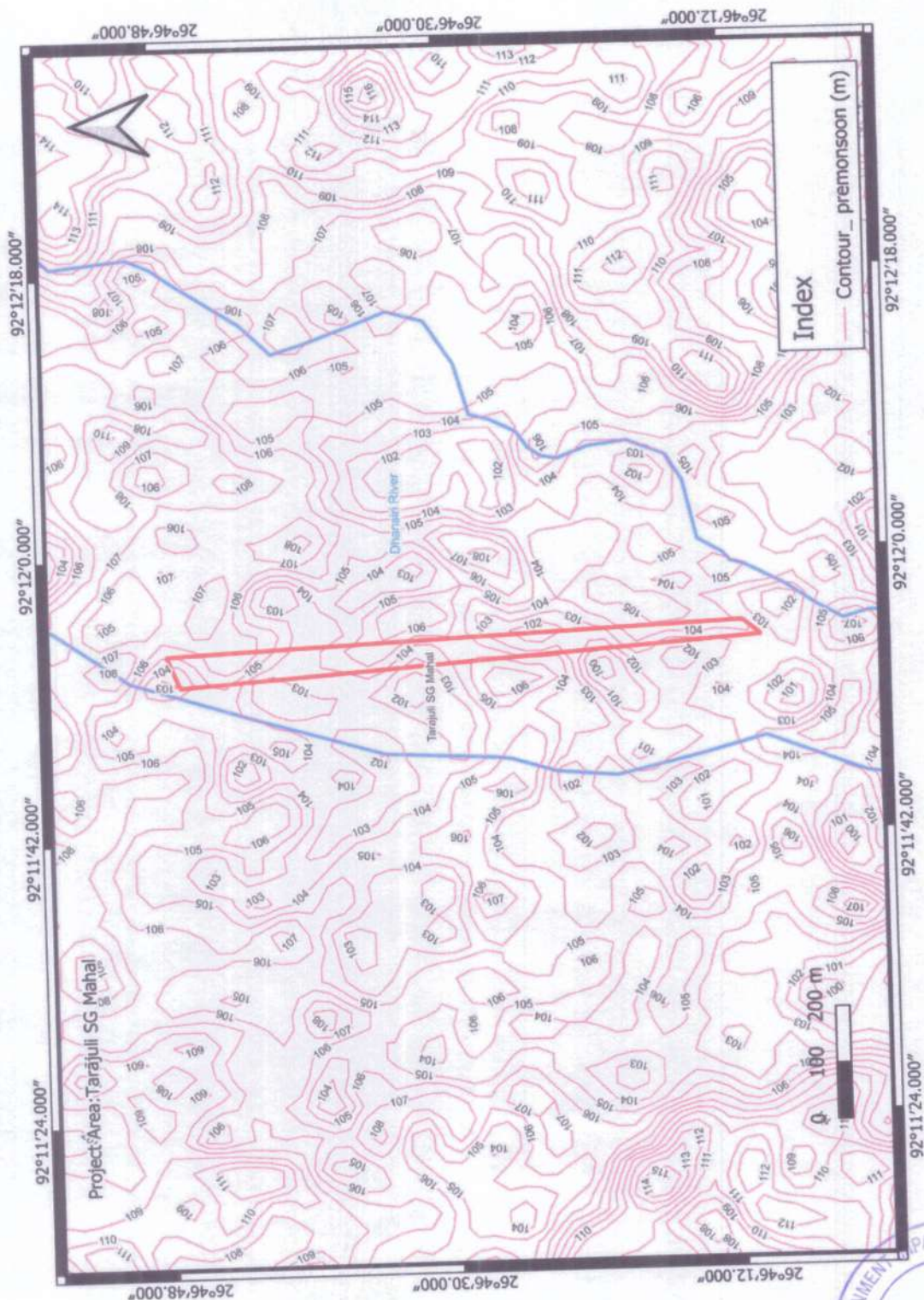




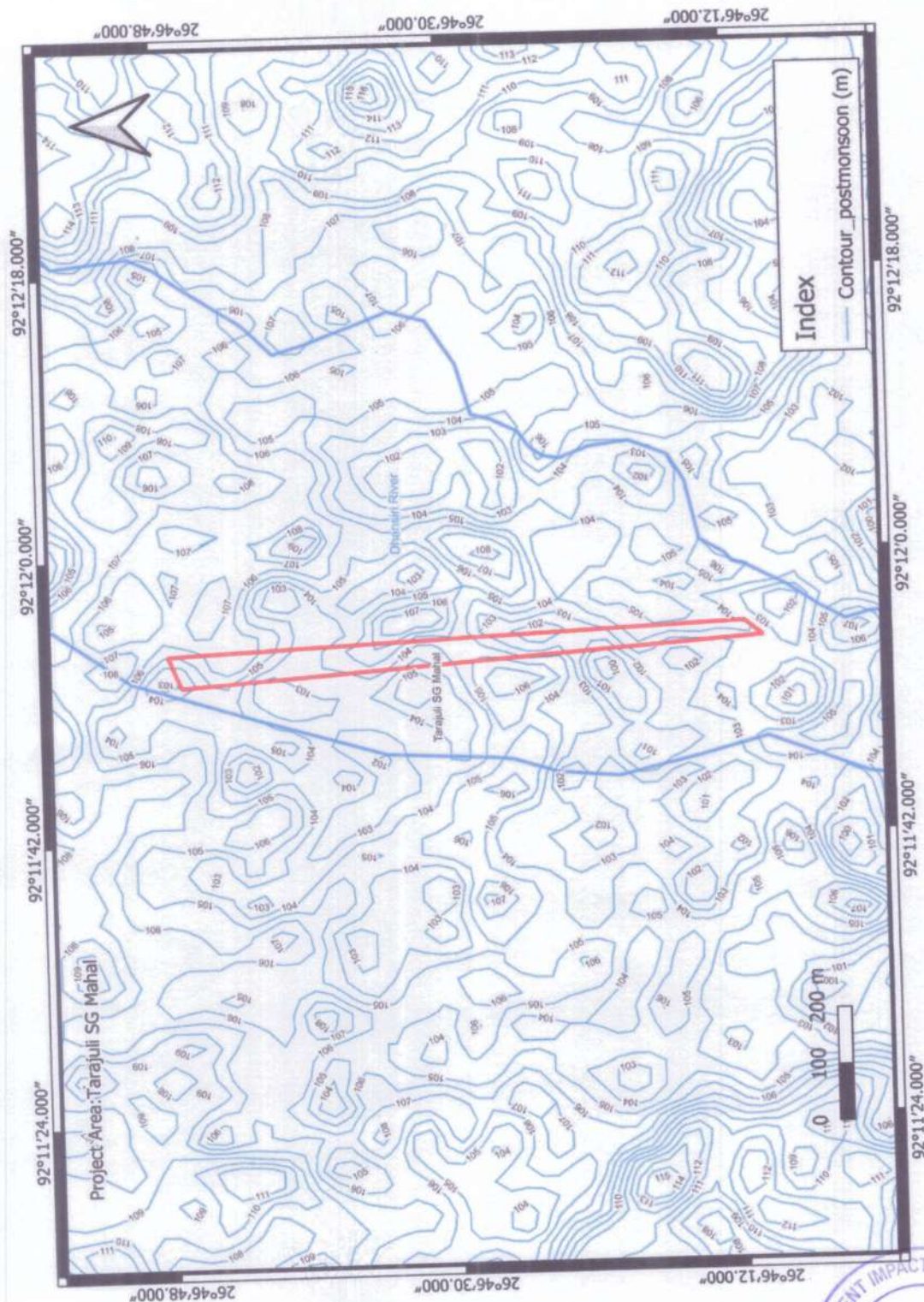














The integrated analysis of Satellite imagery, ICESat-2 elevation data, water level data, and contour difference methods provided a comprehensive understanding of sediment dynamics in Udalguri District. The findings indicate substantial sediment replenishment, particularly in the form of sandbar growth, which suggests a positive replenishment trend except Kulsi River.

However, there is a need for careful monitoring and management of erosion to ensure sustainable sediment extraction. It is recommended that extraction activities focus on areas of significant deposition while implementing erosion control measures in vulnerable sections.

*Disclaimer: This study is based on available satellite imagery, remote sensing data. A more comprehensive study of river dynamics is necessary to accurately assess the replenishment capacity of these rivers. These results do not reflect the economic viability of the lease or the proposed areas.*

  
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## Photoplates:



Khowrang Boulder Mahal



Pasnoi River Village Samugaon

  
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Kharamakha of Pasnoi River showing sand and Silt deposit ( near Pasnoi River Bridge )



Pasnoi SS Mahal

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Tarajuli and Rangapani North sides Sand and Stone Mahal



POTENTIAL AREA(Nunoi Range)

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POTENTIAL AREANunoi Range



Dhansiri SG Mahal No.1

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Dhansiri SG Mahal No.1



Rowta Bagan SG Mahal

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Rowta Bagan SG Mahal



Beltola SS Mahal

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Nasansali Sand Gravel and Silt Mahal of Nunoi River ( M-Sand unit also present)



Nasansali Sand Gravel and Silt Mahal of Nunoi River ( M-Sand unit also present)

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Bhutiasang SGB Mahal No.1



Bhutiachang SGB Mahal No.2

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Samrang Newly Gravel Earth Mahal



Nunoi SS Mahal No.1

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Nunoi SS Mahal No.1



Field photograph showing Bhutiasang Sand Gravel and Boulder Mahal No.2

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Field photograph of No.2 Kachubil Bhutiasang showing sand and gravel Mahal



Photograph showing Golondi Silt Mahal No.1

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Photograph showing Golondi Silt Mahal No.2



Photograph showing Golondi Silt Mahal No.1

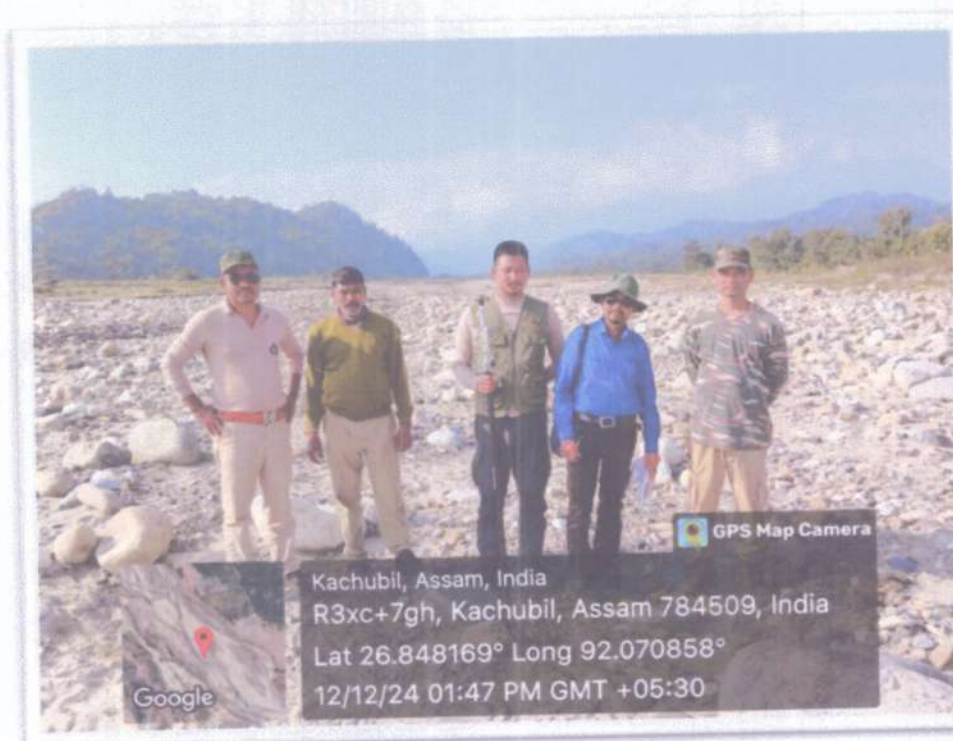
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Photograph showing Bhorla GSB Mahal No.2



Field photograph of Khowrang Boulder Mahal

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Bhorla GSS Mahal No.3



Tarajuli SG Mahal

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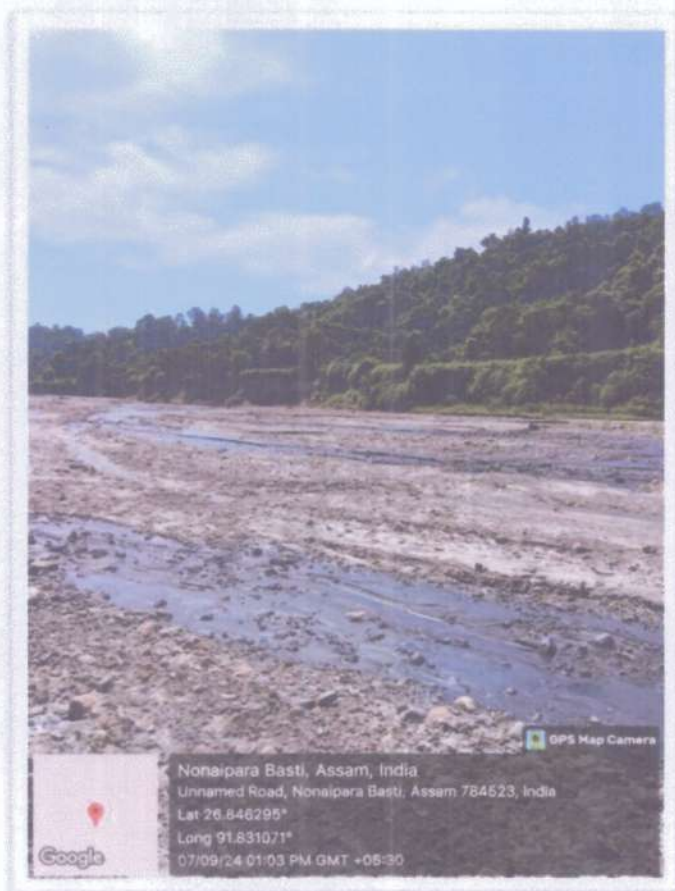
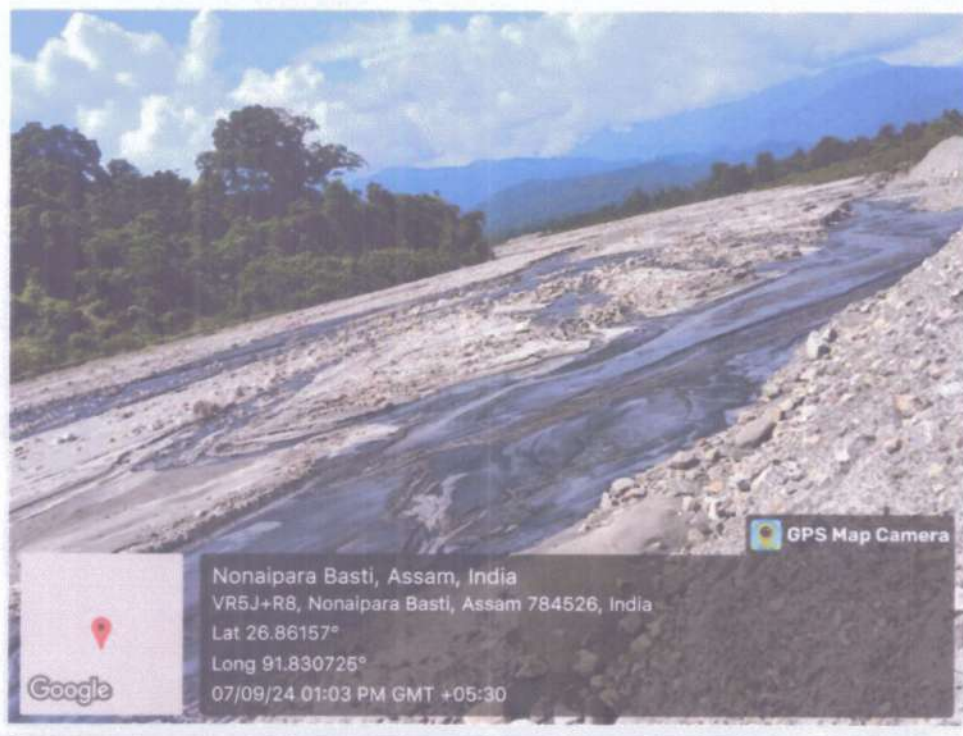
Tarajuli SG Mahal



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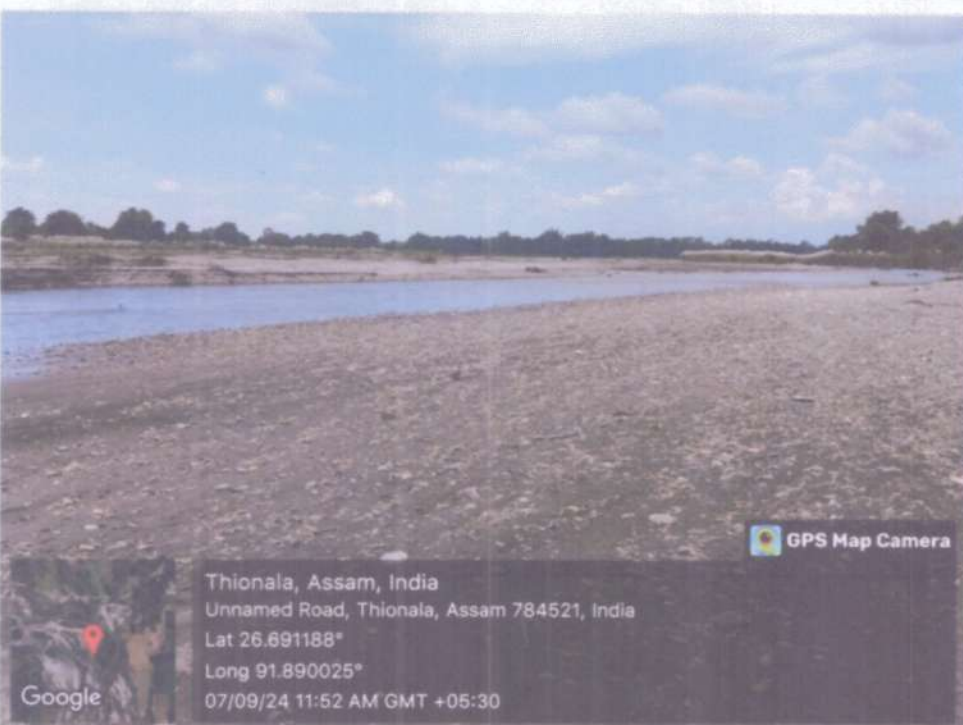




GPS Map Camera



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 Long 91.859217°  
 07/09/24 12:32 PM GMT +05:30



GPS Map Camera



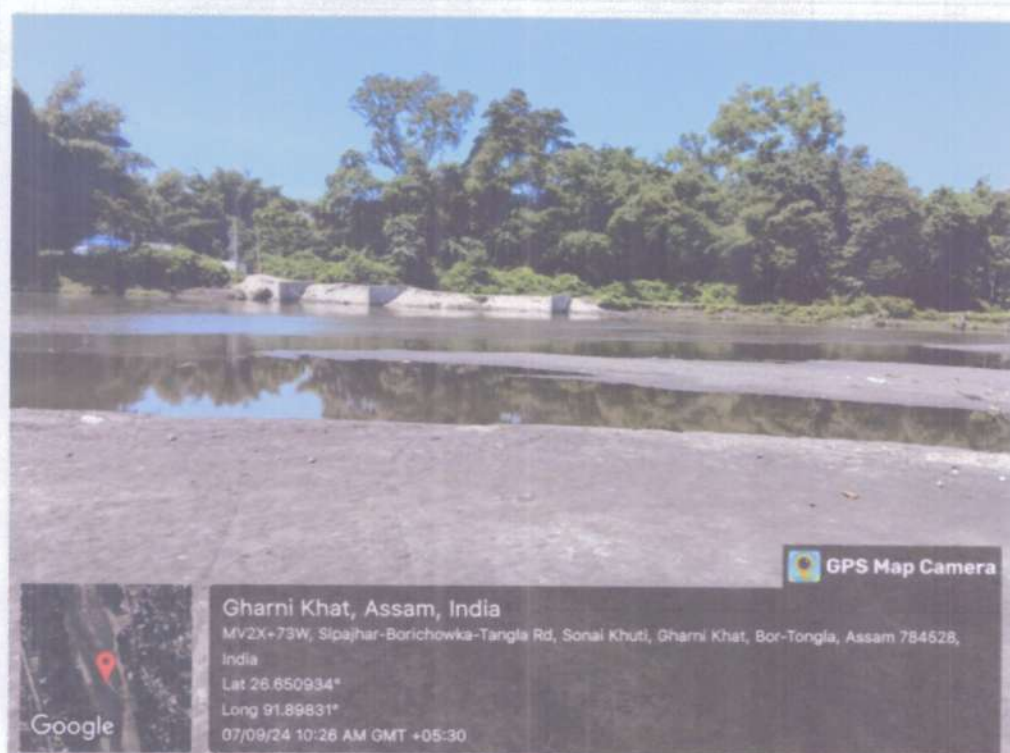
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Sahabasti Sand & Silt Mahal



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Nunoi SS Mahal No.3 (Kulsi)



Nunoi SS Mahal No.3 (Kulsi)

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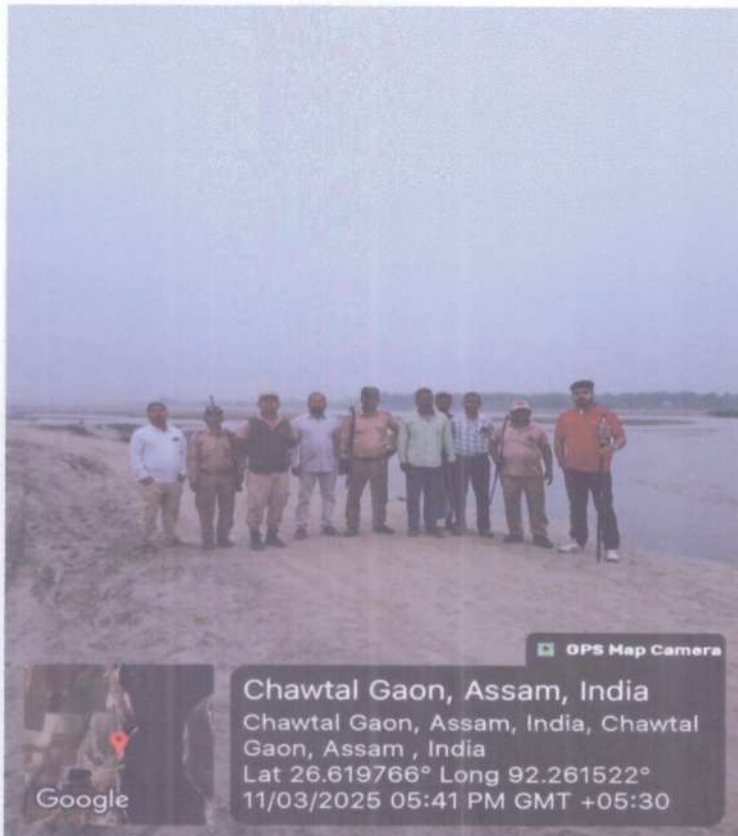




  
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### 13. Groundwater prospects in Udalguri district

Based on the behaviour and occurrence of ground water, the regional ground water flow system of district has been described under following categories.

- i. Shallow aquifer group occurring within 50 m depth.
- ii. Deeper aquifer group beyond a depth of 50 m and down to 200m bgl.

**i. Shallow Aquifer Group:** It is constituted of a mixture of boulder, gravel, sand, silt and clay. The thickness of the aquifer varies from 15 to 40 m. Ground water in this aquifer generally occurs under water table to semi-confined conditions. The development of ground water from this aquifer for both domestic and irrigation purposes is by open wells and shallow tube wells. The boulders are restricted mostly to the northern parts of the district. They occur between GL to 50 mbg land thickness varies from 20 - 30 m. The thickness increases from south to north. The water level in the major part of the district generally lies between 2 to 4 m bgl. The northern most part occupied by the piedmont zones and the areas adjoining to the in selbergs are having deeper water level. The movement of ground water is southerly towards Brahmaputra River. The water table contour follows the topography of the area and lies more or less parallel to the Brahmaputra River. The hydraulic gradient becomes gentler towards south. The granular zones occurring down to a depth of 50m depth can be categorized as shallow aquifer zones. Cumulative thickness of granular zones within 50m varies from 4 to 27m. However, shallow tube wells are not feasible in the piedmont zone owing to the boulder nature of the aquifer. Towards the south of piedmont deposit shallow tube wells are feasible. Directorate of Geology & Mining had constructed one shallow tube well of 49m depth at Bhutiachang. The discharge of the tube well is 74.4m<sup>3</sup> /hr for a drawdown of 0.86m.

**ii. Deeper Aquifer Group:** It is constituted of coarse to medium sand with intercalation of clay. Ground water occurs under water table to semi-confined conditions. Detailed hydrogeological surveys aided by exploratory drilling revealed the existence of two to three promising aquifer zones down to the depth of maximum 200 m bgl. Aquifer displays various degree of lateral and vertical variation indicating various degree of depositional environment both in space and time. The piezometric surface is highly variable and the movement of ground water is towards the south. The granular zones occurring below 50m can be categorized as deeper aquifer zones. Based on available information it can be confirmed that 30 to 60m cumulative thickness of granular zones are available. The aquifers zones below 50m are in most cases are continuation of shallow zones. The zones are generally pebble, cobble and boulder mixed with sand in varying proportions. In the piedmont area boulders are dominant up to 250m while in the alluvial plain it is found below 100m in most of the exploratory wells except

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in the southern boundaries of the district. In the alluvial plain sand and gravels are found below the boulder zones. Clay of considerable thickness is present towards the western part of the district. However, the clay layers are localized.

### **Ground Water Resource**

Methodology adopted for ground water resource estimation of Udalguri District of Assam is as per GEC 1997 Report, i.e. Ground Water Level Fluctuation and Rainfall infiltration factor Method.

### **Ground Water Quality**

There is appreciable variation in the quality of ground water between shallow and deeper aquifers. The ground water is alkaline in nature in majority of the cases. All are excellent to good class and a few are in good to permissible class. The formation water of both shallow and deep aquifers is suitable for most of the irrigational and industrial purposes. From the point of view of domestic uses, the ground water is having a little higher concentration of iron but this can be used after treatment.

### **Ground Water Management Strategy**

Shallow ground water structures are congenial for construction in the district, as water level and aquifer material are laterally persistent throughout the district. Dug wells and dug-cum-bore wells especially near the inselberg zone are very beneficial. Deep tube wells can be constructed preferably below the depth of 50 m tapping aquifer zone with a discharge varying from 100 - 200 m<sup>3</sup> /hr with maintaining a spacing of about 1 km. Considering the vast potential of river water as well as ground water in the district, it is recommended that the conjunctive use of both these resources may be judiciously made.

### **Ground Water Related Issues and Problems**

Frequent floods devastate the district every year during the monsoon months from May to September. Flood accompanied with soil erosion and sand deposition cause maximum damage to standing crops to the agricultural lands. Other than sporadic high Iron content, most of the chemical constituents are within permissible limit.

Major groundwater related issues found in the district are low stage of ground water extraction. As per ground water resource estimation March 2020, the stage of ground water extraction is only 12.88%. At present the irrigation practice by utilizing ground water (constructing tube well) is not practice in large scale by individual villagers due to small land holding, high cost for construction and running of a well compared to production outcome. Moreover, dry season agriculture land remains fallows and the current cropping intensity is 150%. Another major



obstacle in accelerating ground water irrigation is the absence of power lines in most of the cultivated/cultivable area and meager irrigational infrastructure in major parts of the district. Groundwater in the shallow aquifer is infested with iron (Fig. 5.1). Moreover, it was found that ground water in the deeper aquifer has moderately high concentration of iron which needs to be treated before consumption. Water logged areas are found in the alluvial plain/ flood plain where the depth to water level varies within 2.0 mbgl in pre-monsoon. The approximate water logged areas/ prone to water logging is 45 km<sup>2</sup>.

### Management Strategies

The groundwater management involves the optimum utilization of sub-surface water based on geological, hydrological, economic, ecological and legal consideration for the welfare and benefit of the society. The management of the ground water resources has to be taken up after understanding the varied hydrogeological characteristics. In addition, the development of ground water requires thorough understanding of the heterogeneity of the formation. The peneplained surfaces, buried pediments and valley fills are the most favorable localities for development of ground water. Structures such as dug well and tube well are the feasible ground water structures. The objective of management is to utilize the available ground water resources to fulfill human needs and also to boost economy of an area without hampering the interest of future generation. That objective can be achieved by finding out demand of various sectors and adjusting the demand with available resource. As per dynamic ground water resource of Udalguri district, net ground water availability is 63738ham and stage of ground water extraction is 12.88%. The district is having balance net ground water availability for future irrigation use in the tune of 58652ham. If an irrigation plan is made to develop 60% of the balance dynamic ground water resources available, then 35191 ham of groundwater resources is available in the district for future irrigation uses. Hence, there is ample scope for ground water development for irrigation purpose which will help the district in achieving self-reliance on food grain.

The results of exploration carried out by Central Ground Water Board and State department pointed out that the sub-surface of major part of the district is dominated by highly permeable materials. The piedmont or bhabar zone is composed mostly of boulders, pebbles or cobbles. Due to its high porosity as well as permeability, shallow tube wells are not feasible in the piedmont zone. State government had constructed few shallow tube wells in the area. CGWB had also constructed few deep tube wells down to a depth of 300m. The results of exploration in the piedmont zone clearly indicate presence of productive zones within the depth range of 50 to 100m, 100-200m and 200-300m. Tube wells tapping 12m granular zone can give discharge of 40 to 45m<sup>3</sup> /hr. In the alluvial plain also shallow tube wells are very limited. State government had constructed one shallow tube well at Bhutiachang which tapped nearly 25m of granular zone

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to give discharge of 74m<sup>3</sup> /hr for a drawdown of 0.86m. Although CGWB had not constructed any shallow tube wells in the district, presence of productive zones are observed during drilling of deep tube wells. Considering the results of exploration, it can be expected that shallow tube wells can give discharge of 40 to 70m<sup>3</sup> /hr by tapping 15 to 25m granular zones. Thus the unit draft can be calculated by allowing a pump to withdraw water at a rate of 40 m<sup>3</sup> /hr for 8hr pumping per day. For 120 days pumping, the unit draft will be 3.84ham.

