NATIONAL GREEN TRIBUNAL, PRINCIPAL BENCH, NEW DELHI

OA No. 532 of 2023

Balbir Sandhu

Versus

Union of India and others

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Text

NEW DELHI

DATED: 14.03.2024

RESPONDENT NO. 10

Through Counsel:

(ANSHUL MANGLA)
Advocate
P/2238/2011
#477, Sector 12, Panchkula
Anshul.mangla16@gmail.com
8283097167

NATIONAL GREEN TRIBUNAL, PRINCIPAL BENCH, NEW DELHI

OA No. 532 of 2023

Balbir Sandhu

Versus

Union of India and others

Written Statement on behalf of respondent No. 10 i.e. M/s Reliable Mining Corporation, Gurugram.

RESPECTFULLY SHOWETH:

1. That the answering respondent is a partnership firm and is filing the present written statement through its partner namely Sh. Aktar Zawed Salmansidique.

PRELIMINARY OBJECTIONS:

2. That it is submitted that no substantial questions relating to Environment are involved in the present case and there is no civil dispute between the parties in the present case. Hence, the Original Application is not maintainable.

3. That respondent No. 5 had issued an e-auction notice dated 31.05.2022 for the purpose of grant of mining contracts for extraction of minor minerals namely "Boulder, Gravel and Sand" from the minor mineral mines located at District

Ambala, Haryana. A copy of the e-auction notice dated 31.05.2022 is attached herewith as **Annexure R-10/1.**

4. That the bare perusal of the e-auction notice dated 31.05.2022 shall reveal that respondent No. 5 had proposed to grant mining contract for extraction of minor minerals for various mining blocks including Fatehpur Nagoli Mining Block. As per the details appended with the auction notice, the mining block consisted of land located in 6 villages with a total area of 105.51 acres and reserve price of Rs. 07.76 crores per annum. The notice had the details of the land comprised in the mining lease area through specific khasra numbers as per the revenue record.

5. That as per the knowledge of the answering respondent, the e-auction notice dated 31.05.2022 was issued in consonance with the District Survey Report for District Ambala (Annexure A-1/2). The area included in the Fatehpur Nagoli Mining Block is based upon the details of the minerals bearing area enshrined in *Annexure B* appended with the District Survey Report which includes the land located at Villages – Fatehpur, Laha, Batoura, Nagoli, Banaudi, Bari Bassi.

6. That it shall be pertinent to mention that the e-auction notice also incorporates the geo-coordinates of the land comprised in the aforesaid mining block which clearly establishes the fact that the Department had followed due diligence.

7. That the answering respondent had participated in the e-auction which was conducted on 30.06.2022 in pursuance of e-auction notice dated 31.05.2022. The answering respondent had submitted bid to the tune of Rs. 24,06,00,000/- which was the highest bid. Respondent No. 5 had communicated the acceptance of the bid by way of issuance of Letter of Intent (LOI) dated 28.07.2022. A copy of the Letter of Intent dated 28.07.2022 is attached herewith as **Annexure R-10/2.**

8. That in pursuance thereof, the answering respondent had submitted the Mining Plan and Progressive Mine Closure Plan with respondent No. 5 on 17.04.2023 for the purpose of seeking approval. A copy of the Mining Plan and Progressive Mine Closure Plan dated 17.04.2023 is attached herewith as **Annexure R-10/3.**

9. That it is submitted that the for the purpose of preparation of the Mining Plan, detailed map of the mining lease area was prepared by superimposing the mining lease area (through the geo-coordinates provided in the auction notice) on the toposheets available on the official website of Survey of India, Government of India. In this regard, a copy of the Plate No. 1 i.e. Location Map and Plate No. 2 i.e. Key Plan 5 KM Radius, as appended with the Mining Plan, are attached herewith as **Annexure R-10/4**.

10. That the bare perusal of the Mining Plan shall reveal that the mining lease area is located at River Begna and the mining lease area was identified with the help of the geo-coordinates.

Furthermore, for the purpose of assessing the estimate quantity of mineral reserves, all the parameters laid down under the Haryana Minor Minerals Concession, Stocking, Transportation of Minerals and Prevention of Illegal Mining Rules, 2012 as well as the Enforcement and Monitoring Guidelines for Sand Mining, 2020. The Mining Plan also included the Replenishment Study Report on the basis of the pre-monsoon and post-monsoon survey of the mining lease area by using Differential Global Positioning System (DGPS). On the basis of the detailed analysis, the proposed production capacity has been fixed at 12,00,000 MT per annum as the total mineable reserves established with the detailed replenishment study report are 12,05,432 MT per annum.

11. That after careful analysis of the Mining Plan submitted by the answering respondent, respondent No. 5 had granted approval for the same in exercise of powers available under Haryana State Mining Rules, 2012. Respondent No. 5 had granted the approval vide Letter dated 18.05.2023 which is attached herewith as **Annexure R-10/5.**

12. That after seeking approval of the Mining Plan, the answering respondent had approached respondent No. 6 for the purpose of seeking environmental clearance and the same is pending adjudication before respondent No. 6.

13. That it is submitted that the Mining Plan was prepared as per the prescribed procedure; and there is no violation of the District Survey Report while granting approval to the Mining

Plan submitted by the answering respondent. In so far as the total quantity of the mineable minerals mentioned in the District Survey Report is concerned, it is apparent that the same is a result of some inadvertent mistake considering the total area for proposed mining blocks.

14. That it humbly submitted that there is no violation of the District Survey Report in the present case and there is no substantial question relating to the environment is involved in the present case. The Original Application filed by the applicant is without any merits and the same is liable to be dismissed.

REPLY ON MERITS:-

1. That the contents of paragraph No. 1 does not require any reply.

2. That the contents of paragraph No. 2 does not require any reply.

3. That the contents of paragraph No. 3 are admitted to the extent that the Original Application has been filed under Section 14 of NGT Act, 2010. The rest of the contents are denied being false. It is submitted that the applicant is not aggrieved and there is no cause of action in his favor to file the Original Application.

4. That the contents of paragraph No. 4 are denied being false. It is submitted that no substantial question relating to Environment is involved in the present case.

5. That the contents of paragraph No. 5 relates to the jurisdiction of this Hon'ble Tribunal. However, it is submitted that the since

no substantial questions relating to Environment is involved in the present case and there is no civil dispute, the Original Application is not maintainable.

6. That the contents of paragraph No. 6 are denied being false. It is submitted that the Original Application is not maintainable and there is no violation of the Green Laws or the orders issued by this Hon'ble Tribunal. In this regard, the contents of preliminary submissions are re-iterated.

7. That the contents of paragraph No. 7 are denied being false. It is submitted that answering respondent had submitted the Mining Plan after following the prescribed procedure with regards to its preparation. It is further submitted that the approval was granted by the respondent No. 5 after exercising due diligence. In this regard, the contents of preliminary submissions are re-iterated.

8. That the reply to the sub-paragraphs of paragraph No. 8 is as follows:-

   I. That the contents of sub-para No. I refers to judgment of Hon'ble Supreme Court. Hence, no reply is needed. However, the said judgment is not applicable in the present case.

   II. That the contents of sub-para No. II refers to notification dated 15.01.2016 as well as SSMG, 2016. Hence, no reply is needed. However, it is clarified that the Mining Plan was prepared in consonance with the said Guidelines.

III. That the contents of sub-para No. III refers to judgment of this Hon'ble Tribunal. Hence, no reply is needed. However, the said judgment is not applicable in the present case.

IV. That the contents of sub-para No. IV refers to EMGSM, 2020. Hence, no reply is needed. However, it is clarified that the Mining Plan was prepared in consonance with the said Guidelines.

V. That the contents of sub-para No. II refers to notification dated 15.01.2016 and 25.07.2018. Hence, no reply is needed.

VI. That the contents of sub-para No. VI are admitted. However, it is submitted that the notification dated 15.01.2016 was amended by notification dated 25.07.2018.

VII. That the contents of sub-para No. VII are a reproduction of the contents of SSMG, 2016. Hence, no reply is needed. However, it is submitted that the District Survey Report was duly taken into consideration while issuing the e-auction notice dated 31.05.2022 and the Mining Plan was also prepared as per the prescribed procedure and in line with the quantity established for the said block in DSR. There is no violation of the DSR in the present case.

VIII. That the contents of sub-para No. VII are a matter of record.

IX. That the contents of sub-para No. IX are a reproduction of the contents of DSR vide Annexure A1/2. However, it submitted that the quantity of the mineable reserves has been inadvertently mentioned at 38.29 lakhs MT. It is submitted that the mention of 10.11 hectares is also a typographical mistake. In so far as the sources of the minerals with regards to rivers/streams is concerned, it is clarified that River Sukroon is formally known as Trilokpur Nadi/River.

It is submitted that as per the District Survey Report, the minerals are available in the riverbed of 5 rivers i.e. Markanda, Tangri, Begna, Roon and Sukroon (Trilokpur). The total area recommended for mineral concession for first four of the aforesaid five rivers is 1,59,55,000 square meters which is 1595.5 hectares; and after including the area available in the fifth river i.e. Sukroon/Trilokpur, the total area shall be 1,60,00,000 square meters which is around 1600 hectares or 3953.686 acres. By taking the bulk density of the riverbed material to be 2.00 grams / cubic centimeters (as mentioned in the mining plan) and considering the mineral potential @ 60%, the total quantity of minerals available shall be around 1,92,00,000 MT per annum. In this regard, reliance is placed upon the Sustainable Sand

Mining Management Guidelines, 2016 wherein the methodology for calculation of mineral potential has been prescribed. A copy of SSMG, 2016 is attached herewith as **Annexure R-10/6.**

X. That the contents of sub-para No. X are a matter of record.

XI. That the contents of sub-para No. XI are denied being false. In this regard, the contents of preliminary submissions are re-iterated.

XII. That no reply is being submitted with regards to contents of sub-para-No. XII since the same are not related to answering respondent in any manner.

XIII. That no reply is being submitted with regards to contents of sub-para-No. XIII since the same are not related to answering respondent in any manner.

XIV. That no reply is being submitted with regards to contents of sub-para-No. XIV since the same are not related to answering respondent in any manner.

XV. That no reply is being submitted with regards to contents of sub-para-No. XV since the same are not related to answering respondent in any manner.

XVI. That no reply is being submitted with regards to contents of sub-para-No. XVI since the same are not related to answering respondent in any manner.

XVII. That no reply is being submitted with regards to contents of sub-para-No. XVII since the same are not related to answering respondent in any manner.

XVIII. That the contents of sub-para No. XVIII are a matter of record.

XIX. That the contents of sub-para No. XIX are a matter of record.

XX. That the contents of sub-para No. XX are a reproduction of the contents of letter dated 28.07.2022

XXI. That no reply is being submitted with regards to contents of sub-para-No. XXI since the same are not related to answering respondent in any manner.

XXII. That no reply is being submitted with regards to contents of sub-para-No. XXII since the same are not related to answering respondent in any manner.

XXIII. That no reply is being submitted with regards to contents of sub-para-No. XXIII since the same are not related to answering respondent in any manner.

XXIV. That no reply is being submitted with regards to contents of sub-para-No. XXIV since the same are not related to answering respondent in any manner.

XXV. That no reply is being submitted with regards to contents of sub-para-No. XXV since the same are not related to answering respondent in any manner.

XXVI. That no reply is being submitted with regards to contents of sub-para-No. XXVI since the same are not related to answering respondent in any manner.

XXVII. That no reply is being submitted with regards to contents of sub-para-No. XXVII since the same are not related to answering respondent in any manner.

XXVIII. That no reply is being submitted with regards to contents of sub-para-No. XXVIII since the same are not related to answering respondent in any manner.

XXIX. That the contents of sub-para-No. XXIX are a matter of record.

XXX. That the contents of sub-para-No. XXX are a matter of record.

XXXI. That the contents of sub-para-No. XXIX are a matter of record.

XXXII. That the contents of sub-para-No. XXXII are a matter of record.

XXXIII. That the contents of sub-para-No. XXXIII are a matter of record.

XXXIV. That the contents of sub-para-No. XXXIV are denied being false in so far as reference to answering respondent is made. It is submitted that there is neither any violation of DSR nor the Green Laws applicable in the present case. In this regard, the contents of preliminary submissions are re-iterated.

XXXV. That the contents of sub-para No. XXXV are denied being false in so far as reference to answering respondent is made. It is submitted that there is no contradiction with regards to the capacity of the mineable minerals in the mining area. The estimate given in the Mining Plan is based upon scientific assessment and the quantity mentioned in the DSR is a result of inadvertent mistake. It is submitted that the issue with the permitted for mining at District Ambala is completely misconceived since the total area available for mineral concession is 1,60,00,000 square meters or 1600 hectares or 3953.686 acres and mention of 10.11 hectares at one place is a result of typographical mistake. It is further submitted that the issue with regards to bulk density of mineable minerals is also misconceived and the assessment is based upon scientific analysis. In this regard, the contents of preliminary submissions are re-iterated. Further to satisfy the averment made by the applicant, the

answering respondent had engaged the services of consultant which is NABL recognized Laboratory. The consultant had started the sampling for assessment of Bulk Density of Mineable Minerals as per the provisions laid down in Enforcement and Monitoring Guidelines for Sand Mining, 2020 and the testing reports are duly appended with Mining Plan submitted by the answering respondent.

XXXVI. That no reply is being submitted with regards to contents of sub-para-No. XXXVI since the same are not related to answering respondent in any manner.

XXXVII. That the contents of sub-para-No. XXXVII are denied being false. It is submitted that there is no violation of the DSR or the applicable laws. The Mining Plan was prepared as per the prescribed procedure and the same was approved after exercise of due diligence.

XXXVIII. That the contents of sub-para No. XXXVIII are denied being false. It is submitted that there is no violation of the DSR or the applicable laws. The Mining Plan was prepared as per the prescribed procedure and the same was approved after exercise of due diligence.

9. That the contents of paragraph No. 9 are denied for want of knowledge.

10. That the contents of paragraph No. 10 are denied being false. It is submitted that there is no civil dispute between the parties and the applicant has not suffered any injury or loss. The question of balance of convenience does not arise at all.

GROUNDS:-

A. That the contents of paragraph No. A are reproduction of the judgment of this Hon'ble Tribunal. However, the said judgment is not applicable in the present case. It is further submitted that there is no violation of the notification dated 15.01.2016 and the same has been adhered to in letter and spirit.

B. That the contents of paragraph No. B are reproduction of the judgment of this Hon'ble Tribunal. However, the said judgment is not applicable in the present case. It is further submitted that there is no violation of the notification dated 15.01.2016 and the same has been adhered to in letter and spirit. It is further submitted that the Appendix A appended with notification dated 15.01.2016 was substituted by notification dated 25.07.2018 and the same has been duly complied with in the present case. It is further submitted that the methodology for calculation of the mineral potential is prescribed in SSMG, 2016.

C. That the contents of paragraph No. C are reproduction of the judgment of this Hon'ble High Court. However, the said judgment is not applicable in the present case. It is submitted

that the fact that the mining lease area mentioned in the auction notice is in consonance with Annexure B of the DSR shows that the same was issued after proper assessment.

D. That the contents of paragraph No. D are reproduction of the judgment of the Hon'ble High Court. However, there is neither any violation of the Article 21 or the law laid down in the said judgment.

E. That the contents of paragraph No. E are reproduction of the judgment of this Hon'ble High Court. However, the said judgment is not applicable in the present case.

F. That the contents of paragraph No. F are denied since the reference to the judgment of this Hon'ble Tribunal is completely misconceived. It is submitted that the prescribed procedure has been adhered to in letter and spirit.

G. That the contents of paragraph No. G are reproduction of the judgment of this Hon'ble Supreme Court. However, the said judgment is not applicable in the present case since the Mining Plan was sanctioned in consonance with the provisions of DSR and after exercising due diligence.

H. That the contents of paragraph No. H are denied being false. The contents of reply to contents of paragraph No. 10 are re-iterated.

I. That the contents of paragraph No. I are denied for want of knowledge.

LIMITATION

That the contents of paragraph are denied being false. It is submitted that the Original Application has not being filed within the prescribed period of limitation and the same is liable to dismissed on that score alone.

PRAYER

In the light of the submissions made herein above, it is most respectfully prayed that the Original Application may kindly be dismissed with costs.

NEW DELHI
DATED: 14.03.2024

RESPONDENT NO. 10

Through Counsel:

(ANSHUL MANGLA)
Advocate
P/2238/2011
#477, Sector 12, Panchkula
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8283097167

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AFFIDAVIT

I, Akhtar Zawed Salmansidique aged 27 years son of Sh. Salmansidique Mohmadhussain Akhtar resident of 1201, Almukam Flat near Vishal Cicrle, Ahmedabad, City Ahmedabad, Gujarat 380055 do, hereby, solemnly affirm and state as under:

1. That the deponent is the partner of M/s Reliable Mining Corporation. The deponent is authorized to depose by way of present affidavit on behalf of M/s Reliable Mining Corporation being a partner of the firm.

2. That the deponent has read and understood the contents of the accompanying written statement. The facts stated therein are true and correct to record of the case, which the deponent believes to be true. Nothing material has been concealed therefrom.

3. That accompanying written statement has been drafted by my advocate-on-record on my instructions.

NOTARY
RAM NIWAS MALIK
GURUGRAM
Reg. No. 8224
GOVT. OF INDIA

4. That the Annexures filed herewith are true copies/English translation of their respective originals.

DEPONENT

VERIFICATION

I, the above named deponent, do hereby verify that the contents of the above stated affidavit are true and correct to my knowledge and belief and no part thereof is false and nothing material has been concealed there from. Verified at _____ on this the _____day of March, 2024.

DEPONENT

NOTARY
RAM NIWAS MALIK
GURUGRAM
Reg. No. 8224
GOVT. OF INDIA

ATTESTED
RAM NIWAS MALIK, ADVOCATE
NOTARY, GURUGRAM (HR.) INDIA
12 MAR 2024

Department of Mines and Geology
Government of Haryana

e-Auction Notice

Date 31st May, 2022

No. DMG/HY/e-Auction/Amb/2022/3573

It is hereby notified for the information of the General Public that for grant of mining contracts/mineral rights, for excavation of minor mineral namely "Boulder, Gravel, Sand, and Sand" from the minor mineral mines of the district Ambala, the **e**-Auction process (Registration/User ID) and submission of bidding will be as per schedule given below:

Sr. No.	Titles	From	To
1	**Registration and Creation of user ID and uploading of documents**	01.06.2022 10:00 AM	24.06.2022 Upto 05:00PM
2	**Deposition of EMD**	01.06.2022 10:00 AM	24.06.2022 Upto 05:00 PM
3	**E-service fee**	01.06.2022	24.06.2022 Upto 05:00 PM
4	**Bidding**	27.6.2022 10:00 AM	Till the conclusion of Auction
Note: The manual for prospective bidders shall be available on e-Auction portal.			

The important instructions for participation in the online e-Auction are as under:

1. The bids shall be made online on **the e-Auction web portal**, link of which is available on website of the Department **https://minesharyana.gov.in/** under the tab '**Auctions/Tenders**'.
2. The intending bidders before participation in the e- Auction/bidding process will be required to create a User Account **and to obtain a User-ID and Password for the e-Auction Platform by following the link given on the** website of the Department of Mines and Geology, Haryana i.e.; **minesharyana.gov.in** under the tab '**Auctions/Tenders**'.

3. The intending bidders once registered/ having created the "user account" would not be required to get registered again.
4. On successful Registration a **Wallet** for the bidder will get created in the name of bidder/ intending bidder for keeping additional amount.
5. The detailed instructions for participation in e-Auction can be perused at "**Bidders Manuals**" attached as Annexure A. The copy of same can also be downloaded from link "**Download Manuals**" at e-Auction web portal.
6. The prospective/intending bidders having created user account shall upload following documents (in PDF format not exceeding limit of 10 MB for individual document)
    i. **No-Dues-Certificate(s)** from the concerned Officer In-Charge(s) of the District Mining Office (s) or an affidavit sworn before any Magistrate to the effect that no amount of contract money, royalty, dead rent or surface rent is due in respect of any mining lease/contract or mineral concession held by him (or any of his family members) currently or in the past.
    ii. **Copy of the Partnership Deed** (where bidding entity is a partnership firm) or Articles of Association (where bidding entity is a registered Company) or an Affidavit (where bidding entity is a sole proprietorship firm and the bidder is participating as an Individual).

        No transfer or addition or deletion of the Partners/Directors will be permissible before execution of the agreement;
    iii. **A copy of the authority letter** by the Partnership Firm (where bidding entity is a partnership firm) or a copy of the resolution of the Board of Directors (BoD) of the Company (where bidding entity is a registered Company) in favor of the person (authorized representative) who shall be offering the bids online on behalf of the bidding entity.;
    iv. **An affidavit by the authorized representative** of the bidding entity participating in the bid to the effect that the bidder/any of the partners of the partnership firm/any of the Directors of the Company have not been debarred from participation in the auction and from obtaining a mineral concession/s from the State of Haryana.

7. **Deposition of amount of Earnest Money Deposit (EMD): Earnest Money for participation in bidding process for any** mining area/ site/ unit/ block shall be **equal to** 10% of the reserve price rounded by an amount of Rs. 10,000/-.

8. The prospective bidders would have option to select one or more mines of their interest for participation in the auction and would have option to be change the same before the last date for deposit of EMD

9. The perspective bidders shall deposit lumpsum amount of EMD, which shall not be less than 10% of the highest amount of reserve price among the mines opted to be participated by the bidder.

10. The prospective bidders for participation in the bidding shall transfer (RTGS/NEFT) funds in lumpsum amount, to be deposited as EMD and other amount of bid security etc., online to the Account of the Department as per detail given below:

TYPE OF ACCOUNT: CURRENT ACCOUNT
Account No: DMGZ9999
MICR Code: 160751005
SWIFT BIC CODE: IDFBINBB
IFSC CODE: IDFB0010209

Note: All amount will be accepted in INR and refunds, if any, will also be in INR.
The prospective bidder is required to make single transaction for the EMD amount.

11. On successful transfer of lumpsum amount as EMD and other amount/s towards bid security etc. in the above said Account of the Department up to **24.06.2022 till 05:00 PM** and successfully verification [UTR **22 digits (in case of RTGS) or 16 digits (in case of NEFT)** Verification on the e-Auction portal, as a part of e-Auction process] of the EMD deposited along with the prospective bidder having already submitted other documents as per clause 6 shall be eligible to offer further bid for mine.

12. In case the amount deposited is not verified (UTR Verification on the e-Auction portal) within stipulated time frame, the intending bidder will not be allowed to enter in e-Auction of mine(s)/block(s). In case of highest bidder of any of the mine, the amount equal to 10% of the reserve price rounded by Rs. 10,000/- will be deducted from the lumpsum EMD already deposited and such highest bidder will be able to offer bids for further mines, if so desire, only in case the balance amount is equal or more than 10% of the reserve price of next mine selected for bidding. If the balance

amount is less than the 10% of the reserve price of next mine selected for bidding, the bidder may add additional amount before commencement of bidding time for mine to be participated in the e-auction.

13. **Process for Top-up of EMD from wallet of the bidder:** The prospective bidder, in addition to depositing EMD in the Account of the Department, may deposit and keep additional amount in his wallet, by clicking the link "**My Account**" available on top right corner on portal;

    Note: It is clarified that amount of EMD to be deposited initially has to be deposited as per steps given in clause (10) above and in case of deposits (Top-up of EMD) in wallet by following payment gateway by clicking link "My Account".

14. **Refund of the EMD**

    On completion of the auction process of all the mines in this list, the amount of EMD of the un-successful bidders or balance amount of EMD out of lumpsum amount to the successful bidders, if any, would be refunded, provided the same is otherwise not ordered to be forfeited. The prospective bidders shall furnish details of their account for **refund of EMD** (a) Refund Account Name (b) Refund Account No. (c) IFSC code of the Bank.

    Note: Please cross check the information to be submitted online before saving the same as the information in non-editable.

15. **Refund from the wallet:**

    Bidder may request for refund by clicking on '**Request for Refund'** button available under the section "**My Account**" and will get refunded to his Refund Account.

16. **Deposition of amount of E-service fee for participation in the e-auction** The prospective bidders shall have to pay **e-Service Fee/Administrative Charges of Rs. 11000/- plus GST online** for each of the mine to be participated for e-auction through Debit Card/Internet Banking by using the service of secure electronic payment gateway available on the e-Auction portal itself with the link titled as '**Pay Now'**. The secure electronic payments gateway is an online interface between contractors and online payment authorization networks. The Payment for e-Service Fee/Administrative Charges of the bank can be made by eligible bidders/contractors online directly through **Debit Cards & Internet Banking Accounts**.

17. **Furnishing of wrong information or documents:** In case any of the information furnished for creation of User Account and/or any of the documents uploaded as above are found to be wrong/false at any stage during or after the e-Auction, the same shall be liable for action as under:

i. The Department shall be entitled to invoke revocation/cancellation of bid;

ii. The Department shall be entitled to forfeit the amount deposited (EMD or any other amount) at the time of auction;

iii. Even in case, the false information/document is detected after the award of mineral concession, the Department shall be entitled to terminate the mineral concession.

iv. The Department shall debar the bidder from participation in any subsequent auction for a period of 5 years.

18. **Information /training/ clarification/ difficulty for participation in the e-auction process:** In case of any query regarding process of **e-Auction and for undertaking training**, the intending bidder can contact **Help-desk support for e-Auction Portal** for offering Technical Support Assistance over telephone from Monday to Friday (**Exclusions: GAZETTED HOLIDAYS**) between **10:00 A.M to 06:30 P.M as per details given below:**

Following helpdesk No. shall be open between **10: 00 AM to 18:30 PM** IST		
Contact Person	**Email ID**	**Tel. No.**
1. Ms. Neeti Bala Chandra	neeti.bala@c1india.com	+91-7291981128
2. Mr. Chandan Kumar	chandan.kumar@c1india.com	+91-9015145373
3. Mr. Sandeep	Sandeep@c1india.com	+91-9050287464
4. Ms. Sneha Kapoor	sneha.kapoor@c1india.com	+91-9953126803
In case the issue is not resolved by the above team, kindly contact on contact given below		
1. Mr. Mukesh Kumar	mukesh.kumar@c1india.com	+91-7291981127
Monday to Friday (Exclusions: Gazette Holidays)		
Dedicated centralized email id: auctions@c1india.com		

i. The bidders may also send queries to the help-desk through e-mail by sending an email to **auctions@c1india.com** along with appropriate screenshots or error description.

ii. The Online **Training Videos** for prospective bidders shall be available on e-Auction portal.

19. **Bidding Process:**

Serial auction of mines: The mines shall be put-up for auction serially from top to bottom as per list notified in the Auction Notice.

i. The bidding process shall start on 27.06.**2022 at 10.00 AM.**

ii. On the start of the bidding process, the name and the particulars of the mine at Sr. No. 1 to be put-up for e-Auction shall be displayed to the bidders.

iii. The perspective bidder would be allowed to offer bids only in case the mine put to auction is selected for participation in bidding.

iv. In case no bid is received during first 60 minutes after the commencement of bidding process the first round of auction of said mine/block offered shall conclude. The new mine/next in the Sr. no., from the list of mines being taken up for auction, would be offered for auction on 10:00 AM of the following day.

v. If a bid/s is/are received during first 50 minutes but no bid is received during last 10 minutes of the auction (50 minutes to 60 minutes), the bidding shall be concluded by the system after 60 minutes of commencement of bidding.

vi. In case a bid is received during last 10 minutes (50 minutes to 60 minutes) the auction shall be extended by blocks of 10 minutes till such time that no bid is received during the last extended block of 10 minutes. Thus, the bidding shall be concluded when no bid has been received in the last 10-minute extended block.

Note: To illustrate, if a bid is received in say, the 55th minute, the bidding process shall extend by 10 minutes from 60 to 70 minutes. If a bid is now received, say in the 69th minute, the bidding process shall again get extended for another block of 10 minutes from 70 to 80 minutes. If no bid is received from 70 to 80 minutes the bidding process will conclude after expiry of 80 minutes.

vii. Fresh Round of auction for unsuccessful mines: The mines which fail to attract bidders during first round of auction, completed serial wise, shall again be offered for e-auction for second time to explore the possibility of attracting bidders.

Note: To illustrate say there are total 02 mines offered/notified for auction. The mine at Sr. no 1 fails to attract any bid

during first 60 minutes and the auction gets concluded as explained in Sub Clause (iv) above. The mine at Sr. no 2 will be offered for e-auction/bidding on next day (day two). Finally, after concluding auction process for all mine in serial, the mine says at Sr. no 1 which failed to attract bidders in first round will be again offered for bidding. The same process will be followed for any other mine which fails to attract bid in first round.

viii. **Incremental amount**: Minimum incremental bid amount shall be Rs. 5,00,000/- and its multiples.

ix. **Auction without any break:** Auction of any mine that has started at 10:00 AM shall be completed, without any break, irrespective of the number of days taken in the process.

x. **Auction of new mine on following day of conclusion of auction:** Any new mine, from the list of mines being taken up for auction, would **be** offered for auction on 10:00 AM of the following day on which the ongoing auction of last mine was/ is concluded.

xi. **Confidentiality of bids/Display of the bids:** All bidding participants shall be able to view the quoted highest bid value during online bidding process and they will be able to have details of all of their own quoted bids at their end. However, the names/identity of any of bidder in any manner will not be accessible to anyone during auction.

xii. **Payment of balance amount of initial bid security by highest bidder:**

On conclusion of the bid/auction for any particular mine, a system generated confirmation of highest bid offered by the highest bidder shall be sent automatically on the registered email and SMS will be sent on the registered mobile number, directing the highest bidder to deposit an amount equal to 10% of the highest bid after adjusting the EMD deposited for said mine/ block, as 'Initial Bid Security' within 24 hours of such confirmation. The payment has to be made through RTGS/NEFT mode (as process mentioned in clause 10). The payment is required to be made into Department's account directly and a 22 digits (in case of RTGS) or 16 digits (in case of NEFT) UTR number will

be required to verified through the option available on portal for Verification of UTR by the highest bidder. Further, it may also be noted that the highest bidder is not allowed to adjust the amount available in the wallet for payment of difference account. The highest bidder is required to make a single independent transaction for the balance amount.

xiii. In case the highest bidder of preceding mine has funds available in Account (after retention of amount equal to EMD for his successful bid by the Department) equal to EMD for any subsequent mine being offered for auction he may opt for participation in the bidding like any of the other bidders.

xiv. **Non-payment of balance amount of initial bid security by the highest bidder:** In case the bidder is not able to deposit the initial bid security within period allowed as above, the EMD shall be forfeited and he shall be debarred for 5 (five) years to participate in any further/future auction.

xv. **Prospective Effect of Debarment:** The highest bidder of any mine, may participate in subsequent bids for other mine/s in the auction list during the period of 24 hours provided to pay the balance amount towards initial bid security for earlier highest bid. The following scenarios may emerge:

- The bidder fails to deposit the balance amount for the first mine for which he was the highest bidder. The EMD for the mine in question shall be forfeited and he shall be debarred from participating in future auctions for a period of 5 years. The system shall block the bidding by this bidder in all ongoing/ subsequent bids. Any other highest bids offered subsequently by the bidder thus debarred shall automatically stand cancelled.
- The bidder deposits the balance amount for the first mine for which he was the highest bidder but fails to deposit the balance amount for the subsequent mine for which he was also the highest bidder. The bid for the first mine shall be accepted. The EMD for the mine for

which the balance amount was not deposited shall be forfeited and the bidder shall be debarred from participating in future auctions for a period of 5 years.

xvi. **Refund of EMD:** After the completion of the bidding process the EMD amount of the unsuccessful or any balance amount of the highest bidder after adjustment of amount to be deposited, would be refunded/transferred to the account of the bidders on conclusion of the auction process. The unsuccessful bidder may request for refund through **"Refund EMD"** available under **"My Account"** section.

20. The details of the areas of the Mining Blocks along with reserve price and period of mining contract etc. are attached as **Annexure-A**.

21. **The terms and conditions of the Auction:**

i) The period of contract shall commence w.e.f. the date of grant of environmental clearance by the Competent Authority and the Consent to Operate (CTO) by the State Pollution Control Board, whichever is later, or on expiry of the period of 12 months from the date of issuance of LoI, whichever is earlier.

ii) Any site/area/ mine offered for auction can be withdrawn from the Auction without assigning any reason;

iii) Due care had been taken in specifying the details of the areas of the mining blocks. However, in case of any inadvertent clerical mistake in area detail/Khasra number etc., the same shall be got rectified/corrected even after the completion of the auction but before execution of contract agreement;

iv) The contract areas are Tentative and are being notified on 'as is where is' basis and all prospective bidders are expected and presumed to have surveyed the areas to make their own assessment for the potential of the areas for which bids are to be offered.

v) The bidders are expected and presumed to have gone through the terms and conditions of auction notice and also the applicable Acts and Rules for undertaking mining. The State government shall not be responsible for any kind of loss in land/area or any other loss to the bidders/contractors at any point of time (before or after grant of contract) on any account including on account of reduction of land/area/production/non grant of permission for mining in part area or otherwise on account of any

condition stipulated for undertaking mining by any competent authority.

vi) No request regarding reduction in bid amount on account of reduction in land/area of the Mining Block, on any account including that of change in description of khasra numbers/location etc. at any stage will be entertained on any ground. This shall also include any loss/reduction of area for actual mining for want of compliance of applicable laws/restrictions for mining or part of the contracted area had already been operated in the past. Needless to state that this also includes the changes, if any, as per condition above and the prospective bidder shall give their bids taking account of all such eventualities;

vii) No person shall be eligible to participate in the Auction, who or any of his family members is a defaulter of any mining dues in respect of any mineral concession granted in the past or any other current mineral concession. In case any of the partners of a Partnership Firm or a Director of a company participating in the auction process or any of their family members are found to be defaulter, the bidder firm/company would be held ineligible. Further, any person, firm or company as the case may be who had been specifically debarred to participate in the auction would not be eligible to participate in the auction;

viii) In case any bidder participated in the auction is found to be default in arrears of government dues on account of any mineral concession obtained from the State of Haryana at any stage, his bid shall be revoked/cancelled with forfeiture of the amount deposited in order to obtain the said mine on contract;

ix) All intended participant can view the highest quoted bid during online bidding process. The highest bidder will be informed for confirmation of the same through e-mail and SMS alert at his online registered email and Mobile Number respectively on the conclusion of the respective mine;

x) The highest bid received/quoted shall become the 'annual contract money' amount payable by the bidder/contractor. The amount of annual contract money initially determined on the basis of competitive bids/auctions shall be increased by 10% on completion of each block of three years; for every three years.

Explanation: If the initially determined annually bid/ contract money is Rs. 100/, it shall be increased to Rs. 110/- with the commencement of the fourth year and to Rs. 121/- with the commencement of the 7th year and

so on and so forth for the next each block of three years.

xi) The highest bidder would be informed about the same- confirmation that he being declared as highest bidder- as per which he shall be liable to deposit 25% of the annual bid/ contract money amount as "security" and one month's advance contract money. The above said amount shall be deposited as per following schedule:

a) an amount equal to 10% of the annual bid amount/ highest bid, after adjusting the EMD deposited for said mine/ block, as 'initial bid security' within 24 hours of conclusion of the bidding process as per details given in **clause 19 (xii).**

b) balance amount of bid security i.e. 15% of an annual bid amount before commencement of the mining operation or before expiry of the period of 12 months from the date of issuance of Letter of Intent (LoI), whichever is earlier;

Provided that where the Letter of Intent holder/contractor having taken all steps on his part, fails to obtain required environmental clearance and Consent To Operate (CTO) for undertaking mining operations within the said period of 12 months from the date of issuance of LoI, such letter of intent holder/contractor on a specific application submitted to the Director, at least *thirty days* prior to the end of the period mentioned above, giving details of the action already taken may seek additional time up to another twelve months, over and above the time of 12 months already allowed for commencement of the period of contract, on payment of a non-refundable fee as per the following:-

1	Extension of further period up to six months	On payment of a non-refundable fee at the rate of one percent per month of the annual bid for each month of requested extension period
2	Extension for a second period up to six months	On payment of a non-refundable fee at the rate of two percent per month of the annual bid for each month of requested extension period
Note: Extension shall be allowed only in month (s) and any request for period less/part of the month shall be summarily rejected and shall apply along with advance amount of the fee for such requested period of extension.		

xii) In case the highest bidder fails to deposit 10% of the annual bid amount online towards the "Initial bid Security" within 24 hours given for the

same, the earnest money deposited shall stand forfeited. Further such bidder(s) shall not be eligible to participate in any future auctions/Tenders/ competitive bidding process in respect of any area for obtaining mineral concession in the State for a period of 5 years;

xiii) The bids offered/received during the e-auction process shall be provisionally accepted and shall be regarded as successful bid only after accepantace by the State Government;

xiv) The LOI would be issued through e-auction portal/online itself on registered e-mail of the bidder, after validating all the documents and approval from the State Government.

xv) After deposit of 10% of the bid amount (as initial bid security) after the conclusion of auction by the highest bidder(s), no request from the highest bidder(s) regarding revocation or the withdrawal of the highest bid shall be considered. In case, any such request is made, the same shall be followed by the Penal Action i.e. 10% amount deposited towards initial bid security shall stand forfeited and such bidder(s) shall be **debarred** from participation in any future auctions/tenders/competitive bidding process in respect of any area for obtaining mineral concession in the State for a period of 5 years;

xvi) The earnest money deposited by the bidders other than highest bidders shall be refunded upon completion of the auction proceedings;

xvii) After the acceptance of highest bid by the State Government and on issuance of Letter of Intent, the LoI holder shall execute an agreement in Form MC-I appended to the '**Haryana Minor Mineral Concession, Stocking, Transportation of Minerals and Prevention of Illegal Mining Rules, 2012'** within a period of 90 days of the order of grant of LoI;

xviii) The agreement executed shall be got duly registered under relevant law with concerned Registering Authority and they shall be liable to pay applicable stamp duty and registration fee etc. as per the applicable rates and demanded by the Registering Authority/Revenue Department.

xix) In case of failure to execute the agreement, after issuance of acceptance of bid/LOI within prescribed period of 90 days from the date of issuance of LOI, the acceptance/LOI shall be deemed to have been revoked and 10% amount deposited towards "initial bid security" shall stand forfeited and such bidder shall debarred from participation in any future

auctions/tenders/competitive bidding process in respect of any area for obtaining mineral concession in the State for a period of 5 years.;

xx) After execution of agreement, either before commencement of the mining operation or before expiry of the time allowed, if any, as per **clause 21(xi)(b)** above, in case of failure to deposit the balance 15% amount towards security (as required under clause 21(xi)(b) above) the acceptance of bid/issuance of LoI/execution of agreement shall be deemed to have been revoked and 10% amount deposited towards as initial bid security after the conclusion of auction shall stand forfeited. Further, such bidder shall be debarred from participation in any future auctions/tenders/competitive bidding process in respect of any area for obtaining mineral concession in the State for a period of 5 years.

xxi) In case of default as per clause **17 and 19 (XIV and XV)** above, wherever the bidder/contractor are debarred from participation future auctions/ tenders/competitive bidding process, it may be noted that in case of such default by a company, the said company and all of its Promoter/s and Director/s, in case of Partnership Firm along with such firm all of its partners shall be debarred from participation whether individually or as partner/ proprietor/director in a company in bids for the period prescribed.

xxii) The contractor shall also deposit/pay an additional amount equal to 7.5% of the due contract money along with installments towards the 'Mines and Minerals Development, Restoration and Rehabilitation Fund'

xxiii) The contractor shall also deposit/pay an additional amount equal to 2.5% of the due contract money along with installments towards the 'District Mineral Fund'.

xxiv) The contractor shall be liable to pay advance Income Tax as per provisions of Section 206 (c) of the Income Tax Act, in addition to the contract money payable as per terms and conditions of the contract agreement;

xxv) On enhancement of the contract money by 10% with expiry of every three years period, the contractor shall deposit the balance amount of security so as to upscale the security amount equal to 25% of the revised annual contract money as applicable for one year with respect to the next block of three years;

xxvi) No interest, whatsoever, shall be payable on the security amount deposited under proper security head of the government;

xxvii) The LoI holder/contractor shall also furnish a solvent surety for a sum equal to the amount of the annual bid for execution of the agreement. In case the surety offered by the contractor(s) during the subsistence of the contractor is not found solvent, the contractor (s) shall offer another solvent surety and a supplementary deed to this effect shall be executed;

xxviii) The mining contractor shall got prepare a Mining Plan along with the Mine Closure Plan (Progressive & Final) from the Recognized Qualified Person as per Chapter 10 of the "State Rules, 2012" for mining area granted on contract and shall get the same approved by an officer authorized by the Director, Mines & Geology, in this behalf.

xxix) The contractor / LoI shall obtain prior Environmental Clearance for the Mining block(s)/area from Competent Authority as required under notification dated 14/09/2006 issued by the MoE&F, GoI or as amended from time to time and also other required approvals for mining including Consent to Establish and Consent to Operate before commencement of actual mining operations;

xxx) The Mining contractor would also be liable to pay following to the land owners;

(a) The annual rent in respect of the land area blocked under the concession but not being operated, and;

(b) The rent plus compensation in respect of the area used for actual mining operations.

xxxi) The amount of annual rent and the compensation shall be settled mutually between the landowner and the mining contractor. In case of non-settlement of the rent and compensation, the same shall be decided by the District Collector concerned in accordance with the provisions of Chapter 9 of "the State Rules, 2012".

xxxii) The total mineral excavated and stacked by the concession holder within the area granted on mining contract shall not exceed two times of the average monthly production as per approved Mining Plan at any point of time.

xxxiii) The Mining contractor shall not stock any mineral outside the concession area granted on mining contract, without obtaining a valid Mineral Dealer License as per provisions contained in Chapter 14 of the "Haryana Minor Mineral Concession, Stocking, Transportation of Minerals and Prevention

of Illegal Mining Rules, 2012";

xxxiv) The contractor shall not carry out any mining operations in any reserved/protected forest or any area prohibited by any law in force in India, or prohibited by any authority without obtaining prior permission in writing from such authority or an officer authorized in this behalf. In case of refusal of permission by such authority or officer authorized in this behalf, contractor(s) shall not be entitled to claim any relief in payment of contract money on this account;

xxxv) The following special conditions shall be applicable for excavation of minor mineral(s) from river beds in order to ensure safety of river-beds, structures and the adjoining areas:

i. No mining would be permissible in a river-bed up to a distance of five times of the span of a bridge on up-stream side and ten times the span of such bridge on down-stream side, subject to a minimum of 250 meters on the up-stream side and 500 meters on the down-stream side;

ii. There shall be maintained an un-mined block of 50 meters width after every block of 1000 meters over which mining isundertaken or at such distance as may be directed by the Director or any officer authorized by him;

iii. The maximum depth of mining in the river-bed shall not exceed 3 meters from the un-mined bed level at any point in time with proper bench formation;

iv. Mining shall be restricted within the central 3/4th width of the river/ rivulet;

v. In case of areas adjoining to rivers/rivulets, no mining shall be permissible in an area up to a width of 500 meters from the active edges of embankments on either side of all other rivers/ rivulets in case of river Yamuna. (This clause is applicable for mining outside riverbed area);

vi. Any other condition(s), as may be required by the Irrigation Department of the state from time to time for river-bed mining in consultation with the Mines & Geology Department, may be made applicable to the mining operations in riverbeds.

vii. No mining operation may be carried out from 01-07 to 15-09 every year (rainy season)

xxxvi) That no mining operation shall be allowed in the urbanize zone of area notified by Town and Country Planning Department. Further, in case of the agriculture zone notified by Town and Country Planning Department mining shall be permissible only after obtaining prior permission from the competent authority;

xxxvii) A safety margin of two meters (2m) shall be maintained above the ground water table while undertaking mining and no mining operations shall be permissible below this level unless a specific permission is obtained from the competent authority in this behalf.

xxxviii) The contractor shall not undertake any mining operations in the area granted on mining contract without obtaining requisite permission from the competent authority as required for undertaking mining operations under relevant laws;

xxxix) The contractor shall be under obligation to carryout mining in accordance with all other provisions applicable as per Mines Act, 1952, Mines and Minerals (Development and Regulation) Act, 1957, Forest (Conservation) Act, 1980 and Environment (Protection) Act, 1986 and the rules made there under Wild Life (Protection) Act, 1972, Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981;

xl) Further information, if any required, can be had on any working day from the office of the Mining Officer, Mines & Geology Department, Ambala or from the O/o the Director, Mines and Geology, Haryana, DHL Square, Plot No 9, IT Park, Sector 22, Panchkula, Haryana.

Director, Mines & Geology,
Haryana.

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Annexure- A

Sr. No.	Name of the Block		Detail of Khasra Nos.	GPS reading of all corner point taken by HARSAC by using DGPS			Village Wise Area for Mining Activity (In Acres)	Total Area for Mining Activity (In Acres)	Village Wise Area for Ancillary Activities	Total Area for Ancillary Activities	Total Mineral Concession Area (in Acres)	Name of Mineral	Reserve Price (Rs. in Crores Per Annum)	Period (In years)
1.	**2.**	**3.**	**4.**	**5.**			**6.**	**7.**	**8.**	**9.**	**10.**	**11.**	**12.**	**13.**
1	**Toka-Hamidpur**	Toka	**For Mining areas 10//**7/2 min, 8 min, 13/1, 13/2 min, 18 min **For Ancillary areas 11//** 4/1/2, 4/2, 5, 6, 7	**Pillar**	**Longitude**	**Latitude**	1.78	228.63	3.82	18.37	247.00	Boulder, Gravel and Sand	20.57	10
				A	77°10'18.712"E	30°31'26.981"N								
				A1	77°10'18.161" E	30°31'22.915"N								
				Z	77°10'17.939" E	30°31'20.068"N								
				Z1	77°10'21.633" E	30°31'26.317"N								
		Chichi Majra	**For Mining areas 7//**, 25 min **8//**, 19, 20 min, 21 min, 22 min, **9//**, 1 min, 2 min, **10//**, 3 min, 4 min, 5 min, 6 min, 7 min, 8 min	**Pillar**	**Longitude**	**Latitude**	7.29		0					
				A1	77°10'18.161" E	30°31'22.915"N								
				B	77°10'15.703" E	30°31'22.936"N								
				C	77°10'14.477" E	30°31'21.283"N								
				D	77°10'11.109" E	30°31'18.786"N								
				E	77°10'08.593" E	30°31'17.937"N								
				F	77°10'05.765" E	30°31'16.054"N								
				X	77°10'09.468" E	30°31'15.984"N								
				Y	77°10'14.839" E	30°31'17.466"N								
				Z	77°10'17.939" E	30°31'20.068"N								
		Sangrani	**For Mining areas 6//**, 11, 20, 21, 22 min, **12//**, 1, 2 min, 9 min, 10/1, 10/2 min, 11 min, 12, 19, 20 min, 21 min, 22, **19//**, 1/1 min,1/2 min,2,**27//**1, 2, 3 min, 8 min, 9, 10, 11, 12, 19, 20, 21, **28//**, 5 min, 6 min, 15 min, 16/1 min, 16/2 min, 25 min, **33//**,4 min, 5, 6, 7 min, 8 min, 13 min,	**Pillar**	**Longitude**	**Latitude**	34.34		5.50			Boulder, Gravel and Sand		
				A1	77°9'46.599" E	30°30'07.206"N								
				A2	77°9'46.407" E	30°29'59.390"N								
				A3	77°9'47.029" E	30°29'53.117"N								
				A4	77°9'47.413" E	30°29'49.605"N								

			14, 15, 16, 17, 18, 19 min	A5	77°9’45.480” E	30°29’31.877”N								
				A6	77°9’43.504” E	30°29’25.032”N								
			For Ancillary areas 7// 18/1, 18/2, 19, 22, 23, **32//**15, **33//**11	A7	77°9’43.615” E	30°29’23.399”N								
				A8	77°9’42.083” E	30°29’19.999”N								
				A9	77°9’39.041” E	30°29’18.245”N								
				A10	77°9’37.052” E	30°29’14.443”N								
				B1	77°9’48.848” E	30°30’7.163”N								
				B2	77°9’49.029” E	30°30’3.294”N								
				B3	77°9’51.427” E	30°29’57.341”N								
				B4	77°9’51.373” E	30°29’49.632”N								
				B5	77°9’53.326” E	30°29’31.798”N								
				B6	77°9’50.715” E	30°29’27.993”N								
				B7	77°9’50.623” E	30°29’24.075”N								
				B8	77°9’48.259” E	30°29’24.041”N								
				B9	77°9’47.959” E	30°29’18.216”N								
				B10	77°9’45.518” E	30°29’18.216”N								
				B11	77°9’45.346” E	30°29’14.361”N								
		Rao Majra	**For Mining areas 3//**, 20, 21 min, 22 min, **4//**, 15 min, 16 min, 25 min, **9//**, 5 min, **10//**, 1 min, 2 min, 8 min 9 min, 10 min, 11 min, 12, 13 min, 11//25 min, 13// 1 min, 2 min, 3 min, 4 min, 5 min, 8 min, 9 min, 10 min	Pillar	Longitude	Latitude	11.52		0					
				A11	77°9’31.478” E	30°29’08.067”N								
				A12	77°9’32.082” E	30°29’02.986”N								
				A13	77°9’34.921” E	30°28’56.715”N								
				B12	77°9’34.671” E	30°29’04.740”N								
				B13	77°9’39.209” E	30°28’56.715”N								
		Shahpur	**For Mining areas 17//**, 23 min, **18//**, 3 min, 4 min, 7 min, 8 min, 13 min, 14, 15 min, 17 min	Pillar	Longitude	Latitude	3.89		0					
				A21	77°9’36.595” E	30°28’23.201”N								
				A22	77°9’39.936” E	30°28’16.644”N								

				B28	77°9'37.821" E	30°28'25.066"N								
				B29	77°9'42.549" E	30°28'17.928"N								
		Dera	**For Mining areas 7//**, 8 min, 11 min, 12 min , 13 min, 18 min, 19 min, 20 min, 21 min, 22 min, **8//**, 16 min, 24 min, 25 min, **11//**, 3 min, 4 min, 5 min, 6 min, 7 min, 8 min, 9 min, 12 min, 13 min, 18 min, 19 min, 20 min, 21 min, 22 min, 23 min **21//**1 min, 2 min, 3 min, 8 min, 9 min, 10 min, 11 min, 12 min, 13 min, 18 min, 19 min, 20 min, 21 min, 22 min, 23 min, **24//**, 1 min, 2, 9 min, 10 min, 11 min, 12 min, 19 min, 20 min, 21 min, 22 min, **36//**, 10 min, 11 min, 20 min, 21 min, **37//**, 6 min, 15 min, 16 min, 24 min, 25 min, **42//**, 4 min, 5 min, 6 min, 7 min, 14 min, 15 min, 16 min, 17 min, 24 min, 25 min, **43//**, 1 min, 10 min, 11 min, 20 min, 21 min, **57//**, 1 min, 10 min, 11 min, 58//, 4 min, 5 min, 6 min, 7 min, 14 min, 15 min, 16 min, 17 min, 23 min, 24 min, 25 min, **63//**, 3 min, 4 min, 5 min, 7 min, 8 min, 12 min, 13 min, 14 min, 18 min, 19 min, 20 min, 21 min, 22 min, **62//**, 25 min, **81//**, 1 min , 10 min, **82//**, 4 min, 5, 6, 7, 8 min, 13 min, 14 min, 15 min, 16 min, 17, 18 min, 23 min, 24, 25 min, **88//**, 4 min, 5 min, 6 min, 7 min, 8 min, 12 min, 13 min, 14 min, 15 min, 16 min, 17 min, 18 min, 19 min, 21 min, 22 min, 23 min, 24 min, **108//**, 1 min, 2 min, 3 min, 4 min, 7 min, 8 min, 9, 10, 11, 12, 13, 14 min, 18 min, 19 min, 20, 21 min, 22 min, **109//**, 5 min, 6 min, 14 min, 15 min, 16, 17 min, 23 min, 24, 25, **114//**, 3 min, 4, 5 min, 7 min, 8 min, 13 min, 14 min, 17 min, 18, 19 min, 22 min, 23 min, **115//**, 1 min, **134//**, 2 min, 3 min, 9 min, 10 min, 12 min, **120//**, 6 min, 7 min, 13	A	77°11'3.027" E	30°30'18.077"N	117.94		3.95					
				A1	77°10'44.306" E	30°29'48.431"N								
				A2	77°10'36.752" E	30°29'40.976"N								
				A3	77°10'45.492" E	30°29'39.183"N								
				A4	77°10'46.437" E	30°29'43.105"N								
				A5	77°10'47.810" E	30°29'46.814"N								
				A6	77°10'48.038" E	30°29'52.329"N								
				A7	77°10'50.057" E	30°29'59.737"N								
				A8	77°11'0.693" E	30°30'8.858"N								
				B	77°11'3.977" E	30°30'22.529"N								
				C	77°11'3.957"E	30°30'29.449"N								
				C3	77°10'43.097"E	30°29'33.780"N								
				C39	77°10'24.689"E	30°29'18.364"N								
				C4	77°10'32.120" E	30°29'29.079"N								
				C40	77°10'27.890" E	30°29'24.256"N								
				C41	77°10'28.660" E	30°29'27.093"N								
				C42	77°10'29.691" E	30°29'30.480"N								
				C43	77°10'30.499" E	30°29'32.158"N								
				C44	77°10'31.277" E	30°29'33.931"N								
				C45	77°10'32.646" E	30°29'35.047"N								
				C5	77°10'31.554" E	30°29'25.259"N								
				C6	77°10'30.874" E	30°29'23.673"N								

			min, 14 min, 15 min, 16 min, 17, 18 min, 23 min, 24 min, 25 min, **128//**, 4 min For **Ancillary areas 113//** 16/1, 16/2, 25/1, 25/2, **114//**20, 21	C7	77°10'26.142" E	30°29'17.356"N									
				D	77°11'2.912" E	30°30'32.398"N									
				E	77°11'5.050" E	30°30'38.365"N									
				F	77°11'7.145" E	30°30'42.733"N									
				G	77°11'8.111" E	30°30'50.579"N									
				H	77°11'8.338" E	30°30'53.419"N									
				I	77°11'8.226" E	30°30'59.649"N									
				J	77°11'9.903" E	30°31'3.903"N									
				J1	77°11'23.418" E	30°31'12.052"N									
				K	77°11'7.148" E	30°31'4.819"N									
				K1	77°11'23.369" E	30°31'15.987"N									
				L	77°11'3.478" E	30°31'0.006"N									
				M	77°11'3.629" E	30°30'57.734"N									
				N	77°11'3.520" E	30°30'52.069"N									
				O	77°11'2.966" E	30°30'46.221"N									
				P	77°11'4.535" E	30°30'42.388"N									
				Q	77°11'3.375" E	30°30'38.365"N									
				R	77°11'1.168" E	30°30'33.609"N									
				S	77°10'59.523" E	30°30'30.790"N									
				T	77°10'57.695" E	30°30'26.071"N									
				U	77°11'58.843" E	30°30'15.740"N									
				V	77°10'55.468" E	30°30'8.518"N									
				W	77°10'53.161" E	30°30'4.660"N									
				X	77°10'43.902" E	30°29'58.301"N									
				Y	77°10'43.674" E	30°29'52.862"N									

				Z	77°10'44.125" E	30°29'50.160"N								
				A	77°11'48.827" E	30°29'28.235"N								
				B	77°11'44.046" E	30°29'21.744"N								
				U1	77°11'47.297" E	30°29'19.117"N								
				V1	77°11'50.504" E	30°29'21.860"N								
		Hamid-pur	**For Mining areas 4//**, 22 min, 23, **6//,** 1 min, 2 min, 3 min, 4 min, 8 min, 9 min, 10 min, 11 min, 12 min, 20 min, **7//,** 6 min, 7 min, 11 min, 12 min, 13 min, 14 min, 15 min, 16 min, 17 min, 18 min, **17//**, 19 , 20 min, 21 min, 22 min, 23 min, **8//**, 16 min, 17 min, 24 min, 25 min, **22//,** 3 min, 4 min, 5 min, 6 min, 7 min, 8 min, 13 min, 14, 17 min, 18 min, 23 min, 24 min, **29//,** 3 min, 4 min, 7 min, 8 min, 13 min, 14 min, 17 min, 18 min, 19 min, 21 min, 22 min, 23 min, 24 min, **42//,** 5 min, 6 min, 15 min, 16 min, 17 min, 24 min, 25 min, **43//,** 1 min, 2 min, 3 min, 9 min, 10 min, 11 min, 20 min, **48//,** 3 min, 4 min, 5 min, 7 min, 8 min, 13 min, 14 min, 17 min, 18 min **For Ancillary areas 21//** 14, 15, 16, 17	B	77°11'44.046" E	30°29'21.744"N	46.47		3.90			Boulder, Gravel and Sand		
				C	77°11'36.267" E	30°29'17.114"N								
				D	77°11'30.811" E	30°29'15.836"N								
				E	77°11'22.623" E	30°29'13.425"N								
				F	77°11'19.474" E	30°29'9.072"N								
				G	77°11'18.604" E	30°29'3.418"N								
				H	77°11'18.719" E	30°28'55.499"N								
				I	77°11'12.236" E	30°28'48.976"N								
				J	77°11'7.784" E	30°28'40.057"N								
				K	77°11'6.953" E	30°28'35.636"N								
				L	77°11'9.584" E	30°28'34.745"N								
				M	77°11'10.201" E	30°28'39.756"N								
				N	77°11'13.850" E	30°28'45.178"N								
				O	77°11'21.148" E	30°28'53.067"N								
				P	77°11'23.050" E	30°29'2.704"N								
				Q	77°11'23.769" E	30°29'8.229"N								
				R	77°11'25.671" E	30°29'10.979"N								
				S	77°11'32.070" E	30°29'12.701"N								
				T	77°11'38.160" E	30°29'13.369"N								
				U1	77°11'47.297" E	30°29'19.117"N								
		Dehar	**For Mining areas 2//,** 12 min,	B	77°10'10.682" E	30°26'32.254"N	5.40		1.20			Sand		

			9//, 2 min, 3 min, 8 min, 9 min, 12 min, 13 min, 18 min, 19 min, 23 min **For Ancillary areas (Nanhera) 23//** 9/1, 9/2, 10	C	77°10'12.833" E	30°26'21.564"N								
				D	77°10'14.841" E	30°26'14.932"N								
				E	77°10'15.349" E	30°26'13.161"N								
				F	77°10'13.462" E	30°26'14.865"N								
				G	77°10'11.168" E	30°26'19.003"N								
				H	77°10'11.522" E	30°26'19.879"N								
				I	77°10'11.035" E	30°26'22.129"N								
				J	77°10'9.665" E	30°26'26.268"N								
				K	77°10'8.529" E	30°26'29.870"N								
				L	77°10'7.649" E	30°26'33.460"N								
2	**Fatehpur, Nagoli**	Fateh-pur	**For Mining areas 3//** 24 min, 25 min, **14//** 4 min, 5 min, 6 min, 7 min, 8 min, 13 min, 14 min, 17 min, 18 min, 23 min, 24 min, **16//** 3 min, 4 min, 7 min, 8 min, 9 min, 11 min, 12 min, 13 min, 18 min, 19 min, 20, 21, 22 min, **17//** 3 min, 4 min, 5 min, 6 min, 7, 8 min, 13 min, 14, 15 min, 16, 17, 18 min, 23 min, 24, 25, **28//** 3 min, 4, 5, 6, 7, 8 min, 12 min, 13, 14, 15, 16 min, 17, 18 min, 19 min, 21 min, 22 min, 23 min, 24 min, 25 min, **29//** 1 min, 10 min, 11 min, 20 min **31//,** 1 min, 9 min, 10 min, 11 min, 20 min, **32//,** 6 min, 15 min, 16 min, 24 min, 25 min, **39//** 4 min, 5 min, 6 min, 7 min, 14 min, 15 min, 16 min, 17 min, 24 min, 25 min, **42//** 4 min, 5 min, 6 min, 7 min, 14 min, **For Ancillary areas 42//**8, 9, 12, 13	Z1	77°6'23.489" E	30°32'25.472"N	48.95	86.22	4.0	19.29	105.51	Boulder, Gravel and Sand	7.76	10
				Z2	77°6'23.423" E	30°32'28.036"N								
				Z3	77°6'23.607" E	30°32'34.871"N								
				Z4	77°6'23.660" E	30°32'38.173"N								
				Z5	77°6'27.294" E	30°32'44.835"N								
				Z6	77°6'28.392" E	30°32'47.932"N								
				Z7	77°6'32.327" E	30°32'51.832"N								
				Z8	77°6'32.914" E	30°32'54.043"N								
				A29	77°6'26.268" E	30°32'27.255"N								
				A30	77°6'25.853" E	30°32'28.668"N								
				A31	77°6'27.521" E	30°32'40.907"N								
				A32	77°6'33.809" E	30°32'50.635"N								
				A33	77°6'39.131" E	30°32'50.971"N								
				A34	77°6'42.28" E	30°32'55.14"N								
				A35	77°6'43.77" E	30°32'59.19"N								
				A36	77°6'50.25" E	30°33'7.08"N								

