BEFORE THE NATIONAL GREEN TRIBUNAL,
EASTERN BENCH, KOLKATA

MEMORANDUM OF APPLICATION
(Under Section 14 and 15 of the National Green Tribunal Act, 2010)

ORIGINAL APPLICATION NO. 177 OF 2025 /EZ

IN THE MATTER OF:

RIZWAN ...APPLICANT

VERSUS

STATE OF JHARKHAND & ORS ...RESPONDENTS

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Filed on: 15.09.2025

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MEMO OF PARTIES

RIZWAN
S/o Imran
R/o Habibpur, Bhatuabadi Habibpur,
Jagdishpur,
Post and Police Station- Bhagalpur,
District- Bhagalpur, Bihar – 813105 …APPLICANT

VERSUS

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Filed on: 15.9.2025

BEFORE THE NATIONAL GREEN TRIBUNAL
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MEMORANDUM OF APPLICATION
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LETTER OF URGENCY

To,
THE REGISTRAR,
National Green Tribunal,
Kolkata

RESPECTED SIR,

Will you kindly treat the accompanying application as an urgent one in accordance with the NGT Rules and Orders.

The grounds of urgency are as set in the Original Application being may be treated as part and parcel of the present Application.

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Filed on: 15.09.2025

SYNOPSIS

The present Application is being filed under Section 14 and 15 of the National Green Tribunal Act, 2010 raising a serious *Substantial Question relating to the Environment*, by challenging the District Survey Report **[Impugned DSR]** for District Godda, Jharkhand and further challenging the subsequent Auction Notice dated 2.09.2025 **[Impugned Auction Notices]** being in blatant violation of the Judgments passed by the Hon'ble Supreme Court *in Pawan Kumar, Deepak Kumar & Gaurav Kumar*, violation of the EIA, 2006 and MOEF Sand Mining Guidelines (SSMG, 2016 & EMGSM, 2020), and in further dissonance with the Judgments passed by this Hon'ble Tribunal in *Raj Kumar, Anuj Singh & Balbir Sandhu.*

The Applicant submits that permitting Mining operations under such invalid, faulty and defective Impugned DSR and the subsequent Impugned Auction Notice in respect of an Area of 50 ha (Mineable Quantity - 5.14 Lakh Cubic Meter) would invariably have a serious and irreversible impact on the Riverine Environment causing degradation of the rivers, adverse impact on the River's physical habitat characteristics, including bed elevation, substrate composition, stability, velocity, depth, turbidity, sediment transport, apart from causing irreparable harm to the biodiversity and result in flood risk and loss of habitat.

I. CHALLENGE TO THE DSR FOR DISTRICT GODDA

A. DSR prepared by a NABET accredited Consultant and not by the Sub-Divisional Committee in violation of the directions passed Hon'ble Supreme Court in *Pawan Kumar*

The Impugned DSR for District Godda has been prepared by a NABET accredited consultant namely, Sathi Planners Private Limited, and not by a

Sub-Divisional Committee **[SDC]**, and the same is Evident from the Certificate of the said Consultant enclosed with the Impugned DSR itself, and the proceedings before the SEAC/SEIAA, Jharkhand.

The Hon'ble Supreme Court vide its Judgment dated 10.11.2021 in ***'State of Bihar v Pawan Kumar'***, *(2022) 2 SCC 348* directed that a DSR has to be prepared by a Sub-Divisional Committee comprising of **(i)** Sub-Divisional Magistrate, **(ii)** Officers from Irrigation Department **(iii)** SPCB **(iv)** Forest Department **(v)** Geology or Mining Officer, by strictly adhering to the Sand Mining Guidelines 2016 & 2020 issued by the MOEF.

It is pertinent to mention that the Hon'ble Apex Court for reasons specified in Para 15 of the said Judgment, consciously modified the direction passed by this Hon'ble Tribunal permitting the DSR to be prepared by a NABET appointed consultant, and specifically directed that the same be prepared by the Sub-Divisional Committee.

The Relevant portion of which is extracted as under:

> *"15 ... We further find that when the 2020 guidelines as well as the notification issued by MoEF and CC of 2016 itself provide for constitution of Sub-Divisional Committees comprising of the officers of the State Government from various Departments for identification of the potential sites for mining, there would be no necessity of the DSRs being prepared through private consultants as directed by the Tribunal in the impugned order. The Sub-Divisional committee consists of various officers from Revenue Department, Irrigation Department, State Pollution Control Board, Forest Department and Geology Mining Department of the State Government. They are better equipped to visit the sites and prepare the draft DSR for the concerned district. Apart from that, preparation of DSR through private consultants would also unnecessarily burden the public exchequer. We are therefore of the view that the direction in that regard issued by the Tribunal requires to be modified...*

That pursuant to the directions passed by the Hon'ble Apex Court in *Pawan Kumar*, a DSR could only have been prepared by the Sub-Divisional Committee itself, and the Sub-Divisional Committee could not have delegated the said obligation and responsibility on a third party, let alone by a private consultant in light of the reasons stated in Para 15 of the said Judgment. Ergo, the subsequent vetting of the DSR prepared initially by the Consultant would not cure such substantive defect.

It is well settled *[LIC v. Escorts, 1986 (1) SCC 264]* that an Authority who is directed to perform certain functions and obligations cannot divest itself and delegate such functions to some other authority/ persons, in as much as, this tantamount to overreaching the Orders passed by the Hon'ble Supreme Court and results in variation of the judicial order, and a situation that was consciously altered by the Hon'ble Court.

The Applicant submits that preparation of the Impugned DSR *dehors* the procedure devised in Pawan Kumar, further violates two cardinal and established principles of law:

(a) *'where a power is given to do a certain thing in a certain way the thing must be done in that way or not at all'* – Taylor v. Taylor, *(1875) LR 1 Ch D 426*, [Applied by the Privy Council in Nazir Ahmed v. King, *AIR 1936 PC 253*, Parbhani Transport v. RTA, *AIR 1960 SC 801*.

(b) *'what cannot be done directly can also not be done indirectly'(Quando aliquid prohibetur ex directo, prohibetur et per obliquum*) – Supertech Limited v. Emerald Court Owner RWA and ORs, *(2023) 10 SCC 817*

Thus, on the sole ground that the DSR has been prepared by a private consultant *(which has been consciously overruled by the Hon'ble Supreme Court)* and not by the Sub-Divisional Committee, the Impugned DSR ought

to be quashed and set aside, being without jurisdiction, *non-est* and void in law.

B. MINING LEASE AREAS APPROVED IN THE DSR INCLUDE THE ENTIRE RIVER CHANNEL/ RIVER AREA (WHOLLY/ PARTLY SUBMERGED) – *PER SE* ILLEGAL

That a perusal of the Satellite imagery enclosed with the DSR ostensibly establishes that most of the Mining lease Areas are wholly or substantially submerged under water, and includes the entire River channel/ River Area which is *per se* illegal and impermissible.

This Hon'ble Tribunal, Central Zone Bench, Bhopal vide its judgment dated 30.05.2017 in the case of *Medha Patkar* after relying on the SSMG, 2016 issued by the MOEF held that '*no river sand mining can be carried out in any area notwithstanding the same being part of the leased area in case it is 'submerged', or lies within the submerged area'*.

It is submitted that submerged water mining is *per se* prohibited under the SSMG, 2016 & EMGSM, 2020 and permitting the same would invariably have an adverse and deleterious impact of the riverine environment, and contravene and impede the precautionary principle being legally unsustainable and unwarranted, as cautioned by the Hon'ble Supreme Court in *Deepak Kumar*.

The Applicant submits that including submerged water areas within the Mining leases is to maximize revenue and to circumvent Clause 4.3(r) of the EMGSM, 2020 whereby only 60% of the minerals in the Mining lease area is permitted to be extracted. Ergo, by including the submerged water areas, the total mining area is being artificially increased to thereby permit more than 60% of the total minable reversed which is other-wise prohibited.

C. VIOLATION OF THE SSMG, 2016 AND EMGSM, 2020 I.E. SAND MINING GUIDELINES ISSUED BY THE MOEF

The Hon'ble Supreme Court in *Pawan Kumar* (Para 16.2) directed the DSRs to be prepared after ensuring '*strict adherence' to the EMGSM, 2020.* However, the Impugned DSR is not prepared in terms of the EMGSM, 2020, including Clauses 4.1.1, 4.3, 5.0 thereof, which is illustrated below:

SSMG, 2016

The Hon'ble Supreme Court in *Deepak Kumar* approved the recommendations of the MOEF Committee stating that the minimum size of a Mining lease for a Sand Ghat ought to be more than 5Ha. This was duly incorporated in the SSMG, 2016.

However all the 16 Mining leases proposed in the DSR are for Areas less than 5ha. This has obviously been done with the sole endeavour to evade an EIA study/ EMP plan and Public consultation which is as on date exempted for Mining leases less than 5 ha as per the Judgment passed by this Hon'ble Court in *Satender Pandey* v. MOEF.

NOTE: The Judgment of *Satender Pandey* is pending before the Hon'ble Supreme Court in *UOI v. Rajeev Suri & Ors*, CA No. 3799-3800 of 2019.

S NO.	EMGSM, 2020/	VIOLATION
1.	**4.1.1(b)** requires a detailed River survey/ audit to identify the source of River bed material.	No such River survey/ Audit has been done determining inventory of all the mineral available in the District. Only Mining lease areas have been identified.

2.	**4.1.1 (e), 4.3 (r) & (m)** requires a **s**urvey of entire river bed identifying 3/4th of the River or 7.5 m which is to be identified on a map and the remaining 1/4th to be kept as *'No Mining Zone'*.	The entire River bed has been included in the DSR for mining without leaving the 1/4th area/ 7.5 m. (Refer to Satellite images enclosed with the DSR)
3.	**4.1.1 (c) & (g)** mandates identification of No Mining Zones considering Environmental factors.	Areas have not been identified as sensitive and non-sensitive areas. Areas in No Mining Zones including within 1 km from a notified Forest have been included within the Mining lease Area.
4.	**4.1.1 (f)** requires erection of permanent boundary pillars after identification of an area of aggradation and deposition.	Admittedly no such boundary pillars have been erected as is evident from DSR itself.
5.	**4.3 (f)** states that Sand and gravel shall not be allowed to be extracted where erosion may occur, such as at the concave bank.	Concave bank have been included with the Mining leases areas in the DSR.
6.	**4.3 (r)** requires that the area for removal of minerals shall not exceed 60% of the mine lease area.	To circumvent this mandatory limitation of 60%, submerged water areas have been included within the Mining leases areas, and the same is evident from the Satellite Images enclosed with the Impugned DSR.
7.	**4.0, 4.1, 5.0, 5.1** requires the excavation to be restricted to the Replenishment rate of the river.	The approved Mineable quantities under the DSR are more than the Replenished rate of mineral as per the DSR/Replenishment Study, 2022. *(Comparative Table inserted below)*
8.	**9.3** requires Districts/ States where the River is the District/State boundary, the draft DSR to be put up for public consultation in both districts and a combined Task force is to be constituted.	The Gerua River comprises of the State boundary between District Godda, Jharkhand and District Banka, Bihar. Thus the Impugned DSR ought to have put up for Public comments in District Banka, however the same is not complied with.

D. DSRs APPROVED BY THE SEAC/SEIAA, JHARKHAND IN A HURRIED, CASUAL, ARBITRARY & PERFUNCTORY MANNER

The Applicant submits that the Impugned DSR has been approved vide MOM dated 21.03.2025 & MOM dated 01.04.2025 by the SEAC/SEIAA along with 11 and 11 other DSRs respectively on the same day, without application of mind and in a mechanical manner.

That a perusal of the MOM dated 21-25th March 2023 (12 DSRs), 14th-17th April 2023 (6 DSRs), 22-26th May 2023 (6 DSRs) of SEAC Jharkhand would reveal that all DSRs in the State of Jharkhand for Sand Mining have been approved by the SEAC in a casual, hurried and perfunctory manner, with the same observations, *in verbatim.*

Similarly, a perusal of the MOM dated 1-2nd April 2023 (12 DSRs), 27-28th April 2023 (6 DSRs), 28-29th May 2023 (6 DSRs) of SEIAA, Jharkhand would reveal that all DSRs for Sand Mining recommended by SEAC for approval, were subsequently approved by the SEIAA with the same terms and conditions, in verbatim without any reason or application of mind by adopting a '*cut copy paste'* exercise.

The Applicant submits that the Expert bodies [SEAC/SEIAA] failed to carefully scrutinize, evaluate and appraise the DSRs by considering the relevant material on the basis of which the DSR was prepared, including **(a)** compliance of the mandatory and non-derogable provisions of the EMGSM, 2020; **(b)** procedure for preparation of DSR devised/modified by the Hon'ble Supreme Court in *Pawan Kumar*, and **(c)** the Mining lease Area covers the River Channel/ Entire breath of the River and the quantity calculated is on the basis of the which is *per se* impermissible.

The Hon'ble Supreme Court in ***Bengaluru Development Authority v Sudhakar Hegde & Ors***, *(2020) 15 SCC 63* held that the SEAC is an expert body and as such must speak in the manner of an expert by applying itself to every relevant aspect of the case before it and carefully scrutinize the material submitted to it, and only after such proper evaluation render a decision based on cogent reasons.

II. CHALLENGE TO THE IMPUGNED AUCTION NOTICE DATED 2.09.2025

The present OA further challenges the Impugned E-Auction Notice dated 2.09.2025 **[IMPUGNED AUCTION NOTICE]** issued by the Respondent No. 4 District Mining Officer, Godda, on the following grounds:

A. CERTAIN MINING LEASE SOUGHT TO BE AUCTIONED HAVE NOT BEEN GRANTED NOC BY THE FOREST DEPARTMENT

It is submitted that there are 16 Sand Ghats approved in the DSR which all sought to be Auctioned vide the Impugned Auction Notice 2.09.2025. However certain Mining leases in the DSR and the Impugned Auction Notices have not been granted NOC from the Forest Department (Divisional Forest Officer, Godda Forest Division) which is evident from the letter dated 7.01.2023 enclosed with the Impugned DSR.

Sand Ghats for which No NOC has been granted by the Forest Department

S.NO	NAME OF SAND GHAT	AREA (IN HA)
1.	Deshbarang	0.93
2.	Jasmata	3.03
3.	Ghat Jhiluwala	1.82

4.	Lauamba Pasai	5.51
5.	Dalpatpur	2.1
6.	Sanatan	3.98
7.	Jasmata 2	1.82
8.	Bade	2.37

B. IMPUGNED AUCTION NOTICE ISSUED WITHOUT CONDUCTING A REPLENISHMENT STUDY IN 2024

The Impugned E-Auction Notice dated 02.09.2025 has been issued without conducting any Replenishment Study in the year 2024 as required under the MOEF Sand Mining Guidelines, 2016 & 2020, and the quantities Auctioned are ostensibly on the basis of the Impugned DSR which was based on replenishment studies conducted in the year 2022 i.e. three years ago.

In the case of ***Raj Kumar v. State of UP***, OA No. 140 of 2021 vide Judgment dated 6.05.2022 this Hon'ble Tribunal held as follows:

"11. Accordingly, the ACS, Mining, UP has fairly stated that replenishment study will be conducted prior to auctions in future and with regard to the current leases, ongoing replenishment study will be expedited. In the light thereof, the leases will be renewed, if necessary…

12. In view of above, let the Replenishment studies be completed by credible institutions, following due procedure, in accordance with para 5 of EMSG, 2020. Further, no mining be permitted till replenishment studies are completed beyond the schedule laid down above…"

The issuance of the Impugned Auction Notice in the absence of a prior replenishment study is manifestly illegal, unsustainable and *void ab initio*. It is submitted that in absence thereof, the Mining Department has no basis to calculate the quantity of sand available in the Mining lease area which gets

replenished yearly after every monsoon. Ergo, the Replenishment study further determines the Replenished rate of the River/ Mining lease area, equal to which minerals can be legally excavated. Furthermore, without knowing the actual mineable reserves, it would be impossible to check illegal, excessive mining, if any.

C. IMPUGNED AUCTION NOTICE CONTRARY TO THE REPLENISHMENT STUDY, 2022 – PERMITS MINING ABOVE THE REPLENISHED RATE

Without Prejudice to the above submission II (B), it is submitted that the Mineable quantities sought to be auctioned under the Impugned E-Auction Notice dated 2.09.2025 is more than the replenished rate as provided under the Replenishment Study of 2022 (mentioned in the DSR), which is in complete derogation of the Orders passed by this Hon'ble Tribunal in *Anuj Singh* and *Balbir Sandhu* and the SSMG, 2016/ EMGSM, 2020.

Sustainable Sand Mining Guidelines [SSMG, 2016]

"The Effects of sand and gravel mining - River Bed Mining Recommendations

a. 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 the 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.

Standard environmental Conditions for Sand Mining

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…"

Enforcement & Monitoring Guidelines for Sand Mining, 2020 [EMGSM, 2020]

*"**4.0 (viii)** Requirements For Monitoring & Enforcement- The river reaches with sand provide the resource and thus it is necessary to ascertain the rate of replenishment of the mineral. Regular replenishment study needs to be carried out to keep a balance between deposition and extraction. This document provides the procedure to be followed for conducting replenishment study.*

***5.0** Replenishment Study- The need for replenishment study for river bed sand is required in order to nullify the adverse impacts arising due to excessing sand extraction… It is assumed that the riparian habitat disturbance is minimum if the replenishment is equal to excavation for a given stretch. Therefore, to minimize the adverse impact arising out of sand mining in a given river stretch, it is imperative to have a study of replenishment of material during the defined period.*

***5.1** Generic Structure of Replenishment Study - …The results of year-wise surveys help the state government to establish the replenishment rate of the river. Based on the replenishment rate future auction may be planned.*

A TABLE DEPICTING THE QUANTITIES IN THE IMPUGNED AUCTION NOTICE AND THE IMPUGNED DSR IS AS UNDER:

S. NO.	SAND GHATS(S)	AREA (HA)	MINEABLE QUANTITY AS PER THE NIT (M^3)	REPLENISHED QUANTITY AS PER DSR (M^3)
1.	Raha	1.97	19,700	13,790
2.	Deshbarang	0.93	9,261	7,409
3.	Chakwa	3.52	17,592	7,037
4.	Jasmata	3.03	60,681	33,375
5.	Haripur	2.71	13,566	2,713
6.	Ghat Jhiluwala	1.82	14,592	5,472

7.	Lauamba Pasai	5.51	66,138	16,535
8.	Pasai Gari	2.59	44,066	31,106
9.	Asarimadhuri Teliyatikar	11.29	90,355	33,883
10.	Dhodhari	2.39	19,146	9,573
11.	Dalpatpur	2.1	16,833	10,520
12.	Amjora Surapaprwa Machkhar	3.55	70,924	39,008
13.	Taratikar Pakariya Badgawn	1.06	5,309	2,123
14.	Sanatan	3.98	31,837	15,937
15.	Jasmata 2	1.82	12,726	5,454
16.	Bade	2.37	23,652	16,556

The Hon'ble Supreme Court in the recent case of ***Gaurav Kumar v. State of UP*** observed that "*the rate at which we are mining sand, for whatsoever purposes, is much higher than the replenishment rate. This imbalance between consumption and natural replenishment is what becomes the cause of worry…"*

This Hon'ble Tribunal vide its Judgment dated 19.07.2023 in OA No. 284 of 2023 being ***Anuj Singh v. State of UP***, after appreciating the above provisions in the SSMG, 2016 & EMGSM, 2020, directed the State of UP (Mining department) to *'ensure that quantity of minerals directed to be mined will not exceed the quantity under replenishment study'.*

This Hon'ble Tribunal vide its recent Judgment dated 22.04.2025 passed in OA No. 532 of 2023 being ***'Balbir Sandhu v Union of India'*** directed that "*Quantity of minerals directed to be mined should not exceed the quantity*

under replenishment study and should be limited to auctioned as well as sustainably permissible quantity."

The Hon'ble Supreme Court in the case of ***UT of J&K v. Raja Muzaffar Bhat***, CA No. 8055 of 2022 vide Judgment dated 22.08.2025 has held that replenishment studies are mandatory before conducting River mining operations, and absence of such study is detrimental to the Environment.

Thus, as per the prevalent legal position, only the Replenished quantity of sand is permitted to be mined as the excess quantity i.e. over and above the replenished rate amounts to excessive, disproportionate and unsustainable mining which would have a serious and direct adverse impact on the River's physical habitat characteristics, including bed elevation, substrate composition, stability, velocity, depth, turbidity, sediment transport, apart from causing irreparable harm to the biodiversity and result in flood risk and loss of habitat.

That, the Applicant is a farmer by profession and a resident of the adjoining Bhagalpur District, Bihar whose right to life along with that of the other residents/ villagers of the District are directly and immediately affected due to the illegal, unplanned and unsustainable mining sought to be carried on in the entire District of Godda, Jharkhand. It is submitted that the Mining lease Areas are within a distance of 10-15 Km from District Bhagalpur.

Hence the present Application under Section 14 and 15 before this Hon'ble Tribunal.

LIST OF RELEVANT DATES AND EVENTS

DATED	PARTICULARS
14.09.2006	The MOEF issued the parent EIA Notification dated 14.09.2006 *("hereinafter referred to as **EIA, 2006")*** under Section 3 of the Environmental Protection Act, 1986.
27.02.2012	The Hon'ble Supreme Court in the case of ***Deepak Kumar v. State of Haryana***, 2012 (4) SCC 629 highlighted the dangers to the Riverine Environment due to unregulated and illegal Sand Mining.
15.01.2016	The MOEF issued Notification dated 15.01.2016 by *inter-alia* mandating the Preparation of District Survey Report for Sand Mining *(hereinafter referred to as 'DSR')*, an Annual Replenishment Study.
2016	That the MOEF issued the Sustainable Sand Mining Management Guidelines, 2016 *[SSMG, 2016]* which mandated for an Annual Replenishment Study, and stated that Sand mining that ought to be restricted to/ equal to the rate of replenishment, so as to ensure that the natural equilibrium of the stream is not disturbed.
30.05.2017	This Hon'ble Tribunal, Central Zone Bench, Bhopal vide its detailed Judgment dated 30.05.2017 in OA No. 78 of 2015, CZ in *'Medha Patkar v State of MP'* held that no river sand mining can be permitted in a submerged water area.
2020	The MOEF in supplement and addition to the SSMG, 2016 issued the Enforcement & Monitoring Guidelines for Sand Mining, 2020 *(hereinafter referred to as 'EMGSM, 2020')* enumerating the parameters of preparing a DSR, benefits of preparation of a DSR and the importance of a Replenishment study for Riverbed mining which is mandatorily required to nullify the adverse impacts arising due to excessive sand extraction, in Clauses 4.0, 4.1.1, 4.2,

	4.3, 5.1, 5.2.4 etc.
14.10.2020	This Hon'ble National Green Tribunal (NGT), Eastern Zone, vide its detailed Judgment dated 14.10.2020 in the case titled *'Pawan Kumar v. State of Bihar'* directed that a DSR be prepared by an Expert accredited by the National Accreditation Board of Education and Training/ Quality Control Council of India (NABT/QCCI) in terms of the MOEF OM dated 16.03.2010, and thereafter the same be verified by the District Magistrate, and lastly evaluation by the Expert body i.e. the SEAC/ SEIAA.
10.11.2021	The Hon'ble Supreme Court vide its Judgment dated 10.11.2021 in *Pawan Kumar*, modified the procedure for preparation of a DSR as directed by this Hon'ble Tribunal vide Judgment dated 14.10.2020 and instead directed the DSR to be prepared by a Sub-Divisional Committee.
6.05.2022	This Hon'ble Tribunal, Principal Bench in the case of *Raj Kumar v. State of U.P., OA No. 140/2021*, vide its Judgment dated 6.05.2022 directed that a Replenishment Study is mandatorily to be conducted prior to e-Auctions in future, by a credible institution.
October 2022	The District Magistrate, Godda in October 2022 *(post the decision by the Hon'ble Apex Court in Pawan Kumar)* appointed one Sathi Planners Private Limited, NABET accredited consultant to prepare the DSR and conduct Replenishment Study for District Godda, Jharkhand.
Nov 2022	The draft DSR for District Godda published on the website of the local administration in District Godda inviting comments from the public, which was prepared by the NABET Accredited Consultant on the basis of the Replenishment Study conducted in the year 2022 by the said NABET Accredited Consultant.

	Notably, the DSR was not put up for public comments/ hearing in the adjoining District Banka, Bihar despite Mining leases being approved in Gerua River which constitutes of the State boundary.
19.07.2023	That this Hon'ble Tribunal in OA No. 284 of 2023 being *'Anuj Singh v State of Uttar Pradesh'* held that the quantity permitted to be excavated be restricted to the sustainable quantity replenished under the Replenishment study.
21.03.2023	The Draft DSR for District Godda was appraised and approved by the SEAC, Jharkhand vide its Minutes of Meeting dated 21st March, 2023 in a hurried, casual, perfunctory and mechanical manner.
1.04.2023	The Draft DSR was subsequently approved by the SEIAA, UP in its Meeting dated 1-2nd April, 2023, in a casual and mechanical manner only on the basis of the recommendation by the SEAC and without considering the compliance/ non-compliance of the SSMG, 2016 and/or EMGSM, 2020 including violation of Clauses 4.1.1 and 4.3 of the EMGSM, 2020.
08.05.2025	The Hon'ble Supreme Court vide its Judgment dated 08.05.2025 in ***'State of Uttar Pradesh v Gaurav Kumar,'*** *2025 SCC OnLine SC 1069* has re-iterated that DSR is a document of seminal importance and the procedure prescribed under the EIA, 2006 (Appendix X) is to be meticulously followed.
02.09.2025	The Respondent No. 4, District Mining Officer, Godda issued the Impugned Auction Notice dated 02.09.2025 for 16 Sand Ghats without conducting a Replenishment study, and on the basis of the total Mineable quantity (Not replenished quantity) mentioned in the DSR
__.09.2025	Hence the present Original Application.

BEFORE THE NATIONAL GREEN TRIBUNAL,
EASTERN BENCH, KOLKATA

MEMORANDUM OF APPLICATION
(Under Section 14 and 15 of the National Green Tribunal Act, 2010)

ORIGINAL APPLICATION NO. OF 2025

IN THE MATTER OF:

RIZWAN ...APPLICANT

VERSUS

STATE OF JHARKHAND & ORS ...RESPONDENTS

MEMO OF PARTIES

RIZWAN
S/o Imran
R/o Habibpur, Bhatuabadi Habibpur,
Jagdishpur,
Post and Police Station- Bhagalpur,
District- Bhagalpur, Bihar - 813105

…APPLICANT

VERSUS

1. **STATE OF JHARKHAND**
   Through Additional Chief Secretary,
   Department of Environment & Forest
   4th Floor, New Secretariat Building
   Dhurwa, Ranchi, Jharkhand - 834004
   ro.ranchi-mef@gov.in

2. **DEPARTMENT OF MINING & GEOLOGY, JHARKHAND**
   Through its Principal Secretary,
   2nd Floor, Yojana Bhawan,
   Nepal House, Doranda,
   Ranchi, Jharkhand 834002
   director-mines@jharkhandmail.gov.in

3. **DEPUTY COMMISSIONER**
   District Godda, Jharkhand
   Office of the Deputy Commissioner,

Dharmudih, Jharkhand- 814133
dc-god@nic.in

4. **THE DISTRICT MINING OFFICER**
Godda District,
2nd Floor, Yojana Bhawan,
Nepal House, Doranda,
Ranchi, Jharkhand 834002.
dmo-godda@jharkhandmail.gov.in

5. **STATE EXPERT APPRISAL AUTHORITY [SEAC, JHARKHAND]**
Through its Chairman
Dhurwa Nursery Complex,
Near Dhurwa Bus Stand,
Ranchi, Jharkhand
singhkumar105ashok@gmail.com

6. **THE STATE LEVEL ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY [SEIAA, JHARKHAND]**
State of Jharkhand
Through, it's Member Secretary,
Dhurwa Nursery Complex,
Near Dhurwa Bus Stand,,
Ranchi, Jharkhand
chr-seiaajhr@gov.in
msseiaa.jhk@gmail.com

7. **DIVISIONAL FOREST OFFICER, GODDA FOREST DIVISION**
Van Bhawan, Doranda,
Ranchi, Jharkhand-834002
dfo-godda@gov.in

...RESPONDENTS

TO,

THE HON'BLE CHAIRPERSON
AND HIS COMPANION MEMBERS
OF THE NATIONAL GREEN TRIBUNAL

THE HUMBLE ORIGINAL APPLICATION OF THE APPLICANT HEREIN:

MOST RESPECTFULLY SHOWETH:

1. The addresses of the Applicant's counsels are given below for the service of notices of this application.

2. The addresses of the Respondents No. 1-7 are given above for service of notices of the present Application.

3. The Applicant *interalia* seeks appropriate Orders for quashing of the DSR for District Godda *[hereinafter referred to the 'Impugned DSR'],* which has been approved by SEIAA, UP on 1.04.2023 and has been acted upon w.e.f 02.09.2025 for the first time. The Applicant further seeks for appropriate Orders for quashing the Impugned Auction Notice, dated 02.09.2025 issued by the Respondent No. 4, District Mining Officer, Godda and the subsequent actions (LOIs/EC/Mining leases) thereof, if any.

4. The Applicant is a resident of the adjoining District Bhagalpur, State of Bihar whose Right to Life and Health along with that of other citizens are directly and immediately affected due to preparation of a faulty DSR without scientific assessment, Replenishment studies and by non-compliance of the MOEF Sand Mining Guidelines, 2016 & 2020, despite various Judgments passed and directions issued by the Hon'ble Apex Court &this Hon'ble Tribunal.

5. The subsequent Mining activities on the basis of such a faulty DSR is bound to invariably have a serious and irreversible impact on causing Water pollution in the already Polluted Water bodies (Rivers). The Environment being a party in *absentia* cannot pursue its own interests

and the hence the instant application is filed to ensure that such rampant flouting of environmental norms are prevented and checked with a direction to comply with the existing environmental regulations and directions issued by this Hon'ble Tribunal forthwith.

6. That the Applicant has no personal interest in the present *lis* except as aforesaid, and to safeguard the environment by ensuring that mining, if any, is done in consonance with the prevailing law in a sustainable manner.

BRIEF FACTS

7. The Applicant herein seeks to place the following relevant facts chronologically for the kind perusal of this Hon'ble Tribunal, which have a material bearing on the issue at hand and are imperative for the purposes of the present Application:

i. That in September 2006, the MOEF issued the parent EIA Notification dated 14.09.2006 *("hereinafter referred to as EIA, 2006")* under Section 3 of the Environmental Protection Act, 1986.

ii. The Hon'ble Supreme Court in the case of ***Deepak Kumar v. State of Haryana***, 2012 (4) SCC 629 stated that unregulated mining and the extraction of alluvial material from and within, and near a streambed has a direct impact on the stream's physical habitat characteristics and affects its biodiversity. The Hon'ble Apex Court further held that *"... excessive instream sand and gravel mining cause degradation of rivers, and that lack of proper planning and sand management causes disturbance of marine ecosystem and also upset the ability of natural marine processes to replenish the sand".*

It is submitted that permitting the lease holders to mine within the River Channel and/or more than replenished rate of sand would amount to excessive and unsustainable mining which would invariably have a serious and direct adverse impact on the River's physical habitat characteristics, including bed elevation, substrate composition, stability, velocity, depth, turbidity, sediment transport, apart from causing irreparable harm to the biodiversity and result in flood risk and loss of habitat.

A Copy of the Judgment passed by the Hon'ble Supreme Court in *Deepak Kumar v. State of Haryana, 2012 (4) SCC 629* is enclosed herewith as **Annexure A-1 [at page 45 to 57].**

iii. The MOEF issued Notification dated 15.01.2016 amending the EIA, 2006 by *interalia* inserting Appendix X which lays down the procedure for preparation of a District Survey Report **[DSR]**. Under the said Appendix X, the main objective of preparation of a DSR is for "*identification of areas of aggradations or deposition where mining can be allowed; and identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited and calculation of annual rate of replenishment and allowing time for replenishment after mining in that area."*

The District Survey Report (DSR) was to be prepared by a newly constituted District Environmental Impact Assessment Authority *(hereinafter referred to as "DEIAA")* and District Expert Appraisal Committee *(hereinafter referred to as "DEAC")* at the District level in each State.

Furthermore, Appendix XI was inserted to the EIA, 2006 whereby all mining leases within a periphery of 500m from each other constitute a

'*CLUSTER'* and thereby were mandatorily required to be appraised for EC on the basis of a Cluster EIA/ EMP/ Public hearing.

A Copy of the Notification dated 15.01.2016 issued by the MOEF is enclosed herewith as **Annexure A-2 [at page 58 to 69].**

iv. The MOEF issued the Sustainable Sand Mining Management Guidelines, 2016 *(hereinafter referred to as **'SMMG, 2016')*** by *inter-alia* mandating the '*Preparation of District Survey Report for Sand Mining or River Bed Mining and Mining of other Minerals',* and an '*Annual Replenishment Study'.*

Pertinently, the SSMG, 2016 highlighted the dangers of excessive River Sand mining and that the same ought to be restricted to/ equal to the rate of replenishment, so as to ensure that the natural equilibrium of the stream is not disturbed, apart from stating the intent behind adopting a Cluster Assessment approach.

A Copy of the Relevant Extracts of the Sustainable Sand Mining Management Guidelines, 2016 issued by the MOEF is enclosed herewith as **Annexure A-3 [at page 70 to 133].**

v. This Hon'ble Tribunal, Central Zone Bench, Bhopal vide its detailed and well considered Judgment dated 30.05.2017 in OA No. 78 of 2015 (CZ), *Medha Patkar v. State of MP* held as under:

> ***"18.*** *...the Sustainable Sand Mining Guidelines 2016 clearly prohibit any instream mining and further that rivers sand mining can be carried out only up to a depth of 3 meters/till water level is reached whichever is less. Therefore, clearly in accordance with the guidelines which was required to be considered as the guiding factor before any EC or consent can be granted* ***no river sand mining can be carried out in any area notwithstanding the same being part of the leased area in case it is 'submerged', or lies within the submerged area****.*

A Copy of the Order dated 30.05.2017 passed by this Hon'ble Tribunal in OA No. 78 of 2015 (CZ), *Medha Patkar v. State of MP*is enclosed herewith as **Annexure A-4 [at page 134 to 146].**

vi. This Hon'ble Tribunal, Principal Bench vide its Judgment dated 13.09.2018 in the case titled *Satender Pandey v. UOI*, partly quashed the Notifications dated 15.01.2016 and 20.01.2016, including quashing DEIAA and DEAC which comprised of mostly bureaucrats, officials of the mining department and Non-Expert members.

vii. The MOEF in supplement and addition to the Sustainable Sand Mining Management Guidelines, 2016 issued the Enforcement & Monitoring Guidelines for Sand Mining, 2020 **[EMGSM, 2020]** *interalia* to ensure that river mining is conducted in an environmentally sustainable manner.

The EMGSM, 2020 while highlighting the dangers of excessive mining, prohibited mining over and above the rate of replenishment, as the same creates an imbalance between excavation and deposition and is deleterious to the riverine environment. It also enumerated the importance of preparing a DSR, requirement of a Replenishment study for Riverbed mining which is mandatorily required to nullify the adverse impacts arising due to excessive sand extraction, in Clauses 4.0, 4.1.1, 4.2, 4.3 5.1, 5.2.4 etc.

A Copy of the Enforcement & Monitoring Guidelines for Sand Mining, 2020 [EMGSM, 2020] issued by the MOEF is enclosed herewith as **Annexure-A-5 [at page 147 to 229].**

viii. This Hon'ble National Green Tribunal (NGT), Eastern Zone, vide its detailed Judgment dated 14.10.2020 in the case titled *'Pawan Kumar*

v. State of Bihar' considered the issue of preparation of a DSR by experts and held that a DSR is crucial as it contains an Environmental Management Plan, including the replenishment study and other safeguard and is the basis to consider the environment impact of mining based on which decision to grant the Environmental Clearance is taken.

This Hon'ble Tribunal further directed that the DSR be prepared by an Expert accredited by the National Accreditation Board of Education and Training/ Quality Control Council of India (NABT/QCCI) in terms of the MOEF OM dated 16.03.2010, and thereafter the same be verified by the District Magistrate, and lastly evaluation by the Expert body i.e. the SEAC/ SEIAA.

ix. The Hon'ble Supreme Court vide its Judgment dated 10.11.2021 in ***State of Bihar v. Pawan Kumar***, modified the procedure for preparation of a DSR, and directed that the DSR be prepared by a Sub-Divisional Committee comprising of **(i)** Sub-Divisional Magistrate, **(ii)** Officers from Irrigation Department **(iii)** SPCB **(iv)** Forest Department **(v)** Geology or Mining Officer and directed that the EMGSM, 2020 issued by the MOEF be strictly adhered to while preparing District Survey Reports.

It is pertinent to mention that the Hon'ble Apex in Para 15 of the said Judgment, overruled the direction passed by this Hon'ble Tribunal permitting the DSR to be prepared by a NABET appointed consultant, and specifically directed that the same be prepared by a Sub-Divisional Committee which is better equipped and more suitable to prepared the DSR.

A Copy of the Judgment passed by the Hon'ble Supreme Court in *State of Bihar v. Pawan Kumar, 2022 (2) SCC 348*is enclosed herewith as **Annexure A-6 [at page 230 to 236].**

x. This Hon'ble Tribunal, Principal Bench in the case of ***Raj Kumar v. State of U.P.***, *OA No. 140/2021*, vide its Judgment dated 6.05.2022 accepted that a Replenishment Study is mandatorily to be conducted prior to e-Auctions in future and also for all current leases by a credible institution, failing which no Mining shall be permitted.

The Hon'ble Supreme Court vide its Order dated 29.11.2022 dismissed the said Civil Appeal No. 8035-8036 of 2022 filed by the State of UP being aggrieved by the abovementioned Judgment dated 6.05.2022, and clarified that Replenishment studies for both years i.e. year ending 31.12.2021 as well as the current year ending 31.12.2022 has to be undertaken.

A Copy of the Judgment dated 06.05.2022 passed by this Hon'ble Tribunal, Principal Bench in the case titled *'Raj Kumar v. State of U.P.', OA No. 140/2021*is enclosed herein and marked as **Annexure A-7 [at page 237 to 245].**

xi. The District Magistrate, Godda in October 2022 *(post the decision by the Hon'ble Apex Court in Pawan Kumar)* appointed one Sathi Planners Private Limited, NABET accredited consultant to prepare the DSR and conduct Replenishment Study for District Godda, Jharkhand.

xii. That in November 2022, the draft DSR for District Godda was published on the website of the local administration inviting comments from the public, which was prepared by the NABET

Accredited Consultant on the basis of the Replenishment Study conducted in the year 2022 by the said NABET Accredited Consultant, and not by a credible Central or State Institution or agency. Notably, the DSR was not put up for public comments/ hearing in the adjoining District Banka, Bihar despite Mining leases being approved in Gerua River which constitutes of the State boundary.

xiii. That this Hon'ble Tribunal vide Order dated 19.07.2023 in OA No. 284 of 2023 being *'Anuj Singh v State of Uttar Pradesh'* held that the quantity permitted to be excavated be restricted to the sustainable quantity replenished under the Replenishment study, which is as under:

> *"IV. E-auction/auction/tender should be done in accordance with Sustainable Sand Mining Guidelines 2016 as well as Enforcement and Monitoring Guidelines for Sand Mining 2020 and only where details of approved DSR and Annual Replenishment Study are available.*
>
> *V. EC should be accorded only to the limit of auctioned and sustainably permissible quantity.*
>
> *VI. The respondents are directed to ensure that quantity of minerals directed to be mined will not exceed the quantity under replenishment study."*

A Copy of the Order dated 19.07.2023 passed by this Hon'ble Tribunal in OA No. 284 of 2023 being *'Anuj Singh v State of Uttar Pradesh'*is enclosed herein and marked as **Annexure A-8 [at page 246 to 282].**

xiv. That the Draft DSR for District Godda was appraised and approved by the SEAC, Jharkhand vide its Minutes of Meeting dated 21st March 2023 in a hurried, casual and perfunctory manner, for the following reasons:

- The SEAC failed to notice that the DSR has been prepared by NABET consultant instead of the Sub-Divisional Committee as directed by the Hon'ble Supreme Court in *Pawan Kumar.*
- The SEAC recommended the approval of the DSR without considering compliance of the mandatory and non-derogable provisions of the EMGSM, 2020.
- Most of the Mining lease areas *(as shown in the Maps enclosed with the DSR itself)* includes the entire River Channel within the Mining lease Area, and the Mineable Quantity has been calculated on basis thereof which is *per se* illegal and contrary to the Judgment in Deepak Kumar, SSMG, 2016 & EMGSM, 2020.
- On the same day, DSRs for 11 other Districts (i.e. Total 12 DSRs) were approved with identical conditions in a mechanical manner. Additionally, many other projects were appraised and evaluated on the same day which ostensibly shows non-application of mind.

That a perusal of the MOM dated 21-25th March 2023 (12 DSRs), 14th-17th April 2023 (6 DSRs), 22-26th May 2023 (6 DSRs) of SEAC Jharkhand would reveal that all DSRs in the State of Jharkhand for Sand Mining have been approved by the SEAC in a casual, hurried and perfunctory manner, with the same observations, *in verbatim.*

A Copy of the Relevant extracts of MOM of SEAC, Jharkhand dated 21-25th March 2023, 14th-17th April 2023 & 22-26th May 2023 approving the DSR for District Godda, Jharkhand and other 23 DSRs in the State of Jharkhand is enclosed herein as **Annexure A-9 [Colly] [at page 283 to 320].**

xv. The Draft DSR was subsequently approved by the SEIAA, UP in its Meeting dated 1-2nd April, 2023, in a casual and mechanical manner only on the basis of the recommendation by the SEAC and without considering the compliance/ non-compliance of the SSMG, 2016 and/or EMGSM, 2020 including violation of Clauses 4.1.1 and 4.3 of

the EMGSM, 2020 and further non-compliance of Appendix XI, EIA, 2006.

Similarly, a perusal of the MOM dated 1-2nd April 2023 (12 DSRs), 27-28th April 2023 (6 DSRs), 28-29th May 2023 (6 DSRs) of SEIAA, Jharkhand would reveal that all DSRs for Sand Mining recommended by SEAC for approval, were subsequently approved by the SEIAA with the same terms and conditions, in verbatim without any reason or application of mind by adopting a '*cut copy paste'* exercise.

A Copy of the Minutes of the SEIAA, UP dated 1-2nd April 2023, 27th-28th April, 2023 and 28-29th May 2023 approving the Impugned DSR for District Godda along with 23 other DSRs in the State of Jharkhand is enclosed herein and marked as **Annexure A-10 [Colly] [at page 321 to 332].**

A Copy of the Impugned DSR for District Godda prepared by the NABET accredited Consultant is enclosed herein and marked as **Annexure A-11 [at page 333 to 541].**

xvi. That the Respondent No. 4, District Mining Officer, Godda issued the Impugned Auction Notice dated 02.09.2025 for 16 Sand Ghats.

A Copy of the Impugned E-Auction Notice dated 02.09.2025 issued by the District Mining Officer, Godda is enclosed herein and marked as **Annexure A-12 [at page 542 to 560].**

xvii. Hence the present OA.

GROUNDS

The Applicant herein seeks to file the present OA on the following among other grounds:

A. Because the Impugned DSR is *non-est* and void in law having been prepared by a private consultant without jurisdiction, and not by the Sub-Divisional Committee as directed by the Hon'ble Supreme Court in *Pawan Kumar*.

It is submitted that pursuant to the directions passed by the Hon'ble Apex Court in *Pawan Kumar*, a DSR could only have been prepared by the Sub-Divisional Committee itself, and the Sub-Divisional Committee could not have delegated the said obligation and responsibility on a third party (LIC v. Escorts), let alone by a private consultant in light of the reasons stated in Para 15 of the said Judgment. Ergo, the subsequent vetting of the DSR prepared initially by the Consultant would not cure such substantive defect.

B. Because the Impugned DSR of District Godda has been prepared without adherence to the EMGSM, 2020 Guidelines issued by the MOEF, which was subsequently approved by the Expert bodies, SEAC/SEIAA, UP in a hurried, casual, arbitrary and perfunctory manner, without application of mind. It is submitted that the Impugned DSR of District Godda is not prepared in terms of Clause 4.1.1, 4.3, 5.0 etc of the EMGSM, 2020 which is demonstrated in the Table mentioned in the Synopsis to this OA.

The Hon'ble Supreme Court in the case of *Pawan Kumar'*, (2022) 2 SCC 348 held that the EMGSM, 2020 Guidelines should be strictly adhered to while preparing District Survey Reports. Further, in the recent Judgment of '*State of UP v Gaurav Kumar'*, *2025 SCC OnLine SC 1069* the Hon'ble Apex Court reiterated that DSR is a document of seminal importance and the procedure prescribed under the EIA, 2006 (Appendix X) is to be meticulously followed.

C. Because the SEAC/SEIAA, UP being expert bodies ought to have appraised the Impugned DSR after ensuring that it complies with the SSMG, 2016 and EMGSM, 2020. The Hon'ble Supreme Court in ***'Bengaluru Development Authority v Sudhakar Hegde & Ors'***, (2020) 15 SCC 63 has discussed the duties of the expert bodies and held as under:

"88. The reasons furnished by the SEAC must be assessed with reference to the norm that it is required to submit reasons for its recommendation. The analysis by the SEAC is, to say the least, both perfunctory and fails to disclose the reasons upon which it recommended to the SEIAA the grant of EC for the PRR project. The SEAC proceeds merely on the reply furnished by the appellant to the queries raised by the SEAC at its 115th meeting dated 11-08-2014 to 12-08-2014. In this view, the procedure followed by the SEAC suffers from a non- application of mind.

"182. ... a duty is cast upon the EAC or SEAC as the case may be to apply the cardinal principle of Sustainable Development and Principle of Precaution while screening, scoping, and appraisal of the projects or activities. While so, it is evident in the instant case that the EAC has miserably failed in the performance of its duty not only as mandated by the EIA Notification, 2006, but has also disappointed the legal expectations from the same. For a huge project as the one in the instant case, the consideration for approval has been done in such a cursory and arbitrary manner without taking note of the implication and importance of environmental issues. ...Thus, the EAC has not conducted itself as mandated by the EIA Notification, 2006 since it has not made proper appraisal by considering the available materials and objections in order to make proper evaluation of the project before making a recommendation for grant of EC."

The Court held that the EAC had not conducted a proper appraisal given its failure to consider the available material and objections before it. The EAC had thus failed to conduct a proper evaluation of the project prior to forwarding to the regulatory authority its recommendation.

"92. The SEAC, as an expert body, must speak in the manner of an expert. Its remit is to apply itself to every relevant aspect of the project bearing

upon the environment and scrutinise the document submitted to it. The SEAC is duty bound to analyse the EIA report. Apart from its failure to repudiate a process conducted beyond the prescribed time period stipulated by the MoEF-CC, the SEAC failed to apply its mind to the abject failure of the appellant in conducting the EIA process leading upto the submission of the EIA report for the grant of EC. The SEAC is not required to accept either the EIA report or any clarification sent to it by the project proponent. In the absence of cogent reasons by the SEAC for the recommendation of the grant of EC, the process by its very nature, together with the outcome, stands vitiated.

97. The SEAC, as an expert body abdicated its role and function by relying solely on the responses submitted to it by the appellant and failing to comply with its obligations under the OMs issued by the MoEF- CC from time to time. In failing to provide adequate reasons for its recommendation to the SEIAA for the grant of an EC, it failed in its fundamental duty of ensuring both the application of mind to the materials presented to it as well as the furnishing of reasons which it is mandated to do under the 2006 Notification."

D. Because the Impugned DSR approved mining in lease areas that are are wholly or substantially submerged under water, and includes the entire River channel/ River Area which is *per se* illegal and impermissible.

The Applicant submits that including submerged water areas within the Mining leases is to maximize revenue and to circumvent Clause 4.3(r) of the EMGSM, 2020 whereby only 60% of the minerals in the Mining lease area is permitted to be extracted. Ergo, by including the submerged water areas, the total mining area is being artificially increased to thereby permit more than 60% of the total minable reversed which is other-wise prohibited.

E. Because the Impugned Auction Notice dated 02.09.2025 seeks to auction 8 Mining lease Areas for which No NOC was granted by the Respondent No. 7, Divisional Forest Officer. Hence in respect of such

8 Leases, even otherwise the Auction notice ought to be quashed by applying the doctrine of severability.

F. Because Furthermore, certain Mining leases in Category I which require an EC are in a Cluster situation (within 500 m of each other) with Category 2 Mining leases, however in violation of Appendix XI of the EIA, 2006, Clusters have no-where been defined in the DSR. Resultantly, the said Mines which are required to be appraised by a common EIA/ EMP/ Public hearing, would be appraised separately.

The Applicant submits that lease less than 5 ha without cluster have been earmarked only to evade an EIA/EMP and Public hearing and permitting the same would be violative of the SSMG, 2016 and against the letter and spirit of the decision of the Hon'ble Supreme Court in *Deepak Kumar*.

G. Because the Impugned Auction Notice dated 02.09.2025 is auctioned without conducting a prior replenishment study in the year 2024 or 2025, in violation of the directions passed by this Hon'ble Tribunal in *Raj Kumar*.

The Hon'ble Supreme Court in the case of ***UT of J&K v. Raja Muzaffar Bhat,*** CA No. 8055 of 2022 vide Judgment dated 22.08.2025 has held that replenishment studies are mandatory before conducting River mining operations, and absence of such study is detrimental to the Environment.

H. Because under Impugned Auction Notice dated 02.09.2025 is sought to be auctioned wherein the mineable quantities are more than the replenished rate as per the Replenishment Study of 2022/ DSR as indicated in the table given in Synopsis of the OA, and is

impermissible under the provisions of the SSMG 2016, EMGSM 2020.

I. Because the Hon'ble Supreme Court vide its Judgment dated 08.05.2025 in ***'State of Uttar Pradesh v Gaurav Kumar,'*** *2025 SCC OnLine SC 1069* has held that DSR is a document of seminal importance and the procedure prescribed under the EIA, 2006 (Appendix X) is to be meticulously followed. The Hon'ble Supreme Court has further held that the mineable quantity ought to be as per the replenished rate, which is as under:

> *"4.2. The rate at which we are mining sand, for whatsoever purposes, is much higher than the replenishment rate. This imbalance between consumption and natural replenishment is what becomes the cause of worry. The geological processes that produce sand—like the weathering of rocks and the movement of sediments through rivers cannot match the rate at which we are extracting sand from nature. Further, human interventions, such as damming rivers or diverting their natural courses block the natural downstream flow of sediment. As a result, sand fails to reach the places where it would normally accumulate, the river deltas and coastal areas. Beaches are wearing away faster than natural forces can restore them, and riverbeds are being emptied more quickly than upstream erosion can replenish them."*

A Copy of the Judgment dated 3.05.2025 passed by the Hon'ble Supreme Court in Civil Appeal No. 14170 of 2024, *State of UP v. Gaurav Kumar* is enclosed herein and marked as **Annexure A-13__ [at page 561 to 583].**

J. Because this Hon'ble Tribunal in vide its Judgment dated 19.07.2023 in OA No. 284 of 2023 being *Anuj Singh v. State of UP*, after appreciating that the above provisions in the SSMG, 2016 & EMGSM, 2020, directed the State of UP (Mining department) to

'ensure that quantity of minerals directed to be mined will not exceed the quantity under replenishment study'.

K. Because this Hon'ble Tribunal vide its recent Judgment dated 22.04.2025 passed in OA No. 532 of 2023 being *'Balbir Sandhu v Union of India'* directed that *"Quantity of minerals directed to be mined should not exceed the quantity under replenishment study and should be limited to auctioned as well as sustainably permissible quantity."*

L. Because the consequence of not quashing and setting aside the Impugned faulty and defective DSR and the subsequent Auction Notice would invariably result in excessive, disproportionate and unsustainable mining which would have a serious and direct adverse impact on the River's physical habitat characteristics, including bed elevation, substrate composition, stability, velocity, depth, turbidity, sediment transport, apart from causing irreparable harm to the biodiversity and result in flood risk and loss of habitat.

LIMITATION

That the instant Application is being filed within the period of limitation as prescribed under the provisions of Section 14 and 15 of the National Green Tribunal Act, 2010 as the Impugned DSR (final) has for the first time been uploaded on the District portal only in July, 2025. Even otherwise, the Impugned DSR is being acted upon on 02.09.2025 with issuance of the Impugned Auction Notice thus giving rise to a fresh cause of action which is continuing and subsisting.

Hence the Applicant respectfully submits that the present OA has been filed within the period of limitation under Section 14 and 15 of the NGT Act, 2010.

PRAYER

In light of the above stated facts and circumstances, it is most respectfully prayed that this Hon'ble Tribunal may be pleased to pass the following orders:

i. Pass an Order quashing and setting aside the Impugned DSR for District Godda, State of Jharkhand as approved by the SEAC, UP on 21.03.2023 and SEIAA, UP on 1.04.2023, being in flagrant violation of the EIA, 2006, SSMG, 2016 and EMGSM, 2020 and Judgments passed by the Hon'ble Supreme Court and this Hon'ble Tribunal; and

ii. Pass an Order quashing and setting aside the Impugned Auction Notice dated 02.09.2025 issued by the Respondent No. 4, District Mining officer, Godda, Jharkhand; and

iii. Pass an Order directing the Respondents to prepare a fresh DSR for District Godda and/or conduct fresh Auctions after conducting a Replenishment Study for the year 2025 (or latest available Replenishment Study) by a credible Central or State institute, in strict compliance of the EIA, 2006, SSMG, 2016 & EMGSM, 2020; and

iv. Pass an order setting aside any Letter of Intent, Environmental clearance and/or Mining leases if any, granted by the Respondents, in furtherance of the Impugned Auction Notice dated 02.09.2025; and

v. Pass any other orders as the Hon'ble Tribunal may deem fit and proper in the facts and circumstances of the instant case.

AND FOR THIS ACT OF KINDNESS THE APPLICANT AS IN DUTY BOUND SHALL EVER PRAY.

FILED BY:

[VANSHDEEP DALMIA]
COUNSEL FOR THE APPLICANT
206, Jor Bagh, New Delhi-110003
M. No. 9810077085
Email id: vanshdeepdalmia@gmail.com

Place: Kolkata
Filed on: 15.09.2025

Serial No. 50 ..dated 15.9.25

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,
EASTERN ZONE BENCH, KOLKATA

ORIGINAL APPLICATION NO. OF 2025

IN THE MATTER OF:

RIZWAN ...APPLICANT

VERSUS

STATE OF JHARKHAND & ORS ...RESPONDENTS

AFFIDAVIT

, Md Rizwan aged about years S/o Imran R/o Habibpur, Bhatuabadi Habibpur, Jagdishpur, Post and Police Station- Bhagalpur, District-Bhagalpur, Bihar - 813105, do hereby solemnly affirm and declare as under:

1. That I am the Applicant in the above Original Application and I am well conversant with the facts and circumstances of the case and competent to depose the present Affidavit.

2. That I have read and understood the contents of the accompanying OA which has been drafted on my instructions and I say that the facts stated therein are true to my knowledge.

3. That the averments of facts stated herein above are true to my knowledge, no part of it is false and nothing material has been concealed therefrom.

DEPONENT

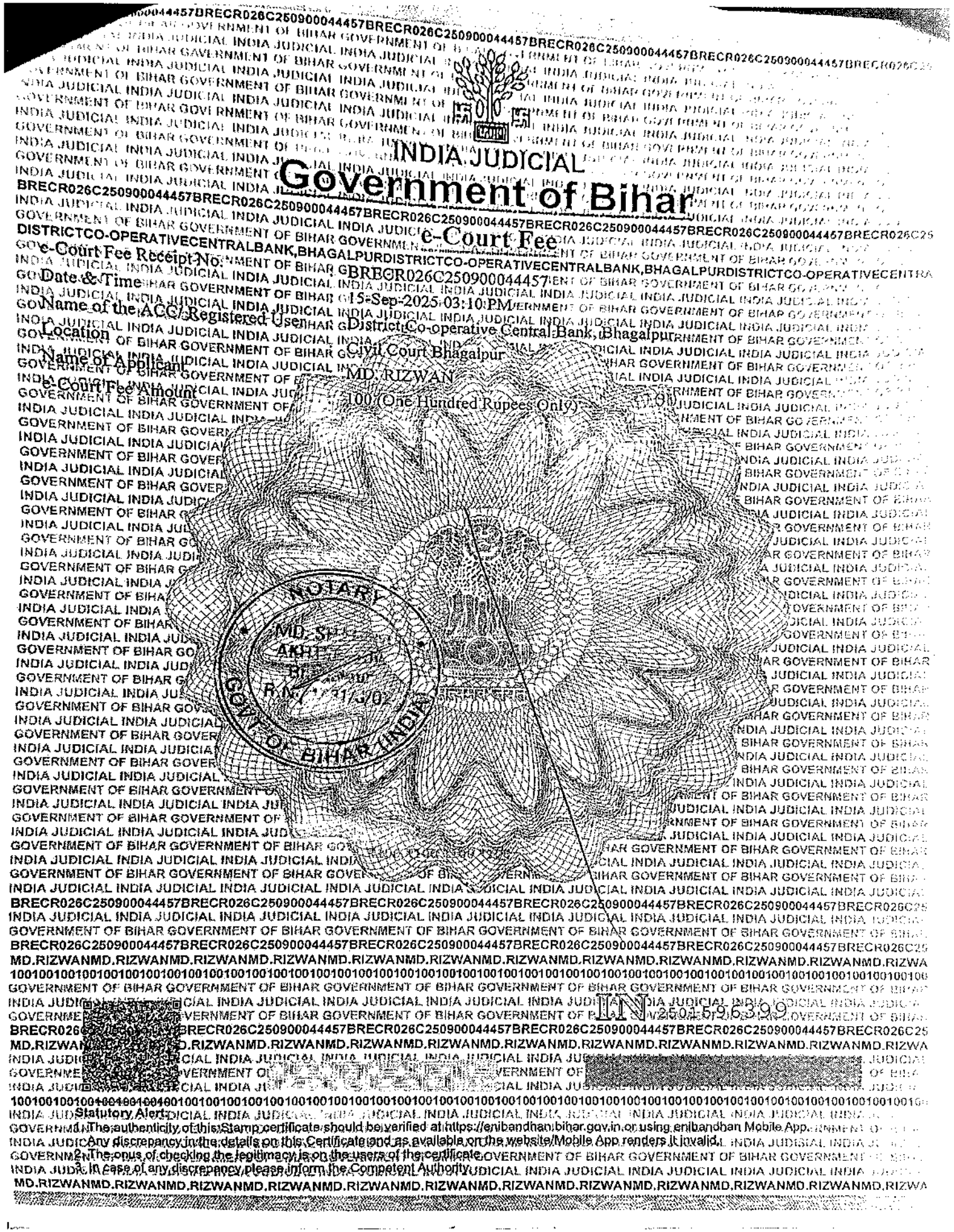
VERIFICATION:-

Verified at Bhagalpur on this 15th day September 2025, that the contents of the present affidavit are true and correct to my knowledge, no part of it is false and nothing material has been concealed therefrom.

DEPONENT

Identified by
Advocate
15.09.25
EN-1526/2000.

eponent.... Md. Rizwan
Who is identified by.....
lemnly affirm and declare
fore me
15.9.25
Md. Shamim Akhter
Notary, Bhagalpur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Location: Civil Court Bhagalpur
Name of Applicant: MD. RIZWAN
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IN-250596399
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3. The onus of checking the legitimacy is on the users of the certificate.
4. In case of any discrepancy please inform the Competent Authority.

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ANNEXURE A-1

(2012) 4 Supreme Court Cases 629

(BEFORE K.S.P. RADHAKRISHNAN AND C.K. PRASAD, JJ.)

DEEPAK KUMAR AND OTHERS .. Petitioners:

Versus

STATE OF HARYANA AND OTHERS .. Respondents.

IAs Nos. 12-13 of 2011 in SLPs (C) Nos. 19628-29 of 2009* with SLPs (C) Nos. 729-31 of 2011, 21833 of 2009, 12498-99 of 2010, SLPs (C) Nos. CC ... 16157 and 18235 of 2011,
decided on February 27, 2012

A. Environment Protection and Pollution Control — Mining — Minor minerals — Environmental impact assessment not required for mining areas of less than 5 ha — Invalidity — Mining/quarrying of minor minerals, boulders, gravel and sand in notified areas and riverbeds — Environmental consequences of — Necessary directions issued

— Inspection report submitted by CEC silent on serious illegal sand mining activities in rivers and prevailing degree of degradation of environment especially on riverbeds — Auction notices concerned stating that for mining leases of area less than 5 ha no environmental impact assessment clearance was required by MoEF, GoI Noti. dt. 14-9-2006 — No light thrown on question whether there has been, in fact, an attempt to flout the Noti. dt. 14-9-2006 by breaking the homogeneous area into pieces of less than 5 ha — Deep concern expressed by Supreme Court on possible adverse environmental/ecological consequences of mining leases on rivers of fragile Shivalik Hills

— Held, there are no materials to come to conclusion that removal of minor minerals, boulders, gravel and sand quarries, etc. covered by auction notices would not cause environmental degradation or threat to biodiversity — Auction notices were issued without conducting any study on possible environmental impact on/in riverbeds and elsewhere

— When faced with a situation where extraction of alluvial material within or near a riverbed has an impact on river's physical habitat characteristics it is not an answer to say that extraction is in blocks of less than 5 ha, separated by 1 km — Collective impact may be significant, therefore, necessity of a proper environmental assessment plan is not done away with — Hence, States/UTs directed that all leases of minor minerals including their renewal for an area of less than five hectares could be granted only after getting EIA (environmental impact assessment) clearance from MoEF, GoI — Recommendation issued to States to prepare "comprehensive mines plan" for contiguous stretches of mineral deposits to be suitably incorporated in Mineral Concession Rules, 1960 by Ministry of Mines, GoI — Constitution of India — Arts. 21, 48-A and 51-A(g) — Minor Minerals Conservation and Development Rules, 2010 — Mines and Minerals (Development and Regulation) Act, 1957, Ss. 3(c), 70 and 15

(Paras 3, 4, 8 to 15 and 20 to 29)

* From the Judgment and Order dated 15-5-2009 of the High Court of Punjab and Haryana at Chandigarh in CWPs Nos. 20134 of 2004 and 4758 of 2008

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B. **Environment Protection and Pollution Control — Mining — Effective mining plan framework — Necessity of — Recommendations issued by MoEF, Government of India and Model Rules, 2010 framed by Ministry of Mines, GoI — Non-implementation of, by States and UTs — Directions issued — Held, all States', UTs' MoEFs and Ministries of Mines directed to give effect to recommendations of MoEF, GoI and model guidelines within a period of six months from date of this order and to submit their compliance reports — Central Government also directed to take steps to bring into force Minor Minerals Conservation and Development Rules, 2010 at the earliest — Directions issued to State Governments and UTs to take immediate steps to frame necessary rules under S. 15 of Mines and Minerals (Development and Regulation) Act, 1957 — Further directions passed — Mines and Minerals (Development and Regulation) Act, 1957, S. 15** **(Paras 22 to 29)**

B-D/49566/C

Advocates who appeared in this case :

Mohan Jain, Additional Solicitor General, Narender Hooda, Senior Additional Advocate General, Dr Manish Singhvi, Additional Advocate General, P.S. Narasimha, Gopal Subramanium, Ranjit Kumar, P.S. Patwalia and Ranbir Chandra, Senior Advocates [Gaurav Agarwal, K. Parmeswar, Haris Beeran, P.K. Manohar, V. Venayagam Balan, Shish Pal Laler, N.P. Midha, Balbir Singh Gupta, D.K. Thakur, B.K. Prasad, S.N. Terdal, Shivendra Dwivedi, Tarjit Singh, Manjit Singh (for Kamal Mohan Gupta), Aseem Mehrotra, Mohd. F. Khan, Ms Shefai Jain, R.P. Singh, Shree Pal Singh, Devashish Bharuka, Radhashyam Jena, Tapesh Kr. Singh, Samir Ali Khan, Jitender Mohan Sharma, Sandeep Singh, Vibhor Verdhan, Sameer Singh, Mohit Kr. Shah, Ashutosh Singh, Devanshu K. Devesh, Irshad Ahmad, Sarvesh Singh, A. Benayagamblan, Manish Pitale, Wasi Haider, C.S. Ashri, Ms Asha G. Nair, Sanand Ramakrishnan, Ms Meena C.R., M/s Karanjawala & Co., Prakash Kr. Singh, Vijay Panjwani, Ms Anitha Shenoy, Ms Vibha Datta Makhija, D.S. Mahra, Ms H. Wahi, D.K. Sinha, Milind Kumar, Krishananand Pandey, Kamlendra Mishra, Ms Rachana Srivastava, B.S. Banthia, Gopal Singh, Anil Srivastava, M/s Corporate Law Group, T.V. George, Naresh K. Sharma, Prashant Bhushan, Shibashish Misra, Ms Prerna Mehta, S.M. Jadhav, Shiv Kr. Suri, G. Prakash, E.M.S. Anam, Subhro Sanyal, Himinder Lal, Moinuddin Ansari, L.R. Singh, C.D. Singh, Ms Lalitha Kaushik, K.S. Bhati, Neeraj Shekhar, Ms Sumita Hazarika, M/s Suresh A. Shroff & Co., S. Prasad, M/s Khaitan & Co., Ms Pragati Neekhra, Naresh K. Sharma, R. Nedumaran, K.K. Mani, Ms Srikala Gurukrishna Kumar, S. Srinivasan, Prashant Kumar, L.K. Pandey, Shiv Prakash Pandey, Ms Sangeeta Kumar, Nikhil Nayyar, V. Ramasubramanian, Pratap Venugopal, Ms Namrata Sood (for M/s K.J. John & Co.), R. Ayyam Perumal, Ms Prabha Swami, M.A. Chinnasamy, C.N. Sreekumar, Naveen R. Nath, Ms Revathy Raghavan, L.C. Agrawala and Ashwani Bhardwaj, Advocates] for the appearing parties.