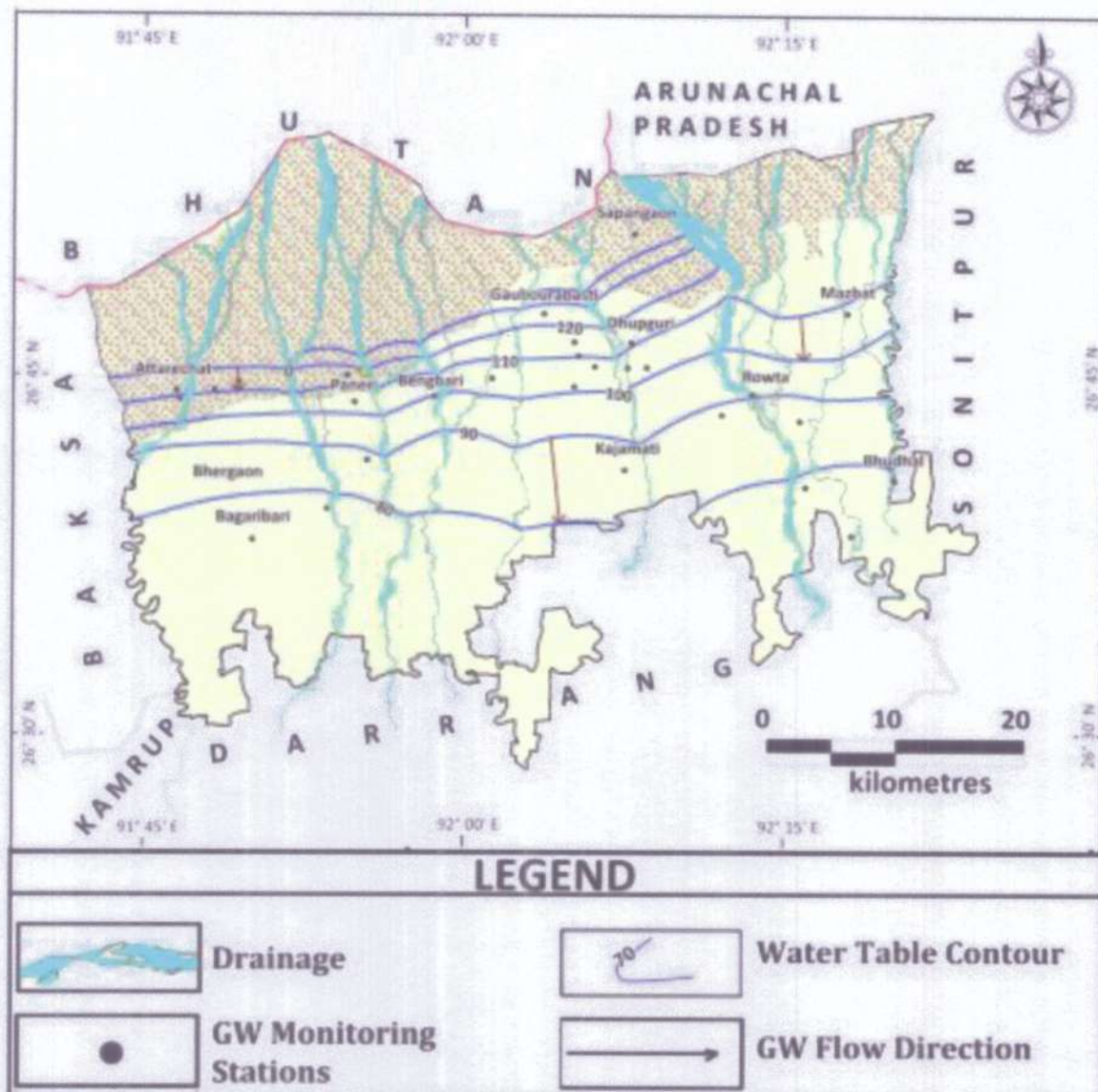
In water logged areas (flood plain), shallow tube wells/dug well can be constructed. In addition, groundwater in the district is infested with Iron in deeper aquifer in certain pocket of the district; therefore before consumption for domestic use, filtering/installation of Iron removal plant have to be adopted.

### **Recommendation**

Existing hydrogeological set up and availability of huge ground water resource indicate that there is much scope for the development of ground water through construction of abstraction structures in a planned and systematic way. Iron treatment plants need to be installed with PHED water supply schemes before using for drinking

  
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Source: Aquifer Mapping and Management Plan of Udalguri district, Assam

Map 13.1: Water table contour map of Udalguri District, Assam

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## 14. Total Mineral Reserve available in Udalguri District

Mineral exploration is a complex and continuous process that involves conducting surveys, analyzing geological data and assessing the quality and quantity of mineral deposits. As the nature of mineral reserves is often governed by local faults, and other lithological factors, it requires thorough examination and evaluation of geological formations, rock samples, and geophysical surveys.

The district has abundant reserve of sand, gravel, silt and stone along with minute earth deposits.

These minerals have attracted significant attention from the mining industry due to their commercial value and various industrial applications.

| Boulder<br>(cum) | Gravel/<br>stone<br>(cum) | Earth<br>(cum) | Sand<br>(cum) | Silt<br>(cum) | Total mineable<br>mineral potential<br>(cum) |
|------------------|---------------------------|----------------|---------------|---------------|--|
| 201708 cum       | 638318 cum                | 33600 cum      | 962028 cum    | 98106 cum     | 1933760 cum                                  |

  
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## 15. List of Letter of Intent (LoI) Holders in Udalguri District along with its validity

| SI No. | Name of the Mineral | Name of the Lessee       | Address & Contact No. of Letter of Intent Holder   | Letter of Intent Grant Order No. & Date                              | Area of Mining lease to be allotted | Validity of LoI |
|--------|---------------------|--------------------------|--|--|-------------------------------------|-----------------|
| 1      | Sand & Stone        | Nasiram Daimary          | Vill-Rowta Pathar (Balisiya),<br>P.O- Bhalukmari,<br>Dist- Udalguri<br>Contact No.8638125868 | B/DDU/ROWTA<br>BAGAN SS<br>MAHAL/1449-61,<br>17/03/2023              | 4.04                                | 7 YEARS         |
| 2      | Sand & Stone        | Sri. Thengwna Basumatary | Vill-Purani Goraibari,<br>P.O/P.S- Udalguri,<br>Assam<br>Contact No.                         | B/DDU/DHANSIRI(BA<br>LISIYA JARGAON)<br>MAHAL/3525-27,<br>27/06/2022 | 4.40                                | 7 YEARS         |
| 3      | Sand & Stone        | Sri Gilard Basumatary    | Vill-Bikrampur<br>P.O- Bengtol<br>Dist- Chirang  | B/DDU/TARAJULI SG<br>MAHAL/5611-13,<br>10/09/21                      | 4.80                                | 7 YEARS         |
| 4      | Sand & Stone        | Sri Amit Kumar Dewry     | Vill- Silakuti<br>P.O-Orang,<br>Dist- Udalguri   | B/DDU/PASNOI<br>SAMUGAON<br>MAHAL/1925-27,<br>17/04/23               | 4.09                                | 7 YEARS         |
| 5      | Sand & Gravel       | Sri Khargeswar Baro      | Vill- Khoirabari<br>P.O. & P.S- Khoirabari<br>Dist- Udalguri                                 | B/DDU/GITIBARI<br>MAHAL NO.2/3551-<br>53, 28/06/2022                 | 4.40                                | 7 YEARS         |
| 6      | Silt                | Sri Dhaniram Basumatary  | Vill- No.2 Goraibari<br>P.O- Goraibari<br>P.S- Udalguri<br>Dist- Udalguri                    | B/DDU/GOLONDI<br>SILT MAHAL/1495-97,<br>17/03/23                     | 3.48                                | 7 YEARS         |
| 7      | Sand & Stone        | Sri Ransaigwra Boro      | Vill-Ladabari,<br>P.O-Dalakati Borobazar<br>Dist- Udalguri, Assam                            | B/DDU/DHANSIRI SG<br>MAHAL/4711-13,<br>13/10/23                      | 4.81                                | 7 YEARS         |
| 8      | Sand & Stone        | Sri Hemen Basumatary     | Vill- Kahibari<br>P.O. & P.S- Harisisnga<br>Dist-Udalguri                                    | B/DDU/NUNOI SS<br>MAHAL NO.1/1461-<br>63, 17/03/23                   | 4.91                                | 7 YEARS         |
| 9      | Sand & Stone        | Sri Mustak Ahmed         | Vill- No.2 Bholatar<br>P.O-<br>Kalikhola<br>P.S- Dimakuchi<br>Dist- Udalguri                 | B/DDU/KALAAMADI<br>SS MAHAL/4708-10,<br>13/10/23                     | 3.90                                | 7 YEARS         |
| 10     | Sand & Stone        | Sri Nasiram Daimari      | Vill-Rowta Pathar<br>P.O- Rowta<br>Dist-Udalguri   | B/DDU/DHANSIRI SS<br>MAHAL NO.1/3929-<br>31, 31/07/23                | 4.84                                | 7 YEARS         |

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|    |                           |                              |  |  |      |         |
|----|---------------------------|------------------------------|--|--|------|---------|
| 11 | Silt                      | Montu Daimari                | Vill- Sudempuri<br>P.O. & P.S- Udalguri<br>Dist- Udalguri            | B/DDU/GOLONDI<br>SILT MAHAL<br>NO.2/402/04,<br>02/02/2024        | 4.70 | 7 YEARS |
| 12 | Sand &<br>Stone           | Sri Jyotish<br>Basumatary    | Vill- Belguri<br>P.O- Sastrapara<br>P.S- Harisinga<br>Dist- Udalguri | B/DDU/BELTOLA SG<br>MAHAL/2184-86,<br>30/05/23                   | 3.69 | 7 YEARS |
| 13 | Sand &<br>Stone           | Sri Horu<br>Baglari          | Vill- Borigaon<br>P.O- Borigaon<br>P.s- Harisinga<br>Dist- Udalguri  | B/DDU/NUNOI SS<br>MAHAL.3/3935-37,<br>31/07/23                   | 4.79 | 7 YEARS |
| 14 | Sand /Gravel<br>& Boulder | Sri Arbinda<br>Daimari       | Vill- Christanpara<br>P.O- Bengbari<br>P.S-Paneri<br>Dist- Udalguri  | B/DDU/Bhutiachang<br>SG&B MAHAL/3842-<br>44, 24/07/23            | 4.90 | 7 YEARS |
| 15 | Sand &<br>Stone           | Sri.<br>Nippjyoti<br>Baruah, | Vill- Nichilamari,<br>P.O/P.S- Orang,<br>Dist-Udalguri               | B/DDU/SIMULIGURI<br>VILLAGE<br>MAHAL/934-35,<br>02/03/24         | 4.09 | 7 YEARS |
| 16 | Sand &<br>Stone           | Sri Heron<br>Daimari         | Vill- Tarabari,<br>P.O-Rowta,<br>Dist- Udalguri, Assam               | B/DDU/TARAJULI&R<br>ANGAPANI(NS)SS<br>MAHAL/2333-35,<br>06/06/23 | 4.52 | 7 YEARS |
| 17 | Sand & Silt               | Sri<br>Jasobanta<br>Bordoloi | Vill-Silakuti,<br>P.O- Barimakha,<br>Dist- Udalguri, Assam           | B/DDU/baligaon pasnoi<br>SS MAHAL/1510-12,<br>20/03/23           | 4.05 | 7 YEARS |
| 18 | Sand &<br>Stone           | Sri. Bimal<br>Daimary        | Vill-Selishbari,<br>P.O- Mazkhuti,<br>P.S-Orang,<br>Dist- Udalguri   | B/DDU/MERABIL SS<br>MAHAL/1516-18,<br>20/03/23                   | 4.02 | 7 YEARS |
| 19 | Sand &<br>Stone           | Krishna<br>Narzary           | Vill- Naoherua,<br>PO-Pathakpur,<br>PS-Mazbat,<br>Dist-Udalguri      | B/DDU/LOWER<br>DHANSIRI SS<br>MAHAL.B/4842-44,<br>13/12/23       | 4.88 | 7 YEARS |
| 20 | Sand &<br>Stone           | Bishnu<br>Brahma             | Vill-Deorigaon,<br>PO-Gerua Bazar,<br>PS-Rowta,<br>Dist-Udalguri.    | B/DDU/RANGAPANI<br>SS MAHAL/1455-57,<br>17/03/23                 | 4.00 | 7 YEARS |

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## 16. Quality /Grade of Mineral available in Udalguri District

Grade in mineral processing refers to the quality or purity of the mineral or ore. Actually grade refers to the concentration of valuable minerals in ore. Besides the essential chemical composition and crystal structure, the description of a mineral species usually includes its common physical properties like crystal habit, structure, hardness and lustre etc. But here in case of sand/riverbed sand if it fulfills certain conditions (above cut off grade) as regards purity or other physical properties-then it is of high grade mineral.

Basically, grade of a mineral is determined by the effectiveness of a geological process which is the result of the interaction between a mineral forming mechanism and the environment in which it operates. In response to economic fluctuations the working grade of mineral like sand that form in geological complex environments, can often be altered to ensure the continued viability of a mining venture.

All the important decisions in the minor minerals industry, such as feasibility studies, choice of mining and processing (mainly screening) and other related processing methods, selection and planning are made on the basis of or are related to, grade estimates.

If the geological controls of grade are fully understood, then it is possible to optimize the selection of the various mining alternatives, leading to the efficient exploitation of desired mineral like sand etc. so after screening of extractable sands from riverbed and flood plain, we may classify the sands as to high grade, moderate grade and of inferior quality or grade.

But in case of M-Sand (produced from boulder, cobble, pebble and granules i.e. all together called gravel deposits) quality or grade of produced sand is determined following the Udden-Wentworth grain size scale for clastic sediments.

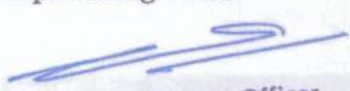
### Sand

Sand is a mixture of small grains of rock and granular materials which is mainly defined by size. Being finer than gravel and coarser than silt, sand ranges in size from 0.06 mm to 5 mm.

*Coarse sand:* Sand with particles that are between 2 mm and 4.75 mm in size.

*Fine sand:* Sand with particles that are between 0.425 mm and 0.075 mm in size. It is mainly made of silicate minerals and silicate rock granular particles. Typically, quartz is the most dominant mineral here as it possesses highly resistant properties to weather. It is also classified according to size:

*Fine Sand:* All the sand particles should pass through No. 16 sieve. This is usually used in plastering works.

  
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*Moderately Coarse Sand:* All the sand particles should pass through No. 8 sieve. This type of sand is generally used for mortar and masonry works.

*Coarse Sand:* All the particles should pass through No. 4 sieve. This type of sand is suitable for concrete work. The sand available in the district is coarse to fine grained. The sand is used for filling purposes and other construction purposes.

### **Gravel**

Gravels are rounded rock particles over 2 mm (0.079 in) in diameter, without specifying an upper size limit. Fragments in gravel range in size from pebbles (4–64 mm [0.16–2.52 inches] in diameter), through cobbles (64–256 mm [2.52–10.08 inches]), to boulders (larger than 256 mm). The rounding of gravel results from abrasion in the course of transport by streams or from milling by the sea.

### **Earth**

Brick earth is a type of clay that is used to make bricks. The brick earth available in the district is medium to fine grained. The brick earth available in the district is greyish to reddish brown color comprising of various proportions of sand, silt, clay and organic materials. It is suitable for earth filling and manufacture of bricks etc. Silica is responsible for preventing cracking, shrinking and warping of bricks. Alumina is accountable for plasticity characteristic of brick earth and lime for preventing shrinkage. Iron oxide gives color, strength and hardness to the bricks.

  
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## 17. Use of Mineral


The earth mined in the district is exclusively used in the manufacturing of bricks.

1. **Construction:** Sand, gravel, silt, clay and ordinary earth are key ingredients in concrete, mortar and asphalt.
2. **Industrial:** Used in glass production and abrasives( only silica sand preferable).
3. **Environmental:** The minerals can improve traffic safety by providing grip on icy roads, and it helps in soil conditioning for agriculture.
4. **Decorative:** Sand, gravel and stones are used in candles, aquariums, and for enhancing aesthetic appeal in landscaping.
5. **Flood Protection:** Proper management of sand mining helps maintain river flood discharge capacity, reducing the risk of floods.
6. Ordinary sand never can be used for preparation of glass and ceramics. But main use of sand is entirely confined to civil construction purpose only.

## 18. Demand and Supply of the Mineral in the last three years

| Financial Year | Production (in cum) |           |                   | Total Production (in cum) |
|----------------|---------------------|-----------|-------------------|---------------------------|
|                | Sand                | Gravel    | Earth/ Silt/ Clay |                           |
| 2023-24        | 20517.43            | 854234.60 | 7922              | 882674.0                  |
| 2022-23        | 25841.84            | 123448.57 | 12629.28          | 161919.7                  |
| 2021-22        | 27924.71            | 199432.76 | 25433.33          | 252790.8                  |

The increasing trend of production shows the increase in the demand for the respective minerals and so in the supply of the same. It indicates the need for growth in the mining industry of the district in order to meet the requirement.

  
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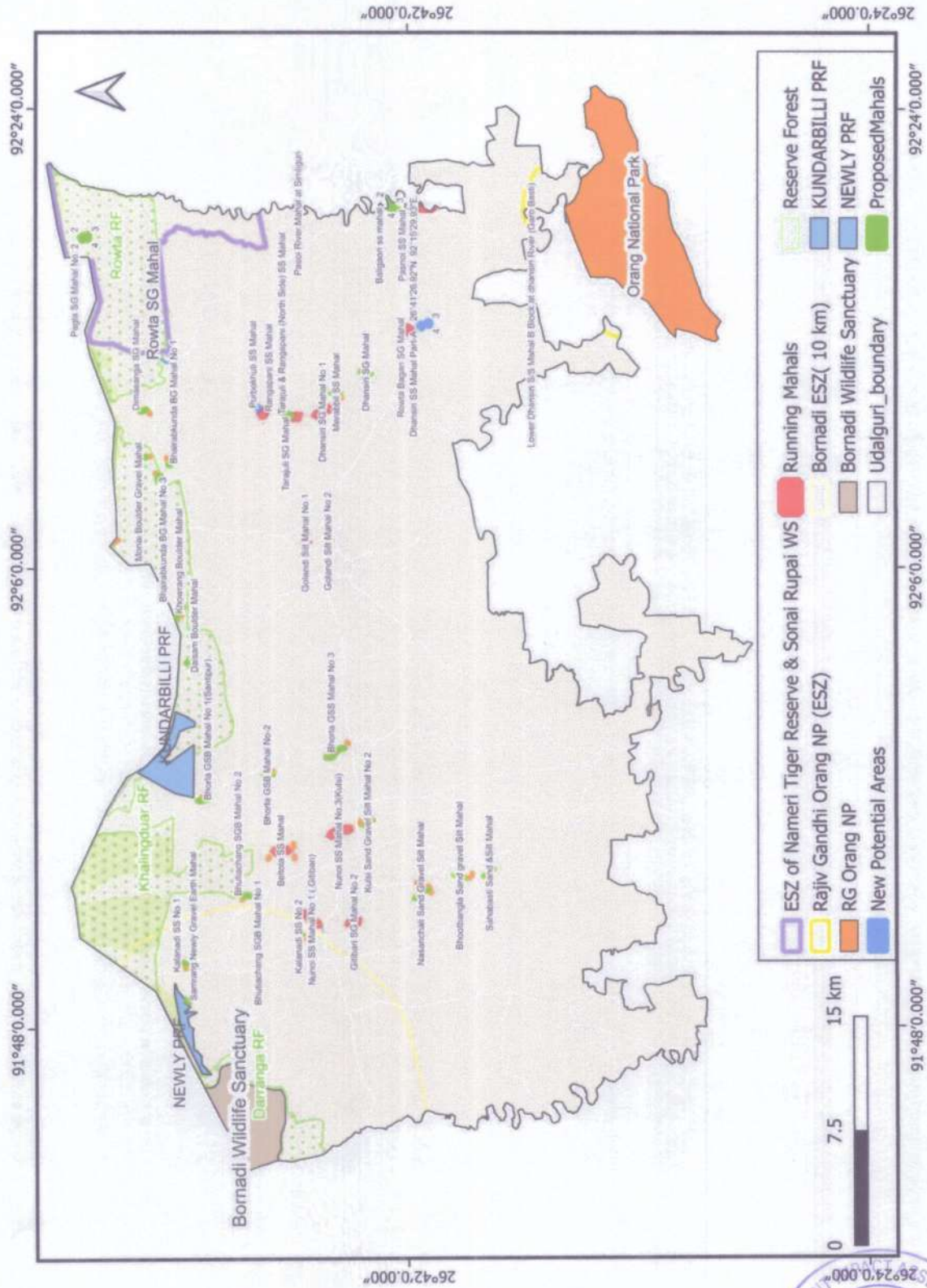
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## 19. Mining Leases marked on the map of Udalguridistrict



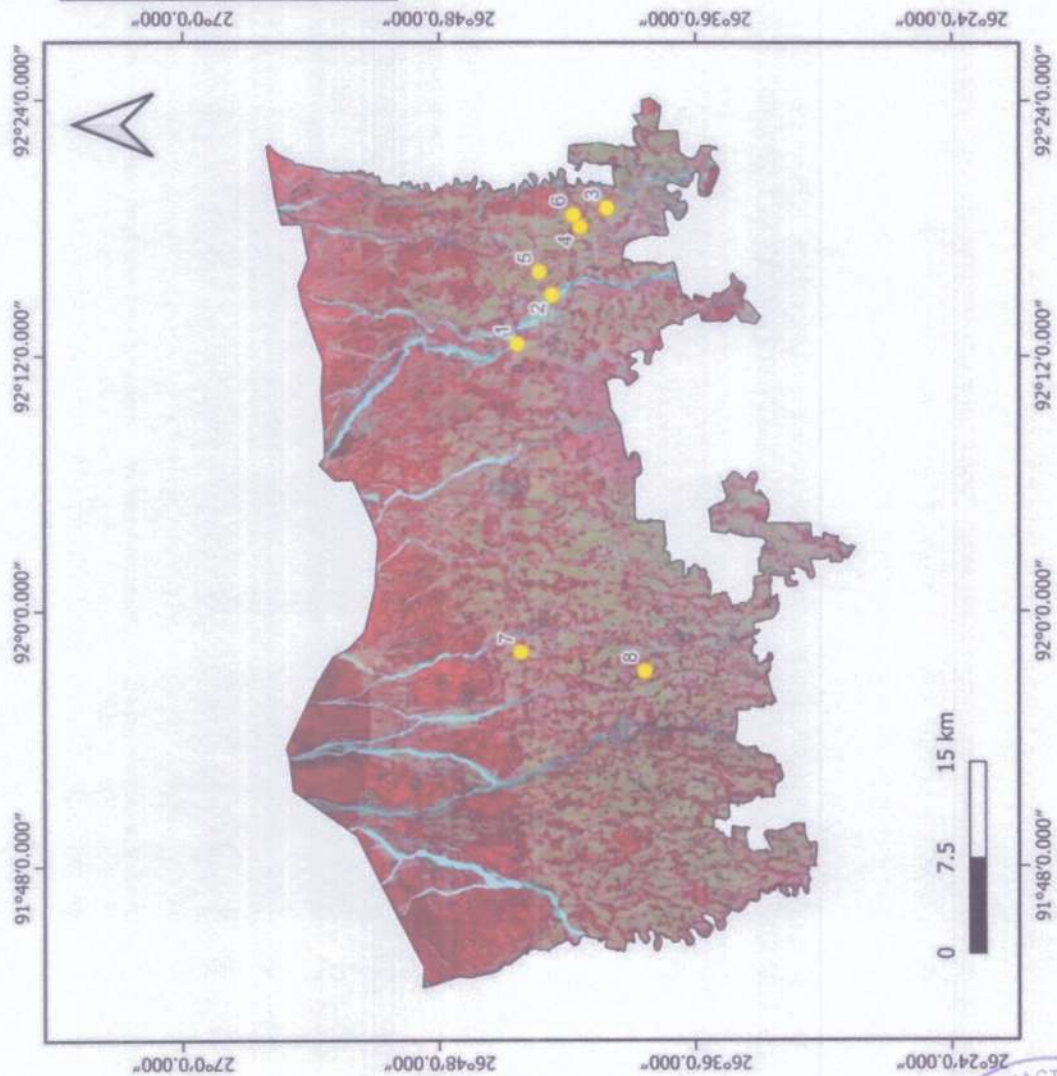
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| sl no | Name                                 | lat           | long          |
|-------|--------------------------------------|---------------|---------------|
| 1     | M/S Dhansiri Brick Industry (D.B.I.) | 26°44'20.34"N | 92°12'33.99"E |
| 2     | M/S N Brick Industry (N.B.I.)        | 26°42'41.20"N | 92°14'50.70"E |
| 3     | M/S M. G. Brick (MGB)                | 26°40'28.81"N | 92°16'55.67"E |
| 4     | M/S O Brick Industry (O.B.I.)        | 26°41'23.54"N | 92°18'2.78"E  |
| 5     | M/S K Brick Industry (K.B.I.)        | 26°43'17.51"N | 92°15'56.14"E |
| 6     | M/S O Brick Factory, (O.B.F.)        | 26°41'42.78"N | 92°18'36.27"E |
| 7     | M/S TBI Brick Industry               | 26°44'10.00"N | 91°58'4.00"E  |
| 8     | M/S J S B Enterprise                 | 26°38'22.00"N | 91°57'10.00"E |



*[Signature]*  
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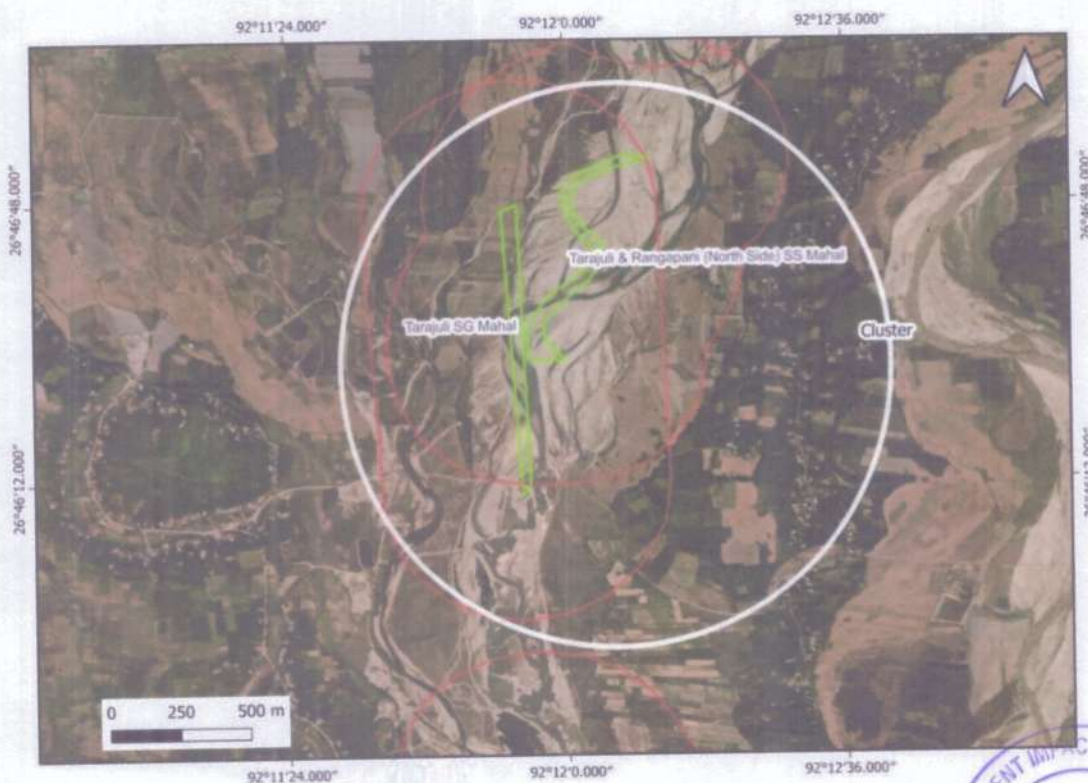


## 20. Details of the area of where there is a cluster of mining leases

A cluster is formed when one mining lease of homogenous mineral is within 500 meters of the other mining lease. In order to reduce the cluster formation mining lease size should be defined in such a way that distance between any two clusters preferably should not be less than 2.5 Km. Mining lease should be defined in such a way that the total area of the mining leases in a cluster should not be more than 10 Ha.

### Cluster details

| Cluster No | Mahal Name  | River Name     |
|------------|---|----------------|
| Cluster 1  | Tarajuli SG Mahal<br>Tarajuli&Rangapani (North side) SS Mahal | Dhansiri River |
| Cluster 2  | Baligaon SS Mahal<br>Pasnoi SS Mahal                          | Pasnoi River   |
| Cluster 3  | Bhutiasang SGB Mahal No.2<br>Bhutiasang SGB Mahal No.1        | Nunoi River    |

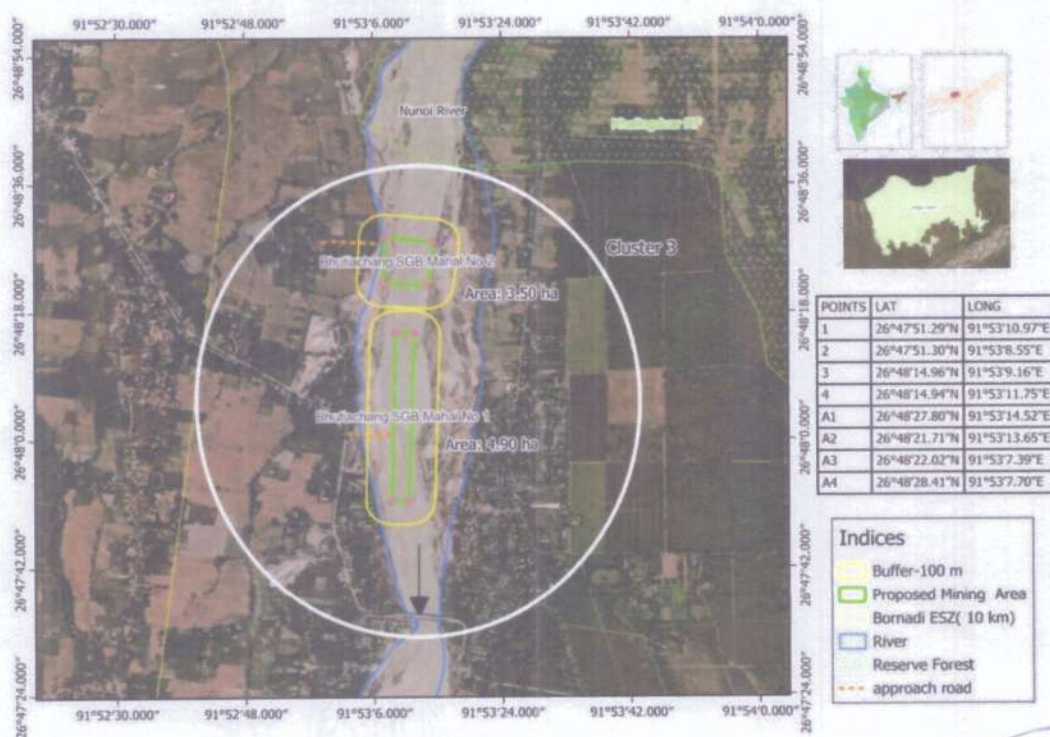
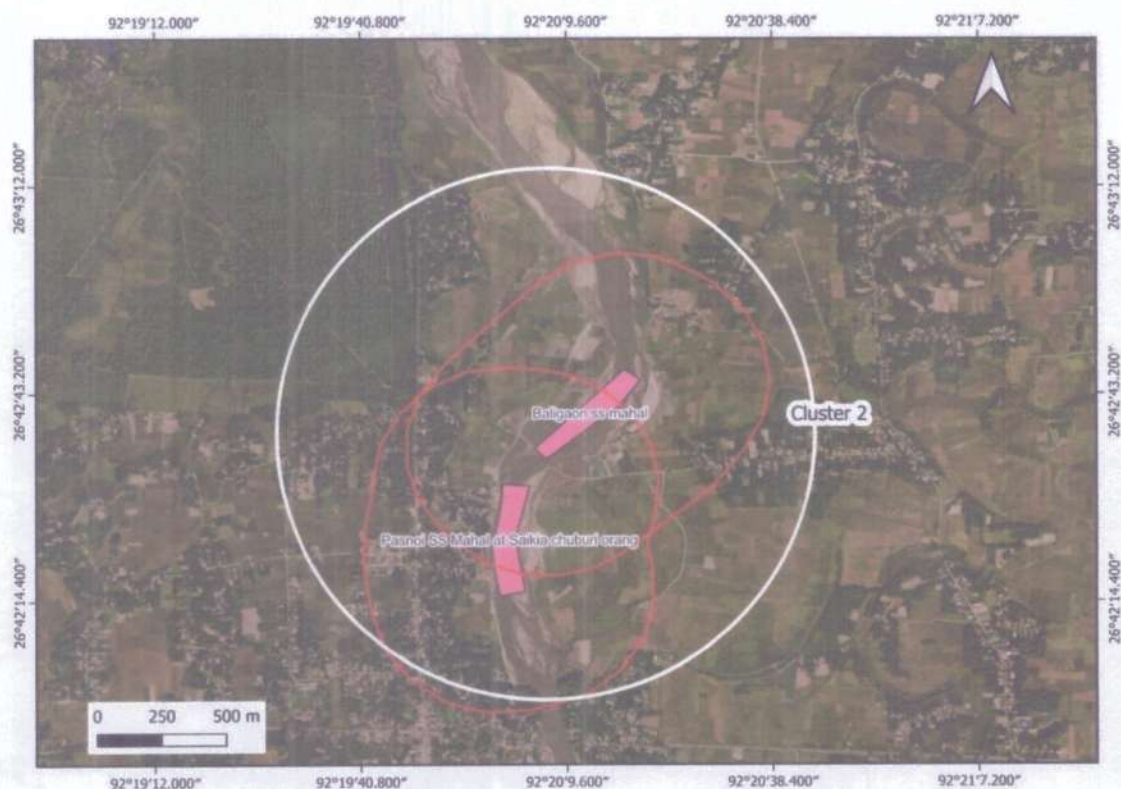