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				A37	77°6’49.10” E	30°33’8.39”N								
				A38	77°6’45.80” E	30°33’5.20”N								
				A39	77°6’41.29” E	30°33’3.55”N								
				A40	77°6’37.65” E	30°33’11.39”N								
				A41	77°6’39.63” E	30°33’18.93”N								
				A42	77°6’37.26” E	30°33’21.01”N								
				A43	77°6’36.73” E	30°33’15.76”N								
				A44	77°6’35.03” E	30°33’12.29”N								
				A45	77°6’36.39” E	30°33’3.56”N								
		Laha	**For Mining areas** 90 min **For ancillary areas 4//**6, **5//** 8, 9, 10	A	77°6’13.290” E	30°31’16.790”N	11.75		3.50			Sand		
				B	77°6’15.874” E	30°31’18.664”N								
				C	77°6’17.274” E	30°31’23.148”N								
				D	77°6’17.948” E	30°31’25.872”N								
				E	77°6’17.339” E	30°31’27.895”N								
				F	77°6’18.289” E	30°31’29.400”N								
				G	77°6’19.524” E	30°31’29.607”N								
				H	77°6’20.431” E	30°31’31.393”N								
				I	77°6’14.024” E	30°31’32.323”N								
				J	77°6’12.010” E	30°31’34.449”N								
				K	77°6’11.955” E	30°31’35.808”N								
				L	77°6’17.586” E	30°31’38.730”N								
				M	77°6’20.597” E	30°31’42.562”N								
				N	77°6’21.037” E	30°31’44.730”N								
				A1	77°6’14.097” E	30°31’16.009”N								
				A2	77°6’17.098” E	30°31’18.109”N								
				A3	77°6’18.338” E	30°31’22.929”N								

				A4	77°6’18.847” E	30°31’26.050”N								
				A5	77°6’18.498” E	30°31’27.889”N								
				A6	77°6’18.949” E	30°31’28.865”N								
				A7	77°6’21.985” E	30°31’29.236”N								
				A8	77°6’22.712” E	30°31’30.509”N								
				A9	77°6’20.235” E	30°31’33.071”N								
				A10	77°6’13.834” E	30°31’34.063”N								
				A11	77°6’14.060” E	30°31’35.966”N								
				A12	77°6’18.634” E	30°31’37.959”N								
				A13	77°6’22.483” E	30°31’41.809”N								
				A14	77°6’23.355” E	30°31’45.910”N								
		Batoura	**For Mining areas 1//**, 16 min, 17 min, 23 min, 24 min, 22 min, **2//**, 11 min, 20 min, **6//**, 2 min, 3 min, 10 min, 11 min, 20 min, 21 min, **7//**, 15, 16, **8//**, 10 min, 11 min, 19 min, 20, 21 min, 22 min	A	77°5’59.453” E	30°30’16.400”N	5.98		0			Sand		
				A1	77°6’4.428” E	30°30’15.633”N								
				A2	77°6’1.042” E	30°30’22.630”N								
				A3	77°6’2.221” E	30°30’27.821”N								
				A4	77°6’2.555” E	30°30’31.496” N								
				A5	77°6’6.889” E	30°30’34.200” N								
				A6	77°6’10.675” E	30°30’35.844” N								
				A7	77°6’14.216” E	30°30’37.229” N								
				A8	77°6’16.333” E	30°30’38.260” N								
				C	77°6’0.882” E	30°30’27.515”N								
				D	77°6’1.878” E	30°30’31.529”N								
				E	77°6’6.365” E	30°30’34.375”N								
				F	77°6’10.451” E	30°30’36.101”N								
				G	77°6’14.172” E	30°30’37.621”N								
				H	77°6’15.948” E	30°30’38.469”N								

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		Nagoli	**For mining areas** 33//, 24 min, 25 min, 35//, 4 min, 5 min, 6 min, 7 min, 14 min, 15 min, 16 min, 17 min, 24 min, 37//, 4 min, 7 min **For Ancillary area 35//** 1, 2, 3/1, 8, 9	B1	77°5'57.603" E	30°30'31.157"N	3.50		3.46			Sand		
				B2	77°5'58.802" E	30°30'39.203"N								
				B3	77°5'59.074" E	30°30'45.293"N								
				C1	77°5'56.077" E	30°30'31.910"N								
				C2	77°5'57.830" E	30°30'39.026"N								
				C3	77°5'58.173" E	30°30'46.239"N								
		Banaudi	**For Mining areas 13//,** 20 min, **14//,** 16 min, 25 min, **21//,** 5 min, 6 min, 15 min, 16 min, 64 min, 65 min, 66 min, **22//,** 1 min, 10 min, 11 min, 20 min, 21 min, **29//,** 5 min, **28//** 11 min, 12/1 min, 19 min, 20 min, 22 min, 23 min, **35//,** 3 min, 7 min, 8 min, 14 min, 16 min, 17 min, 25 min, **36//,** 21 min, 22 min, **43//,** 1 min, 2 min, 3 min, 6 min, 7 min, 8 min, **42//,** 1 min, 10 min, **37//,** 4 min, 5 min, 7 min, 8 min, 13 min, 18 min, 19 min, 21 min, 22 min, **26//,** 16 min, 24 min, 25 min, **25//,** 11 min, 19 min, 20 min, 22 min, 23 min, **38//,** 3 min, 4 min, 7 min, 14 min, 15 min, 16 min, **39//,** 20 min, 21 min, 22 min, 23 min **For Ancillary areas 47//** 6/2, 15, 16/1, **48//** 11, 19, 20	A33	77°4'48.253" E	30°26'40.879"N	10.82		5.33			Sand		
				A32	77°4'42.847" E	30°26'40.886"N								
				A31	77°4'39.022" E	30°26'44.206"N								
				A30	77°4'34.020" E	30°26'50.466"N								
				A29	77°4'31.737" E	30°26'52.971"N								
				A28	77°4'28,095" E	30°26'52.104"N								
				A27	77°4'23.124" E	30°26'45.689"N								
				A26	77°4'17.196" E	30°26'38.471"N								
				A25	77°4'15.717" E	30°26'36.852"N								
				A24	77°4'13.534" E	30°26'35.827"N								
				A23	77°4'6.708" E	30°26'39.133"N								
				A22	77°4'0.761" E	30°26'43.430"N								
				A21	77°3'53.584" E	30°26'53.091"N								
				A20	77°3'51.889" E	30°26'56.622"N								
				A19	77°3'50.577" E	30°27'0.386"N								
				A18	77°3'50.217" E	30°27'2.235"N								
				A17	77°3'50.090" E	30°27'4.240"N								
				A16	77°3'50.102" E	30°27'8.023"N								
				A15	77°3'49.814" E	30°27'11.176"N								
				A14	77°3'51.311" E	30°27'13.643"N								

				Z6	77°4’48.419” E	30°26’41.568”N								
				Z5	77°4’43.334” E	30°26’41.573”N								
				Z4	77°4’39.612” E	30°26’44.405”N								
				Z3	77°4’34.348” E	30°26’51.193”N								
				Z2	77°4’31.966” E	30°26’53.815”N								
				Z1	77°4’31.694” E	30°26’53.886”N								
				Z0	77°4’31.319” E	30°26’54.012”N								
				Z	77°4’22.431” E	30°26’45.670”N								
				1Z	77°4’27.454” E	30°26’52.254”N								
				Y	77°4’16.676” E	30°26’38.993”N								
				X	77°4’15.094” E	30°26’37.230”N								
				W	77°4’13.572” E	30°26’36.411”N								
				V	77°4’6.864” E	30°26’39.737”N								
				U	77°4’1.182” E	30°26’43.817”N								
				T	77°3’54.446” E	30°26’53.298”N								
				S	77°3’52.719” E	30°26’56.925”N								
				R	77°3’51.091” E	30°27’2.352”N								
				R	77°3’51.514” E	30°27’0.474”N								
				Q	77°3’51.199” E	30°27’4.107”N								
				P	77°3’51.389” E	30°27’7.876”N								
				O	77°3’51.009” E	30°27’11.398”N								
				N	77°3’52.085” E	30°27’13.208”N								
		Bari Bassi	**For Mining areas 24//,** 5 min, 6 min, 15 min, 16 min, 24 min, 25 min, **27//,** 4 min, 5 min, 7 min, 8 min, 12 min, 13 min, 19 min **For Ancillary areas 26//** 11, 12, 20, **27//** 15, 16	1A	77°4’54.100” E	30°28’16.468”N	5.22		3.0			Sand		
				2A	77°4’55.025” E	30°28’16.022”N								
				A	77°4’53.268” E	30°28’14.345”N								
				A0	77°4’54.935” E	30°28’13.290”N								

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				A1	77°4’55.276” E	30°28’10.294”N								
				A2	77°4’52.275” E	30°28’5.956”N								
				A3	77°4’46.400” E	30°28’1.364”N								
				B	77°4’53.991” E	30°28’11.002”N								
				C	77°4’51.499” E	30°28’7.253”N								
				D	77°4’45.737” E	30°28’2.667”N								
3	**Badhauli-Tamnauli**	Badhauli	**For Mining areas** 13// 1 min, 2 min, 8 min, 9 min, 10 min, 12 min, 13 min, 17 min, 18 min, 23 min, 24 min, **33//** 11 min, 20 min, 21 min, **34//** 4 min, 5 min, 6 min, 15 min, 16 min, **77//** 10 min, 11 min, 15 min, 16 min, 17 min, 22 min, 23 min, 24 min, 25 min, **81//** 6 min, 7 min, 13 min, 14 min, 18 min, **82//** 1 min, 2 min, 3 min **For Ancillary areas 77//** 2, 3, 4, 7, 8, 9	A1	77°2’19.234” E	30°22’15.571”N	5.37	142.33	6.0	31.34	173.67	Sand	10.24	10
				A2	77°2’20.000” E	30°22’15.000”N								
				A3	77°2’21.600” E	30°22’12.500”N								
				A4	77°2’23.156” E	30°22’12.276”N								
				A5	77°2’24.900” E	30°22’9.500”N								
				A6	77°2’26.837” E	30°22’7.155”N								
				A7	77°2’28.500” E	30°22’5.000”N								
				A8	77°2’29.300” E	30°22’3.800”N								
				A9	77°2’30.347” E	30°22’0.785”N								
				A10	77°2’31.400” E	30°21’57.400”N								
				A11	77°2’6.500” E	30°21’25.300”N								
				A12	77°2’5.100” E	30°21’24.300”N								
				A13	77°2’3.400” E	30°21’22.200”N								
				A14	77°2’1.700” E	30°21’20.700”N								
				A15	77°1’58.770” E	30°21’19.623”N								
				A16	77°1’55.700” E	30°21’18.500”N								
				A17	77°1’53.515” E	30°21’18.265”N								
				A18	77°1’51.900” E	30°21’17.900”N								
				A19	77°1’51.000” E	30°21’16.900”N								
				A20	77°1’46.900” E	30°21’14.100”N								

				A21	77°1’45.800” E	30°21’12.700”N								
				B1	77°2’21.090” E	30°22’15.324”N								
				B2	77°2’22.805” E	30°22’13.599”N								
				B3	77°2’24.051” E	30°22’12.559”N								
				B4	77°2’25.678” E	30°22’9.794”N								
				B5	77°2’27.411” E	30°22’7.340”N								
				B6	77°2’28.900” E	30°22’5.100”N								
				B7	77°2’29.700” E	30°22’3.900”N								
				B8	77°2’30.794” E	30°22’0.864”N								
				B9	77°2’31.800” E	30°21’57.400”N								
				B10	77°2’6.500” E	30°21’24.700”N								
				B11	77°2’5.500” E	30°21’24.100”N								
				B12	77°2’3.700” E	30°21’21.900”N								
				B13	77°2’2.100” E	30°21’20.600”N								
				B14	77°1’59.109” E	30°21’19.274”N								
				B15	77°1’55.800” E	30°21’18.200”N								
				B16	77°1’53.701” E	30°21’17.661”N								
				B17	77°1’52.531” E	30°21’17.378”N								
				B18	77°1’51.374” E	30°21’16.537”N								
				B19	77°1’47.400” E	30°21’14.000”N								
				B20	77°1’46.300” E	30°21’12.500”N								
		Tamnauli	**For Mining areas 34//** 17 min, 24 min, **48//** 4 min, 7 min, 14 min, 17 min, 24 min, **51//** 4 min, 7 min, 14/2 min, 17 min, 24 min, **66//** 4 min, **68//** 18 min, 19 min, 20 min, **69//** 16 min, 18 min, **70//** 23 min, **75//** 3 min, 8 min, 13 min, 18 min	C1	77°2’11.700” E	30°19’13.600”N	4.59		0			Sand		
				C2	77°2’11.200” E	30°19’10.200”N								
				C3	77°2’11.300” E	30°19’7.400”N								
				C4	77°2’11.100” E	30°19’2.100”N								
				C5	77°2’10.800” E	30°18’57.500”N								

				C6	77°2’10.389” E	30°18’55.658”N								
				C7	77°2’10.265” E	30°18’53.529”N								
				C8	77°2’10.226” E	30°18’51.139”N								
				C29	77°1’56.120” E	30°18’35.918”N								
				C30	77°1’54.537” E	30°18’35.996”N								
				C31	77°1’51.800” E	30°18’35.700”N								
				C32	77°1’49.300” E	30°18’35.100”N								
				C35	77°1’44.156” E	30°18’34.715”N								
				C33	77°1’47.500” E	30°18’34.800”N								
				C34	77°1’45.400” E	30°18’35.000”N								
				C36	77°1’43.255” E	30°18’34.143”N								
				C38	77°1’42.300” E	30°18’30.800”N								
				C39	77°1’42.600” E	30°18’27.700”N								
				C37	77°1’42.690” E	30°18’32.624”N								
				C40	77°1’42.522” E	30°18’26.406”N								
				C41	77°1’41.962” E	30°18’25.160”N								
				D1	77°2’12.100” E	30°19’13.500”N								
				D2	77°2’11.600” E	30°19’10.200”N								
				D3	77°2’11.500” E	30°19’7.400”N								
				D4 (P)	77°2’11.500” E	30°19’2.100”N								
				D5	77°2’11.201” E	30°18’57.534”N								
				D6	77°2’10.865” E	30°18’55.685”N								
				D7	77°2’10.583” E	30°18’53.558”N								
				D8	77°2’10.602” E	30°18’51.685”N								
				D30	77°1’55.823” E	30°18’35.565”N								
				D31	77°1’54.600” E	30°18’35.700”N								

				D32	77°1'51.816" E	30°18'35.267"N								
				D33	77°1'49.300" E	30°18'34.600"N								
				D34	77°1'47.462" E	30°18'34.458"N								
				D35	77°1'46.492" E	30°18'34.490"N								
				D36	77°1'45.100" E	30°18'34.600"N								
				D37	77°1'43.700" E	30°18'34.000"N								
				D38	77°1'43.106" E	30°18'32.635"N								
				D39	77°1'42.737" E	30°18'31.043"N								
				D40	77°1'42.800" E	30°18'29.700"N								
				D41	77°1'43.047" E	30°18'27.858"N								
				D42	77°1'42.963" E	30°18'26.455"N								
				D43	77°1'42.400" E	30°18'25.100"N								
		Gokalgarh	**For Mining areas 27//** 4 min, 7 min, 14 min, 17/1 min, 17/2 min, 24/1 min, 24/2 min, **42//** 4/1 min 4/2 min, 3/2 min, 8 min, 13/1 min, 13/2 min, 18 min, 23 min, **43//** 17 min, 18 min, 24 min, 25 min, **44//** 5 min, 6 min, 15 min, **45//** 3 min, 8/1 min, 8/2 min, 9 min, 10 min, 11 min, 12 min **For ancillary areas 41//** 2, 3, 4, 7, 8, 9	C8	77°2'10.226" E	30°18'51.139"N	3.28		5.98			Sand		
				C9	77°2'10.320" E	30°18'48.510"N								
				C10	77°2'10.500" E	30°18'46.700"N								
				C11	77°2'10.500" E	30°18'45.500"N								
				C12	77°2'10.300" E	30°18'44.300"N								
				C13	77°2'8.900" E	30°18'40.400"N								
				C14	77°2'7.527" E	30°18'37.343"N								
				C15	77°2'6.900" E	30°18'35.800"N								
				C16	77°2'7.000" E	30°18'34.000"N								
				C17	77°2'7.700" E	30°18'32.200"N								
				C18	77°2'7.756" E	30°18'30.241"N								
				C19	77°2'6.200" E	30°18'29.100"N								
				C20	77°2'4.300" E	30°18'28.400"N								
				C21	77°2'3.102" E	30°18'28.355"N								

				C22	77°2’2.150” E	30°18’28.301”N								
				C23	77°2’1.619” E	30°18’28.481”N								
				C24	77°2’1.673” E	30°18’29.185”N								
				C25	77°2’1.142” E	30°18’30.716”N								
				C26	77°2’0.100” E	30°18’32.900”N								
				C27	77°1’58.800” E	30°18’34.200”N								
				C28	77°1’57.100” E	30°18’35.700”N								
				C29	77°2’56.120” E	30°18’35.918”N								
				D8	77°2’10.602” E	30°18’51.685”N								
				D9	77°2’10.638” E	30°18’48.556”N								
				D10	77°2’10.763” E	30°18’46.688”N								
				D11	77°2’10.791” E	30°18’45.443”N								
				D12	77°2’10.600” E	30°18’44.200”N								
				D13	77°2’9.100” E	30°18’40.300”N								
				D14	77°2’7.822” E	30°18’37.269”N								
				D15	77°2’7.400” E	30°18’35.700”N								
				D16	77°2’7.300” E	30°18’34.000”N								
				D17	77°2’7.900” E	30°18’32.200”N								
				D18	77°2’8.063” E	30°18’30.121”N								
				D19	77°2’6.516” E	30°18’28.697”N								
				D20	77°2’4.839” E	30°18’28.070”N								
				D21	77°2’3.590” E	30°18’28.020”N								
				D22	77°2’2.280” E	30°18’27.869”N								
				D23	77°2’1.273” E	30°18’28.005”N								
				D24	77°2’1.144” E	30°18’28.471”N								
				D25	77°2’1.217” E	30°18’29.123”N								

				D26	77°2'0.713" E	30°18'30.643"N								
				D27	77°1'59.766" E	30°18'32.737"N								
				D28	77°1'58.445" E	30°18'33.978"N								
				D29	77°1'56.886" E	30°18'35.240"N								
				D30	77°1'55.823" E	30°18'35.565"N								
		Jharumajra	**For Mining areas** 34// 16 min, 24 min, 25 min, 35// 12 min, 13 min, 14 min, 16 min, 17 min, 18, 19 min, 20 min, 21, 22 min, 23 min, 24 min, 38// 1 min, 2 min, 10 min, 39// 4 min, 5, 6 min, 7 min, 13 min, 14, 15 min, 16 min, 17, 18 min, 41// 20 min, 21 min, 22 min, 42// 16 min, 17 min, 18 min, 19 min, 23, 24 min, 25 min, 44// 5 min, 45// 1 min, 2	C28	77°4'39.938" E	30°17'35.086"N	19.26		0			Sand		
				C29	77°4'35.200" E	30°17'35.300"N								
				C30	77°4'29.900" E	30°17'33.800"N								
				C31	77°4'27.100" E	30°17'31.600"N								
				C32	77°4'25.154" E	30°17'25.189"N								
				C38	77°3'57.303" E	30°17'21.831"N								
				C39	77°3'53.200" E	30°17'24.500"N								
				C40	77°3'48.100" E	30°17'26.100"N								
				C41	77°3'45.019" E	30°17'24.823"N								
				D25	77°4'41.460" E	30°17'33.567"N								
				D26	77°4'31.800" E	30°17'30.400"N								
				D27	77°4'28.529" E	30°17'25.055"N								
				D37	77°3'55.587" E	30°17'20.163"N								
				D38	77°3'50.500" E	30°17'23.500"N								
				D39	77°3'47.913" E	30°17'22.616"N								
		Tangail	**For mining areas** 3// 17 min, 18 min, 23 min, 24 min, 7// 2 min, 3 min 4 min, 7 min, 8, 9 min, 11 min, 12 min, 13, 14 min, 18 min, 19 min, 20 min, 21 min, 22 min, 8// 10 min, 11 min, 12 min, 13 min, 16 min, 17 min, 18 min, 19, 20 min, 22 min, 23 min, 24 min, 25 min, 9// 2 min, 3 min, 6 min, 7 min, 8 min, 9 min, 13 min, 14 min, 15, 16 min, 17 min, 13//	C32	77°4'25.154" E	30°17'25.189"N	21.61		7.80			Sand		
				C33	77°4'24.210" E	30°17'21.112"N								
				C34	77°4'17.700" E	30°17'14.600"N								
				C35	77°4'15.000" E	30°17'14.800"N								
				C36	77°4'7.000" E	30°17'18.100"N								
				C37	77°4'2.100" E	30°17'19.400"N								

			4 min, 5 min **For Ancillary 7//** 1, 10, **8//** 3, 4, 5, 6, 7, 8	C38	77°3'57.303" E	30°17'21.831"N								
				D27	77°4'28.529" E	30°17'25.055"N								
				D28	77°4'27.000" E	30°17'21.000"N								
				D29	77°4'26.100" E	30°17'16.200"N								
				D30	77°4'21.900" E	30°17'14.100"N								
				D31	77°4'20.200" E	30°17'12.900"N								
				D32	77°4'14.500" E	30°17'11.700"N								
				D33	77°4'14.500" E	30°17'12.800"N								
				D34	77°4'9.800" E	30°17'13.600"N								
				D35	77°4'7.800" E	30°17'14.400"N								
				D36	77°4'0.952" E	30°17'16.876"N								
				D37	77°3'55.587" E	30°17'20.163"N								
		Rolaheri	**For Mining areas 2//** 18 min, 19 min, 20 min, 21 min, 22 min, **3//** 11 min, 12 min, 16 min, 17 min, 18 min, 19 min, 20 min, 21 min, 22 min, 23 min, 24 min, 25 min, **4//** 13 min, 14 min, 15 min, 16 min, 17, 18 min, 19 min, 22 min, 23, 24, 25 min, **6//** 5 min, 6 min, 7 min, 13 min, 14 min, 15, 16, 17, 18, 23 min, 24 min, 25 min, **7//** 1 min, 2, 3, 4 min, 8 min, 9, 10, 11, 12 min, 13 min, 19/1 min, 19/2 min, 20/1, 20/2, 21 min, 22 min	C21	77°5'24.752" E	30°17'44.468"N	33.03		0			Sand		
				C22	77°5'17.325" E	30°17'43.684"N								
				C23	77°5'9.000" E	30°17'45.800"N								
				C24	77°5'5.600" E	30°17'46.000"N								
				C25	77°5'1.000" E	30°17'44.100"N								
				C26	77°4'55.300" E	30°17'39.000"N								
				C27	77°4'50.060" E	30°17'35.255"N								
				D17	77°5'27.593" E	30°17'43.597"N								
				D18	77°5'22.600" E	30°17'41.700"N								
				D19	77°5'19.000" E	30°17'40.900"N								
				D20	77°5'15.900" E	30°17'41.100"N								
				D21	77°5'9.100" E	30°17'43.300"N								
				D22	77°4'59.600" E	30°17'34.900"N								
				D23	77°4'58.600" E	30°17'31.800"N								

				D24	77°4'48.672" E	30°17'33.329"N								
		Ramgarh	**For Mining areas** 38// 16 min, 17, 39// 11 min, 12 min, 13 min, 18 min, 19 min, 20 min	C27	77°4'50.060" E	30°17'35.255"N	2.84		0			Sand		
				C28	77°4'39.938" E	30°17'35.086"N								
				D24	77°4'48.672" E	30°17'33.329"N								
				D25	77°4'41.460" E	30°17'33.567"N								
		Gaganheri	**For Mining areas** 32// 11, 12, 18, 19, 20 min, 22 min, 23, 24, 25 33// 1 min, 2 min, 3 min, 4 min, 6, 7, 8, 9, 10, 11 min, 12 min, 13 min, 14 min, 15 min, 16 min 34// 4 min, 5 min, 6, 7 min, 13 min, 14 min, 15 min, 16 min, 17, 18 min, 23 min, 24, 25 min, **43//** 2 min, 3/1, 3/2, 4, 5 min, 6 min, 7/1, 7/2, 8 min, 12 min, 13 min, 14, 15/1 min, 15/2 min, 16 min, 17, 18, 19 min, 21 min, 22 min, 23, 24, 25 min, **45//** 2 min, 3 min, 4 min, 5 min, **48//** 1 min, 2, 3, 4, 5 min, 6 min, 7 min, 8 min, 9 min, 10 min, 13 min, 14 min, **49//** 6 min, 14 min, 15 min, 16 min, 17 min, 18 min, 22 min, 23 min, 24 min , 55// 16 min, 25 min, 56// 2 min, 3 min, 9 min, 10 min, 11 min, 12 min, 20 min, 21 min, 59// 4 min, 5 min, 6 min, 7 min, 8 min, 12 min, 13 min, 14 min, 18 min **For Ancillary areas 55//** 11, 12, 13, 14, 17, 18, 19, 20, 21, 22, 23, 24	C1	77°6'24.102" E	30°18'19.022"N	52.35		11.56			Sand		
				C2	77°6'16.505" E	30°18'22.405"N								
				C3	77°6'11.801" E	30°18'25.167"N								
				C4	77°6'6.872" E	30°18'26.064"N								
				C5	77°6'8.407" E	30°18'28.249"N								
				C6	77°6'4.700" E	30°18'28.800"N								
				C7	77°6'2.300" E	30°18'29.400"N								
				C8	77°5'59.000" E	30°18'28.500"N								
				C9	77°5'56.800" E	30°18'27.100"N								
				C10	77°5'52.700" E	30°18'21.500"N								
				C11	77°5'52.200" E	30°18'18.700"N								
				C12	77°5'52.735" E	30°18'15.006"N								
				C13	77°5'49.300" E	30°18'9.800"N								
				C14	77°5'45.400" E	30°18'6.300"N								
				C15	77°5'39.100" E	30°18'0.500"N								
				C16	77°5'37.100" E	30°17'57.700"N								
				C17	77°5'35.700" E	30°17'54.500"N								
				C18	77°5'34.000" E	30°17'52.300"N								
				C19	77°5'31.300" E	30°17'49.800"N								
				C20	77°5'26.800" E	30°17'45.700"N								
				C21	77°5'24.752" E	30°17'44.468"N								

				D1	77°6’20.400” E	30°18’18.100”N								
				D2	77°6’17.800” E	30°18’18.300”N								
				D3	77°6’15.200” E	30°18’21.000”N								
				D4	77°6’8.800” E	30°18’24.100”N								
				D5	77°6’5.200” E	30°18’25.200”N								
				D6	77°5’59.700” E	30°18’23.300”N								
				D7	77°5’57.800” E	30°18’16.800”N								
				D8	77°5’58.300” E	30°18’12.500”N								
				D9	77°5’57.600” E	30°18’7.300”N								
				D10	77°5’54.400” E	30°18’5.400”N								
				D11	77°5’51.500” E	30°18’6.200”N								
				D12	77°5’47.600” E	30°18’6.100”N								
				D13	77°5’44.741” E	30°18’3.362”N								
				D14	77°5’40.600” E	30°18’0.200”N								
				D15	77°5’37.900” E	30°17’55.700”N								
				D16	77°5’32.600” E	30°17’48.200”N								
				D17	77°5’27.593” E	30°17’43.597”N								
4	**Kakarkunda-Binjalpur**	Kakar kunda	**For Mining areas 35//** 24 min, 25 min, **36//** 21 min, 22 min, 23 min, **38//** 21 min, **39//** 20 min, 21 min, 22 min, 23 min, 24 min, 25 min, **40//** 1, 2 min, 3 min, 4 min, 7 min, 8 min, 9 min, 10 min, 11 min, 13 min, 14 min, 15 min, 16 min, 17 min, 20 min, 21 min, 24 min, 25 min, **41//** 3 min, 4 min, 5, 6, 7 min, 8 min, 13 min, 14 min, 15, 16, 17, 18 min, 21 min, 22 min, 23 min, 24, 25 min, **42//** 24 min, 25 min, **46//** 4 min, 5 min, 6 min, 7, 8, **47//** 8 min, 9 min, 10 min, 11, 12, 13, 14 min, 15 min, 16 min, 17, 18, 25	B46	77° 7’ 15.572’’E	30° 18’27.971’’N	49.68	188.72	0	11.27	199.99	Sand	13.58	08
				A48	77° 7’ 10.600’’E	30° 18’28.700’’N								
				B48	77° 7’ 4.800’’E	30° 18’27.100’’N								
				A49	77° 7’ 2.900’’E	30° 18’29.800’’N								
				B49	77° 7’ 0.600’’E	30° 18’28.600’’N								
				B50	77° 6’ 59.300’’E	30° 18’29.800’’N								
				A50	77° 6’ 58.300’’E	30° 18’35.400’’N								
				A51	77° 6’ 56.900’’E	30° 18’38.000’’N								

			min, **48//** 3 min, 4 min, 5, 6 min, 7 min, 9 min, 10 min, 11 min, 12 min, 19 min, 20 min, 21 min, **49//** 1, 2, 3, 4 min, 5 min, 7 min, 8 min, 9 min, 10 min	B51	77° 6' 54.900''E	30° 18'37.000''N								
				A52	77° 6' 53.700''E	30° 18'39.600''N								
				A53	77° 6' 52.000''E	30° 18'39.600''N								
				A54	77° 6' 50.000''E	30° 18'39.200''N								
				A55	77° 6' 47.300''E	30° 18'38.500''N								
				A56	77° 6' 45.500''E	30° 18'37.700''N								
				A57	77° 6' 44.400''E	30° 18'36.300''N								
				A58	77° 6' 47.000''E	30° 18'34.200''N								
				B52	77° 6' 50.200''E	30° 18'33.700''N								
				B53	77° 6' 50.900'E	30°18'29.500'' N								
				B54	77° 6' 47.000''E	30° 18'26.000''N								
				B55	77° 6' 42.900''E	30° 18'24.900''N								
				A59	77° 6' 41.100''E	30° 18'28.600''N								
				A60	77° 6' 35.500''E	30° 18'29.000''N								
				A61	77° 6' 32.300''E	30° 18'28.300''N								
				B56	77° 6' 32.500''E	30° 18'26.500''N								
				B57	77° 6' 31.100''E	30° 18'25.700''N								
				A62	77° 6' 29.800''E	30° 18'26.400''N								
				A63	77° 6' 23.907''E	30° 18'23.756''N								
				B58	77° 6' 26.500''E	30° 18'21.000''N								
				A64	77° 6' 17.200''E	30°18'25.200''N								
				A65	77° 6' 14.200''E	30° 18'26.000''N								
				A66	77° 6' 12.600''E	30° 18'26.300''N								

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				B59	77° 6’ 24.102’’E	30° 18’19.022’’N								
				A67	77° 6’ 8.407’’E	30° 18’28.249’’N								
				B60	77° 6’ 16.505’’E	30° 18’22.405’’N								
				B61	77° 6’ 11.801’’E	30° 18’25.167’’N								
				B62	77° 6’ 6.872’’E	30° 18’26.064’’N								
				A47	77° 7’ 13.316’’E	30° 18’29.621’’N								
		Binjalpur	**For Mining areas 2//**19/1, 19/2, 20 min, 21/1 min, 21/2, 22 min, **3//** 25/1 min, 25/2 min, **6//** 25/2 min, **7//** 3/1 min, 4/1 min, 4/2 min, 5/1, 5/2, 6 min, 7/1 min, 7/2, 8/1 min, 8/2, 9/1 min, 9/2 min, 11 min, 12/1 min, 12/2, 13/1 min, 14 min, 19/1 min, 19/2, 20/1 min, 20/2 min, 21/1 min, 21/2 min, 21/3 min, 22 min, **13//** 1 min, 10 min, 11 min , 20 min, 21 min, **14//** 5 min, 6 min, 15 min, 16 min, 25 min, **16//** 25 min, **17//** 5 min, 6 min, 15 min, 16 min, 17 min, 21 min, 22 min, 23 min, 24 min, 25 min, **18//** 1 min, 10 min, 11 min, 20 min, **30//** 1 min, 2 min, 3 min, 4 min, 5 min **For Ancillary areas 7//**25, **8//** 21, 22, **12//** 1, 2, 9, 10, 11, 12, **13//** 5, 6, 15	A37	77° 7’ 43.593’’E	30° 19’0.091’’ N	23.90		11.27			Sand		
				B36	77° 7’ 45.095’’E	30° 18’58.663’’N								
				B37	77° 7’ 41.100’’E	30° 18’54.900’’N								
				B38	77° 7’ 38.100’’E	30° 18’53.600’’N								
				B39	77° 7’ 34.700’’E	30° 18’52.800’’N								
				A39	77° 7’ 33.300’’E	30° 18’54.800’’N								
				A40	77° 7’ 29.200’’E	30° 18’50.800’’N								
				A41	77° 7’ 28.500’’E	30° 18’49.200’’N								
				B40	77° 7’ 29.800’’E	30° 18’47.800’’N								
				B41	77° 7’ 28.600’’E	30° 18’41.500’’N								
				A42	77° 7’ 25.900’’E	30° 18’42.500’’N								
				A43	77° 7’ 26.100’’E	30° 18’33.000’’N								
				B42	77° 7’ 28.400’’E	30° 18’30.600’’N								
				B43	77° 7’ 26.300’’E	30° 18’28.400’’N								
				B44	77° 7’ 24.700’’E	30° 18’26.700’’N								
				B45	77° 7’ 22.800’’E	30° 18’25.900’’N								
				A44	77° 7’ 22.900’’E	30° 18’27.800’’N								

				A45	77° 7’ 20.400’’E	30° 18’28.000’’N								
				A46	77° 7’ 17.000’’E	30° 18’29.900’’N								
				B46	77° 7’ 15.572’’E	30° 18’27.971’’N								
				A38	77° 7’ 38.164’’E	30° 18’57.211’’N								
				A47	77° 7’ 13.316’’E	30° 18’29.621’’N								
		Jafarpur	8// 25 min, 9// 4, 5min, 6 min, 7 min, 14 min, 15 min, 16 min, 17 min, 18 min, 22 min, 23 min, 24 min, 25 min, 21// 2 min 3 min, 4 min, 8 min, 9, 10 min, 11, 12, 13 min, 19 min, 20, 21, 22 min, **22//** 15, 16, 17, 24 min, 25, 24// 4 min, 5, 6, 7 min, 15 min, **25//** 1, 2 min, 9 min, 10, 11, 12 min, 19 min, 20 min, 21 min, 22 min, 23 min, **40//**2 min**,** 3 min, 7 min, 8 min, 9 min, 13 min, 14 min, 17/1 min, 18/1 min, 19 min, 20 min, 21 min, 22 min, **41//** 16 min, 23 min, 24 min, 25/1 min, **43//** 25 min **44//** 2 min, 3 min, 4 min, 5 min, 6, 7, 8, 9, 11, 12, 13, 14 min, 15 min, 17 min, 18, 19, 20, 21, 22, 23, 24, 25 min, **45//** 1 min, 2 min, 3, 4, 5, 7, 8, 9, min, 10, 11 min, **61//** 10 min, 11 min, 12 min, 13 min, 17 min, 18 min, 19, 20 min, 22 min, 23, 24 min, **62//**1 min, 2, 3, 4, 5 min, 6 min, 7, 8, 9 min, 10 min, 12 min, 13 min, 14/1 min, 14/2 min, 15, 16 min, **65//**, 6 min, 7 min, 8 min, 12 min, 13 min, 14 min, 15 min, 18 min, **66//** 1 min, 2 min, 3 min, 4 min, 8 min, 9, 10, 11 min, 12 min, 13 min	A9	77° 8’ 14.977’’E	30° 20’1.832’’ N	88.41		0			Sand		
				A10	77° 8’ 16.472’’E	30° 20’0.072’’ N								
				A11	77° 8’ 11.200’’E	30° 19’54.000’’N								
				A12	77° 8’ 6.524’’E	30° 19’51.190’’N								
				A13	77° 8’ 4.841’’E	30° 19’48.915’’N								
				A14	77° 8’ 2.887’’E	30° 19’46.406’’N								
				A15	77° 8’ 2.600’’E	30° 19’43.200’’N								
				A16	77° 8’ 4.100’’E	30° 19’41.700’’N								
				A17	77° 8’ 6.900’’E	30° 19’39.600’’N								
				A18	77° 8’ 9.300’’E	30° 19’35.800’’N								
				A19	77° 8’ 12.900’’E	30°19’31.600’’ N								
				A20	77° 8’ 12.900’’E	30° 19’29.800’’N								
				A21	77° 8’ 7.900’’E	30° 19’28.800’’N								
				A22	77° 8’ 2.800’’E	30° 19’27.000’’N								
				A23	77° 7’ 57.800’’E	30° 19’25.500’’N								
				A24	77° 7’ 53.500’’E	30° 19’25.000’’N								
				A25	77° 7’ 45.947’’E	30° 19’24.550’’N								
				A28	77° 7’ 40.370’’E	30° 19’17.202’’N								
				A29	77° 7’ 43.200’’E	30° 19’13.500’’N								
				A30	77° 7’ 49.500’’E	30° 19’10.700’’N								

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				A31	77° 7’ 55.000”E	30° 19’9.100” N								
				A32	77° 7’ 56.946”E	30° 19’7.337” N								
				A33	77° 7’ 56.100”E	30° 19’4.800” N								
				A34	77° 7’ 53.100”E	30° 19’4.100” N								
				A35	77° 7’ 50.900”E	30° 19’4.100” N								
				A36	77° 7’ 48.700”E	30° 19’4.300” N								
				A37	77° 7’ 43.593”E	30° 19’0.091” N								
				B9	77° 8’ 18.369”E	30° 20’5.247” N								
				B10	77° 8’ 19.800”E	30° 20’3.300” N								
				B11	77° 8’ 19.800”E	30° 19’59.900”N								
				B12	77° 8’ 18.200”E	30° 19’56.900”N								
				B13	77° 8’ 13.800”E	30° 19’53.700”N								
				B14	77° 8’ 12.400”E	30° 19’50.600”N								
				B15	77° 8’ 11.100”E	30° 19’45.100”N								
				B16	77° 8’ 10.600”E	30° 19’39.200”N								
				B17	77° 8’ 11.800”E	30° 19’35.800”N								
				B18	77°8’ 12.800”E	30° 19’35.400”N								
				B19	77° 8’ 15.200”E	30° 19’31.400”N								
				B20	77° 8’ 14.300”E	30° 19’29.000”N								
				B21	77° 8’ 13.100”E	30° 19’28.400”N								
				B22	77° 8’ 11.000”E	30° 19’28.300”N								
				B23	77° 8’ 5.500”E	30° 19’25.300”N								
				B24	77° 8’ 2.300”E	30° 19’23.900”N								
				B25	77° 7’ 50.900”E	30° 19’20.300”N								
				B26	77° 7’ 52.563”E	30° 19’13.615”N								

				B27	77° 8’ 0.700”E	30° 19’9.600” N								
				B28	77° 8’ 3.200”E	30° 19’6.300” N								
				B29	77° 8’ 1.100”E	30° 19’4.800” N								
				B30	77° 8’ 0.300”E	30° 19’3.200” N								
				B31	77° 7’ 58.300”E	30° 19’1.000” N								
				B32	77° 7’ 55.000”E	30° 19’0.500” N								
				B33	77° 7’ 52.300”E	30° 19’1.600” N								
				B34	77° 7’ 50.600”E	30° 19’2.500” N								
				B35	77° 7’ 48.900”E	30° 19’1.500” N								
				B36	77° 7’ 45.095”E	30° 18’58.663”N								
		Nurhad	**For Mining areas** 7// 2 min, 3 min, 8 min, 9 min, 10 min, 11 min, 12, 13 min, 18 min, 19, 20 min, 21 min, 22, 23 min, **17//** 1 min, 2, 3 min, 8, 9, 10 min, 11 min, 12 min, 13 min, 14 min, 17 min, 16 min, 18, 19 min, 22 min, 23 min, 24, 25 min, **18//** 21/1 min, 21/2 min, **21//** 1 min, 3 min, 4 min, 8 min, 9 min, 10, 11 min, 12 min, **22//** 3 min, 4, 5/1, 5/2, 6, 7/1, 7/2, 15 min, 51// 11 min, 52// 15 min, 16 min, 25 min	A1	77° 7’ 55.814”E	30° 20’24.684”N	26.73		0			Sand			
				A2	77° 7’ 54.946”E	30° 20’18.469”N								
				A3	77° 7’ 55.700”E	30° 20’11.700”N								
				A4	77° 7’ 59.400”E	30° 20’6.500” N								
				A5	77° 8’ 2.400”E	30° 20’3.700” N								
				A6	77° 8’ 6.700”E	30° 20’1.600” N								
				A7	77° 8’ 9.600”E	30° 20’1.700” N								
				A8	77° 8’ 12.400”E	30° 20’3.800” N								
				A9	77° 8’ 14.977”E	30° 20’1.832” N								
				A25	77° 7’ 45.947”E	30° 19’24.550”N								
				A26	77° 7’ 41.600”E	30° 19’22.800”N								
				A27	77° 7’ 40.600”E	30° 19’21.600”N								
				A28	77° 7’ 40.370”E	30° 19’17.202”N								
				B1	77° 7’ 59.246”E	30° 20’24.921”N								

				B2	77° 7’ 58.300”E	30° 20’19.000”N								
				B3	77° 7’ 58.500”E	30° 20’12.700”N								
				B4	77° 7’ 3.300”E	30° 20’9.400” N								
				B5	77° 8' 5.200”E	30° 20’8.600” N								
				B6	77° 8’ 8.500”E	30° 20’4.700” N								
				B7	77° 8’ 11.400”E	30° 20’4.900” N								
				B8	77° 8’ 14.300”E	30° 20’6.500” N								
				B9	77° 8’ 18.369”E	30° 20’5.247” N								
5.	**Paplotha-Mullana**	Paplotha	**For Mining areas 20//** 8 min, 13 min, 14 min, 17 min, 24/2 min, 25 min, **26//** 11 min, 20 min, 21 min, **27//** 5/2 min, 6 min, 15 min, 16 min, **36//** 1 min , 9 min, 10 min, 11 min, 12 min, 19 min, 20 min, 21, 22 min, **41//** 1 min 18 min, 19 min, 20 min, 21 min, 22 min, 23 min, 24 min, 25 min, **42//** 5 min, 6 min, 15 min, 16 min, 25 min **For Ancillary areas 26//** 3, 4, 5, 6, 7, 8	C1	77°1’28.600” E	30°17’21.700”N	3.95	119.04	6.0	38.65	157.69	Sand	8.57	08
				C2	77°1’29.700” E	30°17’19.000”N								
				C3	77°1’31.536” E	30°17’16.264”N								
				C4	77°1’32.800” E	30°17’14.100”N								
				C5	77°1’33.200” E	30°17’11.400”N								
				C6	77°1’34.600” E	30°17’8.700”N								
				C7	77°1’35.100” E	30°17’5.100”N								
				C8	77°1’35.086” E	30°17’3.105”N								
				C9	77°1’36.400” E	30°17’2.300”N								
				C10	77°1’37.200” E	30°16’59.900”N								
				C11	77°1’37.301” E	30°16’58.095”N								
				C12	77°1’36.700” E	30°16’56.000”N								
				C13	77°1’34.900” E	30°16’54.000”N								
				C14	77°1’33.779” E	30°16’52.479”N								
				C15	77°1’32.369” E	30°16’50.390”N								
				C16	77°1’32.300” E	30°16’48.200”N								
				C17	77°1’33.418” E	30°16’46.637”N								
				C18	77°1’34.011” E	30°16’46.594”N								

				C19	77°1'36.000" E	30°16'46.700"N								
				C20	77°1'38.200" E	30°16'47.000"N								
				C21	77°1'41.200" E	30°16'46.500"N								
				C22	77°1'43.441" E	30°16'45.893"N								
				C23	77°1'43.959" E	30°16'44.596"N								
				D1	77°1'29.000" E	30°17'22.000"N								
				D2	77°1'30.000" E	30°17'19.100"N								
				D3	77°1'31.917" E	30°17'16.516"N								
				D4	77°1'33.500" E	30°17'14.100"N								
				D5	77°1'33.400" E	30°17'12.000"N								
				D6	77°1'33.958" E	30°17'10.779"N								
				D7	77°1'35.200" E	30°17'8.900"N								
				D8	77°1'35.571" E	30°17'5.478"N								
				D9	77°1'35.600" E	30°17'3.800"N								
				D10	77°1'36.800" E	30°17'2.700"N								
				D11	77°1'37.700" E	30°16'59.900"N								
				D12	77°1'37.774" E	30°16'58.002"N								
				D13	77°1'36.870" E	30°16'55.421"N								
				D14	77°1'35.293" E	30°16'53.847"N								
				D15	77°1'34.310" E	30°16'52.298"N								
				D16	77°1'32.883" E	30°16'50.310"N								
				D17	77°1'32.822" E	30°16'48.300"N								
				D18	77°1'33.941" E	30°16'46.856"N								
				D19	77°1'35.885" E	30°16'47.032"N								
				D20	77°1'38.348" E	30°16'47.389"N								
				D21	77°1'41.407" E	30°16'46.912"N								

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				D22	77°1'43.824" E	30°16'46.488"N								
				D23	77°1'44.600" E	30°16'45.000"N								
		Mullana	**For Mining areas 17//** 6 min, 15 min, 16 min, **18//** 10, 11 min, 20 min, **19//** 1 min, 2 min, 3 min, **31//** 22 min, 23 min, 24 min, 25 min, **35//** 2 min, 3, 4, 8 min, 9 min **For Ancillary areas 31//** 11 **32//** 14, 15, 16/2, 17	A1	77° 3' 45.019"E	30° 17'24.823"N	8.88		4.40			Sand		
				A2	77° 3' 41.800"E	30° 17'23.800"N								
				A3	77° 3' 34.300"E	30° 17'23.100"N								
				A4	77° 3' 28.900"E	30° 17'21.100"N								
				A5	77° 3' 24.686"E	30° 17'17.058"N								
				B1	77° 3' 47.958"E	30° 17'22.631"N								
				B2	77° 3' 42.769"E	30° 17'21.005"N								
				B3	77° 3' 35.504"E	30° 17'20.192"N								
				B4	77° 3' 30.100"E	30° 17'18.400"N								
				B5	77° 3' 27.308"E	30° 17'15.515"N								
		Hema Majra	**For Mining areas 34//** 16 min, 22 min, 23 min, 24 min, 25 min, **35//** 7 min, 12 min, 13 min, 14 min, 18 min, 19 min, 20 min, 21 min, 22 min, **44//** 1/1 min, 1/2 min, 2 min, 3 min, 10 min, **45//** 5 min, 6/1 min, 6/2 min, 7 min, 8 min, 12 min, 13/1 min, 13/2 min, 14/1 min, 18 min, 19 min, 20 min, 21 min, 22 min, **46//** 25/2 min, **50//** min, 6 min, 14 min, 15 min, 16/1 min, 17 min, 23 min, 24/1 min, 24/2 min, **51//** 1 min, **60//** 1 min, 2 min, 3/1 min, 3/2 min, 4/1 min, 4/2/1 min, 4/2/2 min, 9 min, 10 min, **61//** 5 min, 6 min, 15 min **For Ancillary area 44//** 12, 13, 14, 17, 18, 19	E1	77°0'15.330" E	30°16'3.076" N	14.50		5.75			Sand		
				E2	77°0'7.959" E	30°15'59.838"N								
				E3	77°0'1.819" E	30°15'58.740"N								
				E4	76°59'48.430" E	30°15'54.620"N								
				E5	76°59'40.456" E	30°15'47.987"N								
				E6	77°59'37.906" E	30°15'42.303"N								
				E7	77°59'36.345" E	30°15'38.511"N								
				E8	77°59'34.665" E	30°15'37.712"N								
				E9	77°59'30.319" E	30°15'37.159"N								
				E10	77°59'26.988" E	30°15'36.952"N								
				E11	77°59'25.618" E	30°15'36.215"N								

				F1	77°0'15.800" E	30°16'2.300"N								
				F10	77°59'27.700" E	30°15'35.900"N								
				F11	77°59'27.231" E	30°15'33.350"N								
				F2	77°0'8.200" E	30°15'58.500"N								
				F3	77°0'2.100" E	30°15'57.800"N								
				F4	76°59'49.351" E	30°15'53.162"N								
				F5	76°59'41.200" E	30°15'47.400"N								
				F6	76°59'39.000" E	30°15'41.900"N								
				F7	76°59'37.100" E	30°15'37.200"N								
				F8	77°59'35.528" E	30°15'36.340"N								
				F9	77°59'30.100" E	30°15'36.000"N								
		Harda	**For Mining areas 28//** 6, 7 min, 14/1 min, 42/2 min, 15/1 min, 15/2 min, 16 min, 17/1 min, 18/2 min, 23 min, 24 min, **31//** 2 min, 3 min, 8 min, 9 min, 11/1 min, 11/2 min, 12 min, 20 min, 21/1 min, **32//** 16 min, 25/1 min, 25/2 min, 25/3 min, **46//** 4 min, 5 min, 7 min, 8 min, 13 min, 12 min, 19 min **For Ancillary areas 27//** 12, 13, 14, 15, 16, 17, 18, 19	A1	76°59'25.618" E	30°15'36.215"N	6.39		8.0			Sand			
				A2	76°59'24.075" E	30°15'32.012"N								
				A3	76°59'19.235" E	30°15'25.623"N								
				A4	76°59'12.517" E	30°15'18.404"N								
				A5	76°59'8.499" E	30°15'15.509"N								
				A6	76°59'5.605" E	30°15'12.571"N								
				B1	76°59'27.231" E	30°15'33.350"N								
				B2	76°59'20.295" E	30°15'25.160"N								
				B3	76°59'13.300" E	30°15'17.800"N								
				B4	76°59'10.503" E	30°15'15.610"N								
				B5	76°59'7.800" E	30°15'13.500"N								
		Ghelri	**For Mining areas**	A6	76°59'5.605" E	30°15'12.571"N	23.67		0			Sand		

			430 min, 433 min, 429 min, 428 min, 427 min, 420 min, 412 min, 413 min, 405 min, 406 min, 407 min, 398 min, 399 min, 400 min, 401 min, 390 min, 391 min, 392 min, 387 min, 388 min, 377 min, 378 min, 374 min, 375 min, 376 min, 365 min, 368 min, 369 min, 373 min, 372 min, 370 min, 371 min, 116 min, 117 min, 115 min, 118 min, 119 min, 120 min, 123 min, 121 min, 133 min, 134 min, 132 min, 135 min, 131 min, 130 min, 136 min, 137 min, 266 min, 267 min, 268 min, 265 min, 270 min, 264 min, 271 min, 276/2 min, 263 min, 272 min, 275 min, 262 min, 273 min, 227 min, 231 min, 236 min, 237 min, 244 min, 235 min, 245 min,	A7	76°59'3.299" E	30°15'9.450"N								
				A8	76°59'2.236" E	30°15'5.989"N								
				A9	76°59'2.509" E	30°15'3.088"N								
				A10	76°59'3.726" E	30°15'1.652"N								
				A11	76°59'6.295" E	30°15'0.419"N								
				A12	76°59'7.698" E	30°14'57.338"N								
				A13	76°59'7.719" E	30°14'55.463"N								
				A14	76°59'6.451" E	30°14'54.401"N								
				A15	76°59'4.292" E	30°14'53.997"N								
				A16	76°58'59.334" E	30°14'54.853"N								
				A17	76°58'56.092" E	30°14'54.579"N								
				A18	76°58'54.087" E	30°14'51.839"N								
				A19	76°58'52.745" E	30°14'44.125"N								
				A20	76°58'53.784" E	30°14'40.672"N								
				A21	76°58'55.824" E	30°14'37.754"N								
				A22	76°58'52.762" E	30°14'35.201"N								
				A25	76°58'42.809" E	30°14'32.948"N								
				A26	76°58'35.961" E	30°14'32.383"N								
				B25	76°58'42.144" E	30°14'31.750"N								
				B26	76°58'39.635" E	30°14'31.622"N								
				B27	76°58'32.467" E	30°14'31.470"N								
				A6	76°59'5.605" E	30°15'12.571"N								
		Sabga	**For Mining areas 76//** 15 min, 16 min, 24 min, 25 min, **77//** 9 min, 10/1 min, 10/2 min, 11 min, 12 min, 20 min, 21 min,	C1	76°56'31.400" E	30°12'50.700"N	9.98		5.15			Sand		
				C2	76°56'29.800" E	30°12'50.000"N								

			87// 4 min, 5 min, 6 min, 7 min, 14/1 min, 14/2 min, 15/1 min, 15/2 min, 17 min, 23 min, 24 min, **95//** 14 min, 15/1 min, 15/2 min, 16/1 min, 17 min, 18 min, 23 min, **96//** 2/2 min, 3 min, 4 min, 8 min, 9/1 min, 9/2 min, 10/2 min, 10/4 min, 11 min **For ancillary area 76//**21, 22, 23, **87//**1, 2, 3/1	C3	76°56'29.700" E	30°12'48.900"N								
				C4	76°56'26.400" E	30°12'43.900"N								
				C5	76°56'25.300" E	30°12'40.000"N								
				C6	76°56'25.200" E	30°12'37.000"N								
				C7	76°56'23.700" E	30°12'34.800"N								
				C8	76°56'21.700" E	30°12'32.900"N								
				C9	76°56'19.500" E	30°12'31.700"N								
				C10	76°56'16.700" E	30°12'30.500"N								
				C11	76°56'11.400" E	30°12'28.300"N								
				C12	76°56'9.399" E	30°12'26.430"N								
				D1	76°56'32.684" E	30°12'49.768"N								
				D2	76°56'30.277" E	30°12'46.092"N								
				D3	76°56'27.683" E	30°12'42.968"N								
				D4	76°56'27.026" E	30°12'39.746"N								
				D5	76°56'26.359" E	30°12'36.010"N								
				D6	76°56'24.576" E	30°12'33.905"N								
				D7	76°56'22.442" E	30°12'32.046"N								
				D8	76°56'19.927" E	30°12'30.914"N								
				D9	76°56'17.007" E	30°12'29.342"N								
				D10	76°56'12.213" E	30°12'27.076"N								
				D11	76°56'10.422" E	30°12'26.018"N								
		Rain Majra	**For Mining areas** 2// 21 min, 22 min, 23 min, 4// 1 min, 2 min, 5// 4 min, 5 min, 6 min, 7	C12	76°56'9.399" E	30°12'26.430"N	6.32		0			Sand		
				C13	76°56'7.643" E	30°12'25.443"N								

			min, 8 min, 9 min, 10/1 min, 11 min, 12 min, 6// 14 min, 15 min, 16 min, 17 min, 18 min, 19 min, 21 min, 22 min, 23 min, 7// 25 min, 8// 4 min, 5 min, 9// 1 min	C14	76°56'3.808" E	30°12'23.866"N								
				C15	76°56'1.628" E	30°12'23.369"N								
				C16	76°55'52.985" E	30°12'21.420"N								
				C12	76°56'9.399" E	30°12'26.430"N								
				C18	76°55'35.539" E	30°12'14.498"N								
				C17	76°55'45.584" E	30°12'18.268"N								
				D11	76°56'10.422" E	30°12'26.018"N								
				D12	76°56'4.301" E	30°12'23.136"N								
				D14	76°55'53.267" E	30°12'20.452"N								
				D16	76°55'36.547" E	30°12'13.893"N								
				D15	76°55'45.866" E	30°12'17.300"N								
				D13	76°55'59.024" E	30°12'22.067"N								
		Tandwal	**For Mining areas** 3 min, 4 min, 7 min, 8 min, 9/2 min, 10/2 min, 11 min, 12 min, 18 min, 84 min	A22	76°58'52.762" E	30°14'35.201"N	3.33		0			Sand		
				A23	76°58'50.329" E	30°14'34.194"N								
				A24	76°58'46.751" E	30°14'33.457"N								
				A25	76°58'42.809" E	30°14'32.948"N								
				B22	76°58'54.300" E	30°14'34.400"N								
				B23	76°58'51.100" E	30°14'33.400"N								
				B24	76°58'47.400" E	30°14'32.400"N								
				B25	76°58'42.144" E	30°14'31.750"N								
		Panjail	**For Mining areas 33//** 18 min, 19/1 min, 19/2 min, 20 min, 21 min, 22 min, 23 min, 24 min, 25 min, **34//** 16 min, 17 min, 18 min, 22/2 min, 23 min, 24 min, **37//** 2/1 min, 2/2 min, 3 min, 9	A1	76°55'26.216" E	30°12'16.445"N	14.37		6.0			Sand		
				A2	76°55'23.904" E	30°12'18.348"N								
				A3	76°55'17.300" E	30°12'23.100"N								

			min, 12 min, **38//** 5 min, **39//** 1 min, 2 min, 8 min, 9 min, 10 min, 12 min, 13 min, 14/1 min, 16 min, 17 min, 18 min, 24 min, 25 min, **40//** 21 min, **43//** 1 min, 2 min, 8 min, 9 min, 10 min, 12 min, 13 min, 14 min, 16 min, 17 min, 25 min, **44//** 5 min, **For Ancillary areas 43//** 4, 5, 6, 7, **42//** 1, 10	A4	76°55'13.200" E	30°12'26.100"N								
				A5	76°55'6.866" E	30°12'30.972"N								
				A6	76°55'1.329" E	30°12'35.120"N								
				A7	76°54'58.652" E	30°12'36.551"N								
				A8	76°54'51.140" E	30°12'38.097"N								
				A9	76°54'46.200" E	30°12'38.300"N								
				A10	76°54'43.150" E	30°12'37.242"N								
				A11	76°54'40.400" E	30°12'35.700"N								
				A12	76°54'38.775" E	30°12'31.994"N								
				B1	76°55'25.253" E	30°12'15.883"N								
				B2	76°55'21.621" E	30°12'18.675"N								
				B3	76°55'16.598" E	30°12'22.360"N								
				B4	76°55'12.382" E	30°12'25.309"N								
				B5	76°55'5.715" E	30°12'30.494"N								
				B6	76°55'0.669" E	30°12'34.494"N								
				B7	76°54'57.154" E	30°12'35.947"N								
				B8	76°54'51.082" E	30°12'37.136"N								
				B9	76°54'46.416" E	30°12'37.341"N								
				B10	76°54'41.819" E	30°12'34.968"N								
				B11	76°54'39.996" E	30°12'31.170"N								
		Dinarpur	**For Mining areas** 29// 12 min, 17 min, 18 min, 19 min, 22 min, 23 min, 24 min, 25 min, 30// 10 min, 11 min, 20 min, 31// 4 min, 5 min, 6 min, 15 min, 16 min, 24 min, 25 min, 48// 3 min, 4/1	A12	76°54'38.475" E	30°12'31.994"N	16.83		0			Sand		
				A13	76°54'39.223" E	30°12'29.169"N								
				A14	76°54'41.469" E	30°12'27.136"N								

			min, 4/2 min, 5 min, 7/3 min, 7/4 min, 7/5 min, 8 min, 9 min, 11 min, 12 min, 13 min, 19 min, 20/1 min, 20/2 min, 21 min, 47// 16/2 min, 20 min, 21 min, 22 min, 23 min, 24 min, 25 min, 51// 1 min, 2 min, 3 min, 4 min, 46// 7 min, 8/1 min, 13 min, 14 min, 15 min, 16 min	A15	76°54'45.800" E	30°12'25.600"N								
				A16	76°54'46.900" E	30°12'23.000"N								
				A17	76°54'46.899" E	30°12'19.664"N								
				A18	76°54'45.477" E	30°12'16.494"N								
				A19	76°54'43.000" E	30°12'14.200"N								
				A20	76°54'39.854" E	30°12'11.794"N								
				A21	76°54'36.486" E	30°12'9.612"N								
				A22	76°54'31.000" E	30°12'7.100"N								
				A23	76°54'28.024" E	30°12'7.104"N								
				A24	76°54'25.800" E	30°12'8.000"N								
				A25	76°54'21.431" E	30°12'11.752"N								
				A26	76°54'18.830" E	30°12'13.400"N								
				A27	76°54'18.132" E	30°12'13.372"N								
				A28	76°54'17.250" E	30°12'12.608"N								
				A29	76°54'16.016" E	30°12'10.714"N								
				B11	76°54'39.996" E	30°12'31.170"N								
				B12	76°54'41.371" E	30°12'28.384"N								
				B13	76°54'44.783" E	30°12'27.536"N								
				B14	76°54'46.785" E	30°12'26.140"N								
				B15	76°54'48.115" E	30°12'23.529"N								
				B16	76°54'49.234" E	30°12'22.519"N								
				B17	76°54'48.451" E	30°12'18.848"N								
				B18	76°54'46.946" E	30°12'16.146"N								