The Order of the Court was delivered by

K.S.P. RADHAKRISHNAN, J. IAs Nos. 12-13 of 2011 are allowed. SLPs (C) Nos. 12498-99 of 2010 be detagged and be listed after two weeks.

2. The Department of Mines and Geology, Government of Haryana issued an auction notice dated 3-6-2011 proposing to auction the extraction of minor minerals, boulders, gravel and sand quarries of an area not exceeding 4.5 ha in each case in the district of Panchkula, auction notices

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dated 8-8-2011 in the districts of Panchkula, Ambala and Yamuna Nagar exceeding 5 ha and above, quarrying minor mineral, road metal and masonry stone mines in the district of Bhiwani, stone and sand mines in the district of Mohindergarh, slate stone mines in the district of Rewari, and also in the districts of Kurukshetra, Karnal, Faridabad and Palwal, with certain restrictions for quarrying in the riverbeds of Yamuna, Tangri, Markanda, Ghaggar, Krishnavati River basin, Dohan River basin, etc. The validity of those auction notices is under challenge before us, apart from the complaint of illegal mining going on in the States of Rajasthan and Uttar Pradesh.

3. When the matter came up for hearing on 25-11-2011, we passed an order directing the CEC to make a local inspection with intimation to MoEF, the States of U.P., Rajasthan and Haryana with regard to the alleged illegal mining going on in the States of Uttar Pradesh, Rajasthan and also with regard to the areas identified for mining in the State of Haryana and submit a report. We also directed the CEC to examine whether there has been an attempt to flout EIA Notification dated 14-9-2006 by breaking the homogeneous area into pieces of less than 5 ha. CEC was also directed to examine whether the activities going on in that area have any adverse environmental impact.

4. CEC, in response to our order, submitted a detailed report on 4-1-2012. However, the report is silent with regard to the disturbing trend of serious illegal and unrestricted upstream, instream and flood plain sand mining activities and the prevailing degree of degradation of the sites and the environment, especially on the riverbeds mentioned earlier. The report of CEC however states that the auction notice also refers to mining leases of less than 5 ha and hence no environmental clearance need be obtained as per the MoEF Notification dated 14-9-2006. No light is also thrown on the question whether there has been, in fact, an attempt to flout the Notification dated 14-9-2006 by breaking the homogeneous area into pieces of less than 5 ha and the possible environmental or ecological impact on quarrying of minor minerals.

5. Mr Patwalia, learned Senior Counsel appearing for the petitioners, submitted that the CEC report is silent about those aspects and also whether 1 km distance has been maintained between the mining blocks of less than 5 ha. The learned counsel also submitted that mining areas earmarked are at the foothills of fragile Himalayan ranges known as Shivalik Hills, which are spread over the districts of Panchkula, Ambala and Yamuna Nagar and the illegal and excessive mining has caused serious environmental degradation and ecological impact, and no environmental impact assessment has ever taken place in areas earmarked for mining especially on the riverbeds.

6. Shri Gopal Subramanium, learned Senior Counsel appearing for the State of Haryana, submitted that the State has taken adequate and effective precautions to maintain 1 km separation between mining blocks of less than 5 ha each and that the auction notice dated 3-6-2011 itself has imposed strict restrictions on quarrying in the riverbeds so also the auction notice dated

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8-8-2011. Further, it was pointed out that the Notification dated 14-9-2006 would not apply for quarrying minor minerals from areas of less than 5 ha and therefore, no environmental impact assessment needs to be undertaken either at the instance of the State Government or the project proponent.

7. Shri Mohan Jain, learned Additional Solicitor General, appearing for MoEF submitted that the grant or allotment of mining licence/lease of smaller plots of less than five hectares should not be encouraged from the environmental point of view and that the applicability of EIA Notification of 2006, has to be seen in its letter and spirit so as to ensure environmental safeguards in place and implemented for sustainable mining. The learned counsel also assured, if environmental clearance is sought for covering a mining area of less than five hectares, the same shall be immediately attended to and necessary clearance would be granted in accordance with law.

8. We have no materials before us to come to the conclusion that the removal of minor minerals, boulders, gravel, sand quarries, etc. covered by the auction notices dated 3-6-2011 and 8-8-2011, in the places notified therein and also in the riverbeds of Yamuna, Ghaggar, Tangri, Markanda, Krishnavati River basin, Dohan River basin, etc. would not cause environmental degradation or threat to the biodiversity, destroy riverine vegetation, cause erosion, pollute water sources, etc. Sand mining on either side of the rivers, upstream and instream, is one of the causes for environmental degradation and also a threat to the biodiversity. Over the years, India's rivers and riparian ecology have been badly affected by the alarming rate of unrestricted sand mining which damage the ecosystem of rivers and the safety of bridges, weakening of riverbeds, destruction of natural habitats of organisms living on the riverbeds, affects fish breeding and migration, spells disaster for the conservation of many bird species, increases saline water in the rivers, etc.

9. 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, instream roughness elements, depth, velocity, turbidity, sediment transport, stream discharge and temperature. Altering these habitat characteristics can have deleterious impacts on both instream 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.

10. We are expressing our deep concern since we are faced with a situation where the auction notices dated 3-6-2011 and 8-8-2011 have permitted quarrying, mining and removal of sand from instream and upstream of several rivers, which may have serious environmental impact on

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ephemeral, seasonal and perennial rivers and riverbeds and sand extraction may have an adverse effect on biodiversity as well. Further, it may also lead to bed degradation and sedimentation having a negative effect on the aquatic life. The rivers mentioned in the auction notices are on the foothills of the fragile Shivalik Hills. Shivalik Hills are the source of rivers like Ghaggar, Tangri, Markanda, etc. River Ghaggar is a seasonal river which rises up in the outer Himalayas between Yamuna and Satluj and enters Haryana near Pinjore, District Panchkula, which passes through Ambala and Hissar and reaches Bikaner in Rajasthan. River Markanda is also a seasonal river like Ghaggar, which also originates from the lower Shivalik Hills and enters Haryana near Ambala. During monsoon, this stream swells up into a raging torrent, notorious for its devastating power, as also, River Yamuna.

11. We find that it is without conducting any study on the possible environmental impact on/in the riverbeds and elsewhere the auction notices have been issued. We are of the considered view that when we are faced with a situation where extraction of alluvial material within or near a riverbed has an impact on the river's 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 ha, separated by 1 km, because their collective impact may be significant, hence the necessity of a proper environmental assessment plan.

12. Possibly this may be the reason that in the affidavit filed by MoEF on 23-11-2011 along with Annexure 2, report, the following stand has been taken:

> "The Ministry is of the opinion that where the mining area is homogenous, 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 the Committee on Minor Minerals, under the Chairmanship of the Secretary (Environment & Forests) with representatives of various State Governments as members including the States 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."

13. Situations referred to earlier prevail not only in the State of Haryana but also in the neighbouring and other States of the country as well and those issues had come up for serious deliberations before the Government of India, on various occasions.

14. The Government of India was receiving various reports regarding the adverse impacts on riverbeds and groundwater due to quarrying/mining of minerals. The Mines and Minerals (Development and Regulation) Act, 1957 empowers the State Governments to make rules in respect of minor minerals.

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It was noticed that proposals for mining of major minerals typically undergo environmental impact assessment and environmental clearance procedure, but due attention has not been given to environmental aspects of mining of minor minerals. Environmental Impact Assessment Notification of 1994 did not apply to the mining of minor minerals, noticing that minor minerals were brought under the ambit of the Environmental Impact Assessment Notification of 2006 and as per the said notification mining of minerals with a lease area of 5 ha and above require prior environmental clearance.

15. MoEF's attention was drawn to several instances across the country regarding damage to lakes, riverbeds and groundwater leading to drying up of waterbeds and causing water scarcity on account of quarry/mining leases and mineral concessions granted under the Mineral Concession Rules framed by the State Governments under Section 15 of the Mines and Minerals (Development and Regulation) Act, 1957. MoEF noticed that less attention was given on environmental aspects of mining of minor minerals since the area was small, but it was noticed that the collective impact in a particular area over a period of time might be significant. Taking note of those aspects, MoEF constituted a Core Group under the Chairmanship of the Secretary (Environment & Forests) to look into the environmental aspects associated with mining of minor minerals, vide its Order dated 24-3-2009.

16. The terms of reference to the Core Group were as under:

(*i*) To consider the environmental aspects of mining of minor minerals (quarrying as well as riverbed mining) for their integration into the mining process.

(*ii*) Specific safeguard measures required to minimise the likely adverse impacts of mining on environment with specific reference to impact on water bodies as well as groundwater so as to ensure sustainable mining.

(*iii*) To evolve model guidelines so as to address mining as well as environmental concerns in a balanced manner for their adoption and implementation by all the mineral-producing States.

17. The Core Group held its first meeting on 7-7-2009 and discussed the impact that may be caused by quarrying/mining of minor minerals on riverbeds and groundwaters. It was noticed that individual mines of minor minerals being small in size may have insignificant impact, however, their collective impacts, taking into consideration various mines on a regional scale, is significantly adverse. It was, therefore, felt necessary to consider various aspects since appropriate guidelines have to be issued on the basis of the report of the Committee. The issues which were brought up for consideration were: (*i*) the need to relook the definition of minor mineral, (*ii*) minimum size of lease for adopting eco-friendly scientific mining practices, (*iii*) period of lease, (*iv*) cluster of mine approach for addressing and implementing EMP in case of small mines, (*v*) depth of mining to minimise adverse impact on hydrological regime, (*vi*) requirement of mine plan for minor minerals, similar to major minerals, and (*vii*) reclamation of mined out area, post mine land use, progressive mine closure plan, etc.

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18. Comments and inputs from various States and experts were also invited so as to prepare a report for consideration of MoEF. Based on the discussion held and subsequent inputs received, a draft report was prepared and circulated to all members for their further inputs. The report was further discussed on 29-1-2010 for its finalisation. The observations/comments made during the meeting were incorporated in the report and it was again circulated to all members for their consideration. The report so circulated was ultimately finalised. The decision taken by MoEF affects generally the mining of minor minerals including the riverbed mining throughout the country.

19. For an easy reference, we may extract the issues and recommendations made by MoEF, which are as follows:

> "**4.0.** ***Issues and recommendations***
>
> **4.1.** *Definition of minor mineral*
>
> The term 'minor mineral' is defined in clause (*e*) of Section 3 of the MMDR Act, 1957 as:
>
> > '**3.** (*e*) "**minor minerals**" means building stones, gravel, ordinary clay, ordinary sand other than sand used for prescribed purposes, and any other mineral which the Central Government may, by notification in the Official Gazette 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:
>
> > '**70.** ***Sand not be treated as minor mineral when used for certain purpose***.—Sand shall not be treated as a minor mineral when used for any of the following purposes, namely:
> >
> > (*i*) purpose of refractory and manufacture of ceramic;
> >
> > (*ii*) metallurgical purposes:
> >
> > (*iii*) optical purposes;
> >
> > (*iv*) purposes of stowing in coal mines;
> >
> > (*v*) for manufacture of silvicrete cement:
> >
> > (*vi*) manufacture of sodium silicate; and
> >
> > (*vii*) for manufacture of pottery and glass.'
>
> Additionally, the Central Government has declared the following minerals as minor minerals: (*i*) boulder, (*ii*) shingle, (*iii*) chalcedony pebbles used for ball mill purposes only, (*iv*) limeshell, kankar and limestone used in kilns for manufacture of lime used as building material, (*v*) murrum, (*vi*) brick-earth, (*vii*) fuller's earth, (*viii*) bentonite, (*ix*) road metal, (*x*) reh-matti, (*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 levelling 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

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production, level of mechanisation, export and import, etc. There do exist some minor mineral mines of silica sand and limestone where the scale of mechanisation 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 operation 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 any such system based on end usage in other countries for classifying minerals into major and minor categories. Thus, there is a need to relook at the definition of 'minor minerals' per se.

It is, therefore, recommended that the 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.

4.2. *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 50 × 50 m. In most of the States area of permit is not specified in the Rules. It has recently been observed by the Punjab and Haryana High Court in its order dated 15-5-2009 that the State Government apparently granting short-term permits by dividing the mining area into small zones in effect 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 the Ministry of Mines.*

4.3. *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 of 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

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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.

a

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 therefrom.*

b

4.4. *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 minimising excessive pressure on road infrastructure. The respective State Governments/mine owners' associations may facilitate implementation of Environment Management Plans in such cluster of mines.*

c

4.5. *Requirement of mine plan for minor minerals*

d

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

e

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

f

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.

4.6. *Creation of separate corpus for reclamation/rehabilitation of mines of minor minerals*

Mining of minor minerals, in our country, is by and large an

g

unorganised sector and is practised 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 out 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*

h

may be utilised for reclamation and rehabilitation of mined out areas. The respective State Governments may work out a suitable mechanism

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for creation of such corpus on the 'polluter pays' principle. An organisational structure may also need to be created for undertaking and monitoring these activities.

4.7. *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 subsurface 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 hydrogeological 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 the Central Groundwater Authority/State Groundwater Board, a decision regarding restriction on depth of mining for any area should be taken on case-to-case basis.

4.8. *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.*

4.9. *Riverbed mining*

4.9.1. Environment damage being caused by unregulated riverbed mining of sand, bazari and boulders is attracting considerable attention including in the courts. The following recommendations are therefore made for the riverbed 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 stretchwise, 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.*

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5.0. *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 the 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 guidelines to be followed by all States." (emphasis supplied)

20. The Report clearly indicates that operation of mines of minor minerals needs to be subjected to strict regulatory parameters as that of mines of major minerals. It was also felt necessary to have a relook to the definition of "minor minerals" per se. The necessity of the preparation of "comprehensive mines plan" for contiguous stretches of mineral deposits by the respective State Governments may also be encouraged and the same be suitably incorporated in the Mineral Concession Rules, 1960 by the Ministry of Mines.

21. Further, it was also recommended that the States, Union Territories would see that 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 mined out areas. Mining plan should take note of the level of production, level of mechanisation, type of machinery used in the mining of minor minerals, quantity of diesel consumption, the number of trees uprooted, export and import of mining minerals, environmental impact, restoration of flora and host of other matters referred to in the 2010 Rules. A proper framework has also to be evolved on cluster of mining of minor minerals for which there must be a *Regional Environmental Management Plan*. Another important decision taken was that while granting of 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 to be duly noted.

22. The Minister for (Environment and Forests) wrote DO Letter dated 1-6-2010 to all the Chief Ministers of the States to examine the Report and to issue necessary instructions for incorporating the recommendations made in the Report in the Mineral Concession Rules for mining of minor minerals

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under Section 15 of the Mines and Mineral (Development and Regulation) Act, 1957. Following are the key recommendations reiterated in the letter:

"(*1*) Minimum size of mine lease should be 5 ha.

(*2*) Minimum period of mine lease should be 5 years.

(*3*) A cluster approach to mines should be taken in case of smaller mine leases operating currently.

(*4*) Mine plans should be made mandatory for minor minerals as well.

(*5*) A separate corpus should be created for reclamation and rehabilitation of mined out areas.

(*6*) Hydrogeological reports should be prepared for mining proposed below groundwater table.

(*7*) For riverbed mining, leases should be granted stretchwise, depth may be restricted to 3m/water level, whichever is less, and safety zones should be worked out.

(*8*) The present classification of minerals into major and minor categories should be re-examined by the Ministry of Mines in consultation with the States."

23. The Ministry of Mines, Government of India sent Communication No. 296/7/2000/MRC dated 16-5-2011 called "Environmental Aspects of Quarrying and of Minor Minerals—Evolving of Model Guidelines" along with a draft model guidelines calling for inputs before 30-6-2011. Draft rules called Minor Minerals Conservation and Development Rules, 2010 were also put on the website. Further, it may be noted that Section 15(1-A)(*i*) of the Act specifies:

"**15. (1-A)(*i*)** the manner in which rehabilitation of flora and other vegetation such as trees, shrubs and the like destroyed by reason of any quarrying or mining operations shall be made in the same area or in any other area [once] selected by the State Government (whether by way of reimbursement of the cost of rehabilitation or otherwise) by the person holding the quarrying or mining lease;"

24. We are of the view that all State Governments/Union Territories have to give due weight to the abovementioned recommendations of MoEF which are made in consultation with all the State Governments and Union Territories. The Model Rules of 2010 issued by the Ministry of Mines are very vital from the environmental, ecological and biodiversity point of view and therefore the State Governments have to frame proper rules in accordance with the recommendations, under Section 15 of the Mines and Minerals (Development and Regulation) Act, 1957.

25. Quarrying of river sand, it is true, is an important economic activity in the country with river sand forming a crucial raw material for the infrastructural development and for the construction industry but excessive instream sand and gravel mining causes the degradation of rivers. Instream mining lowers the stream bottom of rivers which may lead to bank erosion. Depletion of sand in the streambed and along coastal areas causes the

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deepening of rivers which may result in destruction of aquatic and riparian habitats as well. Extraction of alluvial material as already mentioned from within or near a streambed has a direct impact on the stream's physical habitat characteristics.

26. We are of the considered view that it is highly necessary to have an effective framework of mining plan which will take care of all environmental issues and also evolve a long-term rational and sustainable use of natural resource base and also the bio-assessment protocol. Sand mining, it may be noted, may have an adverse effect on biodiversity as loss of habitat caused by sand mining will affect various species, flora and fauna and it may also destabilise the soil structure of river banks and often leaves isolated islands. We find that, taking note of those technical, scientific and environmental matters, MoEF, Government of India, issued various recommendations in March 2010 followed by the Model Rules, 2010 framed by the Ministry of Mines which have to be given effect to, inculcating the spirit of Article 48-A and Article 51-A(*g*) read with Article 21 of the Constitution.

27. The State of Haryana and various other States have not so far implemented the above recommendations of MoEF or the guidelines issued by the Ministry of Mines before issuing auction notices granting short-term permits by way of auction of minor minerals boulders, gravel, sand, etc., in the riverbeds and elsewhere of less than 5 ha. We, therefore, direct 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 guidelines framed by the Ministry of Mines, within a period of six months from today and submit their compliance reports.

28. The Central Government also should take steps to bring into force the Minor Minerals Conservation and Development Rules, 2010 at the earliest. The State Governments and UTs also should take immediate steps to frame necessary rules under Section 15 of the Mines and Minerals (Development and Regulation) Act, 1957 taking into consideration the recommendations of MoEF in its Report of March 2010 and model guidelines framed by the Ministry of Mines, Government of India. Communicate the copy of this order to MoEF, Secretary, Ministry of Mines, New Delhi; Ministry of Water Resources, Central Government Water Authority; the Chief Secretaries of the respective States and Union Territories, who would circulate this order to the Departments concerned.

29. We, in the meanwhile, order that leases of minor minerals including their renewal for an area of less than five hectares be granted by the States/Union Territories only after getting environmental clearance from MoEF. Ordered accordingly.

\\TRUE COPY//

ANNEXURE A-2

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 15th January, 2016

S.O. 141(E).—Whereas in exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986), a draft notification for making certain amendments in the Environment Impact Assessment Notification, 2006, issued *vide* number S.O. 1533(E), dated the 14th September 2006, was published under sub-rule (3) of rule (5) of the Environment (Protection) Rules, 1986, vide number S.O. 2588(E), dated 22nd September, 2015, inviting objections and suggestions from all persons likely to be affected thereby, within a period of sixty days from the date of publication on which copies of Gazette containing the said notification were available to the public;

And whereas, copies of said notification were made available to the public on 22nd September 2015;

And whereas, all objections and suggestions received in response to the above mentioned draft notification have been duly considered by the Central Government;

And whereas, in pursuance to the order of Hon'ble Supreme Court dated the 27th February, 2012 in I.A. No.12-13 of 2011 in Special Leave Petition (C) No.19628-19629 of 2009, in the matter of Deepak Kumar etc. Vs. State of Haryana and Others etc., prior environmental clearance has now become mandatory for mining of minor minerals irrespective of the area of mining lease;

And whereas, as a result of the above said Order of Hon'ble Supreme Court, the number of cases which are now required to obtain prior environmental clearance has increased substantially;

And whereas, the Hon'ble National Green Tribunal, *vide* its order dated the 13th January, 2015 in the matter regarding sand mining has directed for making a policy on environmental clearance for mining leases in cluster for minor minerals;

And whereas, the State Governments have represented for streamlining the process of environmental clearance for mining of minor mineral;

And whereas, the Ministry of Environment, Forest and Climate Change in consultation with State Governments has prepared Guidelines on Sustainable Sand Mining detailing the provisions on environmental clearance for cluster, creation of District Environment Impact Assessment Authority and proper monitoring of sand mining using information technology and information technology enabled services to track the mined out material from source to destination;

Now, therefore, in exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 read with clause (d) of sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986, the Central Government hereby makes the following amendments in the said notification, namely:-

In the said notification,-

(a) in paragraph 2, after the words "in the said Schedule", the following words shall be inserted, namely:-

"and at District level, the District Environment Impact Assessment Authority (DEIAA) for matters falling under Category 'B2' for mining of minor minerals in the said Schedule";

(b) after paragraph 3, the following paragraph shall be inserted, namely:-

"3 A. District Level Environment Impact Assessment Authority:-

(1) A District Level Environment Impact Assessment Authority hereinafter referred to as the DEIAA shall be constituted by the Central Government under sub-section (3) of section 3 of the Environment (Protection) Act, 1986 comprising of four members including a Chairperson and a Member-Secretary.

(2) The District Magistrate or District Collector shall be the Chairperson of the DEIAA.

(3) The Sub-Divisional Magistrate or Sub-Divisional Officer of the district head quarter of the concerned district of the State shall be the Member-Secretary of the DEIAA.

(4) The other two members of the DEIAA shall be the senior most Divisional Forest Officer and one expert. The expert shall be nominated by the Divisional Commissioner of the Division or Chief Conservator of Forest, as the case may be. The term and qualifications of the expert fulfilling the eligibility criteria are given in Appendix VII to this notification.

(5) The members of the DEIAA who are serving officers of the concerned State Government or the Union territory Administration shall be *ex-officio* members except the expert member.

(6) The District Level Expert Appraisal Committee hereinafter referred to as the DEAC shall comprise of eleven members, including a Chairman and a Member-Secretary.

(7) The senior most Executive Engineer, Irrigation Department in the district of respective State Governments or Union territory Administration shall be the Chairperson of the DEAC.

(8) The Assistant Director or Deputy Director of the Department of Mines and Geology or District Mines Officer or Geologist of the district shall be the Member-Secretary of the DEAC in that order.

(9) A representative of the State Pollution Control Board or Committee, senior most Sub-Divisional Officer (Forest) in the district, representative of Remote Sensing Department or Geology Department or State Ground Water Department, one occupational health expert or Medical Officer to be nominated by the District Magistrate or District Collector, Engineer from Zila Parishad, and three expert members to be nominated by the Divisional Commissioner or Chief Conservator of Forest, as the case may be, shall be the other members of the DEAC. The term and qualifications of the experts fulfilling the eligibility criteria are given in Appendix VII to this notification.

(10) The members of the DEAC who are serving officers of the concerned State Government or the Union territory Administration shall be *ex-officio* members except the expert members.

(11) The District Magistrate or District Collector shall notify an agency to act as Secretariat for the DEIAA and the DEAC and shall provide all financial and logistic support for their statutory functions.

(12) The DEIAA and DEAC shall exercise the powers and follow the procedure as specified in the said notification, as amended from time to time.

(13) The DEAC shall function on the principle of collective responsibility and the Chairman shall endeavor to reach a consensus in each case and if consensus cannot be reached, the view of the majority shall prevail. ";

(c) in paragraph 4, after sub-paragraph (iii), the following sub-paragraph shall be inserted, namely:-

"(iv) The 'B2' Category projects pertaining to mining of minor mineral of lease area less than or equal to five hectare shall require prior environmental clearance from DEIAA. The DEIAA shall base its decision on the recommendations of DEAC, as constituted for this notification." ;

(d) for paragraph 5, the following paragraph shall be substituted, namely:-

"5. Screening, Scoping and Appraisal Committees:-

The same Expert Appraisal Committees (EACs) at the Central Government, SEACs at the State or Union territory level and DEAC at the district level shall screen, scope and appraise projects or activity in category 'A', 'B1 and B2' and 'B2' projects for mining of minor minerals of lease area less than and equal to five hectare respectively. EAC, SEACs and DEACs shall meet at least once every month.

(a) The composition of the EAC shall be as given in Appendix VI. The SEAC at the State or the Union territory level shall be constituted by the Central Government in consultation with the concerned State Government or the Union

territory Administration with identical composition. DEAC at the district level shall be constituted by the Central Government as per the composition given in paragraph 3 A.

(b) The Central Government may with the prior concurrence of the concerned State Governments or the Union territory Administration constitute one SEAC for more than one State or Union territory for reasons of administrative convenience and cost.

(c) The EAC and SEAC shall be reconstituted after every three years.

(d) The authorised members of the EAC, SEACs and DEACs concerned, may inspect any site connected with the project or activity in respect of which the prior environmental clearance is sought for the purpose of screening or scoping or appraisal with prior notice of at least seven days to the project proponent who shall provide necessary facilities for the inspection.

(e) The EAC, SEACs and DEACs shall function on the principle of collective responsibility. The Chairperson shall endeavor to reach a consensus in each case and if consensus cannot be reached the view of the majority shall prevail.";

(e) for paragraph 6, the following paragraph shall be substituted, namely:-

"6. Application for Prior Environmental Clearance (EC):-

An application seeking prior environmental clearance in all cases shall be made by the project proponent in the prescribed Form 1 annexed herewith and Supplementary Form 1A, if applicable, as given in Appendix II after the identification of prospective site (s) for the project and/or activities to which the application relates; and in Form 1M for mining of minor minerals up to five hectare under Category 'B2' projects, as given in Appendix VIII, before commencing any construction activity, or preparation of land, or mining at the site by the project proponent. The project proponent shall furnish along with the application, a copy of the pre-feasibility project report, in addition to Form 1, Form 1A, and Form 1M; and in case of construction projects or activities (item 8 of the Schedule), a copy of the conceptual plan shall be provided instead of pre-feasibility report.";

(f) in paragraph 7,-

(i) in sub-paragraph (i), under the heading "I. Stage (1)- Screening:", the existing sub-paragraph shall be lettered as sub-paragraph "(A)" and after sub-paragraph as so lettered, the following sub-paragraph shall be inserted, namely:-

"(B) The cases as specified in Appendix IX shall be exempted from prior environmental clearance." ;

(ii) after sub-paragraph 7 (ii), the following sub-paragraph shall be inserted, namely:-

"7 (iii) Preparation of District Survey Report for Sand Mining or River Bed Mining and Mining of other Minor Minerals:

(a) The prescribed procedure for preparation of District Survey Report for sand mining or river bed mining and mining of other minor minerals is given in Appendix X.

(b) The prescribed procedure for environmental clearance for mining of minor minerals including cluster situation is given in Appendix XI.";

(g) in paragraph 8,-

(i) for the letters and word "EAC or SEAC", the words and letters "EAC or SEAC or DEAC" shall be substituted;

(ii) for the words "Expert Appraisal Committee or State Level Expert Appraisal Committee" wherever they occur, the words "Expert Appraisal Committee or State Level Expert Appraisal Committee or District Level Expert Appraisal Committee" shall be substituted;

(h) in paragraph 9, in sub-paragraph (i),-

for the words "Expert Appraisal Committee or State Level Expert Appraisal Committee", the words "Expert Appraisal Committee or State Level Expert Appraisal Committee or District Level Expert Appraisal Committee" shall be substituted;

(i) in paragraph 10, after sub-paragraph (iii), the following sub-paragraph shall be inserted, namely:-

"(iv) The prescribed procedure for sand mining or river bed mining and monitoring is given in Appendix XII.";

(j) in paragraph 11, -

for the words "Expert Appraisal Committee or State Level Expert Appraisal Committee", the words "Expert Appraisal Committee or State Level Expert Appraisal Committee or District Level Expert Appraisal Committee" shall be substituted;

(k) in the Schedule,-

(i) for item 1 (a) and the entries relating thereto, the following item and entries shall be substituted, namely:-

(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	<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: (i) for project or activity of mining of minor minerals of Category 'B2' (up to 25 ha of mining lease area); (ii) River bed mining projects on account of inter-state boundary.

		irrespective of mining area		**Note:** (1) Mineral prospecting is exempted. ''; (2) The prescribed procedure for environmental clearance for mining of minor minerals including cluster situation is given in Appendix XI."; (3) The mining leases which have obtained environmental clearance under Environment Impact Assessment Notification, 1994 and Environment Impact Assessment Notification, 2006 shall not require fresh environmental clearance during renewal provided the project has valid and subsisting environmental clearance.
	(ii) Slurry pipelines (coal lignite and other ores) passing through national parks or sanctuaries or coral reefs, ecologically sensitive areas.	All projects.		

(l) after Appendix VI, the following appendices shall be inserted, namely:-

"APPENDIX VII

(See paragraph 3 A)

Qualifications and terms for the Experts in DEIAA and DEAC

1. **Qualification:** The person should have at least (i) 5 years of formal University training in the concerned discipline leading to a MA or M Sc Degree or (ii) in case of Engineering/ Technology/ Architectural discipline, 4 years formal training course together with prescribed practical training in the field leading to a B. Tech/ B.E./ B. Arch. Degree, or (iii) Other professional degree (e.g. MBA etc.) involving a total of 5 years of formal University training and prescribed practical training, or (iv) Prescribed apprenticeship/ article ship and pass examinations conducted by the concerned professional associations (e.g. Chartered Accountancy) or (v) a University degree, followed by two years of formal training in a University or Service Academy (e.g. MBA/MPA etc.). In selecting the individual professionals, experience gained by them in their respective fields will be taken note of.
2. **Expert:** A professional fulfilling the above eligibility criteria with at least 10 years of relevant experience in the field or with an advanced degree (e.g. Ph. D) in a concerned field with at least 5 years of relevant experience.
3. **Age:** Below 70 years. However, in the event of non-availability of paucity of experts in a given field, the maximum age of a member may be allowed up to 75 years.
4. **Fields:** Experts in Mining, Geology, Hydrology, Remote Sensing, Environment Quality, Environment Impact Assessment Process, Risk Assessment, Life Sciences, Marine Sciences, Forestry and Wildlife, Environmental Economics, Bio-diversity, and River Ecology.

5. **Tenure:** The maximum tenure of expert members shall be for two terms of three years each.

6. The Expert Members may not be removed prior to expiry of the tenure without cause and proper enquiry.

APPENDIX VIII
(See paragraph 6)
FORM 1 M
APPLICATION FOR MINING OF MINOR MINERALS UNDER CATEGORY 'B2' FOR LESS THAN AND EQUAL TO FIVE HECTARE

(II) Basic Information

(viii) Name of the Mining Lease site:
(ix) Location / site (GPS Co-ordinates):
(x) Size of the Mining Lease (Hectare):
(xi) Capacity of Mining Lease (TPA):
(xii) Period of Mining Lease:
(xiii) Expected cost of the Project:
(xiv) Contact Information:

Environmental Sensitivity

Sl. No.	Areas	Distance in kilometer / Details
1.	Distance of project site from nearest rail or road bridge over the concerned River, Rivulet, Nallah etc.	
2.	Distance from infrastructural facilities Railway line National Highway State Highway Major District Road Any Other Road Electric transmission line pole or tower Canal or check dam or reservoirs or lake or ponds In-take for drinking water pump house Intake for Irrigation canal pumps	
3.	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	
4.	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	
5.	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	
6.	Inland, coastal, marine or underground waters	
7.	State, National boundaries	
8.	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	
9.	Defence installations	
10.	Densely populated or built-up area, distance from nearest human habitation	
11.	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	
12.	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	
13.	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	
14.	Areas susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)	

15.	Is proposed mining site located over or near fissure / fracture for ground water recharge	
16.	Whether the proposal involves approval or clearance under the following Regulations or Acts, namely:- (a) The Forest (Conservation) Act, 1980; (b) The Wildlife (Protection) Act, 1972; (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status to be given.	
17.	Forest land involved (hectares)	
18.	Whether there is any litigation pending against the project and/or land in which the project is propose to be set up? (a) Name of the Court (b) Case No. (c) Orders or directions of the Court, if any, and its relevance with the proposed project.	

(Signature of Project Proponent
Along with name and address)

APPENDIX – IX
[See paragraph 7(i) (B)]
EXEMPTION OF CERTAIN CASES FROM 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.

APPENDIX - X
[See paragraph 7 (iii) (a)]
PROCEDURE FOR PREPARATION OF DISTRICT SURVEY REPORT

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

Identification of areas of aggradations or deposition where mining can be allowed; and identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited and calculation of annual rate of replenishment and allowing time for replenishment after mining in that area.

The report shall have the 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

In addition to the above, the report shall contain the following:

(a) District wise detail of river or stream and other sand source.
(b) District wise availability of sand or gravel or aggregate resources.
(c) District wise detail of existing mining leases of sand and aggregates.

A survey shall be carried out by the DEIAA with the assistance of Geology Department or Irrigation Department or Forest Department or Public Works Department or Ground Water Boards or Remote Sensing Department or Mining Department etc. in the district.

Drainage system with description of main rivers

S. No.	Name of the River	Area drained (Sq. Km)	% Area drained in the District

Salient Features of Important Rivers and Streams:

S. No.	Name of the River or Stream	Total Length in the District (in Km)	Place of origin	Altitude at Origin

Portion of the River or 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)

Mineral Potential

Boulder (MT)	Bajari (MT)	Sand (MT)	Total Mineable Mineral Potential (MT)

Annual Deposition

S. No.	River or Stream	Portion of the river or 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)
Total for the District						

A Sub-Divisional Committee comprising 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.

Methodology adopted for calculation of Mineral Potential:

The mineral potential is calculated based on field investigation and geology of the catchment area of the river or streams. As per the site conditions and location, depth of minable mineral is defined. The area for removal of the 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 or stream. For example in some hill States mineral constituents like boulders, river born Bajri, 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 or stream.

The District Survey Report shall be prepared for each minor mineral in the district separately and its draft shall be placed in the public domain by keeping its copy in Collectorate and posting it on district's website for twenty one days. The comments received shall be considered and if found fit, shall be incorporated in the final Report to be finalised within six months by the DEIAA.

The District Survey Report shall form the basis for application for environmental clearance, preparation of reports and appraisal of projects. The Report shall be updated once every five years.

APPENDIX - XI

[See paragraph 7 (iii) (b)]

PROCEDURE FOR ENVIRONMENTAL CLEARANCE FOR MINING OF MINOR MINERALS INCLUDING CLUSTER

The following policy shall be followed for environmental clearance of mining of minor minerals including cluster situation:-

(1). The data provided by the States (Sustainable Sand Mining Guidelines) shows that 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.

(2). 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.

(3). 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.

(4). Environmental clearance shall be applied for and issued to the individual project proponent. 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.

(5). The details of cluster Environment Impact Assessment or Environment Management Plan shall be reflected in each environmental clearance in that cluster and 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.

(6). 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.

(7). Form 1M, Pre-Feasibility Report and mine plan for Category 'B2' projects for mining of minor minerals shall be prepared by the Registered Qualified Person or Accredited Consultants of Quality Council of India, National Accreditation Board for Education and Training. The Environment Impact Assessment or Environment Management Plan for Category 'A' and Category 'B1' projects shall be prepared by the accredited consultants of Quality Council of India, National Accreditation Board for Education and Training.

(8). The SEIAAs shall have supervisory jurisdiction over the DEIAAs and decisions of DEIAA shall be reviewed by the SEIAA without prejudice to any provisions under any existing law.

Schematic Presentation of Requirements on Environmental Clearance of Minor Minerals 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 and other Minor Mineral 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

> 5 ha and < 25 ha	**'B2'**	Form –I, PFR and Approved Mine Plan and EMP	No	Yes	Project Proponent	Project Proponent	SEAC / SEIAA	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	EAC/ MoEFCC	
EC Proposal of Sand Mining and other Minor Mineral 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	

APPENDIX - XII

[See paragraph 10 (iv)]

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 not later than three months. 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.".

[No. Z-11013/98/2014-IA-II (M)]

MANOJ KUMAR SINGH, Jt. Secy.

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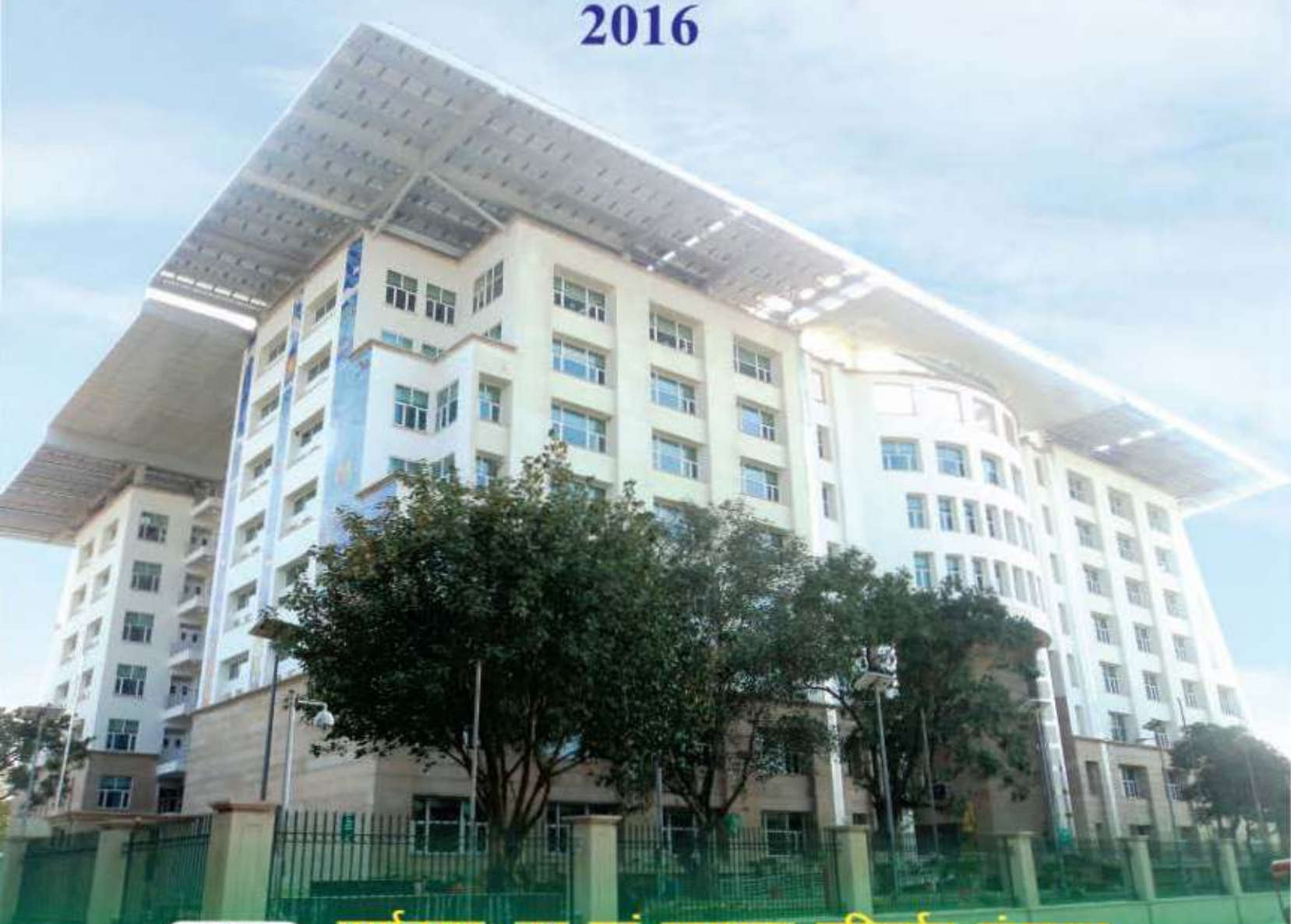
ANNEXURE A-3

सत्यमेव जयते

SUSTAINABLE SAND MINING MANAGEMENT GUIDELINES 2016



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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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प्रकाश जावडेकर
Prakash Javadekar

सत्यमेव जयते

राज्य मंत्री (स्वतंत्र प्रभार)
MINISTER OF STATE (INDEPENDENT CHARGE)
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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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सत्यमेव जयते

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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

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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.

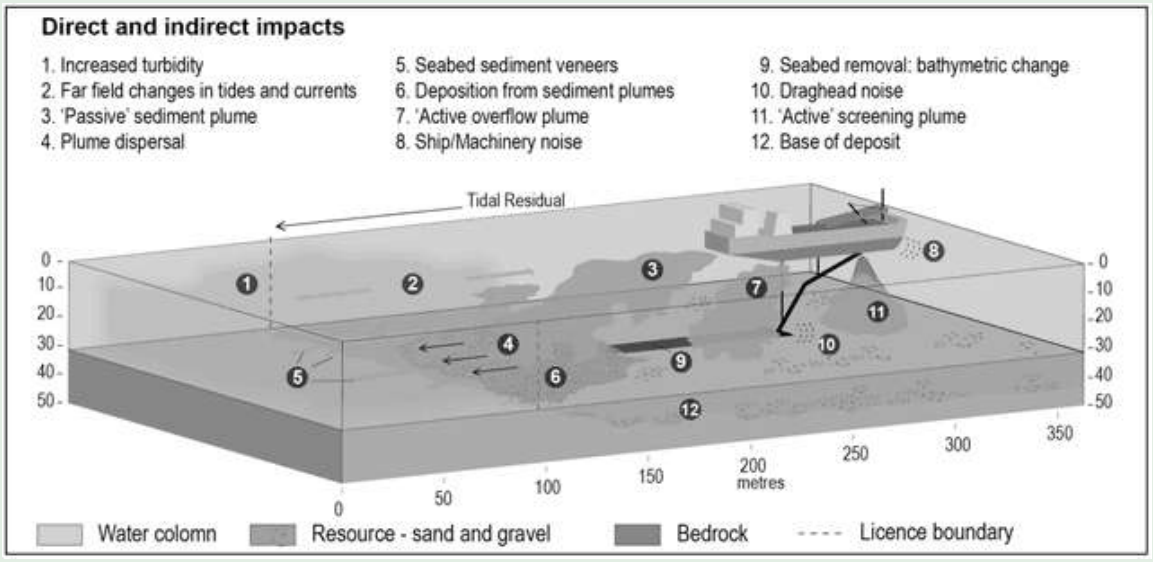

Figure: Direct and indirect consequences of aggregates dredging on the marine environment.

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).

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	

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 - 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
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.

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ANNEXURE A-4

2017 SCC OnLine NGT 1097

In the National Green Tribunal
Central Zonal Bench, Bhopal
(BEFORE DALIP SINGH, J.M. AND S.S. GARBYAL, E.M.)

Between:

1. Medha Patkar, D/o Vasant Khanolkar, Aged 57 Years, R/o Narmada Ashish Navalpura, Badwani - 451551, M.P.
2. Bhagirath S/o Kaliya, Aged about 36 years, Caste : Adivasi (Bhilala), Occupation Farmer, R/o Village Pendra, Tehsil : Badwani, District Badwani
3. Edu S/o Dariyaav, Aged about 60 years, Caste : Adivasi (Bhilala), Occupation Farmer, R/o Village Pichhodi, Tehsil : Badwani, District Badwani
4. Rama S/o Gulab, Aged about 75 years, Caste : Adivasi (Bhilala), Occupation Farmer, R/o Village Bhilkheda, Tehsil : Badwani, District Badwani
5. Asaram S/o Bau, Aged about 38 years, Caste : Mankar, Occupation Farmer, R/o Village Piplud, Tehsil : Badwani, District Badwani
6. Ranjit Singh S/o Sabal Singh, Aged about 45 years, Caste : Rajput, Occupation : Farmer, R/o Village Perkhad, Tehsil : Manavari, District Dhar
7. Ganesh Ratan Aged about 36 years, Caste : Rajput, Occupation : Farmer, R/o Village Perkhad, Tehsil : Manavar, District Dhar ... Applicants;

Versus

1. State of Madhya Pradesh, through its Chief Secretary, Vallabh Bhawan, Bhopal, M.P.
2. Narmada Valley Development Authority through its Vice Chairman, Namada Bhavav, Jail Road, Bhopal
3. Narmada Control Authority, through its Executive Member, Narmada Control Authority Narmada Bhawan, Indore
4. Ministry of Environment and Forest, through its Secretary, Government of India, Paryavaran Bhavan, Lodhi Bhawan, New Delhi
5. Madhya Pradesh Pollution Control Board through its Secretary, Bhopal
6. Collector District Badwani, M.P.
7. Collector, District Dhar, M.P.
8. Superintendent of Police, District Badwani, M.P.
9. Superintendent of Police, District Dhar, M.P.
10. M.P. State Mining Corporation ... Respondents.

Original Application No. 78/2015 (CZ)
Decided on May 30, 2017

Applicant : In Person

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Counsel for State of MP/Mining Corp : Shri Sachin K. Verma, Advocate
Counsel for NCA : Shri Ravi Goyal, Advocate.
Counsel for MoEF : Shri O.S. Shrivastava, Advocate
Counsel for Intervener : Shri Arushi Chouhan, Advocate
Court Commissioner : Shri Dharmvir Sharma, Adv.

JUDGMENT

1) Whether the judgement is allowed to be published on the internet - yes/no

2) Whether the Judgement is to be published in the All India NGT Report - yes/no

DALIP SINGH, J.M.:— This matter arises out of the Writ Petition filed by the Applicant before the Hon'ble High Court of M.P. at the Principal Seat at Jabalpur. The Writ Petition has been filed by way of Public Interest Litigation by the Applicants. The Writ Petition was registered as Writ Petition No. 1260/2013 (WP No. 18183/2014).

2. The Hon'ble High Court on 21.07.2015 framed two questions under its order dated 21.07.2015 and considered it appropriate that one of the issues be referred to this Tribunal. The order dated 21.07.2015 passed by the Hon'ble High Court of M.P. is reproduced below:

Ms. Medha Patkar, Petitioner in person.

Shri R.N. Singh, Learned Sr. Advocate with Shri Arpan, J. Pawar, Respondent No. 2.

Shri Samdarshi Tiwari, Additional Advocate General for the Respondent No. 6 and 7.

Shri R.S. Siddiqui, Learned Counsel appears for the Respondent No. 3.

Shri V.S. Shroti, Learned Sr. Adv. With Shri V. Jauhari, Learned Counsel for the Respondent No. 5.

Two issues are involved in this Public Interest Litigation filed by the Petitioners. The first issue is with regard to grant of lease by the State Government and its authorities in respect of the land which is already vested now in the Narmada Valley Development Authority and the question is as to whether State Government and its authorities can grant mining lease now in the area which is vested with the Narmada Valley Development Authority. The second issue is an environmental issue arising out of carrying out of mining activities particularly of the sand in the submerged area.

While hearing the matter on 26.03.2015, this Court found that prima facie there is force in the contention of the petitioner that if the land has already vested in the Narmada Valley Development Authority, State authorities on their own cannot issue mining lease or permission with respect of such land once the title and authority of the land is given to the Narmada Valley Development Authority. The question as to whether the lease could be granted by the State Government after vesting of the land in Narmada Valley Development Authority and what will be the effect of vesting of the land in Narmada Valley Development Authority of the right of the State Government to grant mining lease for such land has to be considered by this Court.

However, as far as second issue is concerned, we find that the same is and environmental issue pertaining to illegal mining and pollution created in the submerged area and the other areas connected to it as catchment area is due to illegal mining activities. Even though while hearing the matter on 22.04.2015 and thereafter on 06.05.2015, various orders were passed by us and finally on 01.07.2015, taking note of various illegalities and environmental issues raised by the petitioner, we had thought of constituting a committee to cause an enquiry into such matter, but during the course of hearing today, we find that the second issue involved in the Writ Petition pertains to environmental issue and issues pertaining

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to the sand mining in the submerged area, the catchment area and other issues pertaining to echo system, we are of the considered view that the issue pertaining to environment and mining which causes adverse effect on the river bank and the dam which has been constructed is subject to jurisdiction of the National Green Tribunal constituted under the National Green Tribunal Act, 2010 and therefore, the second issue pertaining to permitting of mining in the submerged area and other catchment areas, the consequential pollution and effect on the environment and echo system, in our considered view, has to be taken note of and a decision is to be taken by the National Green Tribunal under the National Green Tribunal Act, 2010. Taking note of the aforesaid circumstance, we deem it appropriate to permit the parties to canvass the second contention before the National Green Tribunal and for the said purpose we would issue necessary directions to the office to forward the copies of the petition and other documents to the Registrar, National Green Tribunal, Bhopal with a request to place the matter before the Hon'ble Bench and the Hon'ble Bench may consider to proceed with the question of environmental issue and illegal mining in accordance with the provisions of the National Green Tribunal Act, 2010. We are constrained to pass such an order in the peculiar facts and circumstance of the case and make a humble request to the National Green Tribunal because we are told that the issues with regard to sand mining and environment in the State of M.P. is already sub-judice before the National Green Tribunal, Bhopal and yesterday the Learned Tribunal has taken cognizance of the same and a complete stay banning mining operation has been issued by the Tribunal. In view of the above, the National Green Tribunal having expertise in the matter and further in view of the Jurisdiction vested in the Tribunal to deal with such issue under the NGT Act, 2010 we are constrained to pass the aforesaid order. As far as this petition is concerned, we will deal with the first question i.e. right of the State Government and its authorities in granting the mining lease after vesting of the land in Narmada valley Development Authority.

Accordingly, we direct the Registry to prepare three photocopies of the entire set of documents including petition, documents, annexure, return, additional documents, interlocutory applications and forward the same to the Registrar of National Green Tribunal, Bhopal with a request to him to place the matter along with copy of this order before the Hon'ble Bench for proceeding in the matter in accordance with law. The parties may appear before the National Green Tribunal, Bhopal for proceeding in the matter in accordance with law.

As far as present petition is concerned, it shall proceed for considering the first issue as indicated hereinabove and the question of contempt involved in the matter. The question of contempt which is said to be committed during the pendency of this matter before this Court in pursuance to the interim order passed shall be considered in connected Contempt Case No. 843/2015.

List this matter after six weeks.

Office to comply with the aforesaid directions within one week.

3. After receipt of the record from the Hon'ble High Court, notices were ordered to be issued to the parties and the matter came up for consideration before this Tribunal on 22.09.2015. This Tribunal after going through the order dated 21.07.2015 passed the order which reads as follows:

Service is complete.

From the order dated 21.07.2015, we find that the Hon'ble High Court while dealing with the aforesaid issue framed two questions for consideration:

(i) With regard to grant of lease of the State Government and its authority in respect of the land which is already vested now with NVDA and whether the State Government and its authority can grant mining leases in the said mines

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vested with the NVDA.

(ii) Second issue pertains to the environmental issues arising out of carrying out the mining activities particularly of the sand in sub-merged area.

The Hon'ble High Court felt that, as far as the first question is concerned, the same shall be dealt with by the Hon'ble High Court and the second issue pertaining to environment was referred to this Tribunal taking cognizance of the fact that this Tribunal had already taken cognizance of similar issues and passed interim orders banning the mining operations.

The Applicant who is present in person also drew our attention to the fact that despite interim orders having been issued by the Hon'ble High Court, the injunction orders of the Hon'ble High Court were flouted and mining operations are going on without any restrictions or checking by the authorities. We also find that in the order of 21.07.2015, the issue with regard to contempt of the order of the Hon'ble High Court was noticed by the Hon'ble High Court and it has been observed "as far as the present petition is concerned, it shall proceed for considering the first issue as indicated hereinabove and the question of contempt involved in the matter. The question of contempt is said to be committed during the pendency of this matter before this court in pursuance of the interim orders passed shall be considered in connection with the contempt application No. 843/2015."

In that view of the matter as far as the grievance of the Applicant for non-compliance of the injunction order passed by the Hon'ble High Court is concerned, since the Hon'ble High Court has itself directed that the same shall be covered and dealt with in Contempt Application No. 843/2015, we are of the opinion that the Applicant is free to approach the Hon'ble High Court for the said purpose.

Be that as it may, this Tribunal has already in the case of Amarkant Mishra *v.* State of MP *in Original Application No. 49/2015 passed an order restraining the river sand mining in terms of Condition No. 5 of the EC granted by SEIAA in 61 cases of mining leases of river sand and had made this condition applicable in the case of remaining 63 cases also thereby asking that all the 124 mining leases shall not operate during the monsoon period in terms of Condition No. 5 of the EC imposed by SEIAA between 1st June to 31st October. Learned Counsel appearing for the State assured us that the aforesaid directions contained in the* Amarkant Mishra *v.* State of MP *case are being implemented*.

While dealing with the aforesaid, we brought it to the notice of the Applicant that the MoEF & CC, Government of India has itself on 15.09.2015 circulated draft guidelines by way of policy documents for mining which includes issues of river sand mining and invited suggestions/objections by putting the same in public domain from all interested persons. The proposed guidelines for the river sand mining may take care of the issues involved in river sand mining and its environmental impact which is the issue referred to this Tribunal by the Hon'ble High Court. We would expect the Applicant and all parties to go through the said guidelines so as to make their valuable contribution by way of suggestion/objections before the MoEF & CC which is considering the same.

We also direct the Respondents to file the affidavit with regard to the steps taken by the Respondents for implementation of the directions issued by the Hon'ble High Court for restraining the river sand mining as also in terms of the compliance of the directions issued by this Tribunal in Amarkant Mishra *v.* State of MP

The aforesaid affidavit be filed on behalf of the Secretary (Mines), Government of MP.

4. As would be noticed from the order dated 22.09.2015 this Tribunal was of the view that the matter pertaining to rivers sand mining and also with regard to illegal mining in the rivers in M.P., the matter titled *Amarkant Mishra* v. *State of M.P.* is

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pending before this Tribunal in O.A. No. 49/2015 and is under consideration as such the entire issue at the request of the parties pertaining to rivers sand mining and also illegal mining in the four districts for which the Applicant had raised the issue before this Tribunal were considered by the Tribunal.

5. On 12.10.2015 after hearing the parties the Learned Counsel for the State submitted an affidavit stating steps taken by the State Government for checking the illegal sand mining in the four districts namely Dhar, Badwani, Alirajpur and Khargone. The Applicant, however, was not satisfied and submitted that illegal mining is still rampant and particularly in the "submergence area". The information that was submitted before the Tribunal was that, in fact so far as these four districts of Dhar, Badwani, Alirajpur and Khargone are concerned the position with regard to mining leases and environmental clearances was as follows:

> In Alirajpur 33 leases for rivers sand mining had been granted out of which 22 had necessary consents from SEIAA but did not possess the consent to operate by MPPCB. In so far as District Khargone is concerned it was submitted that no consent had been granted by SEIAA for any of the mining leases to be allowed to operate in Khargone District.

6. Subsequently on 11.12.2015 it was submitted before this Tribunal that SEIAA had granted 30 Environmental Clearances (EC) to the mining leases out of 33 which have been sanctioned in the area. It was however, submitted that no mining lease has been granted in the submergence area. This however, was contested by the Applicants and as such it was considered proper to appoint commissioners from this Tribunal and accordingly Learned Counsels Shri Ajay Gupta, Advocate and Shri Dharamvir Sharma Advocate were appointed as Court Commissioners to visit the Districts of Dhar, Alirajpur, Badwani and Khargone. It may further be stated that as far as any illegal activity of mining was concerned the State authorities were directed to take appropriate action in accordance with law. In the meanwhile, the Commissioners submitted their report. The State also filed its response with regard to action taken, giving details of number of FIRs against the various persons having been filed and the seizure of the property and other issues which were relevant. To this the Applicant filed a counter for all the four districts.

7. Since, the issue involved was based upon the reference made by the Hon'ble High Court on the second issue namely whether mining activities particularly of rivers sand mining could be permitted in the submerged area, there was still such time as "Sustainable Sand Mining Management Guidelines 2016 had not been framed by Ministry of Environment and Forest & CC, Govt. of India, a gray area in that behalf and it all depended upon the Environment Clearance (EC) and the terms and conditions imposed therein by the State Environment Impact Assessment Authority (SEIAA).

8. We may also add that till January 2016 cases for grant of EC of areas up to 5 hectares were being brought before SEIAA. Subsequently, in the light of the judgment of the Principal Bench NGT, New Delhi in *Himmat Singh's Case* such ECs were required to be obtained for all mining leases notwithstanding the extent of their area and for all minerals including rivers sand mining. This obviously resulted in all mining leaseholders in all the States including M.P. to apply for the EC before SEIAA. This flood of applications could not be dealt with by SEIAA and several applications requesting for grant of extension of the time by the Tribunal for obtaining the ECs were filed. Realising the aforesaid difficulty, the MoEF, Govt. of India decided to delegate the powers for grant of ECs to District Environment Assessment Authority (DEIAA) and for appraisal to the District Environment Appraisal Committee (DEAC) under their notification particularly of mining leases which were less than 5 hectares. This considerably reduced the pressure upon the SEIAA and several applications which were pending before SEIAA were transferred to the DEIAA and fresh applications,

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therefore, in the light of the notification came to be submitted before DEIAA itself directly.

9. The position, therefore, that emerges is that the activity of rivers sand mining in all areas irrespective of their location or otherwise is now dependent upon the appraisals being made by DEAC/SEAC and the EC being granted by SEIAA/DEIAA after due appraisals and recommendations made by those bodies. While these applications were still pending, the Sustainable Sand Mining Management Guidelines 2016 were also notified by the MoEF & CC Govt. of India and, therefore, now so far as rivers sand mining is concerned the matter stands covered by the aforesaid Sustainable Sand Mining Management Guidelines 2016.

10. The issue which has been referred as to whether rivers sand mining be allowed in submerged area which the Applicant seeks to admit is in fact not submerged area but submergence area of the various projects on the river Narmada which in our view stands answered by the Sustainable Sand Mining Management Guidelines 2016 which apply to all cases of River Sand Mining notwithstanding their area of location.

11. The provisions in this behalf of the Sustainable Sand Mining Management Guidelines 2016 may be extracted for a ready reference. In the introduction it clearly been stated that:

> *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 can not be achieved through inappropriate economic growth, if it undermines the environment in which people and businesses exists. These guidelines support that fundamental concept, promoting environmental protection, limiting negative, Physiological, hydrological and social impacts underpining 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 kilometre or more) beyond the extraction site.*

With this introduction under the heading of objectives of the guidelines it has been provided as follows:

OBJECTIVE OF THE GUIDELINES

The guidelines 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*

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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 guideliens

- *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 is 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.*
- *Streaming and simplifying the process for grant of environmental clearance (EC) for sustainable mining.*

12. After giving the objectives of the guidelines under the head of effect of sand and gravel mining has been outlined in detail which are as follows:

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 sediments 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 bank 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.*

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d. Bed degradation are responsible for channel shifting, causing loss to 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 flood plain 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 bend 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 reduces 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. Pollution ground water by reducing the thickness of the filter material especially if mining is taking place at top of recharge fissures.

n. Choking and sand layer which act 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 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. Impact on coastal processes.

13. So far as instream mining is concerned under the head of fact of sand and gravel mining it has been stated as follows:

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.

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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 process 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 hydrological 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 liming extraction to 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 the 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 grave can destabilise channel 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.

14. Having given the aforesaid outlines the guidelines provide the general approach that has to be kept in mind by the appraisal authorities and the assessment authorities while recommending the case for granting ECs in this behalf under head of general approach to sustainable sand and gravel mining. At the cost of repetition we may add that no river sand mining is permissible unless the lessee obtains an EC in terms of these guidelines and the concerned authorities will consider each case on its merit in the light of the conditions mentioned in these guidelines.

The following consideration should be kept in mind which are as follows:

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 aggradations shall be identified first. The Lease holder/Environmental Clearance holder may be allowed to extract the sand and gravel deposit in the locations to manage aggradations 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 channel 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) Layer 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.

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(g) 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 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.

(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.

(o) Demarcation of mining area with pillars and geo-referencing should be done prior to start of mining.

15. With the aforesaid considerations having spelt out the following points emerge as basic principals:—

1. The identification of the leased area based upon the quantum of deposits for this even use of satellite imageries has been recommended.
2. Collection of annual rate of replenishment of sand in the area identified.
3. Identifying ways of scientific and systematic mining.
4. Identifying measures for protection of environment and ecology.
5. Determining the measures for protections of bank erosion.
6. Establishing a benchmark (BM) below the aforesaid no mining shall be allowed.
7. Identifying the steps for conservation of the mineral.
8. Permanent catching facilities in consultation with the Central Ground Water Commission or such like State agency.
9. Implementing safeguards for checking illegal and indiscrete mining.
10. Provide for environmentally safe depth of mining and safeguards of banks by prescribing safe distances from banks.

With these salient features to be observed the District Authorities are required to prepare a survey document mapping the status of the sand resources in the district and also other considerations. The preparation of mining plan is also essential and the survey shall also be required to give details of the rivers or streams and the districts and other sand sources, district wise availability of sand and gravel and district wise details of existing mining leases. It has been provided that the rivers/stream/other sources of sand and aggravate are to be studied on the following parameters:

1. Place of origin
2. Catchment area
3. General profile of river stream
4. Annual deposition factor
5. Replenishment
6. Total potential of minor mineral in the river bed.

16. Having provided all these guidelines under the Sustainable Sand Mining guidelines of 2016 issued by the MoEF instructions have also been issued wherein *inter-alia* for river bed mining it is provided that "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". It has further provided under the heading of river bed mining which is as follows:

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(emphasis supplied)

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 bases, 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.*

(emphasis supplied)

17. In so far as issue which has been referred to this Tribunal is concerned, after framing of the Sustainable Sand Mining Guidelines of 2016 which also provides for the requirement of "monitoring system for sustainable sand mining from page 64 onwards of the guidelines takes a comprehensive measure commencing from the survey of the deposits, availability of the quality of mineral to the annual replenishment, as well as precautionary aspects in terms of appraisals and assessments and recommendations to either grant or refuse EC since no such activity can be permitted without a valid EC. It also takes into account the safety measures requires to be undertaken including those of the location and the requirement of a monitoring system to be carried out by the impact assessment authorities of the State and the districts.

18. In the light of the above the issue as to whether sand mining can be permitted within the 'submergence' area as contented by the Applicant we are of the view that the issue stands answered with the provisions having been made on the principal of precautionary approach as well as sustainable development in the guidelines of 2016 extract of which quoted hereinabove. Alternatively, since in the order of the Hon'ble High Court dated 21.07.2015 the term used is "Environment issue arising out of carrying out mining activities particularly of sand in submerged area" is concerned the Sustainable Sand Mining Guidelines 2016 clearly prohibit any instream mining and further that rivers sand mining can be carried out only up to a depth of 3 meters/till water level is reached whichever is less. Therefore, clearly in accordance with the guidelines which was required to be considered as the guiding factor before any EC or consent can be granted no river sand mining can be carried out in any area notwithstanding the same being part of the leased area in case it is 'submerged', or lies within the submerged area.

19. We have noticed several ECs which have been subject matter of litigation before us and in which EC has been granted but the conditions specifically provides that no instream mining will be allowed and further that no removal of sand below a depth of 3 meters or the water channel whichever is earlier shall be carried out.

20. In the light of the above, we answer the question that has been referred to us that no river sand mining is permitted in the submerged area in accordance with the Sustainable Sand Mining Guidelines 2016 alternatively in so far as the issue whether it can be permitted in the submergence areas is concerned our answer to the same is that in submergence area which may be a wider area than the one actually submerged as a submergence area would encompass the full reservoir level of the river or the high flood level of the river recorded but in any case where the mineral is exposed and not instream such sand mining in accordance with the Sand Mining Guidelines 2016 and the conditions imposed in the environmental clearance may be carried out.

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21. With the aforesaid answer we would return the record, of the case to the Hon'ble High Court. We may state here that the delay that has occurred is on account of the fact that several ancillary issues had been raised by the parties which were required to be heard and adjudicated. The issue of rampant illegal sand mining was also one of them for which a team of court commissioners were appointed who inspected the areas and submitted their report, however, all this happened prior to this Tribunal having had the occasion to finally deal with the case in *Amarkant Mishra* v. *State of M.P.* in O.A. No. 49/2015 which later on was transferred to Principal Bench NGT, New Delhi and in accordance with decision therein the MoEF Government of India framed the Sustainable Sand Mining Guidelines 2016 which in our view answers the issue that has been raised before us and referred to us.

22. While we were still seized of this matter, only recently on 16.05.2017 for curbing the issue of illegal sand mining the State Government also has amended the Madhya Pradesh Minor Mineral Rules, 1996 by substituting Rule 53 providing more stringent penalties and confiscation of vehicles and equipment which may lead to some kind of deterrence. However, the actual working would determine whether these measures have proved adequate or have fallen short since trading in the mineral of river sand particularly on account of the demand in the real estate sector as also several projects in the infrastructure sector. Again on 22.05.2017 the State Government has announced a total ban on river sand mining in the River Narmada. A specimen of conditions imposed in EC for River Sand Mining may also be seen. The same are extracted below:

1. The PP shall not start mining activity before execution of leases agreement.
2. The average depth of the pit shall not exceed 3.0 mtr. or water level, whichever is less as the end of lease period.
3. No tree to be cut or damage from mining activity.
4. The amount towards reclamation of the land in MLA shall be carried out through the mining department the appropriate amount as estimated for the activity by mining department has to be deposited with the Collector to take up the activity after the mine is exhausted.
5. PP shall be responsible for discrepancy (if any) in the submission made by the PP to SEAC and SEIAA.
6. It was observed during the visit to Alirajpur by the subcommittee that the banks of the tributaries have been eroded due to floods hence as special condition PP shall use the rejects and soil for plantation on these eroded banks to prevent further damages of the banks.
7. Mining shall be carried only between Ist November to 31st May that is during non -monsoon period.
8. Transportation of sand shall not be carried out through forest area.
9. The mining activity shall be done manually.
10. Heavy vehicles shall not be allowed on the banks for loading of sand.
11. The sand shall be transported by small trolleys up to the main transport vehicle.
12. Transport vehicles will be covered with taurpoline to minimize dust/sand particle emission.
13. For carrying out mining in proximity to any bridge and/or embankment, appropriate safety zone of 1 km on upstream as well as on downstream from the periphery of the mining site shall be ensured taking into account the structural parameters, location aspects, flow rate, etc. and no mining shall be carried out in the safety zone.
14. No in stream mining shall be allowed.
15. The mining shall be carried out strictly as per the approved mining plan and

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ensure that the annual replenishment of sand in the mining lease area is sufficient to sustain the mining operations at levels prescribed in the mining plan.