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**Map 20.1: Map showing clusters in Udalguri district**

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## 21. Details of Eco-Sensitive Area in Udalguri district

**Bornadi Wildlife Sanctuary** is a 26.22-square-kilometre (10.12 sq mi) wildlife sanctuary situated on the foothills of Himalayas bordering Bhutan in the north and is situated in Udalguri district & Baksa District of Assam. This sanctuary is named after the river Bornadi which flows on its western border. It is 30 km (19 mi) from Tangla town and 130 km (81 mi) from Guwahati. The sanctuary was established in 1980 to protect the hispid hare (*Caprolagus hispidus*) and pigmy hog (*Porcula salvania*). Pretty approachable at about 11 km out of library point, the sanctuary is home to many birds such as The White Capped Water Redstart and the Red Billed Blue Magpie. If you are lucky you can also spot some animals including panther, deer, Himalayan goat and even a leopard at times.

| Sl no | Name of the mahals               | Status   | Area under ESZ | Name of the ESZ                | Percentage covered |
|-------|----------------------------------|----------|----------------|--------------------------------|--------------------|
| 1     | Samrang Newly Gravel Earth Mahal | Proposed | 4.85 ha        | Barnadi Wildlife Sanctuary ESZ | 100                |
| 2     | Kalanadi SS No.1                 | Proposed | 4.50 ha        | Barnadi Wildlife Sanctuary ESZ | 100                |
| 3     | Kalanadi SS No.2                 | Proposed | 3.30 ha        | Barnadi Wildlife Sanctuary ESZ | 100                |
| 4     | Pagla SG Mahal No.2              | Proposed | 4.80 ha        | Nameri National Park ESZ       | 100                |

**Orang National Park**, located in the state of Assam, India, is a stunning wildlife sanctuary known for its rich biodiversity. Spanning over 78.81 square kilometers, it is often referred to as the "Mini Kaziranga" due to its similarity to Kaziranga National Park, particularly in terms of its habitat for the one-horned rhinoceros. The park is home to a variety of flora and fauna, including tigers, elephants, wild boars, and numerous species of birds, making it a haven for nature enthusiasts and wildlife photographers. The park also serves as a crucial conservation area for the endangered species of the region. Its peaceful environment and dense forests offer visitors a unique opportunity to experience the beauty of Assam's wilderness. About 14 sq km of Udalguri District falls under Orang National Park. About 13 km sq area of Udalur District fall under ESZ of Orang national park

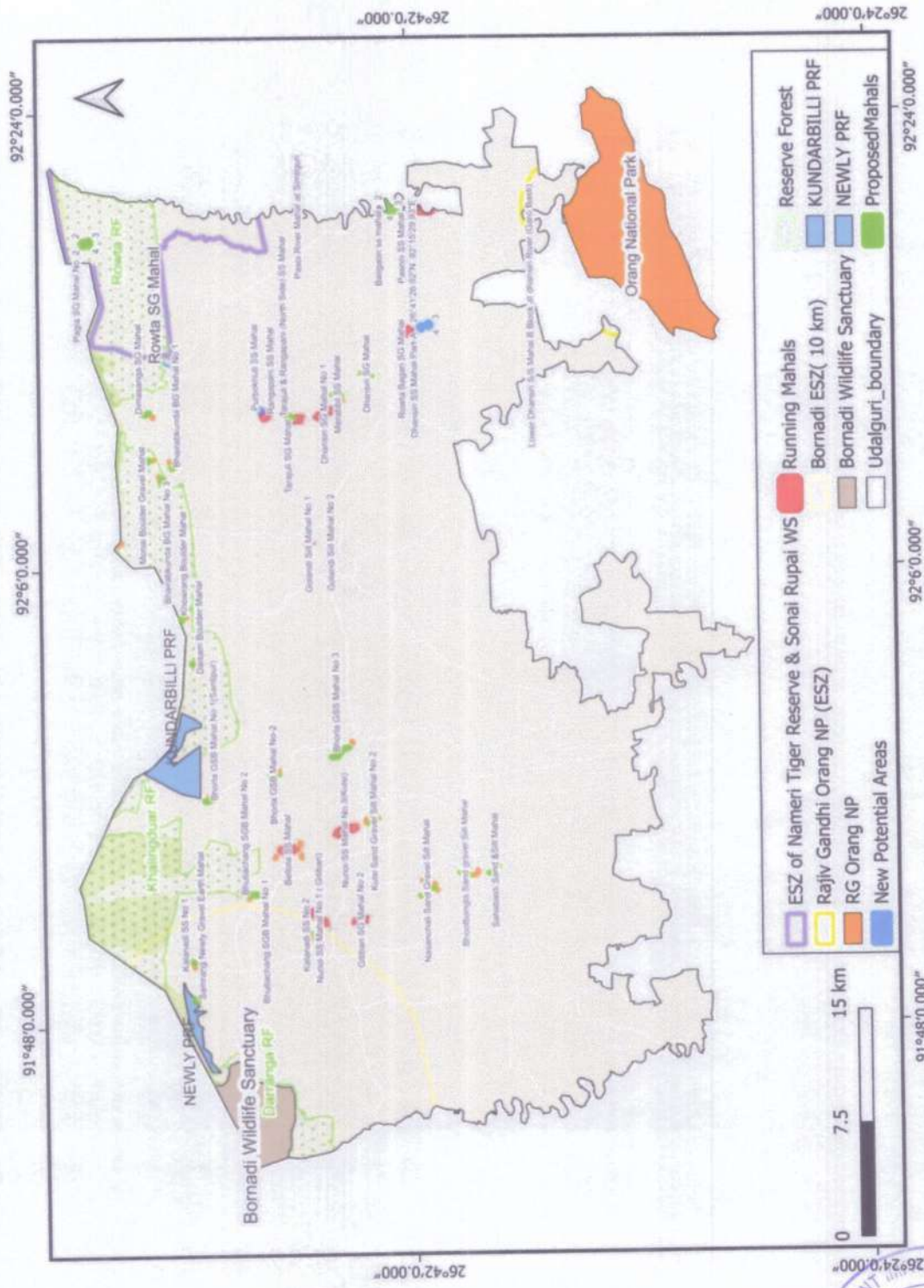
**The Nameri Tiger Reserve (NTR) and Sonai Rupai WS:** Both are in the northern part of the Sonitpur district of Assam, along the foothills of Arunachal Pradesh. The habitat is biologically rich and is famous for the white winged wood duck. About 73 km sq. Area of Udalguri District fall under ESZ of Nameri tiger Reserve and Sonai Rupai WS.

  
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**Map 21.1 Eco-Sensitive Area in Udalguri district**  
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## 22. Impact on the Environment due to mining activity

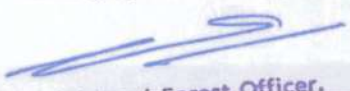
Impact on Environment due to mining activities varies based on quantum of production rate proposed. The different activities involved before & during mining are narrated below, which helps to assess the impact on environment. Population growth, economic development and environmental degradation are interlinked with each other. The high growth in population speeds-up economic activities resources. Meanwhile, it also deteriorates environment as for the high level of economic development, plenty of natural resources are exploited. Similarly, mining activities have considerable impacts on environment.

Land degradation is one of the significant impacts arising out of mining and quarrying activity which is mainly in the form of alternation of land structure due to excavation, stacking of top soil and loss of the land due to dumping of mine waste and overburden soil. Stone and sand quarrying causes damage to property, depletion of ground water, loss of fertile top soil, degradation of forest land, adverse effect on the biodiversity and public health.

Mining and quarrying, either open cast or underground, destroys landscape and forest ecosystems. The waste materials that remain after the extraction of usable ores are dumped on the surrounding land, thus causing loss of top soil.

Air pollution, due to dust from the mines, is a common environmental problem in mines and quarries especially open cast operations. Stone Mining activities are normally associated with different types of pollution is regarded as the most notable one, where particulate matter (dust) are generated and found in the surrounding areas of such activities. Particles with aerodynamic of less than 50  $\mu\text{m}$  (termed Total Suspended Particulate matter, or TSP) can become suspended in the atmosphere, and those with aerodynamic diameters of less than 10  $\mu\text{m}$  termed PM<sub>10</sub> (inhalable particles) can be transported over long distances, and enter the human respiratory system.

Noise pollution is associated with many types of equipment used in mining operations, but blasting is considered the major source. Loud sound disturbed the vegetable nearby the area. It also affects stability of infrastructures, building and homes of people living near to these working sites. In this regard, noise pollution may include noise from vehicle engines, loading and unloading of rock into steel dumpers, chutes, power generation, and other sources. Mining operations impact the environment in several ways, and water pollution is a major

  
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concern in such operations. For instance quarry dust can change the chemistry of water resources by dissolving in them, it can also settle in water bodies and cause pollution.

Furthermore, these operations disrupt the existing movement of surface water and groundwater; they interrupt natural water recharge and can lead to reduced quantity and quality of drinking water for residents and wildlife near or downstream from a quarry site.

The pollution potential of the proposed project, its possible impacts on the surrounding environment during pre-operational and operational phases and the necessary management actions proposed for control and abatement of pollution are furnished here under.

Impact on the some component of the environment is as below:


**Air environment:**

Although mining does not cause any direct change in air environment, transportation etc. In stone mining operations, the source of air pollution may cause deterioration of quality due to the fugitive dust emission during blasting, scooping, loading-unloading operations and transportation.

Loading and unloading of mineral would be associated with the fugitive emission in the active area whereas fugitive emission during transportation would affect the areas/villages situated adjacent to road side. Another source of air pollution would be emission from the trucks/tractor/other vehicles to be used of transportation of soil.

**Water environment:**

As far as impact on surface water is concerned, during mining and transportation, there are chances of contamination of surface water resources (pond, well etc.) with dust or by other means. The labourers working in stone mining come from neighbouring districts and colonies in the surrounding areas with inadequate facilities for waste disposal. This, in due course, leads to disposal of various things into surface water bodies which in due course of time results into surface water contamination through misuse/ mismanagement and decomposition of the trash.

  
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**Land environment:**

There shall be no major impacts of stone mining on land due to rocky terrain having no soil cover generation of top soil shall be nil. Other impacts on land include disposal of packing material, carried by the workers. This packing material would include used sachet/gutka/pan masala pouches. Polythene bags are used by the workers to bring their foods etc.

**Noise environment:**


As far as noise pollution is concerned, blasting is considered the major source of noise pollution. The machinery used in mining of stone mineral creates sound and vibrates. As well as vehicles used for transport, loading- unloading of mineral etc. put impact on noise environment. Noise level in the working environment should be compared with the standards prescribed by central pollution.

Control Board which has been adopted and enforced by the Govt. of India through The Noise Pollution (Regulation and control) Rules, 2000.

**Flora and Fauna:**

The mining is a destructive activity generated by human being for providing strength and security to his living standard. The mining in the concerned zones provides raw materials in the form of crusher, gravels and stones, etc. for construction of roads, railway line and other infrastructures.

From the last few years the mining rate has increased several times. It results in the loss of biodiversity of both flora and fauna and physiographic features of the concerned region.

  
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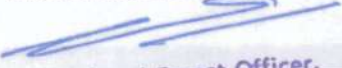




## 23. Remedial Measures to mitigate the impact of mining on the Environment

|                          |  |
|--------------------------|--|
| <b>Recommendation 1</b>  | <b>Recognize sand as a strategic resource</b> that delivers critical ecosystem services and underpins the construction of vital infrastructure in expanding towns and cities globally. |
| <b>Recommendation 2</b>  | <b>Include place-based perspectives for just sand transitions</b> , ensuring the voices of all impacted people are part of decision-making, agenda-setting and action.                 |
| <b>Recommendation 3</b>  | <b>Enable a paradigm shift to a regenerative and circular future.</b>  |
| <b>Recommendation 4</b>  | <b>Adopt strategic and integrated policy and legal frameworks</b> horizontally, vertically and intersectionally, in tune with local, national, and regional realities.                 |
| <b>Recommendation 5</b>  | <b>Establish ownership and access to sand resources</b> through mineral rights and consenting.   |
| <b>Recommendation 6</b>  | <b>Map, monitor and report sand resources</b> for transparent, science-based and data-driven decision-making.  |
| <b>Recommendation 7</b>  | <b>Establish best practices and national standards, and a coherent international framework</b>   |
| <b>Recommendation 8</b>  | <b>Promote resource efficiency &amp; circularity</b> by reducing the use of sand, substituting with viable alternatives and recycling products made of sand when possible.             |
| <b>Recommendation 9</b>  | <b>Source responsibly</b> by actively and consciously procuring sand in an ethical, sustainable, and socially conscious way.   |
| <b>Recommendation 10</b> | <b>Restore ecosystems and compensate for remaining losses</b> by advancing knowledge, mainstreaming the mitigation hierarchy, and promoting nature-based solutions.                    |

Mitigating the environmental impact of mining involves implementing various remedial measures to minimize negative effects on air, water, soil, flora and fauna, and overall ecosystems. Here are some common remedial measures to mitigate the impact of mining on the environment:

  
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### **Remedial Measures for Air Pollution:**

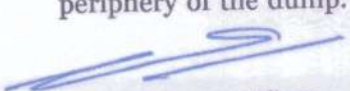
- All types of machinery and transport vehicles will be properly maintained and pollution checks will be done once in a year to keep the emissions from machinery and vehicles under control.
- Water sprinkling will be done on haul roads to control the emission of dust while transporting minerals and waste. Provision for water spray by tankers on 'Kuccha' road shall be done.
- Water sprinkling at the loading area.
- Tree plantation along the haul roads & approach road will be done. Plantation along the mine boundary shall be done with a tree density of 2000 trees per Hectare as per the norms of MoEF& CC, to control dust & noise.
- Use of personal protective equipment like dust masks.
- Ambient air pollution monitoring will be carried out

### **Remedial Measures for Noise Pollution:**

- Diesel-powered machinery, which is a major source of noise in open-cast mining shall be properly maintained. Attention shall be paid towards rigorous maintenance of the silencer of the diesel engines.
- Protective devices shall be provided for use of persons employed in the vicinity of high-noise areas.
- With the adoption of controlled blasting techniques, the ground vibrations will be minimized
- Plantation around the lease boundary will cut the noise levels.
- Remedial Measures for Land Environment:

### **Some of the measures followed to minimize the impacts are as follows:**

- The mining activities will be restricted within the lease area only.
- The waste material will be utilized for the construction of roads and also will be used by the local people for construction work.
- The surface runoff from the lease area will be retained within the lease and used for plantation, dust suppression and block cutting. So, there will be no soil erosion from the lease area and its surroundings due to mining activity
- The dump will have an inward slope with catch drains at inward side of the terrace and the catch drain of the individual terrace will be connected to the garland drain outside the periphery of the dump. The retaining wall and garland drain will be constructed around

  
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the dumps and the surface runoff water pass through the garland drain and finally settle in a settling pit before being released outside

- **Biodiversity Conservation:** Implement conservation strategies to protect biodiversity, including the preservation of critical habitats, reforestation, and the creation of wildlife corridors.
- **Community Engagement:** Involve local communities in decision-making processes and ensure they benefit from mining activities. This may include providing employment opportunities, supporting local infrastructure, and contributing to community development projects.
- **Closed-Loop Systems:** Design mining operations with closed-loop systems to minimize resource consumption and waste generation. This includes recycling and reusing water, materials, and energy within the mining process
- **Monitoring and Compliance:** Establish regular monitoring programs to assess the environmental impact of mining activities. Ensure strict compliance with environmental regulations and standards.
- **Training and Awareness:** Provide training for mining personnel on environmentally friendly practices and the importance of conservation. Increase public awareness about the environmental impacts of mining and the efforts being made to mitigate them.
- **Post-Closure Planning:** Develop and implement plans for the post-closure phase of mining operations to ensure ongoing environmental monitoring, maintenance, and adaptive management.

By incorporating these remedial measures, mining operations can help minimize their environmental impact and contribute to sustainable resource extraction. It's important to recognize that effective mitigation requires collaboration among industry stakeholders, regulatory bodies, local communities, and environmental experts.

  
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## 24. Reclamation of Mined out area

It is necessary to reclaim the land affected by mining for to following reasons

- To put the land into productive use like agriculture, forestry or recreational purposes
- To check soil erosion from dumps leading to the destruction of watersheds and siltation of rivers.
- Accumulation of huge quantities of water in worked-out pits may pose a threat to life and property.
- To combat adverse visual impact.

The afforestation programme is the most important programme to improve the environment and ecological balance of the area. Grasses and bushes that have fibrous roots are at the first instance grown which gives the binding property to the soil. After growing grasses and bushes, other tree species in consultation with the experts will be raised, based on the characteristics of soil, topography and climatic conditions.

The main post-mine land use for the Project will be grazing based on a self-sustaining vegetation community using appropriate pasture grasses and scattered plantings of native tree and shrub species.

For successful reclamation following points are to be considered

- Listing inventory of pre-mining condition.
- Monitoring flexibility of mining programme in the light of efficient land reclamation
- Evaluation of the post-mining requirements of the region and to decide on the needs and desires of the affected ground.
- To make reclamation planning suitable to the techno-economical and socio-political environment.
- To assess the physio-chemical characteristics of overburden.
- Extra cost of preservation, re-handling, spreading and levelling of subsoil and topsoil.
- Knowledge of hydrogeological/geomorphological conditions. Aesthetic and/or historic value of land.

The fast-growing plantation and re-grassing shall be done on the exhausted/excavated benches as well as in backfilled pits and will be done in consultation with local peoples or Govt. Authorities like the forest department etc. The mining lease shall be fenced properly in

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the entire periphery of the safety zone. The total mined-out area of the benches

shall be dedicated to plantation and re-grassing. The average year-wise proposed bench area for the plantation is as under:

- a) The plantation/regressing and its maintenance cost will be borne by the applicant. Also, a green belt will be developed in consultation with the local panchayat and forest departments along approach roads in order to minimize pollution.
- b) Based on the characteristics of soil, topography and climatic conditions of the area, plantation of grasses/bushes and other tree species will be done by the applicant
- c) Plantation before the onset of the monsoon season will be done progressively until the final closure of the mine
- d) Green Belt shall be properly designed in consultation with the forest department. Plantation shall be carried out as per the periodical plantation programmer
- e) Fast-growing and evergreen trees, trees with broadleaf resistance to specific pollutants and those that would maintain the regional ecological balance, soil and hydrological conditions shall be favoured.
- f) Green belt area along the haul roads, buffer zone, dumping sites as well as the excavated benches shall be developed.
- g) Besides this, only local labours shall be engaged for watch and ward and plantation activity with proper maintenance.

The plantation/regressing and its maintenance cost will be borne by the applicant. Also, a green belt will be developed in consultation with the local panchayat and forest department along approach roads in order to minimize pollution

  
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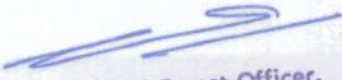
## 25. Risk Assessment & Disaster Management Plan

### Risk Assessment:

- **Identify Hazards:** Conduct a thorough identification of potential hazards associated with mining activities, considering factors such as geology, equipment, processes, and external influences
- **Risk Analysis:** Assess the likelihood and potential consequences of identified hazards. This involves quantifying risks to prioritize them based on severity and probability
- **Vulnerability Assessment:** Evaluate the vulnerability of critical infrastructure, surrounding communities, and the natural environment to potential risks and hazards
- **Stakeholder Engagement:** Involve relevant stakeholders, including local communities, government agencies, and environmental experts, in the risk assessment process to gather diverse perspectives and local knowledge.
- **Emergency Response Planning:** Develop detailed emergency response plans for various scenarios, considering potential accidents, natural disasters, and other emergencies. Include evacuation routes, emergency shelters, and communication protocols.

### Disaster Management Plan

- **Risk Mitigation Strategies:** Implement risk mitigation strategies to minimize the likelihood and impact of identified hazards. This may involve engineering controls, process modifications, and the use of advanced technologies.
- **Safety Training and Awareness:** Conduct regular safety training for mining personnel, contractors, and local communities. Promote awareness of potential hazards and the importance of adhering to safety protocols. The required personal protective equipment should be provided and used in a manner that protects the individual from injury. A few minor injuries which can be prevented are slip, trip or fall hazards; hazards due to rock falls and collapse of unstable rocks, atmosphere containing toxic or combustible gases; protection from chemical or hazardous material etc.
- **Infrastructure Design:** Design mining infrastructure with safety in mind, incorporating features such as containment systems for hazardous materials, emergency exits, and protective barriers.
- **Contingency Planning:** Develop contingency plans for various emergency scenarios, outlining specific actions to be taken in the event of accidents, spills, fires, or other critical incidents.

  
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District Survey Report (DSR) of Udalguri District |





- **Collaboration with Emergency Services:** Coordinate with local emergency services, hospitals, and law enforcement agencies to ensure a seamless response to emergencies. Conduct joint training exercises and drills to improve preparedness.
- **Emergency Equipment and Resources:** Maintain an inventory of emergency equipment, such as first aid supplies, firefighting equipment, and evacuation vehicles. Ensure that resources are strategically located for quick access. A disaster management plan should be prepared for taking care of for any disaster. Other risks which are included in this category are noise, as it occurs and it can lead to permanent disability. There are problems related to road traffic in and out issuers; inappropriate exposure of moving machines; mechanical failure and because of large number of moving trucks and dumpers there is a large quantity of dust present in roadways which affects the operators and can lead to accidents.

By integrating comprehensive risk assessments and disaster management plans into mining projects, companies can enhance the safety of their operations, protect the environment, and contribute to the well-being of surrounding communities. It is essential to work closely with regulatory bodies and local stakeholders throughout the planning and implementation processes.

  
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## 26. Details of the Occupational Health issues in Udalguri District

The negative impacts of dust pollution due to quarrying activities on health revealed by respondent information were respiratory problem, eye infection, cough, sneezing, allergy, chest pain, headache, accumulation of dust on home, and slow growth of fodder for cattle and goats. Negative effects of dust pollution on crop productivity. Two major effects were reduction of agricultural yield due to deposition of dust on crop and secondly availability of ground water and water contamination. Another problem we noticed through interview was many agricultural labour were faced difficulty to work in dusty environment therefore resulting in reduction of agricultural yield indirectly. Many fruit trees also affected by dust pollution resulting in stunted growth and decreased fruit yields. There are also reductions in appearance of insect pollination like butterflies, bees, moths etc. due to dust pollution.

The persons employed in the mines are exposed to a number of hazards at work which adversely affect their health. Some of the important ones are dust, noise, heat, humidity, vibration etc. In recent times, there has been increasing awareness among the mining industry and workers about occupational diseases. Almost all occupational diseases are known to cause permanent disablement and there is no effective treatment. However, most of occupational diseases can be prevented by adopting proper occupational health measures and engineering control of airborne dust at the workplace.

In order to detect occupational diseases, the health surveillance programme shall be adopted in mines which include:

- Initial Medical Examination of persons to be employed in mines.
- Periodic Medical Examination once every five years. General physical examination, chest radiographs, lung function tests and audiometric
- Classification of chest radiographs of workers as per ILO Classification.
- Medical examination within one year of superannuation

  
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## **27. Plantation and Green Belt development in respect of leases already granted in Udalguri District**

Protect natural or semi- natural environments:

- Improve air quality within urban areas
- Protect the unique character of rural communities that might otherwise be absorbed by expanding suburbs.
- Plants that grow fast should be preferred
- Preference for high canopy covers plants with local varieties
- Perennial and evergreen plants should be preferred
- Plants having a high Air pollution Tolerance Index (APTI) should be preferred.

### *Greenbelt Development & Plantation Programme*


Plantation should be developed at 2mX2m spacing; the rate of survival should be aimed at 80% by regular watering & fencing to keep plants safe from animal grazing. Local species will be planted in consultation with local horticulturist. Diseased plants should be replaced by planting new saplings.

### **Recommendation for green Belt Development**

It is strongly recommended to create greenbelt around the project or in case lease failed the authority should take proper action to stop mining operation or Revoke mining permission with necessary action.

### **References:**

1. <https://udalguri.assam.gov.in>
2. <https://www.cgwb.gov.in>
3. AQUIFER MAPPING AND MANAGEMENT PLAN OF UDALGURI DISTRICT, ASSAM ANNUAL ACTION PLAN, 2019-20
4. DISTRICT DISASTER MANAGEMENT PLAN 2024-25, UDALGURI DISTRICT
5. [https://udalguri.assam.gov.in/sites/default/files/public\\_utility/FAP](https://udalguri.assam.gov.in/sites/default/files/public_utility/FAP)
6. [https://www.cgwb.gov.in/old\\_website/District\\_Profile/Assam/Udalguri](https://www.cgwb.gov.in/old_website/District_Profile/Assam/Udalguri)

  
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**MAP SHOWING NO MINING ZONE OF SOME MAJOR RIVERS OF UDALGURI DISTRICT**  
(According to EMGSM- January, 2020)

**DIMASANG RIVER**



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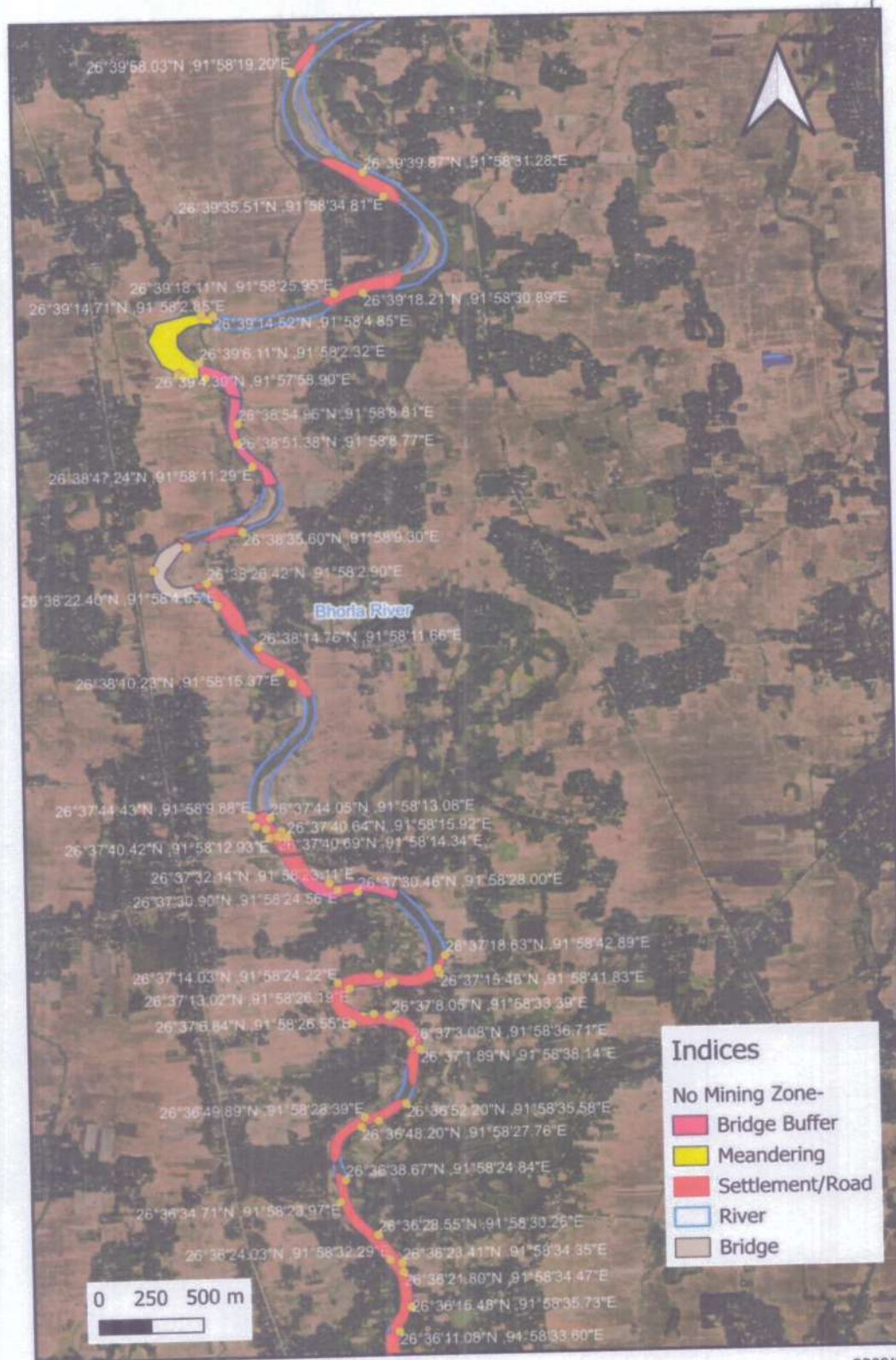


# BHORLA RIVER





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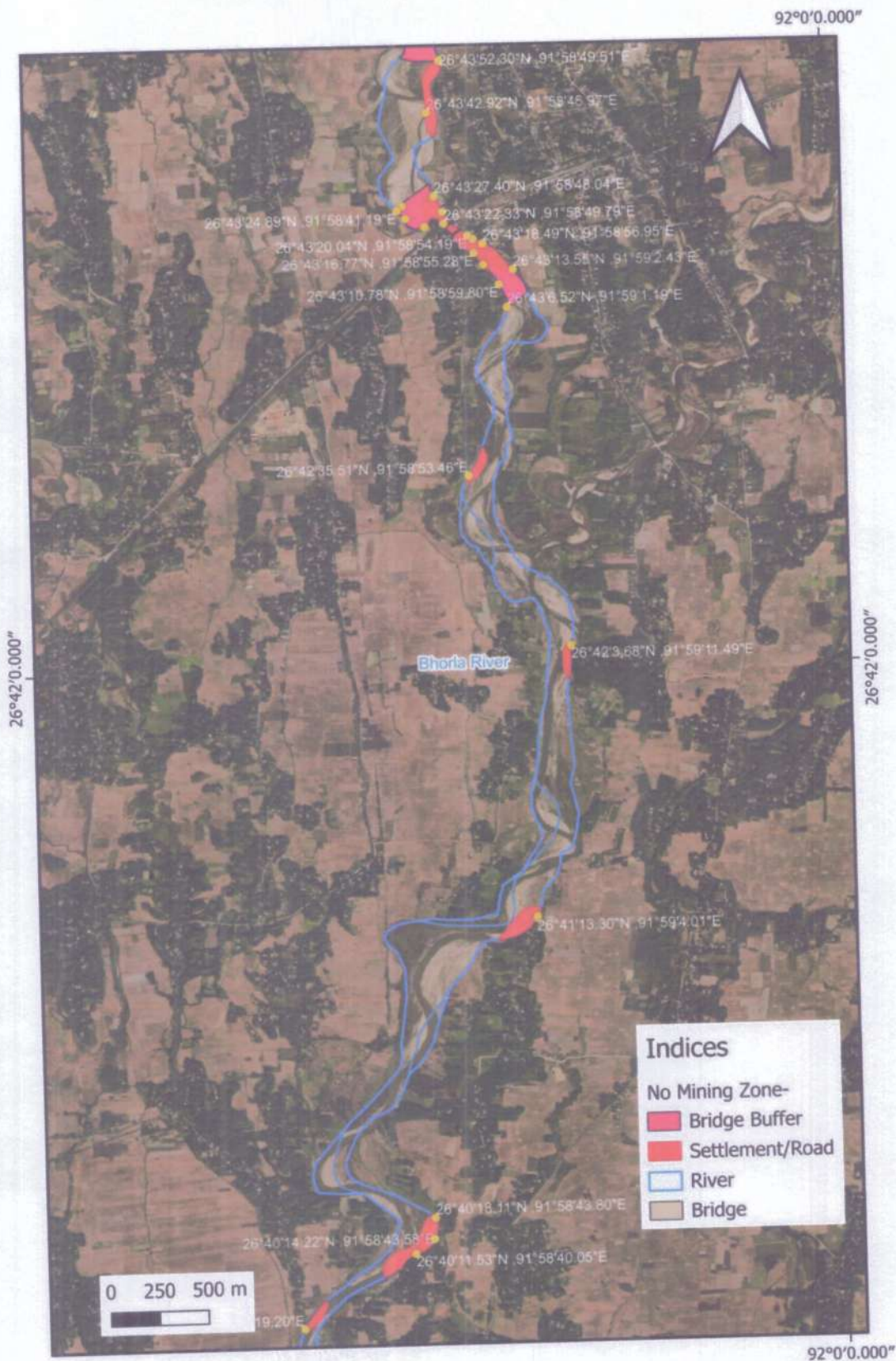
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District Survey Report (DSR) of Udalguri District