				B19	76°54'44.581" E	30°12'13.247"N							
				B20	76°54'37.914" E	30°12'8.704"N							
				B21	76°54'34.480" E	30°12'6.837"N							
				B22	76°54'31.199" E	30°12'5.981"N							
				B23	76°54'27.664" E	30°12'5.639"N							
				B24	76°54'25.763" E	30°12'6.132"N							
				B25	76°54'24.966" E	30°12'6.847"N							
				B26	76°54'20.968" E	30°12'10.960"N							
				B27	76°54'18.474" E	30°12'12.608"N							
				B28	76°54'17.215" E	30°12'11.728"N							
				B29	76°54'16.564" E	30°12'10.254"N							
		Hasanpur	**For Mining areas 2//** 18 min, 19 min, 22 min, 23/1 min, **4//** 2/1 min, 2/2 min, 3/1 min, 9 min, 12/1 min, 12/2 min, 19 min, 22/1 min, 22/2 min, **11//** 2 min, 9 min, 12 min, 19/1 min, 19/2 min, 22 min, 23 min, **14//** 2 min, 3 min, 8 min, 9 min, 12 min, 13 min, 18 min, 19 min, 23 min, **20//** 3 min, 8 min, 9 min, 12 min, 13 min, 19 min, 21 min, 22 min, **21//** 1 min, 2 min, 10 min, 11 min, **For Ancillary areas 3//** 20, 21, **4//** 17, 24, 25	A29	76°54'16.016" E	30°12'10.714"N	10.82		3.35			Sand		
				A30	76°54'14.757" E	30°12'5.436"N							
				A31	76°54'13.571" E	30°11'58.264"N							
				A32	76°54'14.308" E	30°11'47.517"N							
				A33	76°54'15.265" E	30°11'43.149"N							
				A34	76°54'15.483" E	30°11'35.300"N							
				A35	76°54'13.787" E	30°11'30.417"N							
				A36	76°54'10.032" E	30°11'22.204"N							
				B29	76°54'16.564" E	30°11'10.254"N							
				B30	76°54'15.717" E	30°11'4.906"N							
				B31	76°54'14.838" E	30°11'57.796"N							
				B32	76°54'15.590" E	30°11'47.373"N							

				B33	76°54'16.405" E	30°11'43.452"N								
				B34	76°54'16.651" E	30°11'35.005"N								
				B35	76°54'14.763" E	30°11'29.980"N								
				A29	76°54'16.016" E	30°12'10.714"N								
				B36	76°54'10.950" E	30°11'21.607"N								
6.	**Rayawali Sadhanpur**	Rayawali	**44**/2/1/2 min	A28	76°55'50.603" E	30°28'3.065"N	2.0	77.68	0	12.61	90.29	Sand	5.59	08
				A29	76°55'54.723" E	30°27'55.149"N								
				Z1	76°55'49.587" E	30°28'2.914"N								
				Z4	76°55'54.595" E	30°27'53.355"N								
		Sadhanpur	**For Mining areas** 16 min, 17 min, 75 min, 14 min, 19 min, 23 min, 38 min, 49 min, 66 min, 191 min, 67 min, 183 min, 181 min, 101 min, 102 min, 103 min, 104 min	A30	76°56'1.085" E	30°27'49.807"N	9.99		0			Sand		
				A31	76°56'3.611" E	30°27'46.279"N								
				A32	76°56'4.043" E	30°27'44.187"N								
				A33	76°56'2.738" E	30°27'40.482"N								
				A34	76°56'0.834" E	30°27'39.601"N								
				A35	76°55'56.999" E	30°27'39.269"N								
				A36	76°55'51.979" E	30°27'40.313"N								
				Z5	76°55'58.967" E	30°27'49.416"N								
				Z6	76°56'0.088" E	30°27'49.212"N								
				Z7	76°56'2.807" E	30°27'43.768"N								
				Z8	76°55'58.854" E	30°27'40.498"N								
				Z9	76°55'50.874" E	30°27'41.402"N								
		Jatwar	**For Mining areas** **4//,** 17 min, 18 min, 23 min, **6//**, 3 min, 8 min, 13 min, 17 min, 18 min, 23 min, 24 min, **17//**, 6	A37	76°55'49.300" E	30°27'37.700"N	39.10		12.61			Sand		
				A38	76°55'48.800" E	30°27'28.800"N								

			min, 7 min, 13 min, 14 min, **18//**, 1 min, 2 min, 3 min, 4 min, 5 min, 6 min, 7 min, 8 min, 9 min, 10/1, 10/2, **28//**, 21 min, **29//**, 18 min, 19 min, 20 min, 21, 22, 23, 24 min, 25 min, **30//**, 16 min, 25 min, **37//**, 25 min, **38//**, 4 min, 5, 6 min, 7 min, **38//**, 12 min, 13 min, 14 min, 15 min, 18 min, 19 min, 20 min, 21 min, **39//**, 1 min, 2 min, 3 min, 4 min, 5 min, **40//**, 1 min, 2 min, 3 min, 4 min, 5 min, **61//**, 1 min, 21 min, 22 min, **62//**, 4 min, 5 min, 6 min, 7 min, 13 min, 14 min, 17 min, 18 min, 23 min, 24 min, 25 min, **67//**, 1 min, 2 min, 3 min, 4 min, 6 min, 7, 8, 14 min, 15 min, 16 min, **68//,** 10 min, 11 min, 12 min, 19 min, 20 , 22 min, 23 min, **109//**, 17 min, 23 min, 24 min, 25 min, **108//**, 21 min, **111//**, 5 min, **112//**, 1 min, 2 min, 3 min, 8 min, 13 min, 14 min, 17 min, 18 min, 23 min, 24 min, **128//**, 2 min, 3 min **For Ancillary areas 40//** 24, 25, **41//** 21, 22, **59//** 4, 5, 6, 7, 14, 15, **58//** 1/1, 1/2, 9, 10/1, 10/2,	A39	76°55'50.700" E	30°27'27.100"N									
				A40	76°55'51.600" E	30°27'25.300"N									
				A41	76°55'51.700" E	30°27'24.000"N									
				A42	76°55'48.700" E	30°27'23.600"N									
				A43	76°55'41.700" E	30°27'23.000"N									
				A44	76°55'38.600" E	30°27'22.400"N									
				A52	76°55'13.900" E	30°27'5.700"N									
				A53	76°55'7.700" E	30°27'5.500"N									
				A54	76°54'59.200" E	30°27'7.100"N									
				A55	76°54'51.600" E	30°27'5.800"N									
				A56	76°54'50.000" E	30°27'3.900"N									
				A57	76°54'47.481" E	30°27'2.566"N									
				A58	76°54'45.599" E	30°27'1.571"N									
				A59	76°54'43.500" E	30°27'0.600"N									
				A60	76°54'41.000" E	30°26'59.300"N									
				A61	76°54'38.500" E	30°26'56.600"N									
				A62	76°54'34.900" E	30°26'53.800"N									
				A63	76°54'34.100" E	30°26'49.800"N									
				A64	76°54'39.400" E	30°26'49.500"N									
				A66	76°54'56.200" E	30°26'39.900"N									
				A77	76°55'8.537" E	30°26'7.123"N									
				A78	76°55'9.615" E	30°26'5.955"N									
				A79	76°55'11.390" E	30°26'1.704"N									

				A80	76°55'8.755" E	30°25'57.469"N									
				Z10	76°55'48.400" E	30°27'38.000"N									
				Z11	76°55'47.800" E	30°27'28.800"N									
				Z12	76°55'49.600" E	30°27'27.000"N									
				Z13	76°55'49.900" E	30°27'24.800"N									
				Z14	76°55'41.700" E	30°26'24.200"N									
				Z15	76°55'38.300" E	30°27'23.000"N									
				Z22	76°55'13.600" E	30°27'6.700"N									
				Z23	76°55'8.400" E	30°27'6.700"N									
				Z24	76°54'58.600" E	30°27'9.100"N									
				Z25	76°54'54.200" E	30°27'10.600"N									
				Z26	76°54'51.100" E	30°27'9.900"N									
				Z27	76°54'49.000" E	30°27'8.200"N									
				Z28	76°54'47.300" E	30°27'4.100"N									
				Z29	76°54'41.500" E	30°27'1.100"N									
				Z30	76°54'40.500" E	30°27'0.200"N									
				Z31	76°54'36.600" E	30°26'57.700"N									
				Z32	76°54'33.900" E	30°26'55.100"N									
				Z33	76°54'32.100" E	30°26'51.100"N									
				Z34	76°54'32.900" E	30°26'49.300"N									
				Z35	76°54'34.900" E	30°26'48.400"N									
				Z36	76°54'38.700" E	30°26'48.200"N									
				Z37	76°54'50.600" E	30°26'41.400"N									

				Z45	76°55'3.009" E	30°26'8.112"N								
				Z46	76°55'7.698" E	30°26'6.547"N								
				Z47	76°55'9.131" E	30°26'5.177"N								
				Z48	76°55'10.521" E	30°26'1.755"N								
				Z49	76°55'7.201" E	30°25'57.877"N								
		Samru	**For Mining areas** 33//, 2 min	A45	76°55'34.500" E	30°27'20.600"N	5.02		0			Sand		
				A46	76°55'62.200" E	30°27'18.400"N								
				A47	76°55'31.400" E	30°27'15.400"N								
				A48	76°55'30.100" E	30°27'13.200"N								
				A49	76°55'27.600" E	30°27'10.700"N								
				A50	76°55'24.900" E	30°27'9.300"N								
				A51	76°55'17.500" E	30°27'6.400"N								
				Z16	76°55'34.300" E	30°27'21.300"N								
				Z17	76°55'31.300" E	30°27'19.300"N								
				Z18	76°55'30.300" E	30°27'15.100"N								
				Z19	76°55'26.400" E	30°27'11.700"N								
				Z20	76°55'22.000" E	30°27'8.900"N								
				Z21	76°55'17.600" E	30°27'7.500"N								
		Khera Jatan	**For Mining areas** 27 min	A72	76°54'39.040" E	30°26'26.988"N	3.0		0			Sand		
				A73	76°54'37.447" E	30°26'25.335"N								
				A74	76°54'34.776" E	30°26'24.095"N								
				Z41	76°54'39.125" E	30°26'28.283"N								
				Z42	76°54'35.091" E	30°26'25.796"N								

				Z43	76°54'35.011" E	30°26'24.193"N								
		Bodyo	**For Mining areas 1//**, 16 min, 25 min, **2//,** 20, 21, 22 min, **4//**, 1, 2 min, 9 min, 10 min, 11 min, 20 min, **5//**, 5 min, 6 min, 15 min, 16 min, 25 min, **6//**, 5 min, 29/4 min, 29/3 min, 31 min, 23 min, 24 min, **11//**, 3 min, 4 min, 5 min, 6 min, **10//**, 1 min, 10 min, 11 min, 12 min, 28/9 min, 28/10 min	A65	76°54'51.685" E	30°26'33.322"N	17.15		0			Sand		
				A67	76°54'53.600" E	30°26'35.000"N								
				A68	76°54'50.024" E	30°26'30.639"N								
				A69	76°54'47.541" E	30°26'26.628"N								
				A70	76°54'44.792" E	30°26'24.201"N								
				A71	76°54'43.460" E	30°26'24.027"N								
				A75	76°54'57.910" E	30°26'11.858"N								
				Z38	76°54'49.100" E	30°26'33.500"N								
				Z39	76°54'45.535" E	30°26'27.703"N								
				Z40	76°54'42.243" E	30°26'26.850"N								
				Z44	76°54'56.444" E	30°26'10.994"N								
		Tepla	**For Mining areas** 2//, 14 min, 16, 17 min, 24 min, 25, 11//, 5 min	Z2	76°55'50.603" E	30°27'59.565"N	1.42		0			Sand		
				Z3	76°55'51.719" E	30°27'57.080"N								
				Z4	76°55'54.595" E	30°27'53.355"N								
7	**Gadauli-Ambli**	Gada-uli	**For Mining areas 135//,** 5 min, 6 min, 14 min, 15, 16, 17 min, 23 min, 24 min, 25, **136//,** 1 min, 2 min, 3 min, 9 min, 10 min, 11 min, 12 min, 20 min, 21 min, **146//**, 1 min, 10 min, 11 min, 20 min, 21 min, **147//**, 3 min, 4, 5, 6, 7, 8 min, 13 min, 14, 15, 16, 17 min, 18 min, 24 min, 25, **154//**, 4 min, 5, 6 min, 7 min, 13 min, 14, 15 min, 16 min, 17 min, 18 min, 19 min, 21 min, 22 min, 23 min, 24 min, 25 min, **155//**, 1 min, **167//,** 1, 2, 3, 4 min, 5 min, 7 min, 8 min, 9, 10, 11 min, 12 min, 13 min, **168//**, 1, 2 min, 3 min, 4 min, 5 min, 6, 7, 8, 9, 13	A12	77°9'56.214" E	30°22'39.063"N	48.21	83.59	7.80	15.50	99.09	Sand	6.01	08
				A13	77°9'52.972" E	30°22'34.741"N								
				A14	77°9'50.587" E	30°22'29.935"N								
				A15	77°9'50.421" E	30°22'25.477"N								
				A16	77°9'50.910" E	30°22'21.192"N								
				A17	77°9'49.466" E	30°22'15.752"N								
				A18	77°9'49.176" E	30°22'13.115"N								
				A19	77°9'47.497" E	30°22'9.861"N								
				A20	77°9'45.015" E	30°22'7.478"N								

			min, 14 min, 15 min, **152//,** 25 min, **153//**, 21 min **For Ancillary areas 134//** 6, 15, 16, 25, **135//** 10, 11, 20, 21	A21	77°9'40.715" E	30°22'5.671"N								
				A22	77°9'38.718" E	30°22'5.528"N								
				A23	77°9'34.911" E	30°22'5.887"N								
				A24	77°9'30.779" E	30°22'6.699"N								
				Z	77°9'23.422" E	30°22'13.096"N								
				Y	77°9'32.003" E	30°22'9.341"N								
				X	77°9'38.584" E	30°22'11.408"N								
				W	77°9'41.699" E	30°22'14.388"N								
				V	77°9'44.843" E	30°22'16.825"N								
				U	77°9'45.954" E	30°22'18.970"N								
				T	77°9'45.852" E	30°22'22.925"N								
				S	77°9'44.343" E	30°22'23.956"N								
				R	77°9'43.330" E	30°22'29.148"N								
				Q	77°9'47.411" E	30°22'34.419"N								
				P	77°9'49.260" E	30°22'39.693"N								
		Ambli	**For Mining areas 20//**, 17 min, 24 min, **36//,** 4 min, 7 min, 14, 13 min, 17, 18 min, 23 min, 24, **38//,** 3 min, 4, 5, 6, 7, 8 min, 13 min, 14, 15 min, 16 min, 17 min, 18 min, 19 min, 22 min, 23 min, 24 min, **54//,** 2 min, 3 min, 4 min, 8 min, 9 min, 10 min, 11 min, 12, 13 min, 18 min, 19, 20 min, 21 min, 22, 23, 24 min, **56//**, 11 min, 19 min, 20 min, 21 min, 22 min, 23 min, **57//**, 2 min, 3, 4 min, 5 min, 6 min, 7, 8 min, 9 min, 13 min, 14 min, 15, 16 min, 17 min, **74//**, 1 min, 2 min, 3 min, **For Ancillary areas 21//** 17, 18, 19, 20, 21, 22, 23, 24	A	77°10'26.792" E	30°25'1.217"N	35.38		7.70			Sand		
				B	77°10'25.957" E	30°24'53.852"N								
				C	77°10'25.052" E	30°24'49.006"N								
				D	77°10'22.346" E	30°24'38.486"N								
				E	77°10'20.288" E	30°24'34.790"N								
				F	77°10'19.286" E	30°24'32.126"N								
				G	77°10'20.338" E	30°24'27.276"N								
				H	77°10'22.529" E	30°24'23.995"N								
				I	77°10'24.142" E	30°24'23.165"N								
				J	77°10'25.561" E	30°24'22.236"N								

				K	77°10’29.564” E	30°24’20.072”N								
				L	77°10’31.291” E	30°24’18.377”N								
				M	77°10’33.826” E	30°24’15.191”N								
				N	77°10’42.050” E	30°24’9.870”N								
				O	77°10’33.817” E	30°24’20.439”N								
				P	77°10’31.147” E	30°24’21.970”N								
				Q	77°10’24.127” E	30°24’29.786”N								
				P	77°10’24.151” E	30°24’34.960”N								
				Q	77°10’28.557” E	30°24’40.406”N								
				R	77°10’29.711” E	30°24’45.120”N								
8	**Kharu Khera**	Kharu Khera	**For Mining area** 27 min **For ancillary area 12**//22, 23	B1	76°55’41.263” E	30°19’31.298”N	7.15	7.15	1.83	1.83	8.98	Sand	0.51	08
				B2	76°55’39.840” E	30°19’31.426”N								
				C1	76°55’41.517” E	30°19’30.448”N								
				C2	76°55’39.844” E	30°19’30.529”N								
				B3	76°55’35.866” E	30°19’31.480”N								
				C3	76°55’35.616” E	30°19’31.100”N								
				B4	76°55’35.434” E	30°19’31.520”N								
				C4	76°55’32.018” E	30°19’30.928”N								
				B6	76°55’22.740” E	30°19’28.271”N								
				C5	76°55’23.038” E	30°19’27.642”N								
				C6	76°55’21.415” E	30°19’26.892”N								
				B7	76°55’20.921” E	30°19’27.136”N								
				C7	76°55’20.812” E	30°19’25.620”N								

				B8	76°55'20.090" E	30°19'25.894"N								
				B9	76°55'19.380" E	30°19'21.242"N								
				C8	76°55'20.220" E	30°19'21.158"N								

77

Director, Mines and Geology, Haryana

Speed/Registered

From

The Director,
Mines and Geology Haryana,
Plot No. 9, I.T. Park, Sector-22,
Panchkula.

To

M/s Reliable Mining Corporation,
SR-68, DLF Phase-3, Gurugram, Haryana-122010..

Memo No. DMG/HY/Cont./Fatehpur Nagoli/AMB/2022/ 4858
Dated Panchkula, the 28-7-22

Subject: Acceptance of the highest bid in respect of the minor mineral Boulder, Gravel and Sand contract of "Fatehpur Nagoli (BGS)" having tentative area of 105.51 Acres in the district Ambala, offered in e-auction held on 30.06.2022/issuance of Letter of Intent (LoI)- regarding.

You participated in the e-auction held on 30.06.2022 on the e-Auction web portal (https://minesharyana.c1auctions.com/) for grant of mining contract of minor mineral Boulder, Gravel and Sand mine after accepting the terms and conditions of the auction notice issued vide notification no. DMG/HY/e-Auction/Amb./2022/3573 dated 31.05.2022 and Corriengendum No. DMG/HY/e-Auction/Amb./2022/3629 dated 09.06.2022 in order to obtain mining contract of minor mineral Boulder, Gravel and Sand mine of the district Ambala.

2. You offered the highest bid of Rs. 24,06,00,000/- (Rs. Twenty four Crores six lacs only) per annum against the Reserve Price of Rs. 07,76,00,000/- for obtaining the Mining Contract of Minor Mineral Mine namely 'Fatehpur Nagoli (BGS)' for extraction of 'Boulder, Gravel and Sand' having total area of 105.51 Acres. The details of the khasra number of the area under above said Mining (86.22 hectares in riverbed for mining and 19.29 hectares for ancillary activities) is attached as Annexure 'A'.

3. You are hereby informed that the State Government has accepted the highest bid of Rs. 24,06,00,000/- per annum offered by you in respect of 'Fatehpur Nagoli (BGS)' under the provision of Haryana Minor Mineral Concession, Stocking, Transportation of Minerals & Prevention of Illegal Mining Rules, 2012 (State Rules, 2012). Accordingly, you have become the successful bidder in respect of above said mine.

4. The State Government having accepted the aforementioned highest bid of Rs. 24,06,00,000/- per annum offered by you, the Department is pleased to issue this Letter of Intent (LoI) in your favour in respect of the Mining area namely of 'Fatehpur Nagoli (BGS)' subject to the following terms and conditions:

4.1 The period of the contract shall be 10 years and the same shall commence w.e.f. the date of grant of Environmental Clearance by the competent

authority and the Consent to Operate (CTO) by the State Pollution Control Board, whichever is later, or on expiry of the period of 12 months from the date of issuance of LoI, whichever is earlier;

4.2 As per the terms and conditions of the grant, you are liable to deposit Rs. 6,01,50,000/- i.e. equal to 25% of the annual bid amount as "Security", out of which you have already deposited an amount of Rs. 2,40,60,000/- (Rs. Two Crore forty lacs sixty thousand only) i.e. equal to 10% of the annual bid amount as 'initial bid security' after the conclusion of e-auction. The balance amount of Rs. 3,60,90,000/- of the bid security i.e. 15% of the annual bid amount shall be deposited before commencement of the mining operation or before expiry of the period of 12 months from the date of issuance of Letter of Intent (LoI), whichever is earlier;

Provided that in case having taken all steps on your part, if you fails to obtain required environmental clearance and consent to operate(CTO) for undertaking mining operations within the said period of 12 months from the date of issuance of LoI, such letter of intent holder/contractor on a specific application submitted to the Director, at least thirty days prior to the end of the period mentioned above, giving details of the action already taken may seek additional time up to another twelve months, over and above the time of 12 months already allowed for commencement of the period of contract, on payment of a non-refundable fee as per the following:-

1	Extension of further period up to six months	On payment of a non-refundable fee at the rate of one percent per month of the annual bid for each month of requested extension period
2	Extension for a second period up to six months	On payment of a non-refundable fee at the rate of two percent per month of the annual bid for each month of requested extension period
Note: Extension shall be allowed only in month (s) and any request for period less/part of the month shall be summarily rejected and shall apply along with advance amount of the fee for such requested period of extension.		

4.3 You may note that the detail of the area of the mining is tentative and was notified on 'as is where is' basis (refer condition no. 21 (iv) of the auction notice). In case of any inadvertent mistake in the area detail/Khasra number etc., the same shall be got rectified/corrected before execution of the contract agreement (refer condition no. 21 (iii) of the auction notice);

4.4 No request regarding reduction in bid amount on account of reduction in land/area of the Mining Block, on any account including that of change in description of Khasra numbers / location etc. at any stage will be entertained on any ground. This shall also include any loss/reduction of area for actual mining for want of compliance of applicable laws/restrictions for mining or part of the contracted area had already been operated in the past. Needless to state that this also includes the changes, if any, as per condition no. 21 (vi) of the auction notice.

4.5 You offered bid after having gone through the terms and conditions of auction notice and also the applicable Acts and Rules for undertaking mining. The State government shall not be responsible for any kind of loss to you being the highest bidders/contractor at any point of time (before or after grant of contract) on any account including on account of reduction of land/ area/ production/ non grant of permission for mining in part area or otherwise on account of any condition stipulated for undertaking mining by any competent authority.

4.6 The amount of the highest bid i.e. Rs. 24,06,00,000/- (Rs. Twenty four Crores six lacs only) per annum shall be the "Annual Contract Money" payable by you as the contractor money in the manner prescribed in the contract agreement to be executed on form MC-1 appended to State Rules.

As per orders dated 01.07.2022 of the State Government you will have to open Escrow Account with the Department wherein all the sale proceed made through E-rawaana portal will required to be deposited.

4.7 The annual contract money shall be increased at the rate of 10% on completion of each block of three years. Accordingly, the year-wise amount of the annual contract money shall be as per details given below:

Sr. No.	Year of the contract Period	Annual Contract Money [in Rs.]
1	First Year	24,06,00,000/-
2	Second Year	24,06,00,000/-
3	Third Year	24,06,00,000/-
4	Fourth Year	26,46,60,000/-
5	Fifth Year	26,46,60,000/-
6	Sixth Year	26,46,60,000/-
7	Seventh Year	29,11,26,000/-
8	Eighth Year	29,11,26,000/-
9	Ninth Year	29,11,26,000/-
10	Tenth Year	32,02,38,600/-

4.8 You are directed to execute the Contract Agreement in Form MC-1 appended to the State Rules, 2012 within a period of 90 days from the date of order of issuance of this LoI.

Note: 90 days period is for execution of Contract Agreement. Therefore, it is advised to submit draft agreement along with all relevant documents preferably within 45 days, so that agreement could be executed within 90 days after completing all the formalities of scrutiny and verification.

4.9 In case of the Partnership Deed (where bidding entity is a partnership firm) or Articles of Association (where bidding entity is a registered Company) or an Affidavit (where bidding entity is a sole proprietorship firm and the bidder is participating as an Individual), no transfer or addition or deletion of the Partners/Directors will be permissible before execution of the agreement;

Director, Mines and Geology, Haryana

4.10 The Contract Agreement executed shall be got duly Registered under relevant laws with concerned Registering Authority and you will be liable to pay applicable stamp duty and registration fee etc. as per the applicable rates and as demanded by the Registering Authority/Revenue Department at the time of Registration.

4.11 In case of failure to execute the agreement, after issuance of this acceptance of bid/LoI within the prescribed period of 90 days, this LoI shall be deemed to have been revoked and 10% amount of the highest bid deposited as initial bid security shall be forfeited and you, will be debarred from participation in any future auctions/tenders/competitive bidding process in respect of any area for obtaining mineral concession in the State for a period of 5 years.

4.12 You shall also furnish a solvent surety for a sum equal to the amount of the annual bid for execution of the Agreement. The documents in support of solvency of the surety shall be submitted dully evaluated by the concerned Revenue Authority along with Non Encumbrance Certificate from the concerned Revenue Authority. In case, the surety offered by the contractor(s) during the subsistence of the contract is not found solvent, the contractor(s) shall offer another solvent surety and a supplementary deed shall be executed to this effect.

4.13 After execution of agreement, either before commencement of the mining operation or before expiry of the time allowed, if any, as per condition No. 4.2 above, in case of failure to deposit the balance 15% amount towards security (as required under clause 4.2 above), the acceptance of bid/issuance of LoI/execution of agreement shall be deemed to have been revoked and 10% amount deposited towards as initial bid security after the conclusion of auction shall stand forfeited. Further, such bidder shall debarred from participation in any future auctions/Tenders/competitive bidding process in respect of any area for obtaining mineral concession in the State for a period of 5 years.

4.14 You shall be liable to deposit the contract money in advance at monthly intervals as per provisions of Contract Agreement i.e. from the date of commencement of the contract period.

4.15 You shall also deposit/ pay an additional amount equal to 7.5% of the due contract money along with the monthly instalments towards the 'Mines and Mineral Development, Restoration and Rehabilitation Fund.

4.16 You shall also deposit/ pay an additional amount equal to 2.5% of the due contract money along with the monthly instalments towards the 'District Mineral Fund'.

4.17 You shall also be liable to pay advance Income Tax as per provisions of Section 206(c) of Income Tax Act in addition to contract money, payable as per terms and conditions of contract agreement.

4.18 On enhancement of the contract money with the expiry of every three years period, you shall deposit the balance amount of security so as to upscale the security amount equal to 10% of the revised annual contract money as applicable for one year with respect to the next block of three years. No interest, whatsoever, shall be payable on the security amount deposited under the prescribed security head of the government;

4.19 You shall prepare a Mining Plan along with the Mine Closure Plan (Progressive & Final) from the Recognized Qualified Person as per chapter 10 of the State Rules, 2012 for the "Mining Unit" and get the same approved from an officer authorised by the Director, Mines & Geology, in this behalf.

4.20 Further, the actual mining will be allowed to be commenced only after prior Environment Clearance is obtained by you as the LoI holder/ Mining contractor for the Mining from the Competent Authority as required under EIA notification dated 14/09/2006 issued by Ministry of Environment, Forests and Climate Change, Government of India or as amended from time to time and also other required approvals for mining including Consent to Establish and Consent to Operate from the Haryana State Pollution Control Board before commencement of actual mining operations.

4.21 You will also be liable to pay the following to the landowners to undertake mining operations:

(a) Annual rent in respect of the land area blocked under the concession but not being operated; and
(b) Rent Plus compensation in respect of the area used for actual mining operations.

4.22 The amount of annual rent and the compensation shall be settled mutually between the landowner and the mining contractor. In case of non-settlement of the rent and compensation, the same shall be decided by the District Collector concerned in accordance with the provisions contained in Chapter 9 of the "State Rules, 2012";

4.23 The total mineral excavated and stacked by the concession holder within the area granted on mining contract, however, the quantity of mineral stacked shall not exceed three times of the average monthly production as per approved Mining Plan and/or quantity approved under Environmental Clearance, at any point of time.

4.24 The Mining Contractor shall not stock any mineral outside the concession area granted on mining contract, without obtaining a valid Mineral Dealer Licence as per provisions contained in Chapter 14 of the State Rules, 2012.

4.25 The contractor shall not carry out any mining operations in any reserved/ protected forest or any area prohibited by any law in force in India, or prohibited by any authority without obtaining prior permission in writing from such authority or officer authorized in this behalf. In case of refusal of permission by such authority or officer authorised in this behalf,

contractor(s) shall not be entitled to claim any relief in payment of contract money on this account;

4.26 Following are the general/ special conditions applicable for excavation of minor mineral(s) from river beds in order to ensure safety of riverbeds, structures and the adjoining areas:

i. No mining would be permissible in a river-bed up to a distance of five times of the span of a bridge structure on up-stream side and ten time the span of such bridge structure on down-stream side, subject to a minimum of 250 meters on the up-stream side and 500 meters on the down-stream side;

ii. There shall be maintained an un-mined block of 50 meters width after every block of 1000 meters over which mining is undertaken or at such distance as may be directed by the Director or any officer authorised by him;

iii. The maximum depth of mining in the river-bed shall not exceed three meters from the un-mined bed level at any point in time with proper bench formation;

iv. Mining shall be restricted within the central 3/4th width of the river/ rivulet;

v. Any other condition(s), as may be required by the Irrigation Department of the state from time to time for river-bed mining in consultation with the Mines & Geology Department, may be made applicable to the mining operations in river-beds.

vi. No mining operation may be carried out from 1st July to 15th September every year (rainy season).

4.27 No mining operation shall be allowed in the urbanize zone of area notified by Town and Country Planning Department. Further, in case of the agriculture zone notified by Town and Country Planning Department mining shall be permissible only after obtaining prior permission from the competent authority;

4.28 The contractor shall not undertake any mining operation in the area granted on mining contract without obtaining requisite permission from the competent authority as are required for undertaking mining operations under relevant laws;

4.29 The contractor shall be under obligation to carry out mining in accordance with all other provisions as applicable under the Mines Act, 1952. Mines and Minerals (Development and Regulation) Act, 1957, Indian Explosive Act, 1884, Forest (Conservation) Act, 1980 and Environment (Protection) Act, 1986 and the rules made thereunder, Wild life (Protection) Act, 1972, Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981;

4.30 All other terms and conditions shall remain as per auction notice, and the contract agreement to be executed in Model Form MC-1 appended to the

State Rules, 2012. Further, the provisions of the Mines and Minerals (Development and Regulation) Act, 1957 and Rules made thereunder shall prevail over all the terms and conditions.

5. In view of above, it is once again stated that the highest bid of Rs. 24,06,00,000/- (Rs. Twenty four Crores six lacs only) per annum offered by you in respect of minor mineral mine namely 'Fatehpur Nagoli (BGS)" of district Ambala have been accepted by the State Government and the Department is pleased to issue this Letter of Intent (LoI) in your favour for grant of mining contract of said mine subject to the above said terms and conditions. Accordingly, you are advised to execute the Contract Agreement by submitting all requisite documents including a solvent surety(s) for a sum equal to the amount of the annual bid for execution of the agreement, within a period of 90 days from the date of issue of this bid acceptance letter and the LoI.

Director, Mines & Geology,
Haryana.

Speed/Registered

Endst. No. DMG/HY/Cont./Fatehpur Nagoli/AMB/2022/4859 Dated: 28-7-22.

A copy is forwarded to the following for information and necessary action please:-

1. The Principal Secretary to Government Haryana, Mines and Geology Department.
2. The Chairman, Haryana State Pollution Control Board, Panchkula.
3. The Deputy Commissioner, Ambala.
4. The Mining Officer, Mines & Geology Department, Ambala. He is directed to ensure that proper and complete 'Draft Contract Agreement Documents' as required are submitted within stipulated period.

Director, Mines & Geology,
Haryana.

Director, Mines and Geology, Haryana

Annexure 'A'.

Sr. No.	Name of mining Contract Unit with name of Mineral	Name of village	Details of Khasra Nos.	Area as per Revenue record (in Acres)	Period (in years)
1	Fatehpur, Nagoli	Fatehpur	For Mining areas 3// 24 min, 25 min, 14// 4 min, 5 min, 6 min, 7 min, 8 min, 13 min, 14 min, 17 min, 18 min, 23 min, 24 min, 16// 3 min, 4 min, 7 min, 8 min, 9 min, 11 min, 12 min, 13 min, 18 min, 19 min, 20, 21, 22 min, 17// 3 min, 4 min, 5 min, 6 min, 7, 8 min, 13 min, 14, 15 min, 16, 17, 18 min, 23 min, 24, 25, 28// 3 min, 4, 5, 6, 7, 8 min, 12 min, 13, 14, 15, 16 min, 17, 18 min, 19 min, 21 min, 22 min, 23 min, 24 min, 25 min, 29// 1 min, 10 min, 11 min, 20 min 31//, 1 min, 9 min, 10 min, 11 min, 20 min, 32//, 6 min, 15 min, 16 min, 24 min, 25 min, 39// 4 min, 5 min, 6 min, 7 min, 14 min, 15 min, 16 min, 17 min, 24 min, 25 min, 42// 4 min, 5 min, 6 min, 7 min, 14 min, For Ancillary areas 42//8, 9, 12, 13	105.51	10
		Laha	For Mining areas 90 min For ancillary areas 4//6, 5// 8, 9, 10		
		Batoura	For Mining areas 1//, 16 min, 17 min, 23 min, 24 min, 22 min, 2//, 11 min, 20 min, 6//, 2 min, 3 min, 10 min, 11 min, 20 min, 21 min, 7//, 15, 16, 8//, 10 min, 11 min, 19 min, 20, 21 min, 22 min		
		Nagoli	For mining areas 33//, 24 min, 25 min, 35//, 4 min, 5 min, 6 min, 7 min, 14 min, 15 min, 16 min, 17 min, 24 min, 37//, 4 min, 7 min For Ancillary area 35// 1, 2, 3/1, 8, 9		
		Banaudi	For Mining areas 13//, 20 min, 14//, 16 min, 25 min, 21//, 5 min, 6 min, 15 min, 16 min, 64 min, 65 min, 66 min, 22//, 1 min, 10 min, 11 min, 20 min, 21 min, 29//, 5 min, 28// 11 min, 12/1 min, 19 min, 20 min, 22 min, 23 min, 35//, 3 min, 7 min, 8 min, 14 min, 16 min, 17 min, 25 min, 36//, 21 min, 22 min, 43//, 1 min, 2 min, 3 min, 6 min, 7 min, 8 min, 42//, 1 min, 10 min, 37//, 4 min, 5 min, 7 min, 8 min, 13 min, 18 min, 19 min, 21 min, 22 min, 26//, 16 min, 24 min, 25 min, 25//, 11 min, 19 min, 20 min, 22 min, 23 min, 38//, 3 min, 4 min, 7 min, 14 min, 15 min, 16 min, 39//, 20 min, 21 min, 22 min, 23 min For Ancillary		

			areas 47// 6/2, 15, 16/1, 48// 11, 19, 20		
		Bari Bassi	For Mining areas 24//, 5 min, 6 min, 15 min, 16 min, 24 min, 25 min, 27//, 4 min, 5 min, 7 min, 8 min, 12 min, 13 min, 19 min For Ancillary areas 26// 11, 12, 20, 27// 15, 16		

MINING PLAN
INCLUDING
PROGRESSIVE MINE CLOSURE PLAN

Submitted under Rule 70 (1) of Haryana Minor Mineral Concession, Stocking, Transportation of Minerals and Prevention of Illegal Mining Rules, 2012.

For

"Fatehpur Nagoli (BGS)"

Mineral – Boulder, Gravel and Sand Minor Mineral

Total Mining Lease Area – 105.51 Acre i.e 42.70 Hectare (Non- Forest)

District- Ambala, State- Haryana

Lease Period- 10 years from the date of registration

Mining Plan Period- 5 years (2023-24 to 2027-28)

APPROVED
With Conditions
शर्तों के साथ अनुमोदित
Vide Letter No.
Date/Dated
राज्य भू-विज्ञानिक
State Geologist

DMG/HY/MP/Fatehpur/2693 to 2696 dt 18-5-23

LOI HOLDER

M/S RELIABLE MINING CORPORATION
R/o: SR-68, DLF PHASE-3,
GURUGRAM,
122010 (Haryana)

PREPARED BY

PRERNA CHAUHAN
(Geologist/Qualified Person)
N.S. ENVIRO-TECH LABORATORIES & CONSULTANT
P.No. 51.Ganeta House, Shiv Vihar Colony, Mansarovar, Jaipur Rajasthan,302020
(AnNABET, NABL&ISO9001:2008,CertifiedCompany)

M/S RELIABLE MINING CORPORATION
R/o: SR-68, DLF PHASE-3, GURUGRAM, 122010
(Haryana)

AUTHORISATION

M/S Reliable Mining Corporation,hereby authoriseMiss Prerna Chauhan (Geologist/Qualified Person) Key Person forM/S - N.S. Enviro-Tech Laboratories & Consultant, to prepare the Mining Plan including Progressive Mine Closure Plan under Haryana Minor Mineral Concession, Stocking,Transportation of Minerals and Prevention of Illegal Mining Rules, 2012, in respect of Boulder, Gravel and Sand minor mineral of "Fatehpur Nagoli (BGS)" having total area of 105.51 Acre i.e 42.70 ha.in Village- Fatehpur, Laha, Batoura, Nagoli, Banaudi, Bari Bassi District- Ambala, State- Haryana.

I request the Director General, Mines & Geology Department, Haryana, Plot no 9, I.T. Park, Sector -22, Panchkula to make further correspondence regarding submission /modification / withdrawal / re-submission and to collect the approved copies of the aforesaid Mining Plan Including Progressive Mine Closure Plan with the said recognized person on his following address: -

Prerna Chauhan
Miss Prerna Chauhan
(Geologist/Qualified Person)
M/S N.S. Enviro-Tech Laboratories & Consultant

Geology (Qualified Person)

Place :Ambala

Date :

Zaved

M/S RELIABLE MINING CORPORATION

N.S.ENVIRO-TECHLABORATORIES&CONSULTANT
P.No. 51.Ganeta House, Shiv Vihar Colony, Mansarovar, Jaipur Rajasthan,302020
(AnNABET, NABL&ISO9001:2008,CertifiedCompany)

CERTIFICATE

I, Prerna Chauhan, Key person, for M/S N.S. Enviro-Tech Laboratories & Consultant, hereby certify that,

1. "The provisions of Haryana Minor Mineral Concession, Stocking, Transportation of Minerals and Prevention of Illegal Mining Rules, 2012 have been observed in the Mining Plan including Progressive Mine Closure Plan, for Boulder, Gravel and Sand minor mineral of "Fatehpur Nagoli (BGS)" having total area of 105.51 Acre i.e 42.70 ha. in Village- Fatehpur, Laha, Batoura, Nagoli, Banaudi, Bari Bassi, District- Ambala, State Haryana of M/S RELIABLE MINING CORPORATIONand wherever specific permission is required, the applicant will approach the concerned authorities of Mines & Geology Department, Haryana, Plot no 9, I.T. Park, Sector -22, Panchkula for granting the permission."
2. It is also certified that the provisions of Mines Act, Rules and Regulations made there under have been observed in the aforesaid Mining Plan including Progressive Mine Closure Plan and wherever specific permissions are required, the applicant will approach the Director General of Mines Safety.
3. It is further certified that the aforesaid Mining Plan including Progressive Mine Closure Plan is prepared as per the copies of the records and documents provided by the licence holder and information given as per discussions held with applicant's representative.
4. It is also certified that the information furnished in the aforesaid Mining Plan including Progressive Mine Closure Plan are true and correct to the best of my knowledge & belief and in case of default the approval would be withdrawn.

Place : Jaipur
Miss Prerna Chauhan

(Geologist/Qualified Person)

M/S RELIABLE MINING CORPORATION
R/o: SR-68, DLF PHASE-3, GURUGRAM, 122010
(Haryana)

CERTIFICATE

1. It is certified that the provisions of the Mines Act, Rules and Regulations made there under have been observed in the Mining Plan including Progressive Mine Closure Plan for Boulder, Gravel and Sand minor mineral of "Fatehpur Nagoli (BGS)" having total area of 105.51 Acre i.e 42.70 ha. in Village- Fatehpur, Laha, Batoura, Nagoli, Banaudi, Bari Bassi , District- Ambala, State- Haryana of M/S RELIABLE MINING CORPORATION, and wherever specific permissions are required, the applicant will approach the Director General of Mines Safety. Further, the standards as prescribed by Director General of Mines Safety in respect of miner's health will be strictly implemented.

2. The Mining Plan including Progressive Mine Closure Plan for Boulder, Gravel and Sand minor mineral of "Fatehpur Nagoli (BGS)" having total area of 105.51 Acrei.e 42.70 ha. in Village- Fatehpur, Laha, Batoura, Nagoli, Banaudi, Bari Bassi, District- Ambala, State- Haryana of M/S RELIABLE MINING CORPORATION, complies all the statutory Rules, Regulations, Orders made by the Central Government or State Government, Statutory organizations, Court etc. and have been taken into consideration. Wherever any specific permission is required, the applicant will approach the concerned authorities.

Place : Ambala

Date :

M/S RELIABLE MINING CORPORATION

M/S RELIABLE MINING CORPORATION
R/o: SR-68, DLF PHASE-3, GURUGRAM, 122010 (Haryana)

DECLARATION

1. The Mining Plan including Progressive Mine Closure Plan, for Boulder, Gravel and Sand minor mineral of "Fatehpur Nagoli (BGS)" having total area of 105.51 Acrei.e 42.70 ha. in Village- Fatehpur, Laha, Batoura, Nagoli, Banaudi, Bari Bassi, District- Ambala, State- Haryana of M/S RELIABLE MINING CORPORATIONhas been prepared in full consultation with me and I understand its contents and agree to implement the same in accordance with law and in case of default the approval would be withdrawn.

2. It is further declared that during the pendency period of the approval of above said document or thereafter if any change occurs in the name and address of applicant, it will be informed promptly.

Text

Place : Ambala

Date :

Zaved

M/S RELIABLE MINING CORPORATION

M/S RELIABLE MINING CORPORATION
R/o: SR-68, DLF PHASE-3, GURUGRAM, 122010
(Haryana)

UNDERTAKING

M/S RELIABLE MINING CORPORATIONfor Boulder, Gravel and Sand Mine of "Fatehpur Nagoli (BGS)" having total area of 105.51 Acre i.e 42.70 Hectare in Village- Fatehpur, Laha, Batoura, Nagoli, Banaudi, Bari Bassi , District- Ambala, State Haryana ofM/S RELIABLE MINING CORPORATION, hereby undertake that all the commitments so made in the aforesaid Mining Plan including Progressive Mine Closure Plan by the QP, Miss Prerna Chauhan of M/S N.S. Enviro-Tech Laboratories & Consultantto be deemed to have been made with my knowledge and consent and as such shall be acceptable to me and binding on me in all respects.

M/S RELIABLE MINING CORPORATION, hereby also undertake that all the measures proposed in the Mining Plan including Progressive Mine Closure Plan of Boulder, Gravel and Sand minor mineral of "Fatehpur Nagoli (BGS)" having total area of 105.51 Acre in Village- Fatehpur, Laha, Batoura, Nagoli, Banaudi, Bari Bassi, District- Ambala, State- Haryanawill be implemented in a time bound manner from the date of approval of this Mining Plan including Progressive Mine Closure Plan as proposed.

Place : Ambala

Date :

Signed

M/s RELIABLE MINING CORPORATION

LIST OF ANNEXURES

Sr. No.	PARTICULARS	ANNEXURE NO.
1	A Copy of LOI	I
2	Khasra Map	II
3	Authorization Letter	III
4	Partnership Deed	IV
5	Photo ID	V
6.	Certificate & Experience of QP	VI
7.	Analysis Report of Bulk Density	VII

LIST OF PLATES

S. No.	Particulars	Plate Number
1	Location Plan	1
2	Key Plan	2
3	Surface Plan & Sections	3
4	Surface Geological Plan & Sections	4
5	Pre- Post Monsoon Plan	5A
6	Year wise Development Plan &Sections	5
7	Progressive Mine Closure Plan	6
8	Conceptual Plan	7
9	Environment Plan	8

CHAPTER – 1

INTRODUCTION

The Government of Haryana accepted the highest bid offered by M/s Reliable Mining Corporation in the e-auction held on 30/06/2022 for an area of 105.51 Acre i.e 42.70 Ha. in respect of Boulder, Gravel and Sand minor mineral of "Fatehpur Nagoli (BGS), Village- Fatehpur, Laha, Batoura, Nagoli, Banaudi, Bari Bassi District- Ambala, State Haryana, for which this Mining Plan including Progressive Mine Closure Plan is prepared. The Department of Mines & Geology, Govt. of Haryana has issued the Letter of Intent for grant of mining lease in favor of M/s Reliable Mining Corporation in respect of the Boulder, Gravel and Sand minor mineral mines of Fatehpur Nagoli (BGS), in Village- Fatehpur, Laha, Batoura, Nagoli, Banaudi, Bari Bassi, District- Ambala, State- Haryana. The period of l shall be 10 years and same shall commence w.e.f. the date of grant of Environment Clearance by the competent authority & the consent to operate (CTO) by the state Pollution Control Board, whichever is later, or on expiry of the period of 12 months from the date of issuance of LOI, whichever is earlier. (As mentioned in point 4.1 of LoI.)

There is no mining carried out by the LOI holder. However, the mining operations were carried out in past by some other lessee with due permission from the Department of Mines & Geology, Haryana. It is a case of fresh grant of lease. The actual mining will be allowed to be commenced only after Environment Clearance is obtained by the LOI holder, as per the Letter of Intent vide Memo No-DMG/HY/cont./Fatehpur Nagoli/AMB/2022/4858 Dated- 28.07.2022 (Panchkula).

CHAPTER- 2

2.1. GENERAL INFORMATION ABOUT APPLICANT

M/S Reliable Mining Corporation

R/o SR- 68 , DLF Phase-3, Gurugram, Haryana, 122010

2.2 STATUS OF THE APPLICANT:

Firm

2.3 MINERALS THAT THE APPLICANT INTENDS TO MINE

River Boulder, Gravel and Sand as minor mineral from Begna River Bed.

2.4 NAME& ADDRESS & REGISTRATION NUMBER OF QUALIFIED PERSON, WHO HAS PREPARED THE MINING PLAN: -

Prerna Chauhan (Geologist/Qualified Person)

M/S N.S. Enviro-Tech Laboratories & Consultant.

P.No. 51.Ganeta House, Shiv Vihar Colony,
Mansarovar, Jaipur Rajasthan, 302020
Contact details-

Phone-7878360147

E-Mail- prerna.eic@gmail.com

2.5 NAME & ADDRESS OF PROSPECTING AGENCY

The Director General of Mines & Geology Department, Govt. of Haryana, Plot No 9, I.T park, Sector-22, Panchkula who has prospected the area and allotted the area to the applicant on the basis of highest bid.

2.6 DETAILS OF THE MINING LEASE AREA: -

(a) Allotted area of 105.51 Acre i.e 42.70 ha. marked on Toposheet No.53 F/3 refer Plate No. 2. The lease area extends between 77°6'23.423"E.30°32'28.036"N & 77°6'15.948"E 30°30'38.469"N in Begna Nadi.

(b) Name of the Mineral: - Boulder, Gravel and Sand along with associated minor minerals.

Village:– Different blocks of river Begna in Village- Fatehpur, Laha, Batoura, Nagoli, Banaudi, Bari Bassi , Tehsil – Naraingarh District- Ambala, State- Haryana.

Khasra No. : - Khasra Nos. of block is given in table below: -

Table No. 2.1

Sr.No.	Name of the Block	Name of the Village	Details of Khasra No	Mining Area (Acre)	Ancillary Area (Acre)
1.	Fatehpur Nagoli	Fatehpur	For Mining areas 3// 24 min,25 min,14//4 min, 5 min,6 min,7 min, 8 min, 13 min, 14min 17 min, 18 min, 23 min,24 min,16// 3 min,,4 min,7 min, 8 min, 9 min, 11min, 12 min, 13 min, 18 min, 19 min,20,21, 22 min, 17// 3 min, 4 min, 5 min, 6min,7,8 min, 13 min, 14, 15 min, 16, 17,18 min, 23 min, 24, 25,28// 3 min, 4,5,6,7,8 min, 12 min, 13, 14,15, 16 min, 17,18min, 19 min, 21 min,22 min, 23 min, 24 min,25 min,29// 1 min,10 min, 11 min, 20min,31//,1min,9 min, 10 min, 11 min,20 min,32//,6 min, 15 min, 16 min, 24 min, 25 min, 39// 4 min,5 min, 6 min, 7min, 14 min, 15 min, 16 min, 17 min,24 min, 25 min, 42//4 min, 5 min, 6 min, 7min, 14 min, For Ancillary areas 42//8,9,12,13.	48.95	4.00
2.		Laha	For Mining areas 90 min for ancillary areas 4//6, 5//8, 9, 10	11.75	3.50
3.		Batoura	For Mining areas 1//,16 Min, 17 min,23 min,24 Min,22 .min,2//,11 Min 20 min, 6//,2 Min,3 min, 10 Min, 11 Min,20 Min , 21 Min,7// 15,16,8//, 10 min, 11 Min, 19 Min 20,21 min, 22 Min.	5.98	0.00
4.		Nagoli	For Mining areas 33//,24 min, 25 min, 35//, 4 Min, 5 min 6 Min 7 Min,14min, 15 min, 16 min, 17 min, 24 min,37//,4 Min, 7 Min For Ancillary area 35//1,2,3/1,8,9.	3.50	3.46
5.		Banaudi	for mining areas 13//,20 Min14//,16min,25min, 21//, 5 Min,6 Min, 15 min, 16, Min, 64 Min ,65 Min, 66 Min ,22//, 1 Min,10 Min, 11 min, 20 min, 21 Min,29//5 Min,28// 11 min, 12/ 1 Min,19 Min,20 Min,22 Min,23 Min,35//,3 Min,7 Min,8 Min,14 Min,16 Min,17 Min,25 Min,36//,21 Min,22 Min,43//,1 Min,2 Min,3 Min,6 Min,7, Min,8 Min, 42/1,1 Min, 10 min, 37//,4 min,5 min, 7min,8min, 13 Min,18 Min,19 Min, 21 min, 22 Min, 26//, 16 Min,24 Min,25 Min,25//,11 Min,19 Min,20 Min,22 Min,23 Min,38//,3 Min,4 Min,7 Min,14 Min,15 Min,16	10.82	5.33

			Min,39//,20 Min,21 Min.22 Min,23 Min for Ancillary area 47//6/2,15,16/1,48//11,19,20.		
6.		Bari Bassi	for mining areas24//.5 min,6 min,15 min, 16 min,24 min,25 min,27//,4Min,5Min,7 Min,8 Min,12 Min,13 Min,19 Min. for Ancillary area 26//11,12,20,27//15,16.	5.22	3.0

Mining Area (Acre)	Ancillary Area (Acre)	Total Area (Acre)	Total Area(Hectare)
86.22	19.29	105.51	42.70

Status of Land: - River Bed

Village-Fatehpur, Laha, Batoura, Nagoli, Banaudi & Bari bassi

District- Ambala, **State** – Haryana.

Lease Coordinates:-

Village Fatehpur

Sr. No.	Pillar	Longitude	Latitude
1	Z1	77°6'23.489" E	30°32'25.472"N
2	Z2	77°6'23.423" E	30°32'28.036"N
3	Z3	77°6'23.607" E	30°32'34.871"N
4	Z4	77°6'23.660" E	30°32'38.173"N
5	Z5	77°6'27.294" E	30°32'44.835"N
6	Z6	77°6'28.392" E	30°32'47.932"N
7	Z7	77°6'32.327" E	30°32'52.032"N
8	Z8	77°6'32.914" E	30°32'54.043"N
9	A29	77°6'26.268" E	30°32'27.255"N
10	A30	77°6'25.853" E	30°32'28.668"N
11	A31	77°6'27.521" E	30°32'40.907"N
12	A32	77°6'33.809" E	30°32'50.635"N
13	A33	77°6'39.131" E	30°32'50.971"N
14	A34	77°6'42.28" E	30°32'55.14"N
15	A35	77°6'43.77" E	30°32'59.19"N
16	A36	77°6'50.25" E	30°33'7.08"N
17	A37	77°6'49.10" E	30°33'8.39"N
18	A38	77°6'45.80" E	30°33'5.20"N
19	A39	77°6'41.29" E	30°33'3.55"N
20	A40	77°6'37.65" E	30°33'11.39"N
21	A41	77°6'39.63" E	30°33'18.93"N
22	A42	77°6'37.26" E	30°33'21.01"N
23	A43	77°6'36.73" E	30°33'15.76"N
24	A44	77°6'35.03" E	30°33'12.29"N
25	A45	77°6'36.39" E	30°33'3.56"N

Village Laha

Sr. No.	Pillar	Longitude	Latitude
1	A	77°6'13.290" E	30°31'16.790"N
2	B	77°6'15.874" E	30°31'18.664"N
3	C	77°6'17.274" E	30°31'23.148"N
4	D	77°6'17.948" E	30°31'25.872"N
5	E	77°6'17.339" E	30°31'27.895"N
6	F	77°6'18.289" E	30°31'29.400"N
7	G	77°6'19.524" E	30°31'29.607"N
8	H	77°6'20.431" E	30°31'31.393"N
9	I	77°6'14.024" E	30°31'32.323"N
10	J	77°6'12.010" E	30°31'34.449"N
11	K	77°6'11.955" E	30°31'35.808"N
12	L	77°6'17.586" E	30°31'38.730"N
13	M	77°6'20.597" E	30°31'42.562"N
14	N	77°6'21.037" E	30°31'44.730"N
15	A1	77°6'14.097" E	30°31'16.009"N
16	A2	77°6'17.098" E	30°31'18.109"N
17	A3	77°6'18.338" E	30°31'22.929"N
18	A4	77°6'18.847" E	30°31'26.050"N
19	A5	77°6'18.498" E	30°31'27.889"N
20	A6	77°6'18.949" E	30°31'28.865"N
21	A7	77°6'21.985" E	30°31'29.236"N
22	A8	77°6'22.712" E	30°31'30.509"N
23	A9	77°6'20.235" E	30°31'33.071"N
24	A10	77°6'13.834" E	30°31'34.063"N
25	A11	77°6'14.060" E	30°31'35.966"N
26	A12	77°6'18.634" E	30°31'37.959"N
27	A13	77°6'22.483" E	30°31'42.009"N
28	A14	77°6'23.355" E	30°31'45.910"N

Village Batoura

Sr. No.	Pillar	Longitude	Latitude
1	A	77°5'59.453" E	30°30'16.400"N
2	A1	77°6'4.428" E	30°30'15.633"N
3	A2	77°6'1.042" E	30°30'22.630"N
4	A3	77°6'2.221" E	30°30'27.821"N
5	A4	77°6'2.555" E	30°30'31.496" N
6	A5	77°6'6.889" E	30°30'34.200" N

7	A6	77°6'10.675" E	30°30'35.844" N
8	A7	77°6'14.216" E	30°30'37.229" N
9	A8	77°6'16.333" E	30°30'38.260" N
10	C	77°6'0.882" E	30°30'27.515"N
11	D	77°6'2.078" E	30°30'31.529"N
12	E	77°6'6.365" E	30°30'34.375"N
13	F	77°6'10.451" E	30°30'36.101"N
14	G	77°6'14.172" E	30°30'37.621"N
15	H	77°6'15.948" E	30°30'38.469"N

Village Nagoli

Sr. No.	Pillar	Longitude	Latitude
1	B1	77°5'57.603" E	30°30'31.157"N
2	B2	77°5'58.802" E	30°30'39.203"N
3	B3	77°5'59.074" E	30°30'45.293"N
4	C1	77°5'56.077" E	30°30'31.910"N
5	C2	77°5'57.830" E	30°30'39.026"N
6	C3	77°5'58.173" E	30°30'46.239"N

Village Banaudi

Sr. No.	Pillar	Longitude	Latitude
1	A33	77°4'48.253" E	30°26'40.879"N
2	A32	77°4'42.847" E	30°26'40.886"N
3	A31	77°4'39.022" E	30°26'44.206"N
4	A30	77°4'34.020" E	30°26'50.466"N
5	A29	77°4'31.737" E	30°26'52.971"N
6	A28	77°4'28,095" E	30°26'52.104"N
7	A27	77°4'23.124" E	30°26'45.689"N
8	A26	77°4'17.196" E	30°26'38.471"N
9	A25	77°4'15.717" E	30°26'36.852"N
10	A24	77°4'13.534" E	30°26'35.827"N
11	A23	77°4'6.708" E	30°26'39.133"N
12	A22	77°4'0.761" E	30°26'43.430"N
13	A21	77°3'53.584" E	30°26'53.091"N
14	A20	77°3'52.089" E	30°26'56.622"N
15	A19	77°3'50.577" E	30°27'0.386"N
16	A18	77°3'50.217" E	30°27'2.235"N
17	A17	77°3'50.090" E	30°27'4.240"N
18	A16	77°3'50.102" E	30°27'8.023"N
19	A15	77°3'49.814" E	30°27'11.176"N
20	A14	77°3'51.311" E	30°27'13.643"N

21	Z6	77°4'48.419" E	30°26'41.568"N
22	Z5	77°4'43.334" E	30°26'41.573"N
23	Z4	77°4'39.612" E	30°26'44.405"N
24	Z3	77°4'34.348" E	30°26'51.193"N
25	Z2	77°4'31.966" E	30°26'53.815"N
26	Z1	77°4'31.694" E	30°26'53.886"N
27	Z0	77°4'31.319" E	30°26'54.012"N
28	Z	77°4'22.431" E	30°26'45.670"N
29	1Z	77°4'27.454" E	30°26'52.254"N
30	Y	77°4'16.676" E	30°26'38.993"N
31	X	77°4'15.094" E	30°26'37.230"N
32	W	77°4'13.572" E	30°26'36.411"N
33	V	77°4'6.864" E	30°26'39.737"N
34	U	77°4'1.182" E	30°26'43.817"N
35	T	77°3'54.446" E	30°26'53.298"N
36	S	77°3'52.719" E	30°26'56.925"N
37	R	77°3'51.091" E	30°27'2.352"N
38	R	77°3'51.514" E	30°27'0.474"N
39	Q	77°3'51.199" E	30°27'4.107"N
40	P	77°3'51.389" E	30°27'7.876"N
41	O	77°3'51.009" E	30°27'11.398"N
42	N	77°3'52.085" E	30°27'13.208"N

Village Bari Bassi

Sr. No.	Pillar	Longitude	Latitude
1	1A	77°4'54.100" E	30°28'16.468"N
2	2A	77°4'55.025" E	30°28'16.022"N
3	A	77°4'53.268" E	30°28'14.345"N
4	A0	77°4'54.935" E	30°28'13.290"N
5	A1	77°4'55.276" E	30°28'10.294"N
6	A2	77°4'52.275" E	30°28'5.956"N
7	A3	77°4'46.400" E	30°28'1.364"N
8	B	77°4'53.991" E	30°28'11.002"N
9	C	77°4'51.499" E	30°28'7.253"N
10	D	77°4'45.737" E	30°28'2.667"N

2.7 LEASE PERIOD: The period of contract shall be 10 years and same shall commence w.e.f. the date of grant of Environment Clearance by the competent authority & the consent to operate (CTO) by the state Pollution Control Board, whichever is later, or on expiry of the period of 12 months from the date of issuance of LOI, whichever is earlier.(As mentioned in point 4.1 of LoI.)