16. Established water conveyance channel should not be relocated, strengthened or modified.

17. If the stream is dry the excavation must not proceed beyond the lowest undisturbed elevation of the stream bottom, which is a function of local hydrolics, hydrology and geo morphology.

18. After mining is complete the edge of the pit should be graded to a 2.5 : 1 slope in the direction of the flow.

19. PP shall take socio-economic activities in the region through the Gram Panchayat.

Thus we see that river sand mining, is being carried out in a systematic manner in accordance with the legal provision and procedure, taken into account the principle of sustainable development and is also based upon the Precautionary Principle.

23. We have also noticed that rivers sand mining along with mining of other minerals in all the districts covers a huge field but the staff to regularly inspect and check illegal mining is wholly inadequate with the Mining Department particularly in the Districts. Also this staff does not have the necessary means to check the illegal mining and stocking of the mineral and illegal transportation and the persons indulging in this activity are often those who have considerable power at their command. The need, therefore, for the State is to strengthen the mechanism for preventing the illegal mining and provide adequate manpower and force at the command of the mining officials which would include *Armed* guards to exercise restrain upon the illegal mining activity and also provide protection of the Mining Department officials and personnel.

24. A perusal of the rivers Sand Mining guidelines 2016 shows that a technological approach has been adopted for dealing with the issue. However, despite the guidelines having remained in force for about one year not much has been achieved in actual practice in terms of the modernization and technological approach to the problem of checking the illegal mining. We have been informed by the Learned Counsel appearing for the State that the State has now set the target for putting the Sustainable Sand Mining Guidelines of 2016 in operation in its totality including the measures for checking by electronic means by the end of this year. However, to what extent these measures actually work, including the impact of the recent amendment of providing correct details of powers of confiscation and deterrent penalties with a complete ban on sand mining in the river Narmada has to be seen.

25. With the aforesaid answer to the question we would return the record of the case to the Hon'ble High Court of MP at Jabalpur with all pending M.As. Nos. 1034/2016, 1036/2016, 02/2017, 03/2017, 04/2017, 104/2017, 105/2017 & 222/2017 pertaining to release of vehicles which may be decided by the Hon'ble High Court of MP at Jabalpur.

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ANNEXURE A-5

Enforcement & Monitoring Guidelines for Sand Mining

Ministry of Environment, Forest and Climate change

January, 2020

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1.0 INTRODUCTION

The Ministry of Environment Forest & Climate Change formulated the Sustainable Sand Management Guidelines 2016 which focuses on the Management of Sand Mining in the Country. But in the recent past, it has been observed that apart from management and systematic mining practices there is an urgent need to have a guideline for effective enforcement of regulatory provision and their monitoring.

Section 23 C of MMDR, Act 1957 empowered the State Government to make rules for preventing illegal mining, transportation and storage of minerals. But in the recent past, it has been observed that there was large number of illegal mining cases in the Country and in some cases, many of the officers lost their lives while executing their duties for curbing illegal mining incidence. The illegal and uncontrolled illegal mining leads to loss of revenue to the State and degradation of the environment.

India is developing at a faster pace and much technological advancement has already been taken place in the surveillance and remote monitoring in the field of mining. Thus, it is prudent to utilize the technological advancement for the effective monitoring of the mining activities particularly sand mining in the country.

Use of latest remote surveillance and IT services helps in effective monitoring of the sand mining activity in-country and also assist the government in controlling the illegal mining activity in the country. Thus, there is a need for an effective policy for monitoring of sand mining in the Country which can be enforced on the ground. These guidelines focus on the effective monitoring of the sand mining since from the identification of sand mineral sources to its dispatch and end-use by consumers and the general public. Further, the effective monitoring and enforcement require efforts from not only Government agencies but also by consumers and the general public.

It is the responsibility of every citizen of India to protect the environment and effective monitoring can only be possible when all the stakeholders viz. Central Government, State Government, Leaseholders/Mine Owners, Distributors, Dealers, Transporters and Consumers (bulk & retail) will contribute towards sustainable mining, and comply with all the statutory provisions. It is felt necessary to identify the minimum requirements across all geographical region to have a uniform protocol for monitoring and enforcement of regulatory provision prescribed for sustainable sand and gravel mining.

This document will serve as a guideline for collection of critical information for enforcement of the regulatory provision(s) and also highlights the essential infrastructural requirements necessary for effective monitoring for Sustainable Sand Mining.

The document is prepared in consideration of various orders/directions issued by Hon'ble NGT in matters pertaining to illegal sand mining and also based on the reports submitted by expert committees and investigation teams.

Further, this document is supplemental to the existing "Sustainable Sand Mining Management Guideline-2016" (SSMG-2016), and these two guidelines viz. "Enforcement & Monitoring Guidelines for Sand Mining" (EMGSM-2020) and SSMG-2016 shall be read and implemented in sync with each other. In case, any ambiguity or variation between the provision of both these document arises, the provision made in "Enforcement & Monitoring Guidelines for Sand Mining-2020 "shall prevail.

2.0 NEED FOR POLICY GUIDELINES

The Ministry of Environment, Forest & Climate Change (MoEF&CC) published Environmental Impact Assessment Notification 1994 which is only applicable for the Major Minerals more than 5 ha. In order to cover the minor minerals also into the preview of EIA, the MoEF&CC issued EIA Notification 2006 for Major & Minor Mineral more than 5 Ha. The Hon'ble Supreme Court in its Judgment dated the 27th February 2012 in I.A. No.12- 13 of 2011 in Special Leave Petition (C) No.19628-19629 of 2009, in the matter of Deepak Kumar etc. Vs. State of Haryana and Others etc. made prior environment clearance mandatory for mining of minor minerals irrespective of the area of mining lease. In order to comply with the judgment of Hon'ble Supreme Court, the Ministry issued S.O.141 (E) dated 15.01.2016. Further, MoEF&CC published Sustainable Sand Mining Management Guidelines 2016 for scientific and sustainable sand mining in the Country. The recommendations for the management of sustainable sand extraction are the key objective of the Guidelines. Special emphasis is given on monitoring of the mined out material, which is key to the success of the environmental management plan. Use of IT and IT-enabled services for effective monitoring of the quantity of mined out material and transportation along with process re-engineering has been made a part of the Guidelines. Guidelines support the fundamental concept, promote environmental protection, limit negative physiological, hydrogeological and social impacts underpinning sustainable economic growth.

The Hon'ble NGT in its order dated 04.09.2018 in O.A. 173/2018 in the matter of Sudarsan Das vs. State of West Bengal & Ors. Inter-alia observed that *"**There can be no two views that an effective institutional monitoring mechanism is required not only at the stage when Environmental Clearance is granted but also at subsequent stages". "The guidelines focus on the preparation of District Survey Report and the Management Plan" ... We are of the view that all the safeguards which are suggested***

in sustainable sand mining guidelines as well as notification dated 15.01.2016 ought to be scrupulously followed."...It is a known fact that in spite of the above-suggested guidelines being in existence, on the ground level, illegal mining is still going on. The existing mechanism has not been successful and effective in remedying the situation." ..." Since there is an utter failure in the current monitoring mechanism followed by the State Boards, SEIAAs and DEIAAs, it is required to be revised for effective monitoring of sand and gravel mining and a dedicated monitoring mechanism be set up."

The Hon'ble NGT in its order dated 04.09.2018 in O.A. 173/2018 in the matter of Sudarsan Das vs. State of West Bengal & Ors. directed that ***MoEF&CC has issued directions from time to time under Section 3 and 5 of the Environment (Protection) Act, 1986. The MoEF&CC needs to revise its directions keeping in mind the following:***

- *Mining Surveillance System discussed in para 23 above be finalized in consultation with ISRO Hyderabad.*
- *Safeguards suggested in Sustainable Sand Mining Guidelines published by the MoEF&CC in the year 2016.*
- *Suggestions in the High Power Committee Report.*
- *The requirement of demarcation of boundaries being published in respect of different leases in the public domain.*
- *Need to issue SOP laying down mechanism to evaluate loss to the ecology and to recover the cost of restoration of such damage from the legal or illegal miners. Such evaluation must include the cost of mining material as well as the cost of ecological restoration and the net present value of future ecosystem services forgone.*
- *Need to set up a dedicated institutional mechanism for effective monitoring of sand and gravel mining which may also take care of mining done without any Environmental Clearance as well as mining done in violation of Environmental Clearance conditions.*

- *The Mining Department may make a provision for keeping apart at least 25% of the value of mined material for the restoration of the area affected by the mining and also for compensating the inhabitants affected by the mining.*

- *One of the conditions of every lease of mine or minerals would be that there will be independent environmental audit at least once in a year by reputed third party entity and report of such audit be placed in the public domain.*

- *In the course of such an environmental audit, a three-member committee of the local inhabitants will also be associated. Composition of three members committee may preferably include ex-servicemen, a former teacher and former civil servant. The Committee will be nominated by the District Magistrate.*

The Hon'ble NGT in its order dated 05.09.2018 in O.A. 44/2016 in the matter of Mushtakeem Vs. MoEF & CC & Ors. Inter-alia observed the following:

"Para 20. In Original Application No. 481/2016, the allegation is that there is the connivance of the District Administration with the miners and mining is going in violation of conditions of Environmental Clearance. According to the applicant, an effective mechanism is required to be evolved so that illegal mining does not place."

"Para 22. We proceed to consider the main question proposed for the consideration stated earlier hereinabove as to ***how to ensure the protection of the environment by checking illegal mining."***

"Para 23. We have dealt with the identical issue relating to the illegal sand mining in the border districts in the State of West Bengal and Odisha in the order dated 04th September 2018 in Sudarsan Das Vs. State of West Bengal & Ors., Original Application No. 173 of 2018. We have directed the MoEF&CC to revise the guidelines on the subject for an effective mechanism for sand mining, relevant portions of which are reproduced below: -..."

The Hon'ble NGT in its order dated 10.09.2018 in O.A. 304/2015 in the matter of Jai Singh & Anr.Vs. Union of India Ors. inter-alia observed the following:

"Para 6. After disposal of the above matters, a disturbing event widely reported in media which took place on 07th September 2018 has been brought to our notice. ***A Deputy Ranger who tried to stop illegal mining was killed by mining mafia at Morena in the State of M.P.***

"Para 7. The above disturbing event may also be kept in mind by the MoEF, while considering the issuance of revised guidelines in light of the judgment dated 05th September 2018 (Supra)."

The Hon'ble NGT in its order dated 05.04.2019 in O.A. 360/2015 in the matter of National Green Tribunal Bar Association & Anr.Vs. Union of India & Ors. inter-alia observed the following:

"*The 2016 Guidelines need revision in the light of the report of High Powered Committee in September 2016, failure of Monitoring mechanism followed by State Boards, SEIIAs, DEIAAs and MSS system developed by Ministry of Mines & IBM with the assistance of BISAG and MAITY and other observations quoted in paras 12 to 15 above.*

50. As noted earlier in paras 17, 23, 27, 31 and 35, States of West Bengal, Odisha, Gujarat, Karnataka, Maharashtra, Punjab, Haryana and Uttar

Pradesh are required to follow SSMG, 2016 as may be revised by MoEF&CC and even other States where illegal sand mining is taking place.

The States may review the monitoring mechanism in terms of several directions of the Tribunal and guidelines of MoEF&CC.

The international conservation concern regarding natural wealth is a universal demand. Article 51(a) subsection (G) of the constitution requires every citizen of India to protect and improve the natural environment including forest, lakes, rivers, wildlife and to have compassion for the living creature.

The Hon'ble Supreme Court in the case of M.C. Mehta Vs. Kamal Nath (1997) 1 SCC 388 held that under Article of Indian Constitution incorporates the "Public Trust Doctrine" and as such extents to the protection of all-natural resources which includes the protection of flora and fauna.

The Hon'ble Supreme Court in the case of Vellore Citizens Welfare Forum Vs. Union of India & Ors (1996) held that the precautionary principle is part of the Environmental Law in India. It further stated that onus of proof is on the actor of the developer/industrialize to show that its actions are environmentally benign."

3.0 OBJECTIVE OF GUIDLINES

- Identification and Quantification of Mineral Resource and its optimal utilization.
- To regulate the Sand & Gravel Mining in the Country since its identification to its final end-use by the consumers and the general public.
- Use of IT-enabled services & latest technologies for surveillance of the sand mining at each step.
- Reduction in demand & supply gaps.
- Setting up the procedure for replenishment study of Sand.
- Post Environmental Clearance Monitoring.
- Procedure for Environmental Audit.
- To control the instance of illegal mining.

4.0 REQUIREMENTS FOR MONITORING & ENFOCEMENT

Sustainable Sand Mining Management Guidelines (SSMMG) 2016 and past experience suggest that the source of sand in India are through

a) River (riverbed and flood plain),
b) Lakes and reservoirs,
c) Agricultural fields,
d) Coastal / marine sand,
e) Palaeo-channels and
f) Manufactured Sand (M-Sand).

The SSMMG-2016 highlights the identification of the sand mining sources, replenishment of the River Bed Material (Sand, Boulder, Gravel, Cobble etc.), preparation of Districts Survey Report, and Standard Environmental Conditions suitable for sand mining projects.

The necessary requirements to comply with the direction of Hon'ble NGT and to facilitate effective monitoring and enforcement of regulatory provision for sand mining in the country are as follows:

i) Identification of sand mining sources, its quantification and feasibility for mining considering various environmental (proximity of protected area, wetlands, creeks, forest etc.) and other factors such as important structures, places of archaeological importance, habitation, prohibited area etc.

ii) The mining lease auctioned by State government as per their Minor Mineral Concession Rules are granted of Letter of Intent (LoI), but it has been observed that many of the sites are not suitable w.r.t environmental aspects. In most of the cases, the unplanned grant of mining lease leads to formation of cluster and/or contiguous cluster

of small mining leases which sometimes is difficult to regulate and monitor. In order to address such issues, more emphasis is required on the preparation of District Survey Report and its format for reporting,

iii) Mining Plan is an important document to assist the mine owner to operate the mine in a scientific manner. States have their own format for preparation of mining plan and it is observed that recording of the initial level of mining lease at shorter interval say 25m X 25 m grid interval is not present.

iv) There is no practice for regular replenishment study to ascertain the rate of depositing, plan and section needs to be prepared based on the restrictions provided in letter of intent and provisions of Sustainable Sand Mining Management Guidelines 2016.

v) Environmental Clearance is a process wherein the regulatory authorities after considering the potential environment impact of mining clearance is granted with a set of specific & standard conditions to carry out mining operations, but often it is observed that letter of intent is granted for a location which has less potential for mining and not feasible for environment-friendly mining. This leads to an unnecessary financial burden on the mine owners and litigations. Thus, LoI should be preferably granted for those locations which have the least possibility of an impact on the environment and nearby habitation.

vi) It is the responsibility of the mine owner to obtain all the statutory clearance and comply with the conditions stipulated in the clearance letter. Mining should be carried out within the mining lease area as per

approved mining plan or mining plan concurred by other regulatory authorities.

vii) Mining operation also involves transportation of mineral from the mining area to end-user and its necessary that movement of the mineral needs to be monitored.

The State Government already have power under section 23c of MMDR, Act 1957 to make rules for preventing illegal mining, transportation and storage of minerals. However, there are instances of illegal mining which shows that there is a need for strengthening the system of mineral dispatch and its monitoring. This document provides good practices already under implementation by various states for regulating the mineral sale, dispatch, storage, transportation and use.

viii) The river reaches with sand provide the resource and thus it is necessary to ascertain the rate of replenishment of the mineral. Regular replenishment study needs to be carried out to keep a balance between deposition and extraction. This document provides the procedure to be followed for conducting replenishment study.

ix) Even after all the regulatory procedure and policy being in place, there are instances where illegal mining is taking place. There is a need for regular surveillance of the sand mining reaches. The monitoring agencies can monitor the sites remotely by using Unmanned Artificial Vehicles (UAVs)/Drone which is now a viable option. The drone can also be used for reserves estimation, quantity estimation, land use monitoring. This document highlights possible use of IT/Satellite/Drone technology for effective monitoring of sand mining.

4.1 Identification of possible sand mining sources and preparation of District Survey Report (DSR)

4.1.1 Preparation of District Survey Report.

"Sustainable Sand Mining Guidelines, 2016" issued by MoEF&CC requires preparation of District Survey Report (DSR), which is an important initial step before grant of mining lease/LoI. The guidelines emphasize detailed procedure to be followed for the purpose of identification of areas of aggradation/ deposition where mining can be allowed and identification of areas of erosion and proximity to infrastructural structures and installation where mining should be prohibited. Calculation of annual rate of replenishment, allowing time for replenishment after mining, identification of ways of scientific and systematic mining; identifying measures for protection of environment and ecology and determining measures for protection of bank erosion, benchmark (BM) with respect to mean Sea Level (MSL) should be made essential in mining channel reaches (MCR) below which no mining shall be allowed.

The Hon'ble NGT in its Judgment dated 08.12.2017 in the matter of Anjani Kumar vs State of Uttar Pradesh & Ors. inter-alia mentioned the following regarding sand mining in the Uttar Pradesh.

> *"It states that the main object of preparation of District Survey Report is to ensure identification of areas of aggradation/deposition where mining can be allowed and identification of areas of erosion and proximity to infrastructural structures and installation where mining should be prohibited and calculation of annual rate of replenishment and allowing time for replenishment after mining area. Thus, the environmental protection requires a strictly regulated mining in terms of area, quantity as well as most importantly replenishment thereof."*

"The data collection and declared for preparation of DSR shall take precedence over other data and would form the foundation for providing mining lease in terms of Appendix- x to the Notification dated 15th January 2016 must be prepared by the statutory authority stated therein i.e. DEIAA prior to awarding of permits for carrying on mining activity in any part of the State of UP."

The Hon'ble High Court of Jharkhand at Ranchi in its orders dated the 11th April 2018 and 19th June 2018 in W.P. (PIL) No. 1806 of 2015, in the matter of Court on its Own Motion Versus the State of Jharkhand & Others with W.P. (PIL) No. 290 of 2013, in the matter of Hemant Kumar Shilkarwar Versus the State of Jharkhand & Others, has inter-alia directed the preparation of District Survey Report for minor minerals other than Sand and Bajri or delegation of the powers for preparation of format of District Survey Report of minor minerals other than sand and Bajri to the State Government and/or District Environment Impact Assessment Authority and District Expert Appraisal Committee. To comply with the direction of Hon'ble High Court the Ministry has issued S.O. 3611(E) dated 25.07.2018, wherein, the procedure of preparation of DSR is mentioned. But it is felt that still there is other information that needs to be reported in DSR to make it a comprehensive DSR.

Therefore, preparation of District Survey Report is a very important step and sustainable sand mining in any part of the country will depends on the quality of District Survey Report.

Considering the importance of district survey report, the Ministry of Environment Forest and climate change, after consultation with experts dealing with mining-related matters, formulated the following guidelines for the preparation of comprehensive District Survey Report for sand mining.

a) District Survey Report for sand mining shall be prepared before the auction/e-auction/grant of the mining lease/Letter of Intent (LoI) by Mining department or department dealing the mining activity in respective states.

b) The first step is to develop the inventory of the River Bed Material and Other sand sources in the District. In order to make the inventory of River Bed Material, a detailed survey of the district needs to be carried out, to identify the source of River Bed Material and alternative source of sand (M-Sand). The source will include rivers, de-siltation of reservoir/dams, Patta lands/Khatedari Land, M-sand etc.

The revenue department of Kerala already conducted river mapping and sand auditing of around 20 rivers of Kerala which is a good example wherein the profile of rivers was created at regular intervals and aggradation/deposition was identified along with water level. In the same study, benchmarks were also created at a prominent location at regular interval for future surveying. Such study helps the mining departments to identify the source of sand.

Thus, it is proposed that for preparation of district survey report, the auditing of rivers needs to be carried out. There is already a provision under MMDR Act 2015 for National Mineral Exploration Trust (MET) wherein a 2% of royalty amount to be deposited in the trust. This fund is used for mineral exploration in the country. The Sand Auditing is also a sort of identification of mineral and State Government may request Central Govt. for proving funds for river auditing. The Central Govt. (Ministry of Mines) may also explore the possibilities for providing the funds for river auditing. The other option is that State Govt. may conduct such studies by its own fund and the same may be recovered from the leaseholders to whom the mining lease will be allocated.

c) District Survey Report is to be prepared in such a way that it not only identifies the mineral-bearing area but also define the mining and no mining zones considering various environmental and social factors.

d) Identification of the source of Sand & M-Sand. The sources may be from Rivers, Lakes, Ponds, Dams, De-silting locations, Patta land/Khtedari lands. The details in case of Rivers such as [name, length of river, type (Perennial or Non-Perennial), Villages, Tehsil, District], in case of Lakes, Ponds, Dams, De-silting locations [Name, owned/maintained by (State Govt./PSU), area, Villages, Tehsil, District] in case of Patta land/Khtedari lands [Owner Name, Sy No, Area, Agricultural/Non-Agricultural, Villages, Tehsil, District], in case of M-Sand Plant [Owner Name, Sy No, Area, Quantity/Annum, Villages, Tehsil, District], needs to be recorded as per format given in **Annexure-I.**

e) Defining the sources of Sand/M-Sand in the district is the next step for identification of the potential area of deposition/aggradation wherein mining lease could be granted. Detailed survey needs to be carried out for quantification of minerals. The purpose of mining in the river bed is for channelization of rivers so as to avoid the possibility of flooding and to maintain the flow of the rivers. For this, the entire river stretch needs to be surveyed and original ground level (OGL) to be recorded and area of aggradation/deposition needs to be ascertained by comparing the level difference between the outside riverbed OGL and water level. Once the area of aggradation/deposition are identified, then the quantity of River Bed Material available needs to be calculated. The next step is channelization of the river bed and for this central ¾th part of the river, width needs to be identified on a map. Out of the ¾th part area, where there is a deposition/aggradation of the material needs to be identified. The remaining ¼th area needs to be kept as no mining zone for the

protection of banks. The specific gravity of the material also needs to be ascertained by analyzing the sample from a NABL accredited lab. Thus, the quantity of material available in metric ton needs to be calculated for mining and no mining zone.

Note: As physical survey with conventional method is time-consuming, use of unmanned aerial vehicle (UAV) may be explored to carry out the survey and finalizing the original ground level and for developing a 3D model of the area.

f) The permanent boundary pillars need to be erected after identification of an area of aggradation and deposition outside the bank of the river at a safe location for future surveying. The distance between boundary pillars on each side of the bank shall not be more than 100 meters.

g) Identifying the mining and no mining zone shall follow with defining the area of sensitivity by ascertaining the distance of the mining area from the protected area, forest, bridges, important structures, habitation etc. and based on the sensitivity the area needs to be defined in sensitive and non-sensitive area.

h) Demand and supply of the Riverbed Material through market survey needs to be carried out. In addition to this future demand for the next 5 years also needs to be considered.

i) It is suggested that as far as possible the sensitive areas should be avoided for mining, unless local safety condition arises. Such deviation shall be temporary & shall not be a permanent feature.

j) The final area selected for the mining should be then divided into mining lease as per the requirement of State Government. It is suggested the mining lease area should be so selected as to cover the entire deposition area. Dividing a large area of deposition/aggradation into smaller

mining leases should be avoided as it leads to loss of mineral and indirectly promote illegal mining.

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

l) The number of a contiguous cluster needs to be ascertained. Contiguous cluster is formed when one cluster is at a distance of 2.5 Km from the other cluster.

m) The mining outside the riverbed on Patta land/Khatedari land be granted when there is possibility of replenishment of material. In case, there is no replenishment then mining lease shall only be granted when there is no riverbed mining possibility within 5 KM of the Patta land/Khatedari land. For government projects, mining could be allowed on Patta land/Khatedari land but the mining should only be done by the Government agency and material should not be used for sale in the open market. Cluster situation as mentioned in para k above is also applicable for the mining in Patta land/Khatedari land.

n) The State Government should define the transportation route from the mining lease considering the maximum production from the mines as at this stage the size of mining leases, their location, the quantity of mineral that can be mined safely etc. is available with the State Government. It is suggested that the transportation route should be selected in such a way that the movement of trucks/tippers/tractors from the villages having habitation should be avoided. The transportation route so

selected should be verified by the State Government for its carrying capacity.

o) Potential site for mining having its impact on the forest, protected area, habitation, bridges etc, shall be avoided. For this, a sub-divisional committee may be formed which after the site visit shall decide its suitability for mining. The list of mining lease after the recommendation of the Committee needs to be defined in the following format given in as **Annexure-II**. The Sub-Divisional Committee after the site visit shall make a recommendation on the site for its suitability of mining and also records the reason for selecting the mining lease in the Patta land. The details regarding cluster and contiguous cluster needs to be provided as in **Annexure-III**. The details of the transportation need to be provided as in **Annexure IV.**

p) **Public consultation-**The Comments of the various stakeholders may be sought on the list of mining lease to be auctioned. The State Government shall give an advertisement in the local and national newspaper for seeking comments of the general public on the list of mining lease included in the DSR. The DSR should be placed in the public domain for at least one month from the date of publication of the advertisement for obtaining comments of the general public. The comments so received shall be placed before the sub-divisional committee for active consideration. The final list of sand mining areas [leases to be granted on riverbed & Patta land/Khatedari land, de-siltation location (ponds/lakes/dams), M-Sand Plants (alternate source of sand)] after the public hearing needs to be defined in the final DSR in the format as per **Annexure-V.** The details regarding cluster and contiguous cluster needs to be provided in **Annexure-VI**. The details of the transportation need to be provided in **Annexure-VII.**

4.2 Grant of Letter of Intent to those mining leases which are falling in potential mining zone

The State Government shall issue letter of intent as per procedure laid down in their Minor Mineral Concession Rules with due consideration of final district survey report. The State Government shall ensure that all the letter of intent shall have complete details of the mining lease including geo-coordinate of the corner points, the involvement of forest land, distance from the forest land, distance from the protected area, distance from other sites of archaeological importance, details of the cluster situation etc. The demarcation of the boundaries of LoI/Lease area shall be placed in public domain along with LoI/lease deed details.

The LOI should not be granted for mining area falling on both riverbed and outside riverbed. Therefore, in the same lease, both types of area should not be included.

The authority responsible for grant of lease for sand mining shall ensure that annual audit of the sand mining process, production and compliance of the imposed conditions by regulatory authority (Environmental clearance or mine plan) shall be one of the essential condition of the lease agreement. The annual audit report shall be submitted to the district administration, which shall be put in public domain through the district website. Any deviation observed shall be appropriately and in-accordance with applicable law shall be dealt by the concerned authority and corrective measures shall also be taken to restoration of ecological/environmental damage, if observed.

4.3 Mining Plan

The preparation of Mining Plan is also very important. The mining plan should include the original ground level recorded at an interval not more than 10M x 10M along & across the length of the river. In addition to this-levels, outside the mining lease and bank of the river up to meters needs to be recorded. In the mining plan, there should be 3 plates for each year production & development planning (pre-monsoon, monsoon and post-monsoon). The time period of monsoon should be defined in the DSR. At the time of review of the mining plan, the details of the replenishment study conducted for all the years needs to be included in the mining plan. The Mining Plan should include the certificate from PCCF on forest land, distance from the protected area, past production details for mining leases seeking expansion.

Following considerations shall be kept in mind for sand/gravel mining while approving mining plan

a) Parts of the river reach that experience deposition or aggradation shall be identified. The Leaseholder/ 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 the terrace and inactive floodplains be preferred rather than active channels and their deltas and flood plains. The stream should not be diverted to form the 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 the 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 up to a distance of 1 kilometre (1 km) from major bridges and highways on both sides, or five times (5x) of the span (x) of a bridge/public civil structure (including water intake points) on up-stream side and ten times (10x) the span of such bridge on down-stream side, subjected to a minimum of 250 meters on the upstream side and 500 meters on the downstream side.

i) The sediment sampling should include the bed material and bed material load before, during and after the 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.

j) 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.

k) The flood discharge capacity of the river could be maintained in areas where there is a 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. 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 groundwater 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 meters and distance from the bank should be ¼th or river width and should not be less than 7.5 meters.

n) The borrow area should preferably be located on the riverside of the proposed embankment because they get silted in the 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 the case of the higher embankment, the distance should not be less than 50 m. In order to obviate the development of flow parallels to the embankment, crossbars of width eight times the depth of borrow pits spaced 50 to 60 meter center-to-center should be left in the borrow pits.

o) Demarcation of mining area with pillars and geo-referencing should be done prior to the start of mining.

p) A buffer distance /un-mined block of 50 meters after every block of 1000 meters over which mining is undertaken or at such distance as may be the directed/prescribed by the regulatory authority shall be maintained.

q) A buffer distance /unmined block of 50 meters after every block of 1000 meters over which mining is undertaken or at such distance as may be the directed/prescribed by the regulatory authority shall be maintained.

r) River bed sand mining shall be restricted within the central 3/4th width of the river/rivulet or 7.5 meters (inward) from river banks but up to 10% of the width of the river, as the case may be and decided by regulatory authority while granting environmental clearance in consultation with irrigation department. Regulating authority while regulating the zone of river bed mining shall ensure that the objective to minimize the effects of riverbank erosion and consequential channel migration are achieved to the extent possible. In general, the area for removal of minerals shall not exceed 60% of the mine lease area, and any deviation or relaxation in this regard shall be adequately supported by the scientific report.

s) Mining Plan for the mining leases(non-government) on agricultural fields/Patta land shall only be approved if there is a possibility of replenishment of the mineral or when there is no riverbed mining possibility within 5 KM of the Patta land/Khatedari land. For government projects mining could be allowed on Patta land/Khatedari land but the mining should only be done by the Government agency and material should not be used for sale in the open market.

The minerals reserve for river bed area is calculated on the basis of maximum depth of 3 meters and margins, width and other dimensions as mentioned in para (s) above. The area multiplied by depth gives the volume and volume multiplied with bulk density gives the quantity in Metric Ton. In case of river bed, mineable material per hectare area available for actual mining shall not exceed the maximum quantity of 60,000 MT per annum.

4.4 Obtaining Environmental & Other Statutory Clearance

The LOI Holder/Lease Holder to obtain Environmental and Other Statutory Clearances from the concerned authorities as per provision of applicable laws.

4.5 Baseline date before Commencement of Mining Operations

Baseline data in respect of the initial level of mining lease in the interval not more than 25 X 25 meters shall be collected for record by leaseholder. The level of river bed upstream and downstream up to 100 meters also needs to be recorded. The area outside the mining lease/river bank (if lease boundary coincides with mining lease) up to 100 meters from both the banks/mining lease needs to surveyed for initial level.

4.6 Additional measures where project proponent is selected by a bidding

In those states where sand plots are auctioned to the highest bidder, the following is suggested:

It has been observed that bidders try to form a cartel and bids are received for certain plots where legal mining is done, and bids for certain other plots don't elicit any response. Sand from these un-

auctioned plots is then excavated using the same machinery deployed for the excavation of adjacent plot which might have been auctioned off. It is not easily possible for the field machinery to prevent such illegal activities. This may be prevented by having plot of larger size. plots are large in size as possible are identified for auction. Care may be taken to ensure that no continuous stretch of plot in the river bed is divided for auction. A continuous stretch of plot shall be preferred for auction, and the attempt may not be made to auction it off in pieces.

5.0 REPLENISHMENT STUDY

The need for replenishment study for river bed sand is required in order to nullify the adverse impacts arising due to excessing sand extraction. 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 an impact on the ecological equilibrium of the riverine regime, disturbance in channel configuration and flow-paths. This may also cause an adverse impact on in-stream biota and riparian habitats. It is assumed that the riparian habitat disturbance is minimum if the replenishment is equal to excavation for a given stretch. Therefore, to minimize the adverse impact arising out of sand mining in a given river stretch, it is imperative to have a study of replenishment of material during the defined period.

5.1 Generic Structure of Replenishment Study

Initially replenishment study requires four surveys. The first survey needs to be carried out in the month of April for recording the level of mining lease before the monsoon. The second survey is at the time of closing of mines for monsoon season. This survey will provide the quantity of the material excavated before the offset of monsoon. The third survey needs to be carried out after the monsoon to know the quantum of material deposited/replenished in the mining lease. The fourth survey at the end of March to know the quantity of material excavated during the financial year. For the subsequent years, there will be a requirement of only three surveys. The results of year-wise surveys help the state government to establish the replenishment rate of the river. Based on the replenishment rate future auction may be planned.

The replenishment period may vary on nature of the channel and season of deposition arising due to variation in the flow. Such period and season may vary on the geographical and precipitation characteristic of the region and requires to be defined by the local agencies preferable with the help of the Central Water Commission and Indian Meteorological Department. The excavation will, therefore, be limited to estimated replenishment estimated with consideration of other regulatory provisions.

5.2 Methodology for Replenishment Study

The replenishment estimation is based on a theoretical empirical formula with the estimation of bedload transport comprising of analytical models to calculate the replenishment estimation. The iso-pluvial maps of IMD can be used for estimation of rainfall. Catchment yield is computed using different standard empirical formulas relevant to the geographical and channel attributes. eg. Strange's Monsoon runoff curves for runoff coefficient). Peak flood discharge for the study area can be calculated by using Dickens, Jarvis and Rational formula at 25, 50 and 100 years return period. The estimation of bed load transport using Ackers and White Equation or similar can be made. A simulation model is used with basic data generated from the field in the pre-study and post-study period (preferably pre-monsoon and post-monsoon) to estimate the volume of replenished material. The particle size distribution and bulk density of the deposited material are required to be assessed from a NABL recognized laboratory. Considering the bulk density and the volume, the estimation of replenishment in weight will be calculated after considering safeguards and stability of the slopes and riverine regime. Some of the common methods used for field data acquisition for replenishment study

5.2.1. Physical survey of the field by the conventional method

i. The conventional survey technical using DGPS and other survey tools are used to define the topography, contours and offsets of the lease area. The survey should clearly depict the important attributes of the stretch of the river and its nearby important civil and other feature of importance. Such information will provide the eligible spatial area for mining. The contour and the elevation benchmarks will provide the baseline data for assessing the pre and post-study period scenario.

ii. Physical benchmarks are to be fixed at appropriate intervals (preferable 1 in 30 m) and the Reduced Level (RL) shall be validated from a nearby standard RL. These RL should be engraved on a steel plate (Bench Plate) and shall be fixed and placed at locations which are free from any damages and are available in pre and post-study period. The bench plates shall be available for use during the mining period as reference for all mining activity. Reference pillar may also be used in place of Bench Plates with visible and readable demarcation on the ground as common reference points to control the topographic survey and mining activity.

iii Baseline data on elevation status for a grid of 10 m x 10 m is preferred to have accuracy in the assessment. It is expected that two consecutive cross-sections in longitudinal and lateral direction should not be more than 10-meter distance apart, however, the regulatory authority may fix these intervals depending on the geographical and site-specific conditions, only and after providing the scientific reason for such deviation.

iv The changes observed in the elevation in per and post scenario at each node should be depicted in graphical forms with an appropriate scale to estimate the area of deposition and erosion. These graphical

presentations should depict the active channel regime and the flow bed elevation with other important features required to be considered for estimation of the mining area. The area of deposition and erosion shall be calculated for each cross-section after giving due regard to the stability and safety of active channel banks, and other features of importance. The elevation level shall be in reference to the nearest bench-plates established for the purpose.

v The levels (MSL & RL) of the corner point of each grid should be identifiable and safety barriers (Non-Mining) demarcated as restricted in consensus with Mineral Concession Rules of respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.

vi A clear identification is required to be highlighted between grids under mineable and grids under the non-mineable area. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive at the replenishment area and corresponding volume and estimated weight.

vii The database should be 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.

viii Net area shall be derived after the summation of the area of deposition minus area of erosion for each cross-section. The volume will be estimated by multiplying the distance between two cross-sections with the average of net area of these two consecutive cross-sections.

ix One sample per 900 square meters (30 m x 30 m) shall be preferred sample density for assessment of bulk density for estimation of deposition rate. Care should be taken that the sample for assessment

of bulk density is taken from the deposition zone and not from erosion. However, depending on the site condition, river morphology and geographical condition, sample density may be adjusted. Reason for such deviation shall be appropriately highlighted in the report with supporting scientific data.

5.2.2. Use of UAV/Drone and other image data processing techniques

With the development in image data processing tools and its accuracy acceptability, Drone/UAV fitted with the advance camera are used for survey purposes. Such technology has promising potential in the survey of sand mining zones due to its fast and reliable output deliveries. The survey is conducted using a set of instruments and compatible software to utilized the properly referenced data for depicting the topography of the study area. Instrument calibration and software compatibility and its validation with the ground data are an essential requirement for using this technique.

The details of the instruments their limitation and software used shall be demonstrated in the form of the accuracy assessment report, through a chapter in the replenishment study report. Other details to be incorporated in the report with regard to the study using such imaginary techniques shall highlight the followings:

a) **Flight Planning:** - The lease co-ordinates and the flight plan devised to capture the front and side overlap percentages for in each flight in reference to global coordinates (Kml or SHP file) system. The software used for the purpose and its details along with limitations with basic analytical assumptions.

b) **Block file generation:** - This operation concerns the selection of the sensor model and the definition of block properties, the addition of

imagery to the block file, marking of GCPs, generation of tie points and refining of the model.

c) **Interior orientation:** - The interior orientation of the stereo pair rational polynomial coefficients (RPC) used, which should be bundled with the scenes. RPCs are coefficient, which is used by photogrammetric software to represent the ground to-image viewing geometry.

d) **Exterior orientation:** For exterior orientation, ground control points shall be used, which are collected from the DGPS survey.

e) **Aero Triangulation:** - A critical phase in photogrammetric mapping is to rectify the satellite imagery at an appropriate tract on the surface of the earth. This is accomplished by collecting horizontal and vertical data [GCP's] to ascertain the spatial location of a number of features that are visible and measurable on the aerial images – this process is often called control bridging, which refers to passing horizontal and vertical information from one aerial image to the next.

f) **Ortho Generation:** - After running the above steps; the software shall automatically generate orthorectified imagery.

g) **DTM extraction:** For extraction of DTM, Generated point cloud data classified manually to extract bare earth.

5.2.3 Accuracy Assessment of Aerial Data:

To check the accuracy of DTM generated by Aerial data, few points are selected and compared with on-site by using DGPS instrument for the ground-truthing purpose. It is preferred to do ground-truthing at minimum 5 locations spread evenly across the lease area. The readings from the DGPS instrument are then compared with the Drone data for accuracy assessment

purpose. A comparative chart will be prepared in comparison of Data related to ground-truthing (by DGPS) and from Drone. Such accuracy assessment report shall a chapter of the replenishment study.

5.2.4 Replenishment study shall have the details of

- List of instruments
- List of software
- Establishment of Benchmark by putting No. of pillar points and various Ground Control Points (GCP) at the site.
- Ground Control Points (GCP) Collection: - Various GCPs were observed by using DGPS for Permanent Benchmarks and for control points.
- The summary of the elevation data from each section's profile based on the post-monsoon the survey should have mentioned in the table form.
- The detail of post-monsoon survey data in the tabular form shall be
- The detailed comparison of both pre-monsoon and post-monsoon elevation data shall be attached
- Cross-sectional depiction of deposition and erosion for each section in pre and post-deposition season shall be given supported by relevant field study data and plan.

6.0 ENFORCEMENT

6.1 Mining Operation:

The mining operations should be strictly carried out in accordance with the approved mining plan and after complying with all the conditions stipulated in Environmental & Other Statutory Clearance. Mine owner shall follow the operational procedure (for sale, dispatch, storage, reserve reconciliation and transportation) as may be defined by the concerned state government in its monitoring guidelines. Mine owner should comply with the recommendation and suggestion made by the High Power Committee as applicable.

6.2 Post Environment Clearnace Monitoring:

It's the responsibility of the EC Holder to comply with the Environmental Clearance conditions and upload the six-monthly EC compliance report on the website of the Ministry. For the category, 'A' mines (>100 Ha individual & cluster) Regional Office of the MoEF&CC are entrusted to carry out EC Monitoring and for the Category 'B' Mines by SEIAA. The monitoring shall be carried out as per the procedure/schedule suggested by MoEF&CC from time to time. MOEF&CC vide its notification S.O. 637(E) dated 28.02.2014 has delegated the power to State/Union Territory Environmental Impact Assessment Authority to issue show cause notice to project proponent in case of violation of Conditions of Environmental Clearance issued by the said authority and to issue direction for keeping the said EC in abeyance or withdrawing it. Thus, for category 'B' (0 to 100 Ha) projects SEIAAs are responsible for EC monitoring.

6.3 Environment Audit:

The Hon'ble NGT in its order dated 04.09.2018 in O.A. 173/2018 in the matter of Sudarsan Das vs. State of West Bengal & Ors. Inter-alia directed

that "*One of the conditions of every lease of mine or minerals would be that there will be independent environmental audit at least once in a year by reputed third party entity and report of such audit be placed in the public domain. In the course of such an environmental audit, a three-member committee of the local inhabitants will also be associated. Composition of three member's committee may preferably include ex-servicemen, a former teacher and former civil servant. The Committee will be nominated by the District Magistrate.*

The gazette notification on environmental audit has been issued by the Ministry of Environment and Forests on March 13, 1992 (amended vide notification GSR 386 (E) dated April 22, 1993). This notification applies to every person carrying on an industry, operation or process requiring consent to operate under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) or under section 21 of the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981), or both, or authorization under the Hazardous Waste (Management and Handling) Rules, 1989, issued under the Environment (Protection) Act, 1986 (29 of 1986). The notification requires that an Environmental Statement for the financial year ending the 31st March be submitted to the concerned State Pollution Control Board, on or before the 30th September of the same year.

It is suggested that NABET Accredited consultant may be engaged for Environment Audit and during the course of the audit, a three-member committee nominated by District Magistrate shall be associated.

6.4 Monitoring of Sale & Purchase of Sand:

6.4.1 In order to curb illegal mining it is very necessary that the general public is aware of the legal source of sand and RBM suppliers. The Ministry of Mines issued ***Sand Mining Framework 2018*** wherein it has proposed two mechanisms for the online sale of sand depending on whether there is a free market for sand in the State or the prices are regulated by the Government.

Para 1.2.12.2 Under the market model

In the case of the market model, all the lessees/ certified dealers in the State should register themselves on the online portal/ mobile app. For registering, the lessee/ certified dealer will have to enter the details of its concession/ stockyard, location, the quantity of sand expected on a weekly basis, as per the approved mining plan. Once registered, the online portal/ app will display the name of the reach/ stockyard and sand could be booked by the consumer from those leases/ stockyards and prices up to the delivery level. Further, the lessee/ certified dealer needs to regularly update the sand available in the reach/ stockyard, and they can decide the price at which they want to sell their sand. Anyone who wishes to purchase sand in the State will have the following options for buying:

1. *Mobile app*
2. *Online portal*
3. *Customer care/ telephone call*
4. *Licensed traders*

The consumer needs to register on the portal and log in using his/her credentials (Aadhar card based only). After logging in, the portal will display the entire list of reaches/ stockyards along with the quantity of sand available in those reaches/ stockyards and the quality and price of

sand. The consumer can filter/ sort the reaches/ stockyards based on such parameters as location, quality and price, and book from the lease/ stockyard he/she wishes to. The consumer should also have the option to purchase the sand by ordering at customer care. Also, stockyards should be made around all the major consumption hubs in the State based on their estimated demand.

Para 1.2.12.3 Controlled market prices

In case the prices are regulated by the State Government, the only difference from the previous model is that the price of sand at the river reach/ stockyard shall be uniform across the State/ district based on the quality and transportation lead. A consumer after logging in may choose the reach/ stockyard from which he/she wishes to purchase the sand. The payment for booking the sand in both the cases should be made on the portal/ app so that proper accounting of the sale of sand can be maintained by the Government. Also, stockyards should be made around all the major consumption hubs in the State based on their estimated demand.

It is suggested that the State Government should develop an online portal for sale and purchase of Sand & RBM. In addition to this State Government shall decide on the model viz. *Under market model or Controlled market prices or both* to be adopted for their respective States. The State Government shall accordingly modify their Minor Mineral Concession Rules within 6 months of publication of these guidelines. It is suggested that the controlled price model is more effective in controlling illegal sand mining. Because if the State Government is the only agency to provide the sand in the State, then price and supply of sand can be controlled more effectively. There will be no confusion in the consumers about legality of the purchase as the only source of sand provider is the State Government through its network of registered stockiest, retailers and transporters. The consumers

can fill the online request, pay the amount, select the transporter and give its feedback after the receipt of the sand. The transportation can also be controlled as the tippers used for transportation is registered tippers with GPS facility, the transportation route is well defined for easy monitoring, control over overloading of tippers, control over spillage of mineral etc. The State Govt. shall also make provision for penalizing the persons/agency buying the sand and RBM from the illegal sources.

6.4.2 The Ministry of Mines in its Sand Mining Framework also mentioned the following different level of monitoring:

Para 1.2.13.1 Level 1- Reach/ Stockyard level monitoring

For monitoring of the active reaches:

a. *Quantity of sand to be extracted from the reach should be based on the quantity of sand assessed in the reach by the Joint Inspection Team.*

b. *The lease boundary should be demarcated with geo-coordinates or geo-fenced to ensure that sand extraction is going on only within the permitted area.*

c. *De-casting from river beds should be monitored on a regular basis to keep a track of excavated quantity.*

d. *After every two years, a mandatory audit of the quantity extracted and quantity permitted along with the replenishment rate.*

e. *Mandatory e-pass/ e-permit should be made available at reach level for transportation of any sand by any GPS enabled vehicle with the provision of entering the vehicle number of the sand carrying vehicle and expected delivery address and customer name/ mobile number. Also, provision should be made available for stockyards/ stockiest of sand. In the case of*

nomination based (controlled pricing) business model, the margin of private stockist should be capped over a fixed percentage of notified prices.

f. *At the stockyard, the stock supervisor should verify the authenticity of online payment receipt before issuing the transit pass. The loading of sand should be monitored electronically and all transporting vehicles should pass through an electronically monitored weighbridge. g. Real-time data capture for transportation*

Para 1.2.13.2 Level 2 - Transportation monitoring

To make transportation monitoring effective and useful, all the sand carrying vehicles (tractors/ trucks) should be registered with the department and GPS equipment should be installed in all the sand carrying vehicles. Weighbridges with CCTV should be installed at all the stockyards, active reaches to ascertain the exact quantity of sand being transported in the vehicle. Check posts with CCTV cameras should be established near all major consumption centres to check if all the transporting vehicles are carrying a valid transport permit. The transport permit generated should contain the security features mentioned under section 5.11 so that one permit cannot be re-used by generating photocopies of the permit.

Para 1.2.13.3 Level 3 - End consumer monitoring/ bulk consumer

For end consumer monitoring, a customer grievance redressal center should be established to enquire about the grievances faced by the sand consumers. The telephone number of the call center should be advertised so that it reaches the general public through which anyone in the State can register his/her complain related to the sand, be it in terms of price or any other grievance. Additionally, profiles of customers should be analyzed such as the delivery of sand at the same address, usage pattern and its comparison with the estimated usage, as mentioned in purpose, etc. Further, surprise checking

should be conducted by the district level committee staff as per instructions of the monitoring agency.

Para 1.2.13.4 Level 4 - Indirect monitoring

Indirect monitoring can be done by determining sand consumption through the quantum of cement sales in the State, as the sale of cement is quite organized and data is easily available at the State level and district levels for the same. From district-wise cement consumption, the further trend of sand consumption can be derived. Any anomalies in the sand consumption/demand can be analyzed further.

Note: *The above monitoring mechanism is just a suggestion and the States may visit Andhra Pradesh and Telangana to study the monitoring mechanism in greater detail.*

It is suggested that State Government may consult with concern department of State of Telangana and Tamil Nadu to have better understanding on their experience and knowledge in adopting best sand mining enforcement provisions and monitoring practices and frame their own regulatory regime and monitoring framework. The framework of monitoring should essential include online sale & purchase of River Bed Material/ Auction of leases, Sand from rivers and other sources, online monitoring of excavation, storage and transportation of mineral for control of illegal mining.

The respective State Governments shall develop the online Sale & Purchase System after defining the model viz. Under market model or Controlled market prices model. The level of monitoring needs to be defined and guidelines need to be finalized by the respective State Governments as per their requirement with due consideration of suggestive guideline in this document. These all measure will help in curbing illegal mining.

7.0 Recommendations of High Power Committee:

A high power committee (HPC) was constituted by Hon'ble National Green Tribunal to assess the status of illegal mining the stretch of River Yamuna, under the chairmanship of Secretary, Ministry of Environment Forest & Climate Change. The committee after exhaustive field survey and interaction with stakeholders and having surprise visits submitted a comprehensive report on river sand mining along with certain recommendations on enforcement requirements and monitoring essentials. The same is provided in the following section for consideration of monitoring / regulatory authority to adopt applicable provisions in their monitoring framework and also to ensure that the infrastructural requirements recommended by the HPC are put in use at all locations including the lease area.

7.1 Recommendations of High Power Committee (HPC)

The following recommendation of the High Power Committee shall be considered while framing the monitoring mechanism by the State Government.

i. Project Proponent must ensure that following security features are included in the Transport Permission/Permits (TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible.:

(a) Printed on Indian Bank Association (IBA) approved
(b) Magnetic Ink Character Recognition Code (MICR) paper;
(c) Unique Barcode;
(d) Unique Quick Response Code (QR);
(e) Fugitive Ink Background;
(f) Invisible Ink Mark;
(g) Void Pantograph;
(h) Watermark.

ii. Project Proponent must ensure that CCTV camera, Personal Computer (PC) or laptop, Internet Connection, Power Back up, access control of mine lease site; and arrangement for weight or approximation of weight of mined out mineral on basis of volume of the trailer of vehicle used at mine lease site are available.

iii. The PP has to enter the 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 are generated by the software which gets printed individually on each TP Validity of TP is calculated based on the distance between plot and destination. After validity time is over the TP stands invalid.

iv. The officers involved in monitoring should be provided with mobile application and/or bar code scanners using which the TP can be checked anywhere on road. As soon as the bar or QR code on TP gets scanned through using the mobile application and/or scanner or vehicle number is entered into the application or sent by SMS to a predefined number, all details of TP such as plot details, vehicle details, validity time, etc. should be fetched from the server. This means if anything is re-written on TP and attempt is made to reuse the same, it can be traced immediately. 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.

v. The facility to fetch details using mobile app, website and SMS may be made available to the general public as well. However, they shall not be allowed to stop the vehicles to check the transportation. The only option that they should have is to check vehicle numbers of the passing vehicle in the mobile app or SMS for the validity of the pass. The only result that should be available to them should be if the vehicle carrying sand has a

valid permit at the relevant point of time or not. If the citizen finds that the vehicle doesn't have such a permit, as ascertained from mobile app or website or SMS, he should alert local authorities, who shall then take further action as per the law.

vi. In case, the vehicle break-down, the validity of Transport Permit or Receipt shall be extended by sending SMS by the driver in specific format to report the breakdown of the vehicle. The server will register this information and register the breakdown. The State can also establish a call center, 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/call center.

vii. The route of the vehicle from source to destination shall be tracked through the system using checkpoints, Radio-frequency identification (RFID) tags, and Global Positioning System (GPS) tracking.

viii. The system shall enable the Authorities to develop a periodic report on different parameters like daily lifting report, vehicle log/ history, lifting against allocation, and total lifting. The system can be used to generate auto mails/SMS. This will enable the District Collector / Magistrate and other authorities to get all the relevant details and will 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 should be tracked.

ix. It is necessary to prevent any truck/vehicle from transporting sand out of the identified plot bypassing the strong IT enabled system. Therefore, at each of the sand plot, the following additional measures should be taken.

(a) There shall be one entry and exit point provided for trucks/vehicles. The said entry point should have facilities as mentioned above. In case, it is necessary to have more than one entry/exit points, all such points shall have checkpoints with facilities as mentioned above. All other possible ways of entry/exit should be closed using barriers like compound, trench, etc. All provisions shall be made to not make it possible for any vehicle to enter or exit without entry into the computerized system.

(b) All such points should have 24X7 CCTV coverage, the footage of which should be made available online to the district administration. In cases, where sufficient internet bandwidth is not available, it may be deposited with the district administration on a weekly basis. If possible, the entry/exit points should have boom barriers which will record the vehicles entering and exiting the plot.

8.0 GENERAL APPROACH TO SUSTAINABLE SAND MINING

8.1 Pre-requisite for starting sand mining operation

i) All district to prepare a comprehensive mining plan for the district as per the provision of District Survey Report. These reports shall be put on the website of District Administration. No mining shall be allowed in the area which has not been identified in the comprehensive mining plan of the District.

ii) Replenishment study should be conducted on regular basis.

iii) All potential rivers mining zone/area shall be identified and put for auction with proper geo-tagged details by the auctioning authority concerned.

iv) The latitude and longitude of each mining lease shall be clearly mentioned in Letter of Intent issued to the potential mine lease. Such information shall be provided on the website of the district administration.

v) The provision of these guidelines shall be considered while identifying the potential stretches /locations and boundaries of the leases for the minable area.

vi) The LoI holder shall seek Environmental Clearance as per the provision of EIA Notification, and the regulatory authority shall ensure that the provision suggested in "Sustainable Sand Mining & Management 2016" and in this documents, as applicable are part of the clearance conditions.

vii) There shall be no river bed mining operation allowed in monsoon

period. The period as defined by IMD Nagpur for each state shall be adhered with.

viii) The monitoring infrastructures including weighbridge and adequate fencing of the lease area, CCTV, Transport permits, etc, as suggested in this document shall be ensured in order to reduce unrecorded dispatch.

ix) Regular monitoring of mined minerals and its transportation and storage shall be ensured and all information shall be captured at centralized database so that easy tracking of illegal material can be done.

x) Annual audit of each mining lease shall be carried out wherein three independent member of repute, nominated by District administration shall also participate.

8.2 Mining of Sand from Agricultural Fields

This practice is prevalent in Haryana; to ensure that mining from outside doesn't affect rivers, no mining is permitted in an area up to a width of 100 meters from the active edge of embankments or distance prescribed by Irrigation department whichever is critical. The top layer of soil varying between 1 and 2 meters is removed and stacked separately and thereafter the sand deposit which maybe 10-15 meter deep is mined. After removing the sand layer up to a maximum depth of 09 meters or the maximum mineable minerals, as permitted by competent authority. The topsoil 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) and 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 the same lease, both types of area should not be included.
3. The sand mining from the 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 degree) and adequate gap (minimum 10 feet) be left from adjacent agricultural field to avoid erosion and scouring.

The provision for sand mining in agricultural field may be permitted, whenever replenishment of sand occurs due to natural phenomena.

Permission may also be granted by competent authority (District administration) for excavation of sand/Soil from agricultural fields, after due diligence of this prevailing condition in order to avoid any unacceptable impact on the environment and nearby livelihood from agriculture provided such objective of such excavation mining of Soil/Sand in limited increase the productivity of sand agricultural field.

9.0 MONITORING MECHANISM

9.1 Illegal Mining

The Hon'ble Supreme Court in its Judgment dated 2.08.2017 in W.P 114 of 2014 in the matter of Common Cause Vs Union of India & Ors, inter-alia passed the following:

Para 128. *The simple reason for not accepting this interpretation is that Rule 2(ii-a) of the MCR was inserted by a notification dated 26th July 2012 while we are concerned with an earlier period. That apart, as mentioned above, the holder of a mining lease is required to adhere to the terms of the mining scheme, the mining plan and the mining lease as well as the statutes such as the EPA, the FCA, the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981. If any mining operation is conducted in violation of any of these requirements, then that mining operation is illegal or unlawful. Any extraction of a mineral through an illegal or unlawful mining operation would become illegally or unlawfully extracted mineral."*

In view of above Judgement, any mining activities which are not governed under the provision of Environment (Protection) Act, 1985, The Water (Prevention & Control of Pollution Act, 1974, The Air (Prevention & Control of Pollution) Act, 1981, Forest Conservation Act-1980, Wildlife Protection Act - 1972, shall be considered as illegal mining within the provision of section 21(5) of Mines and Minerals (Development & Regulation) Act, 1957 (MMDR Act) and the concerned authority shall take necessary action within the provision of MMDR Act.

As per the provision of 23(C) of MMDR Act, the State Government is empowered to make rules for preventing illegal mining, and transportation

& storage of Illegal minerals. All such mining which qualifies under illegal, shall be dealt with in the provision of MMDR Act by the concern authorities.

State Pollution Control Board (SPCB) is the nodal authority in the State for dealing with cases related to pollution or environment management coming under the purview of the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981 and the Environment Protection Act 1986. SPCB shall initiate appropriate action under the provision of these acts for non-compliance of violation of the provisions.

9.2 Environmental Damage due to illegal mining

The environmental damages incurred or resulting due to illegal mining shall be assessed by a committee constituted by District Administration having expertise from relevant fields, and also having independent representation of locals and State Pollution Control Board. Guidelines for assessment of ecological damages prescribed by the State Government or Concerned Pollution Control Boards or any other authority shall be applicable and compensation as fixed shall be paid by the project proponent, in light of Hon'ble National Green Tribunal orders.

9.3 Monitoring of Mining near Inter-district or inter-state boundary

There are situations where bifurcated river becomes district boundaries or state boundaries in such situation it is difficult to assess the mining potential, or to have close monitoring and enforcement of the regulatory provision. Such challenges have been identified and dealt with in SSMG-2016. However, in the absence of any standardized procedure, the monitoring has not been effectively practiced. This has been highlighted by the High Power Committee constituted by NGT in the matter pertaining to illegal mining.

The districts/state sharing the boundary shall constitute the combined task force for monitoring of mined materials, mining activity and also should actively participate in the preparation of DSR by providing appropriate inputs. In such cases, the draft DSR so prepared shall be put up for public consultation in both the districts through respective district administration website.

The task force shall meet every quarter to reconcile the data collected during the period and identify any gap/ lapses based on the outcome of such meeting. The respective district shall take action/ corrective measures. Effort shall be made for real-time data sharing between both the district.

The task –force shall include essentially the representative of respective districts from the mining department, transport department, regional office of SPCB concerned and a reputed citizen nominated by district administration. The Taskforce shall be headed by officer not less than ADM rank and quarterly outcome shall be submitted to District administration.

In addition to the above, there is a need for strict surveillance, particularly at night. The State of Gujarat has already initiated a program called '*Trinetra*' for night surveillance by using night-vision drones to control illegal mining incidents. This program is giving satisfactory results. Such type of system may also be developed by each State within a reasonable time.

A typical standard operating procedure for assessing illegal mining by the committee constituted shall, but not limited to, include the steps given in the following table. However, the process of assessing can be modified based on site-specific conditions and any deviation shall be recorded in the report with proper justification.

Suggestive standard Practice for assessing illegal mining

Step 1	The assessment team should collect the information and documents prescribed in the Pre-Requisite section.
Step 2	The assessment team should verify the applicability/validity of statutes under EPA-1986, Air and Water Act, MMDR 1957, State Mines and Mineral Rules, etc.
Step 3	Field visit should be conducted for identification of mining lease area (in hectare) and boundary pillar constructed to indicate the same.
Step 4	With the help of GPS instrument, the team should assess the area where any extraction or mining have been carried out on the day of visit and calculate the mined-out area in a hectare.
Step 5	If available, the team may avail the use of latest satellite images for calculating the total mined out area.
Step 6	The team should verify the Ground / Surface Level (in meter above MSL) of at least 04 highest points in or around the area where mining has been done. The Ground/surface level will then be computed based on averaging of 04 highest points verified by the team.
Step 7	With the help of Depth Measurement kit or any depth measuring instruments, the depth should be measured for at least 04 points in the mined-out area. For computing, the depth, averaging of the value obtained at 04 points should be done.
Step 8	Verification of compliance conditions of Environmental Clearance and Consent to operate, mining methodology under Mining Plan
Step 9	Identification of vulnerable impacts observed on the field and non-compliance of conditions of Environmental Clearance and Consent to Operate.

Step 10	Field Survey for identification, monitoring and verification of ecological species based on the information available and documents mentioned in the Pre-requisite section.
Step 11	Preparation of inventory of machinery used/observed on the field (optional)
Step 12	Preparation of inventory of hydraulic structures observed on the field (optional)
Step 13	Water sampling for assessment of water quality including physical and biological parameters. (optional)
Step 14	Reconciliation collation of data/information and compilation to maintain violation.
Step 15	Identification of restoration plan and computation of cost of the restoration plan.

9.4 Monitoring Mechanism

A uniform monitoring mechanism is required to assess the regulatory provision in quantitative terms, with robust institutional and legal framework. Based on past experience and suggestions available, the following requirements are suggested for defining a mechanism for monitoring of mining activities which will help in identification of mining which is operating either illegally or are violating the regulatory provisions. Some suggestion will facilitate direct or indirect information to help in such an assessment.

1. All precaution shall be taken to ensure that the water stream flows unhindered and process of Natural river meandering doesn't get affected due to mining activity.

2. River mining from outside shall not affect rivers, no mining shall be permitted in an area up to a width of 100 meters from the active edge of embankments or distance prescribed by the Irrigation department.

3. The mining from the area outside river bed shall be permitted subject to the condition that a safety margin of two meters (2 m) shall be maintained above the groundwater table while undertaking mining and no mining operation shall be permissible below this level unless specific permission is obtained from the Competent Authority. Further, the mining should not exceed nine-meter (9 m) at any point in time.

4. Survey shall be carried out for identifying the stretches having habitation of freshwater turtles or turtle nesting zones. Similarly, stretches shall be identified for other species of significant importance to the river eco-system. Such stretch with adequate buffer distance shall be declared as no-mining zone and no mining shall be permitted. The regulatory authority as defined for granting Environmental Clearance, while considering the application of issuance of ToR and/or EC for the adjacent block (to non-mining zone) of mining shall take due precaution and impose requisite conditions to safeguard the interest of such species of importance.

5. District administration shall provide detailed information on its website about the sand mines in its district for public information, with an objective to extend all information in public domain so that the citizens are aware of the mining activities and can also report to the district administration on any deviation observed. Appropriate feedback and its redressal mechanism shall also be made operational. The details shall include, but not limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments etc.

6. A website needs to be maintain to track the movement of centralised sand mining and a Centralised server system should be made to manage the data related to sand mining across India.

7. The mineral concession holders shall maintain electronic weighbridges at the appropriate location identified by the district mining officer, in order to ensure that all mined minerals from that particular mine are accounted for before the material is dispatched from the mine. The weighing bridge shall have the provision of CCTV camera and all dispatch from the mine shall be accounted for.

8. The mineral movement shall be monitored and controlled through the use of transit permit with security features like printing on IBA approved MICR papers, Unique bar/QR, fugitive ink background, invisible ink mark, void pantographs and watermarks papers or through use of RFID tagged transit permits and IT /IT-enabled services. Such monitoring system shall be created and made operationalised by State Mining department and district level mining officer shall be responsible for ensuring that all legal and operational mines are connected and providing the requisite information on the system. Regular check and associated report shall be submitted to DLTF and uploaded on the website.

9. State Government shall constitute a District Level Task Force (DLTF) under the Chairmanship of Deputy Commissioner/District Magistrate/Collector with Superintendents of Police and other related senior functionaries (District Forest Officer, District transport officer, Regional officer- SPCBs, Senior Officer of Irrigation Department, District Mining Officer) with one/two independent member nominated by the Commissioner concerned. The independent member shall be retired government officials/teacher or ex-serviceman or ex-judiciary member.

The DLTF shall keep regular watch over the mining activities and movement of minerals in the district. The DLTF shall have its regular meeting, preferably every month to reconcile the information from the mining activity, and other observations made during the month and take appropriate corrective and remedial action, which may include a recommendation for revoking mining lease or environmental clearance. The DLTF may constitute an independent committee of the expert to assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the miner's concern. The recommendation may also include action under the provision of E(P) Act, 1986.

10. The area not identified for mining due to restriction or otherwise are also to be monitored on a regular basis by the DLTF. Any observations of mining activity from the restricted area shall be reported and corrective measures shall be initiated on an urgent basis by the DLTF.

11. The dispatch routes shall be defined in the Environmental Clearance and shall be avoided through densely habituated area and the increase in the number of vehicle movement on the road shall be in agreement with the IRC guidelines / carrying capacity of the road. The alternate and dedicated route shall be explored and preferred for movement of mining to avoid inconvenience to the local habitat. The mining production capacity, by volume/weight, shall be governed by total permissible dispatch calculated based on the carrying capacity of dispatch link roads and accordingly, the production should be regulated.

12. The movement of minerals shall be reconciled with the data collected from the mines and various Naka/check posts. Other measures may also include a general survey of the potential mineable area in the district

which has not been leased/auctioned or permitted for mining due to regulatory or other reasons.

13. The location and number of check post requirement shall be reviewed by DLTF on a regular basis so that appropriate changes in location/number could be made as per the requirement. Such review shall be carried out on a regular basis for the district on inter-state boundary or district providing multiple passages between two districts of different states.