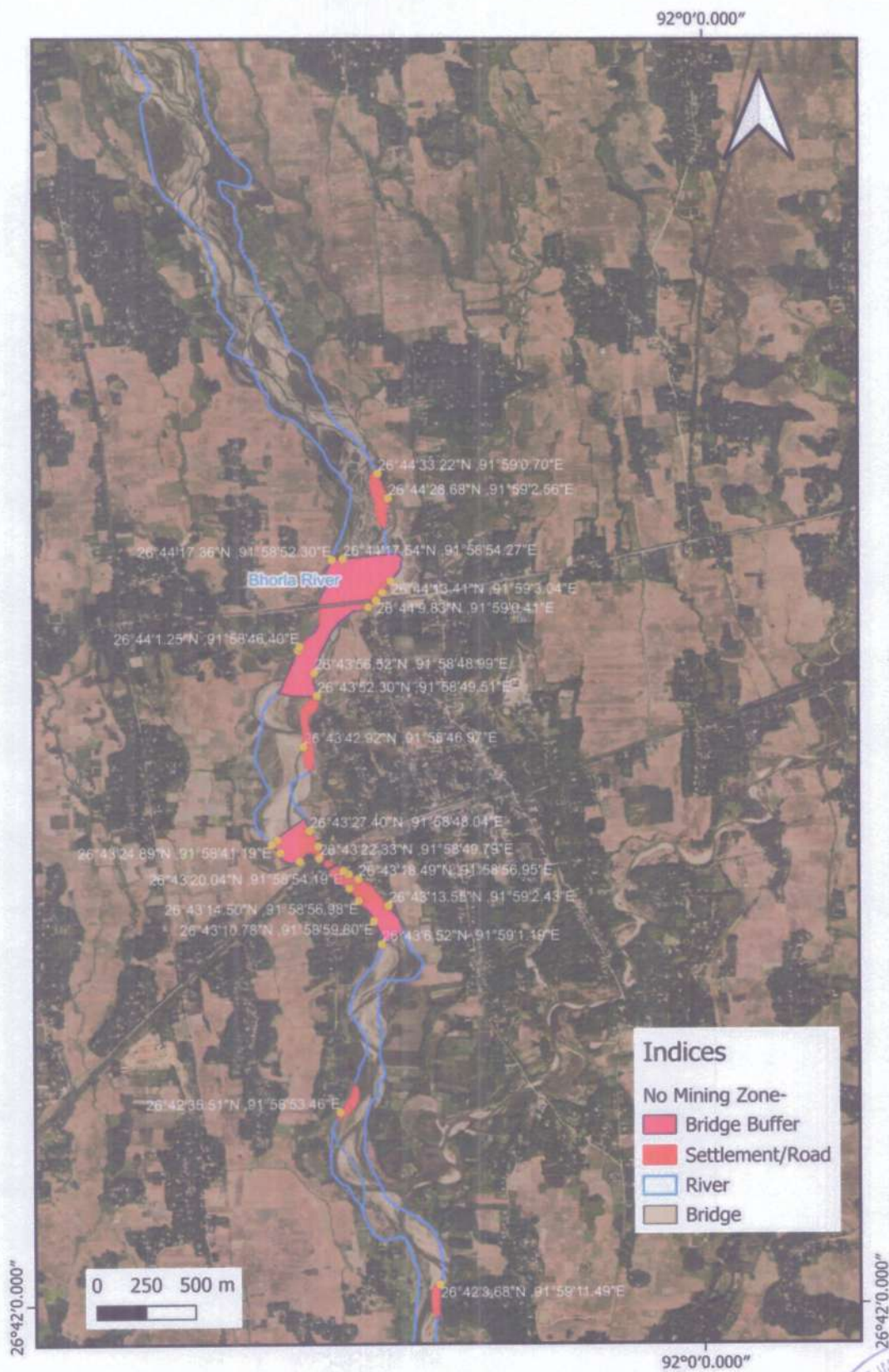
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Udalguri, B.T.C.











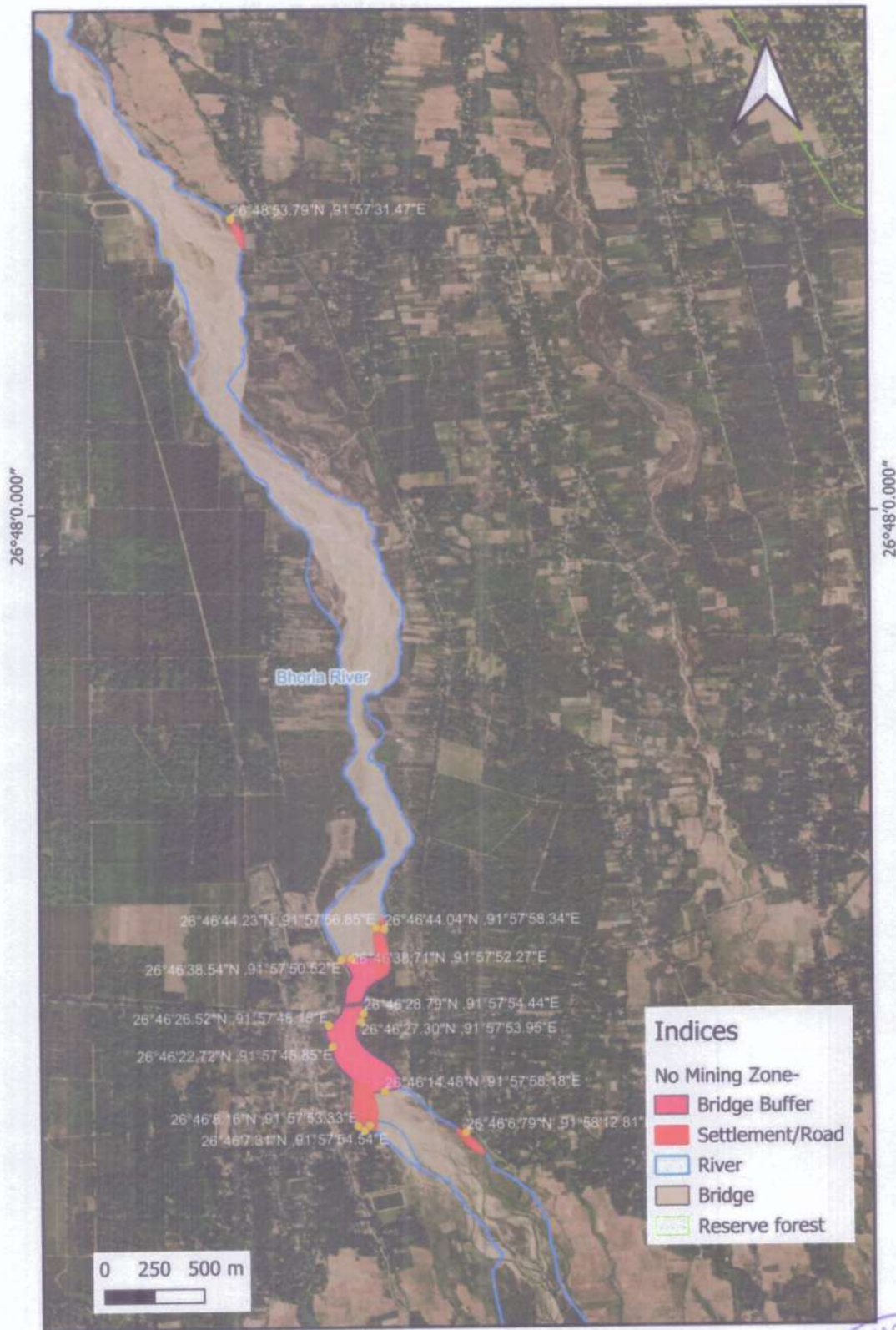
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 Dhansiri Forest Division  
 Udalguri, BTC







Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BFC

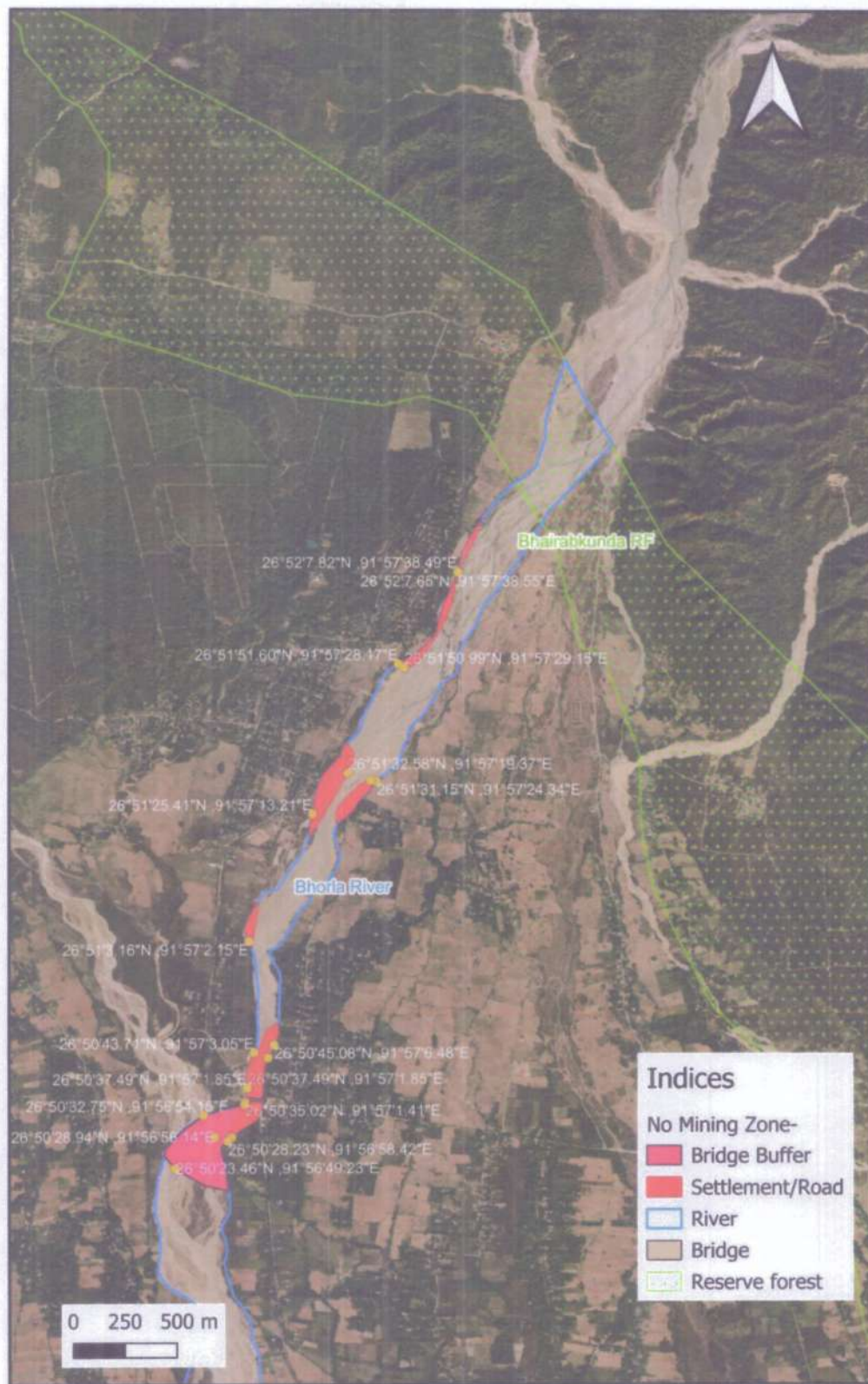
District Survey Report (DSR) of Udalguri District

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Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, B.T.C.

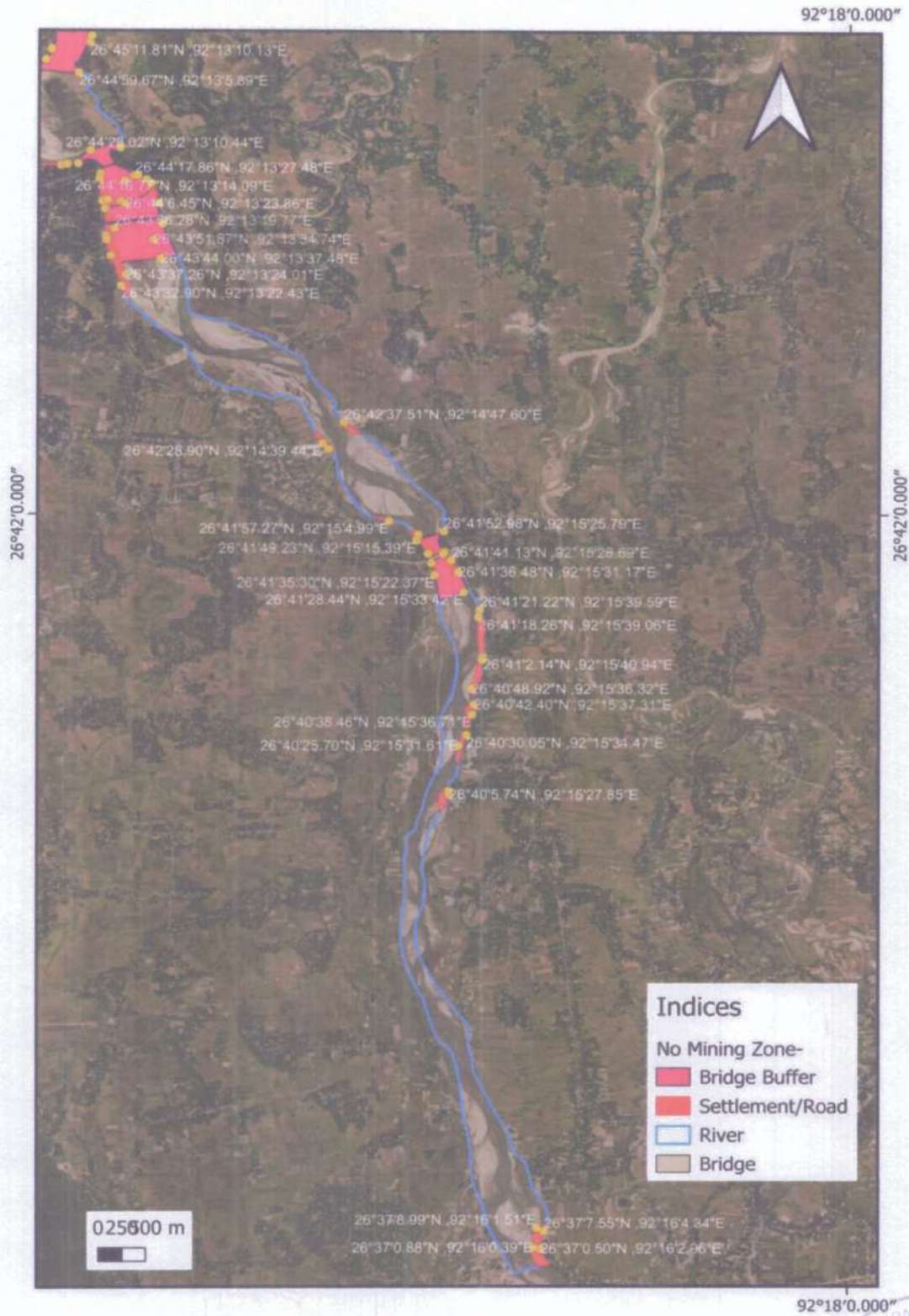
District Survey Report (DSR) of Udalguri District

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# DHANSIRI RIVER

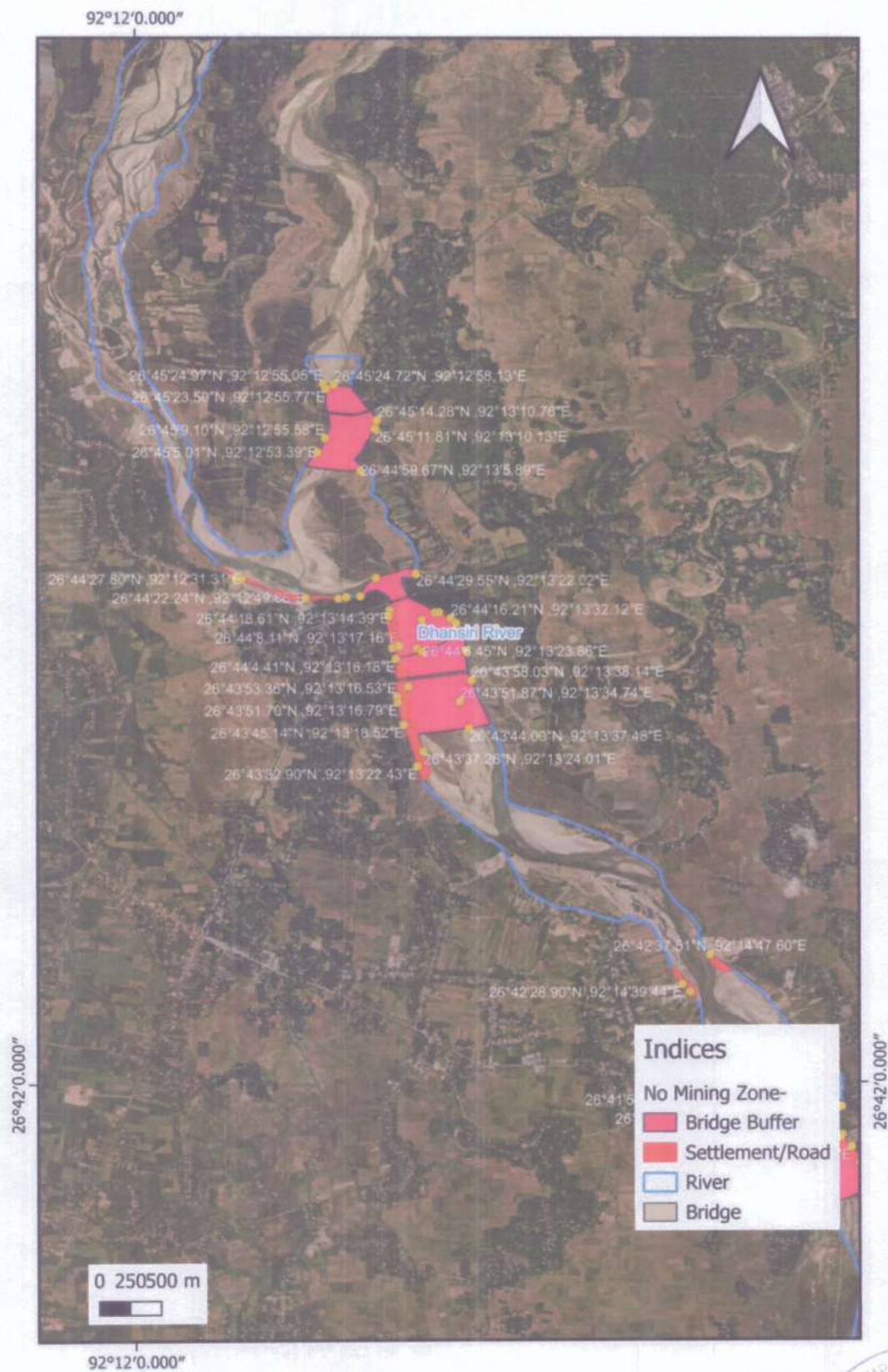


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 Udalguri, BTL

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 Divisional Forest Officer,  
 Dhansiri Forest Division  
 Udalguri, BFC

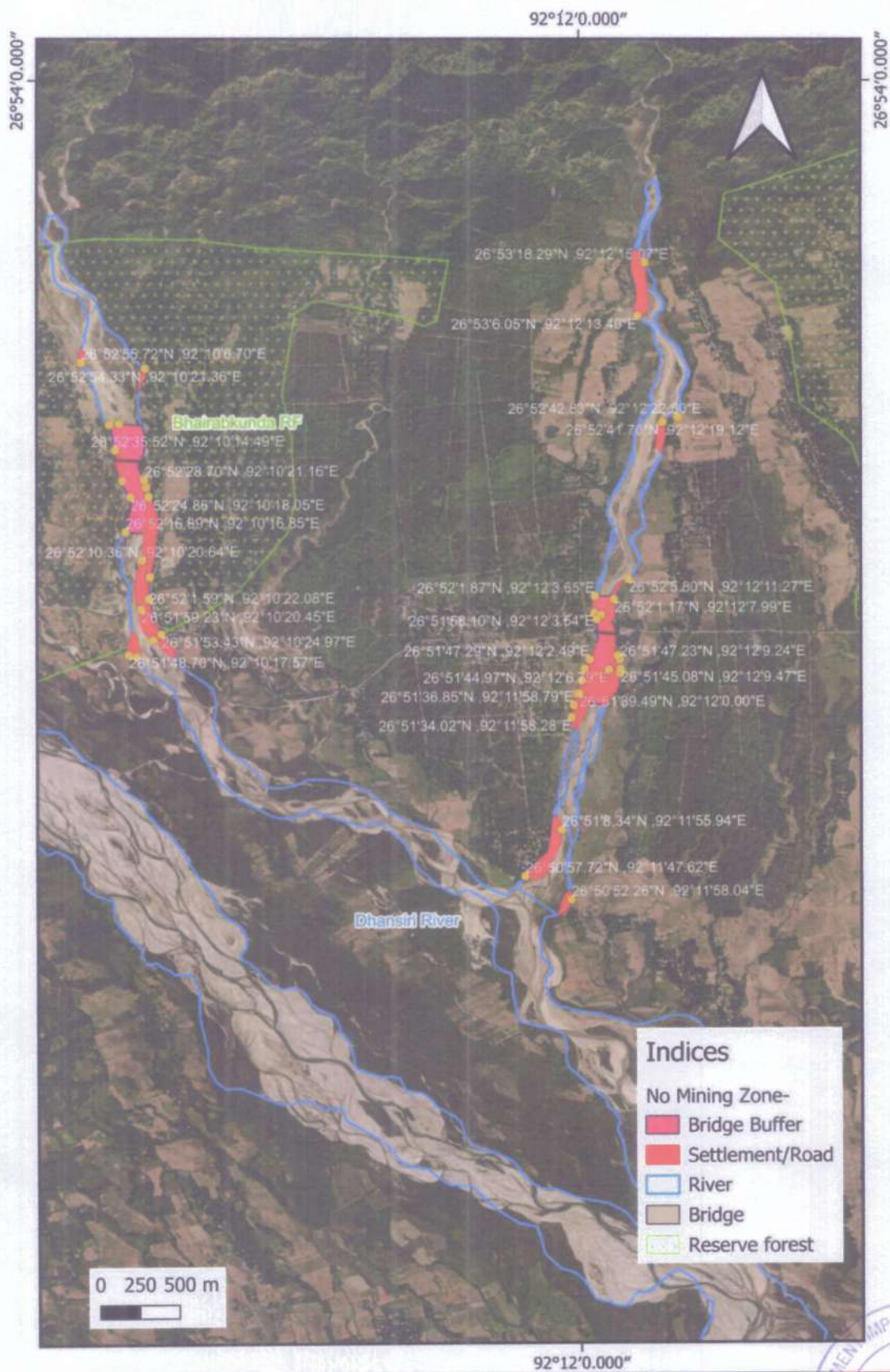
District Survey Report (DSR) of Udalguri District

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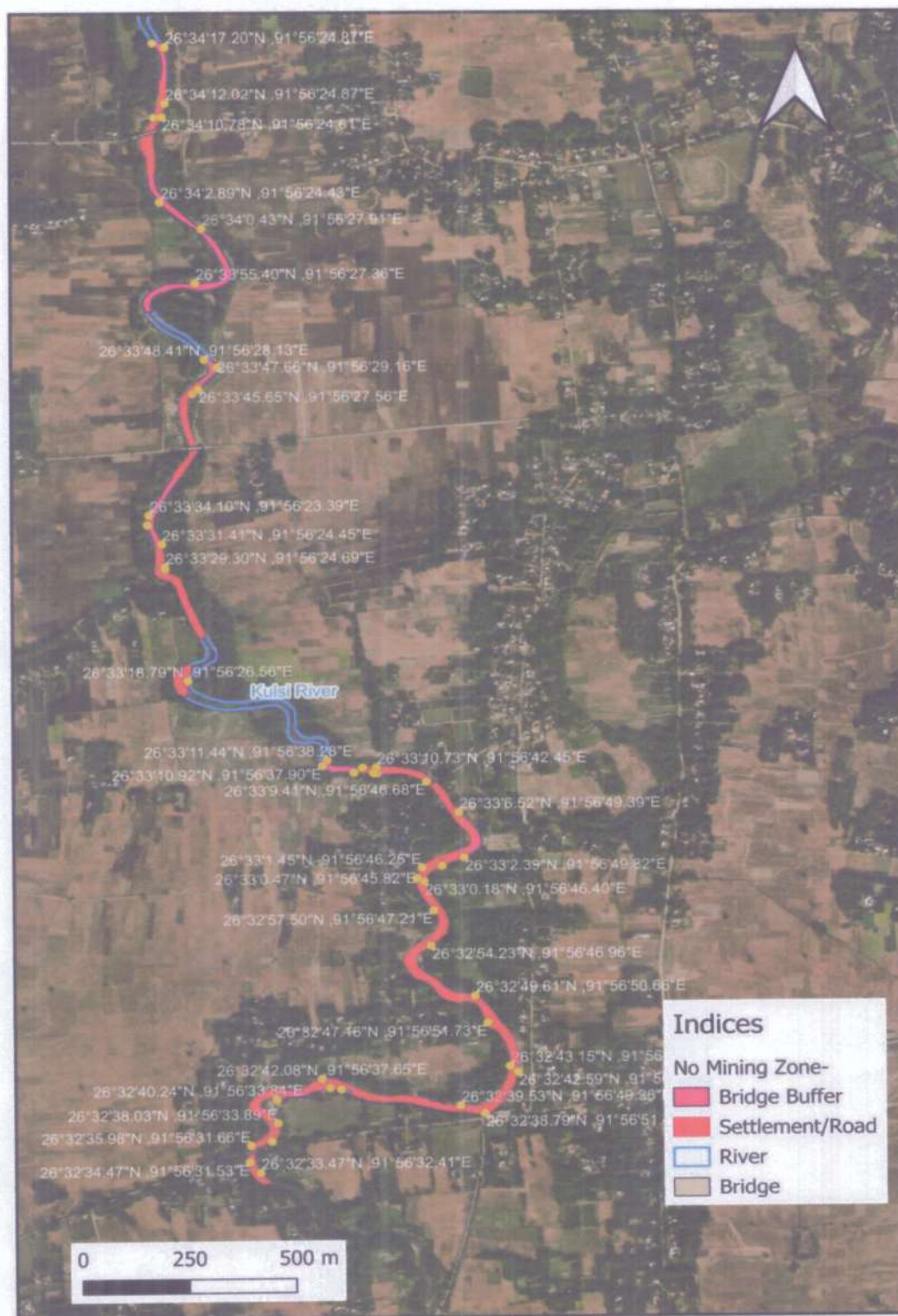
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# KULSI RIVER



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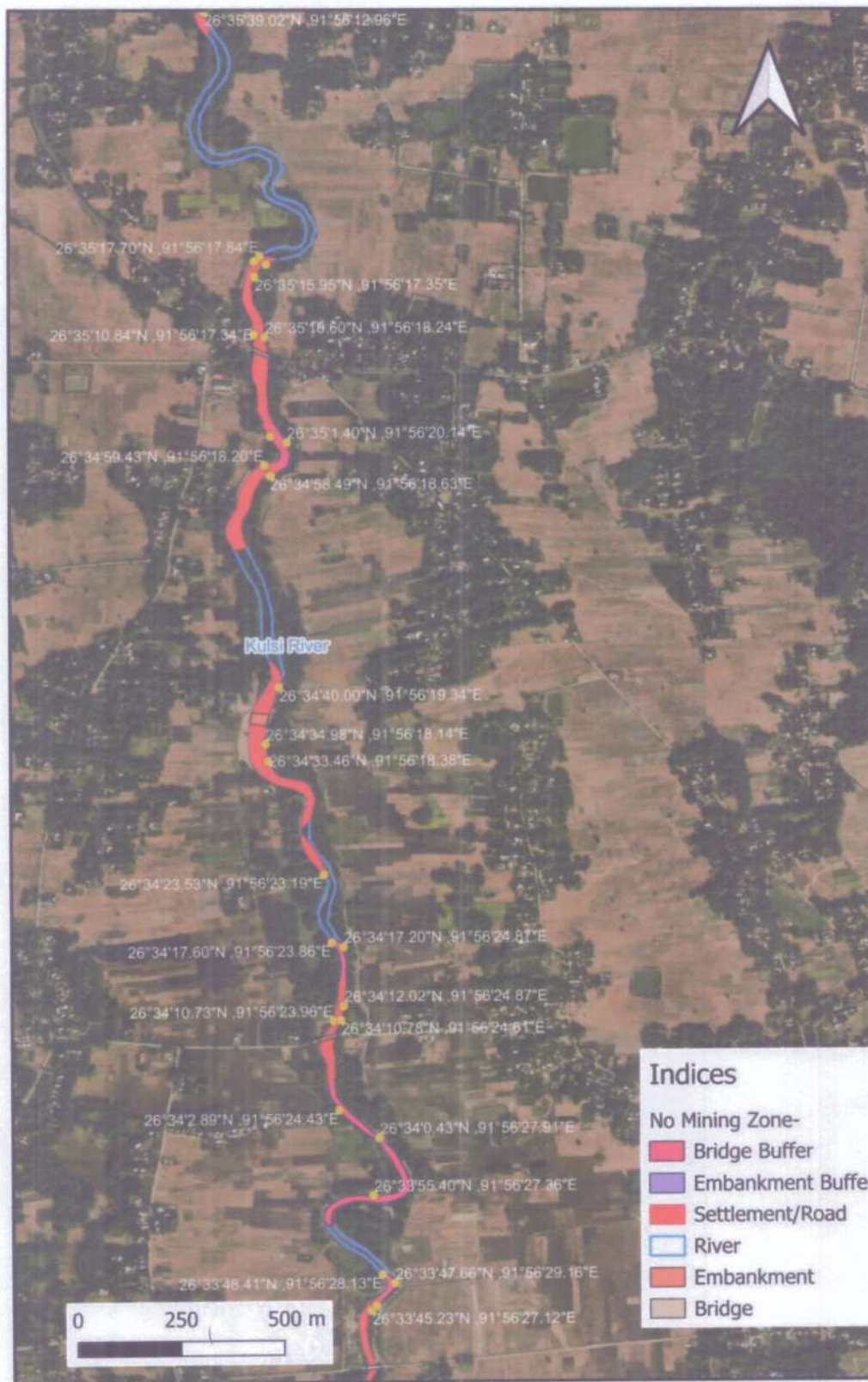
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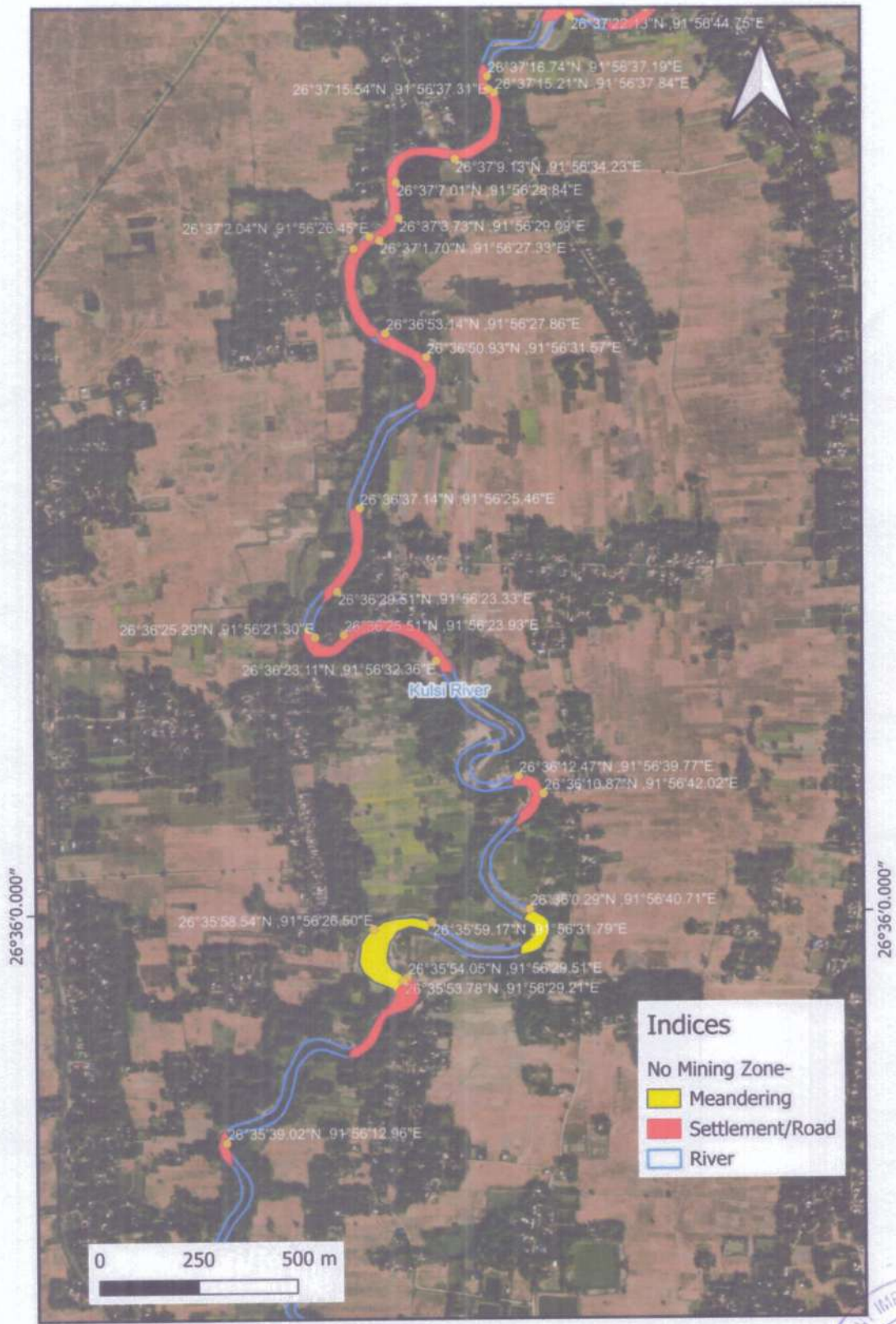
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 Dhanisiri Forest Division  
 Udalguri, B.T.C.