2.8 INFRASTRUCTURE FACILITIES:-

2.8.1:- Railway Station: - The nearest railway station is Ambala which is located at a distance 30 km. from the allotted area.

2.8.2:- Police Station: - The nearest police station is Panjokhara police station which is located at a distance of about 18 km. from the allotted area.

2.8.3:- Post Office: - The nearest post office is located in Ambala cantt which is located at a distance of 20 km. from the allotted area. The telephone facilities are also available at Fatehpur Nagoli.and nearby villages.

2.8.4:- Medical Facilities: - The nearest hospital is situated at Ambala.

2.8.5:- Availability of water: - Water for drinking purpose is brought from nearby villages. The water of hand pump and well located nearby the area is potable and being used by the villagers, habitants and labors.

2.8.6:- Educational Facilities: - The school and College facilities are available at Ambala.

2.8.7:- Mode of transportation of Mineral: - The allotted area is approachable by NH-344 approximately 1.5 Km. Mineral will be transported by trucks / Dumpers from the site to the consumers.

2.8.9:- River/ Canal: - River Begna is a river, which is flowing from NE to SW direction.

2.8.10:-Port: - The nearest port is Kandla port which is about 1350 Km from the allotted area.

2.8.11:- Other relevant information: - Banking and all other essential infrastructural facilities are available at Ambala.

CHAPTER – 3

3.1 Physiography

Ambala district of Haryana lies between 30° 10` to 31° 35` north latitudes and 76° 30` to 77° 10` east longitudes. Total geographical area of the district is 1574 sq.km. Administratively, the district is controlled by Ambala division. It is divided into three tehsils namely Ambala ,Barara and Naraingarh, and sub-divided into six development blocks namely Ambala I, Ambala II ,Barara, Shahzadpur, Naraingarh, and Saha. The district area falls in Yamuna sub-basin of Ganga basin, and is mainly drained by the river Tangri, Beghna and Markanda.

The area of ambala district is bounded by the state of Himachal Pradesh in the north, by the state of Punjab in the west,There is no protected or reserved forest in and around the allotted area. There is no habitation within allotted area.

3.1.1 Climate

The climate of Ambala district can be classified as subtropical monsoon, mild & dry winter, hot summer and sub-humid, that is mainly dry with very hot summer and cold winter except during monsoon season when moist air of oceanic origin penetrate into the district. The hot weather season starts from mid-March to last week of the June followed by the south west monsoon which lasts upto September. The transition period from September to November forms the post monsoon season. The winter season starts late in November and remains upto first week of March. Rainfall: The normal annual rainfall of the district is 1076 mm, and is unevenly distributed over the area. The average rainy days are 44. The south west monsoon, sets in from last week of June and withdraws in the end of September, contributing about 81% of normal annual rainfall. July and August are the wettest months. Rest 19% rainfall is received during non-monsoon period in the wake of western disturbances and thunderstorms. Generally rainfall in the district increases from southwest to northeast .The mean maximum temperature is 40.8o C(May & June) and mean minimum is 6.8o C (January) of the district.

3.1.2 GEOMORPHOLOGY AND SOIL TYPES

The district area is occupied by Indo-Gangetic alluvium. There are no surface features worth to mention except that the area is traversed and drained by seasonal streams namely Tangri, Begna and Markanda. Physiographically the area is flat terrain. However a little part in the extreme northeastern area of the district is occupied by Siwalik hills, and falls in the zone of "Dissected Rolling Plain". The area slopes towards southwest with an average gradient of 1.5m/km. The general elevation in the district varies between 245 m to 300 m above MSL.

3.2 Geology

3.2.1 Regional Geology

The north-eastern and central part of Haryana is predominantly characterized by sedimentary lithology in the sub-Himalayan zone comprising Subathus, Dagshais, Kasaulis and Siwaliks. A general Regional Stratigraphic sequence in the area is given in the table.

Table - 3.1

Age	Super group	Group	Formation	Lithology
Holocene			Newer Alluvium and Newer Aeolian Deposits	Gravel, Sand, Silt, Clay, Limestone, gypsum
Lower to upper Pleistocene			Older Alluvium and older Aeolian Deposits	Gravel, grey sand, silt clay brown sand, calcrete
Lower to Middle Pleistocene		Upper Siwalik	Boulder conglomerates formation	Conglomerate, sand stone, silt, Clay
Upper Pilocene			Pinjore Formation	Coarse grit, red sand stone and clay, conglomerate
			Tat rot Formation	Friable Sand Stone and variegated clay
	Middle Siwalik		Dhokpather Formation	Brown Sandstone and variegated clay
			Nagri Formation	Hard grey sand Stone

				and m inor shale
	Lower Siwalik		Nahan Formation	Course gritty, clay and red sandstone often calcareous, brownish shale with lignite lenticels greenish white quartizite
Lower Miocene	Sirmur		Kausauli Formation	Grey and stone, green shale and grey clay
			Dagsai Formation	Purple sand green sand stone, deep red gritty, clay, white sand stone with ferruginous concretions
Upper Eocene			Subathu Formation	Sandstone with grit clay. Impure fossliferous limestone calcareous slate, greenish shale and dark brown quartizite
Pre Proterozoic			Tunda pathar	Tickly bedded, stromatolite limestone with carboniferous shale and quartzite

3.2.2 Local Geology of the area

The allotted area is the river course of Begna River. It is a river borne deposit which comprises of sand channels formed due to annual deposition. The upper surface in terraced area covered with sandy soil where agriculture fields are developed by local people. Geologically, allotted area is belonging to Quaternary. Boulder, Gravel and Sand are the major litho unit observed in the allotted area. The stratigraphic sequence of the litho units present in the area are as follows:-

Quaternary - Alluvial mixed with river Boulder, Gravel & sand

Older deposition of river sand unit

Based on the structural configuration of the allotted area, surface geological mapping has been done and a Surface Geological Plan with cross-sections & longitudinal sections has been prepared on a scale 1:2000.

GEOMORPHOLOGY OF THE AREA (HARYANA): -

The district is divided into four Physiographic units

- Siwaliks
- Dissected Rolling Plains
- Interfluvial Plains
- Active and Recent Flood Plains
- Relict Plains

- **Siwalik Hills**

  Siwalik hill ranges occupy the northern and northeastern fringe of Ambala district and attain the height up to 950m AMSL. The hills are about 500m high with respect to the adjacent alluvial plains. These are characterized by the broad table land topography that has been carved into quite sharp slopes by numerous ephemeral streams come down to the outer slopes of the Siwalik and spread much of gravels boulders, pebbles in the beds of these streams.

- **Kandi Belt**

  A dissected rolling plain in the northern parts of district is a transitional tract between Siwaliks hills and alluvial plains. It is about 3-8 km wide and elevation varies between 250 and 375m AMSL.

  Interfluvial plains – This tract is part of higher ground between Ghaggar and Chautang and includes high mounds and valleys. In general, the slope is from northeast to southwest.

- **Active and recent flood plains** – This plain is narrow tract along river Begna in the district.
- **Relict wedge plain** – This is almost in alignment to the surface water divide between the westward flowing Ghaggar and eastward flowing Begna River.

3.3 DETAILS OF EXPLORATION

(A) ALREADY CARRIED OUT IN THE AREA

The exploration of mineral Boulder, Gravel sand minor minerals has been carried out by the Department of Mines and Geology Haryana, Panchkula. The river borne sediments are deposited all along the Begna Riverbed and are very well exposed on the surface. Moreover, these sediments are accumulated every year during rainy season depending on the intensity of rain. Accordingly, the state govt. has floated the bid for its auction.

(B) PROPOSED TO BE CARRIED OUT

- The mineral sand is exposed all along the Begna River bed, so there is no need of further exploration in this area. Also as per the condition of LOI there should be no excavation below 3 m (as per the provision of Enforcement & Monitoring Guidelines for Sand Mining-2020.) from the un- mined bed level at any point, so no further exploration is proposed.

3.4 METHOD OF ESTIMATION OF RESERVES

This is the freshly allotted area for mining of Boulder, Gravel and sand minor mineral. The area of proposed mining for first five years is selected as per the provision made in the Haryana Minor Mineral Concession, Stocking, Transportation of Minerals and Prevention of

Illegal Mining Rules, 2012, and guideline contained in the river bed mining policy and land form studies. As per the LOI, the following special conditions shall be applicable for excavation of minor mineral from river bed in order to ensure safety of river- beds, structure and the adjoining areas: -

RESERVE ESTIMATION:-

For estimating the reverse and mine planning of Boulder, Gravel and Sand the following parameters are considered:-

- The levels (MSL & RL) of the corner point are identified and safety barriers (Non-Mining) demarcated as restricted in consensus with the provision mentioned in this Enforcement & Monitoring Guidelines for Sand Mining-2020.
- Identification of Mining & non mining area clearly on plans.
- A buffer distance /un-mined block of 50 meters is maintained after every block of 1000 meters over which mining is undertaken as directed/prescribed by the regulatory authority.
- A barrier/blocked zone has been considered & maintained at 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.
- Mining depth has been restricted to 3 meters and distance from the bank should be ¼th or river width and should not be less than 7.5 meters.
- Mineable material per hectare area available for actual mining shall not exceed the maximum quantity of 60,000 MT per annum.
- Clear depiction of the nomenclature of the section lines, latitude and longitude of the starting point, chain-age and respective levels.
- Volume has been estimated using E-survey CADD software using trapezoidal method of volume calculation.
- For assessment of bulk density for estimation of deposition rate. Sample has been taken from zone of deposition not from erosion for assessment of bulk density.
- The ultimate Mineable depth for the calculation of the reverse has been considered in line with the average replenished depth of mineral established comparing the csv data of pre & post monsoon period (for river bed). For tonnage estimation, the reverse quantity is multiplied with the bulk density of 1.8gg/cc i.e 2.0 tonne per cum **(1gg/cc=1.1024tonne/cum)** (For Boulder, Gravel and sand).Report Enclosed as Annexure-VII

GEOLOGICAL RESERVE CALCULATION TABLE

Table:-1

Blocks	Area (ha)	Area (sqm)	Max. depth (m)	Volume cum	BD (T/cum)	Geological Reserve (MT)
Fatehpur	19.8	198000	3	594000	2	1188000
Laha	4.7	47000	3	141000	2	282000
Batoura	2.42	24200	3	72600	2	145200
Nagoli	1.41	14100	3	42300	2	84600
Banaudi	4.38	43800	3	131400	2	262800
Bari Bassi	2.11	21100	3	63300	2	126600
Total	**34.9**			**1044600**		**2089200**

MINEABLE RESERVE CALCULATION TABLE

Table:-2

Blocks	Area (ha)	Area (sqm)	Max. depth (m)	Volume cum	BD (T/cum)	Mineable Reserve (MT)
Fatehpur	17.35	173500	3	520500	2	1041000
Laha	3.9	39000	3	117000	2	234000
Batoura	1.68	16800	3	50400	2	100800
Nagoli	0.56	5600	3	16800	2	33600
Banaudi	3.73	37300	3	111900	2	223800
Bari Bassi	1.26	12600	3	37800	2	75600
Total	28.60			**854400**		**1708800**

***Volume & tonnage has been calculated considering the maximum permissible depth of mining (i.e 3m) as per Enforcement & monitoring Guidelines 2020 of sand Mining to establish the maximum production that could be achieved from lease area.**
Further Detailed Replenishment study has been conducted to estimate the replenished reserve for current year & planning & proposal has been made accordingly.

REPLENISHMENT STUDY

REPLENISHMENT STUDY METHOD:-

Replenishment Study has been done with Drone survey & Physical survey of the field by the conventional method wherein river stretch has been demarcated with latitude and longitude provided by Department of Mines & Geology (Haryana).

Brief process of replenishment study to estimate & establish the replenished amount of sand/Bajri in respective block/stretch:-

- Data Collection of Pre monsoon – Post monsoon status of Lease Area.
- Establishing the levels difference of Pre monsoon – Post monsoon period to establish the occurrence for Boulder, Gravel and sand in relative block
- Quantifying the replenishment amount of Boulder, Gravel and sand establishing the reserve viability in relative block.
- Sampling is done between two consecutive sections to determine the Bulk density.
- Geological & Mineable reserve estimated and proposal for Boulder, Gravel and sand excavation made for permissible quantity. (Mineable material per hectare area available for actual mining shall not exceed the maximum quantity of 60,000 MT per annum as per Enforcement & Monitoring Guidelines for Sand Mining 2020.).

The pre monsoon data (i.e for period April-May 2022) has been extracted from SRTM digital elevation database v4.1 produced by NASA through open source website i.e cgiarcsi.community.

Using SRTM, Raster data of said area is extracted and converted to point data giving the grid code i.e the elevation of every x,y coordinates of said area.

Thus using e-CADD Survey & Arc GIS software the point data thus established is used to generate the csv file of individual block (applying interpolation method).Further considering all the error factors & rectification of data is done thus establishing the Original Ground level the Databases thus generated, structured in tabulated form clearly mentioning the latitude & longitude and respective levels of all the points taken for pre-monsoon period.

For post monsoon data Drone Survey conducted in all blocks & Ground control points established with DGPS.

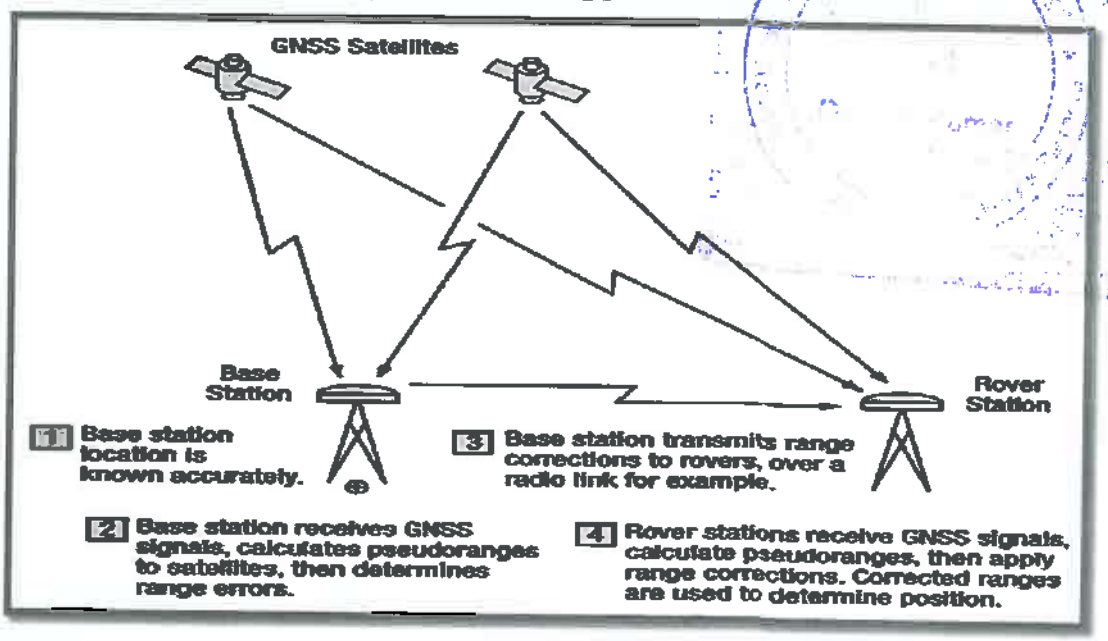
Drone Survey & Field Survey with Differential Global Positioning System (DGPS) :-

Methodology:-

A Differential Global Positioning System (DGPS) is an enhancement to the Global Positioning System (GPS) which provides improved location accuracy, in the range of operations of each system. DGPS (Differential GPS) is essentially a system to provide positional corrections to GPS signals. DGPS uses a fixed, known position to adjust real time GPS signals to eliminate pseudo range errors. DGPS has no effect on results that are based on speed data, such as brake stop results.

Differential GPS (DGPS) requires that a GPS receiver, known as the base station to be set up, thus for pre monsoon Survey/data collection a base station has been set up on a precisely known location. Physical benchmarks has been fixed at appropriate intervals and marked as common/Fixed reference points to control the topographic survey and mining activity in pre & post monsoon period and the Reduced Level (RL) are validated from a nearby standard RL. The base station receiver calculates its position based on satellite signals and compares this location to the known location. The difference is applied to the GPS data recorded by the roving GPS receiver.

3. Fig- DGPS Working processes



Establishing the Original Ground level the Databases thus generated, structured in tabulated form clearly mentioning the latitude & longitude and respective levels of all the points taken in post-monsoon period.

Thus the CSV files of pre & post monsoon data is generated to be processed further to estimate the replenished mineral resource.

Pre Monsoon & Post Monsoon Data of blocks are as follows:-

Fatehpura								
Pre monsoon				Post Monsoon				
Sr.No	Northing	Easting	mRL	Sr.No	Northing	Easting	mRL	Difference
1	702139.7	3381057	336.1506	1	702139.7	3381057	338.5846	2.434
2	702103.5	3380955	336.1415	2	702103.5	3380955	338.4613	2.3198
3	702098.1	3380711	336.3644	3	702098.1	3380711	337.2875	0.9231
4	702091.2	3380631	336.1637	4	702091.2	3380631	337.2404	1.0767
5	702139.8	3380615	336.3313	5	702139.8	3380615	337.0842	0.7529
6	702122	3380667	336.1484	6	702122	3380667	337.2156	1.0672
7	702122.6	3380762	336.153	7	702122.6	3380762	338.1665	2.0135
8	702129.8	3380857	336.1496	8	702129.8	3380857	338.6159	2.4663
9	702144.7	3380955	336.1414	9	702144.7	3380955	338.0247	2.0833
10	702166	3381029	336.1485	10	702166	3381029	339.0191	2.8706
11	702203	3381115	336.2306	11	702203	3381115	339.1169	2.8863
12	702253.1	3381189	336.2306	12	702253.1	3381189	339.1767	2.9461
13	702292.6	3381261	337.8615	13	702292.6	3381261	340.1935	2.332
14	702332.0	3381338	338.9805	14	702332.0	3381338	341.0796	2.0991
15	702383.2	3381363	338.2307	15	702383.2	3381363	339.9119	1.6812
16	702470.8	3381365	339.1087	16	702470.8	3381365	342.0165	2.7078
17	702488.9	3381391	339.1312	17	702488.9	3381391	341.4513	2.3201
18	702432.0	3381487	339.2306	18	702432.0	3381487	341.6862	2.4556
19	702462.8	3381443	339.2306	19	702462.8	3381443	341.6046	2.374
20	702509.5	3381439	339.9273	20	702509.5	3381439	342.4734	2.5461
21	702499.3	3381462	339.9081	21	702499.3	3381462	342.449	2.5409
22	702564	3381491	339.9306	22	702564	3381491	341.9334	2.0028
23	702556.8	3381554	339.1275	23	702556.8	3381554	341.7959	2.6684
24	702667.7	3381739	340.9988	24	702667.7	3381739	344.7461	3.7473
25	702731.7	3381827	341.3081	25	702731.7	3381827	344.425	3.1169
26	702747.2	3381842	342.3273	26	702747.2	3381842	344.8401	2.5128
27	702754.9	3381854	341.9792	27	702754.9	3381854	344.5284	2.5492
28	702748.5	3381865	341.1393	28	702748.5	3381865	343.3365	2.1972

29	702740.1	3381878	342.3306	29	702740.1	3381878	344.8497	2.5191
30	702721.9	3381858	341.9217	30	702721.9	3381858	345.0019	3.0802
31	702691.2	3381820	341.9118	31	702691.2	3381820	344.1631	2.2513
32	702650.6	3381773	341.9581	32	702650.6	3381773	344.4122	2.4541
33	702530.3	3381731	342.0415	33	702530.3	3381731	344.3569	2.5154
34	702524.2	3381712	340.7082	34	702524.2	3381712	342.7642	2.056
35	702498.6	3381771	341.3107	35	702498.6	3381771	343.5575	2.2468
36	702456.9	3381881	341.1377	36	702456.9	3381881	344.0435	2.9058
37	702430	3381935	341.1386	37	702430	3381935	343.6706	2.532
38	702409.8	3381949	340.3413	38	702409.8	3381949	343.192	2.8507
39	702409	3381976	341.2314	39	702409	3381976	344.0529	2.8215
40	702430.6	3382048	343.9962	40	702430.6	3382048	346.0942	2.098
41	702432.2	3382108	342.9915	41	702432.2	3382108	345.2433	2.2518
42	702448.7	3382149	342.3993	42	702448.7	3382149	344.474	2.0747
43	702464	3382203	343.9999	43	702464	3382203	346.1474	2.1475
44	702427.8	3382219	344.1081	44	702427.8	3382219	346.8033	2.6952
45	702426.5	3382258	345.3382	45	702426.5	3382258	347.7566	2.4184
46	702438.2	3382245	343.1793	46	702438.2	3382245	345.8973	2.718
47	702440	3382166	345.2306	47	702440	3382166	346.4733	1.2427
48	702418	3382089	344.0984	48	702418	3382089	345.6803	1.5819
49	702436.9	3382080	342.2303	49	702436.9	3382080	344.4969	2.2666
50	702402.5	3382032	342.3814	50	702402.5	3382032	344.8262	2.4448
51	702398.1	3382004	342.1313	51	702398.1	3382004	343.439	1.3077
52	702385.9	3381925	343.2192	52	702385.9	3381925	345.6397	2.4205
53	702423.2	3381777	342.2306	53	702423.2	3381777	344.1891	1.9585
54	702435.2	3381732	342.1198	54	702435.2	3381732	343.8008	1.681
55	702437.4	3381682	341.1136	55	702437.4	3381682	342.577	1.4634
56	702457.4	3381666	340.3615	56	702457.4	3381666	342.2823	1.9208
57	702492.5	3381651	340.3826	57	702492.5	3381651	343.0229	2.6403
58	702507.3	3381642	341.1504	58	702507.3	3381642	342.1837	1.0333
59	702447.9	3381612	340.2097	59	702447.9	3381612	342.1655	1.9558
60	702430.2	3381593	340.1505	60	702430.2	3381593	341.9473	1.7968
61	702419.8	3381574	340.2316	61	702419.8	3381574	341.6247	1.3931
62	702387.2	3381611	340.1796	62	702387.2	3381611	341.2257	1.0461
63	702377.2	3381591	340.1316	63	702377.2	3381591	342.4288	2.2972
64	702386.7	3381533	340.2197	64	702386.7	3381533	341.3498	1.1301
65	702371	3381550	340.1415	65	702371	3381550	342.1365	1.995
66	702360.3	3381501	338.1504	66	702360.3	3381501	340.8299	2.6795
67	702353.7	3381471	338.3374	67	702353.7	3381471	340.7653	2.4279
68	702339.8	3381443	338.1421	68	702339.8	3381443	340.6437	2.5016
69	702370.4	3381395	338.3905	69	702370.4	3381395	340.5477	2.1572
70	702355.2	3381373	338.0982	70	702355.2	3381373	339.7645	1.6663
71	702328.7	3381404	338.1421	71	702328.7	3381404	340.0364	2.0943
72	702311	3381372	338.1987	72	702311	3381372	341.0501	2.8514

73	702309.6	3381348	338.1001	73	702309.6	338134 8	340.112	2.0119
74	702290.6	3381332	338.2276	74	702290.6	338133 2	339.5923	1.3647
75	702272.5	3381306	338.2307	75	702272.5	338130 6	339.8253	1.5946
76	702244.8	3381283	338.3496	76	702244.8	338128 3	339.6609	1.3113
77	702254.4	3381273	338.2397	77	702254.4	338127 3	339.3938	1.1541
78	702232.3	3381254	338.2387	78	702232.3	338125 4	339.5522	1.3135
79	702212.2	3381232	338.3496	79	702212.2	338123 2	339.7861	1.4365
80	702197.5	3381182	338.3476	80	702197.5	338118 2	339.7324	1.3848
81	702208.1	3381163	338.332	81	702208.1	338116 3	340.2264	2.0944
82	702204.3	3381138	338.14	82	702204.3	338113 8	340.4109	2.2709
83	702162.5	3381112	337.1374	83	702162.5	338111 2	340.0594	2.922
84	702165.6	3381082	337.194	84	702165.6	338108 2	339.9452	2.7512
85	702135	3381019	336.2697	85	702135	338101 9	338.6208	2.3511
86	702134.3	3380992	336.1976	86	702134.3	338099 2	338.3616	2.164
87	702103.8	3380926	336.2372	87	702103.8	338092 6	338.3933	2.1561
88	702102.4	3380595	334.1835	88	702102.4	338059 5	335.9809	1.7974

Laha								
Pre monsoon				Post Monsoon –				
Sr.No	Northing	Easting	mRL	Sr.No	Northing	Easting	mRL	Difference
1	701934	3378479	325.2276	1	701934	3378479	327.0651	2.0375
2	701979.2	3378645	325.2345	2	701979.2	3378645	328.7005	3.466
3	701971.3	3378649	325.3791	3	701971.3	3378649	327.3026	1.9235
4	701965.1	3378652	325.1993	4	701965.1	3378652	327.4287	2.2294
5	701982.8	3378713	325.2277	5	701982.8	3378713	327.9012	2.6735
6	701973.9	3378704	325.2276	6	701973.9	3378704	327.3284	2.1008
7	701987.6	3378727	325.2277	7	701987.6	3378727	328.0892	2.8615
8	701978.1	3378739	325.132	8	701978.1	3378739	327.5872	2.4552
9	701968.8	3378746	325.1309	9	701968.8	3378746	327.3505	2.2196
10	701968.5	3378739	325.132	10	701968.5	3378739	327.1613	2.0293
11	701967.1	3378762	325.2316	11	701967.1	3378762	328.4651	3.2335
12	701974.9	3378772	326.8087	12	701974.9	3378772	329.3957	2.587
13	701966.5	3378782	325.2276	13	701966.5	3378782	327.68	2.4524
14	701970.4	3378799	325.3793	14	701970.4	3378799	327.5186	2.1393
15	701980.5	3378811	326.3765	15	701980.5	3378811	328.8979	2.5214
16	702035.6	3378850	326.1612	16	702035.6	3378850	329.1237	2.9625
17	702052.2	3378851	325.3793	17	702052.2	3378851	328.0615	2.6822
18	702067.8	3378855	325.2596	18	702067.8	3378855	328.4297	3.1701
19	702080	3378850	325.2418	19	702080	3378850	327.6169	2.3751
20	702080.1	3378862	325.2693	20	702080.1	3378862	327.6886	2.4193
21	702053.9	3378892	326.2316	21	702053.9	3378892	328.3001	2.0685
22	702033.4	3378896	326.9997	22	702033.4	3378896	329.9443	2.9446

23	702019.8	3378901	325.2277	23	702019.8	3378901	327.7685	2.5408
24	702025.2	3378912	325.1442	24	702025.2	3378912	327.7682	2.624
25	702013.1	3378925	326.1114	25	702013.1	3378925	328.825	2.7136
26	702011.4	3378940	326.3541	26	702011.4	3378940	329.3112	2.9571
27	701957.4	3378941	326.9312	27	701957.4	3378941	329.7058	2.7746
28	701958.1	3378927	326.3792	28	701958.1	3378927	328.5033	2.1241
29	701949.3	3378917	326.2323	29	701949.3	3378917	328.1081	2.0758
30	701917	3378944	326.8843	30	701917	3378944	329.8589	2.9746
31	701904.2	3378928	326.1087	31	701904.2	3378928	328.181	2.0723
32	701894.6	3378914	326.2085	32	701894.6	3378914	327.7754	1.5669
33	701854.7	3378966	326.2312	33	701854.7	3378966	329.0526	2.8214
34	701841	3378975	326.2592	34	701841	3378975	328.8162	2.557
35	701810.3	3378976	326.2693	35	701810.3	3378976	327.9526	1.6833
36	701806.3	3378976	326.9273	36	701806.3	3378976	329.5635	2.6362
37	701799.6	3378983	327.9999	37	701799.6	3378983	331.0904	3.0905
38	701847.7	3379035	326.3793	38	701847.7	3379035	328.2473	2.068
39	701844.8	3379029	326.1492	39	701844.8	3379029	328.8246	2.6754
40	701839.2	3379018	327.3742	40	701839.2	3379018	329.6843	2.3101
41	701856.8	3379048	326.3793	41	701856.8	3379048	328.1957	2.0164
42	701856.6	3379051	326.9323	42	701856.6	3379051	329.7065	2.7742
43	701892.1	3379059	326.2609	43	701892.1	3379059	328.4978	2.2369
44	701877.2	3379062	326.2306	44	701877.2	3379062	328.2227	1.9921
45	701878.9	3379056	327.9999	45	701878.9	3379056	330.7006	2.7007
46	701925.7	3379078	326.2603	46	701925.7	3379078	328.865	2.6047
47	701922.1	3379083	326.9639	47	701922.1	3379083	329.7621	2.7982
48	701951	3379110	326.3829	48	701951	3379110	328.3814	1.9985
49	701955.1	3379098	326.2727	49	701955.1	3379098	328.8808	2.6081
50	701955.3	3379095	328.9997	50	701955.3	3379095	331.0673	2.0676
51	702009.8	3379145	326.2743	51	702009.8	3379145	328.7081	2.4338
52	701979.6	3379135	327.9343	52	701979.6	3379135	330.3693	2.435
53	702036.6	3379179	327.3129	53	702036.6	3379179	329.6833	2.3704
54	702019.6	3379189	327.3479	54	702019.6	3379189	330.0124	2.6645
55	702065.7	3379210	326.3796	55	702065.7	3379210	329.0685	2.6889
56	702061.4	3379233	326.2648	56	702061.4	3379233	329.0666	2.8018
57	702076.1	3379318	328.2305	57	702076.1	3379318	329.86	1.6295
58	702088.1	3379323	328.1312	58	702088.1	3379323	330.8807	2.7495
59	702077.4	3379267	327.9307	59	702077.4	3379267	330.0747	2.144
60	702063.3	3379275	327.2304	60	702063.3	3379275	329.6767	2.4463
61	702056	3379280	327.9712	61	702056	3379280	330.6822	2.711
62	701905.2	3379074	327.2606	62	701905.2	3379074	330.1804	2.9198
63	701804.5	3379018	327.2304	63	701804.5	3379018	329.6617	2.4313
64	702030.8	3378828	326.1414	64	702030.8	3378828	328.167	2.0256

Bataura								
Pre monsoon				Post Monsoon				
Sr.No	Northing	Easting	mRL	Sr.No	Northing	Easting	mRL	Difference
1	701936.5	3377228	322.3295	1	701936.5	3377228	324.27	1.9405
2	701941.1	3377256	322.3918	2	701941.1	3377256	324.2812	2.0894
3	701933	3377243	322.13	3	701933	3377243	323.8356	1.7056
4	701920.9	3377218	322.35	4	701920.9	3377218	323.9708	1.6208
5	701932.5	3377199	322.3928	5	701932.5	3377199	325.4422	3.0494
6	701905.1	3377229	322.3172	6	701905.1	3377229	323.6644	1.3472
7	701902	3377234	322.3051	7	701902	3377234	324.7538	2.4487
8	701858.3	3377208	322.1257	8	701858.3	3377208	323.8549	1.7292
9	701884.3	3377223	322.1385	9	701884.3	3377223	323.6727	1.5342
10	701835.6	3377198	322.2131	10	701835.6	3377198	323.8388	1.6257
11	701816.4	3377189	322.3234	11	701816.4	3377189	325.6946	3.3712
12	701782.5	3377170	322.1751	12	701782.5	3377170	323.4638	1.2887
13	701759.8	3377158	322.1329	13	701759.8	3377158	325.655	3.5221
14	701770.2	3377166	322.1615	14	701770.2	3377166	323.6047	1.4432
15	701767	3377161	322.1607	15	701767	3377161	324.5965	2.4358
16	701699.7	3377133	322.3015	16	701699.7	3377133	325.2327	2.9312
17	701688.6	3377123	322.1523	17	701688.6	3377123	323.5348	1.3825
18	701702.8	3377128	321.9325	18	701702.8	3377128	323.3124	1.3799
19	701698.5	3377123	321.1295	19	701698.5	3377123	323.5232	2.3937
20	701668.4	3377106	321.1767	20	701668.4	3377106	323.2473	2.0706
21	701649.2	3377093	321.1534	21	701649.2	3377093	323.3123	2.1589
22	701652.7	3377089	323.1161	22	701652.7	3377089	324.94	2.0239
23	701589	3377047	321.2156	23	701589	3377047	323.0218	2.0062
24	701599	3377058	321.2122	24	701599	3377058	323.3623	2.1501
25	701602.2	3377054	323.3932	25	701602.2	3377054	324.877	1.4838
26	701582.3	3377037	321.1832	26	701582.3	3377037	323.4903	2.3071
27	701586.6	3377035	323.1519	27	701586.6	3377035	324.9382	1.7863
28	701575.9	3377035	321.3696	28	701575.9	3377035	322.6955	1.3259
29	701576.5	3377030	321.3579	29	701576.5	3377030	322.5536	1.1957
30	701582.6	3377026	323.2961	30	701582.6	3377026	324.4558	1.1597
31	701577.1	3377013	321.2502	31	701577.1	3377013	323.1196	2.0694
32	701585.5	3377000	323.1738	32	701585.5	3377000	325.1012	1.9274
33	701577.9	3376998	321.1253	33	701577.9	3376998	322.8774	1.7521
34	701569	3377000	323.2043	34	701569	3377000	324.7515	1.5472
35	701573.2	3376960	321.1523	35	701573.2	3376960	323.1404	1.9881
36	701577.2	3376934	321.1532	36	701577.2	3376934	322.8368	1.6836
37	701559.9	3376933	321.1715	37	701559.9	3376933	324.0733	2.9018
38	701551	3376904	321.1822	38	701551	3376904	324.1091	2.9269
39	701561.9	3376842	321.2277	39	701561.9	3376842	322.6885	1.4608
40	701564.4	3376873	321.2217	40	701564.4	3376873	322.7277	1.506
41	701559.9	3376846	321.3793	41	701559.9	3376846	322.6973	1.318

42	701545	3376746	321.2396	42	701545	3376746	322.272	1.0324
43	701563.6	3376706	321.2319	43	701563.6	3376706	322.39	1.1581
44	701542.0	3376661	321.2096	44	701542.0	3376661	322.641	1.4314
45	701574.8	3376632	321.2273	45	701574.8	3376632	322.851	1.6237
46	701543.3	3376590	321.1977	46	701543.3	3376590	323.285	2.0873
47	701604.8	3376579	321.1976	47	701604.8	3376579	323.458	2.2604
48	701632.8	3376562	321.2067	48	701632.8	3376562	323.472	2.2653
49	701540.1	3376634	321.2097	49	701540.1	3376634	322.748	1.5383
50	701585.1	3376659	321.1996	50	701585.1	3376659	322.71	1.5104
51	701602	3376607	321.1311	51	701602	3376607	322.987	2.0559
52	701538.8	3376699	321.1981	52	701538.8	3376699	322.418	1.2199
53	701555.1	3376728	321.1292	53	701555.1	3376728	322.285	1.1558
54	701565.9	3376680	321.2771	54	701565.9	3376680	322.516	1.2389
55	701541.9	3376602	321.3273	55	701541.9	3376602	323.034	1.7067
56	701569.5	3376600	321.1415	56	701569.5	3376600	323.145	2.0035
57	701537.7	3376755	321.1411	57	701537.7	3376755	322.3856	1.2445
58	701550.8	3376765	322.1414	58	701550.8	3376765	324.0646	1.9232
59	701549	3376775	321.3496	59	701549	3376775	322.5739	1.2243
60	701555.3	3376791	321.3326	60	701555.3	3376791	322.779	1.4464
61	701550.5	3376812	321.3795	61	701550.5	3376812	322.7195	1.34
62	701555.5	3376801	321.2616	62	701555.5	3376801	323.9967	2.7351
63	701553.3	3376822	321.2306	63	701553.3	3376822	322.5678	1.3372
64	701515.8	3376576	322.2326	64	701515.8	3376576	323.5964	1.3638

Nagauli								
Pre monsoon				Post Monsoon				
Sr.No	Northing	Easting	mRL	Sr.No	Northing	Easting	mRL	Difference
1	701455.6	3377032	324.1596	1	701455.6	3377032	325.3227	1.1631
2	701437.3	3377046	320.9974	2	701437.3	3377046	323.1185	2.1211
3	701426.8	3377055	320.9276	3	701426.8	3377055	322.8598	1.9322
4	701431.4	3377076	321.9473	4	701431.4	3377076	323.5459	1.5986
5	701448.6	3377067	322.3775	5	701448.6	3377067	324.4976	2.1201
6	701443.9	3377121	322.2096	6	701443.9	3377121	323.7372	1.5276
7	701454.7	3377155	323.2315	7	701454.7	3377155	324.3361	1.1046
8	701457.8	3377197	321.2198	8	701457.8	3377197	322.8851	1.6653
9	701460.6	3377230	321.1993	9	701460.6	3377230	322.7698	1.5705
10	701456.8	3377236	323.2306	10	701456.8	3377236	324.4709	1.2403
11	701468.7	3377248	321.3276	11	701468.7	3377248	322.9676	1.64
12	701476.2	3377242	321.2315	12	701476.2	3377242	323.2342	2.0027
13	701463.7	3377269	321.9992	13	701463.7	3377269	324.2334	2.2342
14	701470.6	3377279	321.2097	14	701470.6	3377279	322.8495	1.6398
15	701475	3377274	321.2105	15	701475	3377274	322.5643	1.3538
16	701479.8	3377271	321.3771	16	701479.8	3377271	322.7252	1.3481

17	701481.3	3377288	322.9996	17	701481.3	3377288	325.9143	2.9147
18	701469.8	3377411	321.2096	18	701469.8	3377411	323.1896	1.98
19	701469.6	3377429	321.9274	19	701469.6	3377429	324.6851	2.7577
20	701475	3377365	321.3793	20	701475	3377365	323.0875	1.7082
21	701483.3	3377413	321.1086	21	701483.3	3377413	322.7978	1.6892
22	701470	3377472	321.9097	22	701470	3377472	324.8328	2.9231
23	701478.8	3377464	321.1349	23	701478.8	3377464	323.2063	2.0714
24	701480.4	3377453	321.2319	24	701480.4	3377453	323.2524	2.0205
25	701469.5	3377455	321.2306	25	701469.5	3377455	323.1663	1.9357
26	701462	3377181	321.2606	26	701462	3377181	323.0751	2.0145
27	701472.3	3377333	321.2596	27	701472.3	3377333	324.018	2.7584
28	701458.2	3377110	322.1089	28	701458.2	3377110	323.835	1.7261

Banaudi								
Pre monsoon				Post Monsoon				
Sr.No	Northing	Easting	mRL	Sr.No	Northing	Easting	mRL	Difference
1	698274.5	3370254	310.2937	1	698274.5	3370254	311.1474	0.8537
2	698277.3	3370262	309.1625	2	698277.3	3370262	310.0984	0.9359
3	698261	3370285	310.2501	3	698261	3370285	311.296	1.0459
4	698269.2	3370298	309.0358	4	698269.2	3370298	310.0402	1.0044
5	698233.4	3370356	310.188	5	698233.4	3370356	311.667	1.479
6	698230.6	3370364	309.1064	6	698230.6	3370364	310.382	1.2756
7	698198	3370466	310.1215	7	698198	3370466	312.6759	2.5544
8	698209.5	3370472	309.1402	8	698209.5	3370472	310.4587	1.3185
9	698185.4	3370537	309.3733	9	698185.4	3370537	311.7532	2.3799
10	698194.9	3370531	309.0319	10	698194.9	3370531	310.2687	1.2368
11	698182.8	3370614	309.2597	11	698182.8	3370614	311.7835	2.5238
12	698195.4	3370612	309.1669	12	698195.4	3370612	310.6792	1.5123
13	698185.5	3370686	310.1075	13	698185.5	3370686	311.4616	1.3541
14	698178.5	3370691	310.244	14	698178.5	3370691	312.0654	2.0214
15	698192	3370691	309.1841	15	698192	3370691	310.6485	1.4644
16	698185.6	3370726	309.2396	16	698185.6	3370726	311.1411	1.9015
17	698177.2	3370731	310.2492	17	698177.2	3370731	312.0778	1.6286
18	698178.2	3370750	310.2057	18	698178.2	3370750	312.8895	2.6838
19	698180.3	3370760	309.2962	19	698180.3	3370760	310.9868	1.6906
20	698174.9	3370807	309.1254	20	698174.9	3370807	310.6576	1.5322
21	698168.6	3370796	310.2296	21	698168.6	3370796	312.112	2.0824
22	698200.9	3370852	309.2373	22	698200.9	3370852	310.6533	1.416
23	698193.6	3370858	309.3679	23	698193.6	3370858	312.0827	2.5148
24	698202.9	3370874	309.1316	24	698202.9	3370874	310.7196	1.588
25	698205	3370865	309.101	25	698205	3370865	310.9092	2.0082
26	698209.4	3370859	309.1627	26	698209.4	3370859	310.5319	1.3692
27	698193.3	3370837	309.3351	27	698193.3	3370837	312.4262	3.0911

28	698191.9	3370847	309.2429	28	698191.9	3370847	311.2504	2.0075
29	698177.5	3370826	309.3212	29	698177.5	3370826	310.991	1.6698
30	698184.5	3370817	309.1955	30	698184.5	3370817	312.6597	3.4642
31	698176.7	3370785	309.1702	31	698176.7	3370785	310.4627	1.2925
32	698185.7	3370792	309.2157	32	698185.7	3370792	311.0215	2.0058
33	698191.5	3370771	309.2097	33	698191.5	3370771	310.788	1.5783
34	698180.7	3370777	309.3673	34	698180.7	3370777	312.4506	3.0833
35	698187.2	3370766	309.2276	35	698187.2	3370766	310.4469	1.2193
36	698197.3	3370740	309.2199	36	698197.3	3370740	310.5549	1.335
37	698198.6	3370726	309.1976	37	698198.6	3370726	310.2981	1.1005
38	698198.5	3370720	309.2153	38	698198.5	3370720	311.145	1.9297
39	698195.3	3370708	309.3857	39	698195.3	3370708	310.638	1.2523
40	698203.5	3370661	309.3856	40	698203.5	3370661	310.5048	1.1192
41	698194.5	3370652	309.3919	41	698194.5	3370652	310.7072	1.3153
42	698182.9	3370633	309.1977	42	698182.9	3370633	310.4311	1.2334
43	698198	3370629	309.3876	43	698198	3370629	312.047	2.6594
44	698183.2	3370574	309.1476	44	698183.2	3370574	310.7504	1.6028
45	698198.9	3370572	309.2154	45	698198.9	3370572	310.7662	1.5508
46	698189.6	3370586	309.2156	46	698189.6	3370586	313.0684	3.8528
47	698196.4	3370519	309.2288	47	698196.4	3370519	310.6789	1.4501
48	698197	3370484	309.3213	48	698197	3370484	310.5859	1.2646
49	698202.0	3370499	309.3532	49	698202.0	3370499	312.0967	2.5435
50	698206.8	3370454	309.1447	50	698206.8	3370454	310.2828	1.1381
51	698214.4	3370443	309.1398	51	698214.4	3370443	310.6082	1.4684
52	698218.2	3370429	309.3095	52	698218.2	3370429	311.9183	2.6088
53	698225.8	3370397	309.1919	53	698225.8	3370397	310.3945	1.2026
54	698246.9	3370360	309.1379	54	698246.9	3370360	310.3024	1.1645
55	698254.5	3370326	308.8679	55	698254.5	3370326	310.0867	1.2188
56	698283.8	3370276	308.4305	56	698283.8	3370276	310.001	1.5705
57	698293.4	3370252	308.5443	57	698293.4	3370252	309.9794	1.4351
58	698290.5	3370246	308.4651	58	698290.5	3370246	309.939	1.4739
59	698282.7	3370238	308.8931	59	698282.7	3370238	310.9884	2.0953
60	698299.3	3370222	308.4976	60	698299.3	3370222	309.8106	1.313
61	698310.3	3370211	307.8911	61	698310.3	3370211	309.8608	1.9697
62	698314.6	3370220	308.8712	62	698314.6	3370220	311.5451	2.6739
63	698329.6	3370200	308.8434	63	698329.6	3370200	309.9594	1.116
64	698326.4	3370187	308.6432	64	698326.4	3370187	309.8314	1.1882
65	698333.2	3370172	308.8644	65	698333.2	3370172	311.0336	2.1692
66	698357	3370147	308.1509	66	698357	3370147	309.7499	1.599
67	698359.4	3370134	308.7199	67	698359.4	3370134	309.8419	1.122
68	698373.9	3370125	308.7121	68	698373.9	3370125	309.9566	1.2445
69	698378.1	3370108	308.6714	69	698378.1	3370108	309.972	1.3006
70	698407.9	3370066	308.0781	70	698407.9	3370066	309.3876	1.3095
71	698431.7	3370033	308.0923	71	698431.7	3370033	309.4206	1.3283

72	698444	3370016	308.0193	72	698444	3370016	309.1064	1.0871
73	698455.4	3369985	308.0379	73	698455.4	3369985	309.2581	1.2202
74	698474.2	3369967	308.0917	74	698474.2	3369967	309.6214	1.5297
75	698466	3369974	308.0379	75	698466	3369974	309.4037	1.3658
76	698459.8	3369996	308.6684	76	698459.8	3369996	310.668	1.9996
77	698472.9	3369982	308.6622	77	698472.9	3369982	310.8545	2.1923
78	698489.5	3369952	308.1666	78	698489.5	3369952	309.2174	1.0508
79	698506.2	3369941	308.3863	79	698506.2	3369941	309.0608	0.6745
80	698528.7	3369920	308.1247	80	698528.7	3369920	312.0141	3.6894
81	698542.6	3369908	308.2156	81	698542.6	3369908	309.2211	1.0055
82	698552.5	3369900	308.3608	82	698552.5	3369900	311.6258	3.265
83	698575.2	3369885	308.3203	83	698575.2	3369885	309.356	1.0357
84	698585.4	3369873	308.1048	84	698585.4	3369873	309.3768	1.272
85	698594.6	3369867	308.9925	85	698594.6	3369867	311.3201	2.3276
86	698603.3	3369858	308.3796	86	698603.3	3369858	309.4739	1.0943
87	698659.6	3369815	308.152	87	698659.6	3369815	309.3988	1.2468
88	698651.9	3369828	308.2334	88	698651.9	3369828	309.2346	1.0012
89	698633.9	3369838	308.8131	89	698633.9	3369838	311.2731	2.46
90	698677.7	3369809	308.0715	90	698677.7	3369809	309.2104	1.1389
91	698716.1	3369794	308.0712	91	698716.1	3369794	309.3567	1.2855
92	698710.8	3369788	308.1575	92	698710.8	3369788	311.6946	3.5371
93	698705.6	3369801	308.1314	93	698705.6	3369801	309.2521	1.1207
94	698751.6	3369772	308.3644	94	698751.6	3369772	309.6182	1.2538
95	698774.3	3369763	308.0912	95	698774.3	3369763	309.2437	1.1525
96	698779.6	3369757	308.0194	96	698779.6	3369757	309.0836	1.0642
97	698794.1	3369748	308.3636	97	698794.1	3369748	310.8857	2.5221
98	698806.9	3369741	308.0089	98	698806.9	3369741	309.0167	1.0078
99	698817.9	3369735	308.0134	99	698817.9	3369735	309.3752	1.3618
100	698817.6	3369742	308.3245	100	698817.6	3369742	310.6666	2.3421
101	698844.1	3369753	307.0192	101	698844.1	3369753	308.7743	1.7551
102	698851	3369765	308.2408	102	698851	3369765	311.1442	2.9034
103	698861.5	3369761	307.2131	103	698861.5	3369761	308.9126	1.6995
104	698874	3369777	307.3709	104	698874	3369777	309.0223	1.6514
105	698873.5	3369765	308.3907	105	698873.5	3369765	311.145	2.7543
106	698912.6	3369822	307.2993	106	698912.6	3369822	308.7667	1.4674
107	698929.2	3369854	307.1595	107	698929.2	3369854	308.8611	1.7016
108	698940	3369853	308.3384	108	698940	3369853	311.1894	2.851
109	698938.4	3369876	307.3895	109	698938.4	3369876	308.9961	1.6066
110	698972.8	3369911	307.097	110	698972.8	3369911	308.8366	1.7396
111	698969.5	3369915	308.2289	111	698969.5	3369915	311.2572	3.0283
112	698993	3369943	307.3669	112	698993	3369943	308.3972	1.0303
113	699005.9	3369968	307.2156	113	699005.9	3369968	308.8159	1.6003
114	699006.6	3369958	308.2957	114	699006.6	3369958	311.1333	2.8376
115	699039.6	3370010	307.2186	115	699039.6	3370010	308.5557	1.3371

116	699128.9	3370152	307.2081	116	699128.9	337015 2	308.5472	1.3391
117	699102.4	3370113	308.2038	117	699102.4	3370113	310.9481	2.7443
118	699149.7	3370181	307.3771	118	699149.7	337018 1	308.8047	1.4276
119	699168.8	3370211	308.3029	119	699168.8	3370211	311.5534	3.2505
120	699208.5	3370247	306.3829	120	699208.5	3370247	307.9986	1.6157
121	699235.6	3370258	306.1728	121	699235.6	337025 8	307.7412	1.5684
122	699251	3370270	308.3845	122	699251	337027 0	310.5276	2.1431
123	699276	3370288	306.3707	123	699276	3370288	307.7765	1.4058
124	699268.5	3370281	306.2442	124	699268.5	3370281	308.0936	2.0494
125	699273.2	3370272	308.2825	125	699273.2	3370272	310.4575	2.175
126	699293.9	3370284	306.3343	126	699293.9	3370284	308.0274	1.6931
127	699295.9	3370274	306.1808	127	699295.9	3370274	307.8035	1.6227
128	699311.4	3370262	307.2185	128	699311.4	3370262	308.2434	1.0249
129	699311.6	3370254	307.1127	129	699311.6	3370254	308.3556	1.2429
130	699316.2	3370245	308.3745	130	699316.2	3370245	310.8726	2.4981
131	699342.6	3370215	306.3921	131	699342.6	3370215	308.2179	2.0258
132	699329.5	3370227	306.2058	132	699329.5	3370227	308.0489	2.0431
133	699336.1	3370235	308.2153	133	699336.1	3370235	310.821	2.6057
134	699381	3370167	306.3464	134	699381	3370167	308.2066	2.0602
135	699400.1	3370138	306.2486	135	699400.1	3370138	308.0749	2.0263
136	699416	3370121	307.1126	136	699416	3370121	308.2006	1.088
137	699424.5	3370109	308.1419	137	699424.5	3370109	310.814	2.6721
138	699435.9	3370099	306.1727	138	699435.9	3370099	307.7981	1.6254
139	699439.2	3370086	308.2903	139	699439.2	3370086	310.6034	2.3131
140	699458.4	3370059	306.2473	140	699458.4	3370059	307.626	1.3787
141	699483.5	3370023	306.1518	141	699483.5	3370023	307.5589	1.4071
142	699496.9	3370003	307.1052	142	699496.9	3370003	308.4384	1.3332
143	699520	3369982	307.1517	143	699520	3369982	308.4189	1.2672
144	699541.5	3369966	306.0061	144	699541.5	3369966	307.2561	1.25
145	699550	3369955	306.3639	145	699550	3369955	307.7402	1.3763
146	699553.9	3369945	306.3141	146	699553.9	3369945	307.8313	1.5172
147	699571.3	3369934	308.2163	147	699571.3	3369934	309.3162	1.0999
148	699590.9	3369918	306.0466	148	699590.9	3369918	307.1475	1.1009
149	699601.5	3369906	306.2206	149	699601.5	3369906	307.4107	1.1901
150	699625.8	3369910	306.2411	150	699625.8	3369910	307.555	1.3139
151	699648.6	3369913	306.3115	151	699648.6	3369913	307.4772	1.1657
152	699678.9	3369908	308.185	152	699678.9	3369908	306.9415	-1.2435
153	699730.1	3369904	306.1638	153	699730.1	3369904	307.4242	1.2604
154	699723.5	3369915	306.1615	154	699723.5	3369915	307.3675	1.206
155	699708.3	3369906	306.3747	155	699708.3	3369906	307.7457	1.371
156	699706.3	3369915	308.2278	156	699706.3	3369915	309.3265	1.0987
157	698271.9	3370266	310.3128	157	698271.9	3370266	313.09	2.7772
158	698286.9	3370261	310.1923	158	698286.9	3370261	313.3706	3.1783

Bari Bassi								
Pre monsoon				Post Monsoon				
Sr.No	Northing	Easting	mRL	Sr.No	Northing	Easting	mRL	Difference
1	699671.9	3372419	312.0965	1	699671.9	3372419	313.5887	1.4922
2	699668.2	3372409	312.1628	2	699668.2	3372409	315.5514	3.3886
3	699659.8	3372394	312.1614	3	699659.8	3372394	315.2239	3.0625
4	699643.8	3372386	312.1588	4	699643.8	3372386	313.4961	1.3373
5	699638.1	3372393	312.3918	5	699638.1	3372393	313.4356	1.0438
6	699642.3	3372407	312.3409	6	699642.3	3372407	313.6695	1.3286
7	699643.1	3372419	312.0979	7	699643.1	3372419	314.8637	2.7658
8	699765	3372512	312.1118	8	699765	3372512	313.8005	1.6887
9	699755.1	3372526	312.3653	9	699755.1	3372526	315.3052	2.9399
10	699794.8	3372563	312.1634	10	699794.8	3372563	314.1432	1.9798
11	699797.6	3372575	312.1472	11	699797.6	3372575	315.465	3.3178
12	699855.2	3372681	311.2186	12	699855.2	3372681	313.8291	2.6105
13	699845.7	3372729	311.2121	13	699845.7	3372729	313.8852	2.6731
14	699849.2	3372737	311.2711	14	699849.2	3372737	313.9135	2.6424
15	699841	3372748	313.1516	15	699841	3372748	316.2137	3.0621
16	699834.2	3372767	311.3439	16	699834.2	3372767	313.8877	2.5438
17	699839.6	3372826	311.1475	17	699839.6	3372826	314.7733	3.6258
18	699849.2	3372837	311.109	18	699849.2	3372837	315.0735	3.9645
19	699844.4	3372842	313.3723	19	699844.4	3372842	316.1402	2.7679
20	699858	3372833	311.3375	20	699858	3372833	314.092	2.7545
21	699863.4	3372828	311.3157	21	699863.4	3372828	314.1576	2.8419
22	699850.8	3372818	311.3706	22	699850.8	3372818	314.1313	2.7607
23	699854.5	3372811	313.3652	23	699854.5	3372811	315.7248	2.3596
24	699846.5	3372799	311.1764	24	699846.5	3372799	314.0769	2.9005
25	699846.7	3372790	311.2278	25	699846.7	3372790	314.9225	3.6947
26	699849	3372780	312.2461	26	699849	3372780	315.5287	3.2826
27	699851.5	3372757	311.323	27	699851.5	3372757	313.8464	2.5234
28	699854.3	3372724	311.152	28	699854.3	3372724	313.9241	2.7721
29	699852.7	3372705	311.3542	29	699852.7	3372705	314.3705	3.0163
30	699856.9	3372715	312.1509	30	699856.9	3372715	315.1516	3.0007
31	699857	3372692	311.1586	31	699857	3372692	313.6068	2.4482
32	699856.1	3372666	311.2516	32	699856.1	3372666	313.3691	2.1175
33	699848.4	3372647	311.3911	33	699848.4	3372647	313.7173	2.3262
34	699834.5	3372615	312.3864	34	699834.5	3372615	313.5776	1.1912
35	699843.1	3372628	312.3779	35	699843.1	3372628	315.7687	3.3908
36	699825	3372593	312.2306	36	699825	3372593	313.5398	1.3092
37	699820.8	3372580	312.2508	37	699820.8	3372580	313.8272	1.5764
38	699803.1	3372553	313.1628	38	699803.1	3372553	315.6729	2.5101
39	699789.3	3372536	312.2542	39	699789.3	3372536	313.5737	1.3195

40	699737.2	3372503	312.3673	40	699737.2	3372503	314.2151	2.0478
41	699764.9	3372500	313.2121	41	699764.9	3372500	316.4549	3.2428
42	699745.6	3372489	312.1423	42	699745.6	3372489	313.2881	1.1458
43	699699.2	3372468	312.3738	43	699699.2	3372468	313.4546	1.0808
44	699699	3372441	312.892	44	699699	3372441	315.8396	2.9476
45	699664.6	3372438	312.3513	45	699664.6	3372438	313.432	1.0807

***Refer Pre & Post Monsoon Map Plate No. 5A**

Data Processing:-

The above generated file is exported to E-Survey CADD software for further processing. With the help of software the data (CSV) is processed & 3D polylines created selecting elevation (mRL).

Interpolate of Survey Data

Interpolation is an easy way to interpolate points at any intervals using the actual surveyed data for generating Cross Sections along the longitudinal section. "Interpolate" allows obtaining values at regular intervals. It interpolates elevations at each cross-section along the longitudinal section, which may further be exported to excel for section generation. It also uses the three most commonly used and proven methods of Interpolation techniques for data processing - Straight line, TIN or 3D interpolation.

Practically, surveying at regular/accurate intervals (as directed in Sustainable Sand Mining Management Guideline 2016, and Rajasthan Miner Mineral concession Rule 2017, and Enforcement & Monitoring Guidelines for Sand Mining 2020) is not possible for various reasons. Thus, to obtain values at regular intervals (as per the guideline & as directed by authority), points are interpolated. This interpolation is often done manually with a lot of calculations.

Section Generation & Volume Calculation:-

Exports interpolated cross-section and longitudinal section values to excel or section generation software i.e E-Survey CADD. Further generate the section drawings from point data available in CAD drawing or levels available in Excel or CSV file. The database thus structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chain-age and respective levels of all the points taken on that section line.

A plan clearly mentioning the width of the river, lease boundaries, levels (MSL & RL), left under safety barriers (non mining) demarcated as restricted in consensus with Rajasthan Miner Mineral concession Rule 2017, and the provision mentioned in this Sustainable Sand Mining

Management Guidelines. 2016, and Enforcement & Monitoring Guidelines for Sand Mining 2020.

Also the software generates the area & volume calculations which is based on trapezoidal method of calculation between two consecutive sections. Thus establishing the volume of reserve replenished in btw pre & post monsoon period. Reserve estimation is based on the data collection and quantification of sand transported during the monsoon season. Based on the quantification of material deposited in the river bed, working plan has been prepared/ proposed for farther excavation. Refer Plate No.-5A

The tonnage of the volume established using the Bulk density between every two consecutive section.