14. The district administration shall compile the information from their district of the permitted and legal mined out minerals and other details and share such information and intelligence with the officials of the adjoining district (Inter or/and Intra State) for reconciliation. The information shall include the area of operation, permissible quantity, mined out minerals (production) the permitted route etc., and other observations, especially where the mine lease boundary is congruent with the district boundary. Such coordination meeting shall be held on a quarterly basis, alternatively in two district headquarters or any other site in two districts decided mutually by the District Magistrate.

15. The mining department shall include submission of an annual environmental audit report as one of the conditions in the mining lease agreement. The annual audit for each river bed mining lease shall be carried out and the audit report shall be uploaded on the website of district administration. The audit shall be carried out by an independent team of 3 members nominated by District Collector/Magistrate/Commissioner comprising of Ex-Serviceman, Ex-Government officials of repute, Professor or Person having experience of mining/environment. The guidelines and method of the audit shall reflect adequately the monitor-able parameters and output and reflect

the compliance status with respect to the conditions imposed by the regulatory authorities including conditions of Environmental clearance.

16. The in-situ and ex-situ environmental mitigative measures stipulated as EMP, CER, CSR and other environmental and safety conditions in mines including the welfare of labours shall properly reflect in the audit report.

9.5 Suggestive additional requirements are

i. The requirement at the Mine Lease Site:

a. Small Size Plot (Up to 5 hectares): Android Based Smart Phone.
b. Large Size Plots (More than 5 hectares): CCTV camera, Personal Computer (PC), Internet Connection, Power Back up.
c. Access control of mine lease site.
d. Arrangement for weight or approximation of the weight of mined out mineral on the basis of the volume of the trailer of vehicle used.

ii. 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 a smartphone. It will require internet availability on SIM card;

c. SMS: Transport Permit or Receipt shall be uploaded on the server even by sending SMS through mobile. Once Transport Permit or Receipt get uploaded, a unique invoice code gets generated with its validity period.

iii. Proposed working of the system:

The State Mining Department should print the Transport Permit or Receipt with security features and issue them to the mining leaseholder 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 preferable 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.

iv. 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 the website, Android Application and SMS.

v. Breakdown of Vehicle:

In case the vehicle break-down, the validity of Transport Permit or Receipt shall be extended by sending SMS by the driver in specific format to report the breakdown of the vehicle. The server will register this information and register the breakdown. The State can also establish a call center, 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 center.

vi. Tracking of Vehicles:

The route of the vehicle from source to destination can be tracked through the system using checkpoints, RFID Tags, and GPS tracking.

vii. Alerts or Report Generation and Action Review:

The system will enable the authorities to develop a 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 regulatory authority 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.

Some of the State has followed the SSMMG-2016 and has also improvised or customized on the provisions given therein, and are successfully in operation. Salient provision adopted at different stages of sand mining in the state of Tamil Nadu is given as **Annexure VIII.**

9.6 Actions against illegal excavation and transport

Solapur district administration in Maharashtra had adopted a multi-pronged strategy to penalize the persons involved in illegal excavation and transport which resulted in a significant increase in revenue earned by the state. Following rules and procedures as mentioned in these guidelines will add to the costs of PP. Those involved in illegal activities are not required to bear these costs and this will make their supply in the market cheaper (though illegal). This will put the players running their business by following rules and procedures laid down by the government to disadvantage as far as the selling price is considered. Therefore, it is necessary to come down heavily on those involved in illegal excavation/transport, so that there is no incentive for players to abide by the rules.

The following action may be taken to achieve this deterrence against illegal business:

1. The action should be taken under all legal options available simultaneously. Thus, after identifying the case of illegal excavation, storage and/or transport of minor minerals (including sand), fine should be levied as per the land revenue laws/code(s) of the state. In addition, FIR should be lodged in the police station under relevant sections of law including sec 379 IPC. In addition, action under the Motor Vehicle Act, 1989 and relevant rules should initiate to cancel/suspend the driving license of the driver and permit of the vehicle. Further, action should be initiated under provisions in the Income Tax Act, 1961 for unaccounted income and under the Central Goods and Services Act, 2017 for non-payment of GST. (Earlier this was done under the state act pertaining to Value Added Tax/Sales Tax). Habitual offenders should also be taken up under local state laws for externment and/or preventive action. It is clarified that as per law, it is possible to take all actions under various laws

simultaneously for one offence. What is prohibited in law is an action under the same law for the same act more than once.

2. The action should be taken against all persons responsible. Often, there is a tendency to penalize only the drivers of the vehicles. The mafia of illegal mining and transport is much bigger and drivers are only one part of the system. It is necessary to identify all those involved in the offence. It is usually not possible to reach the place of excavation without creating a motorable pathway up to the same through land which may be private land. Such role of such landowners needs to be looked into for each offence and proceeded against simultaneously. Further, the role of vehicle owners needs to be probed. Role of the person who allowed his land to be used for illegal excavation and storage should also be examined. Lastly, the person who purchases such sand should also be probed. The legal proceedings stated above needs to be initiated against all of these together. An attempt should be made to fix the financial responsibility in joint and several ways so that recovery is easier.

3. There may be discretion available in law about the extent of the penalty to be levied. If such discretion is very wide, then it is advisable that guidelines may be laid down to reduce such discretion in law for levying penalties. For example, in Maharashtra, Land Revenue Code, fine of any amount of penalty up to thrice the value of the sand can be levied. Solapur district administration had instructed Tahsildars and SDMs not to use discretion and levy the fine of three times the value. Availability of discretion makes junior level functionaries susceptible to pressures and it may also lead to corrupt practices.

4. It is emphasized that actions, as stated above, are most important to ensure that the IT-based system works. If these exemplary actions are not taken against everyone, it shall create a strong disincentive to those

involved in legal excavation and transportation. For IT-based (or any other) legal system to work, it is necessary to ensure that illegal system stops working altogether.

Annexure-I

Details of Sand/M-Sand Sources

a) Rivers:

River Name/M-Sand Plant	Total Stretch of River (in KM)	Type of River (Perennial or Non-Perennial)

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

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

c) Patta Lands/Khatedari Land:

Owner	Sy. No	Area (Ha)	District	Tehsil	Village	Agricultural Land (Yes/No)

d) M-Sand Plants:

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

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

Annexure-II

List of Potential Mining Leases (existing & proposed)

Rivers

River Details	Lease Details	Area (in Ha)	Distance (in KM) from PA/BR/WC/	Distance from Forest Area (in KM)	Mining leases within 500 meters (if yes cluster area)	Total excavation in Tonnes /Annum considering digging depth max as 3 meters	Mineral to be mined (Sand/ Bajri/ RBM etc.)	Existing / Proposed

Patta Lands/Khatedari Land: (existing & proposed)

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

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

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

M-Sand Plants :(existing & proposed)

Plant Name	Owner	District	Tehsil	Village	Geo-location	Quantity Tonnes/Annum	Existing/Proposed

Annexure-III

Cluster & Contiguous Cluster details

Clusters:

River Name	Cluster No.	Lease No	Location (Riverbed / Patta Land)	Village	Area (in Ha)	Total Excavation (Ton)	Total Mineral Excavation (Ton)

Contiguous Clusters:

River Name	Contiguous Cluster No.	Cluster No	Number of leases in the cluster	Location (Riverbed / Patta Land)	Distance between clusters	Village	Area of Cluster (Ha)	Total Mineral Excavation (Ton)

Annexure-IV

Transportation Routes for individual leases and leases in Cluster

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

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

Annexure-V

Final List of Potential Mining Leases (existing & proposed)

Rivers

River Details	Lease Details	Area (in Ha)	Distance (in KM) from PA/BR/WC/	Distance from Forest Area (in KM)	Mining leases within 500 meters (if yes cluster area)	Total excavation in (MT/Yr) (Mine depth max as 3 m)	Mineral to be mined (Sand/Bajri/RBM etc.)	Existing /Proposed

Patta Lands/Khatedari Land: (existing & proposed)

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

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

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

M-Sand Plants :(existing & proposed)

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

Annexure-VI

Final List of Cluster & Contiguous Cluster

Clusters:

River Name	Cluster No.	Lease No	Location (Riverbed / Patta Land)	Village	Area (in Ha)	Total Excavation (Ton)	Total Mineral Excavation (Ton)

Contiguous Clusters:

River Name	Contiguous Cluster No.	Cluster No	Number of leases in the cluster	Location (Riverbed /Patta Land)	Distance between clusters	Village	Area of Cluster (in Ha)	Total Mineral Excavation (Ton)

Annexure-VII

Final Transportation Routes for individual leases and leases in Cluster

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

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

Annexure VIII

Salient provision for sand mining in the state of Tamil Nadu

STEPS TO BE FOLLOWED BEFORE EXECUTION:

- The state as a policy should endeavor to have single authority/agency responsible for all river sand mining in the state with an objective to ease the gap in demand and supply and accordingly, take necessary measures including planning, monitoring of mined material and its transport, and to curb illegal mining and sale of materials.

- The prospective site for sand quarry may be identified based on the availability of adequate sand deposits along the river beds, which hinders the free flow of water and results in flooding during monsoon seasons. Emphasis may be given to such quarry sites which is more viable for replenishment.

- A detailed study may be conducted by engaging expert from reputed Institutions to identify prospective sand reaches, assessment of the impact of sand quarrying on the Ground Water Table and water availability, conduct bore log details and study the social and environmental aspects. The generic requirement for replenishment study is to be followed.

- Once the site is identified for prospective sand quarry site based on the detailed replenishment study, the concerned department shall submit the proposal with the geo-tagged boundary of the proposed mining Precise Area Proposal to the District Collector for approval.

- A joint inspection may be carried out by the RDO/Sub-Collector, Assistant/Deputy Director,

- Executive Engineer, TWAD Board and the PWD officials to consider the various factors before giving consent to the proposal.

- The RDO concerned along with Revenue officials may verify the revenue records of the proposed sand quarrying area and give the NOC.

- The AD/DD Mines may verify the presence of permanent structures such as tower line, bridge, monuments if any, in the vicinity of the proposed mining site as per Tamil Nadu Minor Mineral Concession Rules,1959 (As per Rule 36 " there shall be no quarrying of sand in any river bed or adjoining area or any other area which is located within 500 meter radial distance from the location of any bridge, water supply system, infiltration well or pumping installation of any of the local bodies or Central or State Government Department or the Tamil Nadu Water Supply and Drainage Board head works or any area identified for locating water supply schemes by any of the above mentioned Government Department or other bodies" and " The distance of 50 meter shall be measured in the case of railway, reservoir or canal horizontally from the outer toe of the bank or the outer edge of the cutting, as the case may be …. "). Also, the availability of minerals may be cross verified with the available DSR.

- The TWAD officials may verify the drinking water schemes located nearby the proposed quarry site and the minimum distance required as per statutory norms.

- Based on the feasibility report of the joint inspection by the Revenue, Tamil Nadu Water Supply and Drainage Board and Mining officials/experts, the District Collector may give consent for the Precise Area proposal.

- After getting Precise Area approval, a detailed Mining Plan and sketch shall be prepared by the Executive Engineer, PWD using the services of a NABET accredited consultant who holds the pivotal role in the preparation of mining plan. Due responsibility will be expected on the concerned consultant in the mining plan preparation taking care of adhering to all mining rules, existing as on date. The mining plan shall contain the details of quantity to be excavated, the period of mining, method of excavation, deployment of required machinery, Environment Management Plan (EMP), proposed number of laborers to be deployed and Conceptual Mining Plan, as per Rule 41 of TNMMC Rules 1959. It is also the duty of the consultant to give the safe distance of 50 m or twice the bank height from the toe of the riverbank, whichever is higher and fixing the Geo coordinates for boundaries using DGPS instruments.

- The concerned Executive Engineer, PWD shall submit the Mining Plan prepared by the NABET accredited consultant to the concerned Assistant/Deputy Director, Department of Geology and Mines for approval, as per Rule 42 of TNMMC 1959. After scrutiny, the Assistant/Deputy Director, Department of Geology will present the Mining plan before the State Level Environment Impact Assessment Authority (SEIAA) for granting Environmental Clearance.

- The Executive Engineer, PWD shall prepare Form I and Pre-feasibility report with the help of the consultant and submit to SEIAA for an area less than 50 Ha. or to the Ministry of Environment and Forest and Climate Change (MoEF&CC) for the area more than 50 Ha.

- The State Expert Appraisal Committee (SEAC) under SEIAA, consisting of experts from renowned fields such as Mines, Environment, Sociology etc. shall conduct a site inspection of the proposed sand quarry site and after intense scrutiny, may recommend the proposal to SEIAA for approval.

- SEIAA shall grant Environmental Clearance for the sand quarry proposal after analyzing all the statutory provisions and based on the recommendation of the SEAC.

- The Environmental Clearance shall be informed to the public with basic details through advertisement in at least two widely circulated local newspapers with at least one in the vernacular language of the locality, within 7 days of the receipt of the clearance.

- On receipt of the Environmental Clearance, the Executive Engineer, PWD shall apply for Consent to Establish (CTE), from the Tamil Nadu Pollution Control Board as per the Air and Water Act, to enter upon the sand quarry site and commence the preliminary works such as construction of temporary sheds, bio-toilets, formation of biodegradable road using sugar cane leaves etc., drilling of bore wells etc. as per the statutory requirements. After all the preliminary works are completed, the Executive Engineer, PWD shall apply for the Consent to Operate (CTO) from the Tamil Nadu Pollution Control Board. Earmarking boundary of the identified land site through the concrete posts along with red flags need to be established.

- On receipt of the CTO, the Executive Engineer, PWD shall request the consent of the District Collector to commence the quarries. The District Collector shall request the Taluk Level Task Force comprising of Tahsildar, Inspector of Police, Officials from the Departments of Geology and Mining, Transport and Forest, Assistant Engineer, PWD and the Village Administrative Officer concerned, to verify the compliance of all preconditions mentioned in the Environmental Clearance and grant necessary permission to start the functioning of new sand quarries.

II. STEPS TO BE FOLLOWED DURING EXECUTION:

- Before the commencement of mining operations, the depth of sand quarrying needs to be measured accurately using Advanced technology and new gadgets like Total Stations, Global Positioning System (GPS) instruments etc. The Total Station and GPS instruments also need to be calibrated before measurement. Both the traditional and modern techniques may be infused in the right blend to get an accurate measure of the depth. A clear contour map (0.25m interval) of the levels within 2Km (one Km U/s and one Km D/s) needs to be prepared and submitted to both the Project Director, Sand Quarrying Operations and all the Monitoring Committee members. The depth of sand quarrying shall be restricted to 1 m from the theoretical/design bed level.

- The mining area must be demarcated at a minimum distance of at least 50 m away from the river embankment on either side. The boundaries of the quarries may be fixed with reference to the existing survey marks from the survey fields adjacent to the river. Sand quarrying lease area shall be demarcated on the ground with pucca stone or concrete pillars to show the present natural bed level and the depth of mining allowed.

- Modern techniques such as drone survey may be adopted to assess the depth and quantity of the mined area. Boundary pillars shall be erected at an interval of 50 m each on all four sides of the sand quarry site with red flags on every pillar and also in site pillars. The levels of shoal height, river bed height and depth to be excavated up to one meter downwards shall be marked in the pillars to avoid any deviation from the approved depth of excavation.

- It shall be ensured that no sand quarrying of any type is undertaken with 50m of the distance mentioned in the proposal (whichever is higher)

from both the banks of the river to control and avoid erosion of river banks.

- Temporary access roads or Katcha roads shall be formed between the banks of the river and the mining area with locally available bio-degradable materials such as sugarcane waste (bagasse), hay, etc.

- Proper entry and exit point for the movement of loading vehicles in and out of the sand quarry site shall be carefully located taking into consideration the habitations/settlements in the area.

- To monitor the groundwater level during sand quarrying operations, a network of existing wells may be established around the sand quarrying area and new piezometers must be installed at all sand quarry sites. Monitoring of Ground Water Quality in the vicinity (one Km radius from the sand quarrying site) shall be carried out once in two months.

- Periodic Monitoring (at least four times in a year – pre-monsoon, Monsoon, Post monsoon and winter) once in each season shall be carried out by PWD and the data thus collected may be sent regularly to SEIAA/TNPCB. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out, which includes immediate stopping of mining.

- Similar to the Baseline studies for data on water, soil and air etc., that is being done before the sand quarrying operations, the air and water quality may be checked periodically by Tamil Nadu Pollution Control Board to ensure that no pollution is caused due to Sand Quarrying Operations. 10. Safety gadgets such as earplugs, goggles, respiratory

devices, luminescent vests etc. may be provided to the workers at the sand quarry site.

- First aid kit with all essentials shall be kept ready at all quarry/depot site, in case of any emergency.

- To prevent air pollution due to the dust during sand quarrying operations and safeguard the persons in the sand quarry and depot site, constant water sprinkling on the pathways and dust prone areas may be done. The sand loaded vehicles are to be covered with a tarpaulin before moving out of the quarries/depots.

- Suitable depots shall be located in the vicinity of the sand quarry site to facilitate the sale of sand. While selecting the site for depots, it must be ensured that the site is within 25 km from the sand quarry site and has an area of around 10-15 Acres with parking facilities and proper entry and exit for smooth movement of the vehicles. The depot site shall preferably be a Government poramboke land, foreshore area of tank bund etc., near an NH/SH/MDR/ODR. In the absence of any Government land in the vicinity, private Patta land may be leased out and rent fixed as per the approved Government rates applicable therein.

- Permission must be obtained from the Electricity Board for power supply to operate the CCTV cameras at sand quarry site and depots.

- Minimum of two CCTV cameras, one each at the entry and exit point and one PTZ camera may be installed at all quarries/depots to monitor illegality if any taking place in the sand quarry/depot.

- To ensure uninterrupted seamless live streaming of videos from the surveillance cameras, a high-speed Internet Lease Line connection may

be made available at all quarries/depots. Arrangements may also be made for online monitoring of the sand quarrying, Centre for Assessing Real-Time Sand Mining (CARS) that could be located at the office of the Project Director in Chennai.

- The live streaming of the videos shall be monitored at a Centralised control room and the data shall be stored in the Server for future references. A robust Customer Care may also be functional 24 x 7 at the Control Room, to redress the grievance of the public.

- Drop gates shall be installed at the entry and exit points of all quarries/depots.

- Display boards shall be erected in local vernacular language at sand quarry/depot site, in the nearest village by which sand transportation will be carried and at the entrance of the village road from the main road.

- The concerned authority of PWD shall call for e-tender to select the contractors for loading/raising of sand at the quarry site, transporting contractors to transport sand from the quarry site to depots and loading/maintenance contractors at depots.

- Sand shall be loaded in the quarries in the PWD tendered GPS fitted vehicles and online transmit permit shall be issued by the competent authorities in PWD to the transporting vehicles to transport sand from the quarry to depots.

- On the arrival of the sand shunting vehicles from quarry to the depot, an online authentication shall be done to confirm the arrival of the

appropriate quantity of sand mentioned in the transport permit into the depot.

- The loading of sand from the depots shall be carried out by booking through the online portal "www.tnsand.in" as done presently. Online transit passes will also be issued to the loaded vehicles which could be verified by using an Android app "TNsand Investigator".

- During operation of the quarries, the PWD officers shall ensure that at no point in time, the depth of quarry exceeds 1 m depth from the river bed level and quarrying is done in a uniform manner over the entire mining area to avoid overexploitation and formation of pits at fixed places.

- Proper registers may be maintained at the entry and exit points of the sand quarry/depot sites and a Loading Register may be made available during inspection. An Inspection Register and a Complaint Register may be made available at the sand quarry/depot site.

- The functioning time of quarries/depots shall be from 7.00 AM to 6.00 PM. No sand transporting vehicles to be parked inside the quarry/depot site during night time.

- A copy of the approved mining plan may be kept at the quarry site for ready reference.

- Photographs and sketch showing the pit dimensions, depth etc. may be recorded every week and maintained in the sand quarry. The Executive Engineer, PWD may inspect each sand quarry on a weekly basis and ensure that mining activities are taking place within the approved boundaries/depth.

- The sand quarrying activity shall be stopped if the entire quantity is quarried even before the expiry of the sand quarry lease period and the same shall be mentioned by the PWD authorities.

- The Taluk Level Taskforce shall inspect the quarries every fortnight, as per G.O. (Ms) No. 135 of Industries Department, dated 13.11.2009 and record the status of the compliance in the registers maintained at the sand quarry site.

- The Taluk Level Task Force has to submit its inspection report to the District Level Task Force chaired by the District Collector. The District Level Task Force has to be convened every month to discuss cases of illegal quarrying. An Environmentalist from reputed State / Central Institution and a legal expert on environmental matters may be part of the District Level Task Force. The District Level Task Force shall also dispose of the petitions on illegal sand quarrying after due enquiry and scrutiny, and pass orders within a period of two months from the date of receipt of the complaint. If any person is aggrieved with the orders passed by the District Level Task Force, an appeal may be preferred before the Appellate Forum.

- The District Collector shall take necessary steps to strengthen the existing District and Taluk Level Committees and act on the complaints received, if any, on illegal sand quarrying and take strict remedial measures to rectify the same in a time-bound manner. The District Level Task Force may send its monthly report to the Appellate Forum formed as per G.O. (Ms) No. 27 of Industries Dept. dated 17.02.2015.

- The Appellate Forum shall hear the appeals filed against the orders passed by the District Level Task Force. The Appellate Forum comprises

of the Secretaries to Government from Industries Department, Public Works Department, Revenue Department, Environment and Forests Department, Commissioner of Geology and Mining and an Expert from a reputed Government Institution.

- The Appellate Forum may convene once in 2 months to deliberate on the reports from the District Level Task Force and shall dispose of the appeals made by the petitioners aggrieved with the orders passed by the District Level Task Force.

- Periodical Capacity building and sensitization of PWD officials on the environmental and legal aspects of sand quarrying may be made mandatory. Continuous training and awareness programs shall be scheduled and conducted by IIT/Anna University for the PWD staff to keep themselves aware of the best practices in this field. It may be ensured that the enforcement officials from the Departments of Revenue, Police, Geology and Mining and Transport in the districts where quarries are situated are given adequate training and capacity building on their duties and responsibilities with respect to inspection of sand quarries and sand transporting vehicles at specified time intervals.

- No blasting shall be carried out any point in time.

- It is the obligation of the Public Works Department to run the quarry in an environmentally friendly and ecologically sustainable manner.

- The Hon'ble High Court-appointed Monitoring Committee shall inspect the sand quarries periodically and submit a report to the Hon'ble High Court.

- The PWD should explore/take necessary steps to introduce Mining Surveillance System (MSS) in line with MSS evolved by the Indian Bureau of Mines and Bhaskaracharya Institute for Space Applications and Geo-informatics (BISAG).

III. STEPS TO BE FOLLOWED AFTER EXECUTION:

- A Judicious mine closure plan may be formulated once the quarry is closed after exhaustion of the quantity of sand.

- Reclamation works may be factored into the contract agreement and strict monitoring by the PWD officials may be initiated to scrupulously follow up the mine closure plan.

- It may be ensured that the total quantity of sand permitted in the EC shall not be exceeded in any case.

- After the exhaustion of the quantity of sand, the sheds constructed at the quarry site may be removed. All the roads and pathways may be levelled so that there is no obstruction for the normal flow in the river.

- All the records/registers may be carefully maintained by the PWD for future reference.

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ANNEXURE A-6

(2022) 2 Supreme Court Cases 348

3J

(BEFORE L. NAGESWARA RAO, SANJIV KHANNA AND B.R. GAVAI, JJ.)

STATE OF BIHAR AND OTHERS . . Appellants;

Versus

PAWAN KUMAR AND OTHERS . . Respondents.

Civil Appeals Nos. 3661-62 of 2020†, Order dated November 10, 2021

Environment Law — Mining and Industries — Mining lease — Grant of — Preparation of District Survey Report (DSRs) through private consultants for identification of potential sites for mining — Whether necessary

— In view of provision for constitution of Sub-Divisional Committees comprising of officers of State Government from various Departments for identification of potential sites for mining in the Enforcement and Monitoring Guidelines for Sand Mining, 2020, and notification issued by MoEF and CC of 2016, held, there was no necessity of DSRs being prepared through private consultants — It would also unnecessarily burden public exchequer

Ministry of Environment, Forest and Climate Change (MoEF and CC) in accordance with directions of National Green Tribunal, had issued Enforcement and Monitoring Guidelines for Sand Mining (2020 Guidelines)

In accordance with 2020 Guidelines, DSR is required to be prepared before auction/e-auction/grant of mining lease by Mining Department or Department dealing with mining activity in respective States — For this, a Sub-Divisional Committee is required to be formed which, after site visit, is required to decide regarding suitability of sites for mining — Sub-divisional committee is further required to record its reasons for selecting mining lease in patta land — With advent of modern technology, various technological gadgets like drones and satellite imaging, etc. can be used for identification of potential sites and preparation of DSR and also to check misuse and unauthorised mining

— Therefore, when 2020 Guidelines as well as notification issued by MoEF and CC of 2016 itself provide for constitution of Sub-Divisional Committees comprising of officers of State Government from various Departments for identification of potential sites for mining, there would be no necessity of DSRs being prepared through private consultants as directed by Tribunal Sub-divisional committee consists of various officers from Revenue Department, Irrigation Department, State Pollution Control Board, Forest Department and Geology and Mining Department of State Government They are better equipped to visit sites and prepare draft DSR for district concerned — Apart from that, preparation of DSR through private consultants would also unnecessarily burden public exchequer — Exercise of preparation of DSR for purpose of mining in State in all the districts directed to be undertaken afresh — Draft DSRs shall be prepared by Sub-Divisional Committees — Further until DSRs are finalised and granted

† Arising from the Judgment and Order in *Pawan Kumar* v. *State of Bihar*, 2020 SCC OnLine NGT 2848 (National Green Tribunal, Original Application No. 40 of 2020, dt. 14-10-2020) **[Modified]**

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approval by State Expert Appraisal Committee and State Environment Impact Assessment Authority, State Government permitted to continue with legal mining activities (Paras 10 to 16)

Pawan Kumar v. *State of Bihar*, 2020 SCC OnLine NGT 2848, *modified*

Satendra Pandey v. *Ministry of Environment, Forest & Climate Change*, 2018 SCC OnLine NGT 2388; *Deepak Kumar* v. *State of Haryana*, (2012) 4 SCC 629, *referred to*

RM-D/68186/C

Chronological list of cases cited ***on page(s)***

1. 2020 SCC OnLine NGT 2848, *Pawan Kumar* v. *State of Bihar* 349*d*, 350*a b*, 350*f*, 350*g h*, 351*a*, 353*d*, 353*f g*
2. 2018 SCC OnLine NGT 2388, *Satendra Pandey* v. *Ministry of Environment, Forest & Climate Change* 349*e f*, 350*c d*, 351*d e*, 351*e*
3. (2012) 4 SCC 629, *Deepak Kumar* v. *State of Haryana* 351*e*

ORDER

Per Court

1. The present appeals challenge the judgment and order dated 14-10-2020, passed by the National Green Tribunal, Principal Bench, New Delhi (hereinafter referred to as "the Tribunal") in *Pawan Kumar* v. *State of Bihar*[1], thereby issuing the following directions: (SCC OnLine NGT para 103)

> "*103.* ... (*i*) Having regard to the findings at (*a*), (*b*) and (*c*) above, we direct the State to undertake further exercise for preparation of a fresh DSR for the Banka District.
>
> (*ii*) As DEIAA is not functioning as a consequence of the decision of the Tribunal in *Satendra Pandey*[2], the DSR shall be prepared through a consultant(s) accredited by the National Accreditation Board of Education and Training/Quality Control Council of India in terms of OM of MoEF & CC dated 16-3-2010.
>
> (*iii*) The DSR so prepared shall be submitted to the District Magistrate who shall verify the DSR only in respect of the relevant facts pertaining to the physical and geographical features of the district which shall be distinct from the scientific findings based on the parameters prescribed in the SSMMG-2016. After such verification, the District Magistrate shall forward the DSR for examination and evaluation by the State Expert Appraisal Committee ("SEAC") having regard to the fact that SEIAA comprises of technical/scientific experts. SEAC after appraisal of the report shall forward it to SEIAA for consideration and approval if it meets all scientific/technical requirements.

1 2020 SCC OnLine NGT 2848
2 *Satendra Pandey* v. *Ministry of Environment, Forest & Climate Change*, 2018 SCC OnLine NGT 2388

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(*iv*) While preparing the DSR, the MoEF & CC accredited agency/ consultant shall scrupulously follow the procedure and the parameters laid down under the SSMMG-2016 and EMGSM-2020 read in sync with each other."

2. The appellant State of Bihar has assailed the said judgment and order dated 14-10-2020[1], on various grounds.

3. Shri Atmaram Nadkarni, learned Senior Counsel appearing on behalf of the State of Bihar submitted that the Tribunal has grossly erred in holding that unless the State Expert Appraisal Committee (hereinafter referred to as "SEAC") and the State Environment Impact Assessment Authority (hereinafter referred to as "SEIAA") grants approval to the District Survey Report (hereinafter referred to as "DSR") for the purpose of mining of sand, the same cannot be carried out. He submitted that the Tribunal has further held that the very invitation of the tenders without preparing the DSR in accordance with the judgment of the Tribunal in *Satendra Pandey* v. *Ministry of Environment, Forest & Climate Change*[2] could not have been done. He submitted that after the tenders are invited in accordance with the DSR prepared by the District Level Committee, the successful bidder will be required to prepare a mining plan and unless such a mining plan is approved by SEAC and SEIAA, the environmental clearance would not be granted and in turn, mining activities cannot be carried out. He submitted that the finding of the Tribunal is like putting the cart before the horse.

4. Shri Nadkarni further submitted that the Tribunal has also grossly erred in holding that the DSRs prepared by the State were without following the requisite procedure and without considering the relevant factors. He submitted that not only the procedure as prescribed under the relevant rules and regulations was complied with, but the voluminous material in support of the same was also placed on record before the Tribunal. He submitted that the Tribunal has not taken into consideration the said material. He therefore submitted that the judgment and order passed by the Tribunal dated 14-10-2020[1], needs to be set aside and the State needs to be permitted to finalise the tenders received by it.

5. Shri Nadkarni further submitted that on account of the orders passed by the Tribunal, the old lessees are continuing with the mining activities by paying a meagre amount to the State Government. He therefore submitted that on account of this, a huge loss would be caused to the public exchequer. In the alternative, he submitted that the State, at least, needs to be permitted to undertake mining activities through Bihar State Mining Corporation until the DSRs are finalised in accordance with the judgment[1] of the Tribunal.

1 *Pawan Kumar* v. *State of Bihar*, 2020 SCC OnLine NGT 2848
2 2018 SCC OnLine NGT 2388

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6. Shri P.S. Patwalia, learned Senior Counsel appearing on behalf of the original applicant vehemently opposed the appeals. He submitted that the Tribunal has rightly held[1] that the DSRs are not prepared in accordance with the relevant rules as well as policy guidelines. He submitted that it is apparently clear that the State has taken into consideration only financial enrichment without considering the environmental aspects.

7. Though, we have heard the learned counsel for both the parties at length on merits, we find that it will be appropriate that the appeals are kept pending for further consideration and till then, certain interim orders are passed.

8. It cannot be in dispute that though the developmental activities are not stalled, the environmental issues are also required to be addressed. A balanced approach of sustainable development ensuring environmental safeguards, needs to be resorted to. At the same time, it also cannot be ignored that when legal mining is banned, it gives rise to mushroom growth of illegal mining, resulting into clashes between sand mafias, criminalisation and at times, loss of human lives. It also cannot be disputed that sand is required for construction of public infrastructural projects as well as public and private construction activities. A total ban on legal mining, apart from giving rise to illegal mining, also causes huge loss to the public exchequer.

9. Taking into consideration these aspects of the matter, we propose to issue certain interim directions.

10. The Tribunal, in *Satendra Pandey*[2], has found that the Notification dated 15-1-2016, which provided environmental clearance to be given by the District Environment Impact Assessment Authority (hereinafter referred to as "the DEIAA") was not in consonance with the judgment of this Court in *Deepak Kumar* v. *State of Haryana*[3]. The Tribunal therefore in *Satendra Pandey*[2], had directed Ministry of Environment, Forest and Climate Change (hereinafter referred to as "MoEF and CC") to take steps to revise the procedure laid down in the Notification dated 15-1-2016. It is to be noted that MoEF and CC, in accordance with the directions of the Tribunal, had issued Enforcement and Monitoring Guidelines for Sand Mining (hereinafter to referred to as "the 2020 Guidelines") in the month of January 2020.

11. Chapter 4 of the 2020 Guidelines deals with identification of possible sand mining sources and preparation of DSR. It will be relevant to refer to Clauses 4.1.1(*a*), (*o*) and (*p*) of the 2020 Guidelines:

> "4.1. *Identification of possible sand mining sources and preparation of District Survey Report (DSR)*
>
> 4.1.1. *Preparation of District Survey Report.*

* * *

1 *Pawan Kumar* v. *State of Bihar*, 2020 SCC OnLine NGT 2848
2 *Satendra Pandey* v. *Ministry of Environment, Forest & Climate Change*, 2018 SCC OnLine NGT 2388
3 (2012) 4 SCC 629

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(*a*) District Survey Report for sand mining shall be prepared before the auction/e-auction/grant of the mining lease/ Letter of Intent ("LoI") by Mining Department or department dealing the mining activity in respective states.

* * *

(*o*) Potential site for mining having its impact on the forest, protected area, habitation, bridges, etc. shall be avoided. For this, a Sub-Divisional Committee may be formed which after the site visit shall decide its suitability for mining. The list of mining lease after the recommendation of the Committee needs to be defined in the following format given in as *Annexure II*. The Sub-Divisional Committee after the site visit shall make a recommendation on the site for its suitability of mining and also records the reason for selecting the mining lease in the Patta land. The details regarding cluster and contiguous cluster needs to be provided as in *Annexure III*. The details of the transportation need to be provided as in *Annexure IV*.

(*p*) *Public consultation* The comments of the various stakeholders may be sought on the list of mining lease to be auctioned. The State Government shall give an advertisement in the local and national newspaper for seeking comments of the general public on the list of mining lease included in the DSR. The DSR should be placed in the public domain for at least one month from the date of publication of the advertisement for obtaining comments of the general public. The comments so received shall be placed before the Sub-Divisional Committee for active consideration. The final list of sand mining areas [leases to be granted on riverbed & patta land/khatedari land, de-siltation location (ponds/ lakes/dams), M-Sand Plants (alternate source of sand)] after the public hearing needs to be defined in the final DSR in the format as per *Annexure V*. The details regarding cluster and contiguous cluster needs to be provided in *Annexure VI*. The details of the transportation need to be provided in *Annexure VII*."

12. It could thus be seen that in accordance with the 2020 Guidelines, the DSR is required to be prepared before the auction/e-auction/grant of mining lease by Mining Department or Department dealing with mining activity in the respective States. It is further provided that the potential site for mining having its impact on the forest, protected area, habitation and bridges should be avoided. For this, a Sub-Divisional Committee is required to be formed which, after the site visit, is required to decide regarding the suitability of the sites for mining. The Sub-Divisional Committee is further required to record its reasons for selecting the mining lease in the patta land. Various details are required to be given in the annexures appended to the said policy.

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13. It is further to be noted that Appendix X of the Notification dated 15-1-2016, issued by MoEF and CC also provides for composition of the Sub-Divisional Committee:

> "A Sub-Divisional Committee comprising 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."

14. It is to be noted that with the advent of modern technology, various technological gadgets like drones and satellite imaging, etc. can be used for identification of the potential sites and preparation of the DSR and also to check misuse and unauthorised mining.

15. We further find that when the 2020 Guidelines as well as the notification issued by MoEF and CC of 2016 itself provide for constitution of Sub-Divisional Committees comprising of the officers of the State Government from various Departments for identification of the potential sites for mining, there would be no necessity of the DSRs being prepared through private consultants as directed by the Tribunal in the impugned order[1]. The Sub-Divisional Committee consists of various officers from Revenue Department, Irrigation Department, State Pollution Control Board, Forest Department and Geology and Mining Department of the State Government. They are better equipped to visit the sites and prepare the draft DSR for the district concerned. Apart from that, preparation of DSR through private consultants would also unnecessarily burden the public exchequer. We are therefore of the view that the direction in that regard issued by the Tribunal requires to be modified. We are further of the considered view that until the DSRs are finalised and granted approval by SEAC and SEIAA, it is appropriate that certain necessary arrangements are permitted so that the State can continue with legal mining activities. This apart from preventing illegal mining activities, would also ensure that the public exchequer is not deprived of its share in legalised mining.

16. We therefore find it appropriate to substitute the directions issued by the Tribunal vide judgment and order dated 14-10-2020[1], with the following directions:

16.1. The exercise of preparation of DSR for the purpose of mining in the State of Bihar in all the districts shall be undertaken afresh. The draft DSRs shall be prepared by the Sub-Divisional Committees consisting of the Sub-Divisional Magistrate, Officers from Irrigation Department, State Pollution Control Board or Committee, Forest Department, Geological or Mining Officer. The same shall be prepared by undertaking site visits and also by using modern technology. The said draft DSRs shall be prepared within a

1 *Pawan Kumar* v. *State of Bihar*, 2020 SCC OnLine NGT 2848

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period of 6 weeks from the date of this order. After the draft DSRs are prepared, the District Magistrate of the district concerned shall forward the same for examination and evaluation by SEAC. The same shall be examined by SEAC within a period of 6 weeks and its report shall be forwarded to SEIAA within the aforesaid period of 6 weeks from the receipt of it. SEIAA will thereafter consider the grant of approval to such DSRs within a period of 6 weeks from the receipt thereon.

16.2. Needless to state that while preparing DSRs and the appraisal thereof by SEAC and SEIAA, it should be ensured that a strict adherence to the procedure and parameters laid down in the policy of January 2020 should be followed.

16.3. Until further orders, we permit the State Government to carry on mining activities through Bihar State Mining Corporation for which it may employ the services of the contractors. However, while doing so, the State Government shall ensure that all environmental concerns are taken care of and no damage is caused to the environment.

17. List the matter after 20 weeks.

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ANNEXURE A-7

Item No. 03 & 04 (Court No. 1)

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

(By Video Conferencing)

Original Application No. 140/2021

(With report dated 31.03.2022)

Raj Kumar Applicant

Versus

State of U.P. & Ors. Respondent(s)

WITH

Original Application No. 141/2021

Ramkaran Karn Applicant

Versus

State of U.P. & Ors. Respondent(s)

Date of hearing: 06.05.2022

CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE PROF. A. SENTHIL VEL, EXPERT MEMBER

Applicant: Mr. Vanshdeep Dalmia, Advocate

Respondent: Dr. Roshan Jacob, Secretary, Geology & Mining with Mr. Pradeep Misra, Advocate for the State of Uttar Pradesh & UPPCB

ORDER

1. Grievance in these two identical applications is against illegal mining. In O.A. No. 140/2021, mining is in the submerged water area at Gata No. 28 (Part) and 29, Khand No. 1, village Kanwara, District Banda, UP by M/s Durge Trading Company and in O.A. No. 141/2021 it is in the submerged water area at Gata No. 2/4, 2/23, 2/24 and 2/28, Khand No. -4, village-Bendakhadar, District Banda, UP by Ashish Kumar Gautam,

S/o Suresh Kumar Gautam. Common stand in both the matters is that the mining is in violation of Sustainable Sand Mining Management Guidelines (SSMMG), 2016 and Enforcement and Monitoring Guidelines for Sand Mining (EMGSM), 2020 and binding orders of this Tribunal, including order dated 30.05.2017 in *O.A. No. 78/2015 (CZ)* reported in *2017 SCC OnLine NGT 1097,* holding as follows: -

> *"In the light of the above,* ***we answer the question that has been referred to us that no river sand mining is permitted in the submerged area in accordance with the Sustainable Sand Mining Guidelines 2016 alternatively in so far as the issue whether it can be permitted in the submergence areas is concerned our answer to the same is that in submergence area which may be a wider area than the one actually submerged as a submergence area would encompass the full reservoir level of the river or the high flood level of the river recorded by in any case where the mineral is exposed and not in stream such sand mining in accordance with the Sand Mining Guidelines 2016 and the conditions imposed in the environmental clearance may be carried out****."***

2. Further order of this Tribunal relied upon by the applicants is order dated 26.02.2021 in *O.A. No. 360/2015, NGT Bar Association v. Virender Singh (State of Gujarat) and other connected matters*. Therein, on exhaustive review of the issues relating to sand mining, this Tribunal has issued directions, including the mechanism for enforcement of environmental norms, inter-alia as follows:-

> ***"****1to26..xxx……xxx……xxx*
>
> ***27. We direct all the States/UTs to strictly follow the SSMG-2016 read with EMGSM-2020 reinforced by mechanism for preparation of DSRs (in terms of directions of this Tribunal dated 14.10.2020 in Pawan Kumar, supra and 04.11.2020 in Rupesh Pethe, supra), Environment Management Plans, replenishment studies, mine closure plans, grant of EC (in terms of direction dated 13.09.2018 in Satendra Pandey, supra), assessment and recovery of compensation (as per discussion in Para 25), seizure and release of vehicles involved in illegal mining (in terms of order dated 19.02.2020 in Mushtakeem, supra), other safeguards against violations, grievance redressal, accountability of the designated officers and periodical review at higher levels. As already noted,***

EMGSM-2020 contemplates extensive use of digital technology, including remote sensing.

28. We further direct that periodic inspection be conducted by a five-members Committee, headed and coordinated by the SEIAA and comprising CPCB (wherever it has regional office), State PCB and two expert members of SEAC dealing with the subject. Where CPCB regional office is not available, if MoEF&CC regional office is available, its Regional Officer will be included in the Committee. Where neither CPCB nor MoEF&CC regional office exists, Chairman, SEIAA will tie up with the nearest institution of repute such as IIT to nominate an expert for being included in the Committee. Such inspection must be conducted at least thrice for each lease i.e. after expiry of 25% the lease period, then after 50% of the period and finally six months before expiry of the lease period for midway correction and assessment of damage, if any. The reports of such inspections be acted upon and placed on website of the SEIAA. Every lessee, undertaking mining, must have an environment professional to facilitate sustainable mining in terms of the mining plan and environmental norms. This be overseen by the SEIAA. Environment Departments may also develop an appropriate mobile App for receiving and redressing the grievances against the sand mining, including connivance of the authorities and also a mechanism to fix accountability of the concerned officers. Recommendations of the Oversight Committee for the State of UP quoted earlier may be duly taken into account.

The mechanism must provide for review at the level of the Chief Secretary at least once in every quarter, in a meeting with all concerned Departments in the State. The Chief Secretary UP may ensure further action in the light of the report of the Oversight Committee.

Similarly, at National level, such review needs to be conducted atleast once in a year by the Secretary, Environment in coordination with the Secretaries Mining and Jalshakti Ministries the CPCB."

3. It is submitted that no steps are being taken by the State of UP for compliance of directions of this Tribunal.

4. Vide order dated 02.07.2021 on consideration of the matter, the Tribunal directed Additional Chief Secretary, Mining, UP to furnish a report about the compliance status including the status of DSR and replenishment studies for Banda District and also in-stream mining in submerged water and monitoring mechanism.

5. The matter was last considered on 08.03.2022 and finding that no response was being filed by the Additional Chief Secretary, Mining, Uttar Pradesh, the Tribunal directed personal appearance of the ACS, Mining by V.C. and also directed the District Magistrate and State PCB to file a factual report. If anything, adverse was noticed, the PP was to be put to notice of these proceedings.

6. In pursuance of above, the ACS, Mining, UP is present in person by V.C. and report has been filed by the District Officer, Banda on 31.03.2022 as follows:

> *"xxx ……xxx……xxx*
>
> *10. That for Environmental impact assessment (E.I.A.) study ministry of environment and forest and climate change (MoEF&CC) has propounded Sustainable sand mining management guidelines 2016 and enforcement and monitoring guidelines for sand mining 2020. In compliance of this Guidelines Government of Uttar Pradesh has issued a Government order no 790(1)/86-2020 dated 01.06.2020. As per this Government order, Government of Uttar Pradesh has constituted a team of officials of Department of Geology and Mining, Revenue Department, Forest Department and Irrigation Department, who give recommendation for any new area to be included or any change in D.S.R.(District survey report). Till November 2022 a total of 296 areas has been added in District survey report (D.S.R.) in different districts of Uttar Pradesh.*
>
> *That in district Banda after proper study of replacement of Sand/Morrum on the areas the District Survey Report' (herein after referred as DSR) was prepared and loaded on District Administration Portal and objection of the public domain were also invited and after considering the objection the DSR finalised by the committee constituted by the Government of Uttar Pradesh on 23.11.2017.*
>
> *11. That in Compliance of Hon'ble NGT order dated 02.07.2021 OA no. 140/2021 Raj Kumar Versus State of UP and OA no. 141/2021 Ram Karan karn Versus State of UP, D.M Banda has authorised C.M.P.D.I (Central mine planing and Design Institute limited), a public sector enterprise of Government of India to do the replenishment study of rivers flowing in district Banda on dated 28.10.2021 C.M.P.D.I has started the replenishment study of rivers of banda district and the work is on progress. Its report will be soon provided to the hon'ble NGT.*

The copy of the order of D.M Banda dated 11.10.2021 and consent letter of C.M.P.D.I dated 19.10.2021 being annexed herewith as Annexure No.1, to this compliance report.

12. *That if the bid found to be highest and satisfactory per cubic metre then a letter of intent is issued in favour of such bidder and thereafter, the applicant should obtain approval on its mining plan and environmental clearance from the competent authority and thereafter the mining lease is executed in his favour.*

13. *That in the lease deed, the following terms are specifically mentioned:-*

    i. *The mining operations are to be carried only up to the depth of 3 metres, or up to the water level, whichever is less;*
    ii. *The safety zone should be worked out;*
    iii. *The mining operations will be done in accordance with the scheme mentioned in the Mining Plan;*
    iv. *The lessee will be bound to obey the terms and conditions of the environmental clearance;*
    v. *The mining will be done after sun-rise till sun-set;*
    vi. *In the monsoon season, no mining will be done;*
    vii. *Heavy machinery and Suction Machines will not be used for excavation of the mineral;*
    viii. *No temporary bridge or hinderance will be created in the flow of river water during the lease period;*
    ix. *That the Central Government framed Sustainable Sand Mining Management Guidelines 2016 with object of managing un-controlled sand mining in India.*

14. *That the Ministry of Environment, Forests & Climate Change, Government of India also framed Enforcement and monitoring Guidelines for Sand Mining in January 2020.*

15. *That list of mining leases, granted in District Banda for excavation of sand & morrum, at present, is being annexed herewith as Annexure No.2, to this compliance report.*

16. *That at the time, total 17 mining leases are in operation in Banda district and they have proper environmental clearances, as well as the consent issued by UPPB Lucknow under the provisions of "Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention Control of Pollution) Act, 1981."*

17 *That in compliance of the order dated 26.02.2021, passed by this Hon'ble Tribunal in 0.A. No.360 of 2015 (National Green Tribunal Bar Associations. Veerendra Singh (State of Gujarat & others), 5 members Committee has been constituted by the District Officer, Banda, vide office order No.2892/Khanij-30 Banda, dated 14.12.2021. In the said Monitoring Committee, the members as under:*

1. *Divisional Forest Officer, Banda Chairman*
2. *Mines Officer/Mines Inspector/ Surveyor, Mines Department, Banda Member*
3. *Executive Engineer, Irrigation & Water Resources department, Banda- Member*
4. *Concerned Tehsildar Member*
5. *Regional Officer, Pollution Control Board, Banda Member Secretary.*

A copy of the said office order dated 14.12.2021 issued by the District Officer, Banda, is being annexed herewith as Annexure No.3, to this compliance report.

18. *That the said Enforcement Committee is regularly watching the mining activities of 17 areas and if any lessee is found to violate the above mentioned terms and conditions, then after issuing the notice, necessary proceedings are initiated against him.*

19 *That in the Headquarters, Lucknow, as well as in the districts, Surveillance Systems have also been installed for prevention of over-loading of minerals, as well as without transit passes, and due to this so many electronic challans are automatically created and served on the lessees for recovery of Government dues of such mineral.*

20. *That this Hon'ble Tribunal has also directed for submission of the status report of the following sand, morrum areas*

S. No.	***Area***	***Status***
a)	*Khand No.1 Village Kanwara, Banda M/s Durga Trading Co.*	*mining activities are not being done by the lessee due to preparation of approach road*
b)	*Khand No.4 Village Banda Khadar, District Banda Ashish Kumar Gautam, S/o Shri Suresh Kumar Gautam*	*matter is pending before the Hon'ble Supreme court. (Ravi kumar vs State of U.P. Dairy No. 3177/2022) No mining activities are being done.*

”

7. A report has also been filed on 06.04.2022 by the Geology and Mining Department, UP which is by and large similar to the report of the District Officer, Banda referred to above.

8. We have heard learned Counsel for the Applicants and interacted with the ACS present in person by VC.

9. We find that replenishment study as required under the SSMG-2016 and EMGSM-2020 has not been undertaken prior to the auction in terms of para 5.1 of the EMGSM, 2020 which is reproduced below:

> ***"5.0 REPLENISHMENT STUDY***
>
> *The need for replenishment study for river bed sand is required in order to nullify the adverse impacts arising due to excessing sand extraction. 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 an impact on the ecological equilibrium of the riverine regime, disturbance in channel configuration and flow-paths. This may also cause an adverse impact on instream biota and riparian habitats. It is assumed that the riparian habitat disturbance is minimum if the replenishment is equal to excavation for a given stretch. Therefore, to minimize the adverse impact arising out of sand mining in a given river stretch, it is imperative to have a study of replenishment of material during the defined period***.**
>
> ***5.1 Generic Structure of Replenishment Study***
>
> *Initially replenishment study requires four surveys. The first survey needs to be carried out in the month of April for recording the level of mining lease before the monsoon. The second survey is at the time of closing of mines for monsoon season. This survey will provide the quantity of the material excavated before the offset of monsoon. The third survey needs to be carried out after the monsoon to know the quantum of material deposited/replenished in the mining lease. The fourth survey at the end of March to know the quantity of material excavated during the financial year. For the subsequent years, there will be a requirement of only three surveys. The results of year-wise surveys help the state government to establish the replenishment rate of the river.* ***Based on the replenishment rate future auction may be planned.***
>
> *The replenishment period may vary on nature of the channel and season of deposition arising due to variation in the flow. Such period and season may vary on the geographical and precipitation characteristic of the region and requires to be defined by the local agencies preferable with the help of the Central Water Commission and Indian Meteorological Department. The excavation will, therefore, be limited to estimated replenishment estimated with consideration of other regulatory provisions.***"**

10. With regard to the allegation of instream mining in submerged water, it has been orally stated by the ACS that no such instream mining is permitted. However, in the reports filed before this Tribunal, no such statement has been made on behalf of the State.

11. Accordingly, the ACS, Mining, UP has fairly stated that replenishment study will be conducted prior to auctions in future and with regard to the current leases, ongoing replenishment study will be expedited. In the light thereof, the leases will be renewed, if necessary. Such studies for all Districts in UP will be completed by December 31, 2022 and for Banda by June 30, 2022. She has further stated that the allegation of instream mining will be verified and if found true, the same will be discontinued.

12. In view of above, let the Replenishment studies be completed by credible institutions, following due procedure, in accordance with para 5 of EMSG, 2020. Further, no mining be permitted till replenishment studies are completed beyond the schedule laid down above. The State may ensure that the Regulatory authorities are adequately equipped and capable to assess quantities of mined material. With regard to instream mining, it may be ensured that the machineries permitted or used otherwise comply with "Semi mechanised" mining operations in true sense. In all mining potential districts, environmental damage assessment be carried out and annual assessment reports placed in public domain on the websites of the Mining Department as well as the PCB. Compliance of SSMG, 2016 and EMGSM, 2020 and earlier directions of this Tribunal may be ensured by an effective monitoring mechanism.

The applications are disposed of accordingly.

Adarsh Kumar Goel, CP

Sudhir Agarwal, JM

Prof. A. Senthil Vel, EM

May 06, 2022
Original Application No. 140/2021
Original Application No. 141/2021
DV

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ANNEXURE A-8

Item No. 14 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

(BY HYBRID MODE)

Original Application No. 284/2023

Anuj Singh Applicant

Versus

State of Uttar Pradesh & Ors. Respondent(s)

Date of hearing: 19.07.2023

CORAM: HON'BLE MR. JUSTICE SHEO KUMAR SINGH, CHAIRPERSON
HON'BLE MR. JUSTICE ARUN KUMAR TYAGI, JUDICIAL MEMBER
HON'BLE DR. A. SENTHIL VEL, EXPERT MEMBER

Applicant: Mr. Vanshdeep Dalmia, Adv.

Respondents: Mr. Daleep Dhyani, Adv. for UPPCB
Mr. Mukesh Verma, Adv. for the Mining Department, State of UP
Mr. Shubham Singh, Adv. for MoEF & CC
Ms. Priyanka Swami, Adv. for SEIAA, UP

ORDER

1. The main relief in the original application as prayed by the applicant is to restrain the Respondents No. 1 to 7 from allowing mining lease holders from excavating the entire quantity available at any sand ghat in District Banda, Uttar Pradesh and to restrict the quantity to the mineral replenished as per pre-post monsoon replenishment study and to direct respondents not to permit mining in excess of 60% of the available quantity in terms of clause 4.3(r) of the EMGSM, 2020 guidelines issued by the MoEF&CC and further the respondents should be restrained from conducting mining in a submerged water area of the said mines situated in Tehsil Pailani, District Banda before replenishment study.

2. Basis of the above averment made by learned Counsel appearing for the applicant is judgment of Hon'ble Supreme Court of India dated 27.02.2012 in Deepak Kumar vs. State of Haryana, (2012) 4 SCC 629, where it has been directed that though the economic value of minor minerals excavated in the country is estimated to contribute to about 9% of the total value of the minerals but it should be taken precautions while the mining is done in riverbed mining. Relevant paras are quoted below:

"xxx ……xxx……xxx

4.9. Riverbed mining

4.9.1. Environment damage being caused by unregulated riverbed mining of sand, bazari and boulders is attracting considerable attention including in the courts. The following recommendations are therefore made for the riverbed 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 stretchwise, 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.

5.0. 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 the 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 guidelines to be followed by all States."

(emphasis supplied)

20. The Report clearly indicates that operation of mines of minor minerals needs to be subjected to strict regulatory parameters as that of mines of major minerals. It was also felt necessary to have a relook to the definition of "minor minerals" per se. The necessity of the preparation of "comprehensive mines plan" for contiguous stretches of mineral deposits by the respective State Governments may also be encouraged and the same be suitably incorporated in the Mineral Concession Rules, 1960 by the Ministry of Mines.

21. Further, it was also recommended that the States, Union Territories would see that 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 mined out areas. Mining plan should take note of the level of production, level of mechanisation, type of machinery used in the mining of minor minerals, quantity of diesel consumption, the number of trees uprooted, export and import of mining minerals, environmental impact, restoration of flora and host of other matters referred to in the 2010 Rules. A proper framework has also to be evolved on cluster of mining of minor minerals for which there must be a Regional Environmental Management Plan. Another important decision taken was that while granting of 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 to be duly noted.

22. The Minister for (Environment and Forests) wrote DO Letter dated 1-6-2010 to all the Chief Ministers of the States to examine the Report and to issue necessary instructions for incorporating the recommendations made in the Report in the Mineral Concession Rules for mining of minor minerals under Section 15 of the Mines and Mineral (Development and Regulation) Act, 1957. Following are the key recommendations reiterated in the letter:

"(1) Minimum size of mine lease should be 5 ha.
(2) Minimum period of mine lease should be 5 years.
(3) A cluster approach to mines should be taken in case of smaller mine leases operating currently.
(4) Mine plans should be made mandatory for minor minerals as well.
(5) A separate corpus should be created for reclamation and rehabilitation of mined out areas.
(6) Hydrogeological reports should be prepared for mining proposed below groundwater table.
(7) For riverbed mining, leases should be granted stretchwise, depth may be restricted to 3m/water level. whichever is less. and safety zones should be worked out.
(8) The present classification of minerals into major and minor categories should be re-examined by the Ministry of Mines in consultation with the States."

xxx ……xxx……xxx

25. Quarrying of river sand, it is true, is an important economic activity in the country with river sand forming a crucial raw material for the infrastructural development and for the construction industry but excessive instream sand and gravel mining causes the degradation of rivers. Instream mining lowers the stream bottom of rivers which may lead to bank erosion. Depletion of sand in the streambed and along coastal areas causes the deepening of rivers which may result in destruction of aquatic and riparian habitats as well. Extraction of alluvial material as already mentioned from within or near a streambed has a direct impact on the stream's physical habitat characteristics."

3. The contention of learned Counsel for the applicant is that the Hon'ble Supreme Court vide its Order dated 29.11.2022 dismissed the said Civil Appeal No. 8035-8036 of 2022 filed by the State of UP being aggrieved by the abovementioned Judgment dated 6.05.2022, and clarified that the State authorities shall undertake Replenishment studies for both years i.e. year ending 31.12.2021 as well as the current year ending 31.12.2022. OA No. 410 of 2022 titled `Avinash Kumar Ray v. MOEF' & OA No. 411 of 2022 titled lshhita Foundation v. MOEF' were filed before this Hon'ble Tribunal in June 2022 challenging certain NITs/ E-Auction Notices on the ground that proper Replenishment Studies have not been conducted in District Banda. The Respondent No. 5, District Magistrate Banda filed a Status Report dated 11.01.2023 in 'Avinash Kumar Ray v. MOEF' stating that Replenishment Studies has been conducted by the Central Mine Planning & Design Institute Limited (CMPDI) for 135 Sand Mining Leases in District Banda (both Pre-Monsoon & Post Monsoon) and a Report dated 30.12.2022 has been submitted by CMPDI in that regard. Along with the status Report dated 11.01.2023, the Respondent No. 5 attached a Chart indicating the quantity Replenished & the total Available Quantity in respect of the said 135 Sand Mining leases. Pursuant to the Replenishment Studies conducted by CMPDI, the Respondent No. 5 issued various Orders in respect of several existing Sand Mining leases wherein the entire (Total)

available Quantity (including the Quantity Replenished and existing quantity) was permitted to be fully mined, in complete disregard to the Environmental Rule of Law, the Principle of Sustainable Development, and in violation of the Sand Mining Guidelines issued by the MOEF in 2016 and 2020.

DETAILS OF CERTAIN SUCH ORDERS PASSED BY THE RESPONDENT DISTRICT MAGISTRATE, BANDA ARE DEMONSTRATED AS UNDER:

TABLE

SNO	DETAILS OF MINE	AVAILABLE QUANTITY PRE-MONSOON	REPLENISHED QUANTITY (CUM)	TOTAL AVAILABLE QUANTITY (CUM)	TOTAL QUANTITY PERMITTED TO BE MINED
1.	Gata No. 176Mi, 172, 182, 187, Tehsil Pailani, District Banda admeasuring 25.29 ha. (Allotted in favour of Respondent No. 8)	**166332**	**125186**	**291518** (At Serial No. 107 of Chart)	**291518 [vide Order dated 25.01.2023 by the District Magistrate, Banda]**
2.	Gata No. 100 (Part of Khand No. 3), admeasuring 16 ha. (Allotted in favour of Respondent No. 9)	**194044**	**45888**	**239932** (At Serial No. 72 of Chart)	**239932 [vide Order dated 27.01.2023 by the District Magistrate, Banda]**

4. It is submitted that permitting the lease holders to mine the entire quantity available in the Sand ghats situated along the River would amount to excessive, disproportionate and unsustainable mining which would invariably have a serious and direct adverse impact on the River's physical habitat characteristics, including bed elevation, substrate composition, stability, velocity, depth, turbidity, sediment transport, apart from causing irreparable harm to the biodiversity and result in flood risk and loss of habitat. Such permission to mine the entire available Quantity is violative of the Doctrine of Sustainable Development, various Judgments passed by

the Hon'ble Supreme Court and the Sand Mining Guidelines issued by the MOEF [SSMG, 2016 & EMGSM, 2020].

5. It is further argued that The Hon'ble Supreme Court in the case of Deepak Kumar v. State of Haryana, 2012 (4) SCC 629 stated that unregulated mining and the extraction of alluvial material from and within, and near a streambed has a direct impact on the stream's physical habitat characteristics and affects its biodiversity and ought to be conducted in an environmentally sustainable manner. Lack of proper planning and sand management causes disturbance of marine ecosystem and also upset the ability of natural marine processes to replenish the sand. The Hon'ble Apex Court held that "Quarrying of River sand, it is true, is an important economic activity in the country with river sand forming a crucial raw material for the infrastructural development and the construction industry but excessive in-stream sand and gravel mining cause degradation of rivers. ln-stream mining lowers the stream bottoms the rivers which may lead to bank erosion. Depletion of sand in the streambed and along coastal areas cause the deepening of rivers which may result in destruction of aquatic riparian habitats as well. Extraction of alluvial material as already mentioned from within or near a streambed has a direct impact on the stream's physical habitat characteristics."

6. Similar directions have been issued in N.D. Jayal & Anr. v Union of India & Ors., (2004) 9 SCC 362 and in Vellore Citizens Welfare Forum v. Union of India, (1961) 5 SCC 647.

7. Contention of the applicant is that quantity allowed in EC is much higher than the quantity described in annual replenishment plan. The main objective of the preparation of district survey report as per sustainable sand mining guidelines is to ensure the identification of areas

of aggradations or deposition where mining can be allowed; and identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited and calculation of annual rate of replenishment and allowing time for replenishment after mining in that area. In absence of these details mining cannot be done in sustainable manner. MoEF &CC has come out with Sustainable Sand Mining Guidelines 2016 as well as Enforcement and Monitoring Guidelines for Sand Mining 2020.

8. Vide order dated 19.04.2023, this Tribunal constituted a joint Committee consisting of SEIAA, UP, State PCB and District Magistrate, Banda to verify the factual position and take remedial action.

9. In compliance thereof, the joint Committee visited the site, examined the matter and submitted the report dated 19.06.2023 as follows:

> *"xxx ……xxx……xxx*
> *3. The nominated Joint Committee member carried out field visit around mining place Gata. No- 176Mi, 172Ga, 182, 187, Village- Amlorkhadar, Tehsil- Pailani, District- Banda (Vipul Tyagi) and mining place Gata No-100, Khand No- 3, Village-Khapatiha, Tehsil- Pailani, District- Banda (IS. Enterprises) as mentioned in O.A. no- 284/2023 on dated 26.05.2023. The aforesaid lease hold area is in the river- Ken in District - Banda.*
>
> *The aforesaid lease hold area Gata No- 176Mi, 172Ga, 182, 187, Village- Amlorkhadar, Tehsil- Pailani, District- Banda was not found operational and lease hold area Gata No-100, Khand No- 3, Village-Khapatiha, Tehsil- Pailani, District- Banda was found operational at the time of committee visit.*
>
> *4. Lease hold area Gata No- 176Mi, 172Ga, 182, 187, Village- Amlorkhadar, Tehsil- Pailani, District- Banda on River Ken is allotted to lessee Shri Vipul Tyagi S/o Shri Ravindra Kant Tyagi, R/o **H.** No.- 319, Noor Nagar Sihani, Tehsil and District- Gaziabad, U.P. via registered lease agreement for 5 years from dated 13.05.2021 to 12.05.2026.*
>
> *Lease hold area Gata No- 100, Khand No- 3, Village-Khapatiha, Tehsil- Pailani, District- Banda on River Ken is allotted to lessee M/s J.S. Enterprises, Partner Shri Balvinder Singh S/o Sri Satyapal Singh R/o H.No- 96/A, Nakora (128), District- Sirsa, Haryana via registered lease agreement for 5 years from dated 16.04.2021 to 15.04,2026.*
>
> *The details of permission issued by concern department given is below: -*

Address of lease	Co-ordinate of Lease area of mentioned in Environmental Clearance	Sanction Detail of lease
Gata No- 176Mi, 172Ga, 182, 187, Village- Amlorkhadar, Tehsil- Pailani, District- Banda	*(A) 25°44'59.76' N, 80°21'29.63- E* *(B) 25°44'56.90" N, 80°21'30.33- E* *(B1) 25°44'14.5K N, 80°20'59.54- E* *(B2) 25°44'13.76" N, 80°21'00.41" E* *(B3) 25°44'08.39" N, 80°21'00.29- E* *(B4) 25°44'07.72" N, 80°21'00.6T E* *(B5) 25°44'00.4T N, 80°21'00.6T E* *(B6) 25°44'00.07- N, 80°21'00.3r E* *(C) 25°43'37.6T N. 80°21'13.05" E* *(D) 25°43'36.87" N, 80°21'12.33- E*	*Letter of intent issued vide letter dated 22.10.2018.* 2. *Letter of cluster issued vide letter dated 29.01.2019.* 3. *Letter of mining plan issued vide letter dated 01.03.2019.* 4. *Environmental Clearance by SEIAA issued vide letter dated 28.01.2020.* 5. *Lease Area- 25.29 hectare, Mineable Area- 25.29 hectare, Mineable Capacity- 505800 Cub. Meter/Annum (2023 Cub. Meter/day)* 6. *Lease Deed Execution issued vide letter dated 13.05.2021.* 7. *Sanction tenure of lease mining — 5 years* 8. *CTO issued by UPPCB vide letter dated 24.10.2020 (from 23.10.2020 to 31.12.2024)* 9. *Total mineable quantity after replenishment study report year 2022 - 291518 Cub. Meter.*
Gata No- 100, Khand No- 3, Village- Khapatiha, Tehsil- Pailani, District- Banda	*(A) 24°40'36.12- N, 80°22'06.06" E* *(B) 24°40'32.64- N, 80°21'40.40" E* *(C) 24°40'27.83- N, 80°21'39.12" E* *(D) 24°40'28.4T N, 80°22'09.08- E*	1. *Letter of intent issued vide letter dated 07.05.2018.* 2. *Letter of' cluster issued vide letter dated 31.07.2019.* 3. *Letter of mining plan issued vide letter dated 31.10.2018.* 4. *Environmental Clearance by SE1AA issued vide letter dated 03.03.2021.* 5. *Lease Area- 16.00 hectare, Mineable Area- 16.00 hectare, Mineable Capacity- 320000 Cub. Meter/Annum (1422 Cub. Meter/day)* 6. *Lease Deed Execution issued vide letter dated 16.04.2021.* 7. *Sanction tenure of lease mining — 5 years*

		8. *CTO issued by UPPCB vide letter dated 18.04.2023 (from 18.04.2023 to 31.12.2025)* 9. *Mineable quantityin replenishment study report year 2022- 239932 Cub. Meter.*

5. The quantity of excavated mineral in year 2022-2023 against quantity mentioned in replenishment study report year 2022 as per information provided by Mine Officer, Banda is given as below ***Annexure-1****:-*

Lease area	Resources available at pre-Monsoon (in cubic meter)	Quantity replenished (in cubic meter)	Total resource available (in cubic meter)	Mined mineral quantity between 01.07.2022 to 26.05.2023 (in cubic meter)
Gata No- 176Mi, 172Ga, 182, 187, Village- Amlorkhadar, Tehsil- Pailani, District- Banda	166332	125186	291518	0
Gata No- 100, Khand No- 3, Village- Khapatiha, Tehsil- Pailani, District- Banda	194044	45888	239932	4290

6. It is submitted regarding allegation of mining is being carried out in submerged area water area, extent of mining has been allowed to the extent of entire available mineral including replenished mineral whereas permissible mining is only to the extent of 60% in context of SSMG 2016 and EMGSM 2020 at lease hold area Gata No- 176Mi, 172Ga, 182, 187 and Gata No- 100, Khand No- 3 in river Ken, it was found during the visit of committee that mining work had been done within allotted co-ordinate. Mining work had not been found in the stream of river. Obstruction in the stream of river was not found.