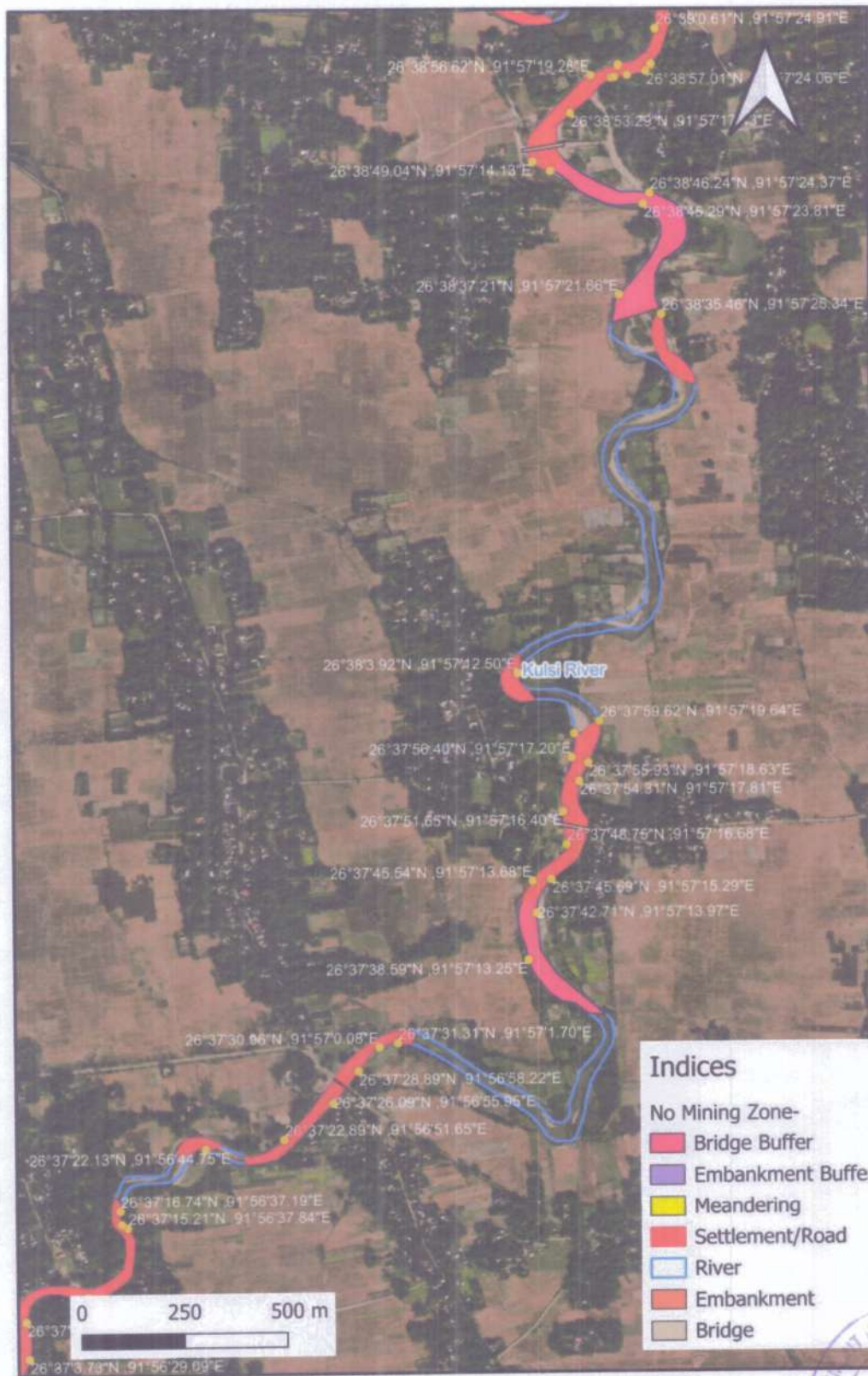


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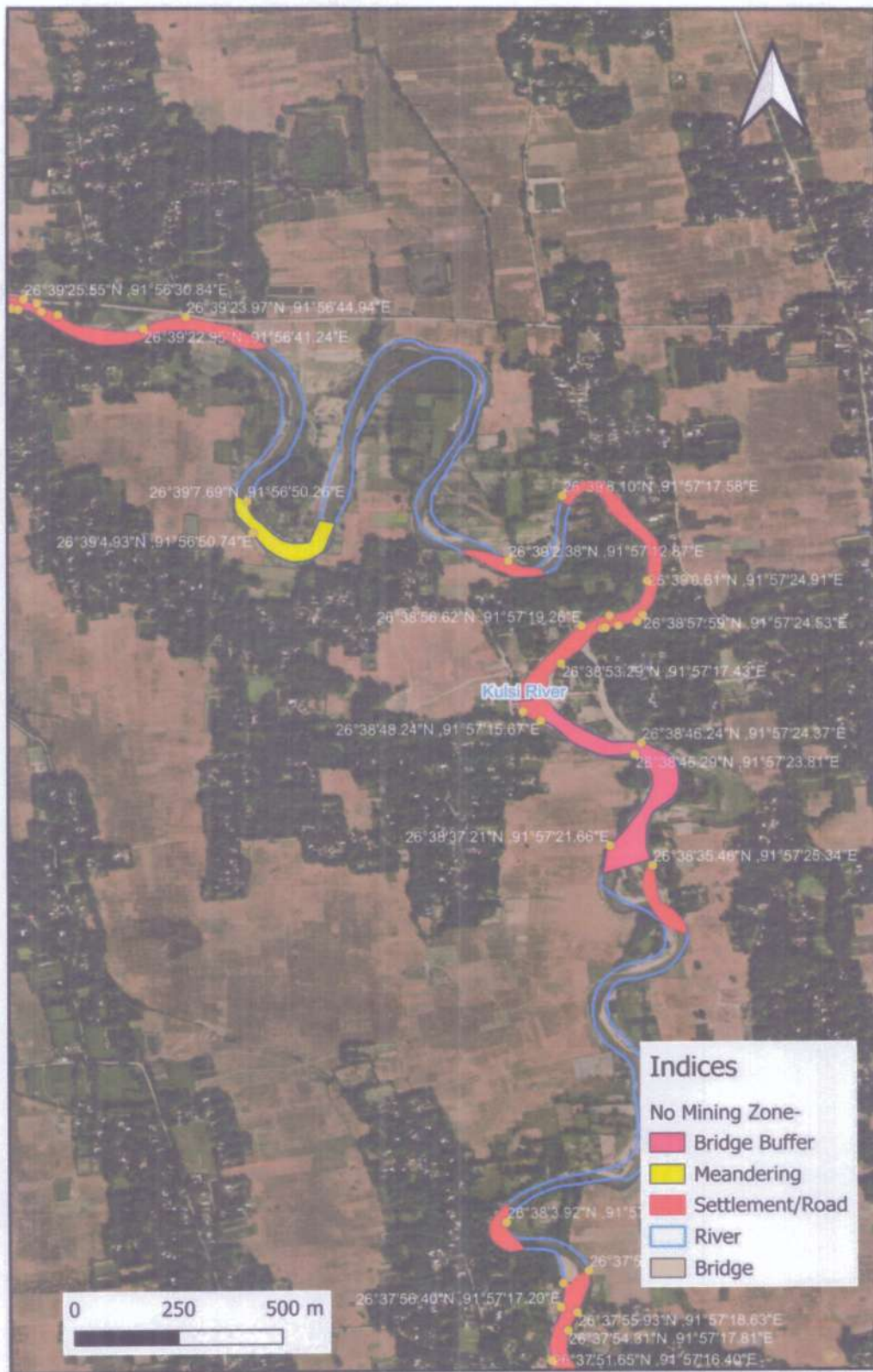


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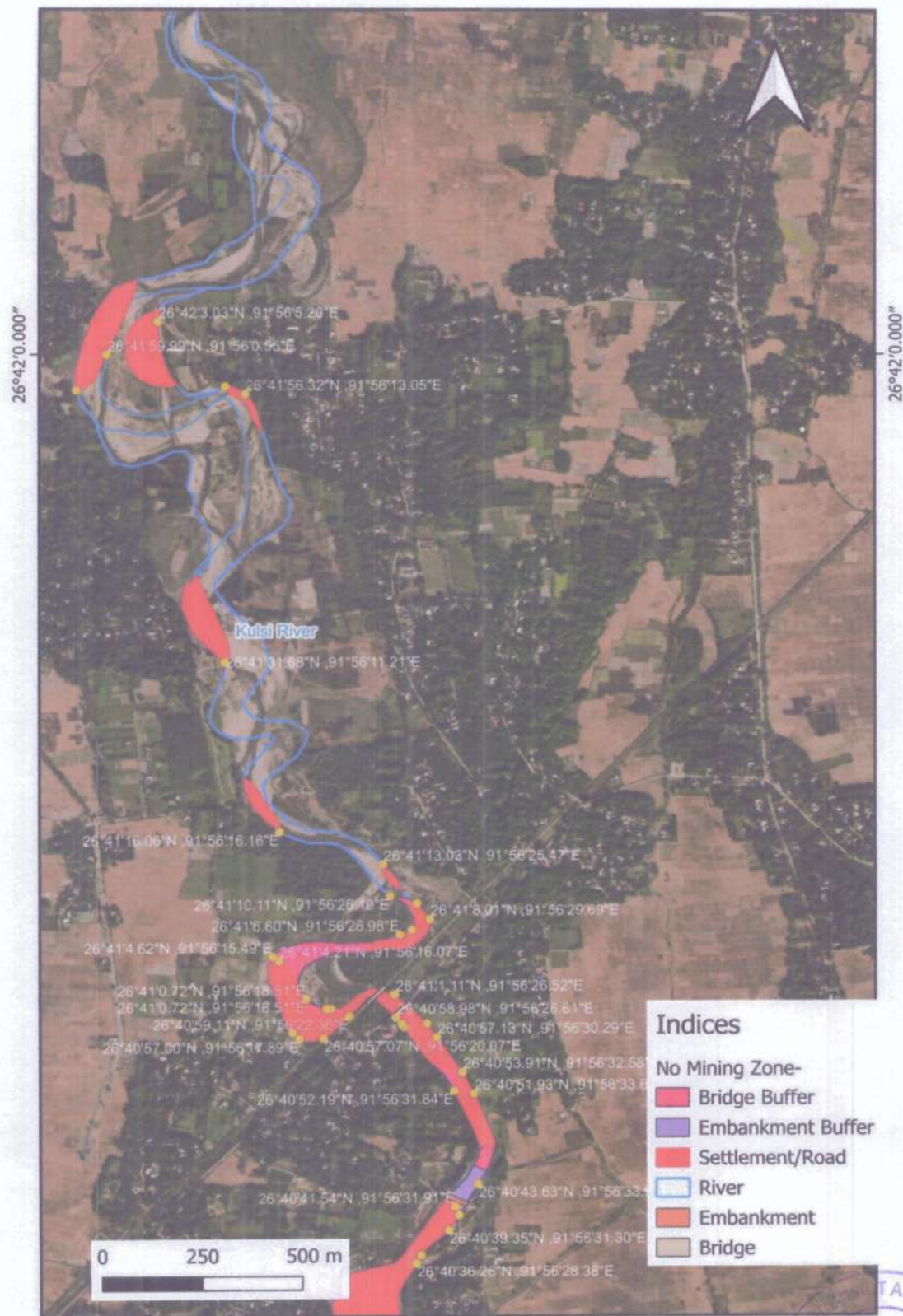
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Udalguri, B.T.C.









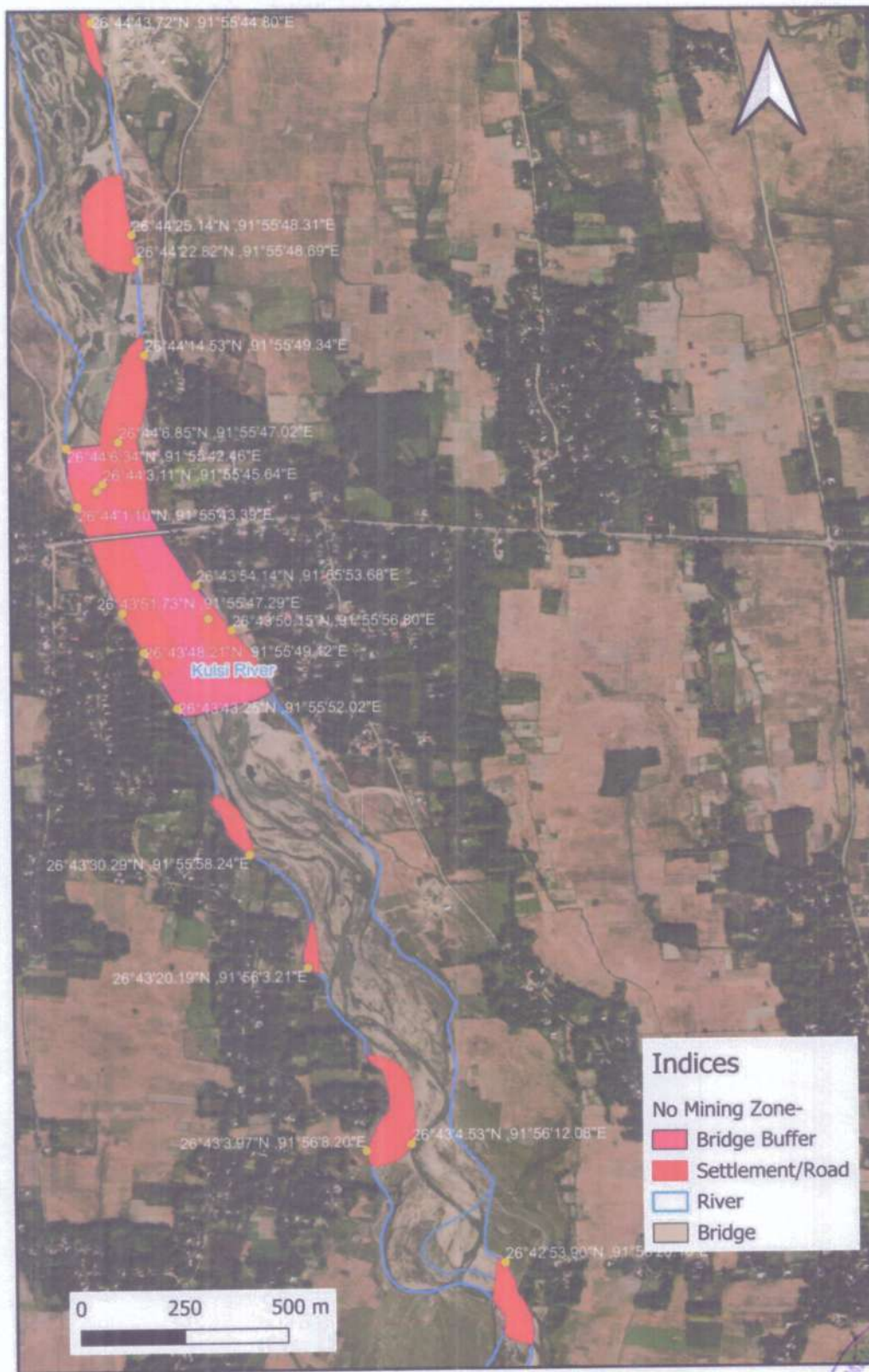


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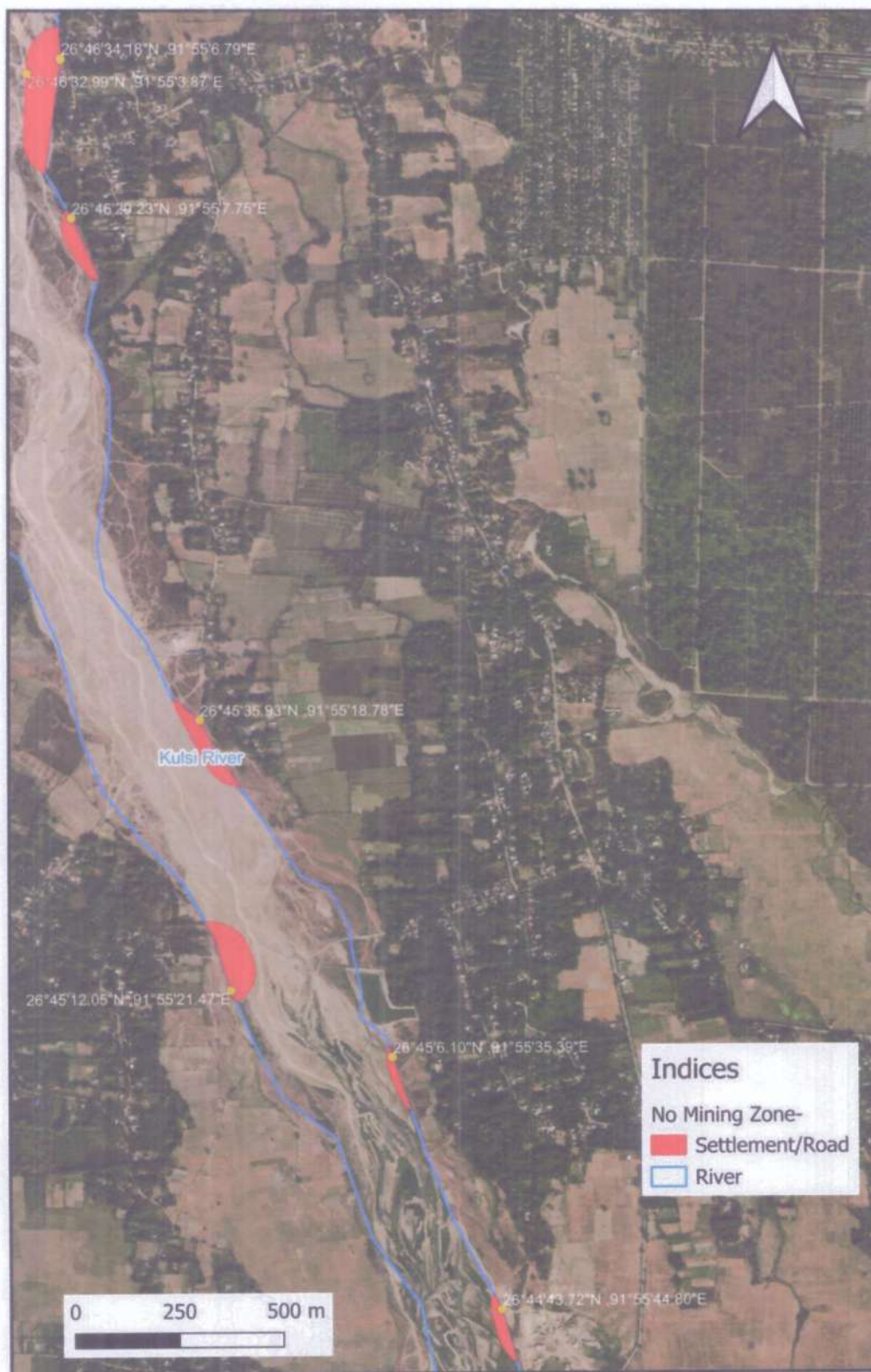


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Divisional Forest Officer,  
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Udalguri, B.T.C.







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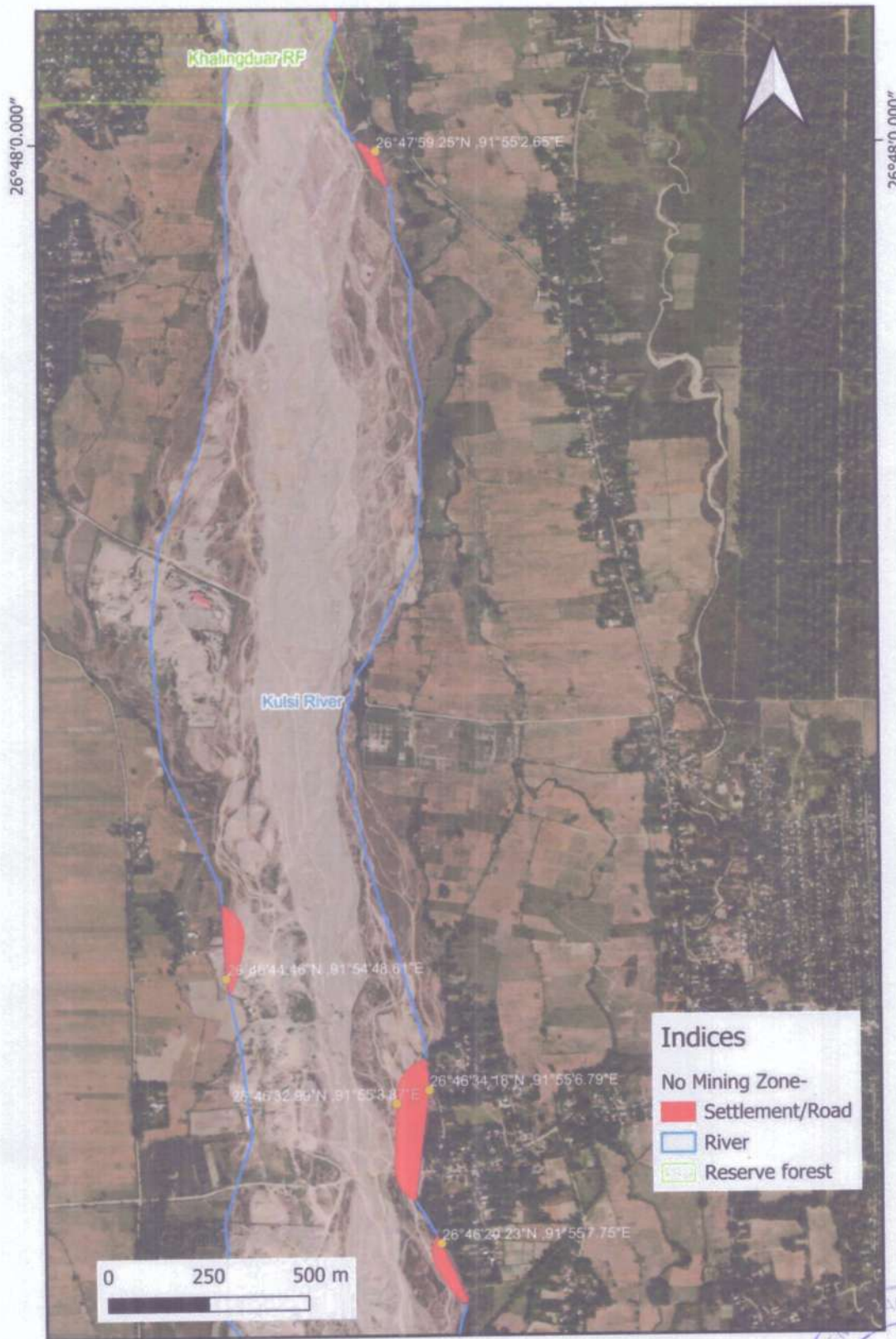
Divisional Forest Officer,  
Dhanisi Forest Division  
Udalguri, BIC

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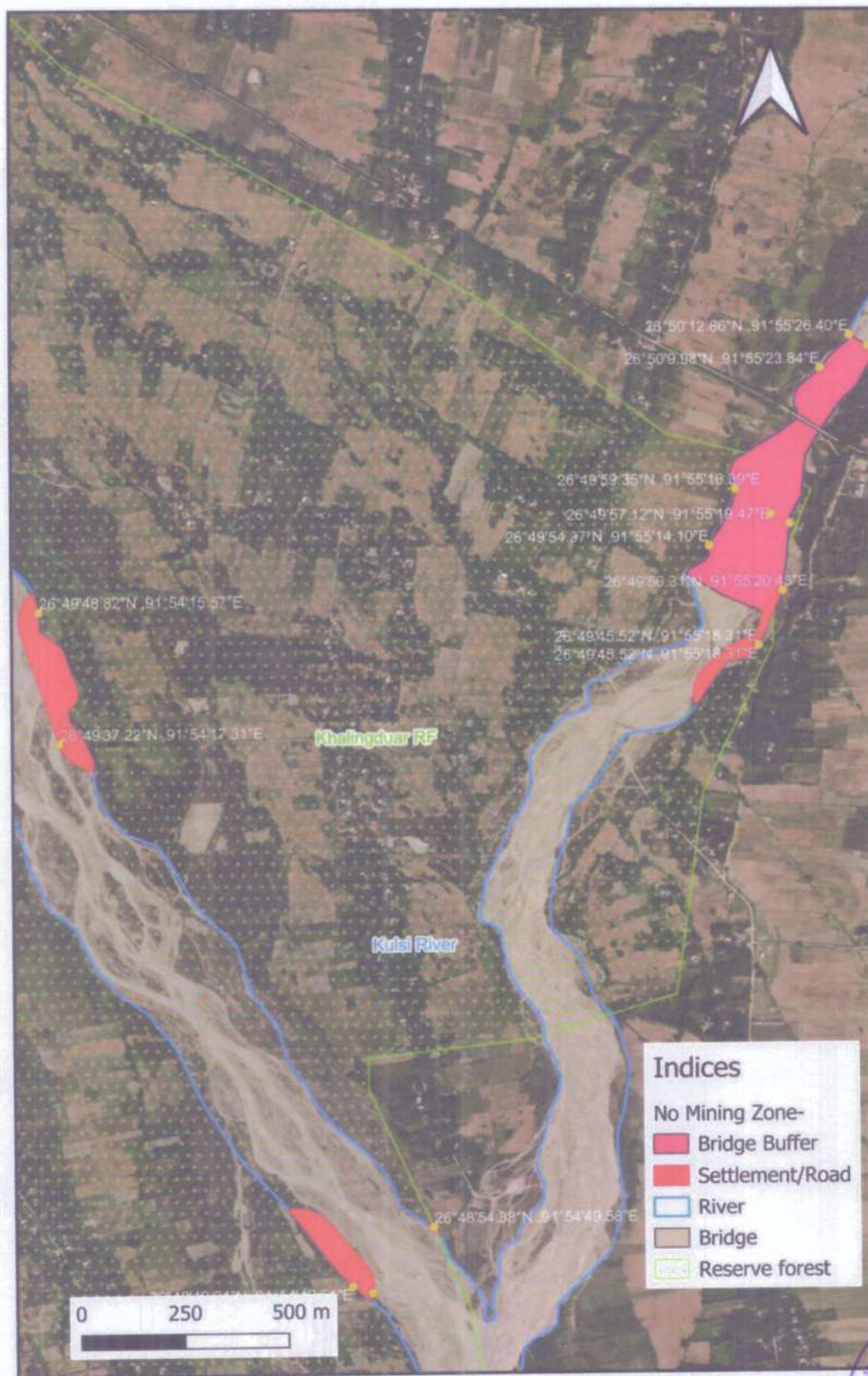


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Udalguri, B.T.C.







District Survey Report (DSR) of Udalguri District

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Dhansiri Forest Division  
Udalguri, B.T.C.