GEOLOGICAL RESERVE CALCULATION TABLE

Table:-3.4.1

Blocks	Area (ha)	Average depth (m)	Volume cum	BD (T/cum)	Geological Reserve (MT)
Fatehpur	19.8	2.13	422518.80	2	845037.6
Laha	4.7	2.45	117814.20	2	235628.4
Batoura	2.42	2.01	44199.42	2	88398.84
Nagoli	1.41	2.07	27709.50	2	55419
Banaudi	4.38	1.69	73734.11	2	147468.2
Bari Bassi	2.11	2.43	51337.00	2	102674
Total	**34.90**		**733185.00**		**1474626**

MINEABLE RESERVE CALCULATION TABLE

Table:-3.4.2

Blocks	Area (ha)	Average depth (m)	Volume cum	BD (T/cum)	Mineable Reserve (MT)
Fatehpur	17.35	2.13	369688	2	739377
Laha	3.9	2.45	97834	2	195668
Batoura	1.68	2.01	30488.02	2	60976.05
Nagoli	0.56	2.07	10595	2	21190
Banaudi	3.73	1.69	63306	2	126613.20
Bari Bassi	1.26	2.43	30804	2	61608
Total	28.60		**602527.22**		**1205432**

SECTION WISE RESERVE CALCULATION TABLE

Geological Reserves Estimation/Replenishment of sand/Bajri of Block Fatehpur

Sr.No	Two Consecutive Cross Section		Average Area of Cross Section	Mineral /Replenishment of Sand (Post Monsoon){in Cubic Meters)	Bulk Density (T/cum)	Tonnage Of Mineral (Replenished) in MT	Distance Between two consecutive Section Line
	From	To					
1	1-1'	2-2'	229.47	45893.60	2	91787.2	200.000
2	2-2'	3-3'	160.73	32145.00	2	64290	200.000
3	3-3'	4-4'	172.62	34523.00	2	69046	200.000
4	4-4'	5-5'	211.85	42369.20	2	84738.4	200.000
5	5-5'	6-6'	335.03	67005.00	2	134010	200.000
6	6-6'	7-7'	281.64	56328.30	2	112656.6	200.000
7	7-7'	8-8'	221.62	44323.00	2	88646	200.000
8	8-8'	9-9'	276.84	55368.50	2	110737	200.000
9	9-9'	10-10'	215.21	44563.20	2	89126.4	207.073
	Total			422518.80		845037.6	

Mineable Reserves Estimation/Replenishment of sand/Bajri of Block Fatehpur

Sr.No	Two Consecutive Cross Section		Average Area of Cross Section	Mineral /Replenishment of Sand (Post Monsoon){in Cubic Meters)	Bulk Density (T/cum)	Tonnage Of Mineral (Replenished) in MT	Distance Between two consecutive Section Line
	From	To					
1	1-1'	2-2'	178.945	35789.00	2	71578	200.000
2	2-2'	3-3'	126.840	25368.00	2	50736	200.000
3	3-3'	4-4'	113.945	22789.00	2	45578	200.000
4	4-4'	5-5'	138.802	27760.30	2	55520.6	200.000
5	5-5'	6-6'	217.962	43592.30	2	87184.6	200.000
6	6-6'	7-7'	199.425	39885.00	2	79770	200.000
7	7-7'	8-8'	275.060	55012.00	2	110024	200.000
8	8-8'	9-9'	206.185	41237.00	2	82474	200.000
9	9-9'	10-10'	377.915	78256.00	2	156512	207.073
	Total			369688.60		739377.2	

*Refer Pre & Post Monsoon Map Plate No. 5A of Fatehpur Block

Geological Reserves Estimation/Replenishment of sand/Bajri of Block Laha

Sr.No	Two Consecutive Cross Section		Average Area of Cross Section	Mineral /Replenishment of Sand (Post Monsoon)(in Cubic Meters)	Bulk Density (T/cum)	Tonnage Of Mineral (Replenished) in MT	Distance Between two consecutive Section Line
	From	To					
1	1-1'	2-2'	56.18	11236.30	2	22472.60	200.00
2	2-2'	3-3'	59.27	11853.50	2	23707.00	200.00
3	3-3'	4-4'	126.85	25369.60	2	50739.20	200.00
4	4-4'	5-5'	84.47	16893.00	2	33786.00	200.00
5	5-5'	6-6'	98.45	19689.50	2	39379.00	200.00
6	6-6'	7-7'	72.68	14536.00	2	29072.00	200.01
7	7-7'	8-8'	137.41	18236.30	2	36472.60	132.72
	Total			117814.20		235628.4	

Mineable Reserves Estimation/Replenishment of sand/Bajri of Block Laha

Sr.No	Two Consecutive Cross Section		Average Area of Cross Section	Mineral /Replenishment of Sand (Post Monsoon)(in Cubic Meters)	Bulk Density (T/cum)	Tonnage Of Mineral (Replenished) in MT	Distance Between two consecutive Section Line
	From	To					
1	1-1'	2-2'	36.300	7260.00	2	14520.00	200.00
2	2-2'	3-3'	42.500	8500.00	2	17000.00	200.00
3	3-3'	4-4'	73.253	14650.50	2	29301.00	200.00
4	4-4'	5-5'	63.650	12730.00	2	25460.00	200.00
5	5-5'	6-6'	92.800	18560.00	2	37120.00	200.00
6	6-6'	7-7'	108.400	21681.31	2	43362.61	200.01
7	7-7'	8-8'	108.899	14452.59	2	28905.17	132.72
	Total			97834.39		195668.79	

*Refer Pre & Post Monsoon Map Plate No. 5A of Laha Block

Geological Reserves Estimation/Replenishment of sand/Bajri of Block Bataura

Sr.No	Two Consecutive Cross Section		Average Area of Cross Section	Mineral /Replenishment of Sand (Post Monsoon)(in Cubic Meters)	Bulk Density (T/cum)	Tonnage Of Mineral (Replenished) in MT	Distance Between two consecutive Section Line
	From	To					
1	1-1'	2-2'	41.170	8234.020	2	16468.04	200.000
2	2-2'	3-3'	46.171	9234.200	2	18468.4	200.000
3	3-3'	4-4'	41.170	8234.000	2	16468	200.000
4	4-4'	5-5'	47.670	9534.000	2	19068	200.000
5	5-5'	6-6'	87.104	8963.200	2	17926.4	102.902
	Total			44199.42		88398.84	

Mineable Reserves Estimation/Replenishment of sand/Bajri of Block Bataura

Sr.No	Two Consecutive Cross Section		Average Area of Cross Section	Mineral /Replenishment of Sand (Post Monsoon)(in Cubic Meters)	Bulk Density (T/cum)	Tonnage Of Mineral (Replenished) in MT	Distance Between two consecutive Section Line
	From	To					
1	1-1'	2-2'	32.980	6596.000	2	13192	200.000
2	2-2'	3-3'	41.725	8345.000	2	16690	200.000
3	3-3'	4-4'	28.250	5650.000	2	11300	200.000
4	4-4'	5-5'	24.995	4999.000	2	9998	200.000
5	5-5'	6-6'	47.599	4898.000	2	9796	102.902
	Total			30488.00		60976	

*Refer Pre & Post Monsoon Map Plate No. 5A of Bataura Block

Geological Reserves Estimation/Replenishment of sand/Bajri of Block Nagauli

Sr.No	Two Consecutive Cross Section		Average Area of Cross Section	Mineral /Replenishment of Sand (Post Monsoon)(in Cubic Meters)	Bulk Density (T/cum)	Tonnage Of Mineral (Replenished) in MT	Distance Between two consecutive Section Line
	From	To					
1	1-1'	2-2'	57.920	11584.000	2	23168	200.000
2	2-2'	3-3'	51.283	10256.500	2	20513	200.000
3	3-3'	4-4'	126.966	5869.000	2	11738	46.225
	Total			27709.50		55419	

Mineable Reserves Estimation/Replenishment of sand/Bajri of Block Nagauli

Sr.No	Two Consecutive Cross Section		Average Area of Cross Section	Mineral /Replenishment of Sand (Post Monsoon)(in Cubic Meters)	Bulk Density (T/cum)	Tonnage Of Mineral (Replenished) in MT	Distance Between two consecutive Section Line
	From	To					
1	1-1'	2-2'	17.945	3589.0	2	7178	200.000
2	2-2'	3-3'	21.175	4235.0	2	8470	200.000
3	3-3'	4-4'	59.936	2770.5	2	5541.08	46.225
	Total			10594.54		21189.08	

*Refer Pre & Post Monsoon Map Plate No. 5A of Nagauli Block

Geological Reserves Estimation/Replenishment of sand/Bajri of Block Banaudi

Sr.No	Two Consecutive Cross Section		Average Area of Cross Section	Mineral /Replenishment of Sand (Post Monsoon)(in Cubic Meters)	Bulk Density (T/cum)	Tonnage Of Mineral (Replenished) in MT	Distance Between two consecutive Section Line
	From	To					
1	1-1'	2-2'	13.65	2727.91	2	5455.82	199.92
2	2-2'	3-3'	16.72	3344.00	2	6688.00	200.00
3	3-3'	4-4'	22.98	4596.00	2	9192.00	200.00
4	4-4'	5-5'	40.12	8023.00	2	16046.00	200.00
5	5-5'	6-6'	33.97	6793.00	2	13586.00	200.00
6	6-6'	7-7'	5.62	1123.00	2	2246.00	200.00
7	7-7'	8-8'	31.02	6203.00	2	12406.00	200.00
8	8-8'	9-9'	0.00	0.00	2	0.00	200.00
9	9-9'	10-10'	26.61	5322.70	2	10645.40	200.00
10	10-10'	11-11'	41.23	8246.00	2	16492.00	200.00
11	11-11'	12-12'	24.45	4889.50	2	9779.00	200.00
12	12-12'	13-13'	28.66	5732.00	2	11464.00	200.00
13	13-13'	14-14'	57.65	11530.00	2	23060.00	200.00
14	14-14'	15-15'	34.28	5204.00	2	10408.00	151.81
	Total			73734.11		147468.21	

Mineable Reserves Estimation/Replenishment of sand/Bajri of Block Banaudi

Sr.No	Two Consecutive Cross Section		Average Area of Cross Section	Mineral /Replenishment of Sand (Post Monsoon)(in Cubic Meters)	Bulk Density (T/cum)	Tonnage Of Mineral (Replenished) in MT	Distance Between two consecutive Section Line
	From	To					
1	1-1'	2-2'	24.475	4893.00	2	9786.00	199.92
2	2-2'	3-3'	19.890	3978.00	2	7956.00	200.00
3	3-3'	4-4'	22.845	4569.00	2	9138.00	200.00
4	4-4'	5-5'	22.895	4579.00	2	9158.00	200.00
5	5-5'	6-6'	27.900	5580.00	2	11160.00	200.00
6	6-6'	7-7'	17.945	3589.00	2	7178.00	200.00
7	7-7'	8-8'	16.210	3242.00	2	6484.00	200.00
8	8-8'	9-9'	0.000	0.00	2	0.00	200.00
9	9-9'	10-10'	25.615	5123.00	2	10246.00	200.00
10	10-10'	11-11'	22.945	4589.00	2	9178.00	200.00
11	11-11'	12-12'	33.945	6789.00	2	13578.00	200.00
12	12-12'	13-13'	29.480	5896.00	2	11792.00	200.00
13	13-13'	14-14'	24.480	4896.00	2	9792.00	200.00
14	14-14'	15-15'	36.779	5583.60	2	11167.20	151.81
	Total			63306.60		126613.20	

*Refer Pre & Post Monsoon Map Plate No. 5A of Banaudi Block

Geological Reserves Estimation/Replenishment of sand/Bajri of Block Bari Bassi

Sr.No	Two Consecutive Cross Section		Average Area of Cross Section	Mineral /Replenishment of Sand (Post Monsoon)(in Cubic Meters)	Bulk Density (T/cum)	Tonnage Of Mineral (Replenished) in MT	Distance Between two consecutive Section Line
	From	To					
1	1-1'	2-2'	76.433	15223.000	2	30446.00	199.169
2	2-2'	3-3'	116.560	23312.000	2	46624.00	200.000
3	3-3'	4-4'	88.841	12802.000	2	25604.00	144.100
	Total			51337.00		102674.00	

Mineable Reserves Estimation/Replenishment of sand/Bajri of Block Bari Bassi

Sr.No	Two Consecutive Cross Section		Average Area of Cross Section	Mineral /Replenishment of Sand (Post Monsoon)(in Cubic Meters)	Bulk Density (T/cum)	Tonnage Of Mineral (Replenished) in MT	Distance Between two consecutive Section Line
	From	To					
1	1-1'	2-2'	35.708	7112.000	2	14224.00	199.169
2	2-2'	3-3'	62.280	12456.000	2	24912.00	200.000
3	3-3'	4-4'	77.974	11236.000	2	22472.00	144.100
	Total			30804.00		61608.00	

*Refer Pre & Post Monsoon Map Plate No. 5A of Bari Bassi Block

Table:-3.4.3

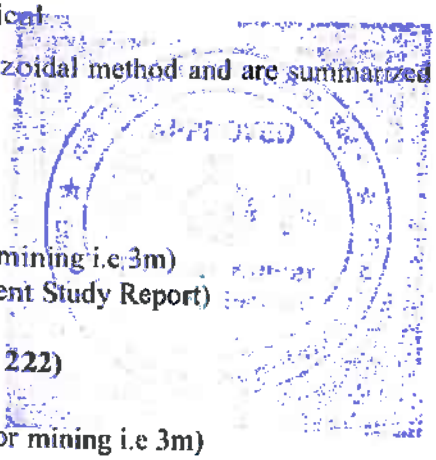
Blocks	Area (ha)	Average depth (m)	Volume cum	BD(T/cum)	Blocked Reserve (MT)
Fatehpur	2.45	2.13	52830.8	2	105660.6
Laha	0.75	2.45	19980.2	2	39960.4
Batoura	0.74	2.01	13711.4	2	27422.79
Nagoli	0.85	2.07	17114.5	2	34229
Banaudi	0.65	1.69	10428.11	2	20855
Bari Bassi	0.85	2.43	20533	2	41066
Total	6.29		134598		269193.8

A. Details of UNFC classification

UNFC is a three digit code based system, the economic viability axis representing the first digit, the feasibility axis the second digit and the geological axis the third digit. Each digit provided Codes 1, 2 and 3 in decreasing order. The highest category of resources under UNFC system has code (111) and for lowest category the code is (334).

- Code (111): This code is provided for the economically mineable part of the measured mineral resources (proved category reserves).
- Code (121): This code is provided for the economically mineable part of the indicated mineral resources (probable category reserves).
- Code (211): The part of the measured mineral resources (proved category), which as per feasibility study has not found economically mineable. The reserves blocked in 7.5 meters buffer zone and 50 meters from permanent structure.
- Code (222): The part of the indicated mineral resources (probable category), which as per feasibility study has not found economically mineable. The reserves blocked in 7.5 meters buffer zone and 50 meters from permanent structure.
- Code (333): Tonnage, Grade and mineral contents can be estimated with low level of confidence and resources are also inferred from geological

The reserves of Boulder, Gravel and sand calculated by trapezoidal method and are summarized here below:



A) PROVED RESERVERS AS PER UNFC CODE (111)

Total Reserves = 2089200 MT (Considering Max. depth for mining i.e 3m)
Total Reserves = **1474626 MT** (as per detailed Replenishment Study Report)

B) BLOCKED RESERVES AS PER UNFC CODE (211 & 222)

Blocked Reserve = 380400 MT (Considering Max. depth for mining i.e 3m)
Blocked Reserve= **269193.8 MT** (as per detailed Replenishment Study Report)

C) MINEABLE RESERVES = (A-B)

Mineable Reserve = 1708800 MT (Considering Max. depth for mining i.e 3m)
Mineable Reserve = 1205432 MT (as per detailed Replenishment Study Report)

D) PROPOSED PRODUCTION

The proposed production has been taken 1200000 MT per year as total mineable reserves established with detailed replenishment study report is 1205432 MT. However, depending upon the replenishment of the mineral the target may be reduced or increased (upto 1708800 MT) proportionately in coming year till lease period.

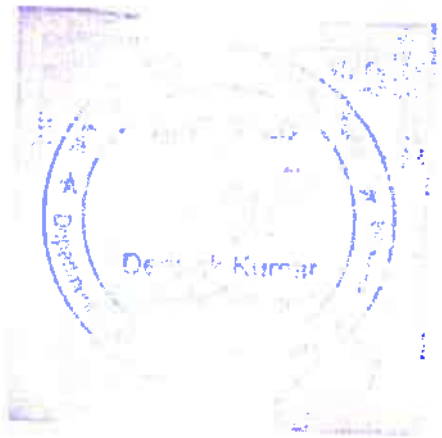
E) BALANCE RESEVERS

For balance reserves it is presumed that the mineral will be replenished every year during the rainy season. New mineral will be added every year in the river bed.

Life of mine: - The mineral reserve will be replenished every year hence life of mine cannot be computed.

f) Geological Reserves and grades- Plate No.-4

g) Surface Plan and Section-Plate No.-3



CHAPTER-4

METHOD OF MINING

4.0 Present Method of Mining: -

It is a case of fresh grant of lease. The actual mining will be allowed to be commenced only after Environment Clearance is obtained by the LOI holder as per the consent letter, dated-28.07.2022. Presently, no mining is carried out by the LOI holder in the allotted area.

It is proposed to produce 4800 tonne/ day of Minor Minerals like Boulder, Gravel and Sand, for this, following consideration taken for the proposed mine layout to be carried out systematically & scientifically.

DESCRIPTION FOR THE MINING LAYOUT: -

Considering 250 working days in a year;

Production per day = 4800 MT/day

Proposed bench height = 3m

Bulk Density of Mineral = 2.0 T/m^3

Volume to be broken per day = $\frac{\text{Production per day}}{\text{Bulk Density of mineral}}$

$= \frac{4800}{2.0}$

$= 2400\ m^3$

Area to be broken per day= $\frac{\text{Volume}}{\text{Bench Height}}$

$= \frac{2400}{3}$

$= 800\ m^2$ / day

To produce 4800 MT/ day of the mineral, it is proposed to work in one shift of 8 hours with semi mechanized mode of mining using Shovel/ excavator –dumper combination.

The best match for production of 4800 MT/ day a cycle of operation by time management of Shovel/ excavator –dumper combination has been considered on the experience of such high producing mines in India as follows: -

Cycle time for Excavator: -

Excavator: -

Capacity of excavator = 0.9 m^3

Fallibility = Bucket capacity X % of filling

= 0.9 X 0.95

= 0.855 m^3

Swell factor for Boulder, Gravel and sand is considered 1.2

Bucket Factor = $\frac{\text{Fillibility}}{\text{Swell factor}}$

= $\frac{0.855}{1.2}$

= 0.7125

Capacity of dumper:-16 Tonne=16/2.0(b.d) = 8.9 cum

No. of pass required to fill one dumper = 8.9 /0.7125

=12.11Say 12 pass

Cycle time for excavator: -

= Spotting time of dumper + Digging time + Swing time + unloading time

= 15sec +15sec +10sec +10 sec = 50 sec

= 0.83 minutes

Total time to fill up the dumper = 12x 0.83 = 9.96 minutes Say 10 minutes,

So in one hour there will be = 60/10 = 6 dumpers to be filled up,

=Say 6 Dumpers

Hence Hourly production will be = 96 Tonne

And Production / shift of 8 hours (effective 6 hrs) = 96 x 6 = 576 Tonne

So, production from one excavator, in one shifts working in a day will be,

= 576 x 1 = 576 Tonne/day

So, no. of excavators required to produce 4800 tonne/day =4800/576 = 8.33

= say 9

= **9 excavator**

Requirement of Dumpers to produce 4800 TPD Boulder, Gravel and sand: -

Daily Production = 4800 Tonne,

No. of production shifts = 1 (effective hours- 6 hours),

Dumper capacity = 16Tonne

Cycle time for excavator: -

= Spotting time of dumper + Loading+ travel time with load+ unloading + return time with no load+ waiting time for loading.

= 15sec +600 sec +720sec +120 sec+240 sec+240sec = 1800sec

= 30minutes

No. of trips per dumper /per shift = 6 x 2 = 12 trips

Handling of tonnage per dumper = Dumper capacity x No. of trips/dumper

= 16 x12

=192

Total No. of dumpers require to handle 4800 tonne/day=4800/192

= 25

= Say 26 Dumpers

4.1 Proposed Year wise development for five Years: -

It is proposed to work the deposit for winning the sand minor minerals by open cast Semi-mechanized method of mining. The mining is proposed by working in blocks Fatehpur Nagoli by forming proper benches of 1-1m height. from the un-mined bed level at any point in the Riverbed.

4.2 Year-wise production for the first five years:

The details of proposed year-wise production are given in Table 4.0 whereas the year-wise planned production of mineral are given in Table 4.1.

Table 4.1 – Proposed Year-wise planned production of mineral

Year	ROM (in MT)
1st Year	1200000
2nd Year	1200000
3rd Year	1200000
4th Year	1200000
5th Year	1200000

* The proposed production rate for successive year may vary in accordance with the estimation of replenished quantity for successive year.

4.3 PROPOSED RATE OF PRODUCTION WHEN MINE IS FULLY DEVELOPED:

The required rate of production is around 1200000 TPA of mineral. The required target is planned & will be achieved during year & maintained thereafter. However, depending upon the replenishment of the mineral the target may be reduced or increased (upto 1708800 MT) proportionately in coming year till lease period.

4.4 MINERAL RESERVE AND ANTICIPATED LIFE OF MINE: -

The area for the mining of sand has been consented for a period of 10 years w.e.f. the date of grant of Environment Clearance by the competent authority & the consent to operate (CTO) by the state Pollution Control Board, whichever is later, or on expiry of the period of 12 months from the date of issuance of LOI, whichever is earlier.

(As mentioned in point 4.1 of LoI.)

Accordingly, the annual production targets have been planned, which will be 1200000TPA. However, depending upon the replenishment of the mineral the target may be reduced or increased (upto 1708800 MT) proportionately in coming year till life of mine.

4.5 PROPOSED METHOD OF MINING: -

The method of mining is open cast by Semi-mechanized means Boulder, Gravel and Sand will be excavated in layers up to a depth as established in replenishment study for individual block & shall not exceed 3 meter in Riverbed in line with the provision mentioned in this Sustainable Sand Mining Management Guidelines, 2016, and Enforcement & Monitoring Guidelines for Sand Mining 2020. Mining will be done by deploying earthmovers like JCB/Excavator/Scrapper for loading of mineral into trucks, tippers and tractor/trolleys. Mining will be restricted within the central 3/4th width of the river leaving 7.5 meter statutory barrier or 1/4th from river bed. In case of bridge across the river a safety margin of 250 m on upstream side and 500m on downstream side has been kept.

The rotational mining shall be adopted to facilitate the replenishment of the excavated pits during rainy season. Thus the mineable area has been divided in two blocks i.e. the upstream block and the downstream block. The Mining of these two blocks is suggested on rotation basis in such a way that pit of previous year mining will act as depository for the post

monsoon season. The previous year pits will reduce the velocity of the flow of the river waters and thus reducing its carrying capacity resulting in deposition of material being transported by the river waters. In totality the principal of the Placer Deposit is adopted. The block being rested would be remaining so nearly for 15 months. Thus virtually each block would be rested for replenishment for two consecutive monsoons.

Conceptual Mining plan

Mine lease area will be worked in blocks for ease of operation. However, as the digging depth will be restricted to 3.0 m only, material will still be available below. This will be further replenished during rainy season. Blocks will be worked systematically as the width is limited while length is much more. Sequence of working has been shown on Plate no. – 4 of Development plan. As the lease period is only 10 years, some of the area will be left un-worked at the end of lease period.

Ultimate Pit Limits: -

It is proposed to work the deposit up to the depth of three meters from the surface. Accordingly, the Ultimate Pit Limit has been drawn upto the 304mRL – 333mRL (as undulated surface of the area) in respective block, which will be above the limit of the mineral reserve considered.

4.6 EXTENT OF MECHANIZATION

At present no mining is carried out in the allotted area so there is no machinery deployed for mining operations. To achieve the desired production, as proposed in the five years mining plan period, the following machinery is proposed to be deployed. Mining will be done by deploying earthmovers like excavator/Proclain, Backhoe and loaders for loading of mineral into trucks, tippers and tractor/trolleys. Mining machineries and transporting vehicles may be deployed on contractual basis. No mineral beneficiation will be carried out at the site.

The Proposed Mining Machinery is as follows: -

S.No.	Machine	No's	Capacity	Remark
1.	JCB/Excavator/Scrapper	8+1	0.9 m^3	On hire basis
2.	Dumper	29	16 Tons	On hire basis
3.	Water Tanker	2	4000 Liters	On hire basis
4.	Light Vehicles	1-2	As per requirement	On hire basis
5.	Maintenance Van	1	As per requirement	On hire basis

Other equipment's to be required: -

1. Water sprinkler -1
2. Potable Workshop containing all the equipments for repairing including portable electric welding sets, Gas cutting arrangements, electrical equipments, such as insulators, conductors, transformers, oil circuit breaker, protective fuses & relays, control cables, flexible cables etc.
3. Safety appliances such as fire extinguisher, safety helmets, shoes, goggles, florescent jackets etc.
4. Equipments & medical appliances for first aid.
5. Office equipment's such as computers, Xerox machine, plotter, surveyor equipment's & tools, various monitoring equipment's such as RDS (Respirable Dust Sampler), Sound level meter, Lux meter, Vibrometer etc.
6. A small workshop along with necessary machines & equipments for repair, maintenance and over hauling of heavy earth moving & other mining machinery.

Code of practice for use of heavy earth moving machinery: -

Shovel/ excavator: -

1. Shovel/ excavator will be provided with efficient warning devices, front & rear lights and efficient brakes.
2. Shovel/ excavator will be under the charge of a competent person authorized in writing by the manager designated as operator.
3. No person other than the operator or his helper if any will ride on the excavator or even enter the excavator's cabin.
4. No person will be permitted to ride in the bucket of a Shovel/ excavator.

5. No inflammable material will be stored in the excavator housing or cab.
6. Shovel/ excavator dippers will be lowered to the ground during greasing operation.
7. When a Shovel/ excavator is to be moved from one point to another its boom shall be kept in strict alignment with direction of travel while the bucket/ dipper shall be held m above the ground.
8. No Shovel/ excavator will be operated in the position where any part of the machines, suspended loads or lines are brought closer than 3 m to the exposed high voltage line.
9. Every movement of a Shovel/ excavator shall be preceded by warning signals.
10. When not in use, the Shovel/ excavator will be moved to and stood on stable ground: the bucket shall be kept resting on stable ground and will never be left hanging.
11. The Shovel/ excavator will be so spaced that there will be no danger of accident from flying & falling objects.
12. Safety appliances, booms will be examined thoroughly once in a year.
13. Emergency switches, safety limit switches will be examined and tested once in four months.
14. All brakes will be tested for their operation worthiness once in a week.

Duties of Shovel/ excavator operator: -

1. At the commencement of every shift the operator will personally inspect and test the machine, paying special attention to the following details: -

(i) The brakes and every warning device are in working order.

(ii) Lights are in working order.

(iii) The operator will neither take out the machine for work nor will he work the machine unless he is satisfied that it is mechanically shown and in efficient working order.

(iv) The operator will maintained a record of every inspection made in a bond paged book, kept for the purpose and shall sign every entry made there in.

(v) The operator will keep the cab window clean so as to ensure clear vision at all times.

(vi) The operator will not operate the machine when persons are in such proximity as to be endangered.

(vii) Before leaving the machine, the operator will lower the bucket to the ground.

(viii) The operator will not leave his machine during the shift. Whenever, he finishes his work, he will hand over the machine to his relief or lock the excavators cab.

(ix) The operator will not allow any unauthorized person to ride on the machine.

Dumper: -

1. Every dumper will be provided with efficient brakes.
2. Efficient audible warning devices will be provided with the dumpers.
3. If required to work after daylight hours, efficient headlights and taillights will be used.
4. Dumpers will be under the charge of a competent person and authorized by the manager.
5. No person, other than the driver or his helper, if any, will ride on a dumper.
6. No person will be permitted to ride in the running board of a dumper.
7. The loaded dumpers will not be reversed on gradients.
8. Sufficient stop blocks will be provided at every tipping point and these will be used on every occasion when material is dumped.
9. Standard traffic rules shall be adopted and followed during movement of all dumpers. They shall be prominently displayed at relevant places in the opencast workings and haulm roads.
10. When not in use, every dumper will be moved to and stood on proper parking places.
11. No person will be permitted to work on a chassis of a dumper, with the body in rest position, until after the dumper body has been securely blocked in position.
12. The mechanical wised mechanism will not be depended upon to whole the body of a dumper in a rest position.
13. No unauthorized person will be permitted to enter or remain in any turning points.
14. While inflating Tyres, suitable protective cages shall be used.
15. Tyres will never be inflated by sitting either in the front or on the top of the same.
16. While the vehicle is being loaded / unloaded on gradient, the same will be secured stationary by the parking brake, and other means suitably designed stopper block
17. At least once in every two weeks the brakes of every dumper will be tested as below: -

(a) Service Brake test: - The brake will be tested on a specified gradient and speed when the vehicle is fully loaded. The vehicle should stop within the specified distance when the brake is applied.

(b) Parking brake test: - The parking brake shall be capable to hold the vehicle when it is fully loaded and placed at the maximum gradient. Maximum gradient of the roadway which is permitted only for a period of at least 10 minutes.

(c) A record of such test will be maintained in a bound paged book and will be signed by the competent person carrying out the test and will be countered signed by the engineer and manager.

(d) All vehicles shall be tested and examined once at least in every 6 months.

Duties of dumper operators: -

1. At the commencement of every shift, the operator shall personally inspect and test the machine, paying special attention to the following details: -

(i) Tyre pressure, brakes, horn and the Lights are in working order.

(ii) The driver will neither take out the machine for work nor will he work the machine unless he is satisfied that it is mechanically shown and in efficient working order.

(iii) The driver will maintained a record of every inspection made in a bound paged book, kept for the purpose and shall sign every entry made there in.

(iv) The driver will keep the cab window clean so to ensure clear vision at all times.

(v) Driver will ensure that the gear is in neutral position before stopping the engine. He will park the vehicle: -

(a) In reverse gear, on level roads and down gradients.

(b) In low gear, on up gradients.

(vi) The driver will negotiate downhill gradients in low gear, so that minimum of braking is required.

(vii) The driver will not drive too fast, avoid distractions and drive defensively.

(viii) Before crossing a road / railway line he will reduce his speed looking both directions along the road or railway line and will proceed across the road or line only if it is safe to do so.

(ix) The driver will not operate the dumper in reverse unless he has a clear view of the area behind the vehicle.

(x) The driver will see that : -

(a) The vehicle is not overloaded.

(b) The material is not loaded in a dumper so as to project horizontally beyond the sides of its body.

(xi) The driver will not allow any unauthorized person to ride on the vehicle.

(xii) When there is a poor visibility, the speed of a vehicle will be restricted in a manner that the braking distance is maintained shorter the distance of visibility.

(xiii) The driver will not leave his machine during the shift. When he finishes his work, he will hand over the machine to his reliever or lock the excavators cab.

Rules to be followed :-

Rule 1: Procedure

(a) No person will drive or operate a vehicle in or about the mine unless authorized to do so for that vehicle or class of vehicle by mines manager.

(b) A private vehicle will not be driven within the mine premises. unless authorized by mines manager.

(c) Any driver, not regularly working in or about the mine, will get permission to enter the mine premises from the mine manager, or an official of the mine authorized for the purpose, prior to driving a vehicle within the mine premises, which will be prominently delineated.

Rule 2: Speed Limits

(a) Permanent or temporary speed limits, set by the mine manager, for any area of the mine or any vehicle or class of a vehicle will be adhered to.

(b) Where visibility or road conditions are poor, a driver shall reduce the speed of his vehicle to the extent necessary to maintain effective control.

Rule 3: Right of Way

a. At intersections, which are not controlled by traffic signs, all drivers should give way to the vehicle on the right, except as stated below: -

(i) All drivers will give way to emergency vehicles showing a **flashing red light.**

(ii) Vehicles being used for grading, rolling, watering and repair of roads have right of way over all vehicles except emergency vehicles. These vehicles will show an **amber flashing light.**

(iii) Light vehicles will at all times give way to haul dumpers and other heavy vehicles.

b. The driver of a vehicle, having right of way over another vehicle, will not endanger himself or others through insistence on that right, if this is likely to cause a collision.

Rule 4: Parking and Standing

(a) A driver will not park or stand his vehicle in a position that will endanger other traffic on the mine premises.

(b) A driver will not park or stand a vehicle opposite another vehicle on haul road.

(c) A driver will not park or stand his vehicle within 30 meters of the working area of the mobile equipment, or where his vehicle cannot be clearly observed.

(d) A driver will not park or stand his vehicle within the area of swing of the dragline, without first obtaining permission from the operator.

(e) A driver, before leaving his vehicle, shall ensure that the vehicle is secure, that parking brakes have been applied, and that all implements have been lowered. If circumstances dictate that a heavy vehicle must be parked on a grade, then the wheels should be chocked, and the steering turned off centre.

(f) A driver of a vehicle will. Before moving from a parked position, ensure that its path is free of any obstruction and/ or personnel.

(g) A driver of a light vehicle will observe the following rules while parking his vehicle: -

- Stop engine;
- Leave vehicle in first or reverse gear;
- Apply hand brake;
- Not park in front of or behind a heavy vehicle;
- Not park within 30 meters radius of a Shovel/ excavator;
- If, for maintenance or operational reasons, it is essential to park adjacent, and in closure proximity to a heavy unit or Shovel/ excavator than allowed above, then the driver of light vehicle shall ensure that the operator of the heavy unit or Shovel/ excavator is fully and clearly aware of his intentions, and has his permission to proceed;
- Chock the wheels, if parked fencing is up or down a slope.

Rule 5: General

(a) Vehicles will not be driven over electric cables, air hoses or water lines unless these are properly protected.

(b) Seat belt will be provided for the operators' personnel safety. They are to be worn at all times while the vehicle is operating.

(c) Passenger will not be carried on any vehicle, unless seated in approved seating, or where authorized for training purposes by the mine manager.

(d) A caution signed or hazard lights are to be placed at the front and rear or any vehicle which is being towed, or which has been broken down and is obstructing the roadway.

(e) Operators and drivers are responsible for cleanliness, oil and water checks, tyres, and fuel, for the machines and vehicles under their control.

(f) Operators and drivers are responsible for ensuring that their vehicle is correctly illuminated during hours of darkness.

(g) Headlights are to be dipped when approaching other traffic or mobile equipment in working areas.

(h) All earth moving equipments will sound blast horn before moving off from parked position.

(i) No smoking or naked lights are permitted during re- fueling and the checking of batteries.

(j) Dumpers are to be loaded in such a manner that spillage is minimized. Loads should be centralized to maximize stability. Loads, which have an excess of 1.2 meters, shall be clearly marked by a red flag during day and red light at night. All loads will be made secure for travel.

(k) The driver will make sure that the vehicle has adequate clearance, particularly when reversing, parking, passing other vehicles and units, or passing stationary and static equipment.

Rule 6: Overtaking

(a) The driver of the vehicle may overtake any other vehicle with due caution, provided that-

(i) The speed limit is not exceeded.

(ii) There is sufficient visibility of the road ahead.

(iii) The vehicles are the clear of any road intersection or junction.

(b) No overtaking will be permitted in the vicinity of road dividers.

(c) While driving behind the haul truck the driver will ensure that he is visible in the rear view mirror until he puts off or overtake.

Rule 7: Signs

(a) All signs are to be obeyed.

(b) Temporary signs will be removed immediately after their need is over.

(c) Warning signs are to be noted at all times.

Rule 8: Mechanical condition of vehicles

(a) The drivers of each heavy vehicle in use will at least, daily examined his machine to ensure that it is in safe working order and make a written record of his observations of such examinations.

(b) The driver of any vehicle will report, to his supervisor, any defect in the vehicle as well as any damage to the vehicle are injury to himself arising out of a vehicle incident of the mine.

CHAPTER- 5

BLASTING

The mine contract area is in the river section and the project is contemplated to win the minor minerals like Boulder, Gravel and sand by fully Semi-mechanized open cast method of mining which doesn't required drilling & blasting.

CHAPTER- 6

MINE DRAINAGE

Boulder, Gravel and sand mining will be carried out in the river bed and during the rainy season operations will be discontinued. All the surface water shall be flowing towards North to South direction. The proposed Mining will start from above surface level, so there will be no effect on ground water table. The general ground water level in the area varies from 10-20mtr below the surface level.

Therefore, ground water table will not be touched due to mining operations. There will be no drainage of water to mine workings. Pumping shall be not done.

Surface Plan & Section, etc. (Plate No.-3)

CHAPTER – 7

DISPOSAL OF WASTE

MEASURES TO BE TAKEN FOR DUMPING OVERBURDEN, STACKING OF TOP SOIL AND UTILISATION OF TOP SOIL

7.1 Nature of waste: - The mineral is out cropping. There is no waste and top soil which is required to be dumped & stacked for their utilization.

7.2 DISPOSAL OF WASTE

Nature of Waste

There is no generation of waste in the proposed mining, hence no measures will be taken.

CHAPTER- 8

USE OF MINERAL

The material is sorted manually at mining site and Sand is separated from Boulder and Gravel. Boulder and Gravel shall be transported to the crusher for crushing and sand will be sold in the market.

CHAPTER- 9

MINERAL BENEFICIATION

The mineral extracted from the river bed in the form of loose dry Boulder, Gravel and sand, will be supplied to consumers. No beneficiation of the mineral will be taken place within the allotted area.

CHAPTER- 10

SURFACE TRANSPORT

10.1 Mode of Transport of Mineral to the Dispatch Point: -During the first five years mining plan period, the mineral produced will be loaded into dumpers, for onward transport to the consumer.

CHAPTER- 11

SITE SERVICES

For the proposed mining operations, the following site services are proposed: -

- A manager's office for supervision and up keeping of records.
- A first aid kit in mine office for giving first aid required in emergency.
- A rest shelter for labors for rest during lunch period.
- Water hut of drinking water.
- A store room for keeping necessary tools.

CHAPTER-12

DETAILS OF EMPLOYMENT

Requirement of Technical and other supervisory staff is propose d for systematic and scientific mining: -

Sr. No.	Particulars	Number of Personnel
1	Manager	1
2	Assistant Manager	2
3	Foreman	4
4	Supervisory Staff	10
5	JCB operator/ Skilled personal	9
6	Semi-skilled personnel	60
7	Un-skilled personnel	10

CHAPTER- 13
ENVIRONMENT MANAGEMENT PLAN

13.1 BASE LINE INFORMATION

(i) EXISTING LAND USE PATTERN

The existing land use is river bed.

The existing land use by mining is as follows: -

S. No.	Particular		Present Land Use (ha.)
1	Pit area		0.00
2	Dump area		0.00
3	Safety Zone	Bridge, 1/4th & 7.5 m lease boundary.	6.299
4	Infrastructure: Office, Temp. Shelter etc.		0.00
5	Mineral Storage		0.00
6	Plantation (in safety zone)		0.00*
7	Unworked/ area available for mining		28.60
8	Naturally reclaimed area		-
	Mining area		34.90 Ha
	Ancillary Activities		7.80 Ha.
	Total Mining Area		**42.70 Ha.**

* Plantation will be developed under social forestry on the land available from the Panchayat and on safety zone by the end of mine life if feasible.

(ii) **WATER REGIME**

Natural water courses do not exist in the allotted area.

(a) **Surface Water**

There is no water in the river Begna, this is the ephemeral stream and carry water only during monsoon season, except this, there is no any surface water body.

(b) **Ground Water**

The water table in the area is between 10- 20m from the surface level. The proposed excavation shall not exceed the depth of 3m from the surface level, so it will be much above from water table.

(iii) **FLORA & FAUNA**

Few local bushes can be seen in the area. Moreover there is no demarcated/protected forest close to the allotted area. The protected wildlife animal in & around the allotted area is also not present.

(iv) **CLIMATIC CONDITION**

The climate of the district- Ambala is characterized by the dryness of the air with an intensive hot summer and a cold winter. The year may be divided into four seasons. The cold season starts by late November and extends to the middle of March. It is followed by hot season which continues to the end of June when the southwest monsoon arrives over the district. July to September is the south-west monsoon season. The post monsoon period is from October to December.

The normal annual rainfall of the district is 1063 mm recorded in a year. The rainfall is recorded during the month of June-September.

August is the wettest month of the year and 280 mm rainfall.

(v) **HUMAN SETTLEMENT**

The proposed mining activities will be carried out in the river bed, so there will be no impact on nearby the human settlement. The workers will be employed from the villages surrounding within 5 km area so there will be no human settlement proposed in the allotted area.

(vi) PUBLIC BUILDING, PLACES AND MONUMENTS

No such buildings, places and monuments exist in and around the allotted area.

(vii) QUALITY OF AIR & WATER

QUALITY OF AIR

The quality of air at the allotted area is reported as fresh & Respirable.

QUALITY OF WATER

Natural watercourses exist out of the allotted area. These are serving the purpose of conveying rainwater into pond. The water table varies between 10-20m from surface level in the area.

(viii) WEATHER THE AREA FALLS UNDER NOTIFIED AREA UNDER WATER ACT 1974

The whole Haryana comes under Water Act 1974.

13.2 ENVIRONMENT IMPACT ASSESSMENT STATEMENT

Impact of mining and beneficiation on environment

The land in the allotted area will be degraded by proposed mining activities like pitting etc.

Particulars		Present land use (ha.)	At the end of 5th year (ha.)
Pit area		0.00	28.60
Dump area		0.00	0.00
Safety Zone	Bridge ,1/4th ,Streams & roads 7.5 m lease boundary	6.299	6.299
Infrastructure: Office, Temp. Shelter etc.		0.00	0.00
Mineral Storage		0.00	0.00
Plantation (in safety zone)		0.00*	0.00*
Unworked/ area available for mining		28.60	0.00
Naturally reclaimed area		-	-
Total area		**34.90**	**34.90**

* *7.80 ha. Area is for Ancillary Activities. Total Area Comes out to be 42.70 ha.
*Plantation will be developed under social forestry on the land available from the Panchayat and on safety zone by the end of mine life if feasible.

AIR QUALITY

Due to proposed five years mining activities the air pollution will take place by, running of transport machinery like dumpers & excavators. To reduce air pollution proposal for water spraying has already been made.

(i) WATER QUALITY

In the proposed five years mine working, there will be no proposal to utilize any surface or ground water. The water table is at 10mbgl to 20mbgl in the area, whereas the proposed mining will be done till a range of 304mRL – 333mRL (As undulated surface of the area). So, there will be no water pollution. The water quality of the allotted area will not be affected by the mining operations. So, the quality of water will remain the same during the proposed five years mining.

(ii) NOISE LEVEL

During the proposed mining operations there will be noise pollution due to following activities:-

(1) Excavation by use of excavator.

(2) Transportation of material by use of dumper and excavator.

To control the noise due to above activities, regular weekly, fortnightly, quarterly &annual maintenance will be carried out for all these machineries. The operators & helpers will be provided with earplugs.

(iii) VIBERATION LEVELS

NA

(v) WATER REGIME

There is no source of surface water in and around the allotted area. Natural water courses exist out of the allotted area, which is the source of water for the pond. The water table for the local area varies between 10-20 m from the surface.

(vi) SOCIAL AND DEMOGRAPHIC PROFILE

The applicant shall spend 1% of the profit, for the development of the area. He will donate this profit in the development of school, religious places, to poor for treatment and other social work.

(vii) HISTORICAL MONUMENTS

No public building, places of monuments are existing in the around the allotted area, so there will be no effect of mining activities on any public building, places and monuments.

13.3 ENVIRONMENTAL MANAGEMENT PLAN

(i) Storage & Preservation of top soil

There is no top soil in the area, so, there is no proposal for storage & preservation of top soil.

(ii) Year wise proposal for reclamation of land affected by mining activities- during and at the end of mining

The proposed five years mining is for slicing of Boulder, Gravel and Sand along with associated minor minerals of the Riverbed which will be replenishment every year naturally with rainfall bringing sediment load in the river channel ultimately in the lease area. Thus no proposal for reclamation of land.

(iii) Program of afforestation, year wise for the initial five years indicating number of plants with name of species to be afforested under different areas in hectares.

PROGRAMME FOR PLANTATION

The area is mostly Alluvial with good vegetation of bushes. Plantation will be carried out around the mine, to arrest the dust at source. The allotted area is 42.70 hectare so, plantation will be carried out in the nearby school, hospital, police station, community centre & other public utility places.

The area receives average rainfall and hence following trees has been proposed which is suitable in the region:-

1	Peepal	2.	Mango	3.	Shisham	and
4.	Neem	5.	Gulmohar			

Schedule of plantation for the five year:

Year	School, Hospital, and Police Station etc				Outside the lease area (road side)		Top Soil Dumps		Total	
	Area (Ha.)	No. of Trees	Area (Ha.)	No. of Trees	Area (Ha.)	No. of Trees	Area (Ha.)	No. of Trees	Area (Ha.)	No. of Trees
I	2.68	1676	--	--	1.16	725	--	--	3.84	2401
II	2.68	1676	--	--	1.16	725	--	--	3.84	2401
III	2.68	1676	--	--	1.16	725	--	--	3.84	2401
IV	2.68	1676	--	--	1.16	725	--	--	3.84	2401
V	2.68	1676	--	--	1.16	725	--	--	3.84	2401
Total										**12005**

Place of proposed plantation: - The plantation shall be done at the following places:- Plantation will be developed under social forestry on the land available from the Panchayat and on safety zone by the end of mine life.

(iv) MEASURES FOR DUST SUPPRESSION

Measures To Be Taken For Dust Suppression: -

1 The drilling is not proposed.

2 Water spray will be regularly carried out over the material of the loaded tippers to minimize the dust during transportation.

3 Water spray will be regularly done over the haul road during the working hours.

4 Earplug will be provided to the work persons.

5 Sharp edges bits will be used for drilling, so minimum dust will be generated.

6 Dust respirators will be provided to the drillers.

7 Proper care & frequent maintenance of machines will be done.

(v) MEASURES TO MINIMISE VIBERATIONS DUE TO BLASTING AND CHECK NOISE POLLUTION

NA.

(vi) STABILISATION AND VEGETATION OF DUMPS

There will be no waste generation from the proposed mining of Boulder, Gravel and Sand along with associated minor minerals, so stabilization of waste will not be required. Top soil is also not there in the allotted area.

(vii) TREATMENT AND DISPOSAL OF WATER FROM MINE AND BENEFICIATION PLANT

The proposed mine workings will be above the ground water table thus no measures will be required.

(viii) MEASURES FOR MINIMISING ADVERSE EFFECTS ON WATER REGIME

No impact will take place due to proposed mining activities on water quality also neither the mineral nor any toxic substance will be discharged to the ground water. The proposed excavation shall not exceed 3 m from the surface level, so it will be much above from water table. Hence no measures will be required.

(ix) AFFORESTATION OF TAILING PONDS

As there is no beneficiation so tailing ponds are not proposed, hence afforestation of tailing ponds will not be required.

(x) PREPARATION OF DUMPING GROUND FOR STACKING TOXIC MINERAL SUBSTANCE

There will be no generation of toxic substances, due to the proposed mining. So, neither the mineral nor any waste will require dumping ground for stacking the toxic mineral / substance.

Post Plantation Care:

(i) Protection from Grazing

Protection from grazing will be done by erecting suitable boundary in the plantation area. As such in this area lessee will erect Boulder, Gravel and Sand wall. This will protect plants from grazing.

(ii) Watering during Dry Spell

Watering will be done daily during the 1st year of plantation from March to July and thrice a week from September to February by water tanker/Overhead tank in the plantation area. Thereafter each year watering will be done alternate day from January to June and once in five day September to February. After five years no watering will be required.

(iii) Manuring

The manuring will be done while plantation work is taken up, for this purpose cattle dung will be dumped in the area that has chosen for plantation. No other manuring is required for the proposed plantation

(iv) Replenishment of Casualties saplings

The loss of each year will be counted and in subsequent plantation casualties will be again planted at same place. This way in the end of 5 years 12005 healthy trees will remain in the area giving proper density.

13.4 DETAIL OF HEALTH CHECKUP AND INSURANCE OF ALL THE EMPLOYED PERSONS (FOR EXISTING LEASE)

Initial and periodical Medical examination will be conducted annually for every person employed in the mines. As per Mines rules 20% of the total employee get examined medically every year, so that the entire person employed in the mine get examined within five years.

Occupational health Surveillance program of the workers will be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures.

The entire person employed in the mines will be covered under Group insurance Scheme.

Common Vocational training Center will be Set up at district level.

Local needs of habitant like School, Crèche, Hospital, Veterinary hospital, Sanitation, Drinking water etc. shall be considered positively.

CHAPTER-14

OTHER INFORMATION

Occupational Health and Safety

To prevent the occupational disease the measure as proposed in previous columns will be taken. This will prevent the inhalation of the dust by the workers. The workers will be periodically medically examined under Rule 29(b) of Mines Rule. If any worker found to have contracted with any occupational disease he will be immediately removed from the affected area and will be provided with proper medical care as per provision of Mines Rule.

Safety

To prevent the worker getting any injury during work following measure will be taken:

(i) The workers will be trained in vocational training whenever available in nearby area.

(ii) They will be provided proper safety wearing and equipment such as hand gloves, safety boots, helmets, and lifeline etc.

(iii) Proper benches will be formed. Apart from this all safety precaution will be taken as per Act. Rules Regulation and Byelaws made there under.

ANY OTHER INFORMATION

Gajender Singh assisted in the preparation of Mining Plan including Progressive Mine Closure Plan, including Plans & Sections, Assessment of Reserves, Year Wise Development Plan, Conceptual Plan & Environment Plan etc.

Prerna Chauhan
Geology (Qualified Person)

Place: - Jaipur
Date: -

Miss Prerna Chauhan
(Geologist/Qualified Person)

PROGRESSIVE

MINE

CLOSURE PLAN

CHAPTER –1

1. INTRODUCTION

The area for which progressive mine closure plan is prepared is Fresh lease area in Favors of M/s Reliable Mining Corporation, 105.51 Acre i.e 42.70 ha. of lease area falls in the Toposheet No. 53F/3 refers Plate No 2. The area is near Village Fatehpur Nagoli, District- Ambala, state- Haryana. A key plan of the lease area and the surrounding area within 5.00 Km. Radius showing details as required is enclosed plate No. 2 The summary of land covered in the Mining Lease area (105.51 Acre) marked as per revenue record is given in chapter of Mining Plan. Details of revenue record are given in Annexure-3. There is no protected or reserved forest in the lease area. The Minor Mineral Boulder, Gravel and Sand will be mined out by open cast method easily by manual means details are given in chapter-7 of Mining Plan.

1.1 Reasons for Closure :

This is fresh area so reasons for closure of mine are not applicable at present.

1.2 Statutory obligations :

This area is Fresh Mining lease area, The PMCP Prepared in Compliance of Rules 37E (VI) so statutory obligation for closure of mine is not applicable at present.

Name address and Registration Number of the Recognized person

Miss Prerna Chauhan
(Geologist/Qualified Person)
M/S N.S. Enviro-Tech Laboratories & Consultant
P.No. 51.Ganeta House, Shiv Vihar Colony,
Mansarovar, Jaipur Rajasthan, 302020

CHAPTER –2

Mine Description

1.1 GEOLOGY

2. a)Regional Geology

The north-eastern and central part of Haryana is predominantly characterized by sedimentary lithology in the sub-Himalayan zone comprising Subathus, Dagshais, Kasaulis and Siwaliks. A general Regional Stratigraphic sequence in the area is given in the table.

Age	Super group	Group	Formation	Lithology
Holocene			Newer Alluvium and Newer Aeolian Deposits	Gravel, Sand, Silt, Clay, Limestone, gypsum
Lower to upper Pleistocene			Older Alluvium and older Aeolian Deposits	Gravel, grey sand, silt clay brown sand, calcrete
Lower to Middle Pleistocene		Upper Siwalik	Boulder conglomerates formation	Conglomerate, sand stone, silt, Clay
Upper Pilocene			Pinjore Formation	Coarse grit, red sand stone and clay, conglomerate
			Tat rot Formation	Friable Sand Stone and variegated clay
	Middle Siwalik		Dhokpather Formation	Brown Sandstone and variegated clay
			Nagri Formation	Hard grey sand Stone and minor shale
	Lower Siwalik		Nahan Formation	Course gritty, clay and red sandstone often calcareous, brownish shale with lignite lenticels greenish white quartizite

Lower Miocene	Sirmur		Kausauli Formation	Grey and stone, green shale and grey clay
			Dagsai Formation	Purple sand green sand stone, deep red gritty, clay, white sand stone with ferruginous concretions
Upper Eocene			Subathu Formation	Sandstone with grit clay. Impure fossliferous limestone calcareous slate, greenish shale and dark brown quartizite
Pre Proterozoic			Tunda pathar	Tickly bedded, stromatolite limestone with carboniferous shale and quartzite

b) Local Geology:-

The allotted area is the river course of seasonal river. It is a river borne deposit which comprises of Boulder, Gravel and sand channels formed due to annual deposition. The upper surface in terraced area covered with sandy soil where agriculture fields are developed by local people. Geologically, allotted area is belonging to Quaternary. Boulder, Gravel and Sand are the major litho unit observed in the allotted area. The stratigraphic sequence of the litho units present in the area are as follows:-

Quaternary - Alluvial mixed with river Boulder, Gravel and sand
Older deposition of river sand unit

Based on the structural configuration of the allotted area, surface geological mapping has been done and a Surface Geological Plan with cross-sections & longitudinal sections has been prepared on a scale 1:2000.

1.2 Reserves

GEOLOGICAL RESERVE CALCULATION TABLE

Table:-3.4.1

Blocks	Area (ha)	Average depth (m)	Volume cum	BD (T/cum)	Geological Reserve (MT)
Fatehpur	19.8	2.13	422518.80	2	845037.6
Laha	4.7	2.45	117814.20	2	235628.4
Batoura	2.42	2.01	44199.42	2	88398.84
Nagoli	1.41	2.07	27709.50	2	55419
Banaudi	4.38	1.69	73734.11	2	147468.2
Bari Bassi	2.11	2.43	51337.00	2	102674
Total	**34.90**		**733185.00**		**1474626**

MINEABLE RESERVE CALCULATION TABLE

Table:-3.4.2

Blocks	Area (ha)	Average depth (m)	Volume cum	BD (T/cum)	Mineable Reserve (MT)
Fatehpur	17.35	2.13	369688	2	739377
Laha	3.9	2.45	97834	2	195668
Batoura	1.68	2.01	30488.02	2	60976.05
Nagoli	0.56	2.07	10595	2	21190
Banaudi	3.73	1.69	63306	2	126613.20
Bari Bassi	1.26	2.43	30804	2	61608
Total	28.60		**602527.22**		**1205432**

***More details are given in chapter 3 of Mining Plan.**

2.3 Mining Method

Mining will be done by open cast method easily by manual/semi Semi-mechanized means. Heavy earth moving machinery is not deployed. More details are given in chapter 7 of Mining Plan.

2.4 Mineral Beneficiation

No mineral beneficiation processing of any kind will be undertaken at mine.

CHAPTER –3

REVIEW OF IMPLEMENTATION OF MINING PLAN INCLUDING FIVE YEAR PROGRESSIVE CLOSURE PLAN UP TO THE FINAL CLOSURE OF MINE.

This is fresh mining area and reserve is more than the scheme period. So this chapter is not applicable at present.

CHAPTER –4

Closure Plan

4.1 Mined out land

This area is fresh applied area so mining activities will take place subsequently that is after the registration of M.L. then only this can be taken out. By proposed mine planning, the limits of Pits average 3m depth at the end of fifth year as shown on Year wise development plan of the area (Plate 4).

4.2 Water Quality Management

Mining operation is carried out when the river bed is dry; hence impact of Mining on surface water will not take place. Ground water table is not going to be touched; hence there will also be no impact on ground water. More details will be given in chapter 13 of Mining plan.

4.3 Air Quality management

Mining operation is of small scale so air pollution due to dust will be negligible.

4.4 Waste management

No Waste generated during the mining operation.

4.5 Top Soil Management

There is no soil cover over proposed area of mining in next five years, so no arrangement for stacking is to be required. Any incidental soil encountered will be used for plantation simultaneously

4.6 Infrastructure

S.T.D. and Telephone facility are available at Village Fatehpur Nagoli Road from Proposed mine site. Educational facility is available up to Senior Secondary school level at near village Fatehpur Nagoli

4.7 Disposal of Mining Machinery

Machinery used for mining having more life than life of mine. Applicant will seek more leases for mining; hence, disposal of mining machinery will not arise.

4.8 Safety & Security

Details are given in chapter 14 of Mining Plan.

4.9 Disaster Management and Risk Assessment

All types of industries face certain types of hazards which can disrupt normal activities abruptly and to disaster like fires, inundation, failure of machinery, explosion, to name a few. Similarly Sand mines also have impending dangers or risk which need be addressed for which a disaster management plan has been formulated with an aim of taking precautionary steps to avert disasters and also to take such action after the disaster which limits the damage to the minimum.

Nevertheless, the following natural/industrial problems may be encountered during the mining operation.

1. Inundation- filling of the mine pit due to excessive rains.
2. Slope failures at the mine faces or stacks.
3. Accident due to fire.
4. Accidents due to use of machinery
5. Health hazard
6. Environmental hazard

As per proposal made under the mining plan, during proposed working the area will be developed by means of Semi-mechanized opencast method. Exploitation and transportation of minerals are to be carried out by Semi-mechanized means. Mining is being done in layers (with depth as established in replenishment study report of individual block refer table no.3.4.1&3.4.2 for depth)& shall not exceed 3m in line with the provisions of Enforcement & Monitoring Guidelines for Sand Mining-2020. The Ground Water table is at 10 to 20m below the surface depending upon the relief of areas. Present surface RL of lease area ranges from 306 mRL to 347mRL & in respective Blocks(variable along the profile as the area is undulating).And the working is proposed upto the level of flowing water (variable depending upon the relief).As we are only working upto 3 mt from the highest mrl of respective Blocks(according to the relief along the profile).Therefore no groundwater table is going to be encountered due to mining activity. The impact of mining on ground water is not anticipated; therefore measures are not required. Water table will not be touched during working. No high risk accidents like landslides, subsidence etc. have been apprehended.

But possibility of accidental disaster is also not ruled out. Therefore, all the statutory precautions should be taken for quick evacuation as per the Mines Act 1952, the Mines Rules 1955, MMR-1961 will be implemented.

POSSIBLE DISASTERS TOGETHER WITH CORRECTIVE AND REMEDIAL MEASURES

INUNDATION

There is no perennial river in the area except seasonal channels within area flowing N to S in the area and flow of water depends only on good monsoon rains.

It is anticipated that ground water level is not encountered while mining as till the end of life of the mine, the maximum depth of the mine floor shall not exceed 3 m from the surface, which is above the ground water table in the workable area. In another case during possible accumulation of water, preventive & management measures shall be planned.

POSSIBLE DANGERS DUE TO STORAGE OF EXPLOSIVES IN THE MAGAZINE

No Blasting Proposed.

DISASTER DUE TO FIRE

No surface fire is anticipated in the mining operation. In case of forest, fire may result due to dry leaves and wood in vegetated part and result in a disaster. In the area under reference, there is no such situation and there is no danger of forests fire. No oil, grease, canvas or other inflammable material will be stored in mine except in a fire-proof receptacle.

CARE AND MAINTENANCE DURING TEMPORARY DISCONTINANCE

During the temporary discontinuance of mine, notice (Reg.6 of MMR, 1961) will be sent to Director of mines Safety. Notice will he accompanied with plan & Sections. All precautionary steps will be taken into account in respect of care and maintenance.

DISASTER PREVENTION MEASURES

In order to take care of above hazard / disasters the following control measures have been envisaged

1. Entry of unauthorized persons will be prohibited.
2. Firefighting and first aid provision shall be kept in the mines office complex and mining area.
3. Safety equipment such as safety boots, helmets, goggles etc. will be made available to the employees and regular checked for their use.
4. Training and refresher courses for all the employees working in the mine.
5. Working of mine as per approved plan and regularly updating the mine plans.
6. Regular maintenance and testing of all mining equipment. As per manufacture's guidelines.
7. Suppression of dust on the haulage roads.
8. Increasing the awareness of safe practices through competitions, posters and other similar drive.