According to the details of mined material provided by Mine Office, Banda, the quantity of mined material is less than the total mineral quantity with available mineral before pre- monsoon and replenished mineral quantity in year 2022. ***Annexure-1***

7. In compliance of direction issued by Hon'ble National Green Tribunal, observation of non-compliance of provision mentioned in SSMG 2016 and EMGSM 2020 are given as below: -

7.1) Issue related to allotment of mineral against replenished mineral quantity.

7.1.1) As per the provision of EMGSM 2020 of Ministry of Environment, Forest and Climate Change January 2020, River bed sand mining shall be restricted within the central 3/4th width of the river/rivulet or 7.5 meters (inward) from river banks but up to 10% of the width of the river, as the case may be and decided by regulatory authority while granting environmental clearance in consultation with irrigation department. Regulating authority while regulating the zone of river bed mining shall ensure that the objective to minimize the effects of riverbank erosion and consequential channel migration are achieved to the extent possible. In general, the area for removal of minerals shall not exceed 60% of the mine lease area, and any deviation or relaxation in this regard shall be adequately supported by the scientific report.

7.1.2) In the letter issued by Mine Office, Banda, as per quantity mentioned in replenishment study report year 2022, the letter issued to lessee Shri Vipul Tyagi S/o Shri Ravindra Kant Tyagi, R/o H. No.- 319, Noor Nagar Sihani, Tehsil and District- Gaziabad, U.P of lease hold area Gata No- 176Mi, 172Ga, 182, 187 Village-Amlorkhadar, Tehsil- Pailani, District- Banda for mining the total mineral quantity 291518 cubic meter vide letter no- 490/ Mineral- 30, Banda dated- 25th January 2023 and letter issued to lessee M/s J.S. Enterprises, Partner Shri Balvinder Singh S/o Sri Satyapal Singh R/o H.No- 96/A, Nakora(128), District- Sirsa, Haryana of lease hold area Gata No- 100, Khand No- 3, Village-Khapatiha, Tehsil- Pailani, District- Banda for mining the mineral total quantity 239932 cubic meter vide letter no- 500/ khanij- 30, Banda dated-27th January 2023.

7.1.3) According to detail of mined material provided by Mine Office, Banda, the quantity of mined material is less than the total mineral quantity with available mineral before pre- monsoon and replenished mineral quantity in year 2022.

7.1.4) The co-ordinate of lease hold area is nearby the river bank and it was found that mining work has been done leaving the 7.5 meter distance of river bank. Whereas the mining work has been restricted within the central 3/4th width of the river/rivulet or 7.5 meters (inward) from river banks through the various guidelines.

7.2) Issue related to in- stream mining

7.2.1) The lease area (sanctioned and allotted) is situated partly in the river stream section. Whereas the in-stream mining is prohibited through the various guidelines.

7.2.2) It has been informed by the Mines Officer Banda that as per lease deed agreement, lessee ware instructed not to conduct excavation in the active river stream.

7.2.3) During visit of committee, Mining work is being found nearby the stream of river. It was observed that mining work had not been done in the river stream. Obstruction in the stream of the river was not found.

73) Issue related to use of heavy machinery

7.3.1) During visit of committee, excavated depth of mining was found within permitted depth 3.0 meter.

7.3.2) The use of excavator has not been allowed under semi mechanized condition in the EC issued to project.

7.3.3) The use of excavator is permitted by the Director, Mining Department, UP vide letter dated 21.06.2019 which was issued in accordance with honorable NGT order in the matter of OA No. 44/2016. However, the condition of EC and said letter regarding use of excavator for the mining activities is contradictory to each other.

7.3.4) During visit of committee, restricted machinery was not found for mining activity at mining place. The machinery (Excavator cum loading machine boom length size 3.0 meter and bucket capacity less than one cubic meter) was found for mining activities at mining place.

7.4) Issue related to illegal mining.

7.4.1) During visit of committee, mining work was not being found in lease hold area Gata No- 176Mi, 172Ga, 182, 187 Village- Amlorkhadar, Tehsil- Pailani, District- Banda. It was informed by MO, Banda that aforesaid mining lease is not in operation due to non-payment of royalty installment in season 2022-2023.

7.4.2) During the visit of committee, mining work was being done in lease hold area Gata No- 100, Khand No- 3, Village-Khapatiha, Tehsil- Pailani, District- Banda. It was observed that mining work was found to be done in allotted Co- ordinate of lease area. It was informed by MO, Banda that aforesaid mining lease has started the mining from 27.04.2023 in season 2022-2023.

7.4.3) As per the provision of EMGSM 2020 of Ministry of Environment, Forest and Climate Change January 2020, In general, the area for removal of minerals shall not exceed 60% of the mine lease area, and any deviation or relaxation in this regard shall be adequately supported by the scientific report

8. Post mining environment restoration plan.

8.1) Due to mining season, mining closer activity was not carried out during visit of committee.

8.2) The green cover development/tree planation is to be done in an area equivalent to 20% of total lease area either on river bank or along road side (Avenue Plantation) However, no such planned plantation has been observed along the approach road sides.

8.3) Regarding environmental Audit, environmental statement etc. are also not been strictly complied with.

9. Conclusion

Considering the observations as listed above the following measure are suggested

9.1) Mining lease near river bank should not be allotted to avoid the mining in restricted area of river banks.

9.2) The mine area across/ within the river course should not be allotted to avoid the in stream mining.

9.3) Strict vigilance and stringent action are required to be taken for stopping the illegal mining.

9.4) The mine work should be allowed as per the provision of EMGSM 2020 of Ministry of Environment, Forest and Climate Change January 2020 and mining plan submitted by Lessee.

9.5) Post mining environmental restoration activity should be completed after closing the mining before start monsoon season."

10. Main contention of the applicant is that the District Magistrate, Banda while granting the mine considered the report that replenished quantity is approximately 125186 cubic meter in item no. 1 which was allotted in favour of Respondent No. 8, while total quantity permitted is 291518 cubic meter which is more than replenished quantity. Similarly in item no. 2 in the mining area which was allotted in favour of Respondent No. 9, the replenished quantity is approximately 45888 cubic meter, while permitted quantity is reported to be 239932 cubic meter and this is in violation of SSMG 2016 and EMGSM 2020.

11. In reply to the contention raised by the applicant, learned Counsel for the State PCB has submitted that in item no. 1, mined mineral quantity is zero while in item no. 2, mined mineral quantity is 4290 cubic meter and this is below the reported quantity of replenished.

12. Mineral Laws (Amendment) Act 2020, as notified with effect from l0th of January 2020 has enacted a new section 8 (B) which is relating to the provisions for transfer of statutory clearances. After which the MoEF&CC issued a notification dated 27th March, 2020 and amended the Environmental Impact Assessment Notification 2006. The Notification states that it shall be lawful for the new lessee to continue mining operations on the land in which mining operations were being carried out by the previous lessee for a period of 2 years from the date of commencement of the new lease. The notification dated 27th March, 2020 is as follows :-

> *"Now therefore in exercise of the powers conferred by Sub Section (1) and Clause (v) of Sub Section (2) and Section 3 of the Environment (Protection) Act 1986 (29 of 1986) read with Sub - Rule (4) of Rule 5 of the Environment (Protection) Rules 1986, the Central Government after having dispensed with the requirement of notice under Clause (a) of Sub Rule (3) of the Rule 5 of the said rules in public interest and in supersession of the Notification No. S.O. 4307 (E) dated 29th November 2019 hereby makes the following further amendments in the EIA Notification 2006 namely –*
>
> *(i) In paragraph 11 after sub-paragraph (2) the following subparagraph shall be inserted namely –*
>
> *(3) The successful bidder of the mining leases expiring under the provisions of Sub-Section (5) and (6) of section 8A of the Mines and Minerals Development and Regulation Act 1957 (67 of 1957) and selected through auction as per the procedure provided under that Act and the rules made there under shall be deemed to have acquired valid prior environmental clearance vested with the previous lessee* ***for a period of two years, from the date of commencement of new lease*** *and it shall be lawful for the new lessee to continue mining operations as per the same terms and conditions of environmental clearance granted to the previous lessee* ***on the said lease area for a period of two years from the date of commencement of new lease or till the new lessee obtains a fresh environmental clearance with the terms and conditions mentioned therein, whichever is earlier :***
>
> *Provided that the successful bidder shall apply and obtain prior environmental clearance*

from the regulatory authority within a period of two years from the date of grant of new lease."

Requirement of preparation of District Survey Report

13. Consequent upon the decision taken at the United Nation Conference on Human Environment held in Stockholm, the Parliament enacted the Environment (Protection) Act, 1986 in September, 2006. The parent EIA Notification dated 14.09.2006 was issued by the MoEF & CC under Section 3 of the EP Act with an endeavour to provide a substantive legal framework and comprehensive procedural mechanism for evaluation, assessment and monitoring of the Environmental Impact on the land, air and water due to various projects undertaken by person in all sectors throughout the territory of India. The EIA Notification dated 14.09.2006, regulated certain activities including mining of minor mineral as laid down in the schedule therein and provided that a prior environmental clearance is mandatory for such regulated and specific projects across all sectors. The notification provided for constitution of central and state level environmental impact assessment authorities, SEIAA manned by professional, experts and technical individuals that shall screen, scope and appraise projects from an environmental prospective and further monitor the same from time to time, in order to achieve much desired goals of sustainable development. The MoEF & CC issued notification dated 15.01.2016 which amended the EIA Notification, 2006 by introducing clause 7 (III) (A) which mandated for the preparation of DSR for sand mining or River Bed Mining and mining of other mineral. Vide another notification dated 20.01.2016, the MoEF & CC constituted the DEIAA and the DEAC. The DEIAA comprised of 04 members and headed by District Magistrate whereas DEAC comprised of 11 members, who were mostly the government officer's bureaucrats. Further, MoEF & CC issued the Sustainable Sand Mining Management Guidelines, 2016 with an endeavor

to ensure that sand and gravel mining is done in an environmentally sustainable and socially responsible manner, and to further ensure the conservation of river equilibrium and its natural environment by protection and restoration of the ecological system. One of the key and nodal objectives enumerated in the SMMG, 2016 was the preparation of the DSR report that would identify the areas of aggradations/deposition where mining can be allowed, and identification of areas of erosion and proximity to infrastructural structures and installation wherein mining should be prohibited.

14. This Tribunal, in the case titled Anjani Kumar v. State of U.P. 2017 SCC Online NGT 979 vide its Judgment dated 8.12.2017 held that a **District Survey Report (DSR) is a pre-requisite and conditional precedent before the grant of any mining leases of sand and bajri**. The Relevant portion is extracted below:

> *"31. From the extracted portion, it could well be understood that to begin with the process prescribed for preparing of survey document mapping the status of the sand sources in a District is an integral but an essential part. The Survey has to be conducted and report be prepared for each District. It must also be noticed that while taking into consideration the fact that rivers cut across districts and States and every river is an ecosystem in itself but keeping in mind the fact that district is a most established unit of administration conduct of survey, planning and monitoring can be ensured effectively, the scheme proposed that every district will prepare this document (District Survey Report) taking river stretch in that district as an ecological and inventorising other sources of sand in the district…*
>
> *65. Thus there is merit in the contention of the applicant that the District Survey Report is not only an important act but it should be conducted prior to sanctioning of the permission/concession.*
> *71. In other words it is evident that absence of the factual District Survey Report after due inspection grant of mining lease will be in conflict of the environmental laws as sand mining lease could be granted in an area only when aspect of replenishment of miner mineral especially in river sand is clearly established.*
>
> *96. It is true that under the Mining Policy, Rules the State is empowered to conduct survey for the purpose of inviting bids opine. The preparation of DSR and obtaining if Environmental Clearance is also a conditional precedent to carrying on mining activity. It is for the State Government to ensure that there is no conflict between two and they are balanced so as to ensure that neither there is scope for illegal mining nor there should*

be environmental degradation.

Notice Inviting Tender (NIT)

15. The rules provide for a conservative estimation of the permissible quantity and in no way discounts the importance of NIT or accord primacy to mining plan. NIT is primary document and it is the constitutional requirement to give level playing field to all the bidders as held in Manohar lal Sharma vs principal secretary (SC) 2014 all SCR 3470 as follow:-

> 49. .....*The constitutional philosophy about law making in relation to mines and minerals and List I Entry 36 (Federal Legislative List) and List II Entry 23 (Provincial Legislative List) in Schedule VII of the Government of India Act, 1935 which correspond to List I Entry 54 (Union List) and List II Entry 23 (State List) in our Constitution has been noticed by this Court in Monnet* ***Ispat and Energy Ltd. v. Union of India and Ors., (2012) 11 SCC 1****. Speaking through one of us (R.M. Lodha, J., as he then was) in* ***Monnet Ispat and Energy Ltd. v. Union of India and Ors., (2012) 11 SCC 1****, this Court has noted the statement of the learned Solicitor General in the House of Commons made in the course of debate in respect of the above entries in the Government of India Bill that the rationale of including only the "regulation of mines" and "development of minerals" and that, too, only to the extent it was considered expedient in the public interest by a federal law was to ensure that the provinces were not completely cut out from the law relating to mines and minerals and if there was inaction at the Centre, then the provinces could make their own laws. Thus, power in relation to the mines and minerals was accorded to both, the Centre and the States. The Court in* ***Monnet Ispat and Energy Ltd. v. Union of India and Ors., (2012) 11 SCC 1*** *said:*
>
> > *"130. ..... The management of the mineral resources has been left with both the Central Government and the State Governments in terms of List I Entry 54 and List II Entry 23. In the scheme of our Constitution, the State Legislatures enjoy the power to enact legislation on the topics of "mines and minerals development". The only fetter imposed on the State Legislatures under Entry 23 is by the latter part of the said entry which says, "subject to the provisions of List I with respect to regulation and development under the control of the Union". In other words, the State Legislature loses its jurisdiction to the extent to which the Union Government had taken over control, the regulation of mines and*

development of minerals as manifested by legislation incorporating the declaration and no more. If Parliament by its law has declared that regulation of mines and development of minerals should in the public interest be under the control of the Union, which it did by making declaration in Section 2 of the 1957 Act, to the extent of such legislation incorporating the declaration, the power of the State Legislature is excluded. The requisite declaration has the effect of taking out regulation of mines and development of minerals from List II Entry 23 to that extent. It needs no elaboration that to the extent to which the Central Government had taken under "its control" "the regulation of mines and development of minerals" under the 1957 Act, the States had lost their legislative competence. By the presence of the expression "to the extent hereinafter provided" in Section 2, the Union has assumed control to the extent provided in the 1957 Act. The 1957 Act prescribes the extent of control and specifies it. We must bear in mind that as the declaration made in Section 2 trenches upon the State legislative power, it has to be construed strictly. Any legislation by the State after such declaration, trespassing the field occupied in the declaration cannot constitutionally stand "……..

83. Two recent decisions viz., (1) ***(2G Case) Centre for Public Interest Litigation & Ors. v. Union of India & Ors., (2012) 3 SCC 1*** *and (2)* ***Natural Resources Allocation, In re, Special Reference No. 1 of 2012, (2012) 10 SCC 1*** *directly deal with the question of auction as mode for the disposal or allocation of natural resources. But before we consider these two decisions, reference to some of the decisions of this Court, which had an occasion to deal with disposal of natural resources, may be of some help in appreciating this aspect in correct perspective.*

84. P.N. Bhagwati, J. in ***Kasturi Lal Lakshmi Reddy & Ors. v. State of J&K & Anr., (1980) 4 SCC 1*** *had said that where the State was allocating resources such as water, power, raw materials, etc., for the purpose of encouraging setting up of industries within the State, the State was not bound to advertise and tell the people that it wanted a particular industry to be set up within the State and invite those interested*

to come up with proposals for the purpose. It was also observed that if any private party comes before the State and offers to set up an industry, the State would not be committing breach of any constitutional or legal obligation if it negotiates with such party and agrees to provide resources and other facilities for the purpose.

85. In ***Sachidanand Pandey & Anr. v. State of West Bengal & Ors., (1987) 2 SCC 295*** *this Court had observed that ordinary rule for disposal of State-owned or public-owned property, was by way of public auction or by inviting tenders but there could be situations where departure from the said rule may be necessitated but then the reasons for the departure must be rational and should not be suggestive of discrimination and that nothing should be done which gives an appearance of bias, jobbery or nepotism.*

86. The statement of law in ***Sachidanand Pandey & Anr. v. State of West Bengal & Ors., (1987) 2 SCC 295*** *was echoed again in* ***Haji T.M. Hassan Rawther v. Kerala Financial Corporation, (1988) 1 SCC 166****, wherein this Court reiterated that the public property owned by the State or by an instrumentality of State should be generally sold by public auction or by inviting tenders. It was emphasised that this rule has been insisted upon not only to get the highest price for the property but also to ensure fairness in the activities of the State and public authorities and to obviate the factors like bias, favoritism or nepotism. Clarifying that this is not an invariable rule, the Court reiterated that departure from the rule of auction could be made but then it must be justified.*

87. The above principle is again stated by this Court in ***M.P. Oil Extraction & Anr. v. State of M.P. & Ors., (1997) 7 SCC 592****, in which this Court said that distribution of largesse by inviting open tenders or by public auction is desirable but it cannot be held that in no case distribution of such largesse by negotiation is permissible.*

88. In ***Netai Bag & Ors. v. State of West Bengal & Ors., (2000) 8 SCC 262*** *this Court said that when any State land is intended to be transferred or the State largesse is decided to be conferred, resort should be had to public auction or transfer by way of inviting tenders from the people as that would be a sure method of guaranteeing compliance with mandate of Article 14 of the Constitution but non-floating of tenders or not holding public auction would not in all cases be deemed to be the result of the exercise of the executive power in an arbitrary manner.*

89. In ***Villianur Iyarkkai Padukappu Maiyam v. Union of India & Ors., (2009) 7 SCC 561*** *the matter before this Court related to the selection of*

contractor for development of the port of Pondicherry withoutfloating a tender or holding public auction. The Court said that where the State was allocating resources such as water, power, raw materials, etc., for the purpose of encouraging development of the port, the State was not bound to advertise and tell the people that it wanted development of the port in a particular manner and invite those interested to come up with proposals for the purpose.

90. There are numerous decisions of this Court dealing with the mode and manner of disposal of natural resources but we think it is not necessary to refer to all of them. Having indicated the view taken by this Court in some of the cases, now we may turn to ***2G case, Centre for Public Interest Litigation & Ors. v. Union of India & Ors., (2012) 3 SCC 1****. In that case, the two-Judge Bench of this Court stated that a duly publicised auction conducted fairly and impartially was perhaps the best method for alienation of natural resources lest there was likelihood of misuse by unscrupulous people who were only interested in garnering maximumfinancial benefit and have no respect for the constitutional ethos and values. Court laid emphasis that while transferring or alienating the natural resources, the State is duty bound to adopt the method of auction by giving wide publicity so that all eligible persons can participate in the process.*

91. The above view in ***(2G Case) Centre for Public Interest Litigation& Ors. v. Union of India & Ors., (2012) 3 SCC 1*** *necessitated the reference by the President of India to this Court under Article 143(1) of the Constitution. The first two questions ? Question 1 and Question 2 ? referred to this Court for consideration and report read as under:*

"Question 1	*Whether the only permissible method for disposal of all natural resources across all sectors and in all circumstances is by the conduct of auctions?*
Question 2	*Whether a broad proposition of law that only the route of auctions can be resorted to for disposal of natural resources does not run contrary to several judgments of the Supreme Court including those of the larger Benches?*

92. The Constitution Bench which dealt with the above reference observed that the answer to the following three questions would provide comprehensive answer to the parent question, viz., Question 1:

(i) Are some methods ultra vires and others intra vires the Constitution of India, especially Article 14?

(ii) Can disposal through the method of auction be elevated to a constitutional principle?

(iii) Is this Court entitled to direct the executive to adopt a certain method because it is the "best" method? If not, to what extent can the executive deviate from such "best" method?

93. The Constitution Bench clarified that the statement of law in ***(2G Case) Centre for Public Interest Litigation & Ors. v. Union of India & Ors., (2012) 3 SCC 1*** *that while transferring or alienating the natural resources, the State is duty bound to adopt the method of auction was confined to the specific case of spectrum and not for dispensation of all natural resources. The Constitution Bench said that findings of this Court in* ***(2G Case) Centre for Public Interest Litigation & Ors. v. Union of India & Ors., (2012) 3 SCC 1*** *were limited to the case of spectrum and not beyond that and that it did not deal with the modes of allocation for natural resources other than spectrum.*

94. The Constitution Bench while dealing with the aspect of disposal of natural resources other than auction, divided the consideration of this aspect under two heads, viz., "Legitimate deviations from auction" and "Potential of abuse". Under the head "Legitimate deviations from auction" the Court considered the earlier decisions of this Court in ***Kasturi Lal Lakshmi Reddy & Ors. v. State of J&K & Anr., (1980) 4 SCC 1***, ***Sachidanand Pandey & Anr. v. State of West Bengal & Ors., (1987) 2 SCC 295***, ***Haji T.M. Hassan Rawther v. Kerala Financial Corporation, (1988) 1 SCC 166***, ***M.P. Oil Extraction & Anr. v. State of M.P. & Ors., [(1997) 7 SCC 592]***, ***Netai Bag & Ors. v. State of West Bengal & Ors., (2000) 8 SCC 262*** *and* ***Villianur Iyarkkai Padukappu Maiyam v. Union of India & Ors., (2009) 7 SCC 561****, which we have briefly noted above, and it was held that there is no constitutional mandate in favour of auction under Article 14. In the main judgment (paras 129 to 131, pg. 92), the Constitution Bench stated as under:*

"129. Hence, it is manifest that there is no constitutional mandate in favour of auction under Article 14. The Government has repeatedly deviated from the course of auction

and this Court has repeatedly upheld such actions. The judiciary tests such deviations on the limited scope of arbitrariness and fairness under Article 14 and its role is limited to that extent. Essentially whenever the object of policy is anything but revenue maximization, the Executive is seen to adopt methods other than auction.

130. A fortiori, besides legal logic, mandatory auction may be contrary to economic logic as well. Different resources may require different treatment. Very often, exploration and exploitation contracts are bundled together due to the requirement of heavy capital in the discovery of natural resources. A concern would risk undertaking such exploration and incur heavy costs only if it was assured utilisation of the resource discovered; a prudent business venture, would not like to incur the high costs involved in exploration activities and then compete for that resource in an open auction. The logic is similar to that applied in patents. Firms are given incentives to invest in research and development with the promise of exclusive access to the market for the sale of that invention. Such an approach is economically and legally sound and sometimes necessary to spur research and development. Similarly, bundling exploration and exploitation contracts may be necessary to spur growth in a specific industry.

131. Similar deviation from auction cannot be ruled out when the object of a State policy is to promote domestic development of an industry, like in Kasturi Lal's case, discussed above. However, these examples are purely illustrative in order to demonstrate that auction cannot be the sole criteria for alienation of all natural resources."

95. While dealing with the argument that even if the method of auction was not a mandate under Article 14, it must be the only permissible method due to the susceptibility of other methods to abuse, the Court under the head "Potential of abuse" held that a potential for abuse cannot be the basis for striking down the method as ultra vires the Constitution. The Court noted two decisions of this Court in ***R.K. Garg v. Union of India & Ors., (1981) 4 SCC 675*** *and* ***D.K. Trivedi & Sons & Ors. v. State of Gujarat & Ors., 1986 Supp SCC 20*** *and held that neither auction nor any other method of disposal can be held ultra vires the Constitution merely because of a potential abuse. The Constitution Bench (para 135, pgs. 93-94) stated as under:*

"135. Therefore, a potential for abuse cannot be the basis for striking down a method as ultra vires the Constitution. It is the actual abuse itself that

must be brought before the Court for being tested on the anvil of constitutional provisions. In fact, it may be said that even auction has a potential of abuse, like any other method of allocation, but that cannot be the basis of declaring it as an unconstitutional methodology either. These drawbacks include cartelization, "winners curse" (the phenomenon by which a bidder bids a higher, unrealistic and unexecutable price just to surpass the competition; or where a bidder, in case of multiple auctions, bids for all the resources and ends up winning licenses for exploitation of more resources than he can pragmatically execute), etc. However, all the same, auction cannot be called ultra vires for the said reasons and continues to be an attractive and preferred means of disposal of natural resources especially when revenue maximization is a priority. Therefore, neither auction, nor any other method of disposal can be held ultra vires the Constitution, merely because of a potential abuse."

96. In ***Natural Resources Allocation, In re, Special Reference No. 1 of 2012; [(2012) 10 SCC 1]*** *the Constitution Bench, in the main judgment, thus, concluded that auction despite being a more preferable method of alienation/allotment of natural resources cannot be held to be constitutional requirement or limitation for alienation of all natural resources and, therefore, every method other than auction cannot be struck down as ultra vires the constitutional mandate. The Court also opined that auction as a mode cannot be conferred the status of a constitutional principle. While holding so, the Court held that alienation of natural resources is a policy decision and the means adopted for the same are, thus, executive prerogatives. The Court summarised the legal position as under:*

> *"146. To summarise in the context of the present Reference, it needs to be emphasised that this Court cannot conduct a comparative study of the various methods of distribution of natural resources and suggest the most efficacious mode, if there is one universal efficacious method in the first place. It respects the mandate and wisdom of the executive for such matters. The methodology pertaining to disposal of natural resources is clearly an economic policy. It entails intricate economic choices and the Court lacks the necessary expertise to make them. As has been repeatedly said, it cannot, and shall not, be the endeavour of this Court to evaluate the efficacy of auction vis-a-vis other methods of disposal of natural resources. The Court cannot mandate one method to be followed in all facts and*

circumstances. Therefore, auction, an economic choice of disposal of natural resources, is not a constitutional mandate. We may, however, hasten to add that the Court can test the legality and constitutionality of these methods. When questioned, the courts are entitled to analyse the legalvalidity of different means of distribution and give a constitutional answer as to which methods are ultra vires and intra vires the provisions of the Constitution. Nevertheless, it cannot and will not compare which policy is fairer than the other, but, if a policy or law ispatently unfair to the extent that it falls foul of the fairness requirement of Article 14 of the Constitution, the Court would not hesitate in striking it down.

147. Finally, market price, in economics, is an index of the value that a market prescribes to a good. However, this valuation is a function of several dynamic variables: it is a science and not a law. Auction is just one of the several price discovery mechanisms. Since multiple variables are involved in such valuations, auction or any other form of competitive bidding, cannot constitute even an economic mandate, much less a constitutional mandate.

148. In our opinion, auction despite being a more preferable method of alienation/allotment of natural resources, cannot be held to be a constitutional requirement or limitation for alienation of all natural resources and therefore, every method other than auction cannot be struck down as ultra vires the constitutional mandate.

149. Regard being had to the aforesaid precepts, we have opined that auction as a mode cannot be conferred the status of a constitutional principle. Alienation of natural resources is a policy decision, and the means adopted for the same are thus, executive prerogatives. However, when such a policy decision is not backed by a social or welfare purpose, and precious and scarce natural resources are alienated for commercial pursuits of profit maximising private entrepreneurs, adoption of means other than those that are competitive and maximise revenue may be arbitrary and face the wrath of Article 14 of the Constitution. Hence, rather than prescribingor proscribing a method, we believe, a judicial scrutiny of methods ofdisposal of natural resources should depend on the facts and circumstances of each case, in consonance with the principles which we have culled out above. Failing which, the Court, in exercise of power of judicial review, shall term the executive action as arbitrary, unfair, unreasonable and capricious due to its antimony with Article 14 of the Constitution."

97. J.S. Khehar, J., while concurring with the main opinion

has stated that auction is certainly not a constitutional mandate in the manner expressed, but it can be applied in some situations to maximise revenue returns, to satisfy legal and constitutional requirements. In his view, if the State arrives at a conclusion, in a given situation, that maximum revenue would be earned by auction of the particular natural resource, then that alone would be the process which it would have to adopt. In the penultimate para of his opinion, J.S. Khehar, J., observed," there can be no doubt about the conclusion recorded in the "main opinion" that auction which is just one of the several price recovery mechanisms, cannot be held to be the only constitutionally recognised method for alienation of natural resources. That should not be understood to mean, that it can never be a valid method for disposal of natural resources ".

98. In ***Natural Resources Allocation, In re, Special Reference No.1 of 2012; [(2012) 10 SCC 1]****, the Constitution Bench said that reading auction as a constitutional mandate would be impermissible because such an approach may distort another constitutional principle embodied in Article 39(b). In the main judgment, with reference to Article 39(b), the Court stated as follows:*

> *"113. The disposal of natural resources is a facet of the use and distribution of such resources. Article 39(b) mandates that the ownership and control of natural resources should be so distributed so as to best subserve the common good. Article 37 provides that the provisions of Part IV shall not be enforceable by any court, but the principles laid down therein are nevertheless fundamental in the governance of the country and it shall be the duty of the State to apply these principles in making laws. Therefore, this Article, in a sense, is a restriction on "distribution" built into the Constitution. But the restriction is imposed on the object and not the means. The overarching and underlying principle governing "distribution" is furtherance of common good. But for the achievement of that objective, the Constitution uses the generic word "distribution". Distribution has broad contours and cannot be limited to meaning only one method i.e. auction. It envisages all such methods available for distribution/allocation of natural resources which ultimately sub-serve the "common good".*
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115. It can thus, be seen from the aforequoted paragraphs

that the term "distribute" undoubtedly, has wide amplitude and encompasses all manners and methods of distribution, which would include classes, industries, regions, private and public sections, etc. Having regard to the basic nature of Article 39(b), a narrower concept of equality under Article 14 than that discussed above, may frustrate the broader concept of distribution, as conceived in Article 39(b). There cannot, therefore, be a cavil that "common good" and "larger public interests" have to be regarded as constitutional reality deserving actualization.

116. The learned counsel for CPIL argued that revenue maximization during the sale or alienation of a natural resource for commercial exploitation is the only way of achieving public good since the revenue collected can be channelized to welfare policies and controlling the burgeoning deficit. According to the learned counsel, since the best way to maximise revenue is through the route of auction, it becomes a constitutional principle even under Article 39(b). However, we are not persuaded to hold so. Auctions may be the best way of maximizing revenue but revenue maximisation may not always be the best way to subserve public good. "Common good" is the sole guiding factor under Article 39(b) for distribution of natural resources. It is the touchstone of testing whether any policy subserves the "common good" and if it does, irrespective of the means adopted, it is clearly in accordance with the principle enshrined in Article 39(b).

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119. The norm of "common good" has to be understood and appreciated in a holistic manner. It is obvious that the manner in which the common good is best subserved is not a matter that can be measured by any constitutional yardstick?it would depend on the economic and political philosophy of the Government. Revenue maximisation is not the only way in which the common good can be subserved. Where revenue maximisation is the object of a policy, being considered qua that resource at that point of time to be the best way to subserve the common good, auction would be one of the preferable methods, though not the only method. Where revenue maximisation is not the object of a policy of distribution, the question of auction would not arise. Revenue considerations may assume secondary consideration to developmental considerations.

120. Therefore, in conclusion, the submission that the mandate of Article 14 is that any disposal of a natural resource for commercial use must be for revenue maximisation, and thus by auction, is based neither on law nor on logic. There is no constitutional imperative in the matter of economic policies? Article 14 does not predefine any economic policy as a constitutional mandate. Even the mandate of Article 39(b) imposes no restrictions on the means adopted to sub-serve the public good and uses the broad term "distribution", suggesting that the methodology of distribution is not fixed.

> *Economic logic establishes that alienation/ allocation of natural resources to the highest bidder may not necessarily be the only way to sub-serve thecommon good, and at times, may run counter to public good. Hence, it needs little emphasis that disposal of all natural resources through auctions is clearly not a constitutional mandate."*
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> *99. In light of the above legal position, the argument that auction is a bestway to select private parties as per Article 39(b) does not merit acceptance. The emphasis on the word "best" in Article 39(b) by the learned senior counsel for the intervener does not deserve further discussion in light ofthe legal position exposited by the Constitution Bench in* ***Natural Resources Allocation, In re, Special Reference No.1 of 2012; [(2012) 10 SCC 1]*** *with reference to Article 39(b). We are fortified in our view by a recent decision of this Court (3-Judge Bench) in* ***Goa Foundation v. Unionof India and Others, (2014) 6 SCC 590*** *wherein following* ***Natural Resources Allocation, In re, Special Reference No.1 of 2012; [(2012) 10 SCC 1]****, it is stated, "...it is for the State Government to decide as a matter of policy in what manner the leases of these mineral resources would be granted, but this decision has to be taken in accordance with the provisionsof the MMDR Act and the Rules made thereunder and in consonance with the constitutional provisions?".*

16. As described in the EMGSM 2020, Mining Plan is an important document to assist the mine owner to operate the mine in a scientific manner. There is no practice for regular replenishment study to ascertain the rate of depositing, plan and section needs to be prepared based on the restrictions provided in letter of intent and provisions of Sustainable Sand Mining Management Guidelines 2016. Therefore, granting EC on the basis of Mining Plan is in violation of the Guidelines and against the principles of sustainable sand mining. Considering the importance of district survey report, the Ministry of Environment Forest and climate change, after consultation with experts dealing with mining-related matters, formulated the guidelines for the preparation of comprehensive District Survey Report for sand mining. It accordingly, prescribed that District Survey Report for sand mining should be prepared before the auction/e-auction/grant of the mining lease/Letter of

Intent (LoI) by Mining department or department dealing the mining activity in respective states. DSR is to be approved at the level of SEIAA with the help of SEAC. It is surprising that SEIAA is not taking DSR or Annual Replenishment Study (ARS) into consideration. Had DSR and ARS taken into consideration the discrepancy between the quantity of sand given in NIT and EC can be easily avoided and sand mining would be sustainable. In addition to that it would also eliminate the chances of misuse of EC for illegal mining.

17. Another category of cases includes those in which the mining areas (Khasra/survey numbers) are not given in NIT but EC are granted even for them. Obviously such EC can lead to illegal mining as well as loss of exchequer to the State. It would also disrupt the system of sustainable mining and escape all kinds of monitoring and supervision, as EC would be available but the mining department would not be looking after them. It is completely out of sync so far as the mining administration in States exists.

18. Vide order dated 14.10.2020 in O.A. No. 40/2020, Pawan Kumar v. State of Bihar & Ors., the issue of preparation of District Survey Report (DSR) by Experts was considered. Vide Notification dated 25.07.2018 issued by the MoEF&CC, under Section 3(2)(v) of the EP Act, 1986 amending EIA Notification dated 14.09.2006, procedure for preparation of DSR for sand mining/riverbed mining was laid down. The DSR is crucial as it contains Environment Management plan, including the replenishment study and other safeguards and is the basis to consider the environment impact of mining based on which decision to grant the Environmental Clearance is taken. The Tribunal held that for such crucial exercise, the Experts should be out of those accredited by the National

Accreditation Board of Education and Training/ Quality Control Council of India (NABT/QCCI) in terms of O.M. of MoEF&CC dated 16.03.2010. Verification by the District Magistrate and evaluation by the SEAC was also necessary. Accordingly, following directions were issued in relation to a matter arising from the State of Bihar:- "(ii) As the DEIAA is not functioning as a consequence of the decision of the Tribunal in Satendra Pandey (supra), the DSR shall be prepared through a consultant(s) accredited by the National Accreditation Board of Education and Training/ Quality Control Council of India in terms of O.M. of MoEF&CC dated 16.03.2010. (iii) The DSR so prepared shall be submitted to the District Magistrate who shall verify the DSR only in respect of the relevant facts pertaining to the physical and geographical features of the district which shall be distinct from the scientific findings based on the parameters prescribed in the SSMMG2016. After such verification, the District Magistrate shall forward the DSR for examination and evaluation by the State Expert Appraisal Committee (SEAC) having regarding to the fact that the SEIAA comprises of technical/scientific experts. The SEAC after appraisal of the report shall forward it to the SEIAA for consideration and approval if it meets all scientific/technical requirements. (iv) While preparing the DSR, the MoEF&CC Accredited Agency/Consultant shall scrupulously follow the procedure and the parameters laid down under the SSMMG-2016 and EMGSM2020 read in sync with each other.

19. Considering the above, vide order dated 04.11.2020 in O.A. No. 726 of 2018, Rupesh Pethe v. State of M.P. & Ors., the Tribunal directed that the above direction ought to be followed pan India, as follows:-

> *"5. The above direction may be followed by the State of MP also for the sake of uniformity. Further information required to be furnished is about the extent of illegal mining, extent of action taken, including the compensation recovered, vehicles seized and other coercive measures*

and impact of such action. The State of M.P. may compile relevant directions on the subject including the binding order of any Courts or Tribunal. This exercise may be undertaken jointly by the Secretary Geology and Mining, Member Secretary State PCB and Member Secretary SEIAA. In light of above, the State may further revise its policy and exercise. Let further compliance status be furnished before the next date by e-mail at judicialngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF.

6. We are of the view that the above directions need to be followed by all other States where the issue of mining is relevant.

7. A copy of this order be forwarded to the Chief Secretaries of all the States and UTs by e-mail for compliance."

Adverse impact of unscientific/unregulated Sand Mining

20. It is undisputed that there is huge degradation of environment on account of unregulated sand mining remains which is otherwise lucrative activity. It poses threat to bio-diversity, could destroy riverine vegetation, cause erosion, pollute water sources, badly affecting riparian ecology, damaging ecosystem of rivers, safety of bridges, weakening of riverbeds, destruction of natural habitats of organisms living on the riverbeds, affects fish breeding and migration, spell disaster for the conservation bird species, increase saline water in the rivers. It has direct impact on the physical habitat characteristics of the rivers such as bed elevation, substrate composition and stability, in-stream roughness elements, depth, velocity, turbidity, sediment transport, stream discharge and temperature. Increase in demand of sand has placed immense pressure in the supply of sand resource and mining activities were going on illegally as well as legally without requisite restrictions. Lack of proper planning and sand management disturbs marine ecosystem and upset the ability of natural marine processes to replenish the sand. The Hon'ble Supreme Court (in Deepak Kumar, supra) noted that core group was constituted by the MoEF&CC to examine the impact of minor minerals on riverbeds and

ground waters. A draft report was prepared recommending mandatory preparation of mining plan on the pattern of mining plans for major minerals. Further recommendations are reclamation and rehabilitation of abandoned mines, proportion of hydro geo-logical balance for minerals below ground water table limiting depth of mining to 3 meter and identification on locations where mining should be permitted was required. There is need for identifying safety zones in the proximity of intendments. Thus, strict regulatory parameters were required for regulating mining of minor minerals. It was noted that in-stream mining lowers the stream bottom of rivers which may lead to bank erosion. Depletion of sand in the stream bed causes deepening of rivers which may result in destruction of aquatic and riparian habitats. It has impact on stream's physical habitat characteristics.

21. In *State (NCT of Delhi) v. Sanjay, (2014) 9 SCC 772, at page 790*, it was observed :

> *"32. The policy and object of the Mines and Minerals Act and Rules have a long history and are the result of an increasing awareness of the compelling need to restore the serious ecological imbalance and to stop the damages being caused to the nature. The Court cannot lose sight of the fact that adverse and destructive environmental impact of sand mining has been discussed in the UNEP Global Environmental Alert Service Report. As per the contents of the Report, lack of proper scientific methodology for river sand mining has led to indiscriminate sand mining, while weak governance and corruption have led to widespread illegal mining. While referring to the proposition in India, it was stated that sand trading is a lucrative business, and there is evidence of illegal trading such as the case of the influential mafias in our country."*
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> *"33. The mining of aggregates in rivers has led to severe damage to rivers, including pollution and changes in levels of pH. Removing sediment from rivers causes the river to cut its channel through the bed of the valley floor, or channel incision, both upstream and downstream of the extraction site. This leads to coarsening of bed material and lateral channel instability. It can change the riverbed itself. The removal of more than 12 million tonnes of sand a year from Vembanad Lake catchment in India has led to the lowering*

of the riverbed by 7 to 15 cm a year. Incision can also cause the alluvial aquifer to drain to a lower level, resulting in a loss of aquifer storage. It can also increase flood frequency and intensity by reducing flood regulation capacity. However, lowering the water table is most threatening to water supply exacerbating drought occurrence and severity as tributaries of major rivers dry up when sand mining reaches certain thresholds. Illegal sand mining also causes erosion. Damming and mining have reduced sediment delivery from rivers to many coastal areas, leading to accelerated beach erosion.

34. The Report also dealt with the astonishing impact of sand mining on the economy. It states that tourism may be affected through beach erosion. Fishing, both traditional and commercial, can be affected through destruction of benthic fauna. Agriculture could be affected through loss of agricultural land from river erosion and the lowering of the water table. The insurance sector is affected through exacerbation of the impact of extreme events such as floods, droughts and storm surges through decreased protection of beach fronts. The erosion of coastal areas and beaches affects houses and infrastructure. A decrease in bed load or channel shortening can cause downstream erosion including bank erosion and the undercutting or undermining of engineering structures such as bridges, side protection walls and structures for water supply.

35. Sand is often removed from beaches to build hotels, roads and other tourism-related infrastructure. In some locations, continued construction is likely to lead to an unsustainable situation and destruction of the main natural attraction for visitors—beaches themselves. Mining from, within or near a riverbed has a direct impact on the stream's physical characteristics, such as channel geometry, bed elevation, substratum composition and stability, instream roughness of the bed, flow velocity, discharge capacity, sediment transportation 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 instream biota and riparian habitats. This disturbance may also cause changes in channel configuration and flow paths.

…..Today, demand for sand and gravel continues to increase. Mining operators, instead of working in conjunction with cognizant resource agencies to ensure that sand mining is conducted in a responsible manner, are engaged in full-time profiteering. Excessive in-stream sand and gravel mining from riverbeds and like resources causes the degradation of rivers. In-stream mining lowers the stream bottom, which leads to bank erosion. Depletion of sand in the stream-bed and along coastal areas causes the deepening of rivers and estuaries and enlargement of river mouths and coastal inlets. It also leads to saline water intrusion from the nearby sea. The effect of mining is compounded by the effect of sea level rise. Any volume of

sand exported from stream-beds and coastal areas is a loss to the system. Excessive in-stream sand mining is a threat to bridges, river banks and nearby structures. Sand mining also affects the adjoining groundwater system and the uses that local people make of the river. Further, according to researches, in-stream sand mining results in the destruction of aquatic and riparian habitat through wholesale changes in the channel morphology. The ill effects include bed degradation, bed coarsening, lowered water tables near the streambed and channel instability. These physical impacts cause degradation of riparian and aquatic biota and may lead to the undermining of bridges and other structures. Continued extraction of sand from riverbeds may also cause the entire stream-bed to degrade to the depth of excavation."

22. Mining within the State is required to be regulated not only by the Mining Department but also by the State Pollution Control Board under the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981and by the MoEF& CC under the Environment (Protection) Act, 1986. The Environmental Laws override other laws and any provision contrary in the Mines Act, 1952 will not stay in the way of enforcing environment norms. The Enforcement and Monitoring Guidelines for Sand Mining, 2020 (EMGSM-2020) seeks to provide effective enforcement and monitoring from the stage of identification of source to its dispatch and in use which requires environment of all stakeholders, Central Government, State Government, Lease Holders, Mine Owners, Distributors, Dealers, Transporters and Consumers. The guidelines issued from the MoEF&CC makes EC mandatory irrespective of the area of mining lease, followed by monitoring in terms of the Environment Management Plan, using IT and IT enabled services.

23. Hon'ble the Supreme Court of India in State of Bihar and Ors vs. Pawan Kumar and Ors etc (Civil Appeal No. 3661-3662 of 2020) decided on **10th November, 2021** considered the essentiality and prerequisite of DSR and held as follows:

"7. It cannot be in dispute that though the developmental activities are not stalled, the environmental issues are also required to be addressed. A balanced approach of sustainable development ensuring environmental safeguards, needs to be resorted to. At the same time, it also cannot be ignored that when legal mining is banned, it gives rise to mushroom growth of illegal mining, resulting into clashes between sand mafias, criminalization and at times, loss of human lives. It also cannot be disputed that sand is required for construction of public infrastructural projects as well as public and private construction activities. A total ban on legal mining, apart from giving rise to illegal mining, also causes huge loss to the public exchequer.
8. Taking into consideration these aspects of the matter, we propose to issue certain interim directions.
9. The Tribunal, in the case of Satendra Pandey (supra), has found that the notification dated 15th January 2016, which provided Environmental Clearance to be given by the District Environment Impact Assessment Authority (hereinafter referred to as the "DEIAA") was not in consonance with the judgment of this Court in the case of Deepak Kumar v. State of Haryana and Others2. The Tribunal therefore in Satendra Pandey (supra), had directed Ministry of Environment, Forest and Climate Change (hereinafter referred to as "MoEF and CC) to take steps to revise the procedure laid down in the notification dated 15th January 2016. It is to be noted that MoEF and CC, in accordance with the directions of the Tribunal, had issued Enforcement and Monitoring Guidelines for Sand Mining (hereinafter to referred to as "the 2020 guidelines") in the month of January 2020. Chapter 4 of the 2020 guidelines deals with identification of possible sand mining sources and preparation of DSR. It will be relevant to refer to Clause 4.1.1 (a), (o) and (p) of the 2020 guidelines:

"4.1 Identification of possible sand mining sources and preparation of District Survey Report (DSR)
4.1.1 Preparation of District Survey Report.

District Survey Report for sand mining shall be prepared before the auction/ e-auction/ grant of the mining lease/ Letter of Intent (Loi) by Mining department or department dealing the mining activity in respective states.

o) Potential site for mining having its impact on the forest, protected area, habitation, bridges etc, shall be avoided. For this, a sub divisional committee may be formed which after the site visit shall decide its suitability for mining. The list of mining lease after the recommendation of the Committee needs to be defined in the following format given in as Annexure II. The Sub Divisional Committee after the site visit shall make a recommendation on the site for its suitability of mining and also records the reason for selecting the mining lease in the Patta land. The details regarding cluster and contiguous cluster needs to be provided as in Annexure III. The details of the transportation need to ~e provided as in Annexure IV.

p) ***Public consultation****- The Comments of the various stakeholders may be sought on the list of mining lease to be auctioned. The State Government shall give an advertisement in the local and national newspaper for seeking comments of the general public on the list of mining' lease included in the DSR. The DSR should be placed in the*

public domain for at least one month from the date of publication of the advertisement for obtaining comments of the general public. The comments so received shall be placed before the sub divisional committee for active consideration. The final list of sand mining areas [leases to be granted on riverbed & Patta land/Khatedari land, de-siltation location (ponds/lakes/dams), M-Sand Plants (alternate source of sand)] after the public hearing needs to be defined in the final DSR in the format as per Annexure-V. The details regarding cluster and contiguous cluster needs to be provided in Annexure-VI. The details of the transportation need to be provided in Annexure-VII."

10. It could thus be seen that in accordance with the 2020 guidelines, the DSR is required to be prepared before the auction/e-auction/ grant of mining lease by Mining Department or Department dealing with mining activity in the respective States. It is further provided that the potential site for mining having its impact on the forest, protected area, habitation and bridges should be avoided. For this, a sub divisional committee is required to be formed which, after the site visit, is required to decide regarding the suitability of the sites for mining. The sub divisional committee is further required to record its reasons for selecting the mining lease in the patta land. Various details are required to be given in the annexure appended to the said policy.

11. It is further to be noted that Appendix-X of the notification dated 15th January 2016, issued by MoEF and CC also provides for composition of the sub divisional committee:
"A Sub Divisional Committee comprising 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."

12. It is to be noted that with the advent of modern technology, various technological gadgets like Drones and satellite imaging etc. can be used for identification of the potential sites and preparation of the DSR and also to check misuse and unauthorized mining.

13. We further find that when the 2020 guidelines as well as the notification issued by MoEF and CC of 2016 itself provide for constitution of sub divisional committees comprising of the officers of the State Government from various Departments for identification of the potential sites for mining, there would be no necessity of the DSRs being prepared through private consultants as directed by the Tribunal in the impugned order. The sub divisional committee consists of various officers from Revenue Department, Irrigation Department, State Pollution Control Board, Forest Department and Geology Mining Department of the State Government. They are better equipped to visit the sites and prepare the draft DSR for the concerned district. Apart from that, preparation of DSR through private consultants would also unnecessarily burden the public exchequer. We are therefore of the view that the direction in that regard issued by the Tribunal requires to be modified. We are further of the considered view that until the DSRs are finalized and granted approval by SEAC and SEIAA, it is appropriate that certain necessary

arrangements are permitted so that the State can continue with legal mining activities. This apart from preventing illegal mining activities, would also ensure that the public exchequer is not deprived of its share in legalized mining.

14. We therefore find it appropriate to substitute the directions issued by the Tribunal vide judgment and order dated 14th October 2020, with the following directions:-

(i) ***The exercise of preparation of DSR for the purpose of mining in the State of Bihar in all the districts shall be undertaken afresh****. The draft* ***DSRs shall be prepared by the sub divisional committees consisting of the Sub-Divisional Magistrate, Officers from Irrigation Department, State Pollution Control Board or Committee, Forest Department, Geological or mining officer. The same shall be prepared by*** *undertaking site visits and also by using modern technology. The said draft DSRs shall be prepared within a period of 6 weeks from the date of this order. After the draft DSRs are prepared, the District Magistrate of the concerned District shall forward the same for examination and evaluation by the SEAC. The same shall be examined by the SEAC within a period of 6 weeks and its report shall be forwarded to the SEIAA within the aforesaid period of 6 weeks from the receipt of it. The SEIAA will thereafter consider the grant of approval to such DSRs within a period of 6 weeks from the receipt thereon;*

(ii) ***Needless to state that while preparing DSRs and the appraisal thereof by SEAC and SEIAA, it should be ensured that a strict adherence to the procedure and parameters laid down in the policy of January 2020 should be followed;***

(iii) Until further orders, we permit the State Government to carry on mining activities through Bihar State Mining Corporation for which it may employ the services of the contractors. However, while doing so, the State Government shall ensure that all environmental concerns are taken care of and no damage is caused to the environment."

24. In view of the above, the answer is that where there is transfer of natural resource, the requirement of NIT is necessary and there must be description of area and quantity of mining in the document. If there is any expansion of business in the form of change of area, increasing area or increasing the quantity of sand mining it is within the definition of expansion of business and required fresh EC thus, the description of area and the quantity of mining is essential part to be included in the NIT.

25. In light of the settled proposition of law in Goa Foundation vs. Union of India 2014 (6) SCC 738 before transferring EC, environmental status of

the sand quarry has to be ascertained. Transfer of EC without taking the environmental considerations into account is brazen breach of law and abetment of destructive practices of sand mining. Requirement of District Survey Report (DSR), Environmental status of the quarry before transferring EC- As already discussed in above paragraphs, MoEF & CC has issued a guidelines named SSMG, 2016 as well as EMGSM, 2020 and before transferring EC environmental status of the quarry has to be ascertained and transfer of EC without taking the environmental considerations into account is a brazen breach of law and abetment of destructive practices of sand mining and shall be in violation of Goa Foundation case (Supra). Thus, NIT in absence of any environmental status while transfer of EC should be taken into account in accordance with the sustainable guidelines.

26. Considering the facts narrated above, the conclusions and directions are as follows:-

I. We direct the State to follow the guidelines issued in Sustainable Sand Mining Guidelines 2016 (SSMG-2016) as well as Enforcement and Monitoring Guidelines for Sand Mining, 2020 (EMGSM-2020) and also enforce the mechanism for the preparation of DSR, Environment Management Plan, Replenishment Studies, Mine Closure Plan, grant of EC, assessment and recovery of compensation, seizure and release of vehicles involved in illegal mining and other safeguards against violation, grievance redressal, accountability of the designated officers and periodical review at higher level of the State.

II. A mechanism should be developed for periodic inspection by a five-members Committee, headed and coordinated by the SEIAA and comprising CPCB, State PCB and two expert members of SEAC dealing with the subject as directed by this Tribunal in O.A. No. 360/2015.

III. The Authority constituted/nominated under Section 3(3) of the Environment (Protection) Act, 1986 as envisaged by Hon'ble the Supreme Court in Goa Foundation Vs. Union of India & Ors. and in the matter of T.N. Godavarman Thirumulpad Vs. Union of India & Ors. (2014) 4 SSC 61 may take further action. The monitoring must be ensured through the Chief Secretary by holding a meeting and issue the necessary guidelines and actions in accordance with the order passed by this Tribunal in O.A. No. 360/2015.

IV. E-auction/auction/tender should be done in accordance with Sustainable Sand Mining Guidelines 2016 as well as Enforcement and Monitoring Guidelines for Sand Mining 2020 and only where details of approved DSR and Annual Replenishment Study are available.

V. EC should be accorded only to the limit of auctioned and sustainably permissible quantity.

VI. The respondents are directed to ensure that quantity of minerals directed to be mined will not exceed the quantity under replenishment study.

27. With these directions and observations, the application finally stands disposed of.

Sheo Kumar Singh, CP

Arun Kumar Tyagi, JM

Dr. A. Senthil Vel, EM

July 19, 2023
Original Application No. 284/2023
DV

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ANNEXURE A-9

MINUTES OF THE 102ND MEETING OF STATE LEVEL EXPERT APPRAISAL COMMITTEE (SEAC), JHARKHAND HELD ON 21ST, 22ND, 23RD , 24TH and 25TH MARCH, 2023.

The 102nd meeting of State Level Expert Appraisal Committee (SEAC), Jharkhand was held on 21st, 22nd, 23rd , 24th and 25th March, 2023 under the Chairmanship of Shri Ashok Kumar Singh, IFS (Retd.) in the Conference Room at SEAC, Ranchi.

The following members were present :

1. Shri Ashok Kumar Singh, IFS (Retd.) - Chairman
2. Dr. Kirti Avishek - Member
3. Shri Niranjan Lal Agarwalla - Member
4. Dr. Raju Kumar - Member
5. Dr. Ajay Govind Bhatt - Member
6. Shri Srikant Verma, IFS - Secretary

Day 1 : March 21st, 2023 [Tuesday]

A. Deputy Commissioner, Godda or through authorized representative and M/s Sathi Planners Pvt. Ltd.

i. Final District Survey Report (DSR) of Sand, Godda.

The Final DSR was submitted by Deputy Commissioner, Godda. He was represented by District Mining Officer, Godda Sri Meghlal Tuddu and Assistant Director, Geology, Dumka Sri Niral Dhan at the SEAC meeting on 21.03.2023.

During the meeting the consultant M/s Sathi Planners Pvt. Ltd., Ranchi in the presence of DMO, Godda and Assistant Director, Geology, Dumka presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors.

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.
3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR has been placed in the public domain for 01 (One) month from the 20.11.2022. As per the Sub Divisional Committee no comments / observations were obtained.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.

7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.
13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.
18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

During appraisal, a few shortcomings were observed which were rectified and included in the final DSR.

The final DSR (sand) of District Godda is recommended to SEIAA for approval.

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B. <u>Deputy Commissioner –cum- District Magistrate, Latehar or through authorized representative and M/s Sathi Planners Pvt. Ltd.</u>

i. <u>Final District Survey Report (DSR) of Sand, Latehar.</u>

The Final DSR was submitted by Deputy Commissioner –cum- District Magistrate, Latehar. He was represented by District Mining Officer, Godda Sri Anand Kumar at the SEAC meeting on 21.03.2023.

During the meeting the consultant M/s Sathi Planners Pvt. Ltd., Ranchi in the presence of DMO, Latehar presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors.

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.
3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR has been placed in the public domain for 01 (One) month from the 26.11.2022. As per the Sub Divisional Committee no comments / observations were obtained.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.
7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.
13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.
18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil

Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

During appraisal, a few shortcomings were observed which were rectified and included in the final DSR.

The final DSR (sand) of District Latehar is recommended to SEIAA for approval.

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C. District Magistrate –cum- Deputy Commissioner, Dumka or through authorized representative and M/s Sathi Planners Pvt. Ltd.

i. Final District Survey Report (DSR) of Sand, Dumka.

The DSR submitted was not complete as per the EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors and same has been admitted by the DMO, Dumka Shri Krishna Kumar Kisku and Assistant Director, Geology, Dumka Shri Niral Dhan.

The DSR should be revised and submit the same for reconsideration.

****

D. Deputy Commissioner –cum- District Magistrate, Pakur or through authorized representative and M/s Atmos Sustainable Solution Pvt. Ltd., Noida, U.P.

i. Final District Survey Report (DSR) of Sand, Pakur.

The Final DSR was submitted by Deputy Commissioner –cum- District Magistrate, Pakur. He was represented by District Mining Officer, Pakur Shri Pradeep Kumar at the SEAC meeting on 21.03.2023.

During the meeting the consultant M/s Atmos Sustainable Solution Pvt. Ltd., Noida in the presence of DMO, Pakur presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors.

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.

2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.
3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR has been placed in the public domain for 01 (One) month from the 19.12.2022. As per the Sub Divisional Committee no comments / observations were obtained.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.
7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.
13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.
18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

During appraisal, a few shortcomings were observed which were rectified and included in the final DSR.

The final DSR (sand) of District Pakur is recommended to SEIAA for approval.

****

E. District Magistrate–cum- Deputy Commissioner, Gumla or through authorized representative and M/s Atmos Sustainable Solution Pvt. Ltd., Noida, U.P.

i. Final District Survey Report (DSR) of Sand, Gumla.

The Final DSR was submitted by District Magistrate–cum- Deputy Commissioner, Gumla. He was represented by Assistant Director, Geology, Ranchi Sri Rakesh Kumar Panna at the SEAC meeting on 21.03.2023.

During the meeting the consultant M/s Atmos Sustainable Solution Pvt. Ltd., Noida in the presence of Assistant Director, Geology, Ranchi presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors.

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.
3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR has been placed in the public domain for 01 (One) month from the 07.01.2023. As per the Sub Divisional Committee no comments / observations were obtained.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.
7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.

13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.
18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

During appraisal, a few shortcomings were observed which were rectified and included in the final DSR.

The final DSR (sand) of District Gumla is recommended to SEIAA for approval.

****

F. District Magistrate–cum- Deputy Commissioner, East Singhbhum or through authorized representative and M/s Atmos Sustainable Solution Pvt. Ltd., Noida, U.P.

i. Final District Survey Report (DSR) of Sand, East Singhbhum.

The Final DSR was submitted by District Magistrate–cum- Deputy Commissioner, East Singhbhum. He was represented by DMO, East Singhbhum Sri Sanjay Kumar Sharma and Assistant Director, Geology, East Singhbhum Shri Karun Kumar Chandan at the SEAC meeting on 21.03.2023.

During the meeting the consultant M/s Atmos Sustainable Solution Pvt. Ltd., Noida in the presence of DMO, East Singhbhum presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors.

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.

3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR has been placed in the public domain for 01 (One) month from the 26.12.2022. As per the Sub Divisional Committee no comments / observations were obtained.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.
7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.
13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.
18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

During appraisal, a few shortcomings were observed which were rectified and included in the final DSR.

The final DSR (sand) of District East Singhbhum is recommended to SEIAA for approval.

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G. District Magistrate –cum- Deputy Commissioner, Dhanbad or through authorized representative and M/s Atmos Sustainable Solution Pvt. Ltd., Noida, U.P.

i. Final District Survey Report (DSR) of Sand, Dhanbad.

The Final DSR was submitted by District Magistrate–cum- Deputy Commissioner, Dhanbad. He was represented by DMO, Dhanbad Shri Mihir Salkar and Assistant Director, Geology, Bokaro & Dhanbad Mrs. Reena Kumari Oreya at the SEAC meeting on 21.03.2023.

During the meeting the consultant M/s Atmos Sustainable Solution Pvt. Ltd., Noida in the presence of DMO, Dhanbad presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors.

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.
3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR has been placed in the public domain for 01 (One) month from the 30.12.2022. As per the Sub Divisional Committee no comments / observations were obtained.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.
7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.

13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.
18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

During appraisal, a few shortcomings were observed which were rectified and included in the final DSR.

The final DSR (sand) of District Dhanbad is recommended to SEIAA for approval.

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H. <u>District Magistrate –cum- Deputy Commissioner, West Singhbhum or through authorized representative and M/s Atmos Sustainable Solution Pvt. Ltd., Noida, U.P.</u>

i. <u>Final District Survey Report (DSR) of Sand, West Singhbhum.</u>

The Final DSR was submitted by District Magistrate–cum- Deputy Commissioner, West Singhbhum. He was represented by DMO, West Singhbhum Shri Nishant Abhishek and Assistant Director, Geology, Chaibasa Shri Amendra Kumar Singh at the SEAC meeting on 21.03.2023.

During the meeting the consultant M/s Atmos Sustainable Solution Pvt. Ltd., Noida in the presence of DMO, West Singhbhum presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors.

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.

3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR has been placed in the public domain for 01 (One) month from the 16.12.2022. As per the Sub Divisional Committee no comments / observations were obtained.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.
7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.
13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.
18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

During appraisal, a few shortcomings were observed which were rectified and included in the final DSR.

The final DSR (sand) of District West Singhbhum is recommended to SEIAA for approval.

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I. District Magistrate –cum- Deputy Commissioner, Saraikela-Kharsawan or through authorized representative and M/s Atmos Sustainable Solution Pvt. Ltd., Noida, U.P.

i. Final District Survey Report (DSR) of Sand, Saraikela-Kharsawan.

The Final DSR was submitted by District Magistrate–cum- Deputy Commissioner, Saraikela-Kharsawan. He was represented by DMO, West Singhbhum Shri Nishant Abhishek and Assistant Director, Geology, Saraikela Shri Vipin Shushant Gudiya at the SEAC meeting on 21.03.2023.

During the meeting the consultant M/s Atmos Sustainable Solution Pvt. Ltd., Noida in the presence of DMO, West Singhbhum presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors.

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.
3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR has been placed in the public domain for 01 (One) month from the 19.01.2023. As per the Sub Divisional Committee no comments / observations were obtained.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.
7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.

13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.
18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

During appraisal, a few shortcomings were observed which were rectified and included in the final DSR.

The final DSR (sand) of District Saraikela-Kharsawan is recommended to SEIAA for approval.

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J. <u>District Magistrate –cum- Deputy Commissioner, Simdega or through authorized representative and M/s Atmos Sustainable Solution Pvt. Ltd., Noida, U.P.</u>

i. <u>Final District Survey Report (DSR) of Sand, Simdega.</u>

The Final DSR was submitted by District Magistrate–cum- Deputy Commissioner, Simdega. He was represented by DMO, Simdega Shri Ajeet Kumar and Assistant Director, Geology, Gumla Shri Rakesh Kumar Panna at the SEAC meeting on 21.03.2023.

During the meeting the consultant M/s Atmos Sustainable Solution Pvt. Ltd., Noida in the presence of DMO, Simdega presented the DSR before the Committee. The DSR was assessed considering the following points.

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.
3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR has been placed in the public domain for 01 (One) month from the 06.01.2023. As per the Sub Divisional Committee no comments / observations were obtained.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.

6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.
7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.
13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.
18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

During appraisal, a few shortcomings were observed which were rectified and included in the final DSR.

The final DSR (sand) of District Simdega is recommended to SEIAA for approval.

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K. <u>Deputy Commissioner –cum- District Magistrate, Ramgarh or through authorized representative and M/s Rian Enviro Pvt. Ltd., Patna, Bihar.</u>

i. <u>Final District Survey Report (DSR) of Sand, Ramgarh.</u>

The Final DSR was submitted by Deputy Commissioner –cum- District Magistrate, Ramgarh. He was represented by DMO, Ramgarh Shri Nitesh Gupta and Assistant Director, Geology, Hazaribagh Shri Abbu Hussain at the SEAC meeting on 21.03.2023.

During the meeting the consultant M/s Rian Enviro Pvt. Ltd., Patna in the presence of DMO, Ramgarh presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors.

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.
3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR has been placed in the public domain for 01 (One) month from the 11.11.2022. As per the Sub Divisional Committee 01 comments / observations were received, the response to which has been addressed in the DSR report.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.
7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.
13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.

18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

During appraisal, a few shortcomings were observed which were rectified and included in the final DSR.

The final DSR (sand) of District Ramgarh is recommended to SEIAA for approval.