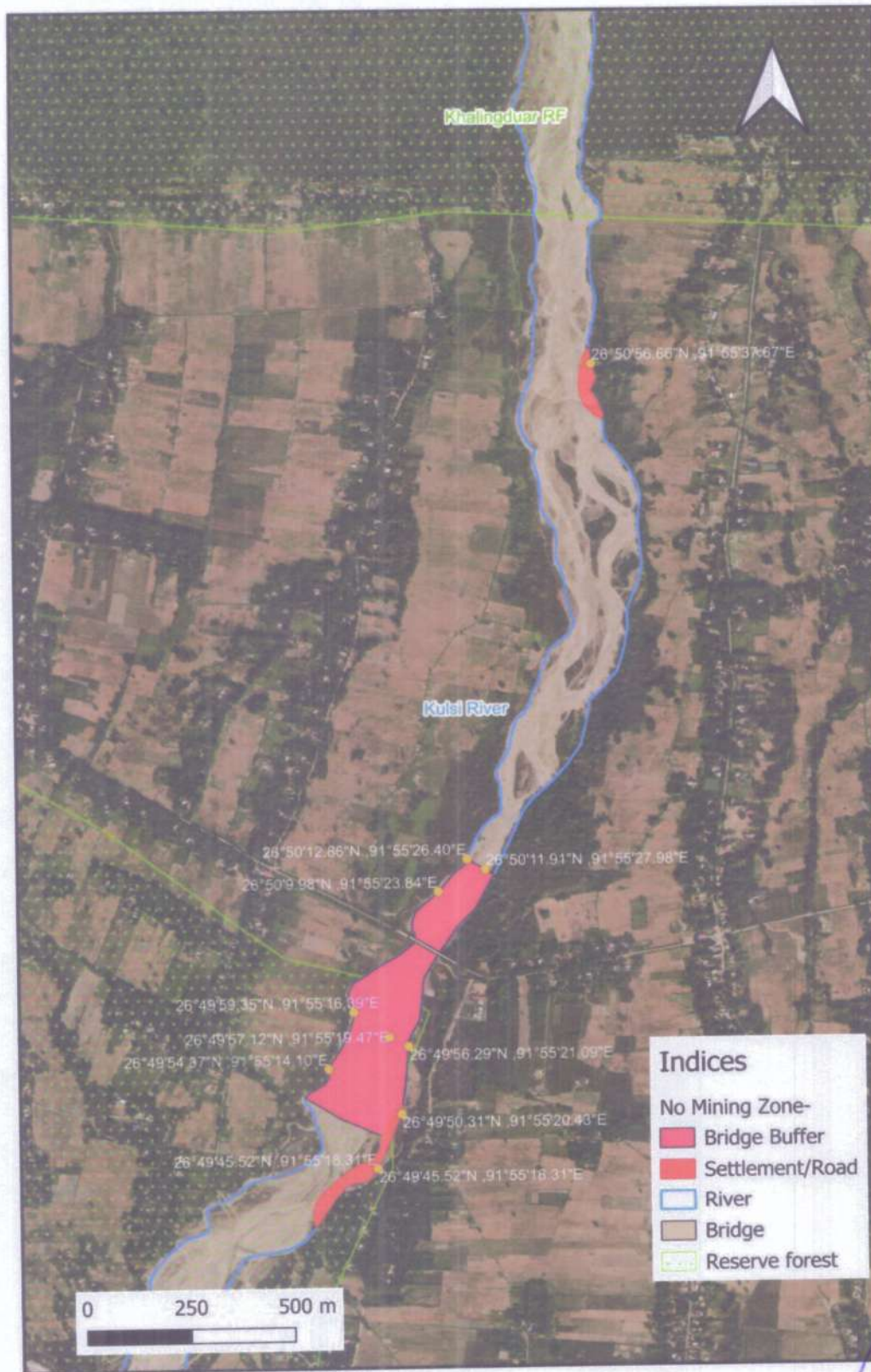


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Dhansiri Forest Division  
Udalguri, B.T.C.







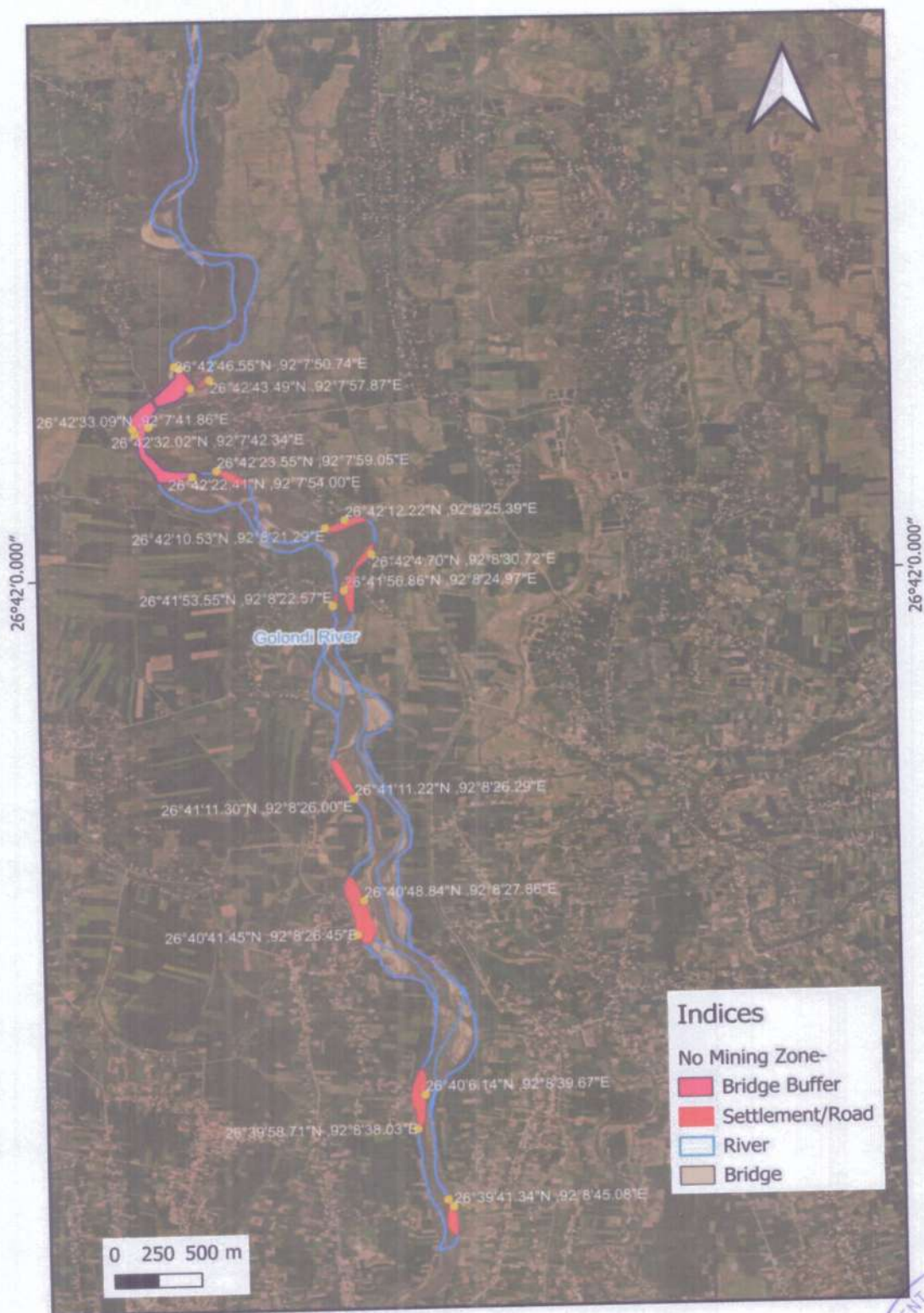
District Survey Report (DSR) of Udalguri District

Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, B.T.C.





# GOLONDI RIVER

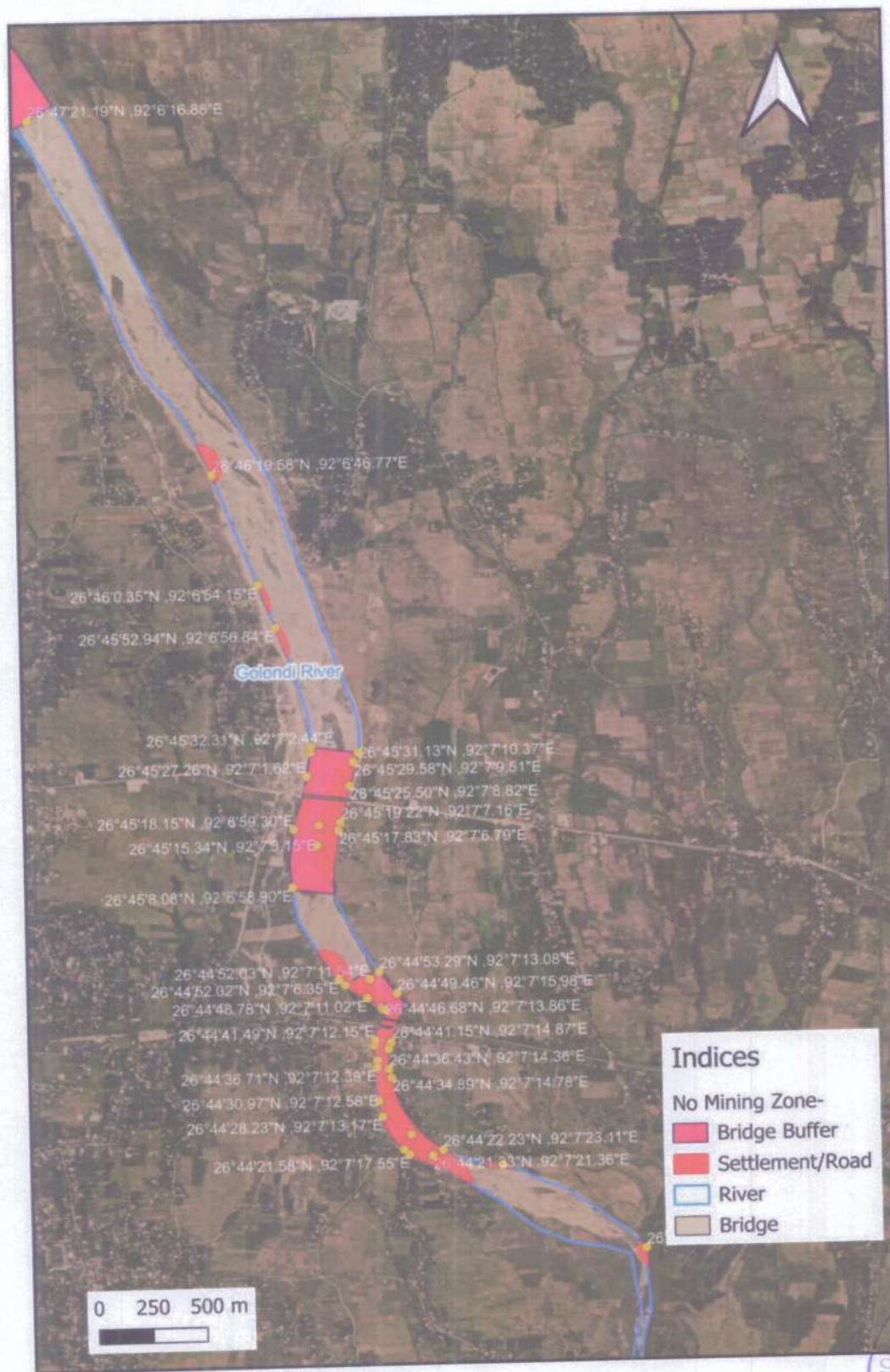


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Divisional Forest Officer,  
Dinashree Forest Division,  
Udalguri, B.T.C.





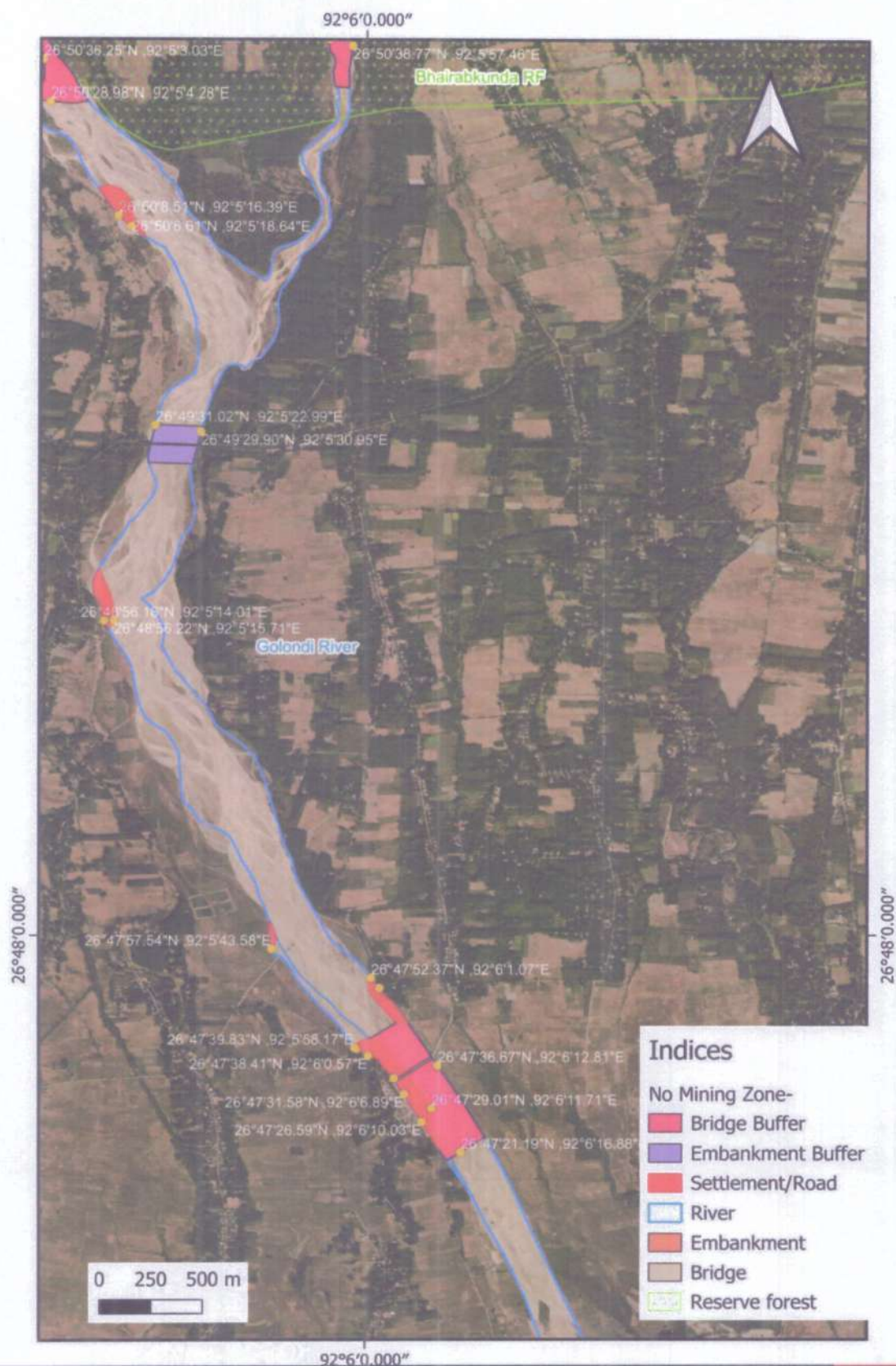


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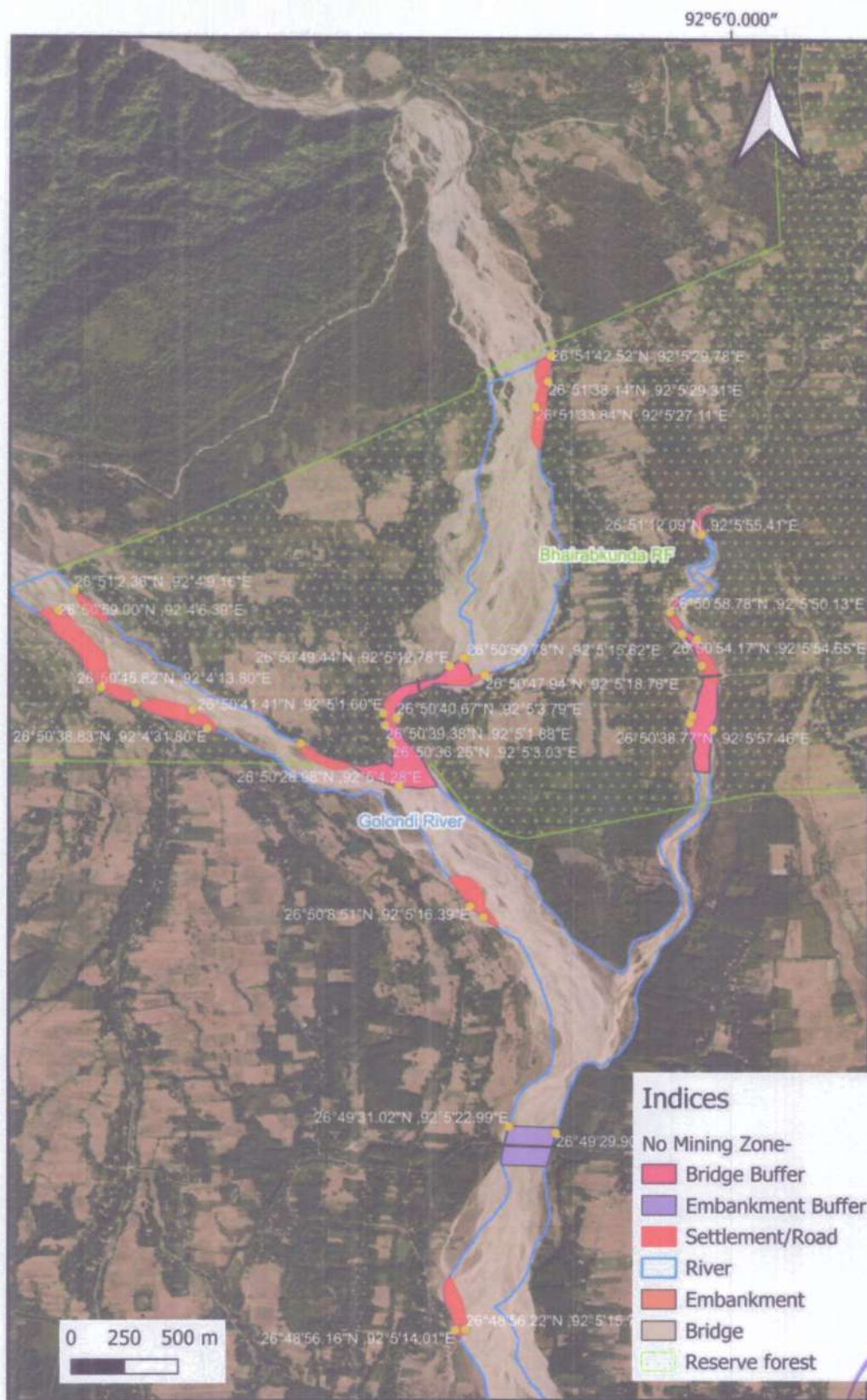
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Udalguri, B.T.C.











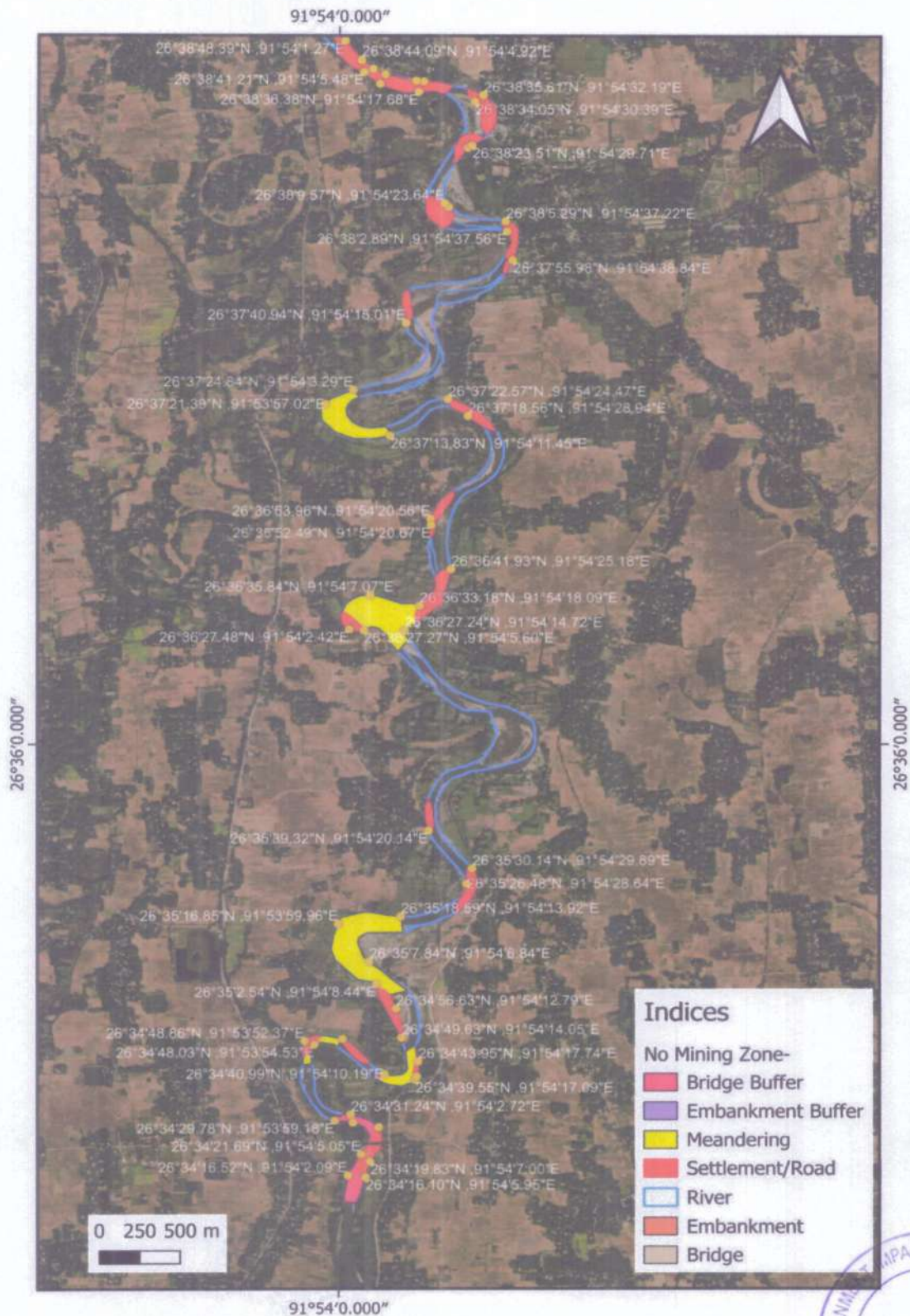
District Survey Report (DSR) of Udalguri District

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 Dinanath Forest Division  
 Udalguri, BTC





# NUNOI RIVER



Divisional Forest Officer,  
Dhanisi Division  
Udalguri, BIC

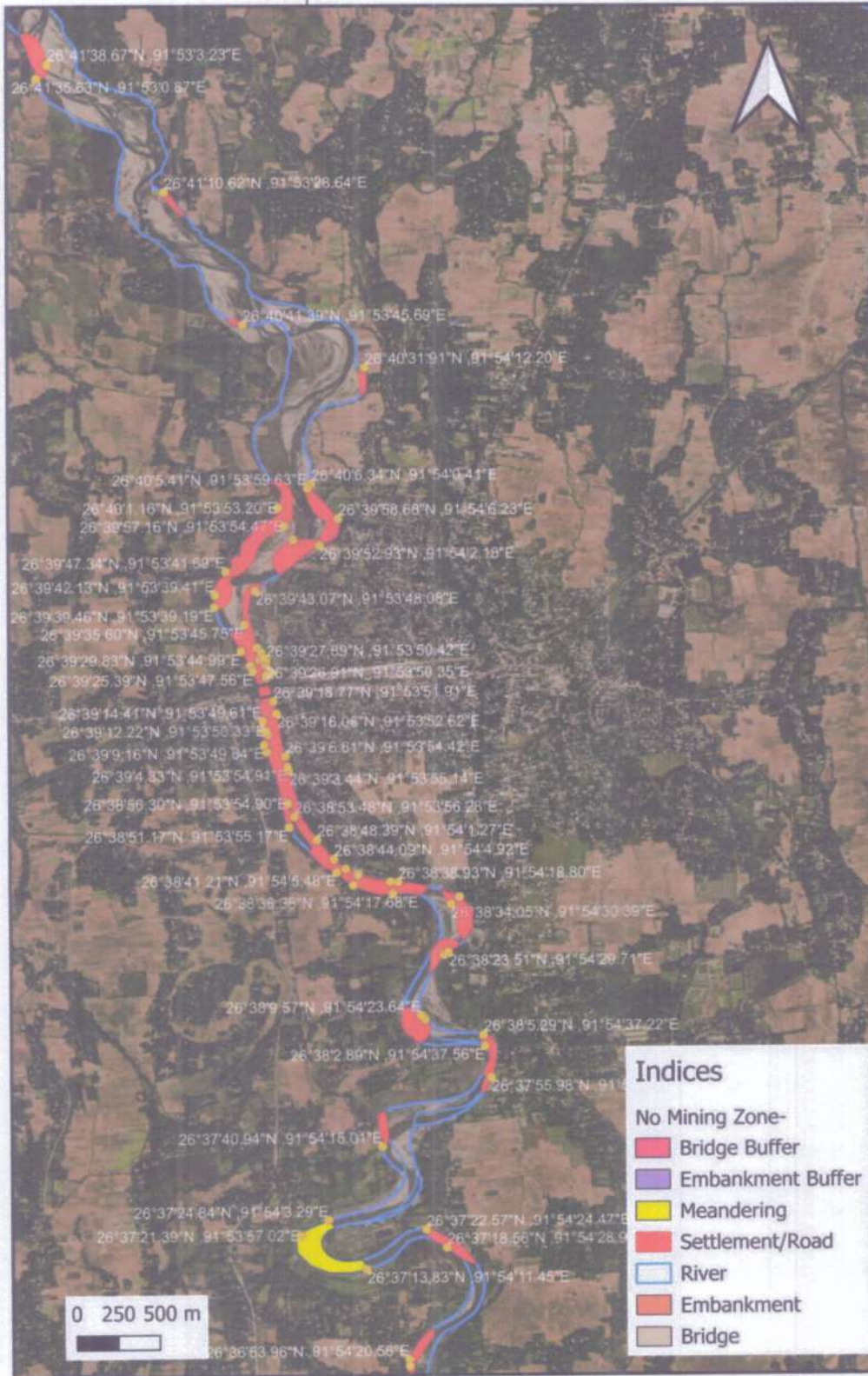
District Survey Report (DSR) of Udalguri District

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91°54'0.000"



District Survey Report (DSR) of Udalguri District

Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, B.T.C.





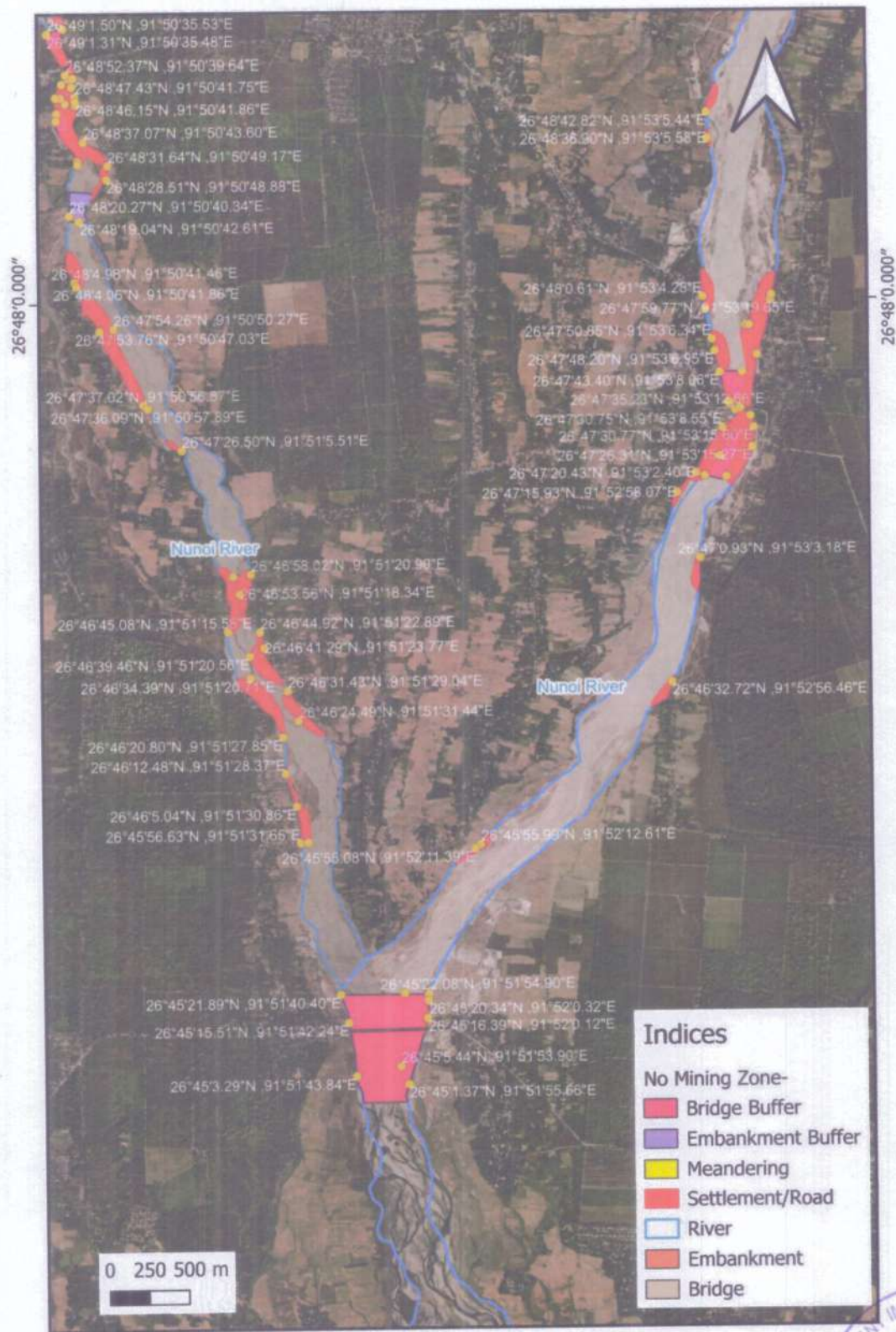


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 Dhanism Forest Division  
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District Survey Report (DSR) of Udalguri District 308 356

Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, B.T.C.





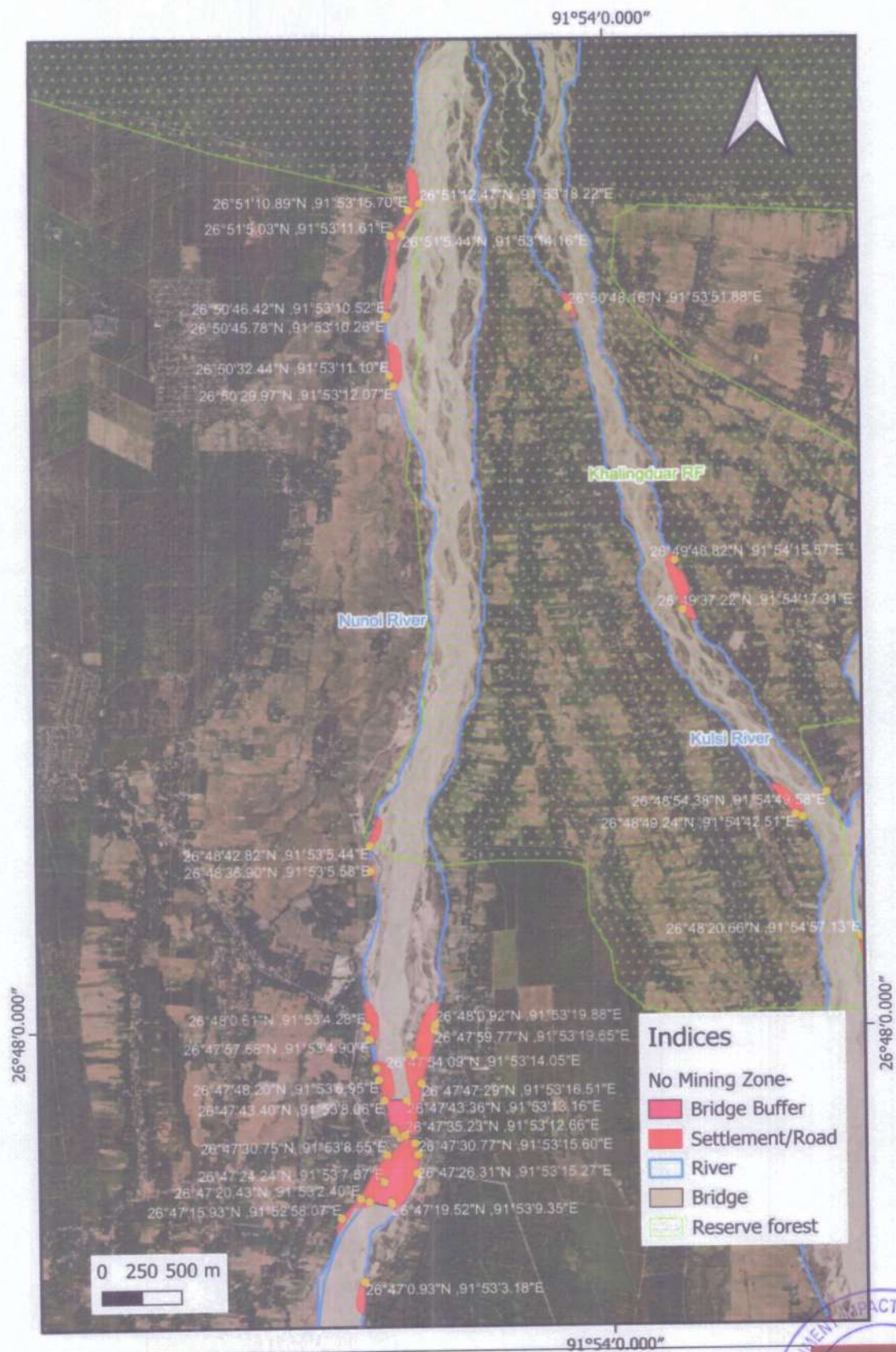


District Survey Report (DSR) of Udalguri District

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District Survey Report (DSR) of Udalguri District

Divisional Forest Officer,  
Dhananjay Forest Division  
Udalguri, B.T.C.