As precautionary measures before onset of monsoon, the floors of different benches are gently sloped so that working remains water free.

CHAPTER-5

Economic Repercussions of closure of Mine and Manpower retrenchments.

5.1 During five years Mining in this area will generate employment potential and general Financial status and socio economic conditions of Laborers will be improved.

5.2 During Five years compensation will be given as per rules.

5.3 Satellite occupations are not connected to the Mining operation.

5.4 Continued engagement of employees for certain mandatory activities.

CHAPTER –6

Time scheduling for abandonment:

This scheduling for abandonment operations are not proposed in para 4 of closure plan. If the mine is closed due to unforeseen reason then tentatively it will 12 months for closure.

Production target of Mineral Boulder, Gravel and Sand are at the average rate tonnes per year.

CHAPTER –7

Abandonment Cost

As at present mining is not going to be closed as abandonment cost could not be assessed. However based on the progressive mine closure activities during the plan period cost is assessed as given below:-

Activity	Year					Rate	Amount (in Rs.)
	First	Second	Third	Fourth	Fifth		
Plantation (in no.)	2401	2401	2401	2401	2401	@ 20 Rs. Per sapling	240100
Plantation Cost	48020	48020	48020	48020	48020		
Total							**240100**

CHAPTER –8

Financial Assurance

Calculation for Financial Assurance –

S.No.	Item	Area put on use at start of plan (Ha)(A)	Requirement at the end of plan period (Ha)	Total area put to use (Ha)(B)	Area considered as fully reclaimed & rehabilitation (Ha)(C)	Net area considered for calculation (Ha) D=(B-C)
1.	Area to be excavated	0.0	28.60	28.60	0.0	28.60
2.	Storage for top soil	0.0	0.0	0.0	0.0	0.0
3.	Overburden/ Dumps	0.0	0.0	0.0	0.0	0.0
4.	Mineral Storage	0.0	0.0	0.0	0.0	0.0
5.	Infrastructure (Workshop, Adm. Building & Road)	0.0	0.0	0.0	0.0	0.0
6.	Safety zones (Bridge, road , Streams)	6.299	6.299	6.299	0.0	6.299
7.	Green belt	0.0	0.0	0.0	0.0	0.0
8.	Tailing Pond	0.0	0.0	0.0	0.0	0.0
9.	Effluent treatment plan	0.0	0.0	0.0	0.0	0.0
10.	Mineral Separation Plant	0.0	0.0	0.0	0.0	0.0
11.	Township area	0.0	0.0	0.0	0.0	0.0
12.	Others to specify	28.60	0.0	0.0	0.0	0.0
Total		**34.90**	**34.90**	**34.90**	**0.0**	**34.90**
* 7.80 ha. Area is used for Ancillary Activities, Total area comes out to be 42.70 ha.						
**The Riverbed which will be replenishment every year naturally with rainfall bringing sediment load in the river channel ultimately in the lease area. Thus no proposal for reclamation of land.						

Total 42.70 ha area will be put in use during the plan period. As per Haryana minor Mineral Concession Rule 2012 Rule 71(6), financial assurance of 15,000 per hectare will be charged for the area put to use for mining & allied activities subjected to a minimum of 1 lakh Rupees.

Area put in use = 42.70Ha.

Applicable Financial Assurance =42.70 x15000 =640500/-

So, The Financial assurance of 6,50,000/-(Round figure) need to be submitted.

9.0 PLANS, SECTIONS

All relevant plans & sections have been enclosed.

1. Location Plan
2. Key Plan
3. Surface Plan & Sections
4. Surface Geological Plan & Section
5. Pre- Post Monsoon Plan
6. Year Wise Development Plan
7. Progressive Mine Closure Plan
8. Conceptual Plan
9. Environment Plan

ANY OTHER INFORMATION

Hariom Chejara assisted in the preparation of this Mining Plan including Progressive Mine Closure Plan, including Plans & Sections, Assessment of Reserves, Year Wise Development Plan, Conceptual Plan & Environment Plan etc.

Place: - Jaipur

Date: -

Miss Prerna Chauhan

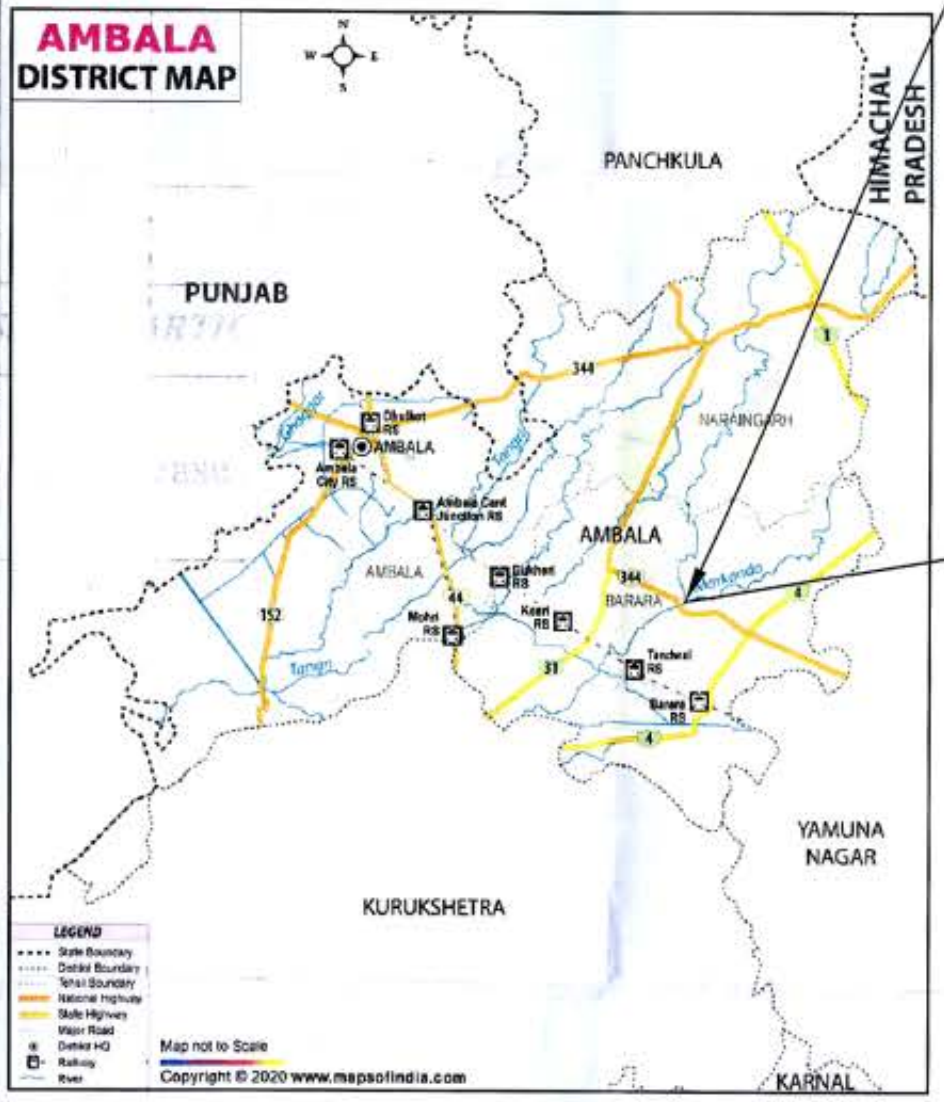
Geologist (Qualified Person)

856

165

ANN. R-10/4

LOCATION MAP



PART OF GT.SHEET NO. - 53 F/2, 53F/3

PLATE NO.- 1

LOCATION MAP

NEAR VILLAGE :- FATEHPUR, LAHA, NAGAULI, BATAURA, BARI BASSI, BANAUDI

TEHSIL :- NARAINGARH,

DISTRICT :- AMBALA, (HARYANA)

BLOCK No.- 2	Total Lease Area :- 105.51 Acre (42.70 Hect.)
Mineral:- Boulder, Gravel and Sand	MAP NOT TO THE SCALE

zaved

(LOI HOLDER)
M/s. RELIABLE MINING CORPORATION

Deepak Kumar
State Surveyor

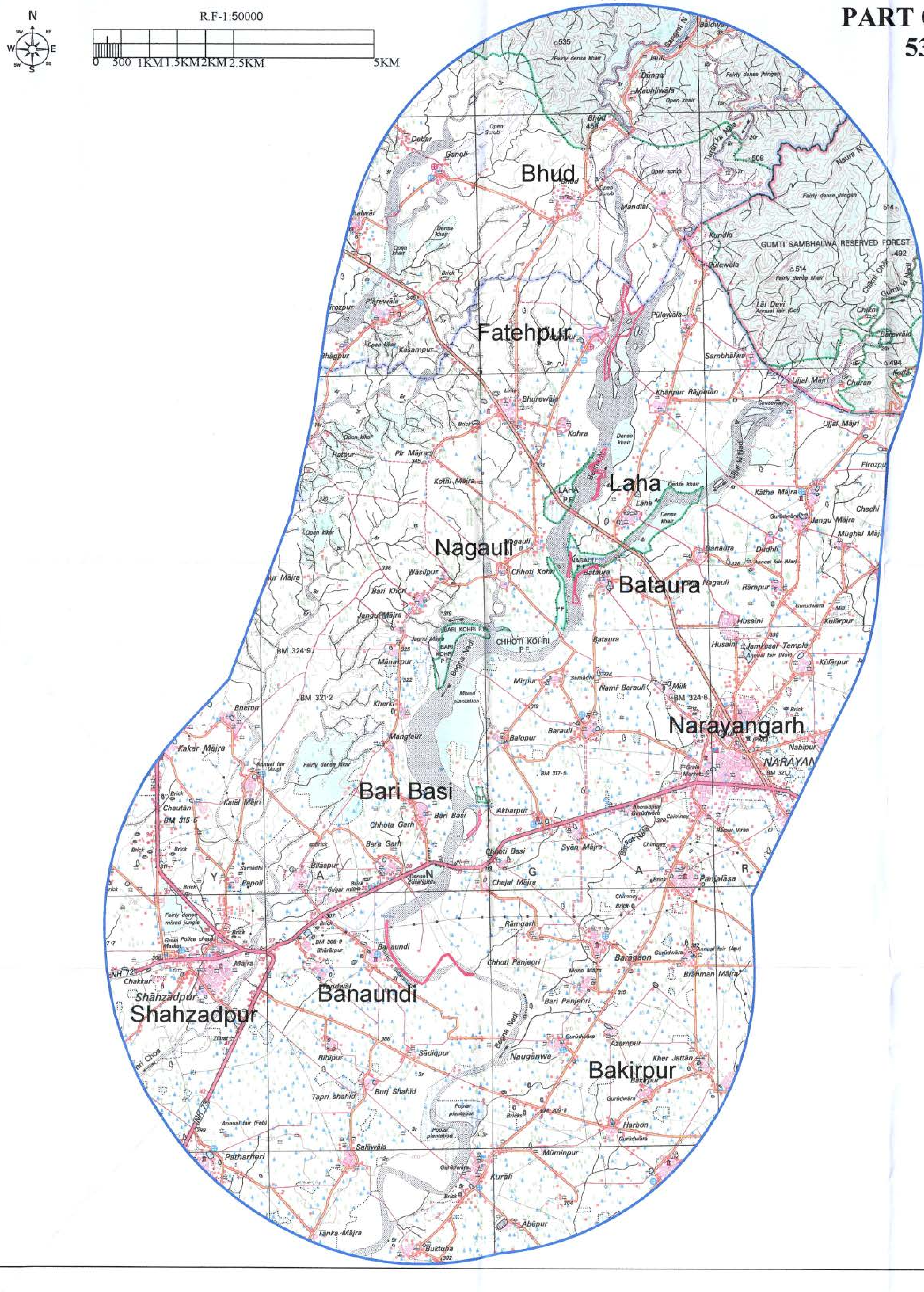
Prerna Chauhan
Geology (Qualified Person)

QUALIFIED PERSON (GEOLOGIST)

LEGEND

S.NO.	PARTICULARS	REF.
1.	Lease Area	

PART OF GT.SHEET NO. 53 F/2 & 53 F/3,



LEGEND

1	☐	LEASE BOUNDARY
2	○	05K.M. BOUNDARY

Express highway: with toll; with bridge; with distance stone
Roads, metalled: according to importance
Roads, double carriageway: according to importance
Unmetalled road. Cart-track. Pack-track with pass. Foot-path
Streams: with track in bed; undefined. Canal
Dams: masonry or rock-filled; earthwork. Weir
River: dry with water channel; with island & rocks. Tidal river
Submerged rocks. Shoal. Swamp. Reeds
Wells: lined; unlined. Tube-well. Spring. Tanks: perennial; dry
Embankments: road or rail; tank. Broken ground
Railways, broad gauge: double; single with station; under construction
Railways, other gauges: double; single with distance stone; do
Mineral line or tramway. Kiln. Cutting with tunnel
Contours with sub-features. Rocky slopes. Cliffs
Sand features: (1)flat (2)sand-hills (permanent). (3)dunes(shifting)
Towns or Villages: inhabited; deserted. Fort
Huts: permanent; temporary. Tower. Antiquities
Temple. Chhatri. Church. Mosque. Idgah. Tomb. Graves
Lighthouse. Lightship. Buoys: lighted; unlighted. Anchorage
Mine. Vine on trellis. Grass. Scrub
Palms: palmyra; other. Plantain. Conifer. Bamboo. Other trees
Areas: cultivated; wooded. Surveyed tree
Boundary, international
state: demarcated; undemarcated
district; subdivision, tahsil or taluk; forest
Boundary pillars: surveyed; unlocated
Heights, triangulated: station; point; approximate — 200
Bench-mark: geodetic; tertiary; canal — BM 63·3
Post office. Telegraph office. Overhead tank
Rest house or inspection bungalow. Circuit house. Police station
Camping ground. Forest: reserved; protected — CG RF PF
Spaced names: administrative; locality or tribal — KIKRI NĀGA
Hospital. Dispensary. Veterinary: Hospital / Dispensary
Aerodrome. Helipad. Tourist site
Power line with pylons surveyed; with poles unsurveyed

APPROVED
Deepak Kumar
State Geologist

PLATE NO.- 2

KEY MAP OF 5 KM. RADIUS

NEAR VILLAGE :- FATEHPUR ,LAHA,NAGAULI, BATAURA,BARI BASSI, BANAUDI
TEHSIL :- NARAINGARH,
DISTRICT :- AMBALA, (HARYANA)

BLOCK No.- 2	Total Lease Area :- 105.51 Acre (42.70 Hect.)
Mineral:- Boulder, Gravel and Sand	SCALE :- 1 Cm = 500 mtr.
zawed (LOI HOLDER) M/s. RELIABLE MINING CORPORATION	QUALIFIED PERSON (GEOLOGIST) Chauhan Geology (Qualified Person)

Registered Post
From

The Director,
Mines and Geology Haryana,
Plot No. 9, I.T. Park, Sector-22,
Panchkula

To

M/s Reliable Mining Corporation,
R/o SR-68, DLF phase-3,
Gurugram, 122010, Haryana.

Memo No. DMG/HY/MP/Fatehpur Nagoli/2022/2693
Dated Panchkula the 18-05-23

Subject: **Submission of Mining Plan including Progressive Mine Closure Plan under Rule 70(1) of the StateRules, 2012 in respect of Fatehpur Nagoli Mines of Boulder Gravel and Sand (Minor Minerals) of district Ambala comprising an area of 105.51 Acres of M/s Reliable Mining Corporation,Gurugram.**

****

Reference to your letter dated 17.04.2023 on the subject noted above.

2. Vide letter under reference, the Mining Plan along with Progressive Mine Closure Plan in respect of an area of 105.51 Acres of land in Fatehpur Nagoli (BGS) Mines, District Ambala was submitted for approval.

3. In exercise of the powers conferred by Rule 69 of the Haryana Minor Mineral Concession, Stoking, Transportation of Minerals and Prevention of Illegal Mining Rules, 2012, I hereby approve the above said Mining Plan along with Progressive Mine Closure Plan in respect of Boulder, Gravel and Sand mine of Villages –Fatehpur, Laha, Batoura, Nagoli, Banaudi and BariBassi , over an area of 105.51 Acres of land situated in district Ambala. This approval is subject to the following conditions:-

(i) That this Mining Plan and Progressive Mine Closure Plan is approved without prejudice to any other laws applicable to the mine/area from time to time whether made by the Central Government or State Government or any other authority.

(ii) That this approval of the "Mining Plan along with Progressive Mine Closure Plan" of Mining does not in any way imply the approval of the State Government in terms of any other provisions of the Mines and Minerals (Development & Regulation) Act, 1957 or Haryana Minor Mineral Concession, Stocking, Transportation of Minerals and Prevention of Illegal Mining Rules, 2012 or any other law including Forest (Conservation) Act, 1980 and Environment Protection Act, 1986 and rules framed there under.

(iii) That this "Mining Plan along with Progressive Mine Closure Plan" is being approved on the basis of data provided by you. In case, at any point of time any ambiguity in the same is found, the approval will be revoked with suspension of the mining operations and will be allowed to resume operation only after modification/rectification of the same, if so required.

(iv) That this "Mining Plan along with Progressive Mine Closure Plan" is approved without prejudice to any other order or direction from any court of any competent jurisdiction and is for a period of five years only and shall not be make you entitled for any extension of the lease period.

(v) That all the norms and provisions as envisaged in the Mining Plan would be adhered to, during the working of mine.

(vi) That the Financial Assurance of Rs. 6,50,000/- (Rs. Six lac Fifty thousand only) as required under the provisions of Rule 71(6) of "Haryana Minor Mineral Concession, Stocking, Transportation of Minerals & Prevention of Illegal Mining Rules, 2012, shall be furnished within a period of 60 days or before start of mining operations, whichever is earlier.

4. Further, as per condition no. 4.20 of the LoI dated 28.07.2022, the actual mining will be allowed to be commenced only after Prior Environmental Clearance from the Competent Authority as required under EIA notification dated 14/9/2006, as amended from time to time by the MoE&F, GoI and guidelines/ circulars issued in this behalf.

Encl: Mining Plan & Progressive
Mine Closure Plan (2 copies)

State Geologist,
for Director, Mines and Geology,
Haryana.

Registered Post
Endst. No . DMG/HY/MP/Fatehpur Nagoli/2022/ Dated:

A copy along with a copy of the dully approved Mining Plan and Progressive Mine Closure Plan is forwarded to the Director Mines Safety, Room No. 201-203, 2nd Floor, B-Block, CGO Complex-II, Hapur Road, Ghaziabad for information and necessary action.

Encl: Mining Plan & Progressive
Mine Closure Plan

-Sd -
State Geologist,
for Director, Mines and Geology,
Haryana.

Endst. No. DMG/HY/MP/Fatehpur Nagoli/2022/ Dated:

A copy along with a copy of the dully approved Mining Plan and Progressive Mine Closure Plan is forwarded to the Mining Officer, Mines and Geology Department, Ambala for information and necessary action.

Encl: Mining Plan & Progressive
Mine Closure Plan

- Sd -
State Geologist,
for Director, Mines and Geology,
Haryana.

Endst. No . DMG/HY/MP/Fatehpur Nagoli/2022/ Dated:

A copy is forwarded to Miss.Prerna Chauhan,(QP),N.S.Enviro Tech Laboratories& Consultant, P.No. 51. Ganeta House, Shiv Vihar Colony, Mansarovar, Jaipur Rajasthan, 302020 w.r.t. her letter dated 17.04.2023 for information and necessary action.

- Sd -
State Geologist,
for Director, Mines and Geology,
Haryana.

सत्यमेव जयते

SUSTAINABLE SAND MINING MANAGEMENT GUIDELINES 2016

पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
इंदिरा पर्यावरण भवन, जोर बाग रोड, नई दिल्ली–110 003
Ministry of Environment, Forest and Climate Change
Indira Paryavaran Bhavan, Jor Bagh Road, New Delhi - 110 003
www.moef.nic.in

Acknowledgment

The Sustainable Sand Mining Management Guidelines 2016, has been prepared after extensive consultation with the States and stakeholders over a period of last one year. The Guideline assimilates the knowledge and experience of stakeholder. The main objective of the Guidelines is to ensure sustainable sand mining and environment friendly management practices in order to restore and maintain the ecology of river and other sand sources. The team of the officers of Ministry of Environment, Forest and Climate Change who have worked for preparing these Guidelines comprised of following:

1. Shri Manoj Kumar Singh, Joint Secretary
2. Dr. U. Sridharan, Scientist 'F'
3. Dr. R.B. Lal, Scientist 'D'
4. Dr. Sonu Singh, Scientist 'D'

SUSTAINABLE SAND MINING MANAGEMENT GUIDELINES

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APPENDIX

प्रकाश जावडेकर
Prakash Javadekar

सत्यमेव जयते

राज्य मंत्री (स्वतंत्र प्रभार)
MINISTER OF STATE (INDEPENDENT CHARGE)
पर्यावरण, वन एवं जलवायु परिवर्तन
ENVIRONMENT, FOREST & CLIMATE CHANGE
भारत सरकार / GOVERNMENT OF INDIA

FOREWORD

Environmental Protection and Sustainable Development have been the cornerstones of the policies and procedures governing the industrial and other developmental activities in India. The Ministry of Environment, Forest and Climate Change has taken several policy initiatives and enacted environmental and pollution control legislations to prevent indiscriminate exploitation of natural resources and to promote integration of environmental concerns in developmental projects. One such initiative is the Notification on Environmental Impact Assessment (EIA) of developmental projects issued on 14th September, 2006 under the provisions of Environment (Protection) Act, 1986, making EIA mandatory for certain categories of developmental projects.

Another land mark decision has been taken with the new notifications dated 15.01.2016 and 20.01.2016 on mining of minor minerals and constitution of District Level Environment Impact Assessment Authority and District Level Environment Appraisal Committee. This will ensure environmentally sustainable mining especially for sand and gravel under close supervision of district authorities. Use of information technology and information technology enabled services for scientific monitoring of mining and transportation of mined out material is another important feature of above notification.

Sand and gravel are one of the most important construction materials. Ensuring their availability is vital for the development of the infrastructure in the country. There are different sources of sand and gravel, the most important among them is the river. As the requirement of these construction materials is on rise, they also are very vital for the health, physical character of the river and the different important functions of the river. The extraction of sand and gravel from the river bodies has to be regulated and done with adoption of required environmental safeguards.

In view of evolving scenario in industry and development sector, My Ministry has prepared a "Sustainable Sand Mining Management Guidelines". The Guidelines *inter-alia* focus on preparation of District Survey Report; Management Plan; Marine Sand Mining and Impact on Marine Biodiversity; Issues and Management of Mining in Cluster; Management of Sand Deposited after Flood on Agricultural Field of Farmers; Mining of Sand from Agricultural Field; Monitoring System for Sustainable Sand Mining using Information Technology System; Creation of District Level Environment Impact Assessment Authority (DEIAA) and District Level Expert Appraisal Committee (DEAC) for granting Environment Clearance for Mining of Minor Minerals; Exemption of certain cases for requirement of Environment Clearance and Standard Environmental Conditions for Sustainable Sand Mining.

The Guidelines will help the Departments of Mines and Geology, State Pollution Control Boards/Committees, Industries, Regulators, Authorities and various Stakeholders to ensure environmentally sustainable mining in the Country.

(Prakash Javadekar)

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अशोक लवासा
ASHOK LAVASA, IAS

सत्यमेव जयते

सचिव
भारत सरकार
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
Secretary
Government of India
Ministry of Environment, Forest and Climate Change

PREFACE

Sand is naturally occurring granular material composed of finely divided rock and mineral particles. Sand and gravel together known as aggregate, represent the highest volume of raw material used on earth. The mining of aggregate has been continuing for many years. Now the mining of aggregates has reached a level threatening the environment and ecosystem besides also reaching a level of scarcity that would threaten the economy. It is recommended that sand and aggregate mining, and quarrying should be done only after sound scientific assessment and adopting best practices to limit the impact on the environment.

The main objectives of the Guidelines, inter-alia, includes to ensure that sand and gravel mining is done in environmentally sustainable and socially responsible manner; availability of adequate quantity of aggregate in sustainable manner; improve the effectiveness of monitoring of mining and transportation of mined out material; conservation of the river equilibrium and its natural environment by protection and restoration of the ecological system; avoid aggradation at the *downstream* reach especially those with hydraulic structures such as jetties, water intakes etc.; to ensure the rivers are protected from bank and bed erosion beyond its stable profile; no obstruction to the river flow, water transport and restoring the riparian rights and in-stream habitats; to avoid pollution of river water leading to water quality deterioration; to prevent depletion of ground water reserves due to excessive draining out of ground water; and streamlining the process for grant of environmental clearance (EC) for sustainable mining.

The recommendations for management of sustainable sand extraction are the key objectives of the Guidelines. Emphasis is given to the setting up of monitoring plans that will provide data on profile changes and sediment transport capacity to enable the authorities to evaluate the long-term effect of the mining activities both upstream and downstream of sand extraction sites. Special emphasis is given on monitoring of the mined out material, which is key to the success of environment management plan. So use of IT and IT enabled services for effective monitoring of the quantity of mined out material and transportation along with process reengineering has been made a part of the Guideline. The Guidelines propose delegation of responsibility and authority to the cutting edge level i.e. the District Environment Impact Assessment Authority along with streamlining the process of impact assessment, environment management plan and environment clearance in cluster situation.

(Ashok Lavasa)

New Delhi
Date: 15-03-2016

इंदिरा पर्यावरण भवन, जोर बाग रोड़, नई दिल्ली-110 003 फोन : (011) 24695262, 24695265, फैक्स : (011) 24695270
INDIRA PARYAVARAN BHAWAN, JOR BAGH ROAD, NEW DELHI-110 003 Ph. : (011) 24695262, 2465265, Fax : (011) 24695270
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EXECUTIVE SUMMARY

The sand and gravel are one of the most important construction materials. Ensuring their availability is vital for the development of the infrastructure in the country. There are different sources of sand and gravel, the most important among them is the river. As the requirement of these construction materials is on rise, they also are very vital for the health, physical character of the river and the different important functions of the river. The extraction of sand and gravel from the river bodies has to be regulated and done with adoption of required environmental safeguards.

For making available these resources, a mapping of these resources at the district level, identification of appropriate sites for extraction, appraisal of the extraction process, putting in place the required environmental safeguards, and rigorous monitoring of the volume of extracted material is required to ensure sustainability of the entire process.

The district is the unit of administration which is best placed to do the mapping of these resources, adopt the best environmental practices for extraction of these materials and monitor its extraction and movement. The large number of leases which are awarded, the scattered geographical location of the availability of these materials and decentralized requirement and usage of the sand and aggregates also places districts in a unique position to play a vital role in adoption of environmental safeguards needed for sustainable extraction of river sand and gravel.

Recommendations for management of sustainable sand extraction are the key objective of the Guidelines. Emphasis is given to the setting up of monitoring plans that will provide data on profile changes and sediment transport capacity to enable the authorities to evaluate the long-term effect of the mining activities both upstream and downstream of sand extraction sites.

Special emphasis is given on monitoring of the mined out material, which is key to the success of environment management plan. So use of IT and IT enabled services for effective monitoring of the quantity of mined out material and transportation along with process reengineering has been made a part of the Guideliness. The Guidelines proposes delegation of responsibility and authority to the cutting edge level i.e. the District Environment Impact Assessment Authority along with streamlining the process of impact assessment, environment management plan and environment clearance in cluster situation.

Promotion of manufactured sand, artificial sand and alternative technologies in construction materials and processes are also required for reducing the dependence and demand on naturally occurring sand and gravel. Development of slag sand, sand from stone chips and there certification under BIS is an important step in this direction.

INTRODUCTION

Sustainable Development is built on three pillars - environmental, social and economic. Sustainable development cannot be achieved if the environment is protected but poverty is prevalent in a significant part of the population. Similarly, sustainable development cannot be achieved through inappropriate economic growth, if it undermines the environment in which people and businesses exists. These Guideliness support that fundamental concept, promoting environmental protection, limiting negative physiological, hydrological and social impacts under pinning sustainable economic growth.

Sand and gravel have long been used as aggregate for construction of roads and building. Today, the demand for these materials continues to rise. In India, the main sources of sand are river flood plain, coastal sand, paleo channel sand, and sand from agricultural fields.

River sand mining is a common practice as habitation concentrates along the rivers and the mining locations are preferred near the markets or along the transportation route, for reducing the transportation cost. River sand mining can damage private and public properties as well as aquatic habitats. Excessive removal of sand may significantly distort the natural equilibrium of a stream channel.

Removing sediment from the active channel bed in river interrupt the continuity of sediment transport through the river system, disrupting the sediment mass balance in the river downstream and induces channel adjustments (usually incision) extending considerable distances (commonly one kilometer or more) beyond the extraction site.

The magnitude of the impact basically depends on the magnitudes of the extraction relative to bed load sediment supply and transport through the reach. Implementation of the principles and processes outlined in this Guidelines will limit the negative externalities of sand and gravel mining.

NEED FOR POLICY GUIDELINES

Sand is naturally occurring granular material composed of finely divided rock and mineral particles between 150 micron to 4.75 mm in diameter (IS 383-1970). Sand is formed due to weathering of rocks due to mechanical forces. In the process the weathered rocks forms gravel and then sand.

Sand and gravel together known as aggregate, represent the highest volume of raw material used on earth after water. The mining of aggregate has been continuing for many years. Now the mining of aggregates has reached a level threatening the environment and ecosystem besides also reaching a level of scarcity that would threaten the economy. It is recommended that sand & aggregate mining, and quarrying should be done only after sound scientific assessment and adopting best practices to limit the impact on the environment.

It is also felt that the greater use of substitute material (Manufactured Sand, artificial sand etc.) & construction technology, and sustainable use of the resource could drastically reduce adverse impact of mining on the environment.

OBJECTIVE OF THE GUIDELINES

The Guideliness has been based on the following principles:

- Uncontrolled sand mining is not sustainable.
- Compliance with present and future legislation and regulations on the subject is mandatory and not voluntary.
- Each lease holder should be given the opportunity to self-regulate to the extent that it can demonstrate compliance with legislation and regulations.
- Where self- regulation fails to deliver compliance with legislation and regulations, increased formal enforcement and monitoring should be implemented with punitive measures applied in line with the legal framework.
- There is a need to protect the environment and the right of the population to live in clean and safe surroundings, with the need to use natural resources in a way that will make a positive and sustainable contribution to the economy.

The main objectives of the Guidelines

- To ensure that sand and gravel mining is done in environmentally sustainable and socially responsible manner.
- To ensure availability of adequate quantity of aggregate in sustainable manner.
- To improve the effectiveness of monitoring of mining and transportation of mined out material.

- Ensure conservation of the river equilibrium and its natural environment by protection and restoration of the ecological system.
- Avoid aggradation at the downstream reach especially those with hydraulic structures such as jetties, water intakes etc.
- Ensure that the rivers are protected from bank and bed erosion beyond its stable profile.
- No obstruction to the river flow, water transport and restoring the riparian rights and in-stream habitats.
- Avoid pollution of river water leading to water quality deterioration.
- To prevent depletion of ground water reserves due to excessive draining out of ground water.
- To prevent ground water pollution by prohibiting sand mining on fissures where it works as filter prior to ground water recharge.
- To maintain the river equilibrium with the application of sediment transport principles in determining the locations, period and quantity to be extracted.
- Streamlining and simplifying the process for grant of environmental clearance (EC) for sustainable mining.

THE EFFECT OF SAND AND GRAVEL MINING

Mining within or near riverbed has a direct impact on the stream's physical characteristics, such as channel geometry, bed elevation, substratum composition and stability, in-stream roughness of the bed, flow velocity, discharge capacity, sediment transport capacity, turbidity, temperature etc. Alteration or modification of the above attributes may cause hazardous impact on ecological equilibrium of riverine regime. This may also cause adverse impact on in-stream biota and riparian habitats. This disturbance may also cause changes in channel configuration and flow-paths.

The effects of sand and gravel mining are as follows:

a) Extraction of bed material in excess of replenishment by transport from upstream causes the bed to lower (degrade) upstream and downstream of the site of removal.

b) In-stream habitat is impacted by increase in river gradient, suspended load, sediment transport and sediment deposition. Excessive sediment deposition for replenishment increases turbidity which prevents penetration of light required for photosynthesis and reduces food availability of aquatic fauna.

c) Riparian habitat including vegetative cover on and adjacent to the river banks it controls erosion, provide nutrient inputs into the stream and prevents intrusion of pollutants in the stream through runoff. Bank erosion and change of morphology of the river can destroy the riparian vegetative cover.

d) Bed degradation are responsible for channel shifting, causing loss of properties and degradation of landscape, it can also undermine bridge supports, pipe lines or other structures.

e) Degradation may change the morphology of the river bed, which constitutes one aspect of the aquatic habitat.

f) Degradation can deplete the entire depth of gravelly bed material, exposing other substrates that may underlie the gravel, which could in turn affect the quality of aquatic habitat. Lowering of ground water table in the flood plain because of lowering of riverbed level as well as river water level takes place because of extraction and draining out of excessive ground water from the adjacent areas. So, if a floodplain aquifer drains to the stream, groundwater levels can be lowered as a result of bed degradation.

g) Lowering of the water table can destroy riparian vegetation.

h) Excessive pumping of ground water in the process of mining in abandoned channels depletes ground water causing scarcity of irrigation and drinking water. In extreme cases it may create ground fissures and subsidence in adjacent areas.

i) Flooding is reduced as bed elevations and flood heights decrease, reducing hazard for human occupancy of floodplains and the possibility of damage to engineering works.

j) The supply of overbank sediments to floodplains is reduced as flood heights decrease.

k) An un-scientific and unregulated sand and gravel mining tends to increase channel bank

scouring and erosion. This causes a large degree of meandering of rivers and sometimes it could be in kms.

l) Rapid bed degradation may induce bank collapse and erosion by increasing the heights of banks.

m) Polluting ground water by reducing the thickness of the filter material especially if mining is taking place at top of recharge fissures.

n) Choking of sand layer which acts as filter for ingress of ground water from river by dumping of finer material, compaction of filter zone due to movement of heavy vehicles. It also reduces the permeability and porosity of the filter material.

o) Removal of gravel from bars may cause downstream bars to erode if they subsequently receive less bed material than is carried downstream from them by fluvial transport.

p) Ecological effects on bird nesting, fish migration, angling, etc.

q) Indiscrete mining activities lead to increased concentration of suspended sediment in the river which in turn causes siltation of water resources projects.

r) Un-scientific and unregulated sand and gravel mining leads to the severe health hazards like air quality degradation and dust fog.

s) Direct destruction from heavy equipment operation; discharges from equipment and refueling.

t) Biosecurity and pest risks.

u) Impacts on coastal processes.

The other deleterious impacts of indiscrete mining include

Loss of riparian habitat resulting from direct removal of vegetation along the stream bank to facilitate the use of a dragline or through the process of lowering the water table, bank undercutting, and channel incision. The physical composition and stability of substrates are altered as a result of in-stream mining and most of these physical effects may exacerbate sediment entrainment in the channel.

Furthermore, the process of in-stream mining and gravel washing produces fine sediments under all flow conditions, resulting in a deposition of fine sediment in riffles as well as other habitats at low discharge. Excess sediment is considered the greatest pollutant in waters and constitutes one of the major environmental factors in the degradation of stream fisheries.

However, in-stream mining may contribute additional sediment to downstream reaches due to the disruption of substrate stability. Once sediment enters the stream, it is best to let natural geomorphological and hydrological processes reach a dynamic equilibrium, rather than further exacerbating the situation by additional disturbance.

All other things being equal:

a) Extracting gravel from an excavation that does not penetrate the water table and is located away from an active stream channel should cause little or no change to the natural hydrological processes unless the stream captures the pit during periods of flooding.

b) In-stream extraction of gravel from below the water level of a stream generally causes more changes to the natural hydrologic processes than limiting extraction to a reference point above the water level.

c) In-stream extraction of gravel below the deepest part of the channel (the thalweg) generally causes more changes to the natural hydrological processes than limiting extraction to a reference point above the thalweg.

d) Excavating sand and gravel from a small straight channel with a narrow floodplain generally will have a greater impact on the natural hydrological processes than excavations on a braided channel with a wide floodplain.

e) Extracting sand and gravel from a large river or stream will generally create less impact than extracting the same amount of material from a smaller river or stream.

f) Over-extraction of gravel can destabilise channels and banks, and/or affect the ecologic functioning of rivers particularly if undertaken at the wrong time, or in the wrong place, or in a way that damages the river bed or margins.

GENERAL APPROACH TO SUSTAINABLE SAND AND GRAVEL MINING

Following considerations should be kept in mind for sand / gravel mining:

a) Parts of the river reach that experience deposition or aggradation shall be identified first. The Lease holder/ Environmental Clearance holder may be allowed to extract the sand and gravel deposit in these locations to manage aggradation problem.

b) The distance between sites for sand and gravel mining shall depend on the replenishment rate of the river. Sediment rating curve for the potential sites shall be developed and checked against the extracted volumes of sand and gravel.

c) Sand and gravel may be extracted across the entire active channel during the dry season.

d) Abandoned stream channels on terrace and inactive floodplains be preferred rather than active channels and their deltas and flood plains. Stream should not be diverted to form inactive channel.

e) Layers of sand and gravel which could be removed from the river bed shall depend on the width of the river and replenishment rate of the river.

f) Sand and gravel shall not be allowed to be extracted where erosion may occur, such as at the concave bank.

g) Segments of braided river system should be used preferably falling within the lateral migration area of the river regime that enhances the feasibility of sediment replenishment.

h) Sand and gravel shall not be extracted within 200 to 500 meter from any crucial hydraulic structure such as pumping station, water intakes, and bridges. The exact distance should be ascertained by the local authorities based on local situation. The cross-section survey should cover a minimum distance of 1.0 km upstream and 1.0 km downstream of the potential reach for extraction. The sediment sampling should include the bed material and bed material load before, during and after extraction period. Develop a sediment rating curve at the upstream end of the potential reach using the surveyed cross- section. Using the historical or gauged flow rating curve, determine the suitable period of high flow that can replenish the extracted volume. Calculate the extraction volume based on the sediment rating curve and high flow period after determining the allowable mining depth.

i) Sand and gravel could be extracted from the downstream of the sand bar at river bends. Retaining the upstream one to two thirds of the bar and riparian vegetation is accepted as a method to promote channel stability.

j) Flood discharge capacity of the river could be maintained in areas where there are significant flood hazard to existing structures or infrastructure. Sand and gravel mining may be allowed to maintain the natural flow capacity based on surveyed cross- section history.

k) Alternatively, off-channel or floodplain extraction is recommended to allow rivers to replenish the quantity taken out during mining.

l) The Piedmont Zone (Bhabhar area) particularly in the Himalayan foothills, where riverbed material is mined, this sandy-gravelly track constitutes excellent conduits and holds the greater potential for ground water recharge. Mining in such areas should be preferred in locations selected away from the channel bank stretches.

m) Mining depth should be restricted to 3 meter and distance from the bank should be 3 meter or 10 percent of the river width whichever less.

n) The borrow area should preferably be located on the river side of the proposed embankment, because they get silted up in course of time. For low embankment less than 6 m in height, borrow area should not be selected within 25 m from the toe/heel of the embankment. In case of higher embankment the distance should not be less than 50 m. In order to obviate development of flow parallel to embankment, cross bars of width eight times the depth of borrow pits spaced 50 to 60 meters centre-to-centre should be left in the borrow pits.

o) Demarcation of mining area with pillars and geo-referencing should be done prior to start of mining.

THE WORLD SCENARIO

Sand and gravel are mined world-wide and account for the largest volume of solid material extracted globally. Formed by erosive processes over thousands of years, they are now being extracted at a rate far greater than their renewal. Furthermore, the volume being extracted is having a major impact on rivers, deltas and coastal and marine ecosystems, resulting in loss of land through river or coastal erosion, lowering of the water table and decrease in the amount of sediment supply. Despite the colossal quantities of sand and gravel being used, increasing dependence on them and the significant impact that their extraction has on the environment, this issue needs far better attention and awareness.

Globally, between 47 and 59 billion tonnes of material is mined every year of which sand and gravel, known as aggregates, account for both the largest share (from 68% to 85%) and the fastest growth in extraction increase. Although more sand and gravel are mined than any other material, reliable data on their extraction is not available. The absence of global data on aggregates mining makes environmental assessment very difficult and has contributed to the lack of awareness about this issue. One way to estimate the global use of aggregates indirectly is through the production of cement for concrete (concrete is made with cement, water, sand and gravel). The production of cement is reported by 150 countries and it reached 3.7 billion tonnes in 2012 (USGS, 2013a). For each tonne of cement, the building industry needs about six to seven times more tonnes of sand and gravel (USGS, 2013b). Thus, the world's use of aggregates for concrete can be estimated at 25.9 billion tonnes a year for 2012 alone.

Added to this are all the aggregates used in land reclamation, shoreline developments and road embankments (for which the global statistics are unavailable), added to this is the 180 million tonnes of sand used in industry (USGS, 2012). Aggregates also contribute to 90% of asphalt pavements and 80% of concrete roads (Robinson and Brown, 2002). Taking all these estimates into account, a conservative estimate for the world consumption of aggregates exceeds 40 billion tonnes a year.

This large quantity of material cannot be extracted and used without a significant impact on the environment. Extraction has an impact on biodiversity, water turbidity, water table levels and landscape and on climate through carbon dioxide emissions from transportation. There are also socio-economic, cultural and even political consequences. In some extreme cases, the mining of marine aggregates has changed international boundaries, such as through the disappearance of sand islands in Indonesia (New York Times, 2010; Guerin, 2003).

The impacts of sand mining can be mainly categorized as follows:

IMPACTS ON	DESCRIPTION
Biodiversity	Impacts on related ecosystems (for example; fisheries)
Land losses	Both inland and coastal through erosion
Hydrological functions	Change in water flows, flood regulation and marine currents
Water supply	Through lowering of the water table and pollution
Infrastructures	Damage to bridges, river embankments and coastal infrastructures
Climate	Directly through transport emissions
Landscape	Coastal erosion, changes in deltaic structures, quarries, pollution of rivers
Extreme events	Decline of protection against extreme events (flood, drought, storm surge)

World over sand was until recently extracted in land quarries and riverbeds; however, a shift to marine and coastal aggregates mining has occurred due to the decline of inland resources. River and marine aggregates remain the main sources for building and land reclamation. For concrete, in-stream gravel requires less processing and produces high-quality material while marine aggregate needs to be thoroughly washed to remove salt. If the chloride is not removed from marine aggregate, a structure built with it might collapse after few decades due to corrosion of steel reinforced structures. Most sand from deserts cannot be used for concrete and land reclaiming, as the wind erosion process forms round grains that do not bind well.

INDIAN SCENARIO

The data on consumption of sand and aggregate in country is not available with any source. It can be derived indirectly from the usage of cement, construction of roads and stowing of mines. The trend for aggregates extraction can be estimated using cement production as a proxy.

Cement production has multiplied three-fold in the last 20 years from 1.37 billion tonnes of cement in 1994 to 3.7 billion tonnes in 2012 (USGS, 2013a) mainly as a result of rapid economic growth in Asia (UNEP and CSIRO, 2011). Five countries: China (58%), India (6.75%), the United States (2%), Brazil and Turkey - produce 70% of the world's cement (USGS, 2013c). The consumption of cement is expected to reach 324 million tonnes, which equates to use of 2.2 billion tonnes of aggregates. This is in addition to sand and aggregates used in stowing of mines, industry and other allied usage.

In India the main sources of sand are:

(a) River (riverbed and flood plain).

(b) Lakes and reservoirs.

(c) Agricultural fields (Haryana).

(d) Coastal / marine sand.

(e) Palaeo-channels (Bikaner in Rajasthan).

THE PRICE ELASTICITY FOR DEMAND OF SAND

As the price elasticity of demand for sand is inelastic (-0.88), any increase in price in absence of marketable alternative will not have any significant impact on demand. Use of crushed stones or other substitute material should be promoted. The regional context of aggregate resources, market demand, and the environmental impacts of various alternatives must be understood before any site-specific proposal for aggregate extraction can be reviewed.

Evaluation of aggregate supply and demand should be undertaken on the basis of production-consumption regions, encompassing the market for aggregate and all potential sources of aggregate within an economical transport distance. The finite nature of high-quality alluvial gravel resources must be recognized, and high-quality PCC-grade aggregates should be reserved only for the uses demanding this quality material (such as concrete). Alternative sources should be used in less demanding applications (such as road sub-base). Part replacement with fly ash in roads and embankments be promoted in place of sand and aggregates.

The environmental costs of sand mining should be incorporated into the price of the product so that alternative sources that require more processing but have less environmental impact become more attractive.

PROCESS OF SEDIMENT TRANSPORT

The loose boundary (consisting of movable material) of an alluvial channel deforms under the action of flowing water and the deformed bed with its changing roughness (bed forms) interacts with the flow. The resulting movement of the bed material (sediment) in the direction of flow is called sediment transport and a critical bed shear stress must be exceeded to start the particle movement.

Such a critical shear stress is referred as incipient (threshold) motion condition, below which the particles will be at rest and the flow is similar to that on a rigid boundary. Some sediment particles roll or slide along the bed intermittently and some others saltate (hopping or bouncing along the bed). The material transported in one or both of these modes is called 'bed load'.

Finer particles (with low fall velocities) are entrained in suspension by the fluid turbulence and transported along the channel in suspension. This mode of transport is called 'suspended load'. Sometimes finer particles from upland catchment (sizes which are not present in the bed material), called 'wash load', are also transported in suspension. The combined bed material and wash load is called 'total load'.

Bed load ranges from a few percent of total load in lowland rivers to perhaps 15% in Mountain Rivers to over 60% in some arid catchments. Although a relatively small part of the total sediment load, the arrangement of bed load sediment constitutes the architecture of sand, and gravel-bed channels.

The rate of sediment transport typically increases as a power function of flow; that is, a doubling of flow typically produces more than a doubling in sediment transport and most sediment transport occurs during floods. The environmental impacts from in-stream mining can be avoided, if the annual bed load is calculated and aggregate extraction is restricted to that value or some portion of it. To accurately limit extraction to some portion of bed load, the amount of sediment that passes the in-stream mining site during a given period of time must be calculated.

There is a large amount of uncertainty in the process of calculating annual rates of bed load transport. How much coarse material is moved, how long it remains in motion as also how far it moves depends on the size, shape & packing of the material and the characteristics of the river flow.

Downstream movement commonly occurs as irregular bursts of short-distance movement separated by longer periods, when the particles remain at rest. Because bed load changes from hour-to-hour, day-to-day, and year-to-year, estimating annual bed load rates is a dynamic process involving careful examination.

Constant variations in the flow of the river make the channel floor and riverbanks a dynamic interface, where some materials are being eroded while others are being deposited. The net balance of this activity, on a short- term basis, is referred to as scour or fill.

On a long-term basis, continued scour results in erosion (degradation), while continued fill results in deposition (aggradation).

A general indicator of the stability of a stream relates to the amount of vegetation present. Gravel bars that are vegetated or where the gravel is tightly packed, generally indicate streams, where the gravel supply is in balance. Streams with excessive gravel generally have gravel bars with little or no vegetation, and are surfaced with loosely packed gravel.

SUSTAINABLE SAND AND GRAVEL MINING GUIDELINES

The broad principle on which any sustainable sand mining Guidelines / policy can be based is that river/ natural resources must be utilized for the benefit of the present and future generation, so river resources should be prudently managed and developed. The preparation of District Survery Report is an important initial step.

The Processes under the Guidelines:

(a) Identification of areas of aggradation / deposition where mining can be allowed; and identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited. Use of satellite imagery for identifying areas of sand deposit and quantity be done.

(b) Calculation of annual rate of replenishment and allowing time for replenishment after mining in area.

(c) Identifying ways of scientific and systematic mining.

(d) Identifying measures for protection of environment and ecology.

(e) Determining measures for protection of bank erosion.

(f) A bench mark (BM) with respect to mean sea level (MSL) should be made essential to in-mining channel reaches (MCR). Below which no mining shall be allowed.

(g) Identifying steps for conservation of mineral.

(h) Permanent gauging facilities (for discharge and sediment both) should be made compulsory for the sites having excessive mining in consultation with Central Water Commission or any competent State Agency.

(i) Implementing safeguards for checking illegal and indiscrete mining.

Following the above processes, to begin with it is important to prepare a survey document mapping the status of sand sources in a district. This survey should be conducted and report be prepared for each district. Though it is an acceptable fact that rivers cut across districts and States and every river is an ecosystem in itself. But, keeping in view the fact that the district is the most established unit of administration at which this kind of survey, planning and monitoring can be ensured effectively, it is proposed that every district will prepare this document taking the river stretch in that district as an ecological unit and inventorising other sources of sand in the district.

Besides, the production of aggregate in a particular area is a function of availability of natural resources, the size of the population, the economy of the area and various developmental and infrastructural works being undertaken in the area.

The natural resources must be utilized in environment friendly manner in scientific and systematic way and with the objective of sustainable development the policy on the subject should have provisions for protection of environment & ecology. These factors can be accounted for in a most efficient manner at district level.

The sustainable mining plan needs to be dynamic. A survey should be carried out by the District Environment Impact Assessment Authority (DEIAA) with the assistance of Geology Department, Irrigation Department, Forest Department, Public Works Department, Ground Water Boards, Remote Sensing Department and Mining Department etc. in the district at regular intervals.

The survey shall contain:

1. District wise detail of river or stream and other sand source.
2. District wise availability of sand or gravel or aggregate resources.
3. District wise detail of existing mining leases of sand and aggregates.

Based on this survey document, the action plan shall divide the river/ stream/ other sources of the District into the following categories:

1. River / Stream beds sections / other sources suitable for extraction of sand and aggregates.
2. River / Stream beds sections / other sources prohibited for extraction of sand and aggregates.

The river/ streams/ other sources of sand and aggregate are studied on following parameters:

a) Geomorphological studies

i) Place of origin
ii) Catchment area.
iii) General profile of river stream.
iv) Annual deposition factor.
v) Replenishment.
vi) Total potential of minor mineral in the river bed.

b) Geological studies

i) Lithology of catchment area.
ii) Tectonics and structural behavior of rocks.

c) Climatic Factors

i) Intensity of rainfall.
ii) Climate Zone.
iii) Temperature variation

The following points to be considered while selecting the river / stream for mining besides the above parameters:

i) A stable river is able to constantly transport the flow of sediments produced by watershed such that it's dimensions (width and depth) pattern and vertical profile are maintained without aggrading (building up) or degrading (scouring down).

ii) The amount of boulders, cobbles, pebbles, and sand deposited in river bed equals to the amount delivered to the river from catchment area and from bank erosion minus amount transported downstream each year.

iii) It is compulsive nature of river to meander in their beds and therefore they will have to be provided with adequate corridor for meandering without hindrance. Any attempt to diminish the width of the corridor (floodway) and curb the freedom to meander would prove counterproductive.

iv) Erosion and deposition is law of nature. The river stream has to complete its geomorphological cycles from youth, mature to old age.

v) River capturing is unavoidable.

vi) Fundamentally the lowest point of any stream is fixed by sea level.

This survey document should be prepared in the district based on direct and indirect benefits of mining and identification of the potential threats to the river / stream beds in the district.

Besides, calculating the carrying capacity of the river / stream beds / other sources to find out maximum quantity available to be allowed for removal each year from the sources, it should also provide various measures to regulate sand and aggregate mining in a systemic way.

It has to provide for environmentally safe depth of mining and safeguards of banks by prescribing safe distance from banks. It is required that there should be a Sub-Divisional Committee which should visit each site and make recommendation. The Committee should comprise of Sub-Divisional Magistrate, Officers from Irrigation department, State Pollution Control Board or Committee, Forest department, Geology or mining officer shall visit each site for which environmental clearance has been applied for and make recommendation on suitability of site for mining or prohibition thereof.

THE STRUCTURE OF DISTRICT SURVEY REPORT

The report can have following structure:

1. Introduction
2. Overview of Mining Activity in the District
3 The List of Mining Leases in the District with location, area and period of validity
4. Details of Royalty or Revenue received in last three years
5. Detail of Production of Sand or Bajari or minor mineral in last three years
6. Process of Deposition of Sediments in the rivers of the District
7. General Profile of the District
8. Land Utilization Pattern in the district: Forest, Agriculture, Horticulture, Mining etc.
9. Physiography of the District
10. Rainfall: month-wise
11. Geology and Mineral Wealth

12. Drainage System with description of main rivers.

Sl.No.	NAME OF RIVER	AREA DRAINED (Sq. Km)	% AREA DRAINED

13. Salient Features of Important Rivers and Streams:

Sl.No.	Name of the River / Stream	Total Length in the District (in Km)	Place of origin	Altitude at Origin

14. Methodology Adopted for Calculating of Mineral Potential

The mineral potential is calculated based on field investigation and geology of the catchment area of the river/ streams. As per the policy of the State and location, depth of minable mineral is defined. The area for removal of mineral in a river or stream can be decided depending on geo-morphology

and other factors, it can be 50% to 60% of the area of a particular river/stream, e.g. in Himachal Pradesh mineral constituents like boulders, river born bajari, sand up to a depth of one meter are considered as resource mineral. Other constituents like clay and silt are excluded as waste while calculating the mineral potential of particular river/ stream.

The specific gravity of each mineral constituent is different. While calculating the mineral potential, the average specific gravity is taken as 2.25. The percent of mineral constituent like boulder, river bajari, sand also varies for different river and streams. While calculating the mineral potential the percentage of each mineral constituent is taken as, Boulders 35-40%, Bajari - 30-35%, Sand 25-30% and 5-10% for silt and clay.

The quantum of deposition varies from stream to stream depending upon factors like catchment lithology, discharge, river profile and geomorphology of the river course. There are certain geomorphological features developed in the river beds such as channel bar, point bar etc. where annual deposition is more even two to three meters.

For illustration one example of Yamuna River in Sirmaour district of Himachal Pradesh is given below:

Portion of the River / Stream Recommended for Mineral Concession	Length of area recommended for mineral concession (in kilometer)	Average width of area recommended for mineral concession (in meters)	Area recommended for mineral concession (in square meter)	Mineable mineral potential (in metric tonne) (60% of total mineral potential)
From Downstream of confluence with Tons River to Behral near Haryana and Uttar Pradesh border	31	478	14818000	16803612

Note: Considering the density of river bed material to be **1.89 g/cm^3**

Present Status of Mining

This gives the detail of mining leases already in operation in this stretch, area and production in last three years from these leases is calculated.

Mineral Potential is calculated in following way:

Mineral Potential

Boulder (MT)	Bajari (MT)	Sand (MT)	Total Mineable Mineral Potential (MT)
5601204	6801462	4400946	16803612

Annual Deposition

336072	408088	264057	1008217

Recommendation:

From the above it is clear that about 16803612 metric tonnes of mineral is available up to depth of one meter in the river bed of Yamuna in Sirmour district.
The annual deposition is 1008217 MT.
The average annual production is 80000 MT.
So, 16723612 MT of mineral can be safely removed.

In similar manner it should be calculated for each river and stream in the district and compiled in following format:

Sl.No.	River/ Stream	Portion of the river / stream recommended for mineral concession	Length of the recommended area for mineral concession (in kilometer)	Average width of the recommended area for mineral concession (in meters)	Area recommended for mineral concession (in sq.mtrs.)	Mineable mineral potential (in metric tonne) (60% of total mineral potential)
Total for the District						

About the size of the mining leases for the aggregates it should be borne in mind that a river / stream can be divided into two zones, which in-turn is dynamic i.e. the zone of erosion and

zone of deposition. These zones of deposition and erosion are extended in different patches in the river.

Any mining lease granted in larger tract can cover both the zones, and mining activity in zone of erosion can further aggravate the problem of erosion and as such the mining activity can be allowed only in the zone of the deposition. The mining leases of larger areas in rivers are neither in interest of environment nor in the interest of mineral conservation.

In Himalayan states the rivers and wasteland has been mostly classed as forest land and mining on that requires diversion of forest land and payment of compensatory afforestation and NPV etc. The land in river beds in hilly tracts and many small rivers at any one site seldom exceed 5 hectare, so not allowing sand mining leases less than 5 hectare on river beds further aggravates the situation. So the size of mining lease for river sand mining should be determined by the State as per the local situation.

MANAGEMENT PLAN

1. River Bed Mining Recommendations:

a) Permit Mining Volume Based on Measured Annual Replenishment

In the first year following adoption of the management plan, a volume equal to the estimated annual replenishment could be extracted from the reach of channel. Replenishment (up to the elevation of the selected channel configuration) would need to occur before subsequent extraction could take place. The concept of annual replenishment accounts for the episodic nature of sediment transport. For example, during wet periods with high stream flows, and a high contribution of sediment from hill slopes and tributaries, monitoring data would show that sand and gravel bars are replenished quickly. During drought periods with low stream flow, and little sediment supply or transport, monitoring data would likely show that bars were replenished at a slower rate.

The use of monitoring data is essential in measuring when actual replenishment occurs. The use of the concept of annual replenishment protects long-term channel stability as well as aquatic and riparian habitat by extracting a volume sustainable by watershed processes.

b) Establish an Absolute Elevation below Which No Extraction May Occur (Minimum Enveloped Level or Redline).

The absolute elevation below which no mining could occur or "redline" would be surveyed on a site-specific basis in order to avoid impacts to structures such as bridges and to avoid vegetation impacts associated with down-cutting due to excessive removal of sediment. An extraction site can be determined after setting the deposition level at 1 m above natural channel thalweg elevation, as determined by the survey approved by mine plan approving authority.

c) Limit River Bed Extraction Methods to Bar Skimming

If mining is limited to the downstream end of the bar with a riparian buffer on both the channel and hill slope (or floodplain) side, bar skimming would minimise impacts. Other methods such as excavation of trenches or pools in the low flow channel lower the local base level, and maximise upstream (head cutting and incision) and downstream (widening and braiding) impacts. In addition, direct disturbance of the substrate in the low flow channel should be avoided. Trenching on bars may be beneficial in the future if the river becomes severely aggraded, flat, shallow and braided. Trenching of bars may initially impact a smaller area of riparian habitat than skimming - as a result of excavating deeper rather than shallow skimming of a large area. However, over the

long-term, the upstream and downstream effects of a trench on the bar or in the channel may offset any short-term benefit derived from this method.

d) Extract Sand and Gravel from the Downstream Portion of the Bar:

Retaining the upstream one to two thirds of the bar and riparian vegetation while excavating from the downstream one to two third of the bar is accepted as a method to promote channel stability and protect the narrow width of the low flow channel necessary for aquatic life. Sand and gravel would be re-deposited in the excavated downstream one to two thirds of the bar (or downstream of the widest point of the bar) where an eddy would form during sediment transporting flows. In contrast, if excavation occurs on the entire bar after removing existing riparian vegetation, there is a greater potential for widening and braiding of the low flow channel.

e) Concentrate Activities to Minimise Disturbance:

River bed extraction activities should be concentrated or localised to a few bars rather than spread out over many bars. This localisation of extraction will minimise the area of disturbance of upstream and downstream effects. Skimming decreases habitat and species diversity - these effects should not be expanded over a large portion of the area.

f) Review Cumulative Effects of Sand and Gravel Extraction:

The cumulative impact of all mining proposals should be reviewed on an annual basis to determine if cumulative riverine effects or effects to the estuary are likely.

g) Maintain Flood Capacity:

Flood capacity in the river should be maintained in areas where there are significant flood hazards to existing structures or infrastructure.

h) Establish a Long-term Monitoring Program:

Monitoring of changes in bed elevation and channel morphology, and aquatic and riparian habitat upstream and downstream of the extraction would identify any impacts of sand and gravel extraction to biologic resources. Long-term data collected over a period of decades as sand and gravel extraction occurs will provide data to use in determining trends.

i) Minimise Activities That Release Fine Sediment to the River:

No washing, crushing, screening, stockpiling, or plant operations should occur at or below the streams "average high water elevation," or the dominant discharge. These and similar activities have the potential to release fine sediments into the stream, providing habitat conditions harmful to local fish.

j) Retain Vegetation Buffer at Edge of Water and Against River Bank:

Riparian vegetation performs several functions essential to the proper maintenance of geomorphic and biological processes in rivers. It shields river banks and bars from erosion. Additionally, riparian vegetation, including roots and downed trees, serves as cover for fish, provides food source, works as a filter against sediment inputs, and aids in nutrient cycling. More broadly, the riparian zone is necessary to the integrity of the ecosystem providing habitat for invertebrates, birds and other wildlife.

k) The River Bed mining should only be allowed during the dry season.