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L. <u>Deputy Commissioner –cum- District Magistrate, Lohardaga or through authorized representative and M/s Crystal Consultants, Ranchi, Jharkhand.</u>

i. <u>Final District Survey Report (DSR) of Sand, Lohardaga.</u>

The Final DSR was submitted by Deputy Commissioner –cum- District Magistrate, Lohardaga. He was represented by Assistant Director, Geology, Lohardaga Mrs. Jaya Kerketta at the SEAC meeting on 21.03.2023.

During the meeting the consultant M/s Crystal Consultants, Ranchi in the presence of Assistant Director, Geology, Lohardaga presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors.

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.
3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR has been placed in the public domain for 01 (One) month from the 27.01.2023. As per the Sub Divisional Committee no comments / observations were obtained.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.

7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.
13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.
18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

During appraisal, a few shortcomings were observed which were rectified and included in the final DSR.

The final DSR (sand) of District Lohardaga is recommended to SEIAA for approval.

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M. <u>Deputy Commissioner –cum- District Magistrate, Giridih or through authorized representative and M/s Crystal Consultants, Ranchi, Jharkhand.</u>

i. <u>Final District Survey Report (DSR) of Sand, Giridih.</u>

The Final DSR was submitted by Deputy Commissioner –cum- District Magistrate, Giridih. He was represented by DMO, Giridih Shri Satish Kumar Nayak and Assistant Director, Geology, Koderma Shri Kunal Kaushal at the SEAC meeting on 21.03.2023.

During the meeting the consultant M/s Crystal Consultants, Ranchi in the presence of DMO, Giridih presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors.

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.
3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR has been placed in the public domain for 01 (One) month from the 10.11.2022. As per the Sub Divisional Committee no comments / observations were obtained.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.
7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.
13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.

18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

During appraisal, a few shortcomings were observed which were rectified and included in the final DSR.

The final DSR (sand) of District Giridih is recommended to SEIAA for approval.

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The meeting concluded with thanks to all present.

(Dr. Raju Kumar)
Member

Ajaygovind Bhatt
25.03.2023
(Dr. Ajay Govind Bhatt)
Member

(Niranjan Lal Agarwalla)
Member

25/3/23
(Dr. Kirti Avishek)
Member

(Srikant Verma)
Secretary

(Ashok Kumar Singh)
Chairman
25/03/2023

MINUTES OF THE 103RD MEETING OF STATE LEVEL EXPERT APPRAISAL COMMITTEE (SEAC), JHARKHAND HELD ON 14TH , 15TH, 16TH 17TH and 18TH APRIL, 2023.

The 103rd meeting of State Level Expert Appraisal Committee (SEAC), Jharkhand was held on 14th , 15th, 16th 17th and 18th April, 2023 under the Chairmanship of Shri Ashok Kumar Singh, IFS (Retd.) in the Conference Room at SEAC, Ranchi.

The following members were present:

1. Shri Ashok Kumar Singh, IFS (Retd.) - Chairman
2. Dr. Kirti Avishek - Member
3. Shri Niranjan Lal Agarwalla - Member
4. Dr. Raju Kumar - Member
5. Dr. Ajay Govind Bhatt - Member
6. Shri Srikant Verma, IFS - Secretary

SEIAA forwarded various projects to the SEAC for the technical appraisal after the last SEAC meeting held on 21st ,22nd , 23rd , 24th and 25th March, 2023. These projects have been put up for discussions. Besides, these Projects, wherein PP's were asked to provide requisite information / clarifications in the earlier meeting of SEAC, were also considered for appraisal. The Project Proponents have been asked to make technical presentation for the appraisal of their projects before the committee.

The following observations /recommendations were made during the presentation (Project -wise), as under :-

Day 1 : April 14th, 2023 [Friday]

A. District Magistrate –cum- Deputy Commissioner, Bokaro or through authorized representative and M/s Sathi Planners Pvt. Ltd.

i. Final District Survey Report (DSR) of Sand, Bokaro.

The Final DSR was submitted by District Magistrate –cum- Deputy Commissioner, Bokaro. He was represented by District Mining Officer, Bokaro Shri Ravi Kumar Singh at the SEAC meeting on 14.04.2023.

During the meeting the consultant M/s Sathi Planners Pvt. Ltd., Ranchi in the presence of DMO, Bokaro presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of Enforcement and Monitoring Guidelines for Sand Mining (EMGSM), 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors and they have affirmed the following :

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.
3. The replenishment study of pre & post monsoon period is included in final DSR.

4. The final DSR had been placed in the public domain for 01 (One) month from the 31.01.2023. As per the Sub Divisional Committee no comments / observations were obtained.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.
7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.
13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.
18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

The final DSR (sand) of District Bokaro is recommended to SEIAA for approval.

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II. Final District Survey Report (DSR) for Minor Minerals other than Sand Mining or River Bed Mining (Stone), Distt. Bokaro .

The Final DSR was submitted by District Magistrate –cum- Deputy Commissioner, Bokaro. He was represented by District Mining Officer, Bokaro Shri Ravi Kumar Singh at the SEAC meeting on 14.04.2023.

During the meeting the consultant M/s Sathi Planners Pvt. Ltd., Ranchi in the presence of DMO, Bokaro presented the DSR before the Committee. The DSR was appraised in light of S.O. no. 3611 (E), dated 25.07.2018 of MoEF&CC, Govt. of India.

The final DSR had been placed in the public domain for 01 (One) month from the 23.02.2023. As per the Sub Divisional Committee no comments / observations were obtained.

The DSR submitted is as per the format provided in the above notification. All the aspects of the notification dated 25.07.2018 were addressed in the DSR and found satisfactory.

Hence, the final DSR for Minor Minerals other than Sand Mining or River Bed Mining (Stone) of District Bokaro is recommended to SEIAA for approval.

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B. Deputy Commissioner, Garhwa or through authorized representative and M/s Rian Enviro Pvt. Ltd.

i. Final District Survey Report (DSR) of Sand, Garhwa.

The Final DSR was submitted by Deputy Commissioner, Garhwa. He was represented by District Mining Officer, Garhwa Shri Nand Dev Baitha at the SEAC meeting on 14.04.2023.

During the meeting the consultant M/s Rian Enviro Pvt. Ltd., Patna, Bihar in the presence of DMO, Garhwa presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of Enforcement and Monitoring Guidelines for Sand Mining (EMGSM), 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors and they have affirmed the following :

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.

3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR had been placed in the public domain for 01 (One) month from the 10.09.2022. As per the Sub Divisional Committee no comments / observations were obtained.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.
7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.
13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.
18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

The final DSR (sand) of District Garhwa is recommended to SEIAA for approval.

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A. Consideration of Proposals

i. **Residential & Commercial Complex Project "The Emporio" of M/s Alokik Infra Build LLP, Village : Saraidhela, Distt. : Dhanbad, Jharkhand.**

(Proposal no. : SIA/JH/INFRA2/ 412891 /2023).

Name of the consultant: Oceao-Enviro Management Solutions (India) Pvt. Ltd., Ghaziabad, Uttar Pradesh.

This is a case of violation which has been taken for appraisal on 17.04.2023 in the light of OM no.. F.No.22-21/2020-IA.III [E 138949] dated 28.01.2022 of MoEF&CC, Govt. of India, order passed by Hon'ble Apex Court in the matter of civil appeal no. 7576-7577 of 2021 in Electrosteel Steels Ltd. vs Union of India and SOS vide OM no. F.No. 22-21/2020-IA.III dated 07.07.2021 issued by MoEF&CC, Govt. of India.

Project Category: **8 (a) Category B2 – (at par with B1 being violation case)**

Project is classified as Category 8(a) as per EIA Notification as the built up area is less than 1,50,000 m^2 and development area is less than 50 ha.

The proposed project is construction of Commercial and Residential complex "THE EMPORIO" by M/s Alokik Infra Build LLP. Located Village: Saraidhela, District: Dhanbad, Jharkhand. The total plot area of the project is **8454.73 m^2** or 2.089 acres. The Built-up area for project is **29518.04 m^2**.

Background:

- The proposed project is construction of Commercial and Residential complex "THE EMPORIO" by M/s Alokik Infra Build LLP. Located Village: Saraidhela, District: Dhanbad, Jharkhand.
- The total plot area of the project is **8454.73 m^2** or 2.089 acres. The Built-up area for project is **29518.04 m^2**. (including FAR + NON FAR + Services)
- The proposed project is consists of 3 Building blocks for which application has been submitted for Environment Clearance.
- Approved building drawing for the project obtained from Dhanbad Municipal Corporation vide Proposal file no. DMC/BP/0115/W22/2020/ALT2 Dated-24.07.2020.
- Approx. 33% of construction activities in proposed project has been already done therefore applying for Environment Clearance under category B2 (Violation case) Suo moto.

Salient features of the project:

S.No.	Area Details	AREA (m^2)
1	Total plot area (2.089 acres)	**8454.73**
2	Net Plot Area	8454.73
3	Permissible Coverage Area (@50 % of Net Plot Area)	4227.37

B. **Deputy Commissioner –cum- District Magistrate, Chatra or through authorized representative and M/s Rian Enviro Pvt. Ltd.**

i. **Final District Survey Report (DSR) of Sand, Chatra.**

The Final DSR was submitted by Deputy Commissioner, Chatra. He was represented by District Mining Officer, Chatra Shri Gopal Kumar Das and Assistant Director, Geology, Hazaribagh Md. Abu Hussain at the SEAC meeting on 17.04.2023.

During the meeting the consultant M/s Rian Enviro Pvt. Ltd., Patna, Bihar in the presence of DMO, Chatra and Assistant Director, Geology, Hazaribagh presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of Enforcement and Monitoring Guidelines for Sand Mining (EMGSM), 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors and they have affirmed the following :

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.
3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR had been placed in the public domain for 01 (One) month from the 17.12.2022. As per the Sub Divisional Committee no comments / observations were obtained.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.
7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.

13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.
18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

The final DSR (sand) of District Chatra is recommended to SEIAA for approval.

C. Deputy Commissioner –cum- District Magistrate, Deoghar or through authorized representative and M/s Crystal Consultants.

i. Final District Survey Report (DSR) of Sand, Deoghar.

The Final DSR was submitted by Deputy Commissioner, Deoghar. He was represented by District Mining Officer, Deoghar Shri Rajesh Kumar and Assistant Director, Geology, Deoghar Shri Biswadeep Kumar at the SEAC meeting on 17.04.2023.

During the meeting the consultant M/s Crystal Consultants, Ranchi, Jharkhand in the presence of DMO, Deoghar and Assistant Director, Geology, Deoghar presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of Enforcement and Monitoring Guidelines for Sand Mining (EMGSM), 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors and they have affirmed the following :

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.
3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR had been placed in the public domain for 01 (One) month from the 25.02.2023. As per the Sub Divisional Committee no comments / observations were obtained.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.

6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.
7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.
13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.
18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

The final DSR (sand) of District Deoghar is recommended to SEIAA for approval.

D. <u>Deputy Commissioner, Khunti or through authorized representative and M/s Crystal Consultants.</u>

i. <u>Final District Survey Report (DSR) of Sand, Khunti.</u>

The Final DSR was submitted by Deputy Commissioner, Khunti. He was represented by District Mining Officer, Khunti Md. Nadeem Shafi and Assistant Director, Geology, Ranchi Smt. Anima Xess at the SEAC meeting on 17.04.2023.

During the meeting the consultant M/s Crystal Consultants, Ranchi, Jharkhand in the presence of DMO, Khunti and Assistant Director, Geology, Ranchi presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of

Enforcement and Monitoring Guidelines for Sand Mining (EMGSM), 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors and they have affirmed the following :

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.
3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR had been placed in the public domain for 01 (One) month from the 17.03.2023. As per the Sub Divisional Committee no comments / observations were obtained.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.
7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.
13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.

18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

The final DSR (sand) of District Khunti is recommended to SEIAA for approval.

The meeting concluded with thanks to all present.

Raju Kumar

(Dr. Raju Kumar)
Member

18.04.2023

(Dr. Ajay Govind Bhatt)
Member

18/04/2023

(Niranjan Lal Agarwalla)
Member

18/4/23

(Dr. Kirti Avishek)
Member

18/04/2023

(Srikant Verma)
Secretary

18/04/2023

(Ashok Kumar Singh)
Chairman

MINUTES OF THE 104TH MEETING OF STATE LEVEL EXPERT APPRAISAL COMMITTEE (SEAC), JHARKHAND HELD ON 22ND , 23RD , 24TH 25TH and 26TH MAY, 2023.

The 104th meeting of State Level Expert Appraisal Committee (SEAC), Jharkhand was held on 22nd , 23rd , 24th 25th and 26th May, 2023 under the Chairmanship of Shri Ashok Kumar Singh, IFS (Retd.) in the Conference Room at SEAC, Ranchi.

The following members were present:

1. Shri Ashok Kumar Singh, IFS (Retd.) - Chairman
2. Dr. Kirti Avishek - Member
3. Shri Niranjan Lal Agarwalla - Member
4. Dr. Raju Kumar - Member
5. Dr. Ajay Govind Bhatt - Member
6. Shri Srikant Verma, IFS - Secretary

SEIAA forwarded various projects to the SEAC for the technical appraisal after the last SEAC meeting held on 14th, 15th, 16th, 17th and 18th April, 2023. These projects have been put up for discussions. Besides, these Projects, wherein PP's were asked to provide requisite information / clarifications in the earlier meeting of SEAC, were also considered for appraisal. The Project Proponents have been asked to make technical presentation for the appraisal of their projects before the committee.

The following observations /recommendations were made during the presentation (Project -wise), as under :-

Day 1 : May 22nd, 2023 [Monday]

Consideration of Proposals

1. **Babhandi Stone Deposit of Shri Ashutosh Kumar Singh, Village : Babhandi, Thana : Chainpur, Thana no. : 78, Distt.: Palamu, Jharkhand (1.21 Ha).**

(Proposal no. : SIA/JH/MIN/428313/2023)

Name of the consultant : P & M Solution, Noida, Uttar Pradesh.

This is a new project which has been taken for appraisal on 22.05.2023.

Project Category : B2 – Application for Environment Clearance
EC Application for: Stone : 22,967 Cu.M. / year i.e 64,308 Tonnes / year

Project and Location Details :

Sl	Parameter		Details
1	Project Name	:	Babhandi Stone Deposit of Sri Ashutosh Kumar Singh
2	Applicant Address:	:	Sri Ashutosh Kumar Singh At Village - Nagar, P.O. + Thana – Hunterganj, District – Chatra, State – Jharkhand - 825403
3	Lease Address :	:	In Mouza - Babhandi, Thana – Chainpur, Thana No. - 78, District - Palamu, Jharkhand.

A. Deputy Commissioner –cum- District Magistrate, Ranchi or through authorized representative and M/s Crystal Consultants, Ranchi

i. Final District Survey Report (DSR) of Sand, Ranchi.

The DSR was submitted by District Magistrate –cum- Deputy Commissioner, Ranchi. He was represented by District Mining Officer, Ranchi Shri Sanjeev Kumar and Assistant Director, Geology, Ranchi Smt. Anima Xess at the SEAC meeting on 25.05.2023.

During the meeting the Committee observed that the norms of obtaining the comments of the public have not been appropriately done.

Hence, the final DSR is to be re-submitted complying all the requirements of Enforcement and Monitoring Guidelines for Sand Mining (EMGSM), 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors.

The fresh approval by the Sub-Divisional Committee is to be incorporated in the final DSR.

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B. Deputy Commissioner –cum- District Magistrate, Hazaribag or through authorized representative and M/s Rian Enviro Pvt. Ltd., Patna

i. Final District Survey Report (DSR) of Sand, Hazaribag.

The Final DSR was submitted by District Magistrate –cum- Deputy Commissioner, Hazaribag. He was represented by District Mining Officer, Hazaribag Shri Ajit Kumar and Assistant Director, Geology, Hazaribag Md. Abu Hussain at the SEAC meeting on 25.05.2023.

During the meeting the consultant M/s Rian Enviro Pvt. Ltd., Patna in the presence of DMO, Hazaribag and Assistant Director, Geology, Hazaribag presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of Enforcement and Monitoring Guidelines for Sand Mining (EMGSM), 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors and they have affirmed the following :

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.
3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR had been placed in the public domain for 01 (One) month from the 13.03.2023. As per the Sub Divisional Committee no comments / observations were obtained.

5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.
7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.
13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.
18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

The final DSR (sand) of District Hazaribag is recommended to SEIAA for approval.

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C. <u>Deputy Commissioner –cum- District Magistrate, Koderma or through authorized representative and M/s Rian Enviro Pvt. Ltd., Patna</u>

i. <u>Final District Survey Report (DSR) of Sand, Koderma.</u>

The Final DSR was submitted by District Magistrate –cum- Deputy Commissioner, Koderma. He was represented by District Mining Officer, Koderma Shri Daroga Rai at the SEAC meeting on 25.05.2023.

During the meeting the consultant M/s Rian Enviro Pvt. Ltd., Patna in the presence of DMO, Koderma presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of Enforcement and Monitoring Guidelines for Sand Mining (EMGSM), 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors and they have affirmed the following :

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.
3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR had been placed in the public domain for 01 (One) month from the 10.11.2022. As per the Sub Divisional Committee no comments / observations were obtained.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.
7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
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18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil

Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

The final DSR (sand) of District Koderma is recommended to SEIAA for approval.

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D. District Magistrate–cum- Deputy Commissioner, Dumka or through authorized representative and M/s Sathi Planners Pvt. Ltd., Ranchi

i. Final District Survey Report (DSR) of Sand, Dumka.

The Final DSR was submitted by District Magistrate –cum- Deputy Commissioner, Dumka. He was represented by District Mining Officer, Dumka Shri Krishna Kumar Kisku at the SEAC meeting on 25.05.2023.

During the meeting the consultant M/s Sathi Planners Pvt. Ltd., Ranchi in the presence of DMO, Dumka presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of Enforcement and Monitoring Guidelines for Sand Mining (EMGSM), 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors and they have affirmed the following :

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.
3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR had been placed in the public domain for 01 (One) month from the 16.11.2022. As per the Sub Divisional Committee no comments / observations were obtained.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.
7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.

9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.
13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.
18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

The final DSR (sand) of District Dumka is recommended to SEIAA for approval.

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E. **District Magistrate–cum- Deputy Commissioner, Palamu, Medininagar or through authorized representative and M/s Sathi Planners Pvt. Ltd., Ranchi.**

i. **Final District Survey Report (DSR) of Sand, Palamu, Medininagar.**

The Final DSR was submitted by District Magistrate –cum- Deputy Commissioner, Palamu, Medinagar. He was represented by District Mining Officer, Palamu, Medininagar Shri Anand Kumar at the SEAC meeting on 25.05.2023.

During the meeting the consultant M/s Sathi Planners Pvt. Ltd., Ranchi in the presence of DMO, Palamu, Medininagar presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of Enforcement and Monitoring Guidelines for Sand Mining (EMGSM), 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors and they have affirmed the following :

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.

2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.
3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR had been placed in the public domain for 01 (One) month from the 14.11.2022. One comment was received from three different persons. This has been addressed by Sub Divisional Committee. Details included in the DSR report as Annexure.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.
7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.
13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.
18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

The final DSR (sand) of District Palamu, Medininagar is recommended to SEIAA for approval.

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F. **District Magistrate –cum- Deputy Commissioner, Jamtara or through authorized representative and M/s Sathi Planners Pvt. Ltd., Ranchi**

i. **Final District Survey Report (DSR) of Sand, Jamtara.**

The Final DSR was submitted by District Magistrate –cum- Deputy Commissioner, Jamtara. He was represented by District Mining Officer, Jamtara Shri Dilip Kumar and Assistant Director, Geology , Deoghar Shri Vishwadeep Kumar at the SEAC meeting on 25.05.2023.

During the meeting the consultant M/s Sathi Planners Pvt. Ltd., Ranchi in the presence of DMO, Jamtara and Assistant Director, Geology , Deoghar presented the DSR before the Committee. The DSR was appraised considering the following aspects alongwith other conditions of Enforcement and Monitoring Guidelines for Sand Mining (EMGSM), 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors and they have affirmed the following :

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per EMGSM guideline 2020.
3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR had been placed in the public domain for 01 (One) month from the 17.11.2022. As per the Sub Divisional Committee no comments / observations were obtained.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavieties /active channels of the river.
7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.

13. Cluster and contiguous cluster formation as per EMGSM guidelines, 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.
18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

The final DSR (sand) of District Jamtara is recommended to SEIAA for approval.

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G. Deputy Commissioner, Godda or through authorized representative.

i. Final District Survey Report (DSR) for Minor Minerals other than Sand Mining or River Bed Mining (Stone), Distt. Godda .

The Final DSR was submitted by Deputy Commissioner, Godda. He was represented by District Mining Officer, Godda Shri Meghlal Tuddu and Assistant Director, Geology, Dumka Shri Niral Dhan at the SEAC meeting on 25.05.2023.

During the meeting the DMO, Godda and Assistant Director, Geology, Dumka presented the DSR before the Committee. The DSR was appraised in light of S.O. no. 3611 (E), dated 25.07.2018 of MoEF&CC, Govt. of India.

The final DSR had been placed in the public domain for 21 days from the 21.04.2023. As per the Sub Divisional Committee no comments / observations were obtained.

The DSR submitted is as per the format provided in the above notification. All the aspects of the notification dated 25.07.2018 were addressed in the DSR and found satisfactory.

Hence, the final DSR for Minor Minerals other than Sand Mining or River Bed Mining (Stone) of District Godda is recommended to SEIAA for approval.

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ANNEXURE A-10

MINUTES OF THE 103RD MEETING OF STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY, JHARKHAND HELD ON 01ST and 02ND APRIL, 2023.

The 103rd meeting of the State Level Environment Impact Assessment Authority (SEIAA) was convened on 01st & 02nd April, 2023 in the office of SEIAA, Ranchi under the chairmanship of Shri S.E.H. Kazmi, SEIAA, Jharkhand. The attendance in the meeting was as follows:

1. **Shri S.E.H. Kazmi, Chairman**, SEIAA, Jharkhand, Ranchi.
2. **Shri Ashok Kumar, Member Secretary**, SEIAA, Jharkhand, Ranchi.
3. **Shri Amar Nath Verma, Member**, SEIAA, Jharkhand, Ranchi.

The decisions taken in the 103rd SEIAA meeting are as follows:-

1. **SEIAA considered the recommendations made by SEAC in its 102nd meeting held on 21st, 22nd, 23rd, 24th and 25th March, 2023 for approval of District Survey Reports (DSRs) of Sand of the following districts:**

A. **District Survey Report (Sand) of Godda district.**

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of Godda district.

In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of Godda district, the same was considered in the 103rd meeting of SEIAA, Jharkhand on 01.04.2023 and 02.04.2023.

The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of Godda district on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhgrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors. It was also decided that a copy of approved District Survey Report of sand should be sent to the concerned Deputy Commissioner for necessary action.

B. **District Survey Report (Sand) of Latehar district.**

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of Latehar district.

In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of Latehar district, the same was considered in the 103rd meeting of SEIAA, Jharkhand on 01.04.2023 and 02.04.2023.

The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of Latehar district on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of

Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ. Bhumi Adhgrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors, It was also decided that a copy of approved District Survey Report of sand should be sent to the concerned Deputy Commissioner for necessary action.

C. **District Survey Report (Sand) of Pakur district.**

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of Pakur district.

In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of Pakur district, the same was considered in the 103rd meeting of SEIAA, Jharkhand on 01.04.2023 and 02.04.2023.

The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of Pakur district on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhgrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors, It was also decided that a copy of approved District Survey Report of sand should be sent to the concerned Deputy Commissioner for necessary action.

D. **District Survey Report (Sand) of Gumla district.**

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of Gumla district.

In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of Gumla district, the same was considered in the 103rd meeting of SEIAA, Jharkhand on 01.04.2023 and 02.04.2023.

The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of Gumla district on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhgrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors, It was also decided that a copy of approved District Survey Report of sand should be sent to the concerned Deputy Commissioner for necessary action.

E. **District Survey Report (Sand) of East Singhbhum district.**

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of East Singhbhum district.

In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of East Singhbhum district, the same was considered in the 103rd meeting of SEIAA, Jharkhand on 01.04.2023 and 02.04.2023.

The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of East Singhbhum district on the basis of recommendation of SEAC

and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhgrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors. It was also decided that a copy of approved District Survey Report of sand should be sent to the concerned Deputy Commissioner for necessary action.

F. **District Survey Report (Sand) of Dhanbad district.**

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of Dhanbad district.

In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of Dhanbad district, the same was considered in the 103rd meeting of SEIAA, Jharkhand on 01.04.2023 and 02.04.2023.

The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of Dhanbad district on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhgrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors. It was also decided that a copy of approved District Survey Report of sand should be sent to the concerned Deputy Commissioner for necessary action.

G. **District Survey Report (Sand) of West Singhbhum district.**

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of West Singhbhum district.

In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of West Singhbhum district, the same was considered in the 103rd meeting of SEIAA, Jharkhand on 01.04.2023 and 02.04.2023.

The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of West Singhbhum district on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhgrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors. It was also decided that a copy of approved District Survey Report of sand should be sent to the concerned Deputy Commissioner for necessary action.

H. **District Survey Report (Sand) of Saraikela-Kharsawan district.**

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of Saraikela-Kharsawan district.

In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of Saraikela-Kharsawan district, the same was considered in the 103rd meeting of SEIAA, Jharkhand on 01.04.2023 and 02.04.2023.

The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of Saraikela-Kharsawan district on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhgrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors. It was also decided that a copy of approved District Survey Report of sand should be sent to the concerned Deputy Commissioner for necessary action.

I. **District Survey Report (Sand) of Simdega district.**

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of Simdega district.

In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of Simdega district, the same was considered in the 103rd meeting of SEIAA, Jharkhand on 01.04.2023 and 02.04.2023.

The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of Simdega district on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhgrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors. It was also decided that a copy of approved District Survey Report of sand should be sent to the concerned Deputy Commissioner for necessary action.

J. **District Survey Report (Sand) of Ramgarh district.**

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of Ramgarh district.

In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of Ramgarh district, the same was considered in the 103rd meeting of SEIAA, Jharkhand on 01.04.2023 and 02.04.2023.

The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of Ramgarh district on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhgrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors. It was also decided that a copy of approved District Survey Report of sand should be sent to the concerned Deputy Commissioner for necessary action.

K. **District Survey Report (Sand) of Lohardaga district.**

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of Lohardaga district.

In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of Lohardaga district, the same was considered in the 103rd meeting of SEIAA, Jharkhand on 01.04.2023 and 02.04.2023.

The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of Lohardaga district on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhgrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors. It was also decided that a copy of approved District Survey Report of sand should be sent to the concerned Deputy Commissioner for necessary action.

L. **District Survey Report (Sand) of Giridih district.**

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of Giridih district.

In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of Giridih district, the same was considered in the 103rd meeting of SEIAA, Jharkhand on 01.04.2023 and 02.04.2023.

The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of Giridih district on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhgrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors. It was also decided that a copy of approved District Survey Report of sand should be sent to the concerned Deputy Commissioner for necessary action.

2. **SEIAA considered the recommendations made by SEAC in its 102nd meeting held on 21st, 22nd, 23rd, 24th and 25th March, 2023 for grant of Environmental Clearance to the following Minor Minerals projects:**

I. **Thambh Stone Deposit** of **M/s Anand Mines & Minerals**, Village : Thambh, Thana : Chandwara, District : Koderma, Jharkhand (0.57 Ha) (Proposal No : SIA/JH/MIN/ 422438/2023).

II. **Kowali Brick Clay Deposit** of **M/s Baba Bricks** (Marka - Baba) (Prop. : Shri Bidyadhar Sahu), Village : Kowali, Thana/Circle : Potka, District : East Singhbhum, Jharkhand (1.39 Ha) (Proposal No : SIA/JH/MIN/422176/2023).

III. **Sahraj Stone Deposit** of **Md. Khalid Hussain & Md. Firoj Ansari**, Village : Sahraj, Thana : Govindpur, Thana no. : 210, District : Dhanbad, Jharkhand (0.967 Ha) (Proposal No : SIA/JH/MIN/408768/2022).

IV. **Amit Kumar Mandal Stone Mine** of **Sri Amit Kumar Mandal**, Mouza : Badalpur, Thana : Nirsa, Thana no. : 187, District : Dhanbad, Jharkhand (1.18 Ha) (Proposal No : SIA/JH/MIN/418417/2023).

V. **Amit Kumar Mandal Stone Mine** of **Sri Amit Kumar Mandal**, Mouza : Tentuliya, Thana : Nirsa, Thana no. : 188, Block : Keliasole, District : Dhanbad,

MINUTES OF THE 104TH MEETING OF STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY, JHARKHAND HELD ON 27TH and 28TH APRIL, 2023.

The 104th meeting of the State Level Environment Impact Assessment Authority (SEIAA) was convened on 27th & 28th April, 2023 in the office of SEIAA, Ranchi under the chairmanship of Shri S.E.H. Kazmi, SEIAA, Jharkhand. The attendance in the meeting was as follows:

1. **Shri S.E.H. Kazmi, Chairman**, SEIAA, Jharkhand, Ranchi.
2. **Shri Ashok Kumar, Member Secretary**, SEIAA, Jharkhand, Ranchi.
3. **Shri Amar Nath Verma, Member**, SEIAA, Jharkhand, Ranchi.

The decisions taken in the 104th SEIAA meeting are as follows:-

1. **SEIAA considered the recommendations made by SEAC in its 103rd meeting held on 14th, 15th, 16th, 17th and 18th April, 2023 for approval of District Survey Reports (DSRs) of Sand of the following districts:**

   A. **<u>District Survey Report (Sand) of Bokaro district.</u>**

   After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of Bokaro district.

   In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of Bokaro district, the same was considered in the 104th meeting of SEIAA, Jharkhand on 27.04.2023 and 28.04.2023.

   The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of Bokaro district on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhgrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors. It was also decided that a copy of approved District Survey Report of sand should be sent to the concerned Deputy Commissioner for necessary action.

   B. **<u>District Survey Report (Sand) of Garhwa district.</u>**

   After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of Garhwa district.

   In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of Garhwa district, the same was considered in the 104th meeting of SEIAA, Jharkhand on 27.04.2023 and 28.04.2023.

   The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of Garhwa district on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble

Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhgrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors. It was also decided that a copy of approved District Survey Report of sand should be sent to the concerned Deputy Commissioner for necessary action.

C. **District Survey Report (Sand) of Chatra district.**

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of Chatra district.

In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of Chatra district, the same was considered in the 104th meeting of SEIAA, Jharkhand on 27.04.2023 and 28.04.2023.

The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of Chatra district on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhgrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors. It was also decided that a copy of approved District Survey Report of sand should be sent to the concerned Deputy Commissioner for necessary action.

D. **District Survey Report (Sand) of Deoghar district.**

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of Deoghar district.

In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of Deoghar district, the same was considered in the 104th meeting of SEIAA, Jharkhand on 27.04.2023 and 28.04.2023.

The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of Deoghar district on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhgrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors. It was also decided that a copy of approved District Survey Report of sand should be sent to the concerned Deputy Commissioner for necessary action.

E. **District Survey Report (Sand) of Khunti district.**

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of Khunti district.

In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of Khunti district, the same was considered in the 104th meeting of SEIAA, Jharkhand on 27.04.2023 and 28.04.2023.

The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of Khunti district on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhgrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors. It was also decided that a copy of approved District Survey Report of sand should be sent to the concerned Deputy Commissioner for necessary action.

F. **District Survey Report for Minor Minerals other than Sand Mining or River Bed Mining (Stone) of Bokaro district.**

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report for Minor Minerals other than Sand Mining of River Bed Mining (Stone) of Bokaro district, as the District Survey Report (Stone) contained all relevant information required as per the notification no. S.O. 3611(E), dated 25.07.2018 of MoEF & CC, Govt. of India.

In the light of the recommendation of SEAC for approval of District Survey Report for Minor Minerals other than Sand Mining of River Bed Mining (Stone) of Bokaro district, the same was considered in the 104th meeting of SEIAA, Jharkhand on 27.04.2023 and 28.04.2023.

The SEIAA, unanimously, decided to approve the District Survey Report for Minor Minerals other than Sand Mining of River Bed Mining (Stone) of Bokaro district on the basis recommendation of SEAC. It was also decided that a copy of approved District Survey Report of Stone should be sent to the concerned Deputy Commissioner for necessary action.

2. **SEIAA considered the recommendations made by SEAC in its 103rd meeting held on 14th, 15th, 16th, 17th and 18th April, 2023 for grant of Environmental Clearance to the following Minor Minerals projects:**

I. **Purnadih Stone Deposit** of **M/s Hill View Mining (Prop. : Sri Nilesh Ranjan),** Village : Purnadih, Thana : Nawalsahi, Distt. : Koderma, Jharkhand (0.587 Ha) (Proposal No : SIA/JH/MIN/423827/2023).

II. **Mahajori Stone Mine** of **Partners : (1) Sri Shatrughan Mandal (2) Sri Manoj Kumar Mandal & (3) Sri Raghunandan Sah.** Village : Mahajori, P.S. : Margomunda, Distt. : Deoghar, Jharkhand (0.963 Ha) (SIA/JH/MIN/422710/2023).

III. **Medki Stone Mine** of **M/s Bhagwati Stone Crusher,** Village : Medki, P.O. : Dholadih, P.S. : Rajnagar, Distt. : Saraikela-Kharsawan, Jharkhand (2.024 Ha) (Proposal No : SIA/JH/MIN/424331/2023).

MINUTES OF THE 105TH MEETING OF STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY, JHARKHAND HELD ON 28TH and 29TH MAY, 2023.

The 105th meeting of the State Level Environment Impact Assessment Authority (SEIAA) was convened on 28th & 29th May, 2023 in the office of SEIAA, Ranchi under the chairmanship of Shri S.E.H. Kazmi, SEIAA, Jharkhand. The attendance in the meeting was as follows:

1. **Shri S.E.H. Kazmi, Chairman**, SEIAA, Jharkhand, Ranchi.
2. **Shri Ashok Kumar, Member Secretary**, SEIAA, Jharkhand, Ranchi.
3. **Shri Amar Nath Verma, Member**, SEIAA, Jharkhand, Ranchi.

The decisions taken in the 105th SEIAA meeting are as follows:-

1. **SEIAA considered the recommendations made by SEAC in its 104th meeting held on 22nd, 23rd, 24th, 25th and 26th May, 2023 for grant of Environmental Clearance to the following Minor Minerals projects:**
   - I. **Babhandi Stone Deposit of Shri Ashutosh Kumar Singh**, Village : Babhandi, Thana : Chainpur, Thana no. : 78, Distt.: Palamu, Jharkhand (1.21 Ha) (Proposal No : SIA/JH/MIN/428313/2023).
   - II. **Babhandi Stone Deposit of M/s Mahalaxmi Enterprises** (Prop. : Shri Digvijay Singh), Village : Babhandi, Thana : Chainpur, Thana no. : 78, Distt.: Palamu, Jharkhand (2.51 Ha) (Proposal no. : SIA/JH/MIN/428347/2023).
   - III. **Temrai Stone Deposit of M/s Arun Kumar Singh**, Village : Temrai, Thana : Chainpur, Thana no. : 134, Distt.: Palamu, Jharkhand (2.72 Ha) (Proposal No : SIA/JH/MIN/ 427601/2023).
   - IV. **Singari Stone Deposit of M/s Rubal Stone Mines** (Prop. : Shri Satyendra Kumar), Village : Singari, Thana : Angara, Thana no. : 70, Distt.: Ranchi, Jharkhand (1.06 Ha) (Proposal No : SIA/JH/MIN/428407/2023).
   - V. **Ichadag Stone Deposit of M/s Elite Power Projects & Construction Pvt. Ltd.**, Village : Ichadag, Thana : Ormanjhi, Thana no. : 43, Distt.: Ranchi, Jharkhand (0.90 Ha) (Proposal No : SIA/JH/MIN/429105/2023).
   - VI. **Girdhartanr Stone Deposit of M/s Star Construction** (Partners : Shri Amit Kumar Soni), Village : Girdhartanr, Circle : Chas, Distt.: Bokaro, Jharkhand (2.954 Ha) (Proposal No : SIA/JH/MIN/428366/2023).
   - VII. **Jhagrudih Stone Deposit of M/s Om Mining Industries** (Partners : Shri Arvind Kumar Pathak & Shri Naresh Mahto), Village : Jhagrudih, Circle : Deori, Distt.: Giridih, Jharkhand (1.21 Ha) (Proposal No : SIA/JH/MIN/428064/2023).
   - VIII. **Jhagrudih Stone Deposit of Shri Eklavya Kumar**, Village : Jhagrudih, Circle : Deori, Distt.: Giridih, Jharkhand (2.517 Ha) (Proposal No : SIA/JH/MIN/ 429121 /2023).

8. **SEIAA considered the recommendations made by SEAC in its 104th meeting held on 22nd, 23rd, 24th, 25th and 26th May, 2023 for approval of District Survey Reports (DSRs) of Sand of the following districts:**

A. <u>District Survey Report (Sand) of Hazaribag district</u>

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of **Hazaribag district**.

In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of **Hazaribag district**, the same was considered in the 105th meeting of SEIAA, Jharkhand on 28.05.2023 and 29.05.2023.

The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of **Hazaribag district** on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors, It was also decided that a copy of approved District Survey Report of **sand** should be sent to the concerned Deputy Commissioner for necessary action.

B. <u>District Survey Report (Sand) of Koderma district</u>

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of **Koderma district**.

In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of **Koderma district**, the same was considered in the 105th meeting of SEIAA, Jharkhand on 28.05.2023 and 29.05.2023.

The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of **Koderma district** on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors, It was also decided that a copy of approved District Survey Report of **sand** should be sent to the concerned Deputy Commissioner for necessary action.

C. <u>District Survey Report (Sand) of Dumka district</u>

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of **Dumka district**.

In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of **Dumka district**, the same was considered in the 105th meeting of SEIAA, Jharkhand on 28.05.2023 and 29.05.2023.

The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of **Dumka district** on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors, It was also decided that a copy of approved District Survey Report of **sand** should be sent to the concerned Deputy Commissioner for necessary action.

D. <u>District Survey Report (Sand) of Palamu, Medininagar district</u>

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of **Palamu, Medininagar district.**

In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of **Palamu, Medininagar district**, the same was considered in the 105th meeting of SEIAA, Jharkhand on 28.05.2023 and 29.05.2023.

The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of **Palamu Medininagar district** on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors, It was also decided that a copy of approved District Survey Report of **sand** should be sent to the concerned Deputy Commissioner for necessary action.

E. <u>District Survey Report (Sand) of Jamtara district</u>

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report (Sand) of **Jamtara district.**

In the light of the recommendation of SEAC for approval of District Survey Report (Sand) of **Jamtara district**, the same was considered in the 105th meeting of SEIAA, Jharkhand on 28.05.2023 and 29.05.2023.

The SEIAA, unanimously, decided to approve the District Survey Report of Sand mineral of **Jamtara district** on the basis of recommendation of SEAC and in the light of Environment & Monitoring Guidelines for Sand Mining 2020 / Hon'ble Apex Court order in Civil Appeal No. 3661-3662/2020, Pawan Kumar Vs State of Bihar & Hon'ble NGT Order in OA No. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti Vs State of Jharkhand & Ors, It was also decided that a copy of approved District Survey Report of **sand** should be sent to the concerned Deputy Commissioner for necessary action.

F. District Survey Report for Minor Minerals other than Sand Mining or River Bed Mining (Stone) of Godda district

After Technical presentation before SEAC and appraisal of DSR, the unanimous recommendation was sent to SEIAA for approval of District Survey Report for Minor Minerals other than Sand Mining or River Bed Mining (Stone) of **Godda district**, as the District Survey Report (Stone) contained all relevant information required as per the notification no. S.O. 3611(E), dated 25.07.2018 of MoEF & CC, Govt. of India.

In the light of the recommendation of SEAC for approval of District Survey Report for Minor Minerals other than Sand Mining or River Bed Mining (Stone) of **Godda district**, the same was considered in the 105th meeting of SEIAA, Jharkhand on 28.05.2023 and 29.05.2023.

The SEIAA, unanimously, decided to approve the District Survey Report for Minor Minerals other than Sand Mining or River Bed Mining (Stone) of **Godda district** on the basis recommendation of SEAC. It was also decided that a copy of approved District Survey Report of **stone** should be sent to the concerned Deputy Commissioner for necessary action.

The meeting concluded with vote of thanks to the Chairman.

29/05/2023

Member
SEIAA

29/05/2023

Member – Secretary
SEIAA

29/5/23

Chairman
SEIAA

\\TRUE COPY//

राज्य स्तरीय पर्यावरण समाघात निर्धारण प्राधिकरण, झारखण्ड
State Level Environment Impact Assessment Authority, Jharkhand
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सत्यमेव जयते

पत्रांकः– 06 दिनांकः– 02.04.2023

प्रेषकः

सदस्य सचिव,
राज्य स्तरीय पर्यावरण समाघात निर्धारण
प्राधिकरण (SEIAA), झारखण्ड।

सेवा में,

उपायुक्त,
जिला : गोड्डा।

विषय : गोड्डा जिला का बालू खनिज से संबंधित DSR के अनुमोदन के संबंध में।

प्रसंग : आपका कार्यालय का पत्रांक–358/एम0, दि0–13.03.2023।

महाशय,

उपर्युक्त विषयक आपके कार्यालय के प्रासंगिक पत्र दिनांक 13.03.2023 द्वारा गोड्डा जिला का बालू खनिज से संबंधित DSR की एक प्रति अनुमोदन हेतु दिनांक 18.03.2023 को SEIAA कार्यालय में समर्पित किया गया।

तद्अनुसार SEAC, झारखण्ड की 102वीं बैठक दिनांक 21.03.2023 से दिनांक 25.03.2023 में Sri Meghlal Tuddu, DMO, Godda and Sri Niral Dhan, Assistant Director, Geology, Dumka की उपस्थिति में M/s Sathi Planners Pvt. Ltd. consultant द्वारा दिनांक 21.03.2023 में SEAC के समक्ष Presentation दिया गया, जिसमें DSR के Salient Features निम्नवत् बताये गये :–

1. The final DSR submitted is duly signed by all members of the Sub Divisional Committee and the Consultant. All the pages of the DSR are signed by the authorized officer of the Sub Divisional Committee.
2. The final DSR consists of the complete potential area and is demarcated as Potential Resource Area (PRA) / Sand Leases / Ghats as per Enforcement and Monitoring Guidelines for Sand Mining (EMGSM), 2020.
3. The replenishment study of pre & post monsoon period is included in final DSR.
4. The final DSR has been placed in the public domain for 01 (One) month from the 20.11.2022. As per the Sub Divisional Committee no comments / observations were obtained.
5. Demand and supply of the river bed material has been provided. The future demand for next 05 years is included in the final DSR.
6. The PRA / Sand Leases / Ghats have not been proposed on the confluence / meanders / concavities /active channels of the river.

7. Khata & Khasra numbers of the lease area certified by the concerned Circle Officer (CO) are incorporated in the final DSR.
8. The distance of PRA / Sand Leases / Ghats from the Forest / Wildlife Protected area / Birds Sanctuary/ Wildlife Sanctuary / National Park / Eco Sensitive Zone has been verified and certified by the concerned DFOs of the respective Territorial and Wildlife division.
9. A report detailing the presence of aquatic animal in the river in proximity of the proposed PRA / Sand Leases / Ghats is included in the final DSR.
10. The proposed PRA / Sand Leases / Ghats meet the siting criteria of State Pollution Control Board / SEIAA.
11. High resolution color satellite images of the proposed potential sand mining areas are included in final DSR.
12. Bulk density and specific gravity of sand sample data has been provided by NABL accredited laboratory.
13. Cluster and contiguous cluster formation as per EMGSM guidelines. 2020 has been included in the Annexures.
14. Mining is restricted to 3/4th of the river width and 60% of the mineable reserve.
15. Transportation routes for movement of sand are provided in the final DSR.
16. All the annexures as per EMGSM guidelines, 2020 are included in the final DSR.
17. An undertaking with reference to Point no. 9.3 of the EMGSM guidelines, 2020 regarding monitoring of mining near inter-district or inter-state boundary has been provided.
18. The representative of the Sub Divisional Committee along with the Consultants have affirmed that all the guidelines of EMGSM guidelines, 2020 / Hon'ble Apex Court in Civil Appeal no. 3661-3662/2020, Pawan Kumar vs State of Bihar & ors, Hon'ble NGT in O.A. no. 54/2022/EZ, Bhumi Adhigrahan Visthapan Avam Punarvas Kisan Samiti vs State of Jharkhand & ors have been followed in preparation of the final DSR.

SEAC द्वारा उपरोक्त तथ्यों के आलोक में सर्वसम्मति से आपके द्वारा समर्पित DSR को अनुमोदन हेतु SEIAA को अपनी अनुशंसा भेजी गयी।

SEAC की DSR Godda को अनुमोदन हेतु भेजी गयी अनुशंसा के आलोक में SEIAA, झारखण्ड की 103वी बैठक दिनांक 01.04.2023 एवं दिनांक 02.04.2023 में विचार किया गया।

विचारोपरांत SEAC द्वारा की गयी अनुशंसा के आलोक में SEIAA द्वारा सर्वसम्मति से गोड्डा जिला का बालू खनिज से संबंधित DSR का अनुमोदन किया गया।

गोड्डा जिला का बालू खनिज से संबंधित अनुमोदित DSR की एक मूल प्रति अत्र–सह–संलग्न कर आपको अग्रेतर कार्रवाई हेतु भेजी जा रही है।

अनु० यथोक्त।

विश्वासभाजन,

02/04/2023

सदस्य सचिव,
राज्य स्तरीय पर्यावरण समाघात निर्धारण
प्राधिकरण (SEIAA), झारखण्ड।

28/3/23
DC

DISTRICT SURVEY REPORT

FOR

SAND MINING OR RIVER-BED MINING

IN

GODDA DISTRICT OF JHARKHAND

As per Notification No. - S.O. - 3611 (E), 25th July 2018 of Ministry of Environment Forest & Climate Change, Government of India, New Delhi
& Enforcement & Monitoring Guidelines for Sand Mining, 2020 by MoEF & CC

State Level Environment Impact Assessment Authority
Approved
Jharkhand, Ranchi

Prepared by:

Sathi Planners Private Limited

QCI-NABET Accredited and ISO 9001:2015 Certified Company
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District Mining Officer,
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District Mining Officer,
Godda.

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3	GO_Z3_GE_2	0.93	A3
4	GO_Z5_CHI_3	3.52	A4
5	GO_Z5_CHI_4	3.03	A5
6	GO_Z5_CHI_14	3.98	A6
7	GO_Z5_CHI_15	1.82	A7
8	GO_Z9_KAJ_5	2.71	A8
9	GO_Z10_KAJ_6	1.82	A9
10	GO_Z12_SAK_7	5.51	A10
11	GO_Z13_SAK_8	2.59	A11
12	GO_Z14_RIB_9	11.29	A12
13	GO_Z15_CHI_10	2.39	A13
14	GO_Z16_CHI_11	2.10	A14
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5	GO_Z9_KAJ_5	2.71	B5
6	GO_Z10_KAJ_6	1.82	B6
7	GO_Z12_SAK_7	5.51	B7
8	GO_Z13_SAK_8	2.59	B8
9	GO_Z14_RIB_9	11.29	B9
10	GO_Z15_CHI_10	2.39	B10
11	GO_Z16_CHI_11	2.10	B11
12	GO_Z17_CHI_12	3.55	B12
13	GO_Z18_CHI_13	1.06	B13
14	GO_Z5_CHI_14	3.98	B14

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4	GO_Z5_CHI_4	3.03	C4
5	GO_Z9_KAJ_5	2.71	C5
6	GO_Z10_KAJ_6	1.82	C6
7	GO_Z12_SAK_7	5.51	C7
8	GO_Z13_SAK_8	2.59	C8
9	GO_Z14_RIB_9	11.29	C9
10	GO_Z15_CHI_10	2.39	C10
11	GO_Z16_CHI_11	2.10	C11
12	GO_Z17_CHI_12	3.55	C12
13	GO_Z18_CHI_13	1.06	C13
14	GO_Z5_CHI_14	3.98	C14
15	GO_Z5_CHI_15	1.82	C15
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5	GO_Z5_CHI_4	3.03	D5
6	GO_Z5_CHI_14	3.98	D6
7	GO_Z5_CHI_15	1.82	D7
8	GO_Z9_KAJ_5	2.71	D8
9	GO_Z10_KAJ_6	1.82	D9
10	GO_Z12_SAK_7	5.51	D10
11	GO_Z13_SAK_8	2.59	D11
12	GO_Z14_RIB_9	11.29	D12
13	GO_Z15_CHI_10	2.39	D13
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CERTIFICATE

The District Survey Report (DSR) for Sand Mining or River-bed Mining in Godda District of Jharkhand State has been prepared by Sathi Planners Private Limited, a QCI (NABET) accredited consultancy firm (Certificate No.: NABET/EIA/2225/RA0264).

District Survey Report Sand Mining or River-bed Mining in Godda District is prepared under;

✓ Sustainable Sand Mining Management Guidelines, 2016

✓ Sand Mining Policy of Government of Jharkhand, 2017

✓ MoEF & CC, GoI Notification No. - S.O. 3611 (E) dated 25/07/2018

✓ Enforcement and Monitoring Guidelines for Sand Mining, 2020

✓ Jharkhand Minor Mineral Concession Rule, 2021

The information mentioned in the District Survey Report for Sand Mining or River-bed Mining in Godda District of Jharkhand State are correct to the best of our knowledge.

Authorized Signatory

M/s Sathi Planners Pvt. Ltd.

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District Mining Officer,
Godda.

Recommended by Sub-Divisional Committee and Deputy Commissioner, Godda

Assistant Director, Geology Dumka	District Mining Officer Godda	Executive Engineer, Irrigation Godda
Regional Officer, SPCB Dumka	Sub-Divisional Officer Mahagama	Sub-Divisional Officer Godda
Divsional Forest Officer Godda	Deputy Commissioner Godda	

Approved by,

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SEIAA, Ranchi

02/04/2023
Member
State Level Environment Impact Assessment Authority, Jharkhand

02/04/2023
Member Secretary
State Level Environment Impact Assessment Authority
Jharkhand

Chairman
State Level Environment Impact Assessment Authority, Jharkhand

District Mining Officer,
Godda.

1. PREFACE

MoEF & CC has published Notification No. - 3611 (E), dated 25th July, 2018 regarding inclusion of the "Minerals Other than Sand" and format for preparation of the District Survey Report (DSR) for Sand mining or River-bed mining has been specified. Enforcement & Monitoring Guidelines for Sand Mining (EMGSM) January 2020, issued by Ministry of Environment, Forest and Climate Change is prepared in consideration of various orders/directions issued by Hon'ble NGT in matters pertaining to illegal sand mining and based on the reports submitted by expert committees and investigation teams. This DSR has been prepared in conformity with the Enforcement and Monitoring Guidelines for Sand Mining, 2020 and other Sand mining guidelines published by MoEF & CC time to time as well as the requirement specified in Jharkhand State Sand Mining Policy 2017.

The purpose of DSR is to identify the mineral potential areas where mining can be allowed; and also to distinguish areas where mining will not be allowed due to proximity to infrastructural structures and installations, areas of erosion. The DSR would also help to estimate the annual rate of replenishment wherever applicable.

The district of Godda was created on 17th May, 1983 out of old Santhal Pargana district which was upgraded to the level of division. Present Santhal Pargana division comprises 5 districts, viz., Godda, Dumka, Deoghar, Sahebganj and Pakur. Godda(M), the only one town of the district, is the headquarters of Godda district and Godda subdivision. The history of Godda district is inseparable from the history of parent district of Santhal Pargana. Santhal Pargana was created as a separate district in the year 1855 by transferring out portions of Bhagalpur and Birbhum districts. The entire area comprising present divisions of Santhal Pargana, Hazaribag, Munger and Bhagalpur was termed as Jungleterry (Jungle Terai) by the English on assumption of Diwani in 1765.

Godda district is one of the twenty four districts of Jharkhand State in eastern India with it's district headquarter at Godda. It lies in the north-eastern part of the State. The geographical area that now comprises Godda district, used to be part of the erstwhile Santhal Pargana district. The district lies between 25°13'38.47"N, 87°23'55.62"E to 24°30'4.34"N, 87°23'39.21"E (North–South), 25° 0'49.81"N, 87° 8'53.15"E to 24°47'58.32"N, 87°30'30.73"E (West–East)

Godda district is sharing border with Banka district of Bihar to the West, Bhagalpur district to the North, Dumka district to the South, Sahibganj and Pakur district to the East. The district lies in Survey of India Toposheets Nos. - 72O/4, 8, 12, 72P/1, 2, 5, 6. The area of the district is 2110 km², with a population of around 1,313,551 (population density 580/Km²). Tribals like Santhals, Paharias and Lohras make a sizeable chunk of the population of the district. Being tribal dominated its culture and creed is unique. This district is covered with mountains, rivers and forests. Its natural phenomena are fascinating and rare.

The principal rivers of the district are Kajhia, Harna, Sunder, Sapin, Kao, Chir and Geura. The general trend of the drainage is from SE-NW. The structural features particularly the foliation and joints exert profound impact upon the drainage and control the drainage pattern of the district. Sand mining is mainly practiced in Godda, Mahagama and Basantarai, Pathargama, Poriyahat blocks of Godda district. Rivers in which sand mining takes place in Godda district are - Bansloi, Burigeria, Chir, Kajhia, Sundargaria rivers. The general trend of the drainage is from SE-NW. The structural features particularly the foliation and joints exert profound impact upon the drainage and control the drainage pattern of the district.

During 1980's after the successful exploration by GSI and CMPDI the district is well known for its coal mining. The entire scenario changed after coal was first discovered in abundance under the Rajmahal Hills by a team of the Geological Survey of India. Central Mine Planning and Design Institute Ltd. conducted a detailed survey of the area. The Rajmahal Opencast Coal mine project

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was conceived in early 1980s, initially to supply coal to Farakka Super Thermal Power Project of NTPC, with an initial annual capacity of 5 million tonne. For expansion of this coal mine project to 10.5 million tonne per annum, an agreement was signed between Coal India Limited and Canadian Commercial Corporation in January 1989 where MET-CHEM Canada Inc. was designated as the Canadian Executing Agency for implementing the project. The Project was completed in July 1994 and is being run by Eastern Coalfileds Limited personnel. Sand mining is mainly practiced in Godda, Mahagama and Basantarai blocks of Godda district.

The occurrence of riverbed sand and gravel in the district has been established by Department of Mines and Geology, Government of Jharkhand and others in previous instances. It requires further systematic and scientific approach to quantify the resource along with their grade assessment. Sand mining is mainly practiced in Gerua Nadi, Chir Nadi, Kajhia nadi, Sakri Nadi & Ribani nadi of Godda district. This report also recommends to undertake detail exploration program to assess the mineral occurrences in the major rivers of the district and should have a proper development and production plan for the specified minerals.

Compliance of Enforcement & Monitoring Guidelines for Sand Mining (MoEF&CC), January 2020:

Clause No.	Particulars	Status
a	District Survey Report for sand mining shall be prepared before the auction/e-auction/grant of the mining lease/Letter of Intent (LoI) by Mining department or department dealing the mining activity in respective states.	Noted.
b	In order to make the inventory of River-Bed Material, a detailed survey of the district needs to be carried out, to identify the source of River Bed Material and alternative source of Sand (M-Sand). The source will include rivers, de-siltation of reservoir/dams, Patta lands/Khatedari Land, M-sand etc.	Complied with and explained in Maps.
c	District Survey Report is to be prepared in such a way that it not only identifies the mineral-bearing area but also define the mining and no mining zones considering various environmental and social factors.	Complied while making the ghats.
d	Identification of the source of Sand & M-Sand. The sources may be from Rivers, Lakes, Ponds, Dams, De-silting locations, Patta land/Khatedari lands. The details in case of Rivers such as [name, length of river, type (Perennial or Non-Perennial), Villages, Tehsil, District], in case of Lakes, Ponds, Dams, De-silting locations [Name, owned/maintained by (State Govt./PSU), area, Villages, Tehsil, District] in case of Patta land/Khatedari lands [Owner Name, Sy No., Area, Agricultural/Non-Agricultural, Villages, Tehsil, District], in case of M-Sand Plant [Owner Name, Sy No., Area, Quantity/Annum, Villages, Tehsil, District] needs to be recorded .	No M-Sand source are available in the district. All the required details of rivers are mentioned in desired format in Chapter 12.

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e	Defining the sources of Sand/M-Sand in the district is the next step for identification of the potential area of deposition/aggradation wherein mining lease could be granted. Detailed survey needs to be carried out for quantification of minerals. The purpose of mining in the river bed is for channelization of rivers so as to avoid the possibility of flooding and to maintain the flow of the rivers. For this, the entire river stretch needs to be surveyed and original ground level (OGL) to be recorded and area of aggradation/deposition needs to be ascertained by comparing the level difference between the outside riverbed OGL and water level. Once the area of aggradation/deposition are identified, then the quantity of River-bed material available needs to be calculated. The next step is channelization of the river bed and for this central ¾th part of the river, width needs to be identified on a map. Out of the ¾th part area, where there is a deposition/aggradation of the material needs to be identified. The remaining ¼th area needs to be kept as no mining zone for the protection of banks. The specific gravity of the material also needs to be ascertained by analyzing the sample from a NABL accredited lab. Thus, the quantity of material available in metric ton needs to be calculated for mining and no mining zone.	Detailed Survey for capturing OGL has been done using UAV/DGPS. Area of deposition has been identified accordingly. All Sand ghats boundaries has been fixed after leaving the 1/4th of the River width for bank's safety. Tonnage factor of sand has been calculated by analyzing sand samples from NABL accredited laboratory.
f	The permanent boundary pillars need to be erected after identification of an area of aggradation and deposition outside the bank of the river at a safe location for future surveying. The distance between boundary pillars on each side of the bank shall not be more than 100 meters.	Boundary pillars will be fixed while fixation of the mining lease boundary subsequent to district level verification.
g	Identifying the mining and no mining zone shall follow with defining the area of sensitivity by ascertaining the distance of the mining area from the protected area, forest, bridges, important structures, habitation etc. and based on the sensitivity the area needs to be defined in sensitive and non-sensitive area.	No mining zone has been identified by measuring distance from bridges and permanent structures. Also, NOC from the concerned DFO & CO has been obtained for the potential area as per statutory norms. Enclosed in Page No. - 100-118.
h	Demand and supply of the River-bed material through market survey needs to be carried out. In addition to this future demand for the next 5 years also needs to be considered.	Complied
i	It is suggested that as far as possible the sensitive areas should be avoided for mining, unless local safety	Agreed.

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	condition arises. Such deviation shall be temporary & shall not be a permanent feature.	
j	The final area selected for the mining should be then divided into mining lease as per the requirement of State Government. It is suggested the mining lease area should be so selected as to cover the entire deposition area. Dividing a large area of deposition/aggradation into smaller mining leases should be avoided as it leads to loss of mineral and indirectly promote illegal mining.	Entire deposit area has been marked on map as Zones instead of small parts. Sand ghat has been so prepared after leaving statutory distance & covering the entire deposit area within zone.
k	Cluster situation shall be examined. A cluster is formed when one mining lease of homogenous mineral is within 500 meters of the other mining lease. In order to reduce the cluster formation mining lease size should be defined in such a way that distance between any two clusters preferably should not be less than 2.5 Km. Mining lease should be defined in such a way that the total area of the mining leases in a cluster should not be more than 10 Ha.	Since, the sand deposit area has been divided into zones, formation of contiguous cluster has been reduced. Zone boundaries are fixed in such a way that it discontinues wherever there is bridge or no sand deposition or confluence. Also, individual sand ghat area has been kept as large as possible in order to reduce the formation of cluster through artificial break of large area.
l	The number of a contiguous cluster needs to be ascertained. Contiguous cluster is formed when one cluster is at a distance of 2.5 Km from the other cluster.	Due to formation of Sand deposit zone, contiguous cluster formation has been reduced as much as possible.
m	The mining outside the riverbed on Patta land/Khatedari land be granted when there is possibility of replenishment of material. In case, there is no replenishment then mining lease shall only be granted when there is no riverbed mining possibility within 5 KM of the Patta land/Khatedari land. For government projects, mining could be allowed on Patta land/Khatedari land but the mining should only be done by the Government agency and material should not be used for sale in the open market. Cluster situation as mentioned in para k above is also applicable for the mining in Patta land/Khatedari land.	Sand deposit area has been identified within River-bed only with proof of replenishment. No Patta/Khatedari land has been proposed for mining.

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n	The State Government should define the transportation route from the mining lease considering the maximum production from the mines as at this stage the size of mining leases, their location, the quantity of mineral that can be mined safely etc. is available with the State Government. It is suggested that the transportation route should be selected in such a way that the movement of trucks/tippers/tractors from the villages having habitation should be avoided. The transportation route so selected should be verified by the State Government for its carrying capacity.	Transportation route map has been prepared for each sand ghat considering these factors and duly approved by competent authority. Attached as Map No. – D1 to D16.
o	Potential site for mining having its impact on the forest, protected area, habitation, bridges etc., shall be avoided. For this, a sub-divisional committee may be formed which after the site visit shall decide its suitability for mining.	Sub-Divisional Committee has been visited tha Sand ghats and recommended the same. (Photographs enclosed)
p	Public consultation - The Comments of the various stakeholders may be sought on the list of mining lease to be auctioned. The State Government shall give an advertisement in the local and national newspaper for seeking comments of the general public on the list of mining lease included in the DSR. The DSR should be placed in the public domain for at least one month from the date of publication of the advertisement for obtaining comments of the general public. The comments so received shall be placed before the sub-divisional committee for active consideration. The final list of sand mining areas [leases to be granted on riverbed & Patta land/Khatedari land, de-siltation location (ponds/lakes/dams), M-Sand Plants (alternate source of sand)] after the public hearing needs to be defined in the final DSR.	The DSR has been kept in public domain for one month after publication of advertisement in local newspapers.
q	The LoI should not be granted for mining area falling on both river-bed and outside river-bed. Therefore, in the same lease, both types of area should not be included.	Shall be considered while issuing the LoI.

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2. INTRODUCTION

The District Survey Report of Godda District has been prepared as per the guidelines of Ministry of Environment, Forest & Climate Change (MoEF & CC), Government of India vide Notification S.O. 1533(E) dated 14th September 2006 and subsequent MoEF & CC Notification Enforcement and Monitoring Guidelines for Sand Mining, 2020. This report shall guide systematic and scientific utilization of natural resources, so that present and future generation may be benefitted at large. Further, MoEF & CC published a Notification S.O. 3611(E), dated 25th July 2018 and recommended the format for District Survey Report of Sand mining or River-bed mining.

The main objective of DSR is Identification of areas of aggradations or deposition where mining can be allowed; and identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited and calculation of annual rate of replenishment and allowing time for replenishment after mining in that area. The DSR would also help to calculate the annual rate of replenishment wherever applicable and allow time for replenishment.

The objectives of the District Survey Report are as following:

1. Identification and Quantification of Mineral Resource and its optimal utilization.
2. To regulate the Sand & Gravel Mining in the Country, identification of site specificend-use consumers and reduction in demand & supply gaps.
3. Use of information technology (IT) & latest scientific method of mining for surveillance of the Sand mining at each step.
4. District Survey report shall enable Environmental Clearance for cluster of Sand & Gravel Mining. It shall assist concern Department during post Environmental Clearance Monitoring.
5. To control the instance of illegal mining.
6. To control the flood in the area.
7. To maintain the livelihood of aquatic habitat.
8. To protect the incursion of ground water in the area. Limiting extraction of material in floodplains to an elevation above the water table generally disturbs more surface area than allowing extraction of material below the water table.
9. To keep accumulated data records viz. details of Mineral Resource, potential area, lease, approved mining plan, co-ordinates of a district at one place.
10. To maintain the records of revenue generation.
11. 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.
12. In-stream extraction of gravel below the deepest part of the channel generally causes more changes to the natural hydrologic processes than limiting extraction to a reference point above the thalweg.
13. Excavating sand and gravel from a small straight channel with a narrow floodplain generally will have a greater impact on the natural hydrologic processes than excavations on a braided channel with a wide floodplain.
14. 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.
15. A concise guideline can be framed considering the point discussed in the DSR for sand and or minor mineral mining in the district.

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

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2.1 Statutory Framework:

The below table has mentioned the requirement of District survey report and its year wise modification;

Table 2.1: Requirement of District Survey Report & its year wise modification

Year	Particulars
1994	The Ministry of Environment, Forest & Climate Change (MoEF&CC) published Environmental Impact Assessment Notification 1994 which is only applicable for the Major Minerals more than 5 Ha.
2006	In order to cover the minor minerals also into the preview of EIA, the MoEF&CC issued EIA Notification S.O. - 1533 (E), dated 14th September 2006, made mandatory to obtain environmental clearance for both Major & Minor Mineralmore than 5 Ha.
2012	Further, Hon'ble Supreme Court wide order dated the 27th February, 2012 in I.A. No.12- 13 of 2011 in Special Leave Petition (C) No.19628-19629 of 2009, in the matter of Deepak Kumar etc. Vs. State of Haryana and Others etc., ordered that"leases of minor minerals including their renewal for an area of less than five hectares be granted by the States/Union Territories only after getting environmental clearance from MoEF"; and Hon'ble National Green Tribunal, order dated 13thJanuary, 2015 in the matter regarding sand mining has directed for making a policy on environmental clearance for mining leases in cluster for minor Minerals.
2018	MoEF&CC published a notification S.O. 3611(E) Dated 25th July, 2018 and recommended the format for District Survey Report. The notification stated about the objective of DSR, i.e. "Identification of areas of aggradations or deposition where mining can be allowed; and identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited and calculation of annual rate of replenishment and allowing time for replenishment after mining in that area".
2020	Enforcement & Monitoring Guidelines for Sand Mining (EMGSM) 2020 has been published with modifying Sustainable Sand Mining Guidelines, 2016 by MoEF&CC for effective enforcement of regulatory provisions and their monitoring. The EMGSM 2020 directed the states to carry out river audits, put detailed survey reports of all mining areas online and in the public domain, conduct replenishment studies of river beds, constantly monitor mining with drones, aerial surveys, ground surveys and set up dedicated task forces at district levels. The guidelines also push for online sales and purchase of sand and other riverbed materials to make the process transparent. They propose night surveillance of mining activity through night-vision drones.