# SUKLAI RIVER

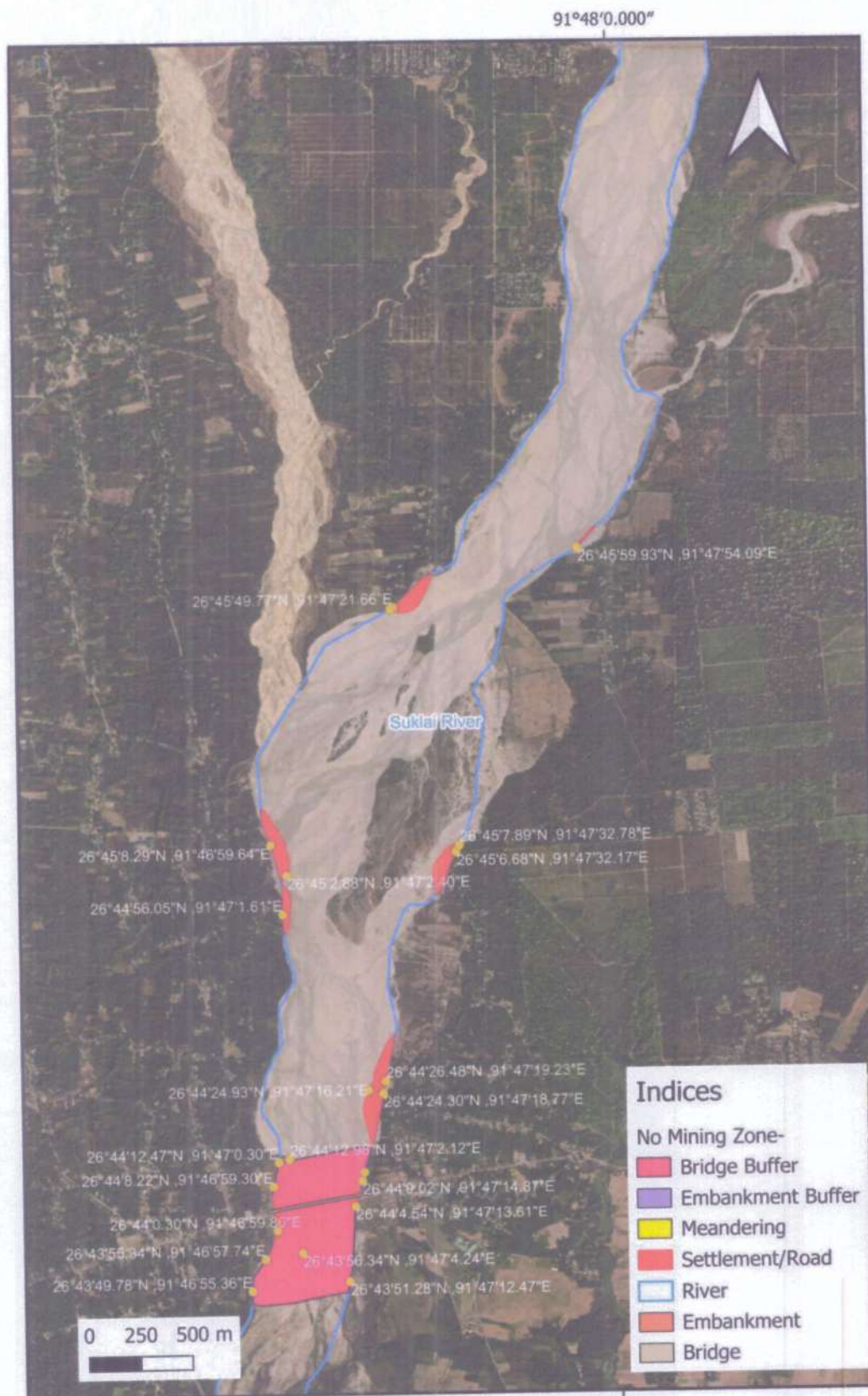


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Dhansiri Forest Division  
Udalguri, B.T.C.





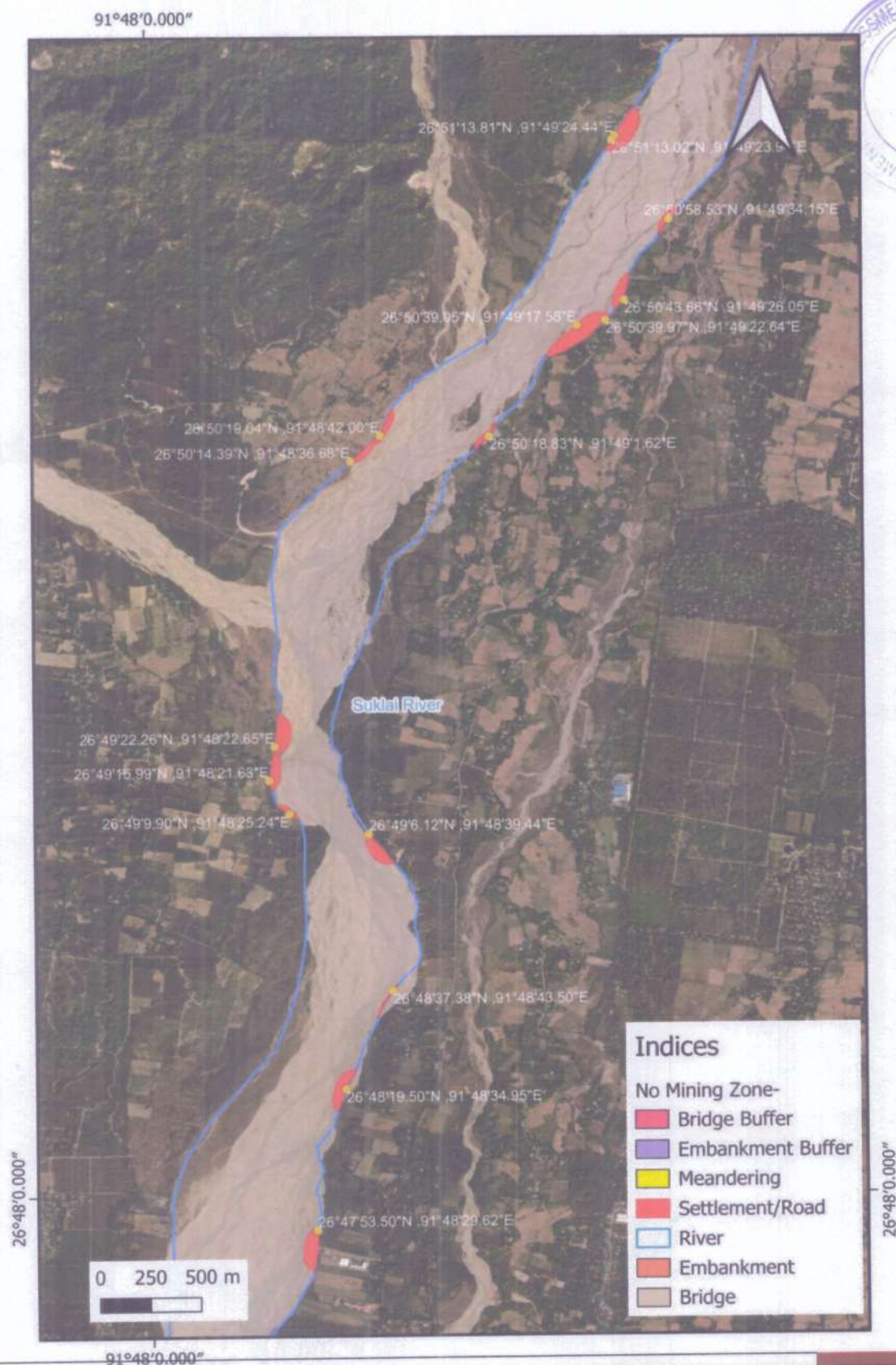


District Survey Report (DSR) of Udaiguri District

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## Annexure – 1

### Details of Sand/ M-Sand Sources

#### a) Rivers

| S. No. | Name of the river or stream | Total stretch of river<br>(in km) | Type of river |
|--------|-----------------------------|-----------------------------------|---------------|
| 1      | Dhansiri                    | 46.4                              | Perennial     |
| 2      | Monai                       | 3.10                              | Perennial     |
| 3      | Suklai                      | 23.8                              | Perennial     |
| 4      | Pasnoi                      | 29.27                             | Perennial     |
| 5      | Pagla                       | 23.6                              | Perennial     |
| 6      | Golondi                     | 29.2                              | Perennial     |
| 7      | Bhorla                      | 45.8                              | Perennial     |
| 8      | Kulsi                       | 64.96                             | Perennial     |
| 9      | Nunoi                       | 63.70                             | Perennial     |
| 10     | Kalanadi                    | 18.26                             | Perennial     |
| 11     | Samrang                     | 5.40                              | Perennial     |
| 12     | Rowta                       | 5.40                              | Perennial     |
| 13     | Dimasang                    | 5.26                              | Perennial     |



  
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List of Patta Land

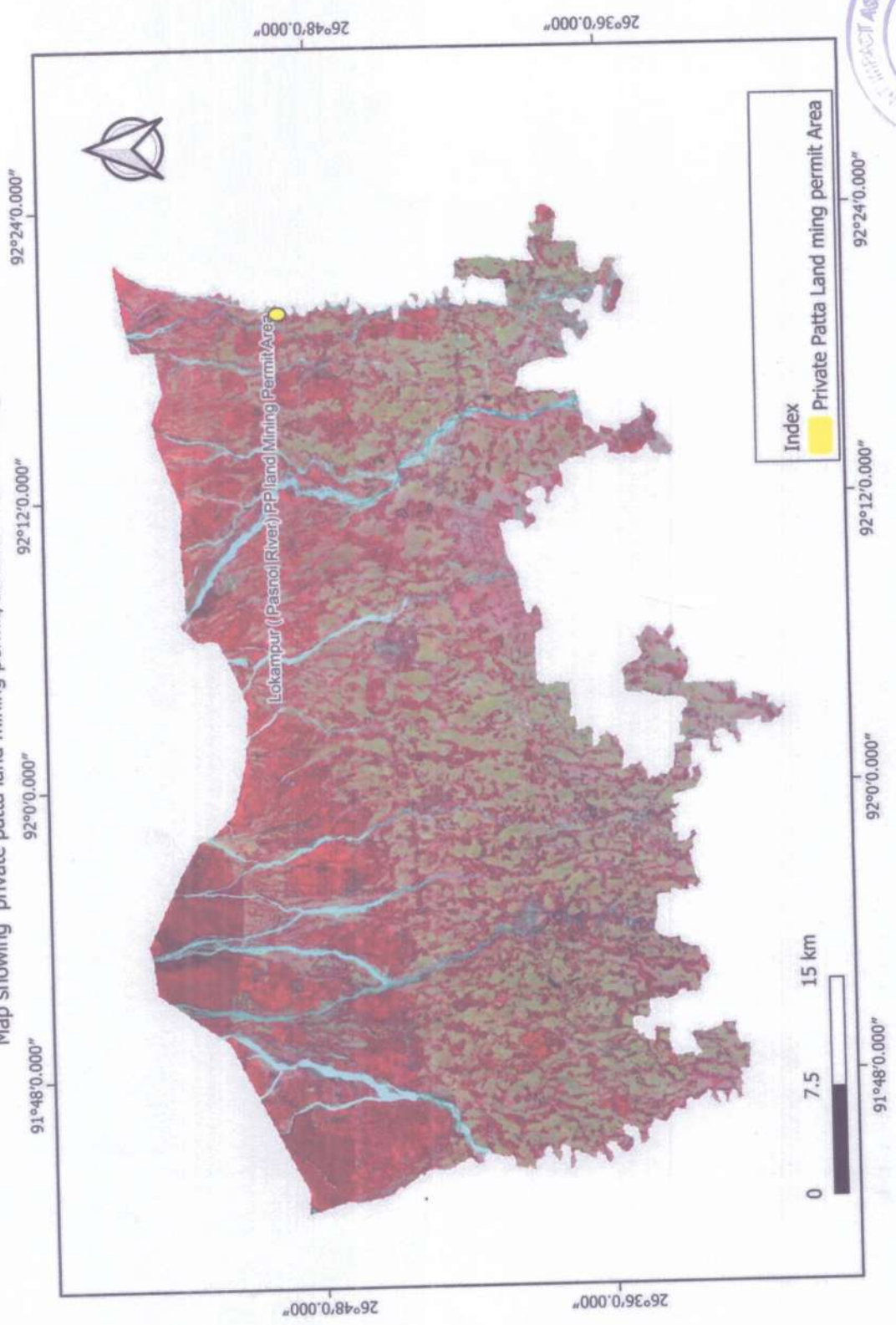
| Name of the permit      | Owner Name      | Village            | GPS Co-Ordinates |                   | Minerals      |
|-------------------------|-----------------|--------------------|------------------|-------------------|---------------|
| Lokampur (Pasnoi River) | Mahindra Kishan | Lokampur, Udalguri | N= 26° 49'25.22" | E = 92° 19'45.35" | Sand & Gravel |
| PP land Mining          |                 |                    | N= 26° 49'25.76" | E = 92° 19'46.82" |               |
| Permit Area             |                 |                    | N=26° 49'31.65"  | E= 92° 19'47.64"  |               |
|                         |                 |                    | N= 26° 49'31.06" | E = 92° 19'48.24" |               |



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Map showing private patta land mining permit/contract Area of Udalguri District



*[Signature]*  
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 Forest Division  
 Dhansiri Forest, BTC  
 Udalguri.

## List of Lol of Udalguri District

| SI No. | Name of the Mineral | Name of the Lessee    | Address & Contact No. of Lessee   | Mining lease Grant Order No. & Date             | Area of Mining lease (ha) | Period of Mining Lease (Initial) | Date of Commencement of Mining Operation | Status  | Obtained Environmental Clearance          | Location of the Mining Lease (Latitude & Longitude)  |
|--------|---------------------|-----------------------|---|---|---------------------------|----------------------------------|--|---------|---|--|
| 1      | Sand & Stone        | Nasiram Daimary       | Vill-Rowta Pathar (Balsiya), P.O.- Bhalukmari, Dist- Udalguri Contact No.8638125868 | GM/MM/86-B(40)/Pt.VI/87 56.60, dtd28/03/2023    | 4.04                      | From 28/03/2023 To 27/02/2028    | 01/12/2023                               | Working | Yes<br>SEIAA.3424/2023,<br>31/05/2023     | N26°42'0.50"<br>E92°15'17.70"<br>N26°41'56.50"<br>E92°15'11.96"<br>N26°41'56.14"<br>E92°15'20.89"<br>N26°41'50.04"<br>E92°15'13.08"  |
| 2      | Sand & Stone        |                       | Vill-Purani Goraibari, P.O/P.S- Udalguri, Assam Contact No.                         | GM/MM/86-B(40)/Pt.VIII/, dtd.13/07/2022         | 4.40                      |                                  |  |         | YES<br>SEIAA.3226/2022,<br>DTD.07/02/2022 | N26°40'13.02"<br>E92°15'30.04"<br>N26°40'15.201"<br>E92°15'27.55"<br>N26°40'15.06"<br>E92°15'24.00"<br>N26°40'7.18"<br>E92°15'19.90" |
| 3      | Sand & Stone        | Sri Gilard Basumatary | Vill-Bikrampur P.O- Bengtol Dist- Chirang   | GM/MM/86-B(40)/Pt.VIII/ 2211-15, dtd.07/10/2024 | 4.80                      | 07/10/2021 To 06/09/2028         |  | working | YES<br>SEIAA.1877/2021,<br>dtd.08/03/2022 | N26°46'8.48"<br>E92°11'53.87"<br>N26°46'9.56"<br>E92°11'51.31"<br>N26°46'46.25"<br>E92°11'51.96"<br>N26°46'46.17"<br>E92°11'53.73"   |



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Udalguri, BTC



|   |               |                         |  |   |      |            |            |            |             |  |  |
|---|---------------|-------------------------|--|---|------|------------|------------|------------|-------------|--|--|
| 4 | Sand & Stone  | Sri Amit Kumar Dewry    | Vill- Silakuti P.O- Orang, Dist- Udalguri                        | GM/MM/86-B(40)/Pt.X/16 22-25, dtd.23/06/2023    | 4.09 | 23/06/2023 | 22/05/2028 | 01/07/2024 | working     | YES<br>SEIAA.3621/2 023, dtd.01/02/2024  | N26°41'31.42"<br>E92°20'8.84"<br>N26°41'31.13"<br>E92°20'10.60"<br>N26°40'59.24"<br>E92°20'4.76"<br>N26°40'59.15"<br>E92°20'5.95"    |
| 5 | Sand & Gravel | Sri Khargeswar Baro     | Vill- Khoirabari P.O. & P.S- Khoirabari Dist- Udalguri           | GM/MM/86-B(40)/Pt.VIII/ 2660-64, dtd.16/09/2022 | 4.40 | 16/09/2022 | 15/08/2025 |            | working     | YES<br>SEIAA.3169/2 022, dtd.07/12/2022  | N26°44'16.91"<br>E91°52'1.65"<br>N26°44'17.23"<br>E91°52'3.43"<br>N26°43'53.85"<br>E91°52'9.10"<br>N26°43'55.16"<br>E91°52'10.20"    |
| 6 | Silt          | Sri Dhaniram Basumatary | Vill- No.2 Goraibari P.O- Goraibari P.S- Udalguri Dist- Udalguri | GM/MM/86-B(40)/Pt.IV/513 7-40, dtd.07/12/2022   | 3.48 | 07/12/2022 | 06/11/2025 |            | working     | YES<br>SEIAA.34442/ 2023, dtd.31/05/2023 | N26°45'51.89"<br>E92°07'03.08"<br>N26°45'51.37"<br>E92°06'59.56"<br>N26°45'39.90"<br>E92°07'03.18"<br>N26°45'40.17"<br>E92°07'06.48" |
| 7 | Sand & Stone  | Sri Ransaigwra Boro     | Vill-Ladabari, P.O-Dalakati Borobazar Dist- Udalguri, Assam      |   | 4.81 |            |            |            | not working |  | N26°43'46.81"<br>E92°13'40.48"<br>N26°43'23.84"<br>E92°13'35.78"<br>N26°43'47.39"<br>E92°13'42.87"<br>N26°43'23.91"<br>E92°13'38.22" |



Divisional Forest Officer,  
Dhansiri Forest Division  
Udalguri, BTC



|    |              |                      |   |  |      |            |            |            |             |   |  |
|----|--------------|----------------------|---|--|------|------------|------------|------------|-------------|---|--|
| 8  | Sand & Stone | Sri Hemen Basumatary | Vill- Kahibari P.O. & P.S- Harisinga Dist-Udaguri               | GM/MM/86-B(40)/Pt.VI/17 0-74, dtd.10/04/2023   | 4.91 | 10/04/2023 | 09/03/2028 |            | working     | YES<br>SEIAA.3494/2023,<br>dtd.01/02/2024 | N26°45'44.23"<br>E91°52'10.34"<br>N26°45'42.66"<br>E91°52'10.34"<br>N26°45'30.94"<br>E91°51'58.39"<br>N26°45'29.47"<br>E91°52'1.557" |
| 9  | Sand & Stone | Sri Mustak Ahmed     | Vill- No.2 Bholatar P.O- Kalikhola P.S- Dimakuchi Dist- Udaguri | GM/MM/86-b(40)/Pt.XV/1 275-78, DTD.06/08/2024  | 3.90 | 06/08/2024 | 05/07/2029 |            | not working | No  | N26°49'28.40"<br>E91°50'32.53"<br>N26°49'50.52"<br>E91°50'31.38"<br>N26°49'50.50"<br>E91°50'29.09"<br>N26°49'28.35"<br>E91°50'30.24" |
| 10 | Sand & Stone | Sri Nasiram Daimari  | Vill-Rowta Pathar P.O- Rowta Dist-Udaguri                       | GM/MM/86-B(40)/Pt.VIII/3682-85, dtd.22/09/2023 | 4.84 | 22/09/2023 | 21/08/2030 | 01/07/2024 | working     | YES<br>SEIAA.3586/2023,<br>dtd.27/04/2024 | N26°45'2.410"<br>E92°12'12.77"<br>N26°45'2.43"<br>E92°12'14.29"<br>N26°45'33.01"<br>E92°11'57.31"<br>N26°45'32.95"<br>E92°11'55.76"  |
| 11 | Silt         | Montu Daimari        | Vill- Sudempuri P.O. & P.S- Udaguri Dist- Udaguri               | GM/MM/86-B/Pt.III/53-56, dtd.05/04/2024        | 4.70 | 05/04/2024 | 04/03/2029 |            | not working | NO  | N26°45'13.08"<br>E92°07'0.38"<br>N26°45'12.89"<br>E92°07'3.88"<br>N26°44'57.14"<br>E92°07'3.55"<br>N26°44'57.45"<br>E92°07'6.04"     |

Divisional Forest Officer,  
Dhansiri Forest Division  
Udaguri, BTC



|    |                            |                        |  |  |      |                |                |  |             |    |  |
|----|----------------------------|------------------------|--|--|------|----------------|----------------|--|-------------|----|--|
| 12 | Sand & Stone               | Sri Jyotish Basumatary | Vill- Belguri<br>P.O- Sastrapara<br>P.S- Harisinga<br>Dist- Udalguri   | GM/MM/86-<br>B(40)/Pt.XIV/<br>3254-57<br>dtd1808/2023    | 3.69 |                |                |  | not working | NO | N26°33'30.57"<br>E90°21'6.46"<br>N26°33'24.24"<br>E90°21'7.17"<br>N26°33'30.98"<br>E90°21'14.19"<br>N26°33'24.54"<br>E90°21'15.98"   |
| 13 | Sand & Stone               | Sri Horu Baglari       | Vill- Borigaon<br>P.O- Borigaon<br>P.S- Harisinga<br>Dist- Udalguri    | GM/MM/86-<br>B(40)/Pt.XIV/<br>3698-701<br>dtd.22/09/2023 | 4.79 |                |                |  | not working | NO | N26°44'16.34"<br>E91°55'44.85"<br>N26°45'0.82"<br>E91°55'32.00"<br>N26°45'0.64"<br>E91°55'31.11"<br>N26°44'16.32"<br>E91°55'43.89"   |
| 14 | Sand /Grave<br>1 & Boulder | Sri Arbinda Daimari    | Vill-<br>Christanpara<br>P.O- Bengbari<br>P.S-Paneri<br>Dist- Udalguri | GM/MM/86-<br>B(40)/Pt.III/36<br>86-89,<br>dtd.22/09/2023 | 4.90 | 22/09/<br>2023 | 21/08/<br>2030 |  | not working | NO | N26°47'51.30"<br>E91°53'10.97"<br>N26°48'14.96"<br>E91°53'09.15"<br>N26°48'14.95"<br>E91°53'11.76"<br>N26°47'51.30"<br>E91°53'08.54" |
| 15 | Sand & Stone               | Sri. Nippiyoti Baruah, | Vill-<br>Nichilamari,<br>P.O/P.S- Orang,<br>Dist-Udalguri              | NO   | 4.09 |                |                |  | not working | NO |  |
| 16 | Sand & Stone               | Sri Heron Daimari      | Vill- Tarabari,<br>P.O-Rowta,<br>Dist- Udalguri,<br>Assam              |  | 4.52 |                |                |  | not working |    |  |



|    |              |                        |   |   |      |  |  |  |  |  |             |  |  |
|----|--------------|------------------------|---|---|------|--|--|--|--|--|-------------|--|--|
| 17 | Sand & Silt  | Sri Jasobanta Bordoloi | Vill-Silakuti, P.O- Barimakha, Dist- Udalguri, Assam      | GM/MM/86-B(40)/Pt.IXIV/4588-91, dtd.20/11/2023  | 4.05 |  |  |  |  |  | not working | NO                                       | N26°42'25.24"<br>E92°20'5.65"<br>N26°42'25.22"<br>E92°20'0.81"<br>N26°42'15.33"<br>E92°20'0.92"<br>N26°42'15.35"<br>E92°20'5.70"     |
| 18 | Sand & Stone | Sri. Bimal Daimary     | Vill-Selishbari, P.O- Mazkhuti, P.S-Orang, Dist- Udalguri |   | 4.02 |  |  |  |  |  |             |  |  |
| 19 | Sand & Stone | Krishna Narzary        | Vill- Naohera, PO-Pathakpur, PS-Mazbat, Dist- Udalguri    | GM/MM/86-B/Pt.VIII/57-60, dtd.05/04/2024        | 4.88 |  |  |  |  |  |             | NO                                       | N26°37'12.58"<br>E92°15'47.18"<br>N26°37'03.16"<br>E92°13'53.35"<br>N26°37'14.51"<br>E92°15'51.31"<br>N26°37'04.78"<br>E92°15'59.14" |
| 20 | Sand & Stone | Bishnu Brahma          | Vill-Deorigaon, PO-Gerua Bazar, PS-Rowta, Dist- Udalguri. | GM/MM/86-B(400)/Pt.VIII/1931-34, dtd.11/07/2023 | 4.00 |  |  |  |  |  | not working | YES<br>SEIAA3731/2024,<br>dtd.19/07/2024 | N26°47'17.17"<br>E92°12'22.95"<br>N26°47'19.25"<br>E92°12'17.10"<br>N26°47'13.59"<br>E92°12'13.03"<br>N26°47'10.10"<br>E92°12'17.70" |



**Brick kiln industry in the district of Udalguri**

| Sl/No | Name of Brick kiln                  | Name of owner        | Village                    | Dag no  | Patta no | Area        | GPS Coordinates                  |
|-------|-------------------------------------|----------------------|----------------------------|---------|----------|-------------|----------------------------------|
| 1     | M/S Dhansiri Brick Industry (D.B.I) | Sri Gupal Kr. Singh  | Rowta Station              | 64      | 16       | 12B-0K-10L  | N26°44' 20.34"<br>E92°12' 33.99" |
| 2     | M/S N Brick Industry (N.B.I)        | Sri Nipul Daimari    | Jamuguri Dhansirighat      | 472     | 88       | 3B-0K-0L    | N26°42' 41.2"<br>E92°14' 50.7"   |
| 3     | M/S M.G Brick (M.G.B)               | Sri Benu Adhikari    | Rowmari (Orang)            | 320     | 29       | 12B-0K-0L   | N26°40' 8.81"<br>E92°18' 55.67"  |
| 4     | M/S O Brick Industry (O.B.I)        | Sri Keshab Baruah    | Bogribari (Orang)          | 261/681 | 209      | 7B-2K-3L    | N26°41' 23.54"<br>E92°18' 2.78"  |
| 5     | M/S K Brick Industry (K.B.I)        | Sri Narayan Singh    | Pup Kurabahi Dhansirighat  | 100     | 15       | 4B-2K-3L    | N26°43' 17.51"<br>E92°15' 56.14" |
| 6     | M/S O Brick Factory (O.B.F.)        | Sri Kashab Baruah    | Orang Garubanda            | 128     | 162      | 4B-4K-18L   | N26°41' 42.78"<br>E92°18' 36.27" |
| 7     | M/S TBI Brick Industry              | Sri Monir Hussin     | Bengbari                   | 779     | 204      | 10B-02K-14L | N26°44' 10"<br>E92°58' 04"       |
| 8     | M/S J.S. Enterprise                 | Sri Jyoti Prasad Das | 1 No Batabari (Khairabari) | 64/642  | 64       | 5B-2K-10L   | N26°38' 22"<br>E91°57' 10"       |
| 9     | M/S ABHI Industry                   | Sri Asha Ram Boro    | Jhargaoon                  |         |          |             |                                  |





## ANNEXURE - II

### List of Running Mining Leases

| Sl. No. | Name of Mahal                 | Location and area of mining lease | Mineral Name | GPS- Coordinates   |  | Status  |
|---------|-------------------------------|-----------------------------------|--------------|--|--|---------|
|         |                               |                                   |              | Latitude   | Longitude  |         |
| 1       | Tarajuli SG Mahal             | Dhansiri River<br>4.80 Ha         | Sand & Stone | N-26°46'8.48"<br>N-26°46'9.56"<br>N-26°46'46.25"<br>N-26°46'46.17"       | E-92°11'53.87"<br>E-92°11'27.24"<br>E-92°11'51.96"<br>E-92°11'53.73" | Running |
| 2       | Rangapani SS Mahal            | Dhansiri River<br>4.00 Ha         | Sand & Stone | N-26°47'17.178"<br>N-26°47'19.258"<br>N-26°47'13.598"<br>N-26°47'10.108" | E-92°12'22.95"<br>E-92°12'17.10"<br>E-92°12'13.03"<br>E-92°12'17.70" | Running |
| 3       | Dhansiri SG Mahal No.1        | Dhansiri River<br>4.48 Ha         | Sand & Stone | N-26°45'33.01"<br>N-26°45'32.95"<br>N-26°45'2.10"<br>N-26°45'2.43"       | E-92°11'57.31"<br>E-92°11'55.76"<br>E-92°12'12.77"<br>E-92°12'14.29" | Running |
| 4       | Rowta Bagan SG Mahal          | Dhansiri River<br>4.50 Ha         | Sand & Stone | N-26°42'09.81"<br>N-26°41'53.58"<br>N-26°41'53.02"<br>N-26°42'07.44"     | E-92°15'10.09"<br>E-92°15'24.32"<br>E-92°15'20.22"<br>E-92°15'09.79" | Running |
| 5       | Pasnoi River Village Samugaon | Pasnoi River<br>4.85 Ha           | Sand & Stone | N-26°43'19.97"<br>N-26°43'47.39"<br>N-26°43'23.34"<br>N-26°43'23.91"     | E-92°13'56.86"<br>E-92°13'42.87"<br>E-92°13'35.78"<br>E-92°13'38.22" | Running |
| 6       | Golondi Silt Mahal No. 1      | Golondi River<br>4.00 Ha          | Silt         | N-26°45'17.31"<br>N-26°45'17.08"<br>N-26°44'55.23"<br>N-26°45'54.42"     | E-92°07'1.77"<br>E-92°07'3.38"<br>E-92°07'7.38"<br>E-92°07'5.75"     | Running |
| 7       | Beltoia SS Mahal              | Kulsi River<br>3.80 Ha            | Sand & Stone | N-26°47'11.05"<br>N-26°47'11.02"<br>N-26°46'39.80"<br>N-26°46'39.61"     | E-91°54'53.35"<br>E-91°54'55.20"<br>E-91°54'57.79"<br>E-91°54'59.03" | Running |



|    |                               |                        |               |  |   |         |
|----|-------------------------------|------------------------|---------------|--|---|---------|
| 8  | Nunoi SS Mahal No.3 (Kulsi)   | Kulsi River<br>3.70 Ha | Sand & Stone  | N-26°45'00.82"<br>N-26°45'00.64"<br>N-26°44'16.32"<br>N-26°44'16.34"     | E-91°55'32.00"<br>E-91°55'31.11"<br>E-91°55'43.89"<br>E-91°55'44.85"        | Running |
| 9  | Nunoi SS Mahal No.1 (Gitbari) | Nunoi River<br>4.90 Ha | Sand & Stone  | N-26°45' 3.33"<br>N-26°46' 2.63"<br>N-26°45' 30.44"<br>N-26°45' 29.61"   | E-91° 52' 29.80"<br>E-91° 52' 30.73"<br>E-91° 51' 59.72"<br>E-91° 52' 1.12" | Running |
| 10 | Gitbari SG Mahal No.2         | Nunoi River<br>4.40 Ha | Sand & Gravel | N-26°44' 16.91"<br>N-26°44' 17.23"<br>N-26°43' 55.16"<br>N-26°43' 53.85" | E-91°52' 1.65"<br>E-91°52' 3.43"<br>E-91°52' 10.20"<br>E-91°52' 9.10"       | Running |