No River bed mining should be permitted during rainy season (see Appendix 9).

l) An Annual Status and Trends Report:

This report should review permitted extraction quantities in light of results of the monitoring program, or as improved estimates of replenishment become available. The report should document changes in bed elevation, channel morphology, and aquatic and riparian habitat. The report should also include a record of extraction volumes permitted, and excavation location. Finally, recommendations for reclamation, if needed should be documented.

2. Off-Channel or Floodplain Extraction Recommendations

a) Floodplain Extraction should be set back from the Main Channel

In a dynamic alluvial system, it is not uncommon for meanders to migrate across a floodplain. In areas where sand and gravel occurs on floodplains or terraces, there is a potential for the river channel to migrate toward the pit. If the river erodes through the area left between the excavated pit and the river, there is a potential for "river capture," a situation where the low flow channel is diverted though the pit. In order to avoid river capture, excavation pits should set back from the river to provide a buffer, and should be designed to withstand the 100-year flood (100-year ARI). Adequate buffer widths and reduced pit slope gradients are preferred over engineered structures which require maintenance in perpetuity. Hydraulic, geomorphic, and geotechnical studies should be conducted prior to design and construction of the pit and bund. In addition to river capture, extraction pits create the possibility of stranding fish.

b) The maximum depth of Floodplain Extraction should remain above the Channel Thalweg

Floodplain pits should not be excavated below the elevation of the thalweg in the adjacent channel. This will minimise the impacts of potential river capture by limiting the potential for head cutting and the potential of the pit to trap sediment. A shallow excavation (above the water table) would provide a depression that would fill with

water part of the year, and develop seasonal wetland habitat. An excavation below the water table would provide deep water habitat.

c) Side Slopes of Floodplain Excavation Should Range from 3:1 to 10:1

Side slopes of a floodplain pit should be graded to a slope that ranges from 3:1 to 10:1. This will allow for a range of vegetation from wetland to upland. Steep side slopes excavated in floodplain pits on other systems have not been successfully reclaimed, since it is difficult for vegetation to become stabilised. Terrace pits should be designed with a large percentage of edge habitat with a low gradient which will naturally sustain vegetation at a variety of water levels.

d) Place Stockpiled Topsoil above the 25-year Return Period or ARI Level

Stockpiled topsoil can introduce a large supply of fines to the river during a flood event and degrade fish habitat. Storage above the 25-year flood (25-year ARI) inundation level is sufficient to minimise this risk.

e) Floodplain Pits Should Be Restored to Wetland Habitat or Reclaimed for Agriculture

The key to successful restoration or reclamation is to conserve or import adequate material to re-fill the pit, while ensuring that pit margins are graded to allow for development of significant wetland and emergent vegetation.

f) Establish a Long-term Monitoring Program

A long-term monitoring program should provide data illustrating any impacts to river stability, groundwater, fisheries, and riparian vegetation. The monitoring program should assess the success of any reclamation or restoration attempted.

g) An Annual Status and Trends Report

The status and trends report described previously should include a section on the hydrologic and biologic components of floodplain pit reclamation.

3. Extraction Methods

The important methods of sand and gravel mining operations are as below:

a) **Bar scalping or skimming** is extraction of sand and gravel from the surface of bars. This method generally requires that surface irregularities be smoothed out and that the extracted material be limited to what could be taken above an imaginary line sloping upwards and away from the water from a specified level above the river's water surface at the time of extraction (typically 0.3 - 0.6 m (1-2 ft). Bar scalping is commonly repeated year after year. To maintain the hydraulic control provided to upstream by the Riffle head, the preferred method of bar scalping is now generally to leave the top one-third (approximately) of the bar undisturbed, mining only from the downstream two-

thirds.

b) Dry-Pit Channel Mining

Dry-pit channel mines are pits excavated within the active channel on dry intermittent or ephemeral stream beds. Dry pits are often left with abrupt upstream margins, from which head cuts are likely to propagate upstream.

c) Wet-Pit Channel Mining

Wet-pit mining involves excavation of a pit in the active channel below the surface water in a perennial stream or below the alluvial groundwater table.

d) Bar Excavation

A pit is excavated at the downstream end of the bar as a source of aggregate and as a site to trap sand and gravel. Upon completion, the pit may be connected to the channel at its downstream end to provide side channel habitat.

e) Channel-wide River bed Mining

In rivers with a highly variable flow regime, sand and gravel are commonly extracted across the entire active channel during the dry season. The bed is evened out and uniformly (or nearly so) lowered.

4. Reclamation Plans

Reclamation plans should include:

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

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

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

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

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

f) A monitoring plan: The appropriate reclamation plans can turn river-bed and floodplain sand and gravel mining operations into something perceived by the public as desirable.

MARINE SAND MINING AND IMPACT ON MARINE BIODIVERSITY

The mining of marine aggregates is increasing significantly. Marine sand mining has had an impact on seabed flora and fauna. Dredging and extraction of aggregates from the benthic (sea bottom) zone destroys organisms, habitats and ecosystems and deeply affects the composition of biodiversity, usually leading to a net decline in faunal biomass and abundance or a shift in species composition. Aggregate particles that are too fine to be used are rejected by dredging boats, releasing vast dust plumes and changing water turbidity, resulting in major changes to aquatic and riparian habitats over large areas.

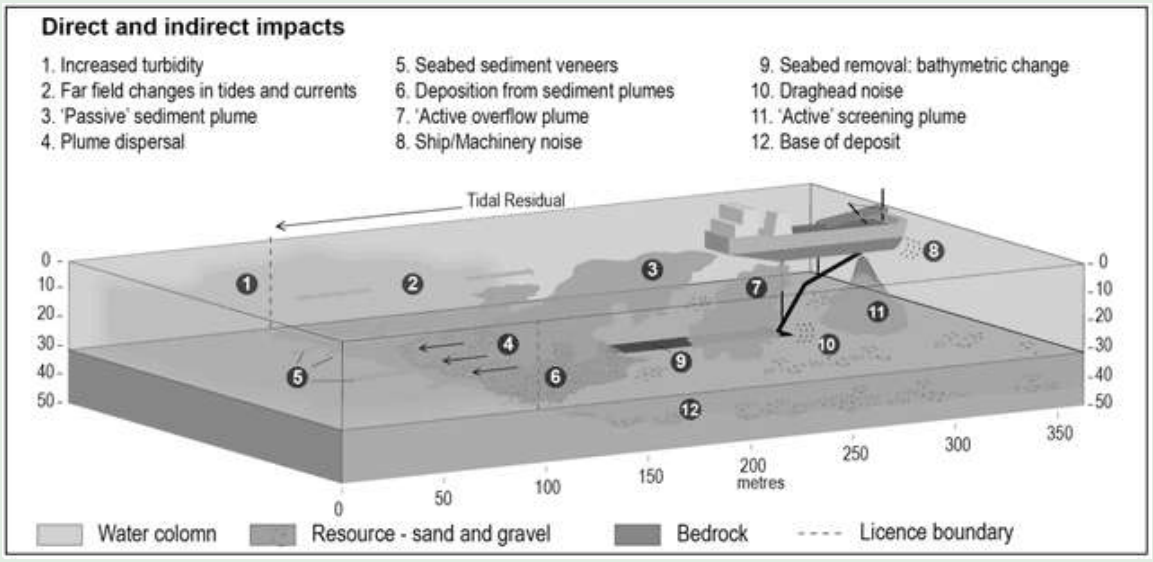

Figure: Direct and indirect consequences of aggregates dredging on the marine environment.

Source: Tillin, H.M., Houghton, A.J., Saunders, J.E., Drabble, R. and Hull, S.C., 2011. Direct and Indirect Impacts of Aggregate Dredging, Marine Aggregate Levy Sustainability Fund (MALSF). Science Monograph Series 1, 1-46.

REDUCING CONSUMPTION OF SAND

Because sand is still very cheap - sand itself is freely accessible; only extraction and transportation costs need to be covered - there is little or no incentive to induce a change in our consumption. Despite the very high value of minerals found in the sand, it is mostly used for concrete or is buried under highways. Recycled building and quarry dust material can be a substitute for sand. Concrete rubble should be recycled to avoid using aggregates, at least for low-quality uses.

Substitutes for sand are available. Quarry dust could be used to replace sand in general concrete structures. The replacement of sand by up to 40% of incinerator ash exhibits higher compressive strength than regular cement mortars. Some desert sand can be used if mixed with other material. There are alternatives for building houses, including wood, straw and recycled material. However, the current building industry is geared toward concrete know-how and equipment.

Training of architects and engineers, new laws and regulations, and positive incentives are needed to initiate a shift for lowering our dependency on sand. Renewable and recycled materials need to be targeted for building houses and roads. Use of Manufactured Sand (M-Sand) also needs to be promoted.

Alternative sources of sand and gravel, which accumulate at the bottom of dams, can also be targeted. Their use would address the problem of these aggregates accumulating which leads to a reduced capacity of dams to store water and could result in the dams' water intakes being blocked. Dams regularly release large amounts of water to flush out aggregates.

The important standard setting bodies in India are taking steps to promote the usage of alternatives to sand and gravel. Bureau of Indian Standards, the National Standards Body of the country, considering the scarcity of sand and coarse aggregates from natural sources, has evolved number of alternatives which are ultimately aimed at conservation of natural resources apart from promoting use of various waste materials without compromising in quality.

These measures include permitting in the Concrete Code (IS 456) as also in the National Building Code of India, the use of slag - a waste from steel industry, fly ash - a waste from thermal power plants, crushed over-burnt bricks and tiles - waste from clay brick and tile industry, in plain cement concrete as an alternative to sand/natural aggregate, subject to fulfilling the requirements of the Code. This Code, further, encourages use of fly ash and ground granulated blast furnace slag as part replacement of ordinary Portland cement in plain as well as reinforced cement concrete.

The Indian Standard on concrete mix design (IS 10262) has been upgraded to include guidance and examples of designing concrete mixes using fly ash and slag. Provisions for compliance for requisite quality of concrete made using fly ash and slag have been duly covered for the manufacturers of ready-mixed concrete in the Indian Standard Code of practice for RMC (IS 4926).

BIS has also formulated an Indian Standard Specification for artificial lightweight aggregates covering manufactured aggregates, such as foamed blast furnace slag, bloated clay aggregate, sintered fly ash aggregate and cinder aggregate (IS 9142).

A series of Indian Standards has also been formulated on various precast concrete products such as solid and hollow concrete blocks, light weight concrete blocks, autoclaved aerated concrete blocks, preformed foam concrete blocks, partial prefabricated concrete flooring and roofing units, concrete pipes, etc, all permitting use of fly ash and slag.

THE REPORT OF THE COMMITTEE HEADED BY SECRETARY, MoEF - 2010

A Committee headed by Secretary, Ministry of Environment and Forest was set up on the subject in 2010. The Committee considered this subject in detail and prepared a report. The important parts of the report are as follows:

Definition of Minor Mineral:

The term 'minor mineral' is defined in clause (e) of Section 3 of MMDR Act, 1957: '3 (e) "minor minerals" means building stones, gravel, ordinary clay, ordinary sand other than sand used for prescribed purposes and any other material which the Central Government may, by Notification in the Gazette of India declare to be a minor mineral;'

The term `ordinary sand' used in clause (e) of Section 3 of the MMDR Act, 1957 has been further clarified in rule 70 of the MCR, 1960 as:

(iv) Purposes of stowing in coal mines,
(v) For manufacture of silvicrete cement,
(vi) Manufacture of sodium silicate and for
(vii) Manufacture of pottery and glass.

Additionally, the Central Government has declared the following minerals as minor minerals:

Sl.No.	Minor Minerals
i)	Boulder
ii)	Shingle
iii)	Chalcedony pebbles used for ball mill purposes only
iv)	Lime shell, kankar and limestone used in kilns for manufacture of lime used as building material
v)	Murrum

Sl.No.	Minor Minerals
vi)	Brick-earth
vii)	Fuller's earth
viii)	Bentonite
ix)	Road metal
x)	Reh-matti

Sl.No.	Minor Minerals
xi)	Slate and shale when used for building material
xii)	Marble
xiii)	Stone used for making household utensils
xiv)	Quartzite and sandstone when used for purposes of building or for making road metal and household utensils
xv)	Saltpetre, and

xvi)	Ordinary earth (Used for filling or leveling purposes in construction or embankments, roads, railways building).

It may thus be observed that minerals have been classified into major and minor minerals based on their end use rather than level of production, level of mechanization, export and import etc. There do exist some minor mineral mines of silica sand and limestone where the scale of mechanization and level of production is much higher than those of industrial mineral mines. Further, in terms of the economic cost and revenue, it has been estimated that the total value of minor minerals constitutes about 10% of the total value of mineral production whereas the value of non- metallic minerals comprises only 3%. It is, therefore, evident that the operations of mines of minor minerals need to be subject to some regulatory parameters as that of mines of major minerals. Further, unlike India there does not exist such system in any other country where minerals are classified as major and minor based on end usage. Thus, there is a need to re-look at the definition of 'minor minerals' per se. It is, therefore, recommended that Ministry of Mines along with Indian Bureau of Mines, in consultation with the State Governments may re-examine the classification of minerals into major and minor categories so that the regulatory aspects and environment mitigation measures are appropriately integrated for ensuring sustainable and scientific mining with least impacts on environment.

Size of the Mine Lease:

Area for grant of mine lease varies from State to State. Maximum area which can be held under one or more mine lease is 2590 ha or 25.90 sq. miles in Jammu and Kashmir. Rajasthan prescribed a minimum limit of 1 ha for a lease. Maximum area prescribed for permit is 50x50 m. In most of the States area of permit is not specified in the rules.

It has recently been observed by Punjab and Haryana High Court in its order dated 15.05.2009 that State Government are apparently granting short term permits by dividing the mining area into small zones in effect to avoids environmental norms. There is, thus a need to bring uniformity in the extent of area to be granted for mine lease so as to ensure that eco- friendly scientific mining practices can be adopted. It is recommended that the minimum size of mine lease should be 5 ha. Further, preparation of comprehensive mine plan for contiguous stretches of mineral deposits by the respective State Governments may also be encouraged. This may suitably be incorporated in the Mineral Concession Rules, 1960 by Ministry of Mines.

Period of Mine Lease:

The period of lease varies from State to State depending on type of concessions, minerals and its end use. The minimum lease period is one year and maximum 30 years. Minerals like granite where huge investments are required, a period of 20 years is generally given with the provisions of renewal. Permits are generally granted for short periods which vary from one month to a maximum one year. In States like Haryana, minor mineral leases are auctioned for a particular time period. Mining is considered to be capital intensive industry and considerable time is lost for developing the mine before it attains the status of fully developed mine. If the tenure of the mine lease is short, it would encourage the lessee to concentrate more on rapid exploitation of mineral without really undertaking adequate measures for reclamation and rehabilitation of mined out area, posing thereby a serious threat to the environment and health of the workers and public at large.

There is thus, a need to bring uniformity in the period of lease. It is recommended that a minimum period of mine lease should be 5 years, so that eco- friendly scientific and sustainable mining practices are adopted. However, under exceptional circumstances arising due to judicial interventions, short term mining leases / contracts could be granted to the State Agencies to meet the situation arising there from.

Cluster of Mine Approach for Small Sized Mines:

Considering the nature of occurrence of minor mineral, economic condition of the lessee and the likely difficulties to be faced by Regulatory Authorities in monitoring the environmental impacts and implementation of necessary mitigation measures, it may be desirable to adopt cluster approach in case of smaller mine leases being operated presently. Further, these clusters need be provided with processing/crusher zones for forward integration and minimizing excessive pressure on road infrastructure. The respective State Governments / Mine Owners Associations may facilitate implementation of Environment Management Plans in such cluster of mines.

Requirement of Mine Plan for Minor Minerals:

At present, most of the State Governments have not made it mandatory for preparation of mining plan in respect of minor minerals. In some States like Rajasthan, eco- friendly mining plans are prepared, which are approved by the State Mining Department. The eco- friendly mining plans so prepared, though conceptually welcome, are observed to be deficient and need to be made comprehensive in a manner as is being done for major minerals. Besides, the aspects of reclamation and rehabilitation of mined out areas, progressive mine closure plan, as in vogue for major minerals could be introduced for minor minerals as well.

It is recommended that provision for preparation and approval of mine plan, as in the case of major minerals may appropriately be provided in the Rules governing the mining of minor minerals by the respective State Governments. These should specifically include the provision for reclamation and rehabilitation of mined out area, progressive mine closure plan and post mine land use.

Creation of Separate Corpus for Reclamation / Rehabilitation of Mines of Minor Minerals:

Mining of minor minerals, in our country, is by and large unorganized sector and is practiced in haphazard and unscientific manner. At times, the size of the leasehold is also too small to address the issue of reclamation and rehabilitation of mined outs areas. It may, therefore, be desirable that before the concept of mine closure plan for minor minerals is adopted, the existing abandoned mines may be reclaimed and rehabilitated with the involvement of the State Government. There is thus, a need to create a separate corpus, which may be utilized for reclamation and rehabilitation of mined out areas. The respective State Governments may work out a suitable mechanism for creation of such corpus on the `polluter pays' principle. An organizational structure may also need to be created for undertaking and monitoring these activities.

Depth of Mining:

Mining of minerals, whether major or minor have a direct bearing on the hydrological regime of the

area. Besides, affecting the availability of water as a resource, it also affects the quality of water through direct run of going into the surface water bodies and infiltration / leaching into groundwater. Further, groundwater withdrawal, dewatering of water from mine pit and diversion of surface water may cause surface and sub- surface hydrologic systems to dry up. An ideal situation would require that quarrying should be restricted to unsaturated zone only above the phreatic water table and should not intersect the groundwater table at any point of time. However, from the point of view of mineral conservation, it may not be desirable to impose blanket ban on mining operation below groundwater table. It is, therefore, recommended that detailed hydro-geological report should be prepared in respect of any mining operation for minor minerals to be undertaken below groundwater table. Based on the findings of the study so undertaken and the comments/ recommendations of Central Ground Water Authority/ State Ground Water Board, a decision regarding restriction on depth of mining for any area should be taken on case to case basis.

Uniform Minor Mineral Concession Rules:

The economic value of the minor minerals excavated in the country is estimated to contribute to about 9% of the total value of the minerals whereas the non- metallic minerals contribute to about 2.8%. Keeping in view the large extent of mining of minor minerals and its significant potential to adversely affect the environment, it is recommended that Model Mineral Concession rules may be framed for minor minerals as well and the minor minerals may be subjected to a simpler regulatory regime, which is, however, similar to major minerals regime.

River Bed Mining:

1. Environment damage being caused by unregulated river bed mining of sand, bajri and boulders is attracting considerable attention including in the courts. The following recommendations are therefore made for the river bed mining.

    (a) In the case of mining leases for riverbed sand mining, specific river stretches should be identified and mining permits/lease should be granted stretch wise, so that the requisite safeguard measures are duly implemented and are effectively monitored by the respective Regulatory Authorities.

    (b) The depth of mining may be restricted to 3m / water level, whichever is less.

    (c) For carrying out mining in proximity to any bridge and / or embankment, appropriate safety zone should be worked out on case to case basis, taking into account the structural parameters, locational aspects, flow rate etc. and no mining should be carried out in the safety zone so worked out.

Conclusion:

Mining of minor minerals, though individually, because of smaller size of mine leases is perceived to have lesser impact as compared to mining of major minerals. However, the activity as a whole is seen to have significant adverse impacts on environment. It is, therefore, necessary that the mining of minor minerals is subjected to simpler but strict regulatory regime and carried out only under an

approved framework of mining plan, which should provide for reclamation and rehabilitation of the mined out areas. Further, while granting mining leases by the respective State Governments "location of any eco-fragile zone (s) within the impact zone of the proposed mining area, the linked Rules/ Notifications governing such zones and the judicial pronouncements, if any, need be duly noted.

The Union Ministry of Mines along with Indian Bureau of Mines and respective State Governments should therefore make necessary provisions in this regard under the Mines and Minerals (Development and Regulation) Act, 1957, Mineral Concession Rules, 1960 and adopt model Guideliness to be followed by all States (emphasis supplied)".

REGIME OF LAW AND ADMINISTRATIVE ORDERS RELATING TO MINING OF MINOR MINERALS

The Entry 54 of List 1 in Schedule VII to the Constitution of India is the entry which empowers the Parliament in respect of 'Regulation of Mines and Minerals Development. Entry 23 of List 2 of the same Schedule, read with Article 246 (3) of the Constitution confers legislative powers on the State Legislature in respect of Regulation of Mines and Mineral Development, but, this power is subject to the provisions of List 1 with respect to the regulation and development under the control of the Union. The Parliament, with the object to amend and consolidate the law relating to the regulation of labour and safety in mines enacted the Mines Act, 1952. Section 2 (JJ) of the Mines Act, 1952 defines "minerals" to mean, all substances which can be obtained from the earth by mining, digging, drilling, dredging, hydraulicing, quarrying or by any other operation and includes mineral oils (which, in turn, include natural gas and petroleum). On 1st June, 1958, the Mines and Minerals (Development and Regulation) Act, 1957 was promulgated. This Act provides, inter alia, for general restrictions on undertaking prospecting and mining operations, the procedure for obtaining prospecting licenses or mining leases in respect of the land in which the minerals vests in the Government, the rule making power for regulating the grant of prospecting licenses and mining leases, special powers of Central Government to undertake prospecting or mining operations in certain cases, and for development of minerals.

The protection of natural environment is one of the fundamental duties of every citizen under Article 51-A of the Constitution of India. Article 48-A of the Constitution, obliged the State to endeavor to protect and improve the environment and to safeguard the forests and wild life of the country. The Environment (Protection) Act and Rules, 1986 were enacted and came into force on 19th November, 1986. The object of this Act is to provide for the protection and improvement of environment and for matters connected therewith. Under provisions of the Act and Rules of 1986, MoEFCC has issued various Notifications regulating the mining of minor minerals, specifically stating the procedures that were required to be complied by persons intending to carry on such mining activity and for the authorities to regulate the same.

Prior to 1994, there was no specific regime in place in relation to mining activity being carried out. The Notification issued by MoEF on 27th January, 1994, in exercise of the powers vested in it under Sub-Rule 3 of Rule 5 of the Rules of 1986 and Sub Section (1) and Clause (v) of Sub-Section (2) of Section 3 of the Act of 1986, prescribed the requirement and procedure for seeking Environmental Clearance for the projects listed in Schedule I. Schedule I of this Notification did not list mining projects of minor minerals. On the contrary, the projects covered under S. No. 20 of Schedule I of this Notification were only "mining projects (major mineral) with leases more than 5 hectares".

It provided for the constitution of Expert Committees and preparation of Environmental Impact Assessment Report which was to be evaluated and assessed by the Impact Assessment Agency. In exercise of its statutory powers afore-indicated, the Central Government on 14th September, 2006,

issued a Notification, i.e., 'Environment Impact Assessment Notification, 2006'. In terms of this Notification, the projects as stated in the Schedule to this Notification required prior Environmental Clearance as per the procedure. The projects have been categorised into two kinds, i.e., Category 'A' and Category 'B' under Clause 2 of the Notification. Projects under Category 'A' were required to take prior Environmental Clearance by MoEFCC. For Category 'B' projects, Environmental Clearance was to be given by State Environment Impact Assessment Authority (SEIAA).

The mining of minerals (both major and minor) were brought under the ambit of the EIA Notification, 2006. The mine lease area of more than equal to 50 ha was Category 'A' and mine lease area less than 50 ha and more than equal to 5 ha was category 'B' project. Mine lease area of less than 5 ha (both major and minor) was kept out of EIA Notification purview.

The Notification of 2006 came to be amended by Notification dated 1st December, 2009. It included the category of non-coal mine and coal mine lease and provided that non-coal mine lease of area more than equal to 5 ha and less than 50 ha will be category 'B' and mine lease area more than equal to 50 ha will be category 'A'. Similarly, mine lease area of more than equal to 5 ha and less than 150 ha for coal mine lease will be category 'B' and mine lease area of coal mine more than 150 ha will be category 'A'. Here again mining lease area of less than 5 ha (both coal and non-coal mine) was kept out of EIA Notification purview.

The Hon'ble Supreme Court, vide its order dated 27.2.2012 in I.A. No.12-13 of 2011 in SLP (C) No.19628-19629 of 2009 titled Deepak Kumar etc. v/s State of Haryana & Ors. has inter alia ordered *"We, in the meanwhile, order that leases of minor mineral including their renewal for an area of less than five hectares be granted by the States/Union Territories only after getting environmental clearance from the MoEF."*

Hon'ble Apex Court in Deepak Kumar's case (supra) extensively examined the environmental concerns, in the context of mining of minor minerals, considering its impact on the environment. The Apex Court observed that Extraction of alluvial material from within or near a streambed has a direct impact on the stream's physical habitat characteristics. These characteristics include bed elevation, substrate composition and stability, in-stream roughness elements, depth, velocity, turbidity, sediment transport, stream discharge and temperature. Altering these habitat characteristics can have deleterious impacts on both in-stream biota and the associated riparian habitat. The demand for sand continues to increase day by day as building and construction of new infrastructures and expansion of existing ones is continuous thereby placing immense pressure on the supply of the sand resource and hence mining activities are going on legally and illegally without any restrictions. Lack of proper planning and sand management cause disturbance of marine ecosystem and also upset the ability of natural marine processes to replenish the sand. Quarrying, mining and removal of sand from in-stream and upstream of several rivers, which may have serious environmental impact on ephemeral, seasonal and perennial rivers and river beds and sand extraction may have an adverse effect on bio-diversity as well. Further it may also lead to bed degradation and sedimentation having a negative effect on the aquatic life.

Apex Court observed that without conducting any study on the possible environmental impact on/

in the river beds and else- where the auction notices have been issued. Hon'ble Apex Court observed that "We are of the considered view that when we are faced with a situation where extraction of alluvial material within or near a river bed has an impact on the rivers physical habitat characteristics, like river stability, flood risk, environmental degradation, loss of habitat, decline in biodiversity, it is not an answer to say that the extraction is in blocks of less than 5 hectares, separated by 1 kilo meter, because their collective impact may be significant, hence the necessity of a proper environmental assessment plan".

In order to ensure compliance of the aforesaid order of the Hon'ble Supreme Court, MoEF issued an OM No.L-11011/47/2011-IA.II(M) dated 18.05.2012 stating inter alia that all mining projects of minor minerals including their renewal, irrespective of the size of the lease would henceforth require prior EC and that the projects of minor minerals with lease area less than 5 ha would be treated as Category "B" as defined in EIA Notification, 2006 and will be considered by the respective State Environment Impact Assessment Authorities (SEIAAs) notified by MoEF and following the procedure prescribed under the EIA Notification, 2006.

On 24th June, 2013, MoEF issued another Office Memorandum stating Guideliness for consideration of proposals for grant of Environmental Clearance under the Notification of 2006 for mining of 'brick earth' and 'ordinary earth' having lease area of less than 5 hectares. Referring to the judgment of the Hon'ble Supreme Court in the case of Deepak Kumar (supra) and its Office Memorandum dated 18th May, 2012, it further considered that the 'brick kiln' manufactures had stated that it was a small scale activity requiring that certain depth should be kept outside the purview of Environmental Clearance. Having considered various aspects, examining the recommendations of the Expert Committee, constituted by MoEF, finally it was directed as follows:

"(a) The activities of borrowing / excavation of 'brick earth' and ordinary earth', upto an area of less than 5 ha, may be categorized under 'B2' Category subject to the following Guideliness in terms of the provisions under '7.I Stage(1)-Screening' of EIA Notification, 2006:

(i) The activity associated with borrowing/excavation of 'brick earth' and 'ordinary earth' for purpose of brick manufacturing, construction of roads, embankments etc. shall not involve blasting.

(ii) The borrowing/excavation activity shall be restricted to a maximum depth of 2 m below general ground level at the site.

(iii) The borrowing/excavation activity shall be restricted to 2 m above the ground water table at the site.

(iv) The borrowing/excavation activity shall not alter the natural drainage pattern of the area.

(v) The borrowed/excavated pit shall be restored by the project proponent for useful purpose(s).

(vi) Appropriate fencing all around the borrowed/excavated pit shall be made to prevent any mishap.

(vii) Measures shall be taken to prevent dust emission by covering of borrowed/excavated earth during transportation.

(viii) Safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to borrowing/excavation of earth.

(ix) Workers / labourers shall be provided with facilities for drinking water and sanitation.

(x) A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.

(xi) A minimum distance of 15 m from any civil structure shall be kept from the periphery of any excavation area.

2. (a) The concerned SEIAA while considering granting environmental clearance for such activity for brick earth / ordinary earth will prescribe the Guideliness as stated at (i) to (xi) above and specify that the clearance so granted shall be liable to be cancelled in case of any violation of above Guideliness.

(b) Notwithstanding what has been stated at (a) above, the following will apply:

(i) No borrowing of earth / excavation of 'brick earth' or 'ordinary earth' shall be permitted in case the area of borrowing/ excavation is within 1 km of boundary of national parks and wild life sanctuaries.

(ii) In case the area of borrowing / excavation is likely to result into a cluster situation i.e. if the periphery of one borrow area is less than 500 m from the periphery of another borrow area and the total borrow area equals or exceeds 5 ha, the activity shall become Category 'B 1' Project under the EIA Notification, 2006. In such a case, mining operations in any of the borrow areas in the cluster will be allowed only if the environmental clearance has been obtained in respect of the cluster. This issues with the approval of the Competent Authority."

These directions which were specific only to 'brick earth' and 'ordinary earth' activities for areas less than 5 hectares, as decided to be categorised as 'B 2' Category projects, subject to the restrictions stated in the memorandum, provided that if the cluster area exceeded 5 hectares, then it would become Category 'B 1' and would not be treated as Category 'B 2' projects. The above Office Memorandum was not dealing with the issues of sand mining or any other minor mineral activity except 'brick earth' and 'ordinary earth'. Further, MoEF has issued an amendment to EIA Notification vide Notification S.O. 2731 (E) dated 9th September 2013 and amended the EIA Notification, 2006 for item 1 (a) as follows:

(1)	(2)	(3)	(4)	(5)
"1(a)	(i) Mining of minerals.	≥ 50 ha of mining lease area in respect of non-coal mine lease	<50 ha of mining lease area in respect of minor minerals mine lease ; and < 50 ha ≥5 ha of mining lease area in respect of other non-coal mine lease.	General Conditions shall apply except for project or activity of less than 5 ha of mining lease area for minor minerals: Provided that the above exception shall not apply for project or activity if the sum total of the mining lease area of the said project or activity and that of existing operating mines and mining projects which were accorded environment clearance and are located within 500 metres from the periphery of such project or activity equals or exceeds 5 ha.
		>150 ha of mining lease area in respect of coal mine lease.	≤ 150 ha ≥ 5 ha of mining lease area in respect of coal mine lease.	(i) Prior environmental clearance is required at the stage of renewal of mine lease for which an application shall be made up to two years prior to the date due for renewal. Further, a period of two years with effect from the 4th April, 2011 is provided for obtaining environmental clearance for all those mine leases, which were operating as

(1)	(2)	(3)	(4)	(5)
				on the 4th April, 2011 with requisite valid environmental clearance and which have fallen due for renewal on or after the 4th November, 2011: Provided that no fresh environmental clearance shall be required for a mining project or activity at the time of renewal of mining lease, which has already obtained environmental clearance under this notification.
	(ii) Slurry pipelines (coal lignite and other ores) passing through national parks or sanctuaries or coral reefs, ecologically sensitive areas.	All projects.		(ii) Mineral prospecting is exempted.

In this Notification a new category of minor mineral was introduced and it was provided that mining lease area of minor mineral less than 50 ha will be category 'B' and will require EC. Accordingly the minor mineral mining projects having less than 5 hectare of lease area are required to be appraised by the SEIAA/SEAC of respective State for granting environment clearance. It was provided that the project or activity of less than 5 ha of mining lease area for minor minerals will be exempt from the General Conditions. Simultaneously the concept of cluster was introduced and it was provided that the exemption of applicability of General Conditions shall not apply for project or activity if the sum total of the mining lease area of the said project or activity and that of existing operating mines and mining projects which were accorded EC and are located within 500 m from the periphery of such project or activity equal or exceeds 5 ha.

The Ministry, on 24th December, 2013, issued another Office Memorandum for consideration of proposals for grant of Environmental Clearance regarding categorisation of Category 'B' projects into Category 'B (1)' and 'B (2)'. Mining of minor minerals had been separately dealt with in this Office Memorandum. This Office Memorandum stated that no river sand mining project with mining lease area of less than 5 hectares may be considered for grant of Environmental Clearance. Such area up to 25 hectares would be categorised as 'B (2)' and such projects were to be considered, subject to the stipulations stated therein. This Office Memorandum stated that no Environmental Clearance would be granted for extraction of minor minerals from any riverbed where the area is less than 5 hectares. Sand mining, in area other than riverbeds, would be permitted, only if the Project Proponent takes Environmental Clearance.

The Ministry vide Notification No. S.O. 1599 (E) dated 25.06.2014 reduced the area of 10 kilo meter to 5 kilo meters for applicability of General Conditions increasing the delegation to States by taking out projects located in 5 to 10 kilo meter of interstate boundary, CEPI, and, PAs from category 'A'.

The anomaly created by the Notification dated 09.09.2013 was corrected vide Notification No. S.O. 2601 (E) dated 7th October 2014, and category of minor mineral was deleted and mining leases were again classed as non-coal mine and coal mine and mining lease area of less than 50 ha was made category 'B' for non-coal mine and mine lease area of less than equal to 150 ha for coal mine was made category 'B'. The mine lease area of less than 5 ha was exempt from the applicability of General Conditions and cluster concept of Notification dated 09.09.2013 was retained.

Notification S.O. 2601 (E) dated 7th October 2014 provides as follows:

(1)	(2)	(3)	(4)	(5)
"1(a)	(i) Mining of minerals.	≥ 50 ha of mining lease area in respect of non-coal mine lease. >150 ha of mining lease area in respect of coal mine lease. Asbestos mining irrespective of mining area.	<50 ha of mining lease area in respect of non-coal mine lease. ≤ 150 ha of mining lease area in respect of coal mine lease.	General Conditions shall apply except for project or activity of less than 5 ha of mining lease area: Provided that the above exception shall not apply for project or activity if the sum total of the mining lease area of the said project or activity and that of existing operating mines and mining projects which were accorded environment clearance and are located within 500 metres from the periphery of such project or activity equals or exceeds 5 ha. Note: (i) Prior environmental clearance is required at the stage of renewal of mine lease for which an application shall be made up to two years prior to the date due for renewal. Provided that no fresh environmental clearance shall be required for a mining project or activity at the time of renewal of mining lease, which has already obtained environmental clearance under this notification. (ii) Mineral prospecting is exempted. "
	(ii) Slurry pipelines (coal lignite and other ores) passing through national parks or sanctuaries or coral reefs, ecologically sensitive areas	All projects.		

The NGT vide order dated 13.01.2015 (O.A. No. 123 of 2014 and M.A. No. 419 of 2014) has declared the Notification dated 09.09.2013 as invalid, inoperative and quashed it. The above order has also quashed the paragraph 4 (b) (i) of O.M. dated 24th June 2013 which provided that "No borrowing of earth / excavation of 'brick earth' or 'ordinary earth' shall be permitted in case the area of borrowing / excavation is within 1 km of boundary of national parks and wild life sanctuary." Though this provision was taken from the observation of Hon'ble Supreme Court in W.P. No. 435 of 2012 (Goa Foundation Vs. Union of India) and order dated 04.08.2006 of Supreme Court in *T.N. Godavarman Thirumulpad v. Union of India & Ors.* Supreme Court has taken a view that 1 km. from the boundaries of National Parks and Sanctuaries would be a safety zone, subject to the orders that may be made in IA No.1000 regarding Jamua Ramgarh Sanctuary and the State will not grant any Temporary Working Permit (TWP) in these safety zones comprising 1 km. from the boundaries of National Parks and Sanctuaries.

Similarly the proviso at paragraph 2 (iii) of O.M. dated 24.12.2013 which says that "No river sand mining project, with mine lease area less than 5 ha, may be considered for granting EC" has been quashed. This condition was taken from the recommendations of the Committee headed by the Secretary, MoEF constituted in 2010. The above proviso were quashed on the ground that as EIA Notification places no such restriction, so same cannot be imposed by an executive order and many hill States find it very difficult to get an area equal to or more than 5 ha. in riverbed. The information made available by the States also makes it clear that majority of the mining leases of sand are of area less than 5 hectares.

THE ISSUES AND MANAGEMENT OF MINING IN CLUSTER

In I.A. No. 12-13 of 2011 in SLP Nos. 729-731 / 2011, 21833 / 2009, 12498-499 / 2010, SLP (C) CC … 16157 / 2011 & CC 18235 / 2011 (Deepak Kumar and Ors. Vs. State of Haryana and Ors. etc.) Hon'ble Supreme Court in its order dated 27.02.2012 on the subject of cluster has quoted the submission of affidavit dated 23.11.2011 of MOEFCC. It says that "The Ministry is of the opinion that where the mining area is homogeneous, physically proximate and on identifiable piece of land of 5 ha. or more, it should not be broken into smaller sizes to circumvent the EIA Notification, 2006 as the EIA Notification, 2006 is not applicable to the mining projects having lease area of less than 5 ha. The Report of Committee on Minor Minerals, under the Chairmanship of Secretary (E&F) with representatives of various state governments as members including the State of Haryana and Rajasthan recommended a minimum lease size of 5 ha for minor minerals for undertaking scientific mining for the purpose of integrating and addressing environmental concerns. Only in cases of isolated discontinued mineral deposits in less than 5 ha, such mining leases may be considered keeping in view the mineral conservation".

The order further quotes that "Cluster of Mine Approach for Small Sized Mines: Considering the nature of occurrence of minor mineral, economic condition of the lessee and the likely difficulties to be faced by Regulatory Authorities in monitoring the environmental impacts and implementation of necessary mitigation measures, it may be desirable to adopt cluster approach in case of smaller mine leases being operated presently. Further these clusters need be provided with processing / crusher zones for forward integration and minimizing excessive pressure on road infrastructure. The respective State Governments / Mine Owners Association may facilitate implementation of Environment Management Plans in such cluster of mines." The order has further quoted the letter dated 1.06.2010 written by the then Minister of Environment, Forest and Climate Change which says on the subject that "A cluster approach to mines should be taken in case of smaller mines leases operating currently". The Hon'ble Court has ordered that "The State of Haryana and various other States have not so far implemented the above recommendations of the MoEF or the Guideliness issued by the Ministry of Mines before issuing auction notices granting short term permits by way of auction of minor mineral boulders gravel, sand etc., in the river beds and elsewhere of less than 5 hectares. We therefore, direct to all the States, Union Territories, MoEF and the Ministry of Mines to give effect to the recommendations made by MoEF in its report of March 2010 and the model Guideliness framed by the Ministry of Mines, within a period of six months from today and submit their compliance reports."

"We in the meanwhile, order that leases of minor mineral including their renewal for an area of less than five hectares be granted by the States/ Union Territories only after getting environmental clearance from the MoEF."

The Ministry vide O.M. No. L-11011/47/2011-IA.II (M) dated 18th May 2012 said that "In order to ensure compliance of the above referred order of the Hon'ble Supreme Court dated 27.02.2012, it has now been decided that all mining projects of minor minerals including their renewal, irrespective of the size of the lease would henceforth require prior environment clearance. Mining projects with lease area up to less than 50 ha including projects of minor mineral with lease area less than 5 ha would be treated as Category 'B' as defined in EIA Notification, 2006 and will be considered by the respective SEIAAs notified by MoEF and following the procedure prescribed under EIA Notification, 2006."

On the issue of cluster, the Notifications No. S.O. 2731 (E) dated 09.09.2013 and Notification No. S.O. No. 2601 (E) of 07.10.2014 were issued.

The above Notifications in Schedule at Item No. 1 (a) in Conditions mentions that "General Conditions shall apply except for projects or activity of less than 5 ha of mining lease area:

Provided that the above exception shall not apply for project or activity if the sum total of the mining lease area of the said project or activity and that of existing operating mines and mining projects which were accorded environment clearance and are located within 500 meters from the periphery of such projects or activity equals or exceeds 5 ha. The Office Memorandum No. J-13012/12/2013-IA-II (1) dated 24.12.2013 is about Guideliness for consideration of proposals for grant of environment clearance under Environment Impact Assessment Notification 2006 and its amendments - regarding categorization of Category 'B' projects/ activities into Category 'B1' & 'B2'.

The above O.M. besides categorizing the Category B into Category B1 & B2 also has directions on mining of brick earth / ordinary earth and river sand mining. These provisions are as follows:

"Mining of minor minerals:

As of now, mining projects of minor minerals with less than 50 hectare of mining lease areas are categorized as Category 'B' as per Notification S.O. 2731 (E) dated 9th September 2013. Also vide O.M. No. L-11011/47/2011-IA-II (M) dated 24.06.2013, Guideliness has been issued regarding categorization of mining projects of brick earth and ordinary earth having lease areas less than 5 hectare as Category 'B2' subject to stipulations stated therein.

In the above backdrop, the projects of mining of minor minerals, categorized as Category 'B' are hereby categorized as 'B2' as per the following:

(i) 'Brick Earth' / 'Ordinary Earth' mining projects having lease area less than 5 ha will be considered for granting EC as per the aforesaid Guideliness issued by MOEF on 24.06.2013.

(ii) 'Brick Earth' / 'Ordinary Earth' mining projects with mining lease area more than equal to 5 ha but less than equal to 25 ha and all other minor , mineral mining projects with mining lease area < 25 ha, except for river sand mining projects will be appraised as Category 'B2' projects.

These projects will be appraised based on the following documents:

(a) Form-1 as per the Appendix-I under the EIA Notification 2006

(b) Pre-feasibility report of the project

(c) Mining plan approved by the authorized agency of the concerned State Government.

Provided in case the mining lease area is likely to result into a cluster situation, i.e. if the periphery of one lease area is less than 500 meter from the periphery of another lease area and the total lease area equals or exceeds 25 ha, the activity shall become Category 'B1' Project under the EIA

Notification, 2006. In such a case, mining operations in any of the mine lease areas in the cluster will be allowed only if the environmental clearance has been obtained in respect of the cluster.

About river sand mining it says that:

(iii) No river sand mining project, with mine lease area less than 5 ha, may be considered for granting EC. The river sand mining projects with lease area more than equal to 5 ha but less than 25 ha will be categorized as 'B2'. In addition to the requirement of documents, as brought out above under sub-para (ii) above for appraisal, such projects will be considered subject to the following stipulations:

(a) The mining activity shall be done manually. The depth of mining shall be restricted to 3 m / water level, whichever is less.

(b) For carrying out mining in proximity to any bridge and / or embankment, appropriate safety zone shall be worked out on case to case basis to the satisfaction of SEAC / SEIAA, taking into account the structural parameters, locational aspects, flow rate etc., and no mining shall be carried out in the safety zone so worked out. No in-stream mining shall be allowed.

(c) The mining plan approved by the authorized agency of the State Government shall inter-alia include study to show that the annual replenishment of sand in the mining lease area is sufficient to sustain mining operations at levels prescribed in the mining plan and that the transport infrastructure is adequate to transport the mines material. In case of transportation by road the transport vehicles will be covered with the tarpaulin to minimize dust/ sand particle emissions.

(d) EC will be valid for mine lease period subject to a ceiling of 5 years.

Provided, in case the mining lease area is likely to result into a cluster situation i.e. if the periphery of one lease area is less than 1 km from the periphery of another lease area and total lease area equals to or exceeds 25 ha., the activity shall become Category 'B1' Projects under EIA Notification, 2006. In such a case, mining operation in any of the mine lease area in the cluster will be allowed only if the environment clearance has been obtained in respect of the cluster.

The NGT order dated 13.01.2015 in O.A. No. 123 of 2014 and M.A. No. 419 of 2014 has following directions on the issue of cluster: "In light of the judgment of the Supreme Court and what has emerged from the various cases that are subject matter of this Judgment, we direct the Ministry of Environment and Forest to formulate a uniform cluster policy in consultation with the States for permitting minor mineral mining activity including its regulatory regime, in accordance with law.

Notification S.O. 1559 (E) dated 25th June 2014 provides that "Any project or activity specified in Category 'B' will be appraised at the Central Level as Category 'A', if located in whole or in part within 5 km. from the boundary of: (i) Protected Areas; (ii) CEPI; (iii) ESA; (iv) Inter-state boundaries or international boundaries ……".

The NGT vide its order dated 13.01.2015 has quashed the Notification dated 9th September 2013, but similar provision on clusters exists in Notification dated 7th October 2014.

The EIA Notification 2006, as amended makes it clear that projects in respect of non-coal mine leases, where the area is more than equal to 50 hectares would require prior Environmental Clearance from MoEFCC, while the projects of area less than 50 hectares would be appraised for prior Environmental Clearance at the level of SEIAA.

The EIA Notification of 2006 in Clause 7 specifies the stages through which projects for grant of Environmental Clearance are required to be passed and processed. The stages include Screening, Scoping, Public Consultation and Appraisal, upon which, the Expert Appraisal Committee makes recommendation to the MoEF/SEIAA. Under 'Screening', this Clause 7 also provides for a further bifurcation of projects falling under category 'B' into 'B 1' and 'B 2'. The relevant part of Clause 7, dealing with this aspect, reads as under: "Stage (1) - Screening (Only for Category 'B' projects and activities): In case of Category 'B' projects or activities, this stage will entail the scrutiny of an application seeking prior environmental clearance made in Form 1 by the concerned State level Expert Appraisal Committee (SEAC) for determining whether or not the project or activity requires further environmental studies for preparation of an Environmental Impact Assessment (EIA) for its appraisal prior to the grant of environmental clearance depending up on the nature and location specificity of the project . The projects requiring an Environmental Impact Assessment report shall be termed Category 'B1' and remaining projects shall be termed Category 'B2' and will not require an Environment Impact Assessment report. For categorization of projects into B1 or B2 except item 8 (b), the Ministry of Environment and Forests shall issue appropriate Guideliness from time to time."

The Ministry on 24th December, 2013, issued Office Memorandum for consideration of proposals for grant of Environmental Clearance regarding categorisation of Category 'B' projects into Category 'B1' and 'B2'. Mining of minor minerals had been separately dealt with in this Office Memorandum. Such area up to 25 hectares would be categorised as 'B 2' and such projects were to be considered, subject to the stipulations stated therein.

The EIA Notification, 2006 does not provide for issuance of Environment Clearance to Cluster of mines. It provides for EC to individual lease holders / project proponents. This position has also been upheld by the Hon'ble Supreme Court in its judgment of Vivek Bansal Vs. State of Haryana that EC should be applied for and granted to the individual lease holder.

There has been rising concerns about adverse impact of mining on small leases (less than 5 hectare) in case the numbers of such leases are large and they are located in close proximity to each other. This leads to the definition of Cluster. To avoid the rigors of environment impact assessment studies, environment management plan and the environment clearance there has been a tendency to break the leases into size which does not attract the provisions of environment impact assessment studies, environment management plan, public consultation and the environment clearance. In Deepak Kumar's case Hon'ble Supreme Court also encountered this situation and in its order dated 27.02.2012 mandated that no mining lease or renewal be done without environment clearance irrespective of size.

It is seen that the categorization of mines into 'B1' and 'B2' category in which Category 'B2' leases are being exempted from the requirement of Environment Impact Assessment, Environment Management Plan, and Public Consultation for grant of EC, in many cases now the mining leases are being given for 25 hectares or less. This defeats the purpose and intent of Hon'ble Supreme Court Judgment which orders environment clearance for all mining leases irrespective of size. The environment clearance without Environment Impact Assessment, Environment Management Plan, and Public Consultation does not serve the purpose of environment clearance which is to ensure environmentally sustainable and socially responsible mining. So if a cluster or individual lease size exceeds 5 hectare, the EIA/ EMP should be completed in the process of grant of prior environment clearance.

The EIA Notification, 2006 and subsequent amendments to that or any O.M. issued by the Ministry do not provide for procedures and Competent Authority for environment clearance for cluster. In a cluster there will mostly be situation where there are a number of different lease holders and as per the settled law the lease holder has to do the working of mine and the lease holder is the one who can apply for and get the environment clearance. The conditions stipulated in the environment clearance have to be complied by the EC holder and any violation of that empowers the authority to cancel the environment clearance or prosecute the EC holder if necessitated by the circumstances.

For cluster there is no mechanism about who will apply for EC, EC will be issued in whose name, and who will be responsible for compliance of EC conditions.

The intent of cluster assessment is to have a holistic knowledge of the impact on environment by different mines operating in close proximity of each other. There are also requirement of mitigative measures which need implementation in concerted manner by different EC holders of that cluster. To ensure that it is important that there should be an integrated Environment Impact Assessment /

Environment Management Plan for the cluster to be presented before the authority appraising the projects and considering the proposals for grant of EC. This integrated EIA/ EMP can be prepared by either the lease holder, group of lease holders, State or the State Agencies. This EIA/ EMP need to be prepared by the accredited consultants / Registered Qualified Persons of the State Governments. The application for EC and grant of EC should be done in the name of individual lease holders in the background of the integrated EIA/EMP report. The Competent Authority (SEIAA/ SEAC / EAC) will entertain individual lease holder's application for grant of EC to individual mining lease projects in that cluster in the name of lease holders. The conditions related to mitigative measures necessitated by the integrated EIA/EMP may run across more than one lease holder or EC holders, that should figure in each EC accordingly and its compliance be ensured by the individual EC holders.

The Hon'ble Supreme Court, NGT, SEAC/EAC and the Project Proponents have raised issue of cluster in mine lease allotment and environment clearance for the same, so following conditions need to be ensured for cluster of mines:

1. To address the concern of adverse impact of minor mineral mining on environment it is proposed that all mining activity including river sand mining (above 5 hectare individual or cluster) will need to prepare Environment Impact Assessment Report and Environment Management Plan before grant of environment clearance. These reports (EIA /EMP) can be prepared by the State or State nominated Agency / the Project Proponent (s).
2. As can be seen from the data provided by the States most of the mining leases for minor minerals are of lease area less than 5 hectare. It is also reported that in hill states getting a stretch in river with area more than 5 hectare is very uncommon. So the size of lease for minor minerals including river sand mining will be determined by the States as per their circumstances.
3. The EIA Notification, 2006 does not provide for cluster EC, it provides for issuance of EC to individual project proponents and the same has also been upheld in the judgment of Hon'ble Supreme Court in Vijay Bansal vs. State of Haryana case. So EC will have to be applied for and issued to the individual project proponent.
4. A cluster shall be formed when the distance between the peripheries of one lease is less than 500 meters from the periphery of other lease in a homogeneous mineral area.
5. The mining of minor minerals is mostly in clusters. The Environment Impact Assessment or Environment Management Plan are required to be prepared for the entire cluster in order to capture all the possible externalities. These reports shall capture carrying capacity of the cluster, transportation and related issues, replenishment and recharge issues, geo-hydrological study of the cluster area. The Environment Impact Assessment or Environment Management Plan shall be prepared by the State or State nominated Agency or group of project proponents

in the Cluster or the project proponent in the cluster.

6. The individual lease holders in cluster can use the same Environment Impact Assessment or Environment Management Plan for application for environmental clearance. The cluster Environment Impact Assessment or Environment Management Plan shall be updated as per need keeping in view any significant change.

7. There shall be one public consultation for entire cluster after which the final Environment Impact Assessment or Environment Management Plan report for the cluster shall be prepared.

8. The details of cluster Environment Impact Assessment or Environment Management Plan shall be reflected in each environmental clearance in that cluster and District Expert Appraisal Committee (DEAC), SEAC, and EAC shall ensure that the mitigative measures emanating from the Environment Impact Assessment or Environment Management Plan study are fully reflected as environmental clearance conditions in the environmental clearance's of individual project proponents in that cluster.

9. As the sand is mostly mined from rivers and majority of the rivers which are important source of sand also form boundary between States, so because of General Conditions most of the sand mining projects become Category 'A' project. So the General Conditions will not apply in case of river sand and gravel mining projects on account of being in 5 kilometer of inter-state boundary.

10. The Committee headed by the District Magistrate or District Collector will be empowered to appraise and grant EC for mining leases up to 5 ha in case of individual lease and up to 25ha in case of cluster for sand mining.

11. In case the mining leases are in cluster (if periphery of one lease is within 500 meters), fowling are the categorization of projects:-

- Category 'B2'Project: Cluster area of mine leases up to 5 ha and to be dealt at DEIAA/ DEAC level
- Category 'B2'Project: Cluster area of Mine leases > 5 ha and < 25 ha with no individual lease > 5 ha and to be dealt at DEIAA/DEAC level
- Category 'B1'Project: Cluster of mine leases of area > 25 hectares with individual lease size < 50ha and to be dealt at SEIAA/SEAC level
- Category 'A' Project: Cluster of any size with any of the individual lease >50ha and to be dealt at MoEFCC/EAC level

The schematic presentation of requirements on Environmental Clearance of Sand Mining including cluster situation is detailed as below:-

Area of Lease (Hectare)	Category of Project	Require-ment of EIA / EMP	Require-ment of Public Hearing	Require-ment of EC	Who can prepare EIA/ EMP	Who will apply for EC	Authority to appraise/ grant EC	Authority to monitor EC compliance
EC Proposal of Sand Mining in cluster situation								
Cluster area of mine leases up to 5 ha	**'B2'**	Form-1M, PFR and Approved Mine Plan	No	Yes	State, State Agency, Group of Project Proponents, Project Proponent	Project Proponent	DEAC/ DEIAA/	DEIAA SEIAA SPCB CPCB MoEFCC Agency nominated by MoEFCC
Cluster area of Mine leases > 5 ha and < 25 ha with no individual lease > 5 ha	**'B2'**	Form-I, PFR and Approved Mine Plan and one EMP for all leases in the Cluster	No	Yes	State, State Agency, Group of Project Proponents, Project Proponent	Project Proponent	DEAC/ DEIAA/	
Cluster of mine leases of area > 25 hectares with individual lease size < 50ha	**'B1'**	Yes	Yes	Yes	State, State Agency, Group of Project Proponents, Project Proponent	Project Proponent	SEAC/ SEIAA	

Cluster of any size with any of the individual lease > 50ha	**'A'**	Yes	Yes	Yes	State, State Agency, Group of Project Proponents, Project Proponent	Project Proponent	EAC/ MoEFCC	

MANAGEMENT OF SAND DEPOSITED AFTER FLOOD ON AGRICULTURAL FIELD OF FARMERS

The Standing Committee on Water Resources on issues, concerning flood management, compensation, and status of ownership of submerged and eroded land in the country including compensation to farmers for loss of their crops destroyed by floods and right to disposal of the sand left in the fields of farmers in its meeting held on 29.04.2015 made observations on this subject.

The Committee observed that pursuant to Hon'ble Supreme Court of India decision in "Deepak Kumar Case" in 2012, regulations were framed by the Ministry of Mines to guide environmental clearance of minor minerals. … The Committee, therefore, desires the Ministry of Water Resources, River Development and Ganga Rejuvenation to work in close coordination with the Ministry of Mines and Environment, Forest and Climate Change to frame regulations / Guideliness in this regard expeditiously.

Mining of Sand

The Committee further observed that due to the floods, the agricultural land of farmer is destroyed and rendered infertile. Further the farmer loses his livelihood as the produce of his land is destroyed by flood and become unsalable. The farmer is also deprived of the right of lifting sand from his land. He is therefore, left helpless and destitute and leave their land in search of job.

The Committee observes that "mining operation" means any operation undertaken for the purpose of winning any mineral. Accordingly, if desilting is undertaken perse with the objective of winning a mineral then only it will be construed as a mining operation. Apparently, if the desilting is undertaken not for winning any mineral, it will not be construed as mining operation and therefore, the farmer can remove the sand from the land without requiring the requisite permits. However, the Committee strongly feels that the farmer be given the right to use and dispose-off the sand accumulated over their land post flood, by incorporating the necessary provisions in the Mines and Mineral (Development and Regulation) Act, 1957".

Removal of sand from the agricultural field by the owner farmer of the land from environment point of view will not be considered as mining operation and its removal and disposal can be allowed without the requirement of environment clearance till it is done only to the extent of reclaiming the agricultural land. The sand deposited after flood only be removed, so no mining / digging below the ground level is allowed. For removing sand in case where private land has gone into the river due to erosion, the requirement of mining lease and environment clearance will continue. This operation

of removal of sand deposited on agricultural field should be done after a mapping of deposition is done by the Land Management Committee of the Gram Panchayat. The sand so deposited post flood can be removed by the farmer owning the land / group of farmers affected by this post flood sand deposition or the Gram Panchayat. Customary rights to remove and dispose off the sand should be given to the farmer affected by deposition of sand on account of sudden flood in his agricultural land.

MINING OF SAND FROM AGRICULTURAL FIELD

This practice is prevalent in Haryana, where the top layer of soil varying between 1 and 2 meters is removed and stacked separately and thereafter the sand deposit which may be 10-15 meter deep is mined. After removing the sand layer up to a maximum depth of 09 meters, the top soil stacked is spread out on the field and the same is brought under the cultivation. Though the level of this land (mined out area) is lowered to the depth of the excavation and in initial years of cultivation the productivity is low, but the productivity of the fields improves with continued cultivation and addition of organic manure in the field. In Haryana some leases are of large area (ranging from 1000 hectare to 2000 hectare) the agricultural fields and river bed both are included in the same lease for mining.

The following recommendations should be kept in mind for mining in such leases:

1. Mining of sand in such mine leases will require environment clearance.
2. The lease should be of sand mining either from the agricultural field or river. In same lease both type of area should not be included.
3. The sand mining from agricultural field is being done in Haryana for a long time and it can be done in a more sustainable manner without adverse impact on agricultural productivity, if proper environmental safeguards are taken.
4. The slope of mining area adjacent to agricultural fields should be proper (preferably 45-60 degree) and adequate gap (minimum 10 feet) be left from adjacent agricultural field to avoid erosion and scouring.

CUSTOMARY RIGHT ON SAND MINING

The native people have their long held customary rights to take silt, sand & soil from their tanks and nearby rivers for their use or community works in the village in almost all the States in some form or the other.

Next to the reserved forests, tanks and rivers are the biggest common properties in India. Most of the village tanks are 'government properties' with some exceptions of privately held tanks. Land revenue department, irrigation department and forest department is given powers to deal with property right' and hence protecting all tanks and rivers preventing damages including encroachments is their responsibility. The local villagers were given 'customary rights' under the Revenue Department Orders, and other laws related to Panchayats and Easements to take sand, soil and earth for agricultural and domestic purposes without seeking any permission from anyone. The States strive to keep these customary rights to use such resources like soil and sand for individuals work and community work in the village intact without requirement of any permit and clearance. These customary rights need to be protected and respected.

DESILTING OF RESERVOIRS / BARRAGES / ANNECUTS / LAKES / CANALS

These structures are generally in possession and maintenance of Irrigation Department / Minor Irrigation Department / PHED of State Governments. The dams and reservoirs can be a significant source of sand. Many such structures are silted and their water holding capacity has gone down considerably. In some instances to compensate for silted capacity raising of height of dam or construction of new structures is proposed which further leads to submergence of new areas of agricultural field and forests. Taking up desilting of such projects can serve dual purpose of increasing the water holding capacity and making available the sand for other usage. In some States the Irrigation Department is permitted to use it for the departmental works free of charge and balance can be disposed of in market after paying the due royalty. A detailed study is required to be carried out to verify economic viability and environmental sustainability before contemplating dredging of storage reservoirs for sand / gravel mining.

The de-silting of reservoir, dredging for upkeep and maintenance of structures, channels and averting natural disasters will not be treated as mining for the purpose of environmental clearance.