➢ **Sustainable Sand Mining Management Guidelines 2016/Enforcement & Monitoring Guidelines for Sand Mining (EMGSM) 2020 (By MoEF & CC)**

The main objective of the guideline 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.

a) Parts of the river reach that experience deposition or aggradations 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 aggradations 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.

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c) Sand and gravel may be extracted across the entire active channel during the dry season.
d) Abandoned stream channels on terrace and inactive flood plains 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 up to a distance of 1 kilometre (1 km) from major bridges and highways on both sides, or five times (5x) of the span (x) of a bridge/public civil structure (including water intake points) on up-stream side and ten times (10x) the span of such bridge on down-stream side, subjected to a minimum of 250 meters on the upstream side and 500 meters on the downstream side.
i) The sediment sampling should include the bed material and bed material load before, during and after the 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.
j) 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.
k) The flood discharge capacity of the river could be maintained in areas where there is a 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. 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 groundwater 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 meters and distance from the bank should be ¼th or river width and should not be less than 7.5 meters.
n) The borrow area should preferably be located on the riverside of the proposed embankment because they get silted in the course of time. For low embankment, less than 6m in height, borrow area should not be selected within 25 m from the toe/heel of the embankment. In the case of the higher embankment, the distance should not be less than 50m. In order to obviate the development of flow parallels to the embankment, crossbars of width eight times the depth of borrow pits spaced 50 to 60-meter center-to-center should be left in the borrow pits.
o) Demarcation of mining area with pillars and geo-referencing should be done prior to the start of mining.
p) A buffer distance/un-mined block of 50 meters after every block of 1000 meters over which mining is undertaken or at such distance as may be the directed/prescribed by the regulatory authority shall be maintained.
q) A buffer distance/unmined block of 50 meters after every block of 1000 meters over which mining is undertaken or at such distance as may be the directed/prescribed by the regulatory authority shall be maintained.
r) River bed sand mining shall be restricted within the central 3/4th width of the river/rivulet or 7.5 meters (inward) from river banks but up to 10% of the width of the river, as the case may be and decided by regulatory authority while granting environmental clearance in consultation with irrigation department. Regulating authority while regulating the zone of river bed mining shall

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ensure that the objective to minimize the effects of riverbank erosion and consequential channel migration are achieved to the extent possible. In general, the area for removal of minerals shall not exceed 60% of the mine lease area, and any deviation or relaxation in this regard shall be adequately supported by the scientific report.

s) Mining Plan for the mining leases(non-government) on agricultural fields/Patta land shall only be approved if there is a possibility of replenishment of the mineral or when there is no riverbed mining possibility within 5 KM of the Patta land/Khatedari land. For government projects mining could be allowed on Patta land/Khatedari land but the mining should only be done by the Government agency and material should not be used for sale in the open market.

The mineral reserve for river bed area is calculated on the basis of maximum depth of 3 meters and margins, width and other dimensions as mentioned in para(s) above. The area multiplied by depth gives the volume and volume multiplied with bulk density gives the quantity in Metric Ton. In case of river bed, mineable material per hectare area available for actual mining shall not exceed the maximum quantity of 60,000 MT per annum.

➢ The Ministry of Environment Forest & Climate Change formulated the Sustainable Sand Management Guidelines 2016 which focuses on the management of sand mining in the country. But in the recent past, it has been observed that apart from management and systematic mining practices there is an urgent need to have a guideline for effective enforcement of regulatory provision and their monitoring. Section 23 C of MMDR 1957 empowered the State Government to make rules for preventing illegal mining, transportation and storage of minerals. But in the recent past, it has been observed that there was large number of illegal mining cases in the Country and in some cases, many of the officers lost their lives while executing their duties for curbing illegal mining incidence. The illegal and uncontrolled illegal mining leads to loss of revenue to the State and degradation of the environment.

2.2 Methodology of DSR Preparation:

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

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

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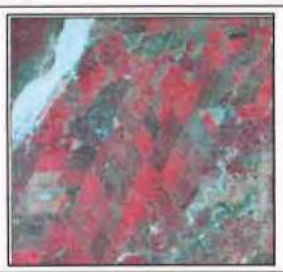
Data Analysis and Map Preparation: Dataset which are captured during the report preparation, are gone through detail analysis work. District Survey Report involves the analytical implication of captured dataset to prepare relevant maps. Methodology adopted for preparation of relevant maps is explained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

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

Here LISS-III satellite imagery has been taken for Supervised Classification as supervised classification can be much more accurate than unsupervised classification, but depends heavily on the training sites, the skill of the individual processing the image, and the spectral distinctness of the classes in broader scale.
According to the Visual Image Interpretation (Tone, Texture, Colour etc.) training set of the pixel has been taken.

Table 2.2: Pictorial Descriptions of Physiographic classification

	
Agricultural Land - Based on their Geometrical shape, Red and Pink colour tone, Agricultural Land has been identified.	**Vegetation Covered Area** - Based on their continuous Red colour tone, Vegetation Covered Area has been identified.
Agricultural Fallow Land - Based on their Geometrical shape, Light and dark Cyan with light Pink colour tone, Agricultural Land has been identified.	**Bad Land Topography**- Light Yellowish mixed with Cyan colour has been identified as Bad Land Topography.

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	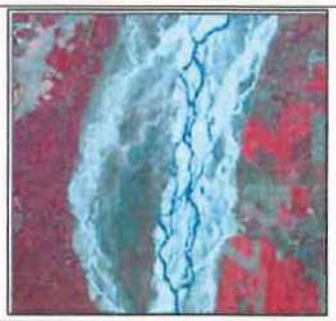
Settlement – Area with Cyan Colour including geometrical shape has been recognised as Settlement Area.	**Water Bodies** – Dark Blue colour has been classified as Water Bodies.

Geomorphological Map:

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

Physiographical Map:

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

Block Map:

- Raw Data collected from **National Informatics Centre (NIC Website)** during March 2022 and October 2022.
- Data has been geo-referenced using GIS software.
- Digitization of Block boundary, District Boundary, State Boundary, International Boundary, and District Headquarter, sub–district Headquarter, Places, Road, Railway, River, Nala etc.
- Road name, River name, Railway name has been filled in attribute table of the Layers.
- Final layout has been prepared by giving scale, legend, north arrow, etc.

Transportation Map:

- Raw Data collected from **National Informatics Centre (NIC Website)** during March 2022 and October 2022.
- Data has been geo-referenced using GIS software.
- Digitization of Block boundary, District Boundary, State Boundary, International Boundary, and District Headquarter, sub–district Headquarter, Places, Road, Railway, River, Nala etc.
- Road name, River name, Railway name has been filled in attribute table of the Layers.
- Final layout has been prepared by giving scale, legend, north arrow, etc.

Drainage Map:

- Raw Data collected from **National Informatics Centre (NIC Website)** during March 2022 and October 2022.
- Data has been geo-referenced using GIS software.
- Digitization of Block boundary, District Boundary, State Boundary, International Boundary, and District Headquarter, sub–district Headquarter, Places, Road, Railway, River, Nala etc.

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- Road name, River name, Railway name has been filled in attribute table of the Layers.
- Final layout has been prepared by giving scale, legend, north arrow, etc.

Earthquake Map:

- Raw data collected from **Ministry of Earth Science.**
- Data has been geo-referenced using GIS software.
- Digitization of Earthquake zone and superimposed it over Block Boundary.
- Zone name has been filled in attribute table of the Layers.
- Final layout has been prepared by giving scale, legend, north arrow, etc.

Soil Map:

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

Wildlife Sanctuary and National Park Location Map:

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

Primary Data Collection: Although, field data collection is an integral part of DSR prepration but due to monsoon season no field visit has been carried out. This report has been preparaed with the holistic approach and data provided by District Mining Office, Godda. The field data collection has been carried out in post-monsoon season and a DSR with all updated data has been prepared.

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

Four times Physical survey is to be carried out by DGPS/Total Station to define the topography, contours and offsets of the riverbed. The surveys should clearly depict the important attributes of the stretch of the river and its nearby important civil and other feature of importance. This information will provide the eligible spatial area for mining. However, this DSR has been prepared on a very short period of time, mostly using secondary data. Primary data to be taken into use in subsequent phases.

Report Preparation: District Survey Report has been prepared to fulfill the purpose of identification of mining area of Major and Minor mineral and their impact on environment. Report provides details of the mineral potential zones. Assessing mining prospect with respect to minor minerals. Replenishment study details includes in the report. Report also provides the socio-environmental study for emphasizing Minor minerals mining in the district.

Demand and Utilization of Sand

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

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a common element. It can also come from another source of minerals like quartz, limestone, or gypsum.

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

Sand extraction from river-beds and brick earth mining for making raw bricks are the main mining activities in the district. With a spurt in construction of real estate sectors and various Govt. sponsored projects, the demand for both sand and bricks has increased manifold.

The extraction of sand is carried out either manually or through semi-mechanized system. The depth of mining for both river-bed sand and brick earth is restricted due to statutory provision in the regulations pertaining to conservation and development of Minor minerals.

River sand mining is a common practice as habitation concentrates along the rivers and the mining locations are preferred near the markets or along the transportation route, for reducing the transportation cost. In the real world, there are a lot of situations where we can find uses of sand. Followings are the common sand uses.

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

- **Chronology:**

Sl. No.	Time Period	Activity
1	January 2022	Pre Monsoon study of Sand deposit has been carried out by the District Mining Office
2	October 2022	Work for Preparation of DSR has been allotted to the concerned NABET accredited consultants.
3	October 2022	Post-Monsoon survey as well as study of satellite imageries has been conducted.
4	November 2022	Softcopy of Draft DSR has been uploaded to the NIC portal for review.

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5	Januar 2022	Incorporating all the suggestions received and field verification by the Sub-Divisional Committee, DSR has been finalized.
6	February 2022	DSR has been placed in front of the Hon'ble SEAC Jharkhand for approval.

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3. GENERAL PROFILE OF THE DISTRICT

3.1 General Information:

Godda district is one of the twenty-four districts of Jharkhand State in eastern India. It lies in the north-eastern part of the State. The geographical area that now comprises Godda district used to be part of the erstwhile Santhal Pargana district. Godda town is the headquarters of Godda district. The area of the district is 2110 km², with a population of around 1313551. The Godda district is connected with rail link. The nearest railway station is Godda. The main economic activity of the people is agriculture and major crops are paddy, wheat and maize. Godda is the land of a tribe called Santhals. Godda is not only a land of tribes, the local inhabitants also include the non-tribal and urban people. Godda is a Silk City with a municipal Council in the Godda subdivision & Mahagama Subdivision the Godda district in the Indian State of Jharkhand. Godda was a part of undivided Santhal Pargana district until 1981 census. Later the old Godda sub-division of Santhal Pargana was separated and formed as a new district. As a consequence of the Santhal rebellion of 1845-55 the district of Santhal Paragna was created from portions of Bhagalpur and Birbhum. Godda district at present comprises nine Blocks. Godda is the only town in the district. There are 2311 villages in the district.

(Source – godda.nic.in)

The principal rivers of the district are Kajhia, Harna, Sunder, Sapin, Kao, Chir and Geura. The general trend of the drainage is from SE-NW. The structural features particularly the foliation and joints exert profound impact upon the drainage and control the drainage pattern of the district. Sand mining is mainly practiced in Godda, Mahagama and Basantarai, Pathargama, Poriyahat blocks of Godda district. Rivers in which sand mining takes place in Godda district are - Bansloi, Burigeria, Chir, Kajhia, Sundargaria rivers.

The district lies in Survey of India toposheets nos. 72O/4, 8, 12, 72P/1, 2, 5, 6.

EAST	Sahebganj District
WEST	Banka District
NORTH	Bhagalpur District
SOUTH	Dumka District

Administrative Set up of the Godda District

Godda town is the District headquarter of Godda itself. For administrative purpose the district has been divided into 2 sub-divisions – Godda & Mahagama and 9 nos. of Blocks/Tehsils as follows: -

Blocks

- Godda Sadar
- Poreyahat
- Sunderpahari
- Pathragama
- Basantrai
- Mahagama
- Meharma
- Boarijor
- Thakurgangti

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(Source – godda.nic.in)

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Villages & Panchayats

There are 201 panchayats and 1634 villages in the district: Table 3.1: -

Blocks	No. of Panchayats	No. of Villages
Basantrai	14	82
Boarijor	22	296
Godda	34	196
Mahagama	29	140
Meherma	23	136
Pathargama	19	141
Poreyahat	31	194
Sundarpahari	13	208
Thakurgangti	16	141
Total	**201**	**1634**

(Soucre – Census 2011)

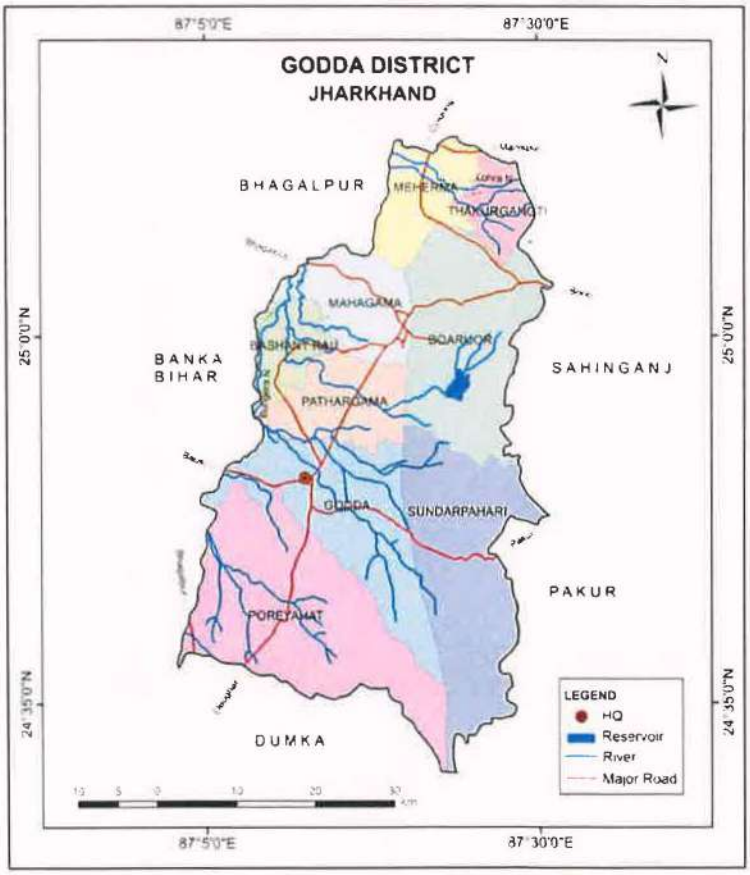

Figure 3.1: Block Map of Godda District

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3.2 Climatic Condition:

Located at an elevation of None meters (0 feet) above sea level, Godda has a Humid subtropical, dry winter climate (Classification: Cwa). The district's yearly temperature is 29.22°C (84.6°F) and it is 3.25% higher than India's averages. Godda typically receives about 32.67 millimeters (1.29 inches) of precipitation and has 34.36 rainy days (9.41% of the time) annually.

Table 3.2: Monthly Average Temperature of Godda District

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Nov	Oct	Dec	Year
Record high °C (°F)	29.0 (84.2)	34.0 (93.2)	40.0 (104.0)	44.0 (111.2)	44.0 (111.2)	46.0 (114.8)	40.0 (104.0)	39.0 (102.2)	37.0 (98.6)	35.0 (95.0)	32.0 (89.6)	28.0 (82.4)	46.0 (114.8)
Average high °C (°F)	23.54 (74.37)	27.31 (81.16)	33.85 (92.93)	37.61 (99.7)	39.0 (102.2)	37.91 (100.24)	34.16 (93.49)	34.28 (93.7)	33.04 (91.47)	31.24 (88.23)	29.41 (84.94)	24.88 (76.78)	32.19 (89.94)
Daily mean °C (°F)	19.68 (67.42)	23.38 (74.08)	30.15 (86.27)	34.36 (93.85)	35.66 (96.19)	35.51 (95.92)	32.18 (89.92)	32.24 (90.03)	30.97 (87.75)	28.68 (83.62)	26.32 (79.38)	21.46 (70.63)	29.22 (84.6)
Average low °C (°F)	14.0 (57.2)	16.71 (62.08)	22.25 (72.05)	26.48 (79.66)	28.22 (82.8)	29.86 (85.75)	28.1 (82.58)	27.88 (82.18)	26.81 (80.26)	23.75 (74.75)	20.69 (69.24)	15.91 (60.64)	23.39 (74.1)
Record low °C (°F)	10.0 (50.0)	10.0 (50.0)	14.0 (57.2)	23.0 (73.4)	21.0 (69.8)	23.0 (73.4)	24.0 (75.2)	22.0 (71.6)	18.0 (64.4)	18.0 (64.4)	16.0 (60.8)	9.0 (48.2)	9.0 (48.2)
Average precipitation mm (inches)	0.45 (0.02)	6.25 (0.25)	3.22 (0.13)	17.38 (0.68)	36.07 (1.42)	41.06 (1.62)	106.56 (4.2)	62.49 (2.46)	93.7 (3.69)	22.45 (0.88)	0.06 (0.0)	2.3 (0.09)	32.67 (1.29)
Average precipitation days (≥ 1.0 mm)	0.18	1.0	0.64	2.36	3.45	5.18	6.55	6.73	6.0	2.18	0.0	0.09	2.86
Average relative humidity (%)	53.91	49.4	31.33	38.18	47.85	54.37	70.18	70.87	73.53	64.92	48.92	44.96	54.03
Mean monthly sunshine hours	8.47	8.42	11.08	12.57	13.07	12.93	11.5	11.63	9.45	10.62	10.17	8.53	10.7

The chart below shows the mean monthly temperature and precipitation of Godda in recent years.

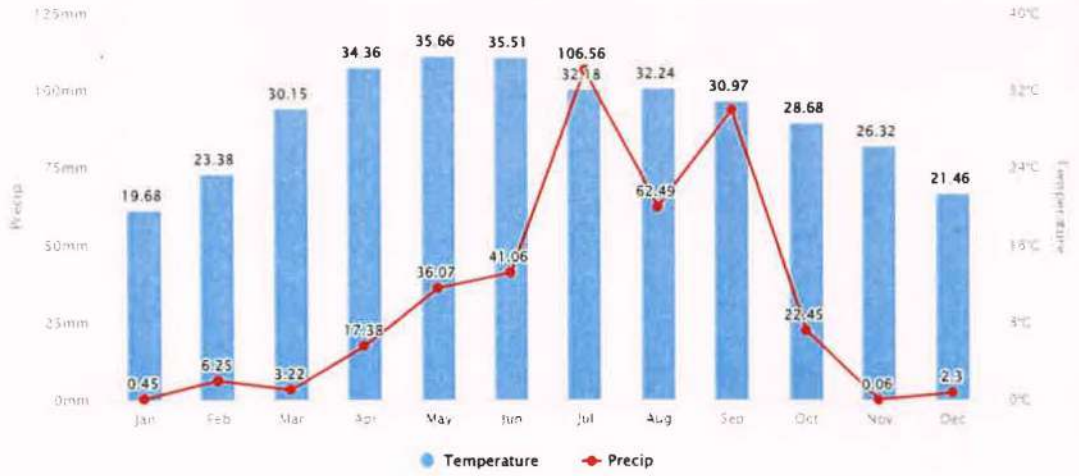

Figure 3.2: Graphical representation of monthly temperature and precipitation of Godda

(Source: Indian Meteorological Department)

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3.3 Rainfall & Humidity:

Godda typically receives about 32.67 millimeters (1.29 inches) of precipitation and has 34.36 rainy days (9.41% of the time) annually.

Table 3.3: Rainfall Data of Godda from 2017-2020

Year		2017	2018	2019	2020
Sl. No.	Month	Avg.	Avg.	Avg.	Avg.
1	Jan	11.50	13.00	17.80	12.10
2	Feb	9.20	32.00	8.30	6.40
3	Mar	5.40	4.70	8.60	7.30
4	Apr	4.80	15.00	84.00	22.30
5	May	90.60	80.30	30.30	60.80
6	Jun	195.90	200.00	272.70	120.90
7	Jul	148.30	305.30	370.90	290.50
8	Aug	387.10	255.40	260.70	180.10
9	Sep	252.10	263.80	180.50	250.50
10	Oct	75.60	39.40	30.70	35.20
11	Nov	0.00	0.00	0.00	0.00
12	Dec	0.00	0.00	0.00	0.00

In Godda, the climate is warm and temperate. The summers here have a good deal of rainfall, while the winters have very little. According to Köppen and Geiger, this climate is classified as Cwa. The average annual temperature in Godda is 25.5°C. In a year, the average rainfall is 1081 mm.

3.4 Topography & Terrain:

The predominant physical feature over major part of the district is the rolling topography dotted with isolated inselbergs except in the Borijore and Sundarpahari blocks. A substantial part of Borijore and Sundarpahari block is under forest cover. The altitude of the land surface increases from west to the east. The major hills are confined to the eastern part of the district comprising the Gandeshwari Pahar (238.41m) and Kesgari Pahar (268.29m) while in the western part of the district isolated hills are in the form of the inselbergs and other small hillocks.
The soil is mostly acidic, reddish yellow, light textured and highly permeable with poor water holding capacity.

3.5 Water Courses and Hydrogeology:

The southern part of the district is underlain by Granite-gneiss of Archaean age forming the basement. These occur as large batholiths and are intruded by basic rocks. In the central and northern part of the district the rocks of Barakar formation consisting of feldspathic sandstones, shales and coal seams overlying the metamorphics are exposed. In the western and northern part of the district alluvial cover of moderate thickness, caps the Archaean crystallines and the Gondwana sedimentaries.

The district is underlain by diverse geological formations with complex tectonic framework. The geological formations have been grouped under three main categories -

a) The gneissic complex in the southern and the central part.
b) The Rajmahal traps in the eastern and southeastern part.
c) Gondwanas overlain by thin mantle of alluvial cover in the northern and central part.

Ground water occurs mostly under phreatic condition in all the lithological units within the shallow aquifers and locally under semiconfined and confined condition in deeper aquifers.

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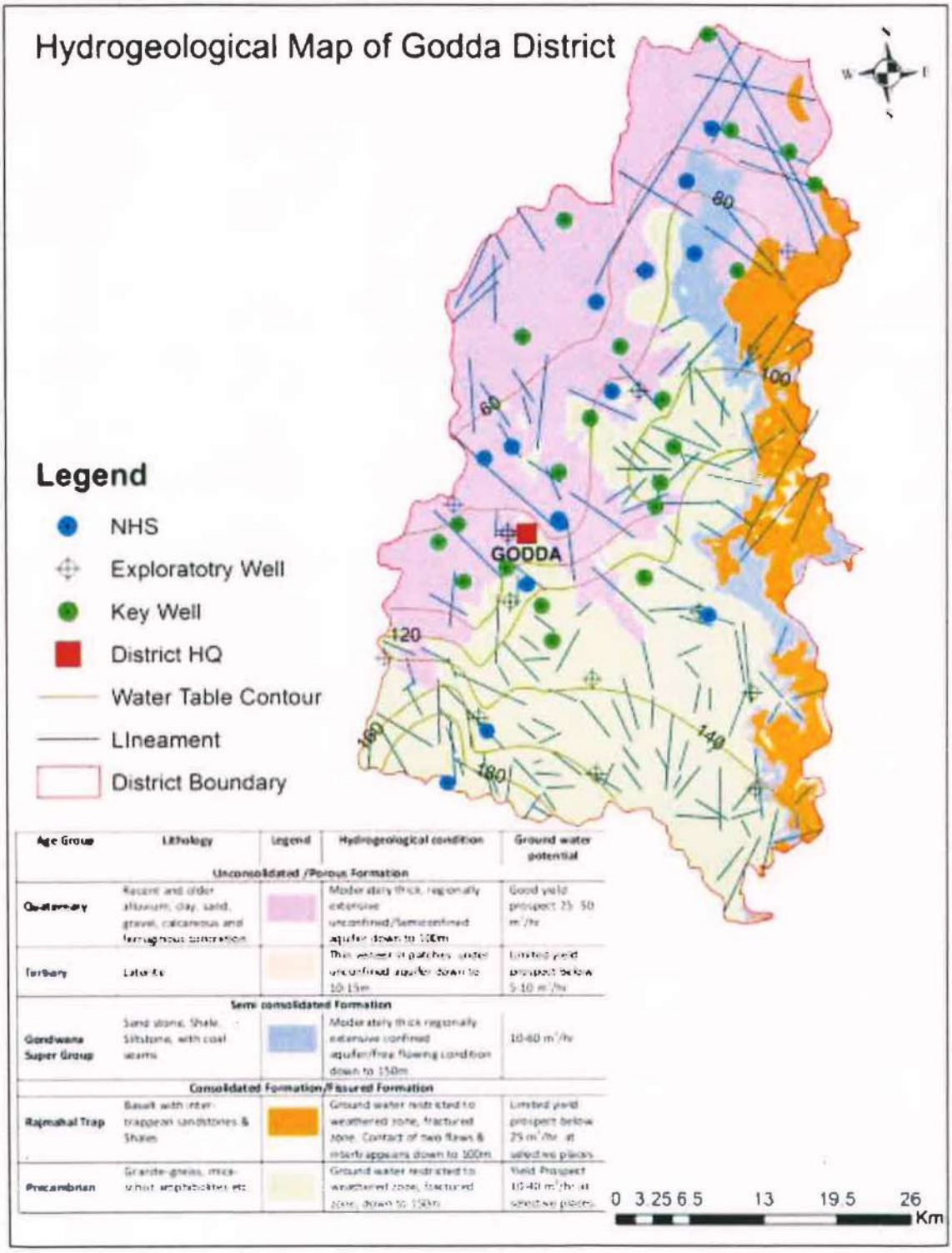

Age Group	Lithology	Legend	Hydrogeological condition	Ground water potential
Unconsolidated /Porous Formation				
Quaternary	Recent and older alluvium, clay, sand, gravel, calcareous and ferruginous concretion		Moderately thick, regionally extensive unconfined/Semiconfined aquifer down to 100m	Good yield prospect 25- 50 m^3/hr
Tertiary	Laterite		Thin extent in patches, under unconfined aquifer down to 10-15m	Limited yield prospect below 5-10 m^3/hr
Semi consolidated Formation				
Gondwana Super Group	Sand stone, Shale, Siltstone, with coal seams		Moderately thick regionally extensive confined aquifer/free flowing condition down to 150m	10-60 m^3/hr
Consolidated Formation/Assured Formation				
Rajmahal Trap	Basalt with inter-trappean sandstones & Shales		Ground water restricted to weathered zone, fractured zone. Contact of two flows & interfaces appears down to 100m	Limited yield prospect below 25 m^3/hr at selected places
Precambrian	Granite-gneiss, mica-schist, amphibolites etc		Ground water restricted to weathered zone, fractured zone, down to 150m	Yield Prospect 10-40 m^3/hr at selected places

Figure 3.3: Hydrogeological Map of Godda District

(Source – CGWB Report)

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Depth to Water Level

During May 2012, the depth to water levels in HNS, wells tapping shallow aquifer ranged from 4.55 to 9.90 m bgl. Depth to ground water levels during the post monsoon period (November 2012) varied between 2.25 and 8.34 m bgl. Categorization of depth to water level of pre-monsoon period (May 2012) for HNS in Godda district is presented below in Table-3.4.

Table-3.4: Categorization of depth to water level of pre-monsoon period (May 2012)

No. of wells measured	Depth to water level (mbgl)		0-2 (m)		2-5 (m)		5-10 (m)		10-20(m)	
	Min.	Max.	No.	%	No.	%	No.	%	No.	%
8	4.55	9.90	0	0	2	20	8	80	0	0

Aquifer Parameters

A total of 13 exploratory wells and 12 observation wells have been drilled down to depth of 191 m in hard rock formation to decipher the potential fracture zones. The morphotectonic analysis of crystalline formation has revealed that rocks have been subjected to several stages of deformation leading to development of deep seated tensile and shear fracture. The most potential fracture zones trend along NNE-SSW, WNW-SSE and NW-SE direction. The exploratory data reveals presence of potential fractures between 17-163 m bgl. The deeper fractures are also found in few cases upto 140 m bgl. The depth of fracture at which maximum yield was obtained in bore well ranges from 75-135 m bgl. The thickness of the weathered zone varies from 9 to 26.5 m. The yield of the well is in the range of 0.25-49.2 m^3/hr.

Table-3.5 Summarized hydrogeological data of exploratory drilling

Rock Type	Depth range (m bgl)	No. of fractures tapped	Depth of Zone Range fracture	Water level (mbgl)	Yield (m^3/hr)	Draw down (m)	T (m^2/day)	S
Granite	81-191	1-5	17-163	2-8.63	0.25-49.2	7.04-	17.95-	$4.3^* 10^{-3}$ -
gneiss						22.11	177	$1.01^* 10^{-5}$

Ground Water Quality: -

Ground water in the phreatic aquifers in Godda district slightly alkaline in nature, which is also colourless, odourless. The specific electrical conductance of ground water in phreatic zone during May 2011 was in the range of 655-2408 µS/cm at 25°C. The suitability of ground water for drinking purpose has been evaluated on the basis of pH, Total hardness (T.H), Ca, Cl, F and NO3. The chemical concentration of these constituents, when compared with the drinking water specification recommended by IS:10500,1991 as presented below in table.

Table-3.6 Number of samples exceeding permissible limit in the district

Quality	IS:10500, 1991		No. of samples in the district exceeding permissible limit
	Desirable limit	Permissible limit	
pH	6.5-8.5	No relaxation	0
T.H	300	600	0
Ca	75	200	0
Cl	250	1000	0
F	1.0	1.5	0
NO3	45	100	0

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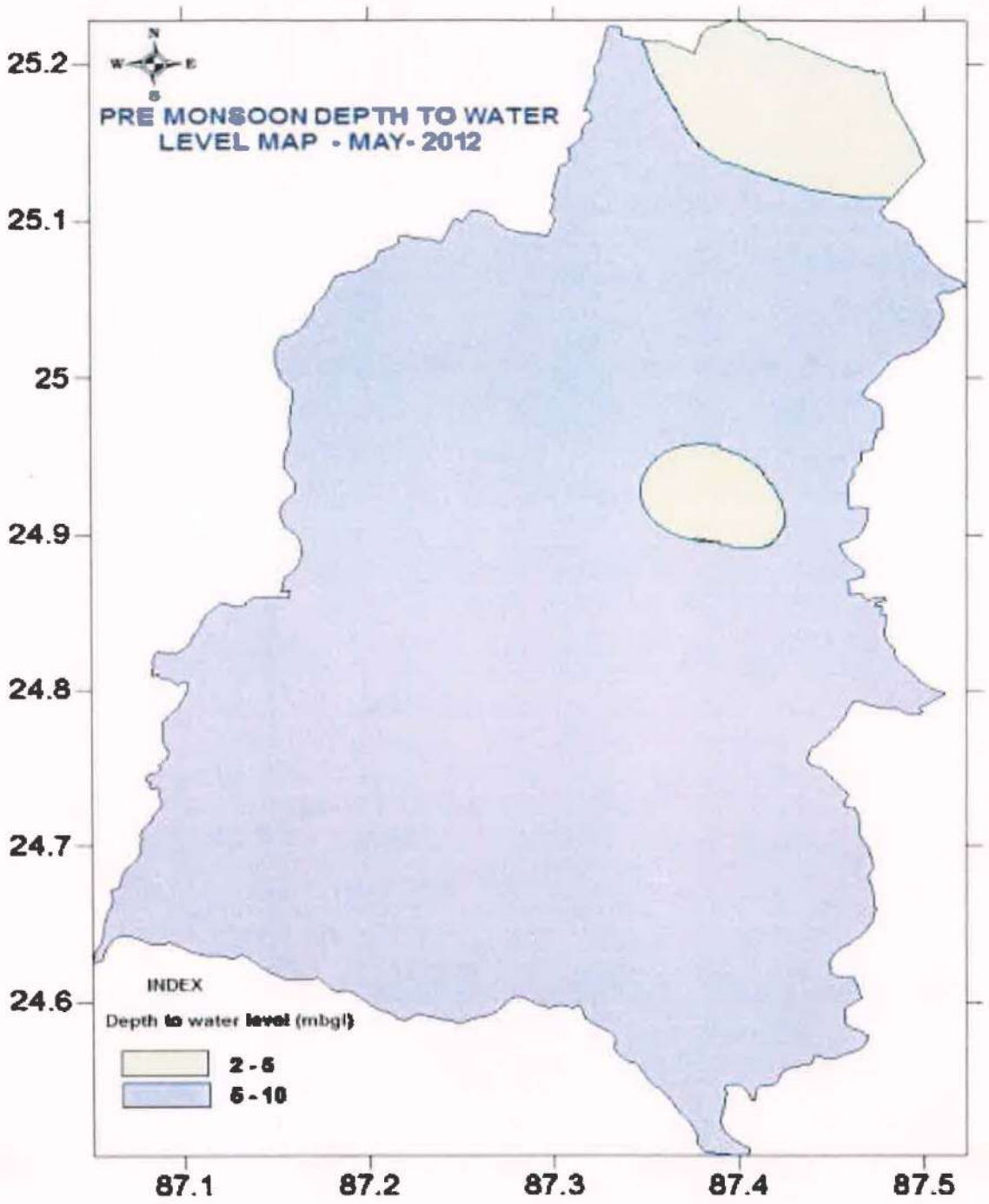

Fig. 3.4: Pre-monsoon Depth of Water Level Map

(Source: Central Ground Water Board)

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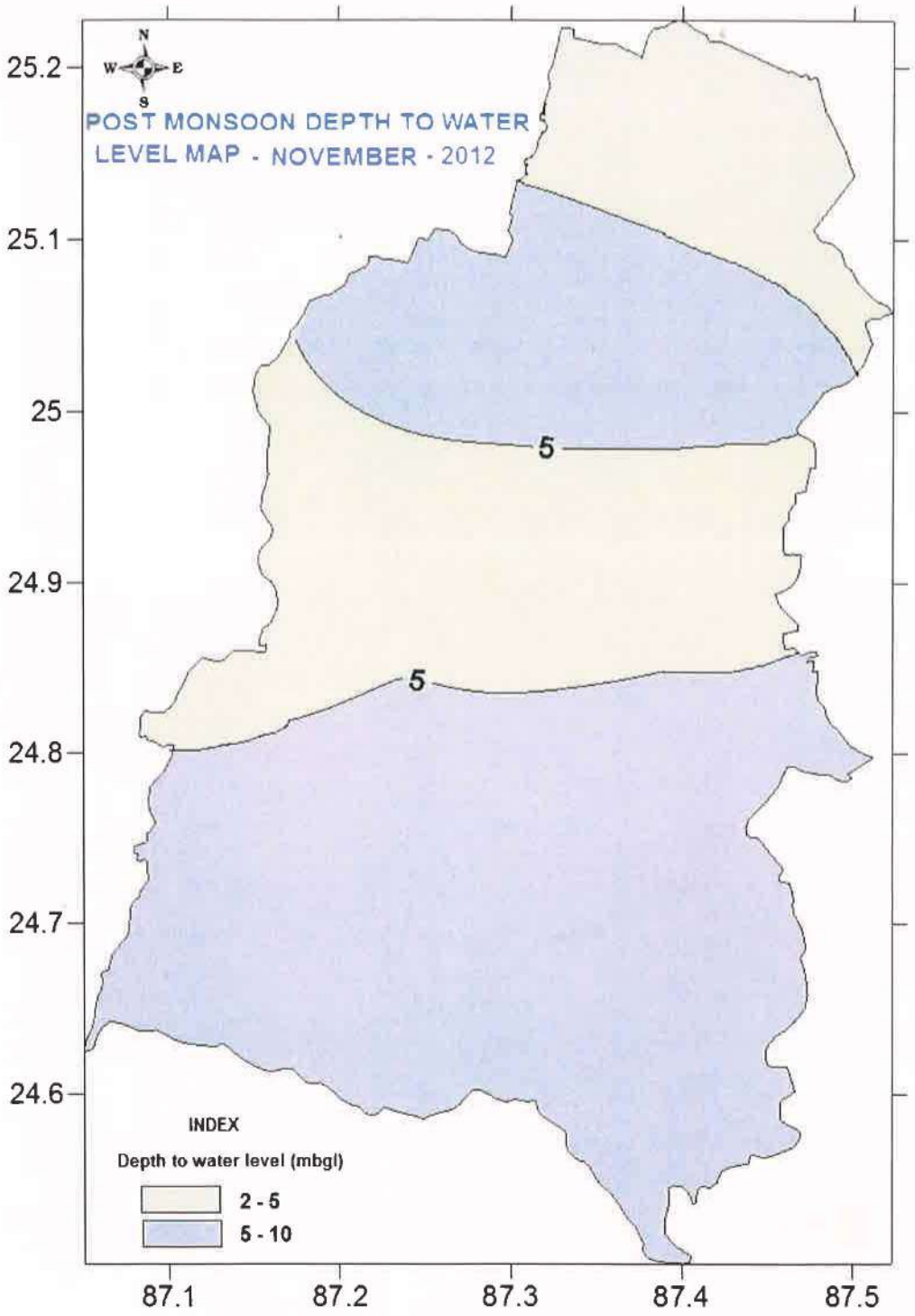

Fig. 3.5: Post-monsoon Depth of Water Level Map

(Source: Central Ground Water Board)

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3.6 Status of Ground Water Development: -

In the rural areas the entire water supply is dependent on ground water. Ground water development is mainly carried out in the district through dug wells and Hand pumps. In general, dug wells are of 2 m diameter and the depth ranges between 8 to 15 m depending on the thickness of the weathered zone, tapping the shallow aquifer in the weathered zone and uppermost slice of the basement. Large number of dug wells used for drinking water is under private ownership for which there is no reliable data. Over the years Mark II/Mark III hand pumps are being drilled in large numbers for ground water development. These hand pumps have the following two major advantages -

i) less susceptible to contamination from surface sources and
ii) tap fractures between 20-60m depth which have been found to be less affected by seasonal water level fluctuation and thus have lesser chances of failure even during extreme summer.

In rural areas of Godda district the number of hand pumps drilled by PHED is 12311 of which 9342 are under working condition. There are 574 dug wells constructed by government departments that are under regular use.

In the urban areas ground water plays a supplementary role in water supply, the major supply being made through dams, reservoirs or weirs across rivers or streams. No authentic data is available on the number of ground water structures catering the urban water supply.

As per the latest ground water resource estimation carried out adopting GEC 97 methodology, the overall stage of ground water development in Godda district has been found to be 38.68.

Ground Water Related Issue and Problems

Some of key ground water related issues are -
a) Locating suitable sites for bore wells.
b) Suitable design of dug wells and hand pumps.
c) Taking up artificial recharge projects to augment the resource availability in Godda district.
d) Optimal development of irrigation potential by developing ground water available for future uses.
e) Creating public awareness for conserving ground water through awareness camps, NGO's and mass media.

Awareness and Training Activity

The Mass Awareness Programme (MAP) By CGWB - Nil

Participation in Exhibition, Mela, Fair etc. - Nil

Area Notified by CGWB – None

Recommendation

As the district suffers from water scarcity, it is recommended to take artificial recharge at suitable locales. On the basis of the hydrogeological criteria such as post monsoon water level below 8 m bgl indicating availability of sufficient space in the unsaturated zone to retain additional water and availability of surplus surface runoff, 313 km² area in Godda district has been demarcated as suitable for artificial recharge. Through this 22.54 cm water can be recharged.

In the hard rock areas, pin pointing suitable sites for bore wells is always a challenge. Considering the anisotropy in distribution of fractures at deeper level, suitable sites may be selected using remote sensing techniques in association with geophysical and hydro-geological investigations. For deriving optimal benefit from aquifers in areas under fissured formation, the dug wells should be designed to penetrate the weathered zone as well as top part (1-2 m) of the underlying bed rock, so as to get the full benefit, from the total thickness of the shallow aquifer. For hand pumps and shallow tube wells the casing provided against the weathered zone should be slotted at the bottom

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so that the well can extract shallow ground water also. In urban areas use of shallow aquifers should be encouraged.

The surface run off in urban areas and its peripheral parts should be harnessed to augment the ground water resource through appropriate recharge techniques. For urban areas roof top rain water harvesting and artificial recharge is most suitable. Location and design of the structures should be guided by findings from hydrogeological and geophysical surveys. Sites for artificial recharge should be taken up at places where sufficient thickness of weathered zone as well as fracture/fracture zones are available. The depth of the recharge well should be governed by the depth of occurrence of the fractures.

3.7 Drainage System:

The principal rivers of the district are Kajhia, Harna, Sunder, Sapin, Kao, Chir and Geura. The general trend of the drainage is from SE-NW. The structural features particularly the foliation and joints exert profound impact upon the drainage and control the drainage pattern of the district. Sand mining is mainly practiced in Godda, Mahagama and Basantarai, Pathargama, Poriyahat blocks of Godda district. Rivers in which sand mining takes place in Godda district are - Bansloi, Burigeria, Chir, Kajhia, Sundargaria rivers.

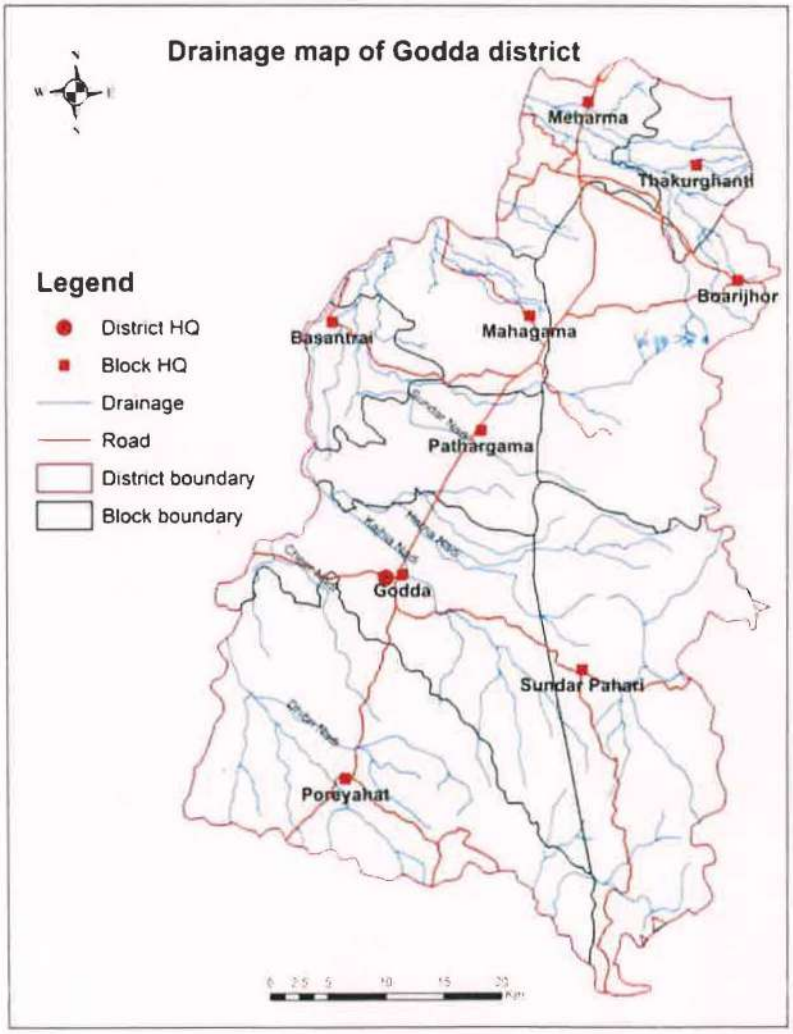

Fig. 3.6 – Drainage Map of Godda District
(Source: Final NAQUIM-Godda District, Jharkhand.pdf)

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3.8 Demography:

In 2011, Godda had population of 1,313,551 of which male and female were 677,927 and 635,624 respectively. In 2001 census, Godda had a population of 1,047,939 of which males were 544,043 and remaining 503,896 were females. Godda District population constituted 3.98 percent of total Maharashtra population. In 2001 census, this figure for Godda District was at 3.89 percent of Maharashtra population. There was change of 25.35 percent in the population compared to population as per 2001. In the previous census of India 2001, Godda District recorded increase of 21.68 percent to its population compared to 1991.

Table 3.7 – Demography details of Godda District

Description	2011	2001
Population	13.14 Lakhs	10.48 Lakhs
Actual Population	1,313,551	1,047,939
Male	677,927	544,043
Female	635,624	503,896
Population Growth	25.35%	21.68%
Area Km²	2,266	2,266
Density/km²	580	497
Proportion to Jharkhand Population	3.98%	3.89%
Sex Ratio (Per 1000)	938	926
Child Sex Ratio (0-6 Age)	960	978
Average Literacy	56.40	43.13
Male Literacy	67.84	57.52
Female Literacy	44.14	27.39
Total Child Population (0-6 Age)	241,784	204,371
Male Population (0-6 Age)	123,368	103,324
Female Population (0-6 Age)	118,416	101,047
Literates	604,519	363,825
Male Literates	376,212	253,504
Female Literates	228,307	110,321
Child Proportion (0-6 Age)	18.41%	19.50%

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Description	2011	2001
Boys Proportion (0-6 Age)	18.20%	18.99%
Girls Proportion (0-6 Age)	18.63%	20.05%

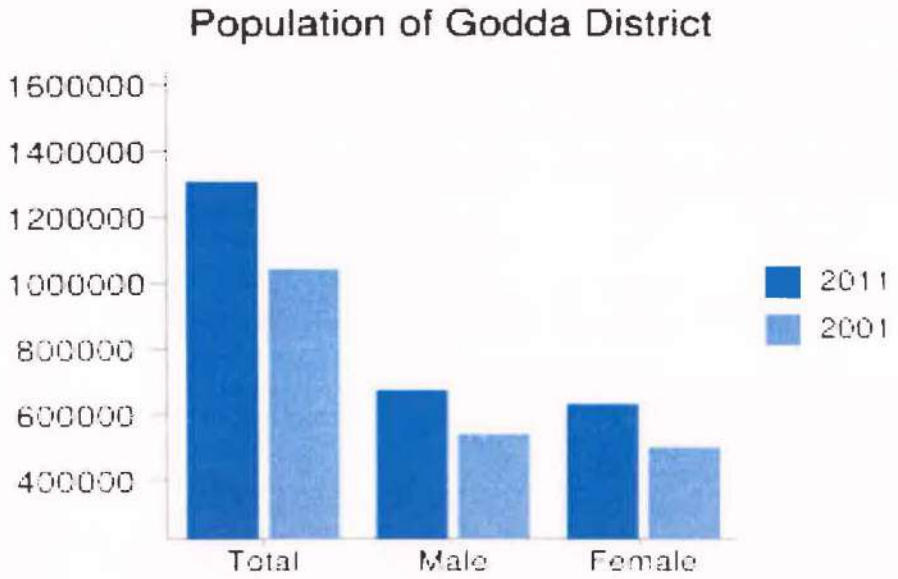

Fig. 3.7: Population Map

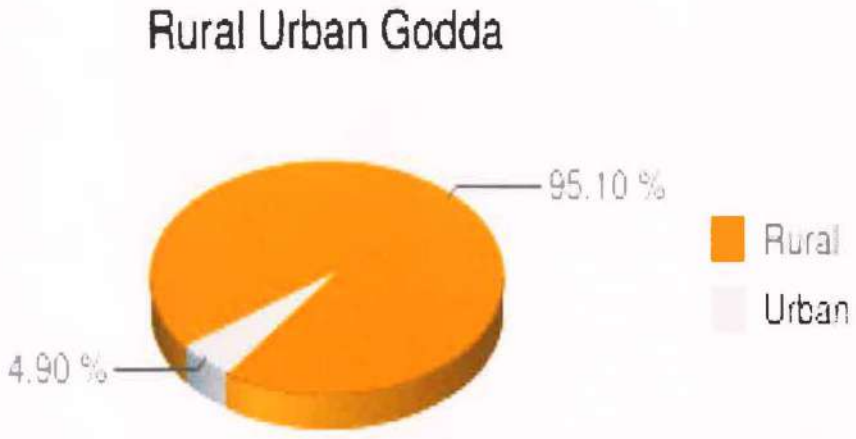

Fig. 3.8: Population Chart

Source - https://www.census2011.co.in/census/district

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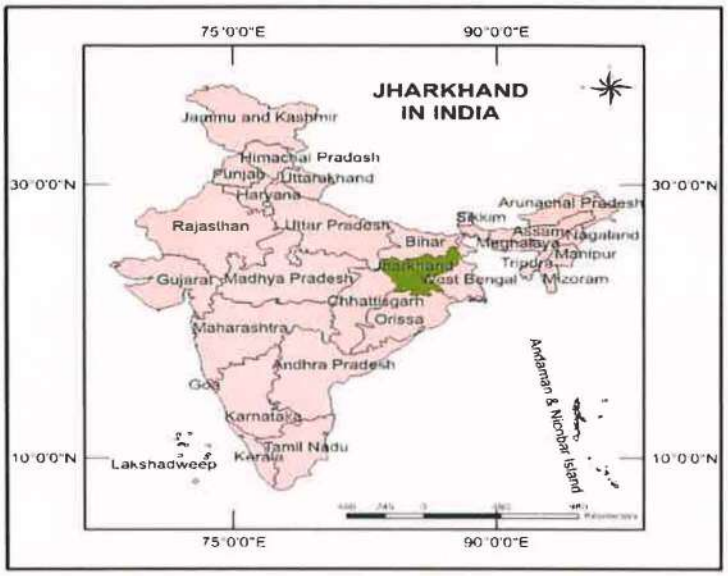
3.9 Connectivity in Godda District:

Godda is well connected with road and rail link. The Godda railway station is situated around 4 km from city center. Humsafar express was the first train depart from the Godda railway station on 8 April 2021. This weekly train will connect Godda to New Delhi via Bhagalpur and Gaya. The national highway NH-133 pass through Godda. Godda is about 297 km by road to Ranchi (Capital of Jharkhand). There is a net-work of good roads in the district. Both the subdivisional headquarters are connected with the district headquarters by black topped all weather roads. No important place in the district is unconnected by a good metalled road. There is road link with Calcutta through Jamtara. The Jamtara Dumka Sahibganj road provides a link with Assam after ferry across the Ganges and is quite busy.



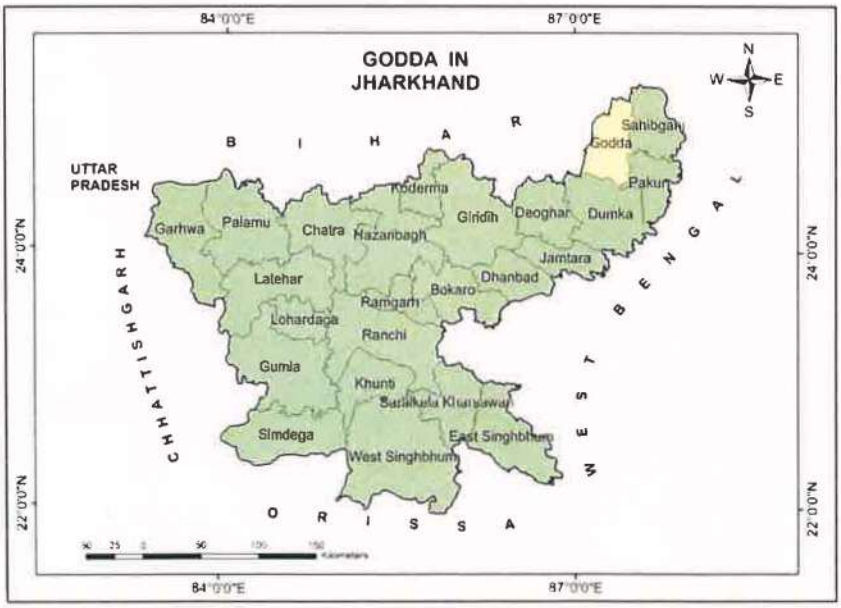


Fig. 3.9: Location Map of Godda District

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3.10 Flora & Fauna:

Flora

The district is abundantly covered with trees in rural as well as urban areas which play an important role in the economy of the district. Trees of the district exhibit a great variety including Mango, date-palm, plum, Jacktree, wood apple, custard apple, black plum, sheesham, sal, bamboo and many more. Besides this, a number of medicinal plants are also found in the district. Many of these medicinal plants have been identified to be useful in the medication of several incurable diseases. Most of the plants are found in the tribal areas of Godda district.

Fauna

A vast variety of fauna is also found in the district. Common fauna includes wild animals like monkey, pig, rabbit, jackal etc. A plethora of birds are also prevalent in the district. Apart from this peacock, leopard, bear are also found. Poisonous species like krait, cobra and scorpions are also common.

(Source - DSR – Stone - 2018)

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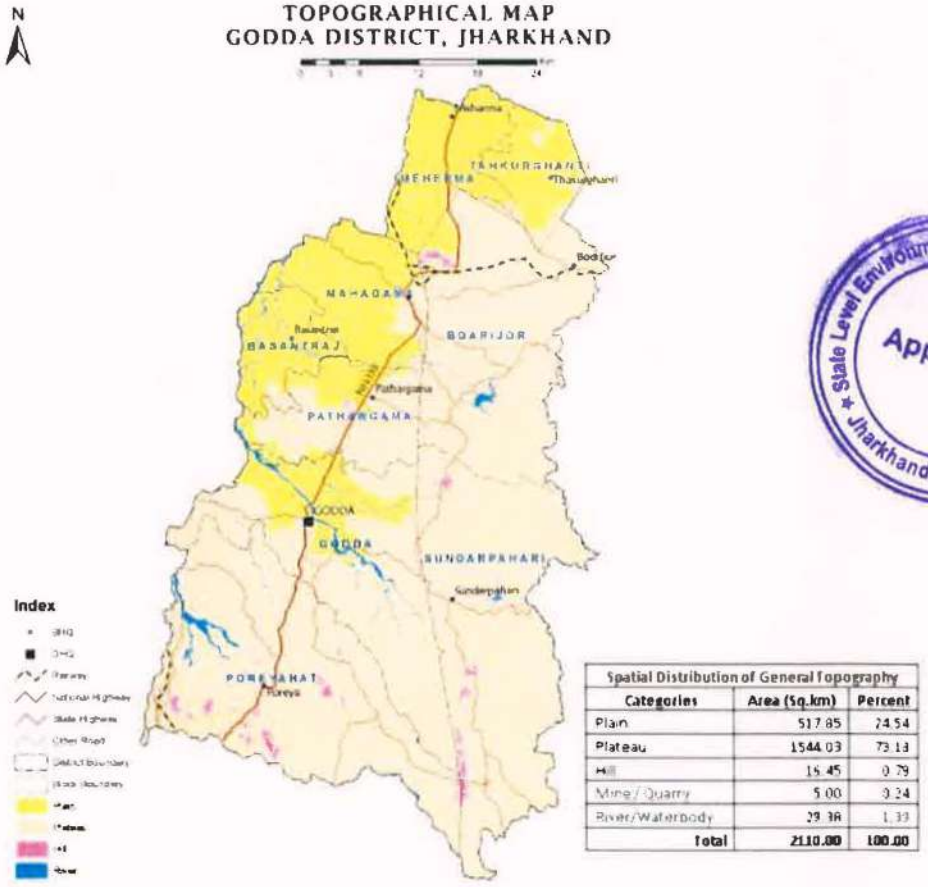
4. PHYSIOGRAPHY OF THE DISTRICT

4.1 General Landforms:

The predominant physical feature over major part of the district is the rolling topography dotted with isolated inselbergs except in the Borijore and Sundarpahari blocks. A substantial part of Borijore and Sundarpahari block is under forest cover. The altitude of the land surface increases from west to the east. The major hills are confined to the eastern part of the district comprising the Gandeshwari Pahar (238.41m) and Kesgari Pahar (268.29m) while in the western part of the district isolated hills are in the form of the inselbergs and other small hillocks. The district consists of the undulating uplands, long ridges and depressions. The isolated high hills like Masanjore are in the adjoining part of Dumka. The western portion of the Rajmahal hills passes through Godda. Geologically, the area has basaltic trap and sedimentary beds.

The principal rivers of the district are Kajhia, Harna, Sunder, Sapin, Kao, Chir and Geura. The general trend of the drainage is from SE-NW. The structural features particularly the foliation and joints exert profound impact upon the drainage and control the drainage pattern of the district. Sand mining is mainly practiced in Godda, Mahagama and Basantarai, Pathargama, Poriyahat blocks of Godda district. Rivers in which sand mining takes place in Godda district are - Bansloi, Burigeria, Chir, Kajhia, Sundargaria rivers.



Spatial Distribution of General Topography		
Categories	Area (Sq.km)	Percent
Plain	517.85	24.54
Plateau	1544.03	73.18
Hill	16.45	0.79
Mine / Quarry	5.00	0.24
River/Waterbody	29.38	1.39
Total	2110.00	100.00

Fig. 4.1: Topographical Map of Godda District

(Source: JSAC, Jharkhand)

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4.2 Soil:

The soil is mostly acidic, reddish yellow, light textured and highly permeable with poor water holding capacity. The soils occurring in different landforms have been characterised during soil resource mapping of the state on 1:250,000 scale (Haldar et al. 1996) and three soil orders namely Entisols, Inceptisols and Alfisols were observed in Godda district. Alfisols were the dominant soils covering 43.1 percent of TGA followed by Inceptisols (39.4 %) and Entisols (15.7 %).
The area is characterized by the following type of soil –

(i) Old Alluvium-Grey-Greyish-Yellow heavy textured cracking Soil.
(ii) Old Alluvium Reddish-Yellow-Yellow-Grey Catenary Soil.
(iii) Old Alluvium–Yellowish-Red-Yellow Soil of foot hill.
(iv) Hill & Forest Soil of steep slopes and highly desected region.
(v) Red-Yellow-light Grey Catenary Soil.
(vi) Yellow–Red, Yellow–Black soil Catenary Soil of Rajmahal.

• Old Alluvium-Grey-Greyish Yellow heavy textured Cracking Soil - These are greyish yellow to grey in colour, medium to heavy in texture, neutral to slightly alkaline in reactions, cracks in drying, very weakly developed profiles.

• Old Alluvium Reddish Yellow-Yellow-Grey Catenary Soil - The well drained soils are strongly to moderately acidic containing ferruginous concretations. The poorly drained low land soils area greish in colour, slightly acidic to slightl alkaline in reaction containing ferruginous concritions in most of the cases showing a tendency to crack during dry months.

• Old Alluvium Yellowish-Red-Yellow Soil of foot hill - These soils resemble the soils of old alluvium reddish yellow, yellow-grey catenary excepting frequent extensive saline and alkali patches. Carbonates are present throughout the soil. Clay minerals found in soil are hydrous mica, kaolinite, chlorites etc.

• Hill & Forest Soil of steep slopes and highly desected region - These are shallow to medium deep over rocks and regoliths, well drain to excessively well drained, very strongly to moderately acidic, light textured gravelly or stony covered with forest of various kind with few cultivated patches.

• Red-Yellow-light Grey Catenary Soil - Slopy and upland soils are well drained generally stongly to moderate acidic shallow to medium deep over rocks and morums. The low land valley soils are poorly drained, neutral to slightly alkaline, fairly deep and most fertile soils.

• Yellow–Red, Yellow–Blacksoil Catenary Soil of Rajmahal - Soils developed on granites are red or yellow coloured depending upon their topographical positions. Soils developed on trap rocks are grey, heavy textured, neutral to lightly alkaline in reaction, sandy loam to loam on top and heavier below, slightly to moderate acidic and medium fertiliyty. Soil map of Godda district is given figure below -

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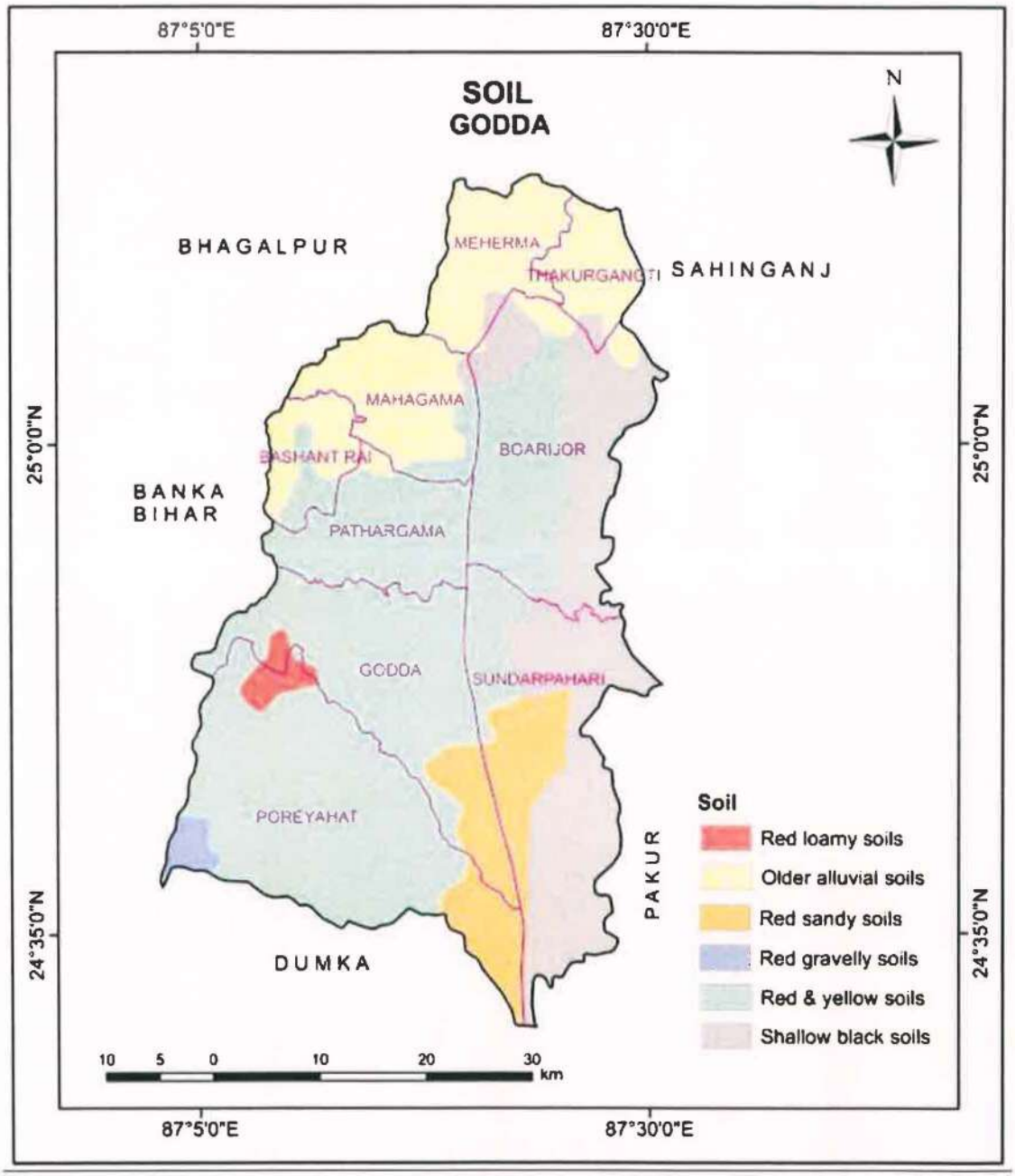

Fig. – 4.2: Soil Map of Godda District

(Source: Final NAQUIM-Godda District, Jharkhand.pdf)

4.3 Geomorphology:

Geomorphologically, (GSI, 2009) the southern part of the district represents the northern most extremities of Chhotanagpur plateau and comprises rolling plains woth isolated hills in the form of tors, inselburgs, small hillocks, ridges and mound. The central part of the area is covered by gently sloping undulatory hills. The northern part is represented by a more or less flat land with gently northerly slope. Brigeria river drains the area along the western margin of the district and is fed by the tributaries like Harna and other streams flowing westerly to north-westerly. Based

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on visual interpretation of Landsat imageries, the various hydrogeomorphic features in the district are: -

i) Alluvial plain: - These are loam to sandy loam deposited over gneissic surface. The streams in this area show structural control. The ground water potential is very good.
ii) Older alluvial plain: - These are characterized by sandy loam at the top with highly oxidized sandy and gravelly horizons at moderate depth.
iii) Burried pediment (Gneissic): - These are gently slopping broad surface of weathered gneiss overlain by alluvium and colluviums of medium texture. Many prominent lineaments are occurring in this area. The ground water condition is good to moderate.
iv) Burried pediment (Volcanic): - This surface is mainly pediment cut out Rajmahal trap rock concealed under a thick pile of alluvium gravelly weathered soil.
v) Pediment (Volcanic): - The underlying lithology is basaltic rocks with thin veneer of fine soil. These are highly fractured.
vi) Pediment (Sedimentary): - These consist of mainly sand stone and shale as underlying rocks. The stratas are gently dipping with local small scale faulting.
vii) Pediment (Gneissic): - Thes are highly fractured region with gneiss and schist as the underlying rocks.
viii) Denudational hills (Volcanic): - Rajmahal traps are the mail rock constituting these hills.
ix) Denudational hills (Gneissic): -These are low hill groups with high rugged topography with gneiss as underlying lithology.
x) Denudational hills (Sedimentary): - These are hills of moderate height made up of horizontal gently dipping sand stone and shales.
xi) Low dissected hills (Gneissic): - The hills of low height mainly composed of gneissic rocks.
xii) Low dissected hills (Sedimentary): - An elevated tract with sand stones and shales as dominant rock types.
xiii) Structural Ridge (Gneissic): - These are long narrow ridges of low height with gneiss as the dominant rock types.