## List of Proposed Mining Leases

| Sl. No. | Name of Mahal                              | Location and area of mining lease | Mineral Name     | GPS-Coordinates  |  | Status   |
|---------|--|-----------------------------------|------------------|--|--|----------|
|         |  |                                   |                  | Latitude   | Longitude  |          |
| 1       | Bhairabkunda BG Mahal No.1                 | Dhansiri River<br>4.64 Ha         | Boulder & Gravel | N-26°51'19.17"<br>N-26°51'13.78"<br>N-26°51'16.15"<br>N-26°51'10.08" | E-92°10'4.47"<br>E-92°10'11.78"<br>E-92°9'59.30"<br>E-92°10'6.28"    | Proposed |
| 2       | Bhairabkunda BG Mahal No.3                 | Dhansiri River<br>4.85 Ha         | Boulder & Gravel | N-26°51'59.07"<br>N-26°51'52.92"<br>N-26°51'55.12"<br>N-26°51'49.94" | E-92°9'18.58"<br>E-92°9'27.24"<br>E-92°9'13.35"<br>E-92°9'23.39"     | Proposed |
| 3       | Tarajuli & Rangapani (North Side) SS Mahal | Dhansiri River<br>4.52 Ha         | Sand & Stone     | N-26°46'54.00"<br>N-26°46'27.63"<br>N-26°46'27.55"<br>N-26°46'54.02" | E-92°12'11.07"<br>E-92°11'55.37"<br>E-92°12'0.29"<br>E-92°12'7.55"   | Proposed |
| 4       | Dhansiri SG Mahal                          | Dhansiri River<br>4.81 Ha         | Sand & Stone     | N-26°43'46.81"<br>N-26°43'47.39"<br>N-26°43'23.34"<br>N-26°43'23.91" | E-92°13'40.48"<br>E-92°13'42.87"<br>E-92°13'35.78"<br>E-92°13'38.22" | Proposed |
| 5       | Lower Dhansiri SS Mahal part- B            | Dhansiri River<br>4.88 Ha         | Sand & Stone     | N-26°37'12.58"<br>N-26°37'14.51"<br>N-26°37'03.16"<br>N-26°37'04.78" | E-92°15'47.18"<br>E-92°15'51.31"<br>E-92°13'53.35"<br>E-92°15'59.14" | Proposed |
| 6       | Monai Boulder Gravel Mahal                 | Monai River<br>3.65 Ha            | Boulder & Gravel | N-26°52'20.7"<br>N-26°52'20.9"<br>N-26°52'04.1"<br>N-26°52'04.1"     | E-92°10'17.6"<br>E-92°10'20.2"<br>E-92°10'21.0"<br>E-91°55'17.5"     | Proposed |
| 7       | Dimasang SG Mahal                          | Dimasang River<br>4.81 Ha         | Sand & Gravel    | N-26°52'29.79"<br>N-26°52'29.32"<br>N-26°52'07.80"<br>N-26°52'07.28" | E-92°12'11.13"<br>E-92°12'14.27"<br>E-92°12'13.10"<br>E-92°12'10.50" | Proposed |
| 8       | Merebil SS Mahal                           | Rowta River<br>4.16 Ha            | Sand & Stone     | N-26°44'33.06"<br>N-26°44'59.02"                                     | E-92°12'48.03"<br>E-92°12'53.04"                                     | Proposed |



|    |                                  |                           |                           |  |  |          |
|----|----------------------------------|---------------------------|---------------------------|--|--|----------|
| 9  | Paglia SG Mahal No.2             | Paglia River<br>4.80 Ha   | Sand & Gravel             | N-26°34'40.10"<br>N-26°54'40.60"<br>N-26°54'27.98"<br>N-26°54'28.50" | E-92°18'53.20"<br>E-92°18'58.40"<br>E-92°18'56.10"<br>E-92°19'00.67" | Proposed |
| 10 | Pasnoi SS Mahal                  | Pasnoi River<br>3.88 Ha   | Sand & Silt               | N-26°46'56.44"<br>N-26°46'56.21"<br>N-26°46'40.58"<br>N-26°46'39.14" | E-92°19'56.33"<br>E-92°19'58.97"<br>E-92°19'59.48"<br>E-92°19'59.46" | Proposed |
| 11 | Pasnoi River Similguri           | Pasnoi River<br>4.09 Ha   | Sand & Stone              | N-26°51'40.40"<br>N-26°49'32.80"<br>N-26°51'40.10"<br>N-26°49'31.80" | E-92°20'15.20"<br>E-92°19'48.70"<br>E-92°20'18.20"<br>E-92°19'52.20" | Proposed |
| 12 | Baligaon SS Mahal                | Pasnoi River<br>4.00 Ha   | Sand & Silt               | N-26°42'35.51"<br>N-26°42'34.07"<br>N-26°42'45.09"<br>N-26°42'46.48" | E-92°20'05.16"<br>E-92°20'06.77"<br>E-92°20'19.96"<br>E-92°20'17.67" | Proposed |
| 13 | Golondi Silt Mahal No. 2         | Golondi River<br>4.70 Ha  | Silt                      | N-26°45'13.08"<br>N-26°45'12.89"<br>N-26°45'57.14"<br>N-26°44'57.45" | E-92°07'0.38"<br>E-92°07'3.38"<br>E-92°07'3.55"<br>E-92°07'6.04"     | Proposed |
| 14 | Khowrang Boulder Mahal           | Khowrang River<br>4.80 Ha | Boulder                   | N-26°51'00.4"<br>N-26°51'0.92"<br>N-26°50'40.9"<br>N-26°50'42.29"    | E-92°04'01.5"<br>E-92°04'5.56"<br>E-92°07'27.7"<br>E-92°04'31.62"    | Proposed |
| 15 | Daisam Boulder Mahal             | Khowrang River<br>4.90 Ha | Boulder                   | N-26°53'34.40"<br>N-26°53'32.10"<br>N-26°53'23.70"<br>N-26°53'21.80" | E-92°07'3.40"<br>E-92°06'58.50"<br>E-92°07'12.00"<br>E-92°07'6.10"   | Proposed |
| 16 | Bhorla GSB Mahal No.1 (Santipur) | Bhorla River<br>4.90 Ha   | Sand/ Gravel &<br>Boulder | N-26°50'10.66"<br>N-26°50'9.66"<br>N-26°49'40.50"<br>N-26°49'39.78"  | E-91°56'54.63"<br>E-91°55'52.27"<br>E-91°56'58.36"<br>E-91°57'0.00"  | Proposed |
| 17 | Bhorla GSB Mahal No.2            | Bhorla River<br>4.60 Ha   | Sand/ Gravel &<br>Boulder | N-26°47'38.42"<br>N-26°47'35.55"<br>N-26°47'13.97"<br>N-26°47'14.22" | E-91°57'54.45"<br>E-91°57'57.48"<br>E-91°57'55.56"<br>E-91°57'52.75" | Proposed |
| 18 | Bhorla GSS Mahal No.3            | Bhorla River<br>3.40 Ha   | Sand/ Gravel &<br>Stone   | N-26°45'12.07"<br>N-26°45'11.60"<br>N-26°44'25.72"<br>N-26°44'25.74" | E-91°58'35.11"<br>E-91°58'34.71"<br>E-91°58'57.10"<br>E-91°58'57.99" | Proposed |





|    |                                    |                           |                            |  |  |          |
|----|------------------------------------|---------------------------|----------------------------|--|--|----------|
| 19 | Kulsi Sand Gravel Silt Mahal No.2  | Kulsi River<br>3.29 Ha    | Sand Gravel Silt           | N-26°43'43.67"<br>N-26°43'43.97"<br>N-26°43'20.35"<br>N-26°43'21.24" | E-91°55'55.01"<br>E-91°55'56.14"<br>E-91°56'8.00"<br>E-91°56'9.24"   | Proposed |
| 20 | Bhutiasang SGB Mahal No.1          | Nunoi River<br>4.90 Ha    | Sand, Gravel &<br>Boulder  | N-26°48'48.38"<br>N-26°48'48.61"<br>N-26°48'0.19"<br>N-26°48'0.00"   | E-91°53'15.44"<br>E-91°53'14.32"<br>E-91°53'9.21"<br>E-91°53'10.41"  | Proposed |
| 21 | Bhutiasang SGB Mahal No.2          | Nunoi River<br>3.50 Ha    | Sand / Gravel &<br>Boulder | N-26°49'12.97"<br>N-26°49'12.66"<br>N-26°48'57.00"<br>N-26°48'59.10" | E-91°53'20.15"<br>E-91°53'22.74"<br>E-91°53'18.50"<br>E-91°53'16.19" | Proposed |
| 22 | Nasanchali Sand Gravel Silt Mahal  | Nunoi River<br>4.75 Ha    | Sand , Gravel &<br>Silt    | N-26°41'44.24"<br>N-26°41'44.90"<br>N-26°41'9.75"<br>N-26°41'10.33"  | E-91°53'1.78"<br>E-91°53'2.80"<br>E-91°53'21.47"<br>E-91°53'22.64"   | Proposed |
| 23 | Bhootbangla Sand Gravel Silt Mahal | Nunoi River<br>3.50 Ha    | Sand , Gravel &<br>Silt    | N-26°40'12.73"<br>N-26°40'12.61"<br>N-26°39'47.88"<br>N-26°39'46.10" | E-91°53'57.92"<br>E-91°53'56.47"<br>E-91°53'43.28"<br>E-91°53'44.70" | Proposed |
| 24 | Sahabasti Sand & Silt Mahal        | Nunoi River<br>3.50 Ha    | Sand & Silt                | N-26°39'1.36"<br>N-26°39'1.59"<br>N-26°38'37.80"<br>N-26°38'37.06"   | E-91°53'53.14"<br>E-91°53'54.42"<br>E-91°54'12.97"<br>E-91°54'12.45" | Proposed |
| 25 | Kalanadi SS No.1                   | Kalanadi River<br>4.50 Ha | Sand & Stone               | N-26°50'58.31"<br>N-26°50'58.82"<br>N-26°50'37.79"<br>N-26°50'37.64" | E-91°50'38.53"<br>E-91°50'35.90"<br>E-91°50'29.88"<br>E-91°50'32.07" | Proposed |
| 26 | Kalanadi SS No.2                   | Kalanadi River<br>3.30 Ha | Sand & Stone               | N-26°46'24.33"<br>N-26°46'25.07"<br>N-26°46'4.15"<br>N-26°46'4.32"   | E-91°51'26.74"<br>E-91°51'28.96"<br>E-91°51'37.47"<br>E-91°51'38.79" | Proposed |
| 27 | Samrang Newly Gravel Earth Mahal   | Samrang River<br>4.00 Ha  | Gravel & Earth             | N-26°50'38.92"<br>N-26°50'39.58"<br>N-26°51'08.52"<br>N-26°50'54.47" | E-91°48'55.90"<br>E-91°51'0.53"<br>E-91°49'24.43"<br>E-91°47'9.50"   | Proposed |



## List of Potential Mining Leases

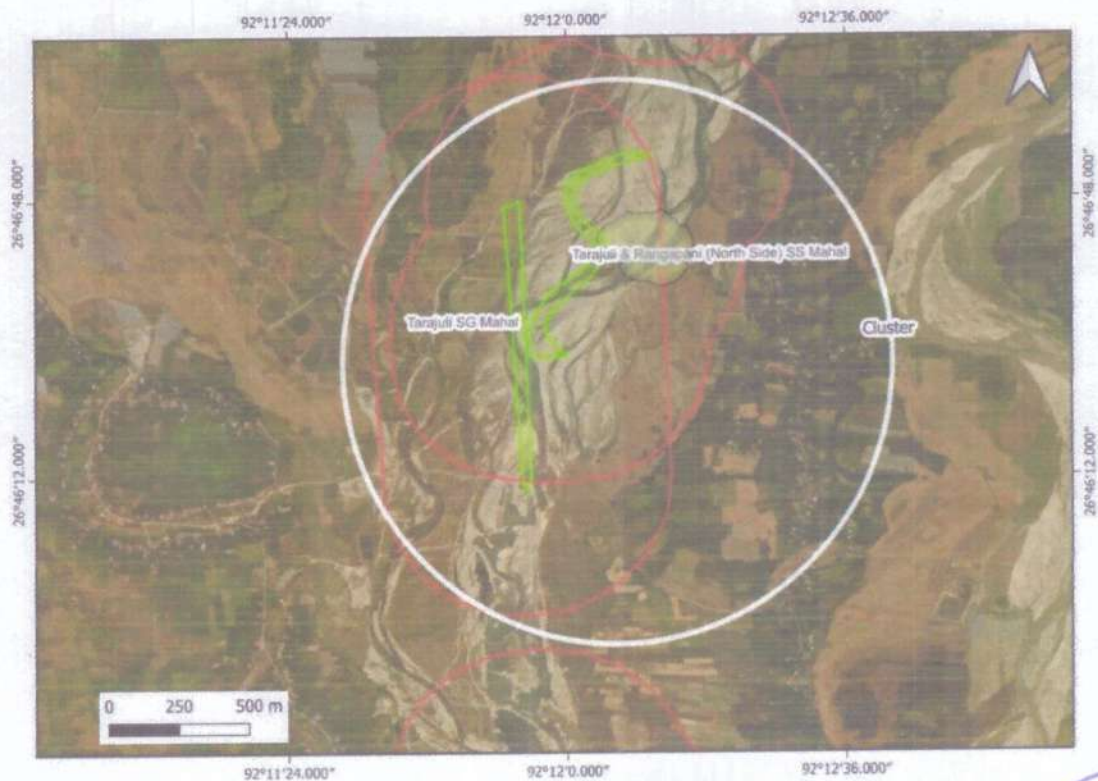
| Sl. No. | Name of Mahal                       | Location and area of mining lease | Mineral Name | GPS- Coordinates   |  | Status    |
|---------|-------------------------------------|-----------------------------------|--------------|--|--|-----------|
|         |                                     |                                   |              | Latitude   | Longitude  |           |
| 1       | Lower Dhansiri SS Mahal Part-A      | Dhansiri River<br>4.31 Ha         | Sand & Stone | N-26° 41' 26.50"<br>N-26° 41' 26.68"<br>N-26° 41' 09.48"<br>N-26° 41' 8.89"  | E-92° 15' 27.31"<br>E-92° 15' 30.08"<br>E-92° 15' 36.04"<br>E-92° 15' 33.26" | Potential |
| 2       | Dhansiri (Balsiya Jargaon) SS Mahal | Dhansiri River<br>4.85 Ha         | Sand & Stone | N-26° 40' 13.2"<br>N-26° 38' 52.9"<br>N-26° 40' 15.6"<br>N-26° 38' 50.2"     | E-92° 15' 30.4"<br>E-92° 15' 20.5"<br>E-92° 15' 24.0"<br>E-92° 15' 14.4"     | Potential |
| 3       | Rowta SG Mahal                      | Rowta River<br>4.45 Ha            | Sand & Stone | N-26° 50' 57.9"<br>N-26° 50' 58.1"<br>N-26° 50' 38.3"<br>N-26° 50' 39.2"     | E-92° 13' 50.5"<br>E-92° 13' 48.2"<br>E-92° 13' 49.5"<br>E-92° 13' 44.5"     | Potential |
| 4       | Purobkhuti S.S. Mahal               | Dhansiri River<br>4.98            | Sand & Stone | N-26° 47' 46.96"<br>N-26° 47' 43.71"<br>N-26° 47' 52.85"<br>N-26° 47' 44.79" | E-91° 12' 08.64"<br>E-91° 12' 13.79"<br>E-91° 12' 18.56"<br>E-91° 12' 20.19" | Potential |




### Annexure - III

#### Cluster details

| Cluster No | Mahal Name  | River Name     |
|------------|---|----------------|
| Cluster 1  | Tarajuli SG Mahal<br>Tarajuli&Rangapani (North side) SS Mahal | Dhansiri River |
| Cluster 2  | Baligaon SS Mahal<br>Pasnoi SS Mahal                          | Pasnoi River   |
| Cluster 3  | Bhutiasang SGB Mahal No.2<br>Bhutiasang SGB Mahal No.1        | Nunoi River    |

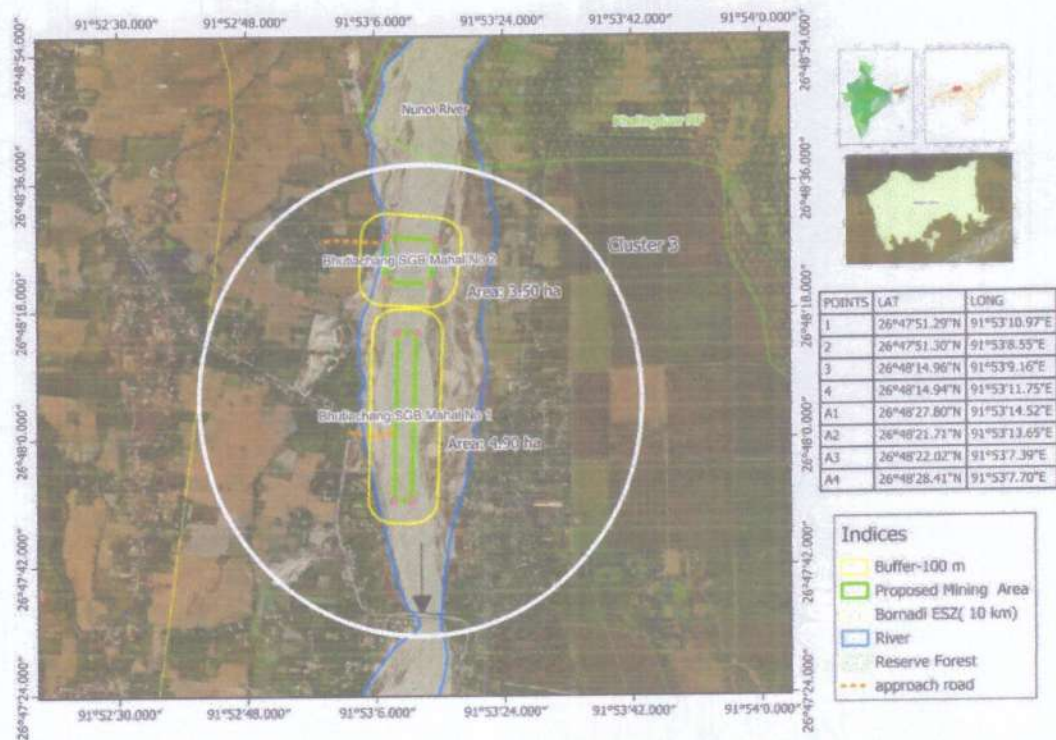


  
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## Annexure – IV

### Transportation Routes for individual leases

| Lease name                                 | Length of Route in KM | Type of Road ( <i>Black Topped/ unpaved</i> ) | Route Map & Location |
|--|-----------------------|---|----------------------|
| Tarajuli SG Mahal                          | 1.9                   | unpaved                                       | attached             |
| Rangapani SS Mahal                         | 0.8                   | unpaved                                       | attached             |
| Dhansiri SG Mahal No.1                     | 0.4                   | unpaved                                       | attached             |
| Rowta Bagan SG Mahal                       | 0.2                   | unpaved                                       | attached             |
| Pasnoi River Village Samugaon              | 0.5                   | unpaved                                       | attached             |
| Golondi Silt Mahal No. 1                   | 0.16                  | unpaved                                       | attached             |
| Beltola SS Mahal                           | 0.8                   | unpaved                                       | attached             |
| Nunoi SS Mahal No.3 (Kulsi)                | 0.1                   | unpaved                                       | attached             |
| Nunoi SS Mahal No.1 (Gitibari)             | 0.7                   | unpaved                                       | attached             |
| Gitibari SG Mahal No.2                     | 1                     | unpaved                                       | attached             |
| Bhairabkunda BG Mahal No.1                 | 1.3                   | unpaved                                       | attached             |
| Bhairabkunda BG Mahal No.3                 | 1.5                   | unpaved                                       | attached             |
| Tarajuli & Rangapani (North Side) SS Mahal | 1.4                   | unpaved                                       | attached             |
| Dhansiri SG Mahal                          | 0.7                   | unpaved                                       | attached             |
| Lower Dhansiri SS Mahal part-B             | 1.7                   | unpaved                                       | attached             |
| Monai Boulder Gravel Mahal                 | 0.06                  | unpaved                                       | attached             |
| Dimasang SG Mahal                          | 0.3                   | unpaved                                       | attached             |
| Merebil SS Mahal                           | 0.6                   | unpaved                                       | attached             |
| Pagla SG Mahal No.2                        | 0.8                   | unpaved                                       | attached             |
| Pasnoi SS Mahal                            | 0.4                   | unpaved                                       | attached             |


  
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|   |      |         |          |
|---|------|---------|----------|
| Pasnoi River Simliguri                        | 0.3  | unpaved | attached |
| Baligaon SS Mahal                             | 0.4  | unpaved | attached |
| Golondi Silt Mahal No. 2                      | 0.2  | unpaved | attached |
| Khowrang Boulder Mahal                        | 0.1  | unpaved | attached |
| Daisam Boulder Mahal                          | 0.1  | unpaved | attached |
| Bhorla GSB Mahal No.1<br>(Santipur)           | 0.2  | unpaved | attached |
| Bhorla GSB Mahal No.2                         | 0.3  | unpaved | attached |
| Bhorla GSS Mahal No.3                         | 0.4  | unpaved | attached |
| Kulsi Sand Gravel Silt Mahal<br>No.2          | 0.2  | unpaved | attached |
| Bhutiasang SGB Mahal No.1                     | 0.7  | unpaved | attached |
| Bhutiasang SGB Mahal No.2                     | 0.5  | unpaved | attached |
| Nasanchali Sand Gravel Silt<br>Mahal          | 0.08 | unpaved | attached |
| Bhootbangla Sand Gravel Silt<br>Mahal         | 0.25 | unpaved | attached |
| Sahabasti Sand & Silt Mahal                   | 0.1  | unpaved | attached |
| Kalanadi SS No.1                              | 0.13 | unpaved | attached |
| Kalanadi SS No.2                              | 0.3  | unpaved | attached |
| Samrang Newly Gravel Earth<br>Mahal           | 0.16 | unpaved | attached |
| Bhairabkunda Boulder and Sand<br>Gravel Mahal | 0.6  | unpaved | attached |
| Lower Dhansiri SS Mahal Part-A                | 0.5  | unpaved | attached |
| Dhansiri (Balisiya Jargaon) SS<br>Mahal       | 1.2  | unpaved | attached |
| Rowta SG Mahal                                | 0.2  | unpaved | attached |
| Purobkhuti S.S. Mahal                         | 0.9  | unpaved | attached |

  
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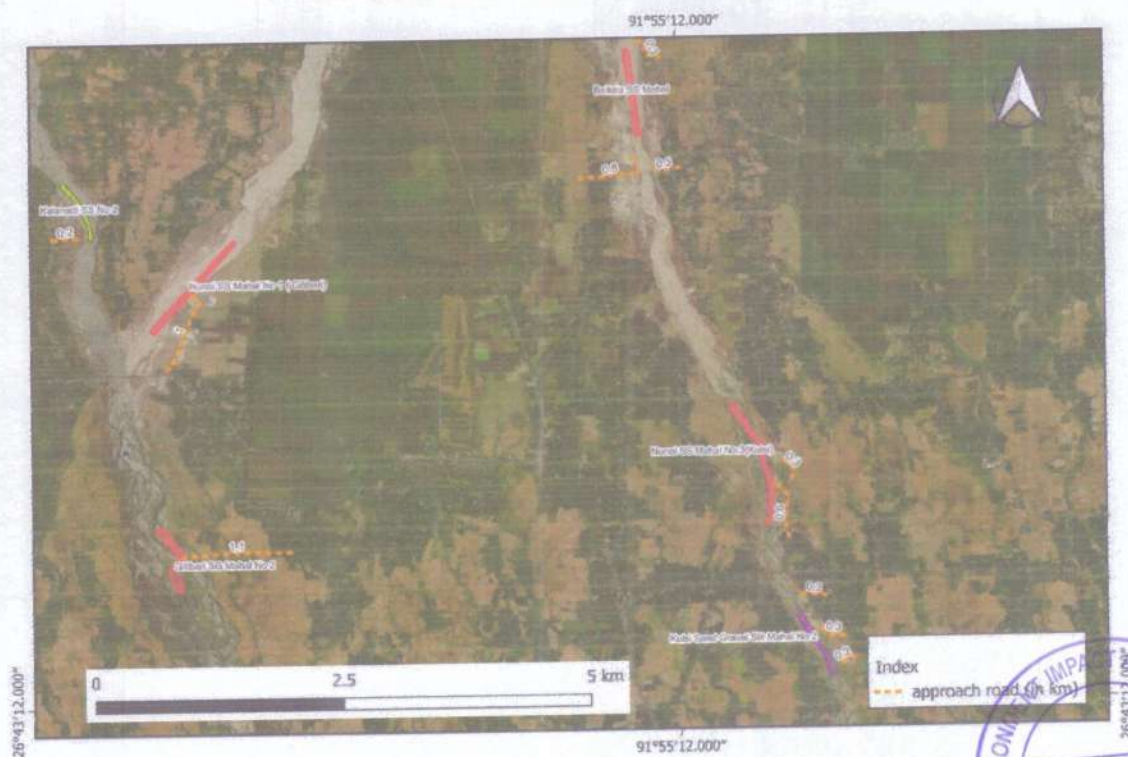




Map showing Approach Road of Mining permit/contract Area



Map showing Approach Road of Mining permit/contract Area



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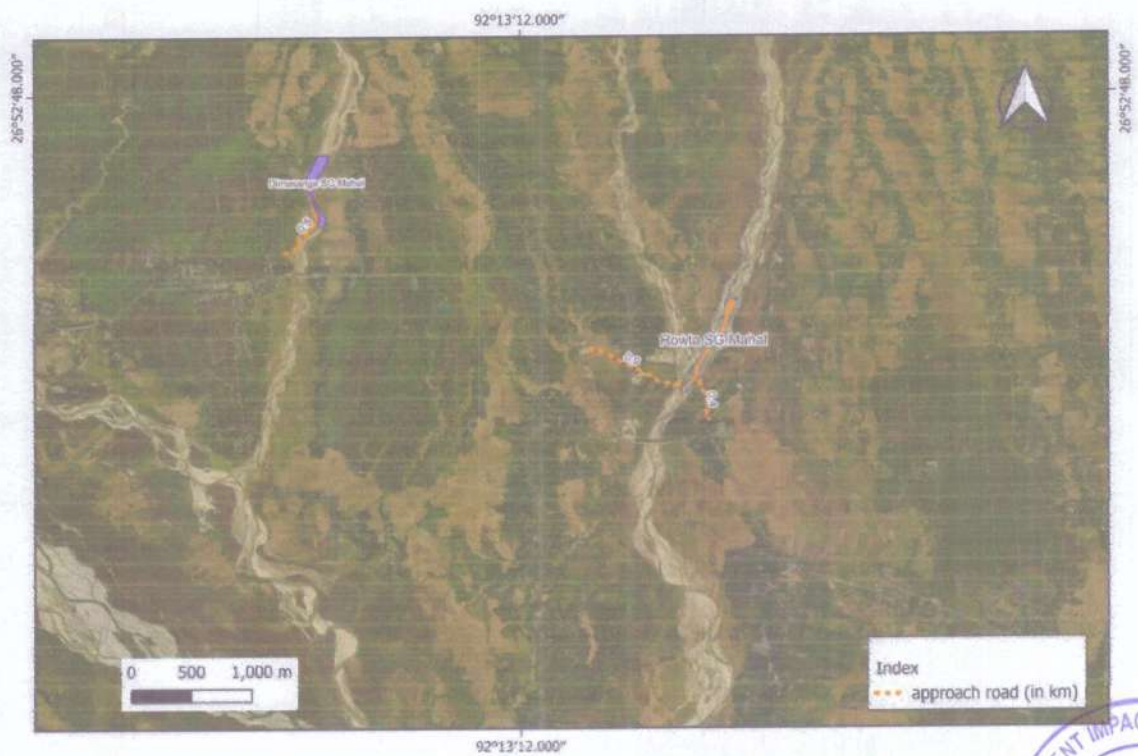




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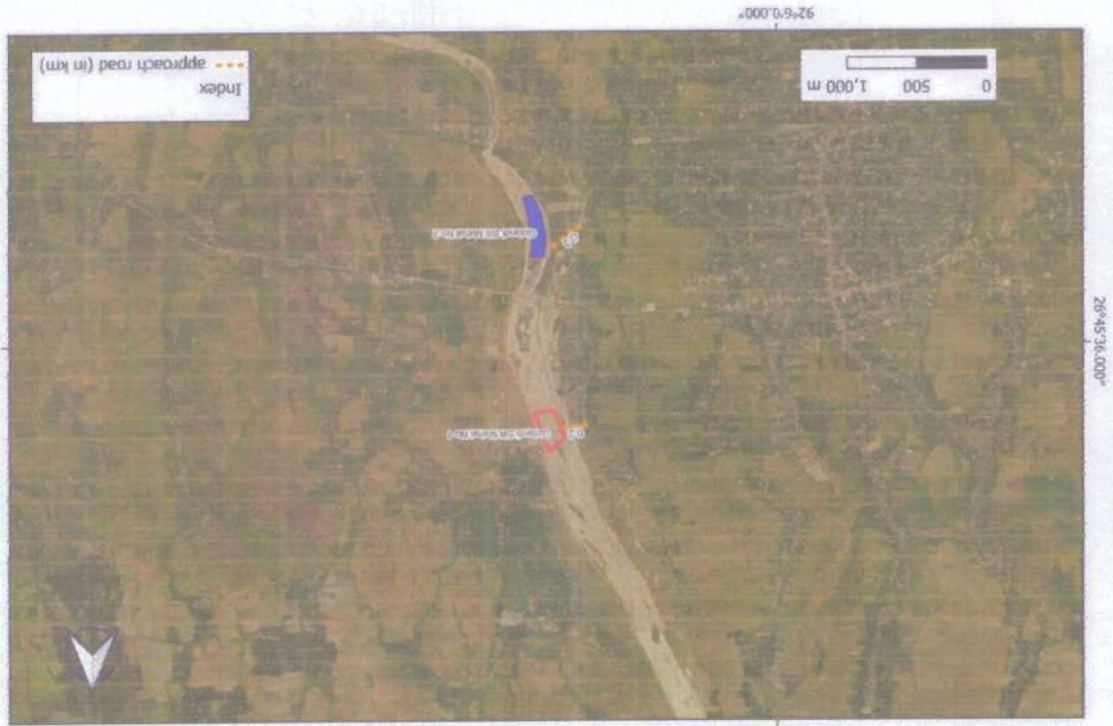
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(To see the scope of accreditation of this laboratory, you may also visit NABL website [www.nabl-india.org](http://www.nabl-india.org))

Name of Legal Entity: Reliant Foundations Private Limited

Signed for and on behalf of NABL

*N. Venkateswaran*

Chief Executive Officer