The Ministry of Water Resources (MoWR) view on desiltation from flood control point of view is as follows:

A multidisciplinary Committee (Mittal Committee) under the chairmanship of Dr. B.K. Mittal, former Chairman, Central Water Commission was constituted by MoWR, vide letter dated 08.10.2001 to identify cause and extent of siltations in rivers, suggest measures to minimize siltation, examine as to whether desilting is a technically feasible means to minimize magnitude of flood in rivers, suggest appropriate technology/ methods of desilting of rivers, propose a realistic operational programme in a time bound manner and other related aspects. The committee studied in respect of few sites on Ganga, Brahmputra, Godavari, Krishna etc., and inter-alia concluded that:

i) Siltation in river is not pronounced and alarming;

ii) Desilting of rivers for flood control is not an economically viable solution;

iii) Dredging in general has been found to be inadequate and should not be resorted to, particularly in major rivers;

iv) There are, of course, some locations such as tidal rivers, confluence points with narrow constrictions and the like which can be tackled by desilting after thorough examination and techno-economic justification;

v) Selective dredging is suggested depending upon local conditions; and

vi) Desilting of rivers can marginally minimize the magnitude of floods and be effective only for a short period.

Thus, desilting in general is not feasible technically, due to several reasons like non-sustainability, non- availability of vast land required for disposal of dredged material etc. This cannot be viewed in isolation of other approaches to manage floods. Desilting of rivers in vulnerable reaches may be suggested based on model study, if it is found techno-economically viable. For navigation purposes, the river reaches in the water ways path may be dredged to have minimum depth of water.

MINING PLAN

The Environment Clearance shall be given to only those mining leases which have mine plan approved by the Competent Authority designated by the States. Modification of the mining plan during operation will also need approval of the Competent Authority. The Mining Plan shall be prepared by the Recognised Qualified Persons (RQP). The person to be recognized for preparing the mining plan should be a holding a degree of Mining Engineering, Environmental Engineering or a post graduate degree in Geology granted by a University established or incorporated by or under a Central Act or a State Act including any institutions recognized by the UGC or any equivalent qualification granted by any University or institution outside India and have a professional experience of three years of working in a supervisory capacity in the field of mining after obtaining a degree. The States will devise their own mechanism of selection and empanelment of RQPs. A mining plan should be valid for a period of 5 years, which can be renewed further.

EVALUATING THE IMPACT OF SAND MINING

To assess the impact of mining and effect of remedial measures can be assessed through monitoring. This is also required for mid-course corrections. Monitoring will provide data to evaluate the upstream and downstream effects of sand and gravel extraction activities, and long-term changes. A brief report summarizing the annual results of the physical and biological monitoring should document the evolution of the sites over time, and the cumulative effects of sand and gravel extraction. The summary should also recommend any modification of extraction rates needed to minimize impacts of extraction.

Sand Replenishment, Geomorphology and Hydrology:

Physical monitoring requirements of sand and gravel extraction activities should include surveyed channel cross-sections, longitudinal profiles, bed material measurements, geomorphic maps, and discharge and sediment transport measurements. The physical data will illustrate bar replenishment and any changes in channel morphology, bank erosion, or particle size.

In addition to local monitoring for replenishment at specific mining sites, monitoring of the entire reach through the estuary will provide information on the cumulative response of the system to sand and gravel extraction. For example, it is important for downstream bars and the estuary to receive sufficient sand and gravel to maintain estuarine structure and function. Because the elevation of the bed of the channel is variable from year to year, a reach-based approach to monitoring will provide a larger context for site-specific changes. If long-term monitoring data show that there is a reach-scale trend of bed lowering (on bars or in the thalweg), the extraction could be limited.

Cross-sections:

Surveyed channel cross-sections should be located at permanently documented sites upstream, downstream and within the extraction area. Cross-sections intended to show reach- scale changes

should be consistently located over geomorphic features such as at the head of riffles, across the deepest part of pools, or across particular types of channel bars.

Cross-section spacing should be close enough to define the morphology of the river channel. Cross-section data should be surveyed in March or April to evaluate changes that may occur during the flooding season.

Cross-section data should be collected over the reach to the estuary, and locally upstream, downstream, and within each mining site. This long-term monitoring data should be collected and analyzed even if no mining occurs in order to understand and estimate the sand budget of the river reach.

Photo-documentation:

Photographs of the project sites should be taken prior to excavation to document the baseline conditions, and again during each monitoring session. Photos should be taken twice a year. Photos of structures nearby like outfalls / off-takes, intakes, bridges and other structures may also be regularly taken.

Groundwater Level:

Monitoring wells should be established adjacent to each off-channel floodplain excavation to record changes in ground water levels. Measurements should be taken monthly. This should help analyse surface water and ground water interaction along the reach.

Extent and Quality of Riparian Vegetation:

Document the extent and quality of riparian vegetation, including successional status, and any increase in disturbance indicators (non-native plants). The extent of riparian habitat can be determined utilising aerial photos. Habitat quality data, i.e., successional status and species composition, must be determined through field reconnaissance.

Riparian Vegetation Maps:

Develop yearly maps of the sensitive habitat areas and document their aerial extent over time. These maps may be combined with the geomorphic maps. Monitor sites identified as sensitive for disturbance in excess of expected geomorphic trends - i.e., massive bank wasting up or downstream from an active mine site. Monitor sand and gravel mining impacts which may translate up and downstream, causing accelerated erosion of sensitive zones and impacting the ability of new habitat to form due to excessive scour or sedimentation.

This monitoring / documentation should be done by the EC holders and will be regularly checked and assessed by the DEIAA for corrective steps in time. The DEIAA should review the status of monitoring and documentation data of each mining site especially for sand mining once in a year.

MONITORING SYSTEM FOR SUSTAINABLE SAND MINING

The implementation of these Guideliness on Sustainable Sand Mining is not possible till States create a robust mechanism to monitor the mining operation and measure the mined out mineral. The entire exercise of Environment Impact Assessment and Environment Management Plan aims towards making the mining process environmentally sustainable. The Environment Clearance letter indicates the EC capacity that is the quantity of material which can be mined in a year. If this quantity is not measured, and much more mineral than envisaged in the EC is mined out then the entire process of EC is rendered futile. Keeping above objective in mind it is required of the State / State Agencies to create and establish a robust system to monitor and measure the mined out mineral at each lease location and its transportation in State.

The State Governments have tried various methods for monitoring the sand mining in their areas, the main feature of which generally has been through Transport Permits (T.P.). The printing of Transport Permits on security paper, invisible ink mark, fugitive ink background, VOID pantograph and Unique Barcode are some of the tools used by the States. These tools need to be backed by suitable software and dedicated websites with security certifications at different levels.

The system proposed is that States should issue Transport Permit. Bar code on the T.P. when scanned using the system, will generate a unique invoice number. The bidder has to enter destination, distance between plot and destination, vehicle number etc in the system. After scanning, unique bar code number; invoice date & time and validity date & time is sent to the bidder, which need to be written on T.P. Validity of T.P. is calculated based on distance between plot and destination. After validity time is over the T.P. stands invalid. The officers involved in monitoring should be provided with the android application using which the T.P. can be checked anywhere on road. As soon as the bar code on T.P. gets scanned through using android application, all details of T.P. such as plot details, vehicle details, validity time etc. should get fetched from server. This means, if anything is re-written on T.P. and attempt is made to reuse the same, it can be traced immediately. Registering of T.P. on server can be done using website, using android application (smartphone with internet) or even through SMS (smartphone without internet). This implies that TP can be registered on server even if only mobile phone range is available on plot. Various reports can be generated using the system showing daily lifting reports and user performance report. This way the vehicles carrying sand can be tracked from source to destination.

MONITORING SYSTEM FOR SUSTAINABLE SAND MINING

PROCEDURE FOR MONITORING OF SAND MINING OR RIVER BED MINING

1. The security feature of Transport Permit shall be as under:

(a) Printed on Indian Banks' Association (IBA) approved Magnetic Ink Character Recognition (MICR) Code paper.

(b) Unique Barcode.

(c) Unique Quick Response (QR) code.

(d) Fugitive Ink Background.

(e) Invisible Ink Mark.

(f) Void Pantograph.

(g) Watermark.

2. Requirement at Mine Lease Site:

(a) Small Size Plot (Up to 5 hectare): Android Based Smart Phone.

(b) Large Size Plots (More than 5 hectare): CCTV camera, Personal Computer (PC), Internet Connection, Power Back up.

(c) Access control of mine lease site.

(d) Arrangement for weight or approximation of weight of mined out mineral on basis of volume of the trailer of vehicle used.

3. Scanning of Transport Permit or Receipt and Uploading on Server:

(a) Website: Scanning of receipt on mining site can be done through barcode scanner and computer using the software;

(b) Android Application: Scanning on mining site can be done using Android Application using smart phone. It will require internet availability on SIM card;

(c) SMS: Transport Permit or Receipt shall be uploaded on server even by sending SMS through mobile. Once Transport Permit or Receipt get uploaded, an unique invoice code gets generated with its validity period.

4. Proposed working of the system:

The State Mining Department should print the Transport Permit or Receipt with security features enumerated at Paragraph 1 above and issue them to the mine lease holder through the District Collector. Once these Transport Permits or Receipts are issued, they would be uploaded on the server against that mine lease area. Each receipt should be preferably with pre-fixed quantity, so the total quantity gets determined for the receipts issued.

When the Transport Permit or Receipt barcode gets scanned and invoice is generated, that particular barcode gets used and its validity time is recorded on the server. So all the details of transporting of mined out material can be captured on the server and the Transport Permit or Receipt cannot be reused.

5. Checking On Route:

The staff deployed for the purpose of checking of vehicles carrying mined mineral should be in a position to check the validity of Transport Permit or Receipt by scanning them using website, Android Application and SMS.

6. Breakdown of Vehicle:

In case the Vehicle breakdown, the validity of Transport Permit or Receipt shall be extended by sending SMS by driver in specific format to report breakdown of vehicle. The server will register this information and register the breakdown. The State can also establish a call centre, which can register breakdowns of such vehicles and extend the validity period. The subsequent restart of the vehicle also should be similarly reported to the server or call centre.

7. Tracking of Vehicles:

The route of vehicle from source to destination can be tracked through the system using check points, RFID Tags, and GPS tracking.

8. Alerts or Report Generation and Action Review:

The system will enable the authorities to develop periodic report on different parameters like daily lifting report, vehicle log or history, lifting against allocation, and total lifting. The system can be used to generate auto mails or SMS. This will enable the District Collector or District Magistrate to get all the relevant details and shall enable the authority to block the scanning facility of any site found to be indulged in irregularity. Whenever any authority intercepts any vehicle transporting illegal sand, it shall get registered on the server and shall be mandatory for the officer to fill in the report on action taken. Every intercepted vehicle shall be tracked.

The monitoring of mined out mineral, environmental clearance conditions and enforcement of Environment Management Plan will be ensured by the DEIAA, SEIAA and the State Pollution Control Board or Committee. The monitoring arrangements envisaged above shall be put in place. The monitoring of enforcement of environmental clearance conditions shall be done by the Central Pollution Control Board, Ministry of Environment, Forest and Climate Change and the agency nominated by the Ministry for the purpose.

ADMINISTRATIVE STRUCTURE FOR ENVIRONMENT CLEARANCE AND ENSURING COMPLIANCE OF EC CONDITIONS

An no mining in allowed without Envirnomental Clearance. The process of EC involves preparation of EIA/EMP, PER and mine plan.

The EIA/EMP can be prepared by the State Government or any agency of the State, group of project proponents in the cluster or the individual project proponent. The EIA / EMP can be prepared by the accredited consultants or the Registered Qualified Person(s) / agencies selected by the States.

DISTRICT ENVIRONMENT IMPACT ASSESSMENT AUTHORITY

The Central Government has constituted the District Level Environment Impact Assessment Authority (DEIAA), for grant of environmental clearance for Category 'B2' Projects for mining of minor minerals, for all the districts in the country.

For, minor minerals including sand and gravel mining lease of area up to 5 hectare in case of individual lease and up to 25 ha in case of cluster for sand mining, the grant of EC will be done by the District Environment Impact Assessment Authority (DEIAA) headed by the District Magistrate or District Collector. This Authority will be responsible for proper and sustainable management of sand mining in the district. The Authority will be responsible for designating the area / stretch in river suitable for mining in the district and also identifying the area / stretch in river prohibited for sand mining. The Authority will ensure clear demarcation of mining site, its documentation, and ensuring that no mining takes place without EIA / EMP and EC of the mining site.

The Chairperson and official members of the Authority for the districts should hold office during their tenure in the district on said posts and the expert member shall hold office for a period of three years from the date of nomination by the Competent Authority. The Committee shall meet at least once in a month.

The District Environment Impact Assessment Authority (DEIAA) :

The DEIAA will have following composition :

1.	District Magistrate or District Collector of the district	Chairperson
2.	Senior most Divisional Forest Officer in the district	Member
3.	An expert member to be nominated by the Divisional Commissioner or Chief Conservator of the Forest	Member
4.	Sub-Divisional Magistrate or Sub-Divisional Officer of the district head quarter	Member-Secretary

DISTRICT LEVEL EXPERT APPRAISAL COMMITTEE:

The District Level Expert Appraisal Committee (DEAC) will appraise the cases and make recommendations to the District Environment Impact Assessment Authority for environmental clearance. This Committee will also make recommendations / suggestions on the District Survey Report to the DEIAA. The DEAC will have following composition:

1.	Senior most Executive Engineer, Irrigation Department	Chairperson
2.	Senior most Sub-Divisional Officer (Forest)	Member
3.	A representative of Remote Sensing Department or Geology Department or State Ground Water Department to be nominated by the District Magistrate or District Collector	Member
4.	Occupational health expert or Medical Officer to be nominated by the District Magistrate or District Collector	Member
5.	Engineer from Zila Parishad	Member
6.	A representative of State Pollution Control Board or Committee	Member
7.	An expert to be nominated by the Divisional Commissioner or Chief Conservator of Forest	Member
8.	An expert to be nominated by the Divisional Commissioner or Chief Conservator of Forest	Member
9.	An expert to be nominated by the Divisional Commissioner or Chief Conservator of Forest	Member
10.	Senior most Assistant Engineer, Public Works Department	Member
11.	Assistant Director or Deputy Director or District Mines Officer or Geologist in the district in that order	Member- Secretary

The DEAC will meet at least once a month, depending on the work load the frequency of meetings can be decided by the Chairperson of DEAC and Chairperson, DEIAA.

Each proposal for the mining lease under consideration for environmental clearance in the district will be inspected on-site by the Sub-Divisional Level Committee headed by the SDM.

The Sub-Divisional Committee should comprise of following officers:

Sub-Divisional Magistrate	Chairperson
Sub-Divisional Officer, Forest/ Assistant Conservator of Forest/ Forest Range Officer	Member
Representative of State Pollution Control Board	Member
SDO, Irrigation Department	Member
Geologist or Assistant Geologist or Mining Officer / Mining Inspector	Member

The presence of at least three members will be needed for inspection. This Committee shall submit its report within 15 days from the receipt of the proposal.

The monitoring of EC conditions and enforcement of EMP will be ensured by the District Collector and the, State Pollution Control Board. The monitoring of enforcement of EC conditions can also be done by the Central Pollution Control Board, Ministry of Environment, Forest & Climate Change and the agency nominated by the Ministry for the purpose.

Schematic Presentation of Requirements on Environmental Clearance of Sand Mining including cluster situation

Area of Lease (Hectare)	Category of Project	Require-ment of EIA / EMP	Require-ment of Public Hearing	Require-ment of EC	Who can prepare EIA/ EMP	Who will apply for EC	Authority to appraise/ grant EC	Authority to monitor EC compliance
EC Proposal of Sand Mining on the basis of individual mine lease								
0 - 5ha	**'B2'**	Form - 1M, PFR and Approved Mine Plan	No	Yes	Project Proponent	Project Proponent	DEAC/ DEIAA	DEIAA SEIAA SPCB CPCB MoEFCC Agency nominated by MoEFCC

> 5 ha and < 25 ha	**'B2'**	Form-I, PFR and Approved Mine Plan and EMP	No	Yes	Project Proponent	Project Proponent	SEAC / SEIAA	DEIAA SEIAA SPCB CPCB MoEFCC Agency nominated by MoEFCC
≥ 25ha and < 50ha	**'B1'**	Yes	Yes	Yes	Project Proponent	Project Proponent	SEAC / SEIAA	
≥ 50 ha	**'A'**	Yes	Yes	Yes	Project Proponent	Project Proponent	SEAC / SEIAA	
EC Proposal of Sand Mining in cluster situation								
Cluster area of mine leases up to 5 ha	**'B2'**	Form - 1M, PFR and Approved Mine Plan	No	Yes	State, State Agency, Group of Project Proponents, Project Proponent	Project Proponent	DEAC/ DEIAA/	DEIAA SEIAA SPCB CPCB MoEFCC Agency nominated by MoEFCC
Cluster area of Mine leases > 5 ha and < 25 ha with no individual lease > 5 ha	**'B2'**	Form -I, PFR and Approved Mine Plan and one EMP for all leases in the Cluster	No	Yes	State, State Agency, Group of Project Proponents, Project Proponent	Project Proponent	DEAC/ DEIAA/	

Cluster of mine leases of area ≥ 25 hectares with individual lease size < 50ha	**'B1'**	Yes	Yes	Yes	State, State Agency, Group of Project Proponents, Project Proponent	Project Proponent	SEAC/ SEIAA	
Cluster of any size with any of the individual lease ≥ 50ha	**'A'**	Yes	Yes	Yes	State, State Agency, Group of Project Proponents, Project Proponent	Project Proponent	EAC/ MoEFCC	

General Conditions will not apply on account of inter- state boundaries for river sand mining leases.

EXEMPTION OF CERTAIN CASES FROM BEING CONSIDERED AS MINING FOR THE PURPOSE OF REQUIREMNT OF ENVIRONMENTAL CLEARANCE

Keeping in view the purpose, maintenance of infrastructure, abatement of disasters, customary easement and property rights, it is felt that following cases may not be treated as mining for the purpose of requirement of environmental clearance. The following cases shall not require prior environmental clearance, namely:-

1. Extraction of ordinary clay or sand, manually, by the Kumhars (Potter) to prepare earthen pots, lamp, toys, etc. as per their customs.
2. Extraction of ordinary clay or sand, manually, by earthen tile makers who prepare earthen tiles.
3. Removal of sand deposits on agricultural field after flood by farmers.
4. Customary extraction of sand and ordinary earth from sources situated in Gram Panchayat for personal use or community work in village.
5. Community works like de-silting of village ponds or tanks, construction of village roads, ponds, bunds undertaken in Mahatama Gandhi National Rural Employment and Guarantee Schemes, other Government sponsored schemes, and community efforts.
6. Dredging and de-silting of dams, reservoirs, weirs, barrages, river, and canals for the purpose of their maintenance, upkeep and disaster management.
7. Traditional occupational work of sand by Vanjara and Oads in Gujarat vide notification number GU/90(16)/MCR-2189(68)/5-CHH, dated the 14th February, 1990 of the Government of Gujarat.
8. Digging of well for irrigation or drinking water.
9. Digging of foundation for buildings not requiring prior environmental clearance.
10. Excavation of ordinary earth or clay for plugging of any breach caused in canal, nala, drain, water body, etc., to deal with any disaster or flood like situation upon orders of District Collector or District Magistrate.
11. Activities declared by State Government under legislations or rules as non- mining activity with concurrence of the Ministry of Environment, Forest and Climate Change, Government of India.

STANDARD ENVIRONMENTAL CONDITIONS FOR SAND MINING

Impact Category	S.No.	Environmental Conditions
Stakeholder Engagement	1	In the case of private land not owned by the lease holder an affidavit should be obtained regarding consent of the concerned land owner (s) for carrying out the mining operation.
	2	Stakeholder awareness and ability to raise concerns and getting it to be addressed.
	3	Implementation of Action Plan on the issues raised during the Public Hearing. The Proponent shall complete all the tasks as per the Action Plan submitted with the budgetary provisions during the Public Hearing.
	4	Having valid lease and all the permits is very much needed.
	5	To establish a Monitoring Committee including Local Panchayat, to check on traffic due to transportation and submit an annual report on the same.
	6	The directions given by the Hon'ble Supreme Court of India vide order dated 27.02.2012 in Deepak Kumar case [SLP(C) Nos. 19628-19629 of 2009] and order dated 05.08.2013 of the Hon'ble National Green Tribunal in application No. 171/2013 may be strictly followed.
	7	All the provisions made and restrictions imposed as covered in the Minor Mineral Rule, shall be complied with, particularly regarding Environment Management Practices and its fund management and Payment of compensation to the land owners.
Sustainable Mining Practices	8	District level Survey Report should be prepared and area suitable for mining and area prohibited for mining be identified.
	9	The depth of mining in Riverbed shall not exceed one meter or water level whichever is less, provided that where the Joint Inspection Committee certifies about excessive deposit or over accumulation of mineral in certain reaches requiring channelization, it can go up to 3 meters on defined reaches of the River.
	10	No River sand mining be allowed in rainy season.
	11	To submit annual replenishment report certified by an authorized agency. In case the replenishment is lower than the approved rate of production,

		then the mining activity / production levels shall be decreased / stopped accordingly till the replenishment is completed.
	12	Ultimate working depth shall be up to 3.0 m from Riverbed level and not less than one meter from the water level of the River channel whichever is reached earlier. In hilly terrain this depth be preferably restricted to one meter.
	13	In River flood plain mining a buffer of 3 meter to be left from the River bank for mining.
	14	In mining from agricultural field a buffer of 3 meter to be left from the adjacent field.
	15	Mining shall be done in layers of 1 meter depth to avoid ponding effect and after first layer is excavated, the process will be repeated for the next layers.
	16	To maintain safety and stability of Riverbanks i.e. 3 meter or 10% of the width of the River whichever is more will be left intact as no mining zone.
	17	No stream should be diverted for the purpose of sand mining. No natural water course and/ or water resources are obstructed due to mining operations.
	18	No blasting shall be resorted to in River mining and without permission at any other place.
	19	Depending upon the location, thickness of sand, deposition, agricultural land/Riverbed, the method of mining may be manual, semi-mechanized or mechanized; however, manual method of mining shall be preferred over any other method.
Identification and Preparation of Mining Site	20	Mining should be done only in area / stretch identified in the District Level Survey Report suitable for mining and so certified by the Sub-Divisional Level Committee after site visit.
	21	Mining should begin only after pucca pillar marking the boundary of lease area is erected at the cost of the lease holder after certification by the mining official and its geo coordinates are made available to the District Level Committee.
	22	The top soil in case of surface land mining shall be stored temporarily in an earmarked site and concurrently used for land reclamation.

Monitoring the Mining of Mineral and its Transportation	23	The EC holder shall keep a correct account of quantity of mineral mined out, dispatched from the mine, mode of transport, registration number of vehicle, person in-charge of vehicle and mine plan. This should be produced before officers of Central Government and State for inspection.
	24	For each mining lease site the access should be controlled in a way that vehicles carrying mineral from that area are tracked and accounted for.
	25	The State / District Level Environment Committee should use technology like Bar Coding, Information and Communications Technology (ICT), Web based and ICT enabled services, mobile SMS App etc. to account for weight of mineral being taken out of the lease area and the number of trucks moving out with the mineral.
	26	There should be regular monitoring of the mining activities in the State to ensure effective compliance of stipulated EC conditions and of the provisions under the Minor Mineral Concessions Rules framed by the State Government.
Noise Management	27	Noise arising out of mining and processing shall be abated and controlled at source to keep within permissible limit.
	28	Restricted working hours. Sand mining operation has to be carried out between 6 am to 7 pm.
Air Pollution and Dust Management	29	The pollution due to transportation load on the environment will be effectively controlled and water sprinkling will also be done regularly.
	30	Air Pollution due to dust, exhaust emission or fumes during mining and processing phase should be controlled and kept in permissible limits specified under environmental laws.
	31	The mineral transportation shall be carried out through covered trucks only and the vehicles carrying the mineral shall not be overloaded. Wheel washing facility should be installed and used.
Management of Visual Impact	32	The mining operations are to be done in a systematic manner so that the operations shall create a major visual impact on the site.
Bio-Diversity Protection	33	Restoration of flora affected by mining should be done immediately. Twice the number of trees destroyed by mining to be planted preferably of indigenous species. Each EC holder should plant and maintain for lease period at least 5 trees per hectare in area near lease.
	34	No mining lease shall be granted in the forest area without forest clearance in accordance with the provisions of the Forest Conservation Act, 1980 and the rules made thereunder.

	35	Protection of turtle and bird habitats shall be ensured.
	36	No felling of tree near quarry is allowed. For mining lease within 10km of the National Park / Sanctuary or in Eco-Sensitive Zone of the Protected Area, recommendation of Standing Committee of National Board of Wild Life (NBWL) have to be obtained as per the Hon'ble Supreme Court order in I.A. No. 460 of 2004.
	37	Spring sources should not be affected due to mining activities. Necessary Protection measures are to be incorporated.
Management of Instability and Erosion	38	Removal, stacking and utilization of top soil in mining are should be ensured. Where top soil cannot be used concurrently, it shall be stored separately for future use keeping in view that the bacterial organism should not die and should be spread nearby area.
	39	The EC should stipulate conditions for adequate steps to check soil erosion and control debris flow etc. by constructing engineering structures
	40	Use of oversize material to control erosion and movement of sediments
	41	No overhangs shall be allowed to be formed due to mining and mining shall not be allowed in area where subsidence of rocks is likely to occur due to steep angle of slope.
	42	No extraction of stone / boulder / sand in landslide prone areas.
	43	Controlled clearance of riparian vegetation to be undertaken
Waste Management	44	Site clearance and tidiness is very much needed to have less visual impact of mining.
	45	Dumping of waste shall be done in earmarked places as approved in Mining Plan.
	46	Rubbish burial shall not be done in the Rivers.
Pollution Prevention	47	The EC holder shall take all possible precautions for the protection of environment and control of pollution.
	48	Effluent discharge should be kept to the minimum and it should meet the standards prescribed.
Protection of Infrastructure	49	Mining shall not be undertaken in a mining lease located in 200-500 meter of bridge, 200 meter upstream and downstream of water supply / irrigation scheme, 100 meters from the edge of National Highway and railway line, 50 meters from a reservoir, canal or building, 25 meter from the edge of State Highway and 10 meters from the edge of other

		roads except on special exemption by the Sub-Divisional level Joint Inspection Committee.
	50	For carrying out mining in proximity to any bridge or embankment, appropriate safety zone (not less than 200 meters) should be worked out on case to case basis, taking into account the structural parameters, location aspects and flow rate, and no mining should be carried out in the safety zone so worked out.
	51	Mining activities shall not be done for mine lease where mining can cause danger to site of flood protection works, places of cultural, religious, historical, and archeological importance.
Enhancement Road Safety	52	Vehicles used for transportation of sand are to be permitted only with **of** fitness and PUC Certificates.
	53	Junction at takeoff point of approach road with main road be properly developed with proper width and geometry required for safe movement of traffic by concession holder at his own cost.
	54	Project Proponent shall ensure that the road may not be damaged due to transportation of the mineral; and transport of minerals will be as per IRC Guideliness with respect to complying with traffic congestion and density.
	55	No stacking allowed on road side along National Highways.
Closure and Reclamation of Mined Out Area	56	The Project Proponent shall undertake phased restoration, reclamation and rehabilitation of land affected by mining and completes this work before abandonment of mine.
	57	Restoration, reclamation and rehabilitation in cluster should be done systematically and jointly by each EC holder in that cluster. This should be appropriately reflected as EC condition in each EC in cluster.
	58	Site specific plan with eco-restoration should be in place and implemented.
Health and Safety	59	Health and safety of workers should be taken care of.
	60	Transport of mineral will not be done through villages / habitations.
	61	The Project Proponent shall make arrangement for drinking water, first aid facility (along with species specific anti-venom provisioning) in case of emergency for the workers.

	62	Project Proponent shall implement the Disaster Management Plan if the mine lease area is located in Seismic Zone-IV. Project Proponent shall appoint a Committee to have a check over any disaster to warn workers well before for the safety of the workers. Emergency helpline number will be displayed at all levels.
	63	Project Proponent shall appoint an Occupational Health Specialist for Regular and Periodical medical examination of the workers engaged in the Project and records maintained; also, Occupational health check-ups for workers having some ailments like BP, diabetes, habitual smokers, etc. shall be undertaken once in six months and necessary remedial/preventive measures taken accordingly. Recommendations of National Institute for Labour for ensuring good occupational environment for mine workers would also be adopted.
Monitoring the Impact of Mining	64	The Project Proponent shall report monitoring data on replenishment, traffic management, levels of production, River Bank erosion and maintenance of Road etc.
Mineral Conservation	65	Use of alternate material such as M-sand in place of natural River sand shall be encouraged in order to reduce stress on natural eco-system.

APPENDIX: TABLE - 1

REVENUE FROM SAND MINING IN STATES / UTs

(Rs. in crores)

Sl.No.	STATE / U.T	2012 - 2013	2013 - 2014	2014 - 2015
01	Andaman & Nicobar	0.073	0	0
02	Arunachal Pradesh	7	8	5
03	National Capital Territory of Delhi	0	0	
04	Himachal Pradesh	0.70	0.35	0.07
05	Jharkhand	4.25	3.04	0.07
06	Karnataka	23.74	15.33	25.99
07	Madhya Pradesh	184.93	179.41	172.53
08	Meghalaya	14.50	15.88	15.50 (as forest royalty from govt. contractors)
09	Mizoram	0.018	0.0475	0.0861
10	Puducherry	0.80	0.20	0.03
11	Rajasthan	173.36	252.06	134
12	Tamil Nadu	188.50	117.73	109.10
13	Uttar Pradesh	97.27	166.45	168.38

* States/UTs not mentioned have not provided the data.

APPENDIX: TABLE - 2

NUMBER OF MINING LEASES IN STATE

Sl.No.	STATE / U.T	In stream	Flood Plain	Sea Shore	Agricul-tural field	River	Total
01	Andaman & Nicobar						Nil
02	Andhra Pradesh						Nil
03	Haryana	5	12		7		31
04	Jammu & Kashmir					650	650
05	Jharkhand	10				387	397
06	Lakshadweep					1090	1090
07	Manipur						NIL
08	Meghalaya						NIL
09	Odisha						NIL
10	Punjab	2 + 80 Temporary Working Permit				73	155
11	Sikkim		85				85
12	Tripura	21	244		5		270

* States/UTs not mentioned have not provided the data.

APPENDIX: TABLE - 3

AVERAGE SIZE OF SAND MINING LEASES IN STATE / UT: 2014-15

(In Hectare)

Sl.No.	STATE / U.T	AVERAGE SIZE	SMALLEST MINING LEASE AREA	LARGEST MINING LEASE AREA
01	Andaman & Nicobar	NOT APPLICABLE		
02	Arunachal Pradesh	ONLY MINING PERMITS		
03	Himachal Pradesh	1.20	0.25	4.09
04	Jharkhand	0.25	0.13	87.38
05	Karnataka	5	5	19.42
06	Madhya Pradesh	8.52	0.30	306.98
07	Meghalaya	Mostly < 1.5 ha.		
08	Mizoram	NA		
09	Puducherry	NA		
10	Rajasthan	2 5 in Bikaner	24.82 2 in Bikaner	1901.89 5 in Bikaner
11	Tamil Nadu	29 leases < 10 ha.	14 leases of 10 - 15 ha.	42 leases > 15 ha.
12	Uttar Pradesh	25	5	200

* States/UTs not mentioned have not provided the data.

APPENDIX: TABLE - 4

AVERAGE PERIOD OF SAND MINING LEASES IN STATE / UT

(In Hectare)

Sl.No.	STATE / U.T	AVERAGE MINING LEASE PERIOD (YEARS)
01	Andaman & Nicobar	Not Applicable
02	Arunachal Pradesh	Only mining permit is given
03	Himachal Pradesh	5
04	Jharkhand	3
05	Karnataka	2
06	Madhya Pradesh	5 to 10
07	Meghalaya	No lease in operation currently
08	Mizoram	No mining lease in operation currently
09	Puducherry	One year permit
10	Rajasthan	5 20-30 years in Bikaner
11	Tamil Nadu	3
12	Uttar Pradesh	3

* States/UTs not mentioned have not provided the data.

APPENDIX: TABLE - 5

COMMON METHOD AND PRACTICE OF SAND MINING IN STATE / UT

Sl.No.	STATE / U.T	COMMON METHOD AND PRACTICE OF SAND MINING
01	Andaman & Nicobar	1. The Apex Court in its order dated 7.5.2002 in I.A. No. 502 in WP (C) No. 202 of 1995, had directed that extraction of sand be phased out @ minimum 20% per year on reducing balance basis to bring the sand mining to a level of 33% of the present level of mining within a maximum period of five years. 2. Since the level of extraction of sand in the territory in the year 2001-02 i.e. the base year, was 68909 cubic meter, the quantity of extractable sand is fixed at 22581 cubic meter. 3. The quantity of sea sand so allowed by MoEF is extracted from the identified and approved sites having such deposits on the sea beaches (identified accreting area) with adequate environmental safeguards so as to prevent any damage to the sensitive coastal eco-system including corals, turtle/ bird nesting sites and the protected areas. 4. The allotment of sea sand is made to the individuals by the Sand Allotment Committee constituted by the Lieutenant Governor under the Chairmanship of Chief Secretary who also heads the A&N CZMA. The quantum of sea sand allotted is fixed by the Committee on the basis of availability of sea sand and the number of applicants (local) applied for their bonafide use.
02	Arunachal Pradesh	1. Mining of sand restricted to foothills only that too for a very short period. Grant of mining lease is kept in abeyance, short term mining permits are issued to various Central and State agencies for carrying out developmental works under the strict supervision of the departmental officers.

* States/UTs not mentioned have not provided the data.

Sl.No.	STATE / U.T	COMMON METHOD AND PRACTICE OF SAND MINING
03	Himachal Pradesh	Manual. The mining lease areas are sanctioned on the river bed if the area is approved in survey document. The mining activities are allowed strictly in accordance with the approved working cum Environment Management Plan and after the environment clearance.
04	Jharkhand	Manual
05	Karnataka	Manual
06	Madhya Pradesh	Manual
07	Meghalaya	Hill quarrying in private areas
08	Mizoram	Extraction of sand limited mainly for domestic purpose in the state. The produce extracted illegally is seized as per the Mizoram Forest Act, 1955. Mining is only limited to river banks and riverbeds with improvised equipments like spade, shovel, small canoes, etc.
09	Puducherry	Manual
10	Rajasthan	In Rajasthan sand is available in seasonal streams and rivers except Chambal which is perennial but mining is banned because of Chambal Crocodile Sanctuary. Mining is done up to 3 meters and is open cast. It is filled in trucks either manually or semi mechanized method. In Bikaner no river exists and mining for sand is being done from palaeo-channel. In this palaeo-channel the sand deposit occurs at the depth of 5 meter to 20 meter below ground level with an over burden of 5 to 20 meters. The mining here is done open cast benching method, where overlying blown sand, gravel, pebble etc. is removed, the sand is further sieved, graded and washed upto 12 to 18 mesh size.
11	Tamil Nadu	Manual mining is carried out in certain quarries. In most of the sand quarries two poclains are used by the PWD.
12	Uttar Pradesh	Manual and Semi-mechanised

* States/UTs not mentioned have not provided the data.

APPENDIX: TABLE - 6

SUGGESTIONS / RECOMMENDATIONS FROM STATES / UTs FOR ENVIRONMENTALLY SUSTAINABLE SAND MINING

Sl.No.	STATE / U.T	SUGGESTIONS / RECOMMENDATIONS FOR ENVIRONMENTALLY SUSTAINABLE SAND MINING
01	Andaman & Nicobar	The quantum of extractable sand fixed at 22581 cubic meter should be enhanced. This limit has been fixed by the orders of Hon'ble Supreme Court subject to study by National Institute of Oceanography.
02	Arunachal Pradesh	1. For environmentally sustainable sand mining a strict and comprehensive sand mining policy need to be framed.
		2. River sand is becoming a scarce commodity and hence exploring alternative to it has become imminent. Manufactured sand is a good alternative both for fine as well as coarse sand used in concrete.
		3. Sand mining should be restricted to surface collection only without the use of heavy machinery.
		4. Due to turbulent and inaccessible nature of rivers flowing in the hilly terrains of the state, deposition of the sand in the river bed is very negligible and except for few quarries in the foothills and plains, most of the notified quarries are boulders and mining of sand is very negligible.
		5. In view of environment related issues the grant of mining lease for river bed minor mineral viz. sand, gravel, shingle, aggregate, boulder are kept in abeyance and extraction of these minerals is regulated only by grant of mining permits, that too not exceeding 3000 cubic meter in one permit.
		6. For scientific mining of sand and other minor minerals Guideliness has been prepared and accordingly Geo-Technical Committee has been constituted under the chairmanship of ADC/SDO in the district level to determine the quantity of quarriable mineral that can be safely removed and also to give technical clearance for notification of quarries of smaller size, preferably within one hectare.
03	Chhattisgarh	1. While attempting to prepare a model Guidelines / policy for the country, the differences that exist in different states may be taken into account. It may be tried to take all stakeholders along.

* States/UTs not mentioned have not provided the data.

Sl.No.	STATE / U.T	SUGGESTIONS / RECOMMENDATIONS FOR ENVIRONMENTALLY SUSTAINABLE SAND MINING
		2. To ease the process of EC granting, SEIAA may have benches across the State with each bench having a SEAC under it. Time bound clearance with ease of access and grant.
		3. Sand mining with use of machinery should be allowed.
		4. Road construction material like murram should be exempted from EC considering their local / pocket occurrences and impossibility of obtaining EC.
		5. Considering the traffic issue at urban areas and to reduce intermediaries like storage point dealers, night mining with adequate lighting should be allowed.
		6. To make the availability of sand from local rivulet / streams the river bank to in-stream mine area distance should be reduced from 10 meter to 3 meters.
04	NCT of Delhi	1. Location of sand mining should be identified by a committee comprising of revenue deptt., Irrigation Deptt., CGWB, SPCB, Forest Department and mining department. Mining area should distinctly be marked at site, before allowing mining.
		2. Depth of mining should be restricted to 3 mtrs or water level, whichever is less and that to from aggradation areas. The side slope of excavation should be less than 3:1.
		3. Requirement of sand and gravel should be reduced by utilization of construction and demolition waste. It requires not only legislative support but also awareness campaign among the society.
		4. Guidelines should be distinctly clear and easy to understand covring do's and don't during mining operation.
		5. Sufficient safe distance should be left between mining site and adjoining engineering structures like embankment, spurs, bed bars, bridges, reservoir and regulator etc.
		6. Security amount should be sufficient enough to compel the agency to carry out rehabilitation, corrective measures and to ensure strict compliance of conditions of lease. S.D. should be released after inspection of committee and recording of certificate that agency complied with the lease conditions.
		7. Mining may be carried out by state agency instead of private agaencies.

* States/UTs not mentioned have not provided the data.

Sl.No.	STATE / U.T	SUGGESTIONS / RECOMMENDATIONS FOR ENVIRONMENTALLY SUSTAINABLE SAND MINING
05	Himachal Pradesh	1. Working cum Environment Management Plan has been made mandatory. The mining activities are allowed after submission of environment clearance.
		2. In compliance of order of Hon'ble Supreme Court dated 27.02.2012 in Deepak Kumar case, the Himachal Pradesh has repealed its rules called the Himachal Pradesh Minor Mineral (Concession) and Mineral (Prevention of illegal mining, transportation and Storage) Rule, 2015 in accordance to the recommendation of the Ministry of Environment & Forest and rules circulated by the Ministry of Mines. Hence the State of Himachal Pradesh has complied with the above directions of the Hon'ble Apex Court,
		3. Therefore the condition of applicability of Environment Clearance on the area less than 5 hectare shall be exempted.
		4. Further keeping in view, the peculiar topography, geography and socio-economic fabric of the State, the condition for the minimum size of the lease should be exempted as the rivers are in youth stage forming different land forms, land holdings are less, population is thin and scattered and the demand of minor mineral is limited, which could be met out locally by exploiting local resources on the small scale.
06	Jammu & Kashmir	1. Uniform Guidelines be framed for sand mining and river bed mining as they cannot be segregated.
		2. Identification of sand belts be made in consultation with CGWB and while framing Guideliness CGWB may be taken on board.
		3. Sand mining leases less than 5 hectare be exempted from EC and comprehensive policy may be made for hilly states for easing the process of grant of lease.
07	Jharkhand	1. Machine should not be used in sand mining. Only manual mining should be done.
		2. The depth of mining shall be restricted to 3 meter / water level whichever is less.
		3. No mining should be carried out in proximity of any bridge / embankment.
		4. In-stream mining should not be allowed.
		5. Mining should be done in accordance with an approved mining plan.

* States/UTs not mentioned have not provided the data.

Sl.No.	STATE / U.T	SUGGESTIONS / RECOMMENDATIONS FOR ENVIRONMENTALLY SUSTAINABLE SAND MINING
		6. EC should be valid for settlement period subject to ceiling of five years.
08	Karnataka	1. Undertaking sand mining activity through a Government agency to be governed by District Level Sand Monitoring Committee headed by Deputy Commissioner.
		2. The area should be properly surveyed and mapped with the help of GPS to assign geo coordinates and accordingly erect boundary pillars so as to avoid illegal and unscientific mining.
		3. Depth of sand available may be indicated in a contour map using suitable drilled holes to ensure sand mining do not exceed one meter depth.
		4. Once thickness is established sand mining may be permitted to one meter depth where the thickness of sand is more than three meter deep. If the thickness of sand is less than three meter, sand mining shall not be permitted.
		5. Sufficient spacing shall be ensured from one block to another block and sufficient time gap shall be provided for replenishment before undertaking mining activity in the same block.
		6. Mining activity shall be restricted to only non-monsoon season and in the area that is exposed.
		7. No in-stream mining shall be permitted.
		8. No stream should be diverted for the purpose of sand mining. No natural water course and/ or water resources are obstructed due to mining operations.
		9. Site specific plan with eco-restoration should be in place.
		10. Sand mining shall be undertaken only by manual method without use of earth moving equipment such as JCB etc. Use of mechanized boats for sucking sand from in-stream area shall be strictly prohibited.
		11. Appropriate safety zones shall be maintained in proximity to any bridge / and / or embankment and other permanent structures. No sand mining shall be undertaken in such safety / buffer zones. Guideliness issued by the Ministry of Mines in this regard shall also be adhered to.
		12. The quarrying activity shall not intersect subterranean water level and ground water table.

* States/UTs not mentioned have not provided the data.

Sl.No.	STATE / U.T	SUGGESTIONS / RECOMMENDATIONS FOR ENVIRONMENTALLY SUSTAINABLE SAND MINING
		13. The top soil in case of surface land mining shall be stored temporarily in an earmarked site and concurrently used for land reclamation.
		14. Use of alternate material such as M-sand in place of natural river sand shall be encouraged in order to reduce stress on natural eco-system.
09	Madhya Pradesh	1. Geographical location of the state should be taken care of.
		2. Keep provision for extraction of sand from forest areas.
		3. Expedite the EC process.
		4. In inter-state boundary leases sand mining EC be giver by the SEIAA.
		5. Clear Guidelines for B-1, B2 be issued.
		6. Simplify cluster cases.
		7. Exempt mining leases of less than 5 hectare from EC.
10	Meghalaya	1. No sand mining within 3 kilometer from Protected area and Reserved Forest area.
		2. Advance royalty etc for entire quantity of mineral be realized in full.
		3. Only loose boulder and sand are allowed to be removed from the mid river stream leaving 15 meter on either side untouched.
		4. No collection of sand is allowed on 15 meter of either side of structures like bridge, culvert etc.
		5. No blasting allowed.
		6. No extraction of stone / boulder / sand in landslide prone areas.
		7. No stacking allowed on road side along national highways.
		8. No felling of tree near quarry is allowed.
		9. No transportation of forest produce (sand from forest area) is allowed after sunset.
		10. Export fee realized if sand is sent outside the state.
		11. Stone crusher cannot be installed without permission of DFO.
		12. Tree should be planted at quarry after completion of mining.
		13. Violation of above conditions will result in cancellation of permit and forfeiture of advance royalty already paid.
11	Mizoram	1. Extraction of sand from the forest may be permitted strictly as per mining plan approved by the Competent Authority and after getting necessary clearance under various acts related to the forest and environment.

* States/UTs not mentioned have not provided the data.

Sl.No.	STATE / U.T	SUGGESTIONS / RECOMMENDATIONS FOR ENVIRONMENTALLY SUSTAINABLE SAND MINING
12	Odisha	1. EC may be exempted for leases less than 5 hectare.
		2. EC should not be required for earth mining.
		3. Minor minerals even close to inter-state borders should be allowed to be cleared by the SEIAA.
		4. In case a river is forming boundary of states and mechanized mining of sand is causing tension in states it should be resolved at the national level.
13	Puducherry	1. Environment Clearance is issued by SEIAA, Puducherry strictly under the provisions of the EIA Notification, 2006 and subsequent amendments.
14	Rajasthan	1. The bajari mined out from river bed is filled back by the river itself during the next rainy season. So, nature itself reclaims the mined out area every year. The formation of bajari is a natural process in the river and it is also essential to remove bajari from the river bed to avoid silting. If the sand deposited in the river bed is not removed, it may cause change of river course and may also results in flood plains will be developed.
		2. Price control system adopted in Rajasthan. Sand is a essential commodity.
		3. The depth of mining should be restricted to 3 meters or above water table.
		4. Machinery having boom height more than 3 meter shall not be allowed in extraction of bajari.
		5. Size of mining leases be allowed below 5 hectare.
		6. In streams with low deposit of sand and if use is mostly local no mechanized mining should be allowed and EC should not be required.
		7. In larger deposits there should be semi-mechanised mining with EC.
		8. The sand (river and stream) in different categories, with their availability, use and size of the deposit. **Category A:** Small deposits in river and stream where thickness of sand bed is very less and sand is used locally in villages and towns only and no mechanical mining is done, in such areas restriction of obtaining Environment Clearance can be relaxed for manual mining.

* States/UTs not mentioned have not provided the data.

Sl.No.	STATE / U.T	SUGGESTIONS / RECOMMENDATIONS FOR ENVIRONMENTALLY SUSTAINABLE SAND MINING
		Category B: Large deposits, where in rivers and streams having thickness of sand bed is medium to large, sand mining, shall be allowed with semi mechanized manner after obtaining Environment Clearance. **Bikaner District:** Bikaner district is a desert terrain where ground water table is very deep. Bajari is excavated above water table and it does not affect the water table. In addition to this boulder, gravel and waste generated due to bajari mining is used in reclamation of pits. Hence environment is not adversely affected due to bajari mining.
15	Sikkim	1. Forest department is the nodal department for sand and stone extraction from the riverbed.
		2. Use of machines is prohibited.
		3. Quarrying sites are allotted to village youth cooperatives.
		4. For bigger companies quarry sites in forest area are allotted after FC.
		5. State Government has considerations for allotment of quarries for Border Road Organization and MoD.
		6. GoI can monitor mining in states through GIS.
16	Tamil Nadu	1. Excess sand deposits identified in the flood plains and in-stream areas only to be mined in order to safeguard and maintain ground water table.
		2. Sand mining operation has to be carried out between 6 am to 7 pm.
		3. Mining operation should be carried out in a systematic manner without affecting environment and ecology of the area.
17	Uttar Pradesh	1. Depth of mining cannot be more than 3 meter or water table whichever is less.
		2. Mining can be done in slices forming benches where bench height cannot be more than 1 meter and bench width cannot be less than 10 meter.
		3. A width of not less than 50 meter or 10% width of river can be restricted for mining activities from river bank. A condition can be imposed that mining will be done from river activities from river bank.
		4. SEIAA should be decentralized to expedite EC process. It can be decentralized to district or zonal level.

* States/UTs not mentioned have not provided the data.

Sl.No.	STATE / U.T	SUGGESTIONS / RECOMMENDATIONS FOR ENVIRONMENTALLY SUSTAINABLE SAND MINING
		5. Make EC conditions practical.
		6. Requirement of mining plan in river bed mining be done away with.
		7. There should not be requirement of EC for short term permit.
		8. The quantity of sand should not be fixed in EC as it leads to loss in revenue and illegal mining.
		9. Semi-mechanised form of sand mining be allowed.
		10. Sand mining to be exempted from EC as it takes 6-8 months and environment department do not have requisite work force to enforce EC conditions. A Guidelines for environmentally sustainable sand mining be framed and it can be complied by imposing it in the lease condition.
18	Uttarakhand	1. Area less than 5 hectare be exempted from EC.
		2. Use of machine be allowed for scientific mining and reducing the cost of production.
		3. RBM deposition in the lease should not be fixed for the entire lease period. RBM in lease area be assessed after rains every year.
		4. 70% of leases in state not operating for want of EC and these vacant lots are source of illegal mining.

* States/UTs not mentioned have not provided the data.

APPENDIX: TABLE - 7

BEST PRACTICE OF SAND MINING ADOPTED IN DISTRICT / STATE / UT

Sl.No.	STATE / U.T	DESCRIPTION OF BEST PRACTICES
01	Andaman & Nicobar	Institute of Ocean Management has been entrusted the task of identification of sand accreting sites.
02	Arunachal Pradesh	Mining of sand is restricted to foothills only that too for a very short period.
03	National Capital Territory of Delhi	In Delhi sand mining lease is granted by Revenue department. NOC from I&FC Deptt. Were issued with condition of limitation of depth, area of mining, operation timing limitation and limited period of NOC. Compliance of laid down conditions and monitoring is ensured by collector.
04	Himachal Pradesh	1. The mining activities on river beds are allowed strictly as per the provisions of river / stream bed mining policy as under.
		2. No river / stream bed mining shall be allowed without the recommendation of the Sub Divisional Level Committee constituted under the Chairmanship of Sub Divisional Magistrate having XEN PWD, Irrigation and Public Health, SPCB, DFO and Mining Officer as its member.
		3. Nor river / stream bed mining shall be allowed within 75 meter from the periphery of soil conservation works, nursery plantations, check dams or within the distance as recommended by the Sub-Divisional Committee whichever is more.
		4. No river / stream bed mining shall be allowed within 1/10th of its span or 5 meters from the banks or as specified by the Sub-Divisional Level Committee, whichever is more.
		5. Nor river / stream bed mining shall be allowed within 200 meters upstream and downstream of water supply scheme or as specified by the Committee whichever is more.
		6. Nor river / stream bed mining shall be allowed within 200 meters upstream and 200 to 500 meters downstream of bridges depending upon the site specific conditions.

* States/UTs not mentioned have not provided the data.

Sl.No.	STATE / U.T	DESCRIPTION OF BEST PRACTICES
		7. No approach road from PWD road shall be allowed to lease area unless lessee / contractor obtains written permission from XEN, PWD for making road leading to all intake places from the PWD road. 8. No boulders/ cobbles/ hand broken road ballast shall be allowed to be transported outside the State from river/stream beds. 9. No digging for more than 3 feet shall be allowed in river/ stream beds. 10. No blasting shall be allowed in river/stream beds.
05	Madhya Pradesh	1. In some districts the Cooperative Societies of Labour are doing the sand collection, loading and unloading work.
06	Tamil Nadu	Permission has been granted in favour of PWD for quarrying sand in the river Poramboke lands in 16 districts in the state of Tamil Nadu. Sand mining is being carried out by the PWD in the entire State.
07	Uttar Pradesh	U.P. Minor Mineral Concession Rules, 1963.

* States/UTs not mentioned have not provided the data.

APPENDIX: TABLE - 8

STATUS OF PROMULGATION OF RULE ON SAND MINING IN THE STATE / UT

Sl.No.	STATE / U.T	NAME OF RULE WITH YEAR OF PROMULGATION
01	Andaman & Nicobar	Indian Forest Act, 1927 as sand has been included as forest produce.
02	Arunachal Pradesh	APMMCR 2002 and made effective from 1.01.2003
03	Himachal Pradesh	1. River/Stream bed Mining Policy-2004.
		2. Himachal Pradesh Minor Mineral Policy-2013.
		3. Himachal Pradesh Minor Mineral (Concession) and Mineral (Prevention of illegal mining, transportation and storage) Rule, 2015.
04	Jharkhand	Rule 12 of Jharkhand Minor Mineral Concession (Amendment) Rule 2014.
05	Karnataka	Karnataka Sand Policy was brought out in the year 2011 and as such amendment to the Karnataka Minor Mineral Concession Rule 1994 were made in the year 2011 and a separate chapter IV B for sand mining was introduced under Rule 31-R. Further, as per the Hon'ble Supreme Court orders sated 27.02.2012 in SLP No. 19628-19629 between Deepak Kumar and State of Haryana and others and as per the model Guideliness issued by the Government of India for Environmental Management of Mining of Minor Minerals, amendment to the Karnataka Minor Mineral Concessions Rule 1994 were brought out on 16.12.2013 incorporating a new chapter II A applicable to all minor minerals on Systematic, Scientific Mining and Protection of Environment, wherein Quarrying Plan, Environmental Management Plan and Environment Clearance was made mandatory. Amendments to Rule 31- R were also made wherein the Government, PWD Department was entrusted with sand mining, storage and transportation, under the District Sand Monitoring Committee and Taluk Sand Monitoring Committee.
06	Madhya Pradesh	Rules have been framed as per the orders of Hon'ble Supreme Court for sand mining under M.P. Minor Mineral Rules 1996 and Sand Mining Policy 2015 is also formulated in the State.

* States/UTs not mentioned have not provided the data.

Sl.No.	STATE / U.T	NAME OF RULE WITH YEAR OF PROMULGATION
07	Meghalaya	No rules notified by the state on sand mining
08	Mizoram	Mizoram Forest Act, 1955, which came into force on 1.01.1956.
09	Puducherry	Puducherry Minor Minerals (Concession) Rules, 1977.
10	Rajasthan	RMMCR, 1986 Notification dated 2.11.2012: 1. First proviso of Rule 8(2) and first proviso of 17 (1) - Renewal of Bajari Mining Leases is not allowed. 2. Rule 16 (3) - Mining Leases of Bajari to be granted for 5 years. 3. Rule 18 (18) - Part surrender of lease area of Bajari not allowed. Notification dated 3.4.2013 - (First proviso Rule 7 (1)- Mining leases of Bajari to be granted only by way of tender or auction. Notification dated 12.07.2013 - (First proviso Rule 11 (2)) - Maximum area limit of 10 sq. km. not applicable for Bajari Mining Leases. Bikaner District: Chapter II of RMMCR, 1986 (last amended 12.07.2013).
11	Sikkim	Sikkim Forest (Allotment of Areas for Quarrying of Sand and Stone), 2006.
12	Tamil Nadu	1. As per G.O. Ms. No. 95 Industries (MMCI) Department dated 1.10.2003, a new Rule 38 A has been introduced in the Tamil Nadu Minor Mineral Concession Rules, 1959. Accordingly quarrying and sale of sand is being carried out by PWD in the state of Tamil Nadu since October 2003. 2. As per G.O. Ms. No. 158 Industries (MMIC) Department dated 25.08.2008, a new Rule 38 B has been introduced in the Tamil Nadu Minor Mineral Concession Rules, 1959. Accordingly transportation of sand outside the state not to be made. To regulate storage and transportation of sand a new Rule 38 C B has been introduced in the Tamil Nadu Minor Mineral Concession Rules, 1959 vide G.O. No. 32 Industries (MMIC) Department dated 11.02.2011.

* States/UTs not mentioned have not provided the data.

APPENDIX: TABLE -9

NORMAL DATES OF ONSET AND WITHDRAWAL OF SOUTH-WEST MONSOON

The India Meteorological Department, Nagpur, vide letter No. NAGPUR RMC /CS-312, dated 18th January,2016 has provided the period of Rainy Season viz. Normal dates of Onset and Withdrawal of Southwest Monsoon over India as state-wise and union territory- wise which are as below:-

States	Normal date of Onset of SW-Monsoon	Normal date of Withdrawal of SW-Monsoon
Andhra Pradesh	1st June	15th October
Arunachal Pradesh	5th June	15th October
Assam	5th June	15th October
Bihar	10th June	15th October
Chhattisgarh	10th June	15th October
Goa	5th June	15th October
Gujarat	15th June	15th September
Haryana	1st July	15th September
Himachal Pradesh	1st July	15th September
Jammu & Kashmir	1st July	15th September
Jharkhand	10th June	15th October
Karnataka	5th June	15th October
Kerala	1st June	15th October
Madhya Pradesh	15th June	1st October
Maharashtra	10th June	1st October
Manipur	1st June	15th October
Meghalaya	1st June	15th October
Mizoram	1st June	15th October
Nagaland	5th June	15th October
Odisha (Orissa)	5th June	15th October
Punjab	1st July	15th September
Rajasthan	1st July	1st September
Sikkim	5th June	15th October
Tamil Nadu	1st June	15th October
Telangana	5th June	15th October
Tripura	1st June	15th October

States	Normal date of Onset of SW-Monsoon	Normal date of Withdrawal of SW-Monsoon
Uttar Pradesh	15th June	1st October
Uttarakhand	15th June	1st October
West Bengal	10th June	15th October
Union territory	**Normal date of Onset of SW-Monsoon**	**Normal date of Withdrawal of SW-Monsoon**
Andaman and Nicobar Islands	20th May	15th October
Dadra and Nagar Haveli	10th June	1st October
Daman and Diu	10th June	1st October
Lakshadweep	1st June	15th October
Delhi	1st July	15th September
Puducherry	1st June	15th October

Note: The District Environment Impact Assessment Authority (DEIAA) in consultation with District Expert Appraisal Committee (DEAC) can make necessary changes as per local meteorological variations in this period of rainy season with respect to prohibition of River Sand Mining in the District.

ENSURING SUSTAINABLE SAND MINING FOR SUSTAINABLE DEVELOPMENT

A Major Initiative of Ministry of Environment, Forest and Climate Change for ensuring Environmentally Sustainable Sand Mining and Prevention of illegal Sand Mining.

{Notification No: SO No. 141 (E) dated 15.01.2016 and S.O. No. 190 (E) dated 20.01.2016 available at www.envfor.nic.in}

- Use of Satellite imagery to decide the site suitable for mining and quantity of sand which can be mined.
- Transit permit with tamper proof security features and tracking of mined out mineral.
- Monitoring of mined out mineral to prevent mining in excess of environmental clearance capacity.

- Delegation of power to grant environmental clearance for sand mining to an authority headed by District Magistrate.

- Intergration of power with District Authorities to grant environmental clearance and prevent illegal mining.

Note : Any information of mining without environmental clearance or against the norms prescribed in these notifications be reported at e-mail id: sandmining-moef@gov.in

VAKALATNAMA

BEFORE THE HONOURABLE NATIONAL GREEN TRIBUNAL, NEW DELHI

Between:

BALBIR SANDHU **Petitioner/Appellant**

Vs

UNION OF INDIA & OTHERS. **Respondent/ Defendant**

I/WE M/S RELIABLE MINING CORPORATION, GURUGRAM THR. SHO AKHTAR ZAHED SALMANSIDIQUE do hereby appoint & retain:

ANSHUL MANGLA, Advocate

P/2238/2011

#477, SECTOR 12, PANCHKULA

M: 8283097167; anshul.mangla16@gmail.com

to be advocate for RESPONDENT NO. 10. in the said Suit /Appeal / Petition / Case /Reference / Revision / Execution. I / we authorize the Advocates to do any or all of the following on my / our behalf:

a) to represent, act and appear for me / us;

b) to conduct and prosecute (or defend) the same and all proceedings that may be taken in respect of any application connected with the same or any decree of order passed therein;

c) to sign, file, verify, present, and receive all types of documents including plaints, statements, pleadings, appeals, cross objections, petitions, applications, revision, withdrawal, compromise or affidavits;

d) to withdraw or compromise or submit to arbitration any differences or disputes that may arise touching or in any manner relating to the said case;

e) to deposit, draw and receive money, cheques, cash and grant receipts thereof;

f) to do all other acts and things which may be necessary or expedient, in the opinion of the Advocates, to be done.

I/We do hereby agree to ratify and confirm all acts done by the Advocate or his substitute in the matter as my/our own acts, as if done by me/us to all intents and purposes. Signed on 10th Day of MARCH, 2023 by:

{**ANSHUL MANGLA**} & {**CHETNA GOYAL**}
P/22382/2011 UK-542/2013
PH- 220642
Advocates

Client