The geomorphological map of Godda district have been presented in Fig. – 4.3

The predominant physical feature over major part of the district is the rolling topography dotted with isolated inselbergs except in the Borijore and Sundarpahari blocks. A substantial part of Borijore and Sundarpahari block is under forest cover. The altitude of the land surface increases from west to the east. The major hills are confined to the eastern part of the district comprising the Gandeshwari Pahar (238.41m) and Kesgari Pahar (268.29m) while in the western part of the district isolated hills are in the form of the inselbergs and other small hillocks. The district consists of the undulating uplands, long ridges and depressions. The isolated high hills like Masanjore are in the adjoining part of Dumka. The western portion of the Rajmahal hills passes through Godda. Geologically, the area has basaltic trap and sedimentary beds.

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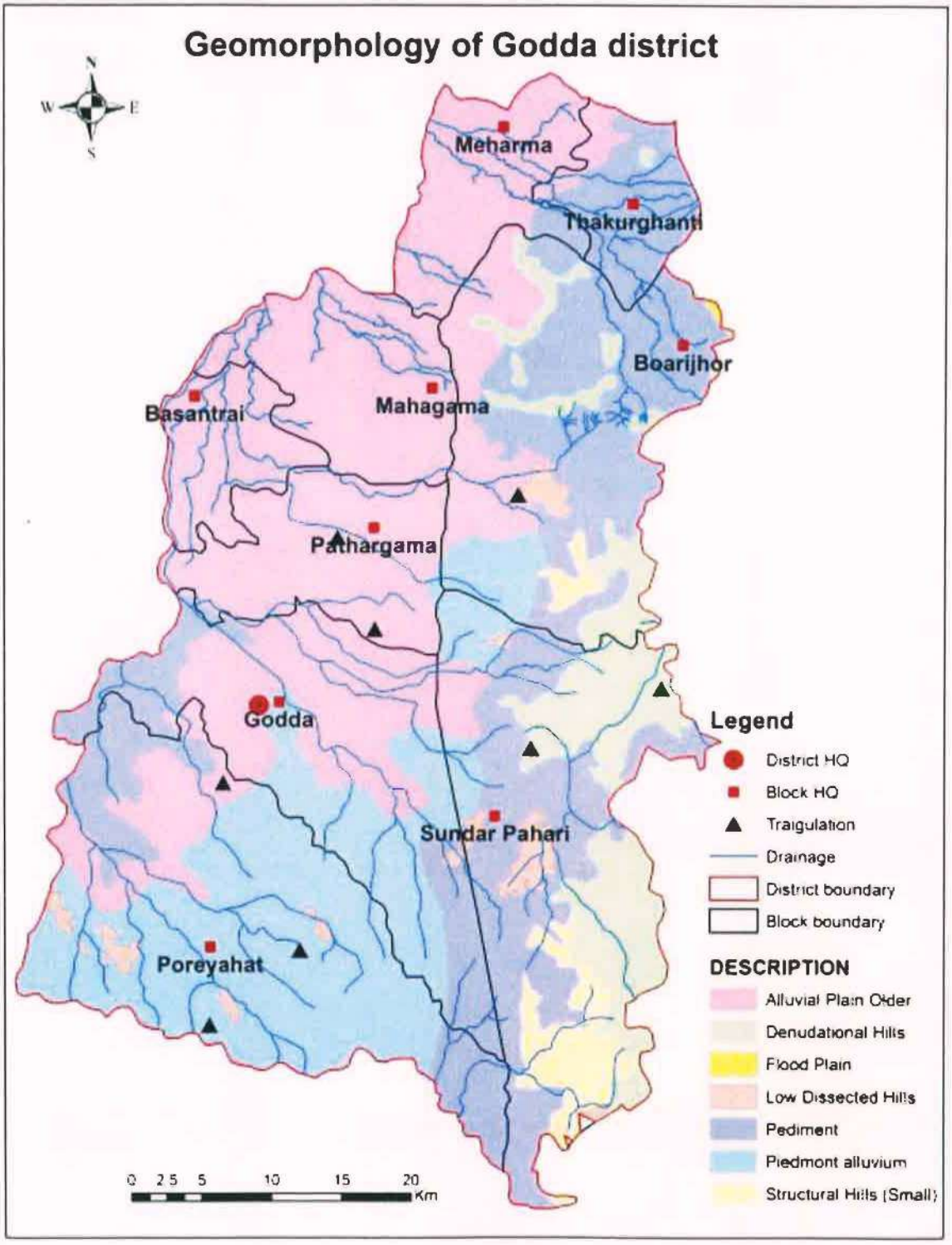

Fig. – 4.3: Geomorphology of Godda District

(Source: Final NAQUIM-Godda District, Jharkhand.pdf)

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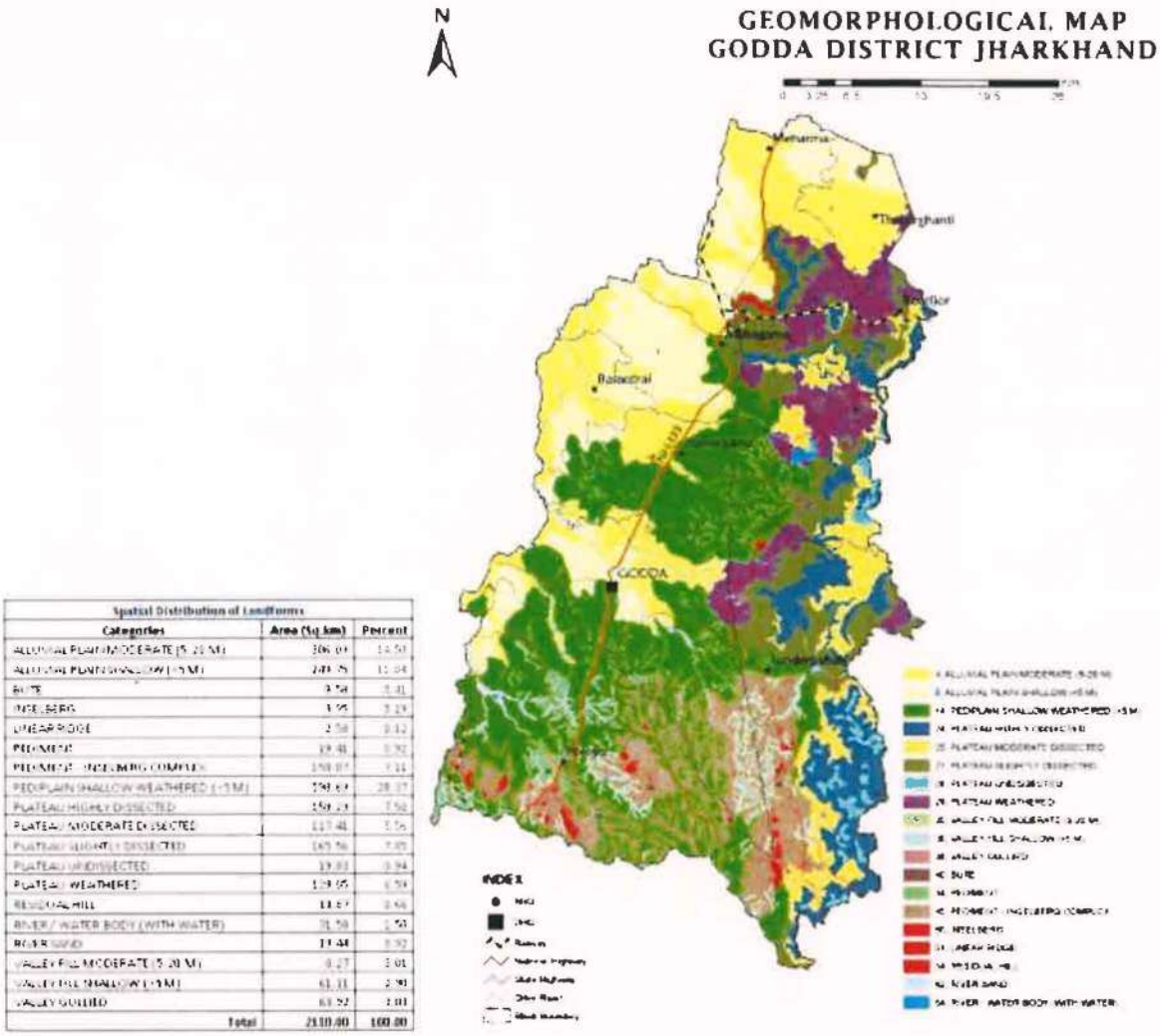

Spatial Distribution of Landforms		
Categories	Area (Sq km)	Percent
ALLUVIAL PLAIN MODERATE (5-20 M)	306.01	14.50
ALLUVIAL PLAIN SHALLOW (<5 M)	249.35	11.84
BUTE	3.58	0.17
INSELBERG	3.95	0.19
LINEAR RIDGE	2.58	0.12
PEDIMENT	19.48	0.92
PEDIMENT - INSELBERG COMPLEX	150.07	7.11
PEDIPLAIN SHALLOW WEATHERED (<5 M)	598.69	28.37
PLATEAU HIGHLY DISSECTED	159.23	7.55
PLATEAU MODERATE DISSECTED	117.48	5.56
PLATEAU SLIGHTLY DISSECTED	165.56	7.85
PLATEAU UNDISSECTED	19.83	0.94
PLATEAU WEATHERED	139.65	6.62
RESIDUAL HILL	11.67	0.55
RIVER / WATER BODY (WITH WATER)	31.58	1.50
RIVER SAND	19.48	0.92
VALLEY FILL MODERATE (5-20 M)	8.27	0.39
VALLEY FILL SHALLOW (<5 M)	63.31	3.00
VALLEY GULLIED	63.52	3.01
Total	2110.00	100.00

Fig. 4.4: Geomorphological Map of Godda District

(Source: JSAC, Jharkhand)

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5. LAND UTILIZATION PATTERN OF THE DISTRICT

Table 5.1: Land Use Pattern of Godda District (Figure in Hectare)

District	Godda
Total Area	211142
Forest Land	23671
Barren & Non-Agriculturable Land	38336
Cultivable Waste Land	9267
Permanent Pastures & other Grassing Land	6256
Land under Miscellaneous Trees	5893
Current Fallow	54644
Fallow Land other than Current Fallow	22201
Net Area Sown	69312

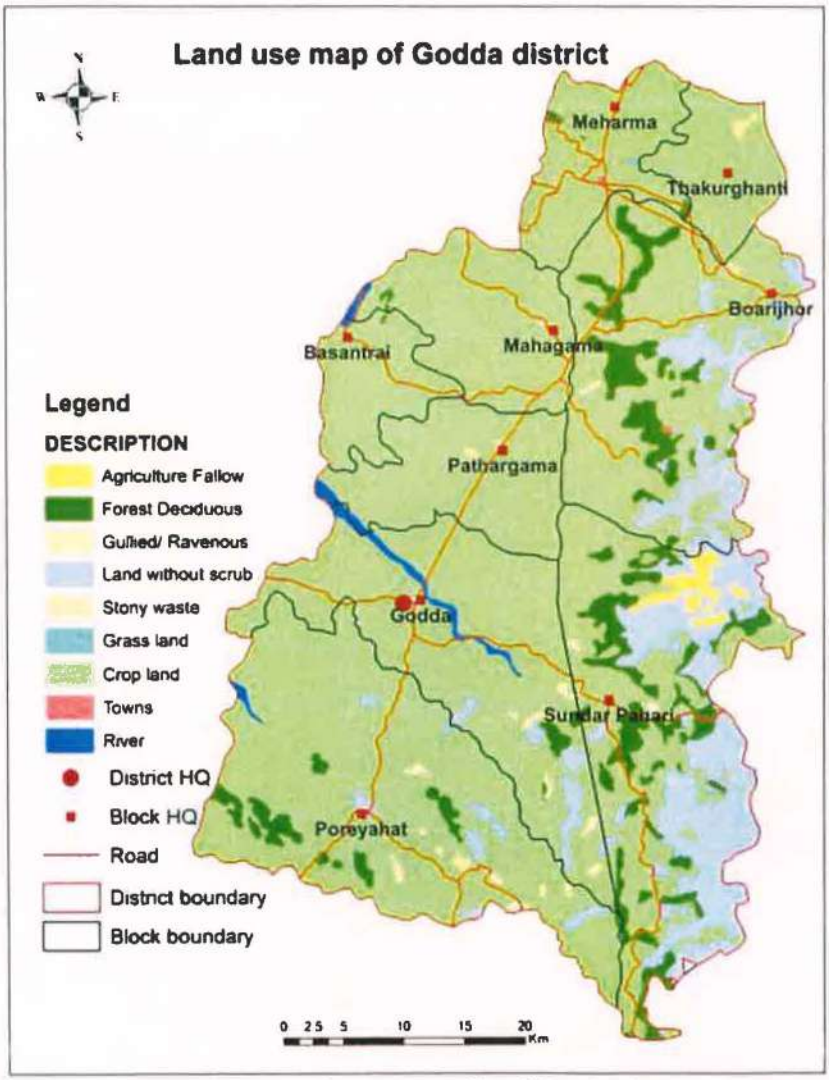

Fig. 5.1: Land Use map of Godda District

(Source: Final NAQUIM-Godda District, Jharkhand.pdf)

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5.1 Forest:

Out of total geographical area of 3651.59 km², forest area covers nearly 2403.04 km². The tribal economy revolves around using forest products, by products and minor products. Kendu leaves, Bamboo and its manufactured products, Mahua, fruits, leaves lac etc. play a role in the economic activity of the people. People also hunt animals for food and 'Jani shikar' festival is related to this hunting habit.

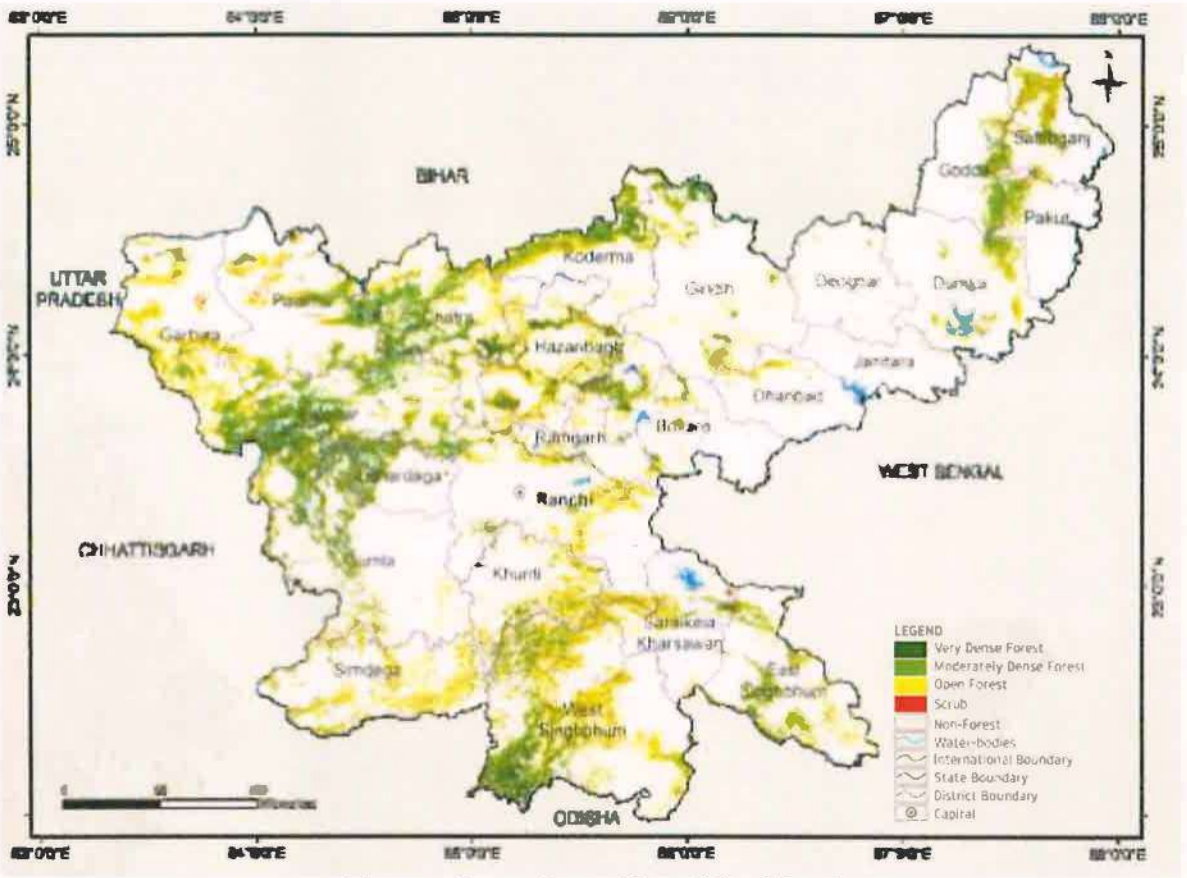

Fig. 5.2: Forest Cover Map of Jharkhand

(Source: India State of Forest Report, 2021)

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Table 5.2: District wise Forest Cover Area in Jharkhand (Area in Km²)

District	Geo-graphical Area (GA)	2021 Assessment				%of GA	Change wrt 2019 assess-ment	Scrub
		Very Dense Forest	Mod. Dense Forest	Open Forest	Total			
Bokaro	2,883	60.99	231.94	283.07	576.00	19.98	2.45	37.95
Chatra	3,718	244.28	871.73	666.08	1,782.09	47.93	4.74	23.57
Deoghar[r]	2,477	0.00	14.30	191.50	205.80	8.31	2.09	14.04
Dhanbad	2,040	0.00	44.00	174.18	218.18	10.70	4.67	16.05
Dumka[r]	3,761	0.00	259.40	318.23	577.63	15.36	0.32	44.55
East Singhbhum[r]	3,562	54.81	591.69	434.19	1,080.69	30.34	1.31	20.91
Garhwa[r]	4,093	125.14	415.60	890.98	1,431.72	34.98	40.13	44.32
Giridih	4,962	77.16	338.56	490.19	905.91	18.26	4.67	28.92
Godda[r]	2,266	12.81	271.88	138.66	423.35	18.68	0.00	14.27
Gumla[r]	5,360	304.69	585.81	552.65	1,443.15	26.92	0.89	8.25
Hazaribagh	3,555	230.11	348.54	784.54	1,363.19	38.35	10.42	15.99
Jamtara[r]	1,811	0.00	20.84	85.18	106.02	5.85	5.38	5.32
Khunti[r]	2,535	72.97	344.59	496.18	913.74	36.04	8.25	3.11
Koderma	2,540	80.80	494.43	447.82	1,023.05	40.28	-0.42	6.37
Latehar[r]	4,291	480.36	1,308.93	613.75	2,403.04	56.00	-3.30	9.30
Lohardaga[r]	1,502	174.03	218.40	111.99	504.42	33.58	-0.20	7.66
Pakur[r]	1,811	2.96	172.40	111.64	287.00	15.85	-0.13	20.06
Palamu[r]	4,393	62.82	512.73	640.18	1,215.73	27.67	14.95	84.23
Ramgarh	1,341	30.96	109.32	190.98	331.26	24.70	2.26	14.49
Ranchi[r]	5,097	62.89	363.91	741.98	1,168.78	22.93	4.29	27.98
Sahibganj[r]	2,063	17.74	258.73	297.48	573.95	27.82	1.60	47.53
Saraikela-Kharsawan[r]	2,657	22.03	213.84	338.73	574.60	21.63	0.56	21.87
Simdega[r]	3,774	21.97	343.54	877.89	1,243.40	32.95	2.48	20.28
West Singhbhum[r]	7,224	461.53	1,353.80	1,553.11	3,368.44	46.63	2.32	47.18
Grand Total	**79,716**	**2,601.05**	**9,688.91**	**11,431.18**	**23,721.14**	**29.76**	**109.73**	**584.20**

(Source: India State of Forest Report 2021 - Jharkhand)

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Godda.

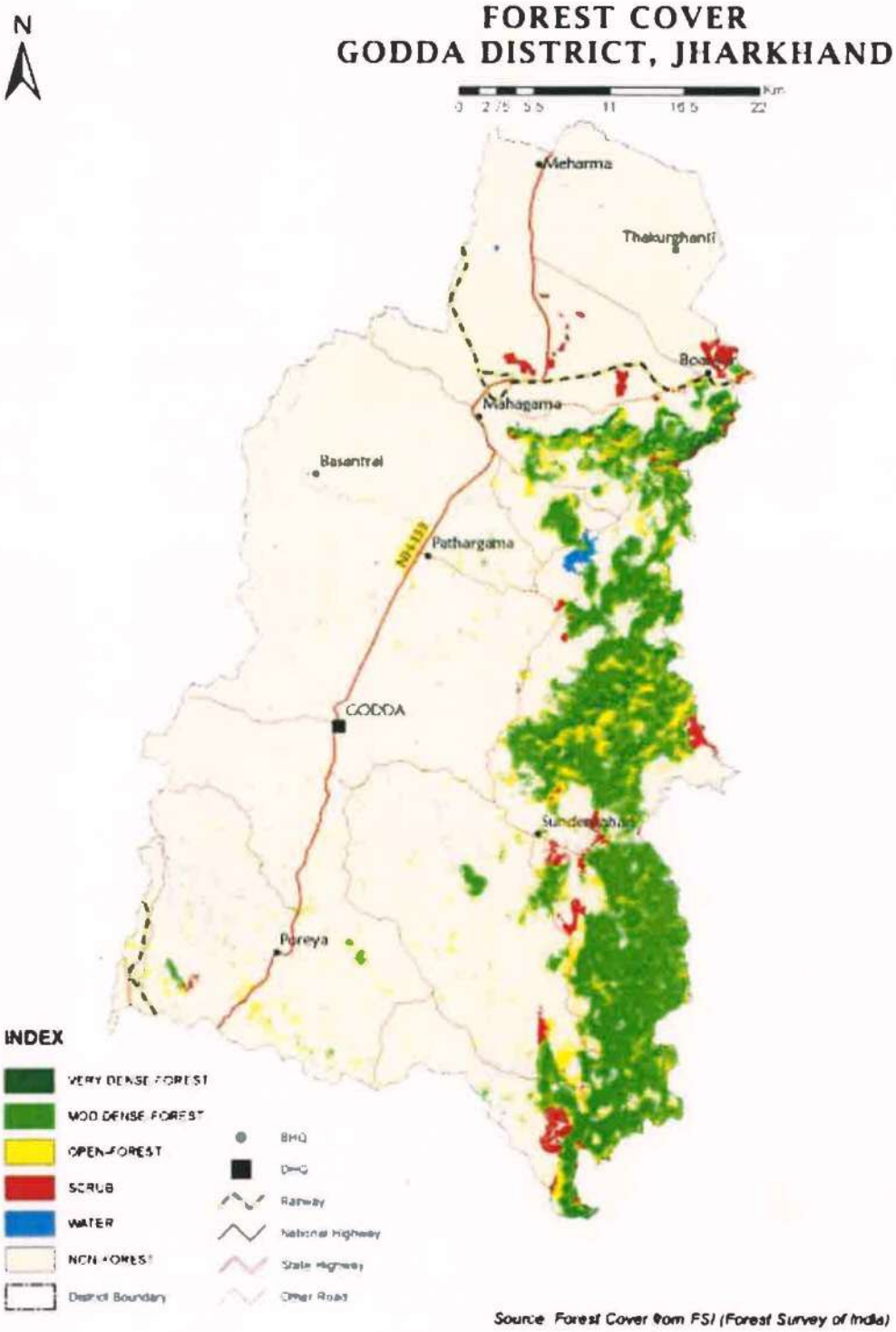

Fig. 5.3: Forest Cover Map of Godda District
(Source: JSAC, Jharkhand)

District Mining Officer,
Godda.

5.2 Agriculture & Irrigation:

The local population of the district mostly depends on agriculture and forestry for their sustenance. The agriculture activity of the area is solely dependent upon the monsoon rainfall. Paddy is the main crop of the district. Wheat, Maize, Gram, Mustard oil Potato are other crops grown widely in Godda and its adjoining areas. Irrigational facilities are not adequate in this district. The most common source is the dug well, but this is not a very dependable source of irrigation. The major part of the district being rocky in nature, it is difficult to dig wells. The undulating nature of land makes it possible to store rain water by bunding. Apart from being dependent upon rains, these are by no means adequate. The result is that failure of rains invariably involves failure of crops except in small pockets. Minor irrigation structures like surface water, tanks and ponds are the other source for irrigation. Available source wise irrigation for the 2012-13 is given in Table 5.3 -

Block	Surface water			Ground water			Other sources
	Canal	Tank	LI	DTW	STW	DW	
Basantrai	0	67	0	226	0	19	0
Boarijor	0	172	17	695	0	1	72
Godda	0	177	1	1201	0	0	20
Mahagama	0	80	20	411	0	0	19
Meherma	0	65	20	382	6	0	28
Pathargama	0	104	0	498	0	24	14
Poreyahat	0	234	0	1556	8	4	23
Sunderpahari	0	163	16	518	7	0	42
Thakurghanti	0	42	5	563	16	0	12
Total	**0**	**1104**	**79**	**6050**	**37**	**48**	**230**

Cropping Pattern

The major crops cultivated in the area are paddy, wheat, maize, gram, oil seeds, pulses and vegetable. But the land available for cultivation is very limited because of the hilly and rugged topography. Area under different crops for the year 2015–16 of the district is presented in Table 5.4 –

(Area in hectare)

Block	Major Crops					
	Paddy	Wheat	Gram	Maize	Mustard	Potato
Godda	30200	1992	1097	2540	1465	81
Pathergama		1926	1239	1621	1591	32
Mahagama		2946	1166	883	1493	12
Meherma		1593	872	596	1174	81
Thakurganti		1385	839	608	1113	101
Boarijore		569	680	1224	1206	4
Sunderpahari		156	522	1212	1032	18
Poraiyahat		956	769	2157	915	243
Total	**30200**	**13515**	**8281**	**13381**	**11454**	**572**

(Source: Final NAQUIM-Godda District, Jharkhand.pdf)

District Mining Officer,
Godda.

Table 5.5: Irrigation details of Godda District

IRRIGATION BY DIFFERENT SOURCES	Number of Structures	Area (Ha.)
(Areas in Ha. and Number of Structures) (MIP Census-2000-2001)	Structures	
Dugwell	17015	9364
Tubewell/Borewell	184	537
Tank/ponds	100	587
Canals	2	2
Other sources	69.50	Bhaurna Bandh, Triveni Weir Scheme and Dania Weir Scheme

(Source – CGWB Report, Godda)

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6. GEOLOGY & MINERAL WEALTH

6.1 Geology:

The southern part of the district is underlain by Granite-gneiss of Archaean age forming the basement. These occur as large batholiths and are intruded by basic rocks. In the central and northern part of the district, the rocks of Barakar formation consisting of feldspathic sandstones, shales and coal seams overlying the metamorphics are exposed. In the western and northern part of the district alluvial cover of moderate thickness, caps the Archaean crystallines and the Gondwana sedimentaries.

The district is underlain by diverse geological formations with complex tectonic framework. The geological formations have been grouped under three main categories -

a) The gneissic complex in the southern and the central part.
b) The Rajmahal traps in the eastern and south eastern part.
c) Gondwanas overlain by thin mantle of alluvial cover in the northern and central part.

Gelogically, the study area represents highly deformed Archaean gneisses called Chhotanagpur granite gneissic complex, older meta-sedimentaries, pegmatites, metabasics etc. The pre-cambrian formations are uncomformably overlain by lower lower gondawanas comprising Talchirs & Barakar formation. Barakar sandstone and shale contains coal seams found in major coal belt of the area. The upper Gondwana are represented by Dubrajpur formation. Rajmahal traps and intertrappeans overlie the Dubrajpur formation and in places overstep onto Barakar formation and Precambrian basement. Tertiary Laterites occur as capping in some of the parts, while Quaternary sediments represented by Sautadih, Belhar and Diara formation consisting of older and newer alluvium are found in considerable part of the area.

Stratigraphic Succession:

The general Stratigraphic succession found in Godda district as per GSI, 2009 are as follows: -

Lithology	Formation		Age
Sand/Silt/Clay mixture	Diara Formation		Late Holocene to Present
	Belhar formation		Middle to Late Holocene
	Sautadih formation/Jamui Formation		Middle Pleistocene to early Holocene
----------EROSIONAL SURFACE----------			
Laterites and Lateritic Soil			Cainozoic
----------EROSIONAL SURFACE----------			
Dolerite			
Basalt with Intertrappeans	Rajmahal Trap		Jurrassic to Cretaceous
----------UNCONFORMITY----------			
Sandstone and Shale	Dubrajpur Formation	Gondwana Super Group	Triassic to Jurassic
Siltstone, Sandstone and Conglomerate with Coal seams	Barakar Formation		Permian
Shale, Sandstone and Conglomerate	Talchir Formation		Carboniferous to Permian

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----------UNCONFORMITY----------		
Intrusive Granite		Proterozoic
----------UNCONFORMITY----------		
Unclassified Metabasics and metasedimentaries	Metamorphics of Chhotanagpur mica belt	Lower to Middle Proterozoic
Unclassified Granite-Gneiss with enclaves of metamorphic, Augen Gneiss and Migmatites, Porphyritic Granite Gneiss, Granite-Biotite Gneiss	Chhotanagpur Gneissic Complex	Archaean to Proterozoic
Quartzite and Quartz Schist	Unclassified Metamorphics	Archaean to Proterozoic
Khondalite/Garnet/Sillimanite biotite garnet gneiss, Acid to Basic Granulite/Charnockite	Eastern Ghat Super Group	

Geological formation

The Lithological units identified can broadly be divided into: - Precambrian Formation, Gondwana super Group, Rajmahal traps and Quaternary Formations.

Precambrian Formation

The study area comprises of highly deformed and metamorphosed Precambrian terrain. This group consists of -

(a) Eastern Ghat Super Group & Chhotanagpur gneissic complex
(b) Intrusive granites
(c) Metabasics
(d) Pegmatites/Quartz vein

a) Eastern Ghat Super Group & Chhotanagpur gneissic complex

The Oldest rocks of the area are represented by Charnockites, Granite-gneiss, Khondalite, Quartzite, granites and migmatites belonging to Eastern Ghat Super Group and Chhotanagpur Gneissic Complex of Archaean age.

Chhotanagpur Granite-Gneiss represents the extensive plateau region to the south and central part of the study area. These rocks comprise broadly granite-gneiss, porphyritic gneiss, augen gneiss, charnokitic gneiss, migmatites etc. The varieties of one of the most important rock types granite gneisses include biotite granite gneiss, hornblende granite gneiss etc. These are generally medium to coarse grained with prominent gneissic banding and foliation. The presence of foliation in granite gneiss is due to presence flaky minerals like biotite and sillimanite. A considerable area has been occupied by porphyritic gneiss. It has been found in the form of augen gneiss in some of the area, where as in some parts its intrusive relationship with granite gneiss is observed.

b) Intrusive granites

The Precambrian rocks exhibit several phases of intrusive granites. The non-foliated, pink coloured coarse grained granites occur as Intrusives in all rock types except dolerites.

c) Metabasics

The metabasics include meta dolerite and metagabbro. The syntectonic basic rocks are represented by meta-dolerite and meta-gabbro shows mostly conformable relationship with the enclosing rocks.

District Mining Officer,
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d) Pegmatites/Quartz vein

All the rocks types described above have been intruded by numerous veins of pegmatites of various dimensions with quartz vein and is found to occur through out the area. These are generally of crusted nature.

Gondwana Super Group

The Gondwana super group rocks are confined to the area occupied by the Rajmahal hills and its adjoining areas. Gravity study of Rajmahal hills show that Gondwana super group sediments were deposited over a rifted and highly faulted sheared margin (Choudhary 1975, Mukhopadhyay 1986). They unconformably overlie the Precambrian formations. In the study area, Gondwana super group rocks with ages ranging from Carboniferous to Triassic is represented by Talchir formation comprising Shale, Sandstone and Conglomerate; Barakar formation consisting of Siltstone, Sandstone and Conglomerate with number of coal seams and Dubrajpur formations containing Sandstone and Shale. Common plant fossils occurring in Barakar Shales include Gangamopteris Cyclopteris, Glossopteris indical and Vertebraria indica.

Rajmahal Traps

Tha Rajmahal hills extend with a north-south trend for more than 120 kms through the districts of Santhal Parganas (including Godda district) in Jharkhand and Birbhum in West Bengal (GSI, 1989). It consists of long flat topped hills attaining a maximum altitude of about 600 m. The basaltic lava flows of the Rajmahal Trap of middle Jurassic to lower cretaceous age occupy the major part of the district. The basaltic lava flows are associated with sedimentary intertrappeans beds. Amgdales of the flows are made up of calcite and chalcedony. The basaltic rocks are hard and fine to medium grained. It has been found that there are more than 8 nos. of basaltic flows area exposed (GSI, 1985) with individual thickness ranging from 10-80m.

Laterites

Laterites, occurring as capping on Rajmahal Trap, show well developed profile at many places which are represented by brown latosol, pisolitic laterite, bauxite, aluminous laterites, goethics and mottled lithonmergic clays.

Quarternary formations

The quaternary sediments identified in the study area have been classified (Sinha and Verma, GSI 1995 and GSI, 2009) into three distinct morphographic units Viz. Sautadin/Jamui formation, Belhar formation and Diara formation. Sautadih/Jamui Formation and Belhar Formation are represented by light grey to buff sticky silty Clay and is mainly composed of Silt, Clay and fine Sand characterized by occasional caliches and ferruginous concretions. The Diara formation is represented by fine Sand and Silt. A marked erosional unconformity lies between them. Its thickness increases from south to north. Major sediments have been derived from the Precambrian rocks as revealed by the composition of the quaternary formations. The maximum thickness of alluvium may be in the range of 80-90 m.

Structural Features

The studies show that the Precambrian rocks of the area have undergone several period of tectonic disturbances (Shekhar, 1999). The earlier phase appears to be folding and metamorphism on a regional scale. The high metamorphism resulted in the formation of Khondalites, Charnokites, Granulites and rocks of migmatites etc. In the study area, Gondwana beds usually rest on the Precambrian basement with a pronounced unconformity. Only certain segments, Gondwana formation are faulted against the metamorphics. Regionally contact with Precambrian basement is aligned in NNW-SSE direction. The north-south trending Rajmahal coal belt is characterized by a major fault. The faults are possibly of pre-Rajmahal in age as they do not effect the volcanics. The prominent igneous structure noted in Rajmahal volcanics are flow, volcanic cone, fissured vent, plug, dyke, primary lineament of vesicales. Mudcracks, solemarks etc. have also been

District Mining Officer,
Godda

encountered in the intertrappean mudstone, shale in some of the section of Rajmahal series.

6.2 Overview of Mineral Resources:

Minerals such as Sand, Stone, Coal etc. are found in the district. The deposition of Dolerite is mainly noticed in southern part of Poreyahat block. Some part of Poreyahat block, mostly in central region also has the deposition of Quartzite and Quartz schist. Pathargama, Godda and Poreyahat block is mostly covered with Laterite and Lateritic soil. Sand mining is mainly practiced in Godda, Mahagama and Basantarai, Pathargama, Poriyahat blocks of Godda district. Rivers in which sand mining takes place in Godda district are - Bansloi, Burigeria, Chir, Kajhia, Sundargaria rivers.

Fig. 6.1: Mineral Map of Godda District
(Source: JSAC, Deptt. of Mines & Geology, Govt. of Jharkhand)

District Mining Officer,
Godda.

7. OVERVIEW OF MINING ACTIVITY IN THE DISTRICT

7.1 List of Mining Lease in the District with location, area and period of validity:

Table 7.1 - List of Sand Ghats in the Godda District: -

Sl. No.	River/Sand Ghat	Panchayat	Area (Hectare)	Mouza	Remarks
1	Nil	Nil	Nil	Nil	Nil

District Mining Officer
Godda

8. DETAILS OF ROYALTY OR REVENUE RECEIVED IN LAST THREE YEARS

8.1 For Sand or Bajri:

Sl. No.	Financial Year	Royalty/Revenue Received (in Rupees)
1	2019-20	34500.22 Lakhs
2	2020-21	25285.37 Lakhs
3	2021-22	11096.09 Lakhs

जिला खनन कार्यालय, गोड्डा।

पत्रांक : ४३१ /एम०

पत्रांक :

जिला खनन पदाधिकारी
गोड्डा।

सेवा में,

सहायक निदेशक, भूतत्व
जिला भूतात्विक कार्यालय, दुमका।

गोड्डा दिनांक : २९ अगस्त, 2022

विषय : श्रेणी 2 बालूघाटों के संचालन के संबंध में।

महोदय,

उपर्युक्त विषयक आपके पत्रांक 150, दिनांक 05.08.2022 के साथ संलग्न प्रपत्रों के सूचक में अंकित सूचियों को निराकरण पूर्व में कर लिया गया है वित्तीय वर्ष 2019-20 से 2021-22 में वहत एवं लघु खनिजों से प्राप्त राजस्व के साथ साथ रुकत अवधि में वहत एवं लघु खनिज के उत्पादन-प्रेषण का ब्यौरा निम्न प्रकार है-

1. Details of Royalty or Revenue received in last three years

Sl. No	Financial Year	Royalty or Revenue Received
1	2019-20	₹ 34,500.22 Lakhs
2	2020-21	₹ 25,585.37 Lakhs
3	2021-22	₹ 11,096.09 Lakhs

2. Details of Production of Sand or Bajari or minor mineral in last three years

Sl. No	Financial Year	Production of Sand or Bajari
1	2019-20	Nil
2	2020-21	Nil
3	2021-22	Nil

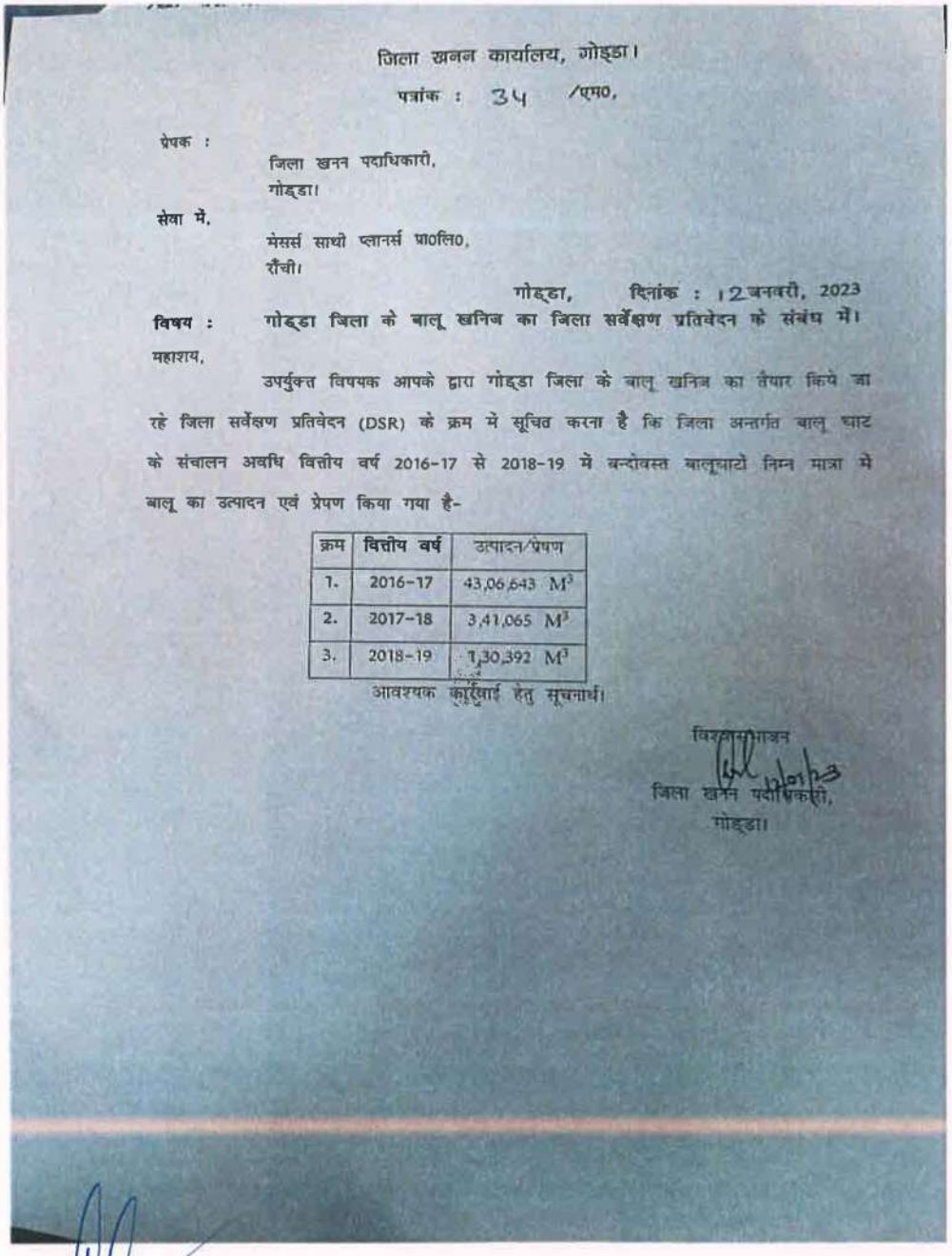
सूचनार्थ।

जिला खनन पदाधिकारी
गोड्डा

District Mining Officer,
Godda

9. DETAILS OF PRODUCTION OF SAND OR BAJRI OR MINOR MINERAL IN LAST THREE YEARS

Sl. No.	Financial Year	Production (in m^3)
1	2016-17	4306643
2	2017-18	341065
3	2018-19	130392



जिला खनन कार्यालय, गोड्डा।

पत्रांक : 34 /एम0,

प्रेषक :

जिला खनन पदाधिकारी,
गोड्डा।

सेवा में,

मेसर्स साथी प्लानर्स प्रा0लि0,
राँची।

गोड्डा, दिनांक : 12 जनवरी, 2023

विषय : गोड्डा जिला के बालू खनिज का जिला सर्वेक्षण प्रतिवेदन के संबंध में।

महाशय,

उपर्युक्त विषयक आपके द्वारा गोड्डा जिला के बालू खनिज का तैयार किये जा रहे जिला सर्वेक्षण प्रतिवेदन (DSR) के क्रम में सूचित करना है कि जिला अन्तर्गत बालू घाट के संचालन अवधि वित्तीय वर्ष 2016-17 से 2018-19 में बन्दोवस्त बालूघाटो निम्न मात्रा मे बालू का उत्पादन एवं प्रेषण किया गया है-

क्रम	वित्तीय वर्ष	उत्पादन/प्रेषण
1.	2016-17	43,06,643 M^3
2.	2017-18	3,41,065 M^3
3.	2018-19	1,30,392 M^3

आवश्यक कार्रवाई हेतु सूचनार्थ।

विश्वासभाजन

जिला खनन पदाधिकारी,
गोड्डा।

District Mining Officer,
Godda.

10. DEMAND & SUPPLY OF THE MINERAL IN THE DISTRICT

The demand for sand is ever growing with the growth of the infrastructure sector in our country. The mineral is used mainly in the construction activities like buildings, bridges etc. The requirement for the mineral is always high in the cities and towns. Therefore, there is always a good demand of the mineral in the domestic market.

A study by the Indian Institute of Technology-Bombay (IIT-B) has estimated that the annual demand for sand in urban India is 60 million metric tonnes. To put the amount in perspective, the national demand for sand stands at an average of 1kg per person per day in urban India, according to IIT-B.

From construction to cosmetics, society uses sand in unexpected ways, and quite literally, is built on it. India's sand demands pose a difficult market to target. The unbridled demand for sand leaves India devastated by extensive and unsustainable mining practices and promotes illegal operations in other districts and countries. Expected shortages of sand only spike the need for illegal mining activities. Although no official data shares the amount of sand mined illegally, the amount sufficiently thwarts state and district-level bodies attempts to reduce unlawful mining operations. Most countries, including India, regulate sand mining through environmental and national regulation, entrusting States to enforce laws and regulation. India is a union of States; there is a demarcation of power between Union and State legislatures. The Mines and Minerals Act 1957 and the Mines Act 1952 are the major national statutes steering India's mining sector. These acts provide power to State legislatures to frame legal outlines for the mining of Minor minerals like that of Sand.

(Source: https://www.hidustantimes.com)

Since, the production of sand achieved in last three financial years in Godda district is about 1600000 m^3. Although demand of sand becomes three times more with respect to supply within district. Therefore, 16 nos. of potential Sand Ghats have been identified and incorporated in this DSR which could meet the requirement and reduce the demand-supply gap of sand in future.

Considering the production of Sand in the year 2016 to 2019, average requirement is approximately 15,92,700 m^3 and since last five-year, production was zero. Thus, the district may compel high demand of Sand.

District Mining Officer,
Godda.

11. PROCESS OF DEPOSITION OF SEDIMENTS IN THE RIVERS OF THE DISTRICT

11.1 Classifying Rivers - Three Stages of River Development:

These categories are: Youthful, Mature and Old age. A Rejuvenated River, one with a gradient that is raised by the earth's movement, can be an old age river that returns to a Youthful State, and which repeats the cycle of stages once again.

Characteristics found in the 3 Stages of River Development:

YOUTHFUL RIVER:

Perhaps the most dynamic of all rivers is a *Youthful River*. Characteristically youthful rivers are found at higher elevations, in mountainous areas, where the slope of the land is steeper. Water that flows over such a landscape will flow very fast. Youthful rivers can be a tributary of a larger and older river, hundreds of miles away and, in fact, they may be close to the headwaters (the beginning) of that larger river.

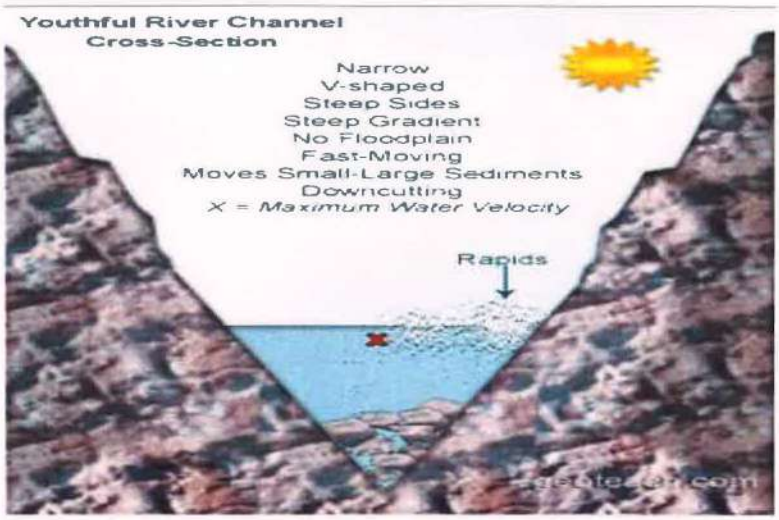


Fig. 11.1: Cross-section of Youthful River Channel

MATURE RIVER:

The Mature River is an in-between stage. The river still down cuts though to a much lesser degree than the Youthful River does but it also erodes laterally, though not as extensively, when compared to the Old Age River. The landscape over which it passes is steep enough that the river's slope enables a velocity capable of moving not only the finer sediments, but also the larger pebbles and cobbles by way of rolling, bouncing and saltation along the river bed. The area through which the river flows may be mountainous but they will not be as high as the Young River's locale. A "hilly" landscape would be a better description for the surrounding area. Rapids are absent and so is the V-shaped channel. The channel of a Mature River is U-shaped but deeper than and not as wide as the Old Age river's channel.

District Mining Officer,
Godda

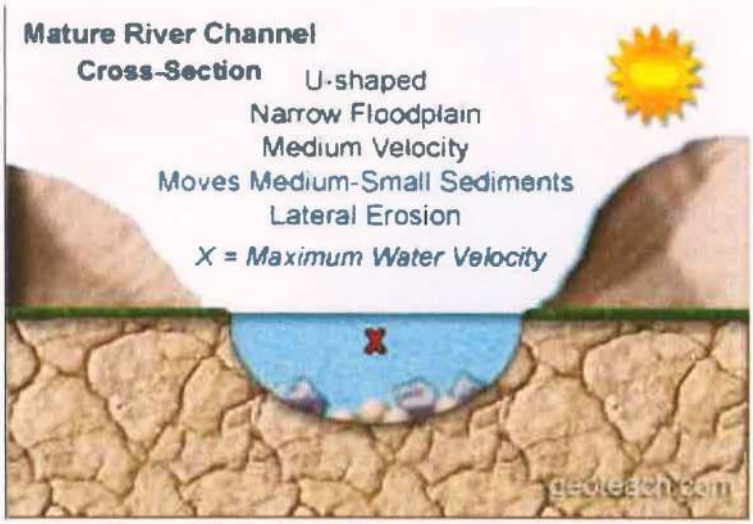


Fig. 11.2: Cross-section of Mature River Channel

OLD AGE RIVER:

Old rivers flow slowest and their rate of erosion is encounter acted by the degree of sediment they deposit. Their course is no longer straight and widened floodplains are a common characteristic. An old river rests in an almost flat valley as a result of the many years of erosion that have taken place.

Fig. 11.3: Cross-section of Old Age River Channel

11.2 Stream Erosion and Deposition:

Flowing water is a very important mechanism for both erosion and deposition. Water flow in a stream is primarily related to the stream's gradient, but it is also controlled by the geometry of the stream channel. Water flow velocity is decreased by friction along the stream bed, so it is slowest at the bottom and edges and fastest near the surface and in the middle. In fact, the velocity just below the surface is typically a little higher than right at the surface because of friction between the water and the air. On a curved section of a stream, flow is fastest on the outside and slowest on the inside.

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Godda.

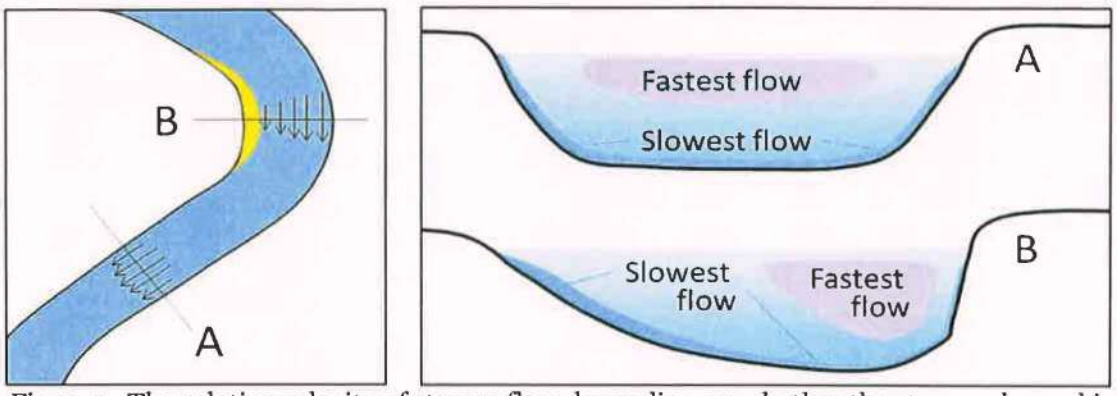

Fig 11.4 - The relative velocity of stream flow depending on whether the stream channel is straight or curved (left) and with respect to the water depth (right)

Other factors that affect stream-water velocity are the size of sediments on the stream bed — because large particles tend to slow the flow more than small ones and the discharge or volume of water passing a point in a unit of time (e.g., m^3/second). During a flood, the water level always rises, so there is more cross-sectional area for the water to flow in; however, as long as a river remains confined to its channel, the velocity of the water flow also increases.

Figure 10.5 shows the nature of sediment transportation in a stream. Large particles rest on the bottom. Bed-load may only be moved during rapid flows under flood conditions. They can be moved by saltation (bouncing) and by traction (being pushed along by the force of the flow).

Smaller particles may rest on the bottom some of the time, where they can be moved by saltation and traction, but they can also be held in suspension in the flowing water, especially at higher velocities. As you know from intuition and from experience, streams that flow fast tend to be turbulent (flow paths are chaotic and the water surface appears rough) and the water may be muddy, while those that flow more slowly tend to have laminar flow (straight-line flow and a smooth water surface) and clear water. Turbulent flow is more effective than laminar flow at keeping sediments in suspension.

Stream water also has a dissolved load, which represents (on average) about 15% of the mass of material transported, and includes ions such as calcium (Ca+2) and chloride (Cl-) in solution. The solubility of these ions is not affected by flow velocity.

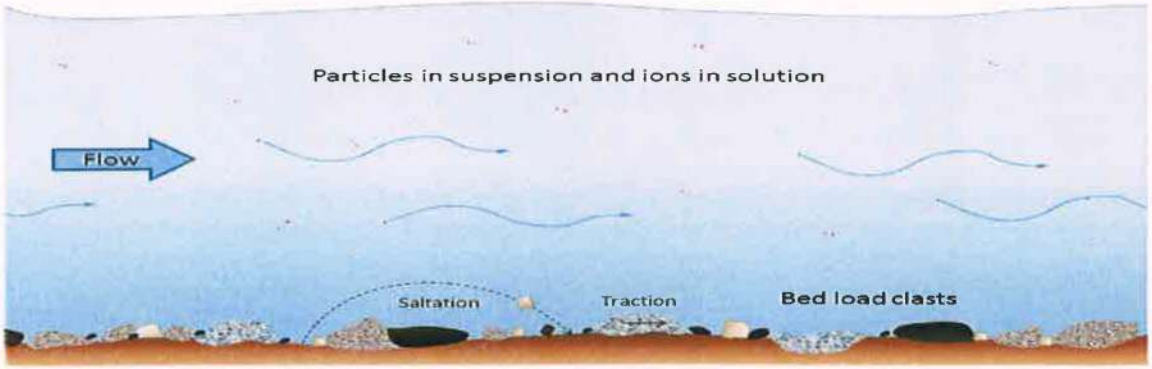

Figure 11.5: Modes of transportation of sediments and dissolved ions (represented by red dots with + and – signs) in a stream. [SE]

The faster the water is flowing, the larger the particles that can be kept in suspension and transported within the flowing water. However, as Swedish geographer Filip Hjulström discovered in the 1940s, the relationship between grain size and the likelihood of a grain being eroded, transported, or deposited is not as simple as one might imagine. Consider, for example, a 1 mm grain of sand. If it is resting on the bottom, it will remain there until the velocity is high enough to erode it, around 20 cm/s. But once it is in suspension, that same 1 mm particle will

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remain in suspension as long as the velocity doesn't drop below 10 cm/s. For a 10 mm gravel grain, the velocity is 105 cm/s to be eroded from the bed but only 80 cm/s to remain in suspension.

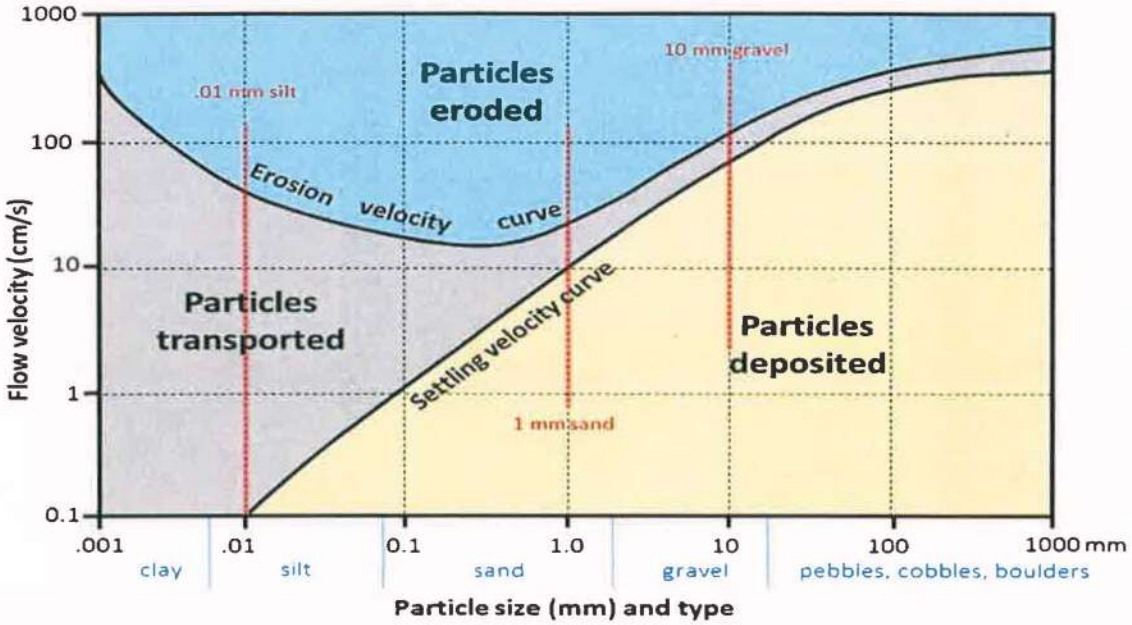

Figure 11.6: The Hjulström-Sundborg diagram showing the relationships between particle size and the tendency to be eroded, transported, or deposited at different current velocities

On the other hand, a 0.01 mm silt particle only needs a velocity of 0.1 cm/s to remain in suspension, but requires 60 cm/s to be eroded. In other words, a tiny silt grain requires a greater velocity to be eroded than a grain of sand that is 100 times larger! For clay-sized particles, the discrepancy is even greater. In a stream, the most easily eroded particles are small sand grains between 0.2 mm. and 0.5 mm. Anything smaller or larger requires a higher water velocity to be eroded and entrained in the flow. The main reason for this is that small particles, and especially the tiny grains of clay, have a strong tendency to stick together, and so are difficult to erode from the stream bed.

It is important to be aware that a stream can both erode and deposit sediments at the same time. At 100 cm/s, for example, silt, sand, and medium gravel will be eroded from the stream bed and transported in suspension, coarse gravel will be held in suspension, pebbles will be both transported and deposited, and cobbles and boulders will remain stationary on the stream bed.

A stream typically reaches its greatest velocity when it is close to flooding over its banks. This is known as the bank-full stage. As soon as the flooding stream overtops its banks and occupies the wide area of its flood plain, the water has a much larger area to flow through and the velocity drops significantly. At this point, sediment that was being carried by the high-velocity water is deposited near the edge of the channel, forming a natural bank or **levée.**

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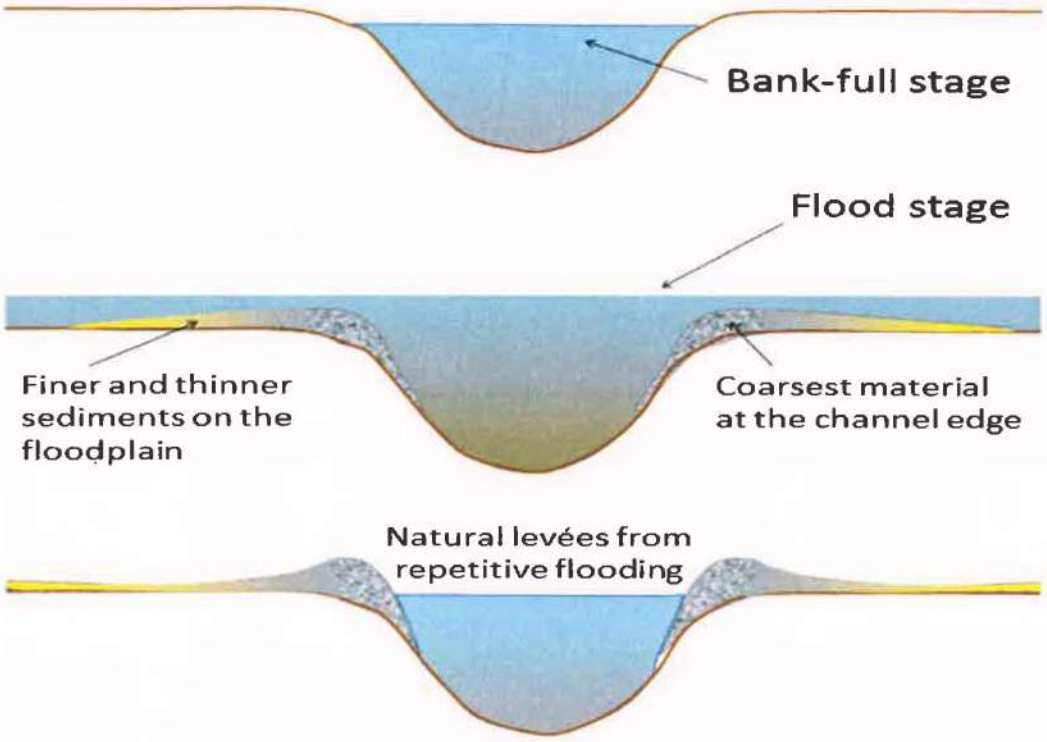

Figure 11.7: The development of natural levées during flooding of a stream. The sediments of the levée become increasingly fine away from the stream channel, and even finer sediments — clay, silt, and fine sand are deposited across most of the flood plain [SE].

11.3 Flood Plain:

Flood-plain is an area of land adjacent to a stream or river which stretches from the banks of its channel to the base of the enclosing valley walls, and which experiences flooding during periods of high discharge. The soils usually consist of clays, silts, and sands deposited during floods.

Flood plains are formed when a meander erodes sideways as it travels downstream. When a river breaks its banks, it leaves behind layers of alluvium (silt). These gradually build up to create the floor of the plain. Floodplains generally contain unconsolidated sediments, often extending below the bed of the stream. These are accumulations of sand, gravel, loam, silt, and/or clay, and are often important aquifers, the water drawn from them being pre-filtered compared to the water in the river.

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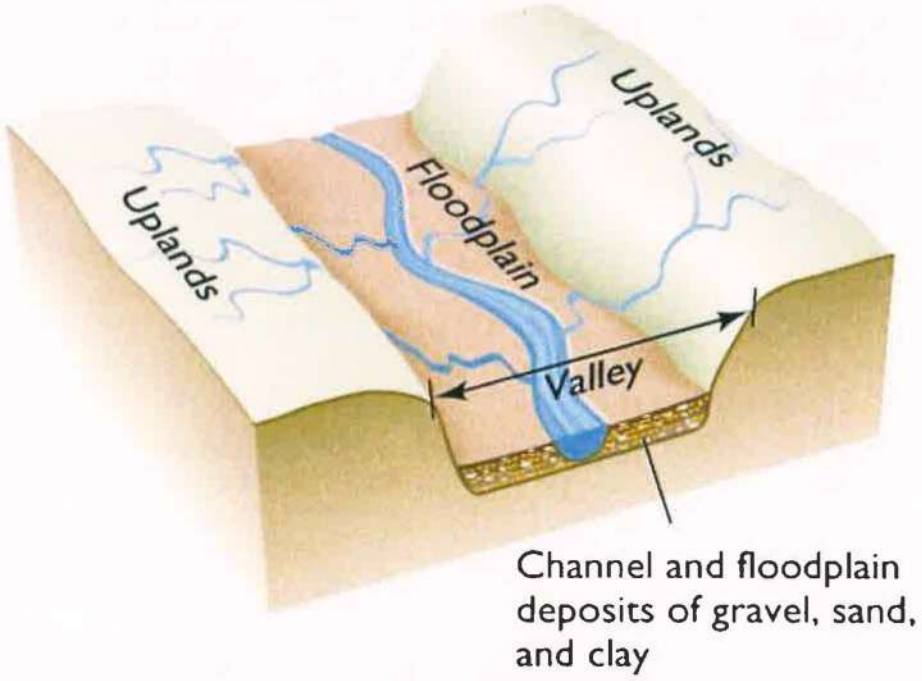

Figure 11.8: Flood Plain

11.4 Replenishment of Sand:

The deposition in a river bed is more pronounced during rainy season although the quantum of deposition varies from stream to stream depending upon numbers of factors such as catchment, lithology, discharge, river profile and geomorphology of the river course where annual deposition is one meters, but it is noticed that during flood season whole of the pit so excavated is completely filled up and as such the excavated area is replenished with new harvest of minerals.

In order to calculate the mineral deposits in the stream beds, the mineral constituents have been categorized as clay, silt, sand, bajri and boulder. However, during present calculation, the waste material i.e. silt which vary from 10 to 20% in different streams has also been included in the total production. Further the Survey of India Topo-Sheets are used as base map to know the extent of river course. The mineral reserves have been calculated only up to 1.00-meter depth although there are some portions in the river beds such as channel bars, point bars and central islands where the annual deposition is raising the level of river bed thus causing shifting of the rivers towards banks resulting in to cutting of banks and at such locations, removal of this material up to the bed level is essential to control the river flow in its central part to check the bank cutting. While calculating the mineral potentials, the mineral deposits lying in the sub- tributaries of that particular stream/river has not been taken into consideration. Since these mineral deposits are adding annually.

11.5 Surface Runoff:

Also known as overland flow is the flow that occurs when excess storm water, melt water, or other sources flows over the Earth's surface. This might occur because soil is saturated to full capacity, because rain arrives more quickly than soil can absorb it, or because impervious areas (roofs and pavement) send their runoff to surrounding soil that cannot absorb all of it. Surface runoff is a major component of the water cycle. It is the primary agent in soil erosion by water.

Runoff that occurs on the ground surface before reaching a channel is also called a nonpoint source. If a nonpoint source contains man-made contaminants, or natural forms of pollution (such as rotting leaves) the runoff is called nonpoint source pollution. A land area which produces

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runoff that drains to a common point is called a drainage basin. When runoff flows along the ground, it can pick up soil contaminants including petroleum, pesticides, or fertilizers that become discharge or nonpoint source pollution.

In addition to causing water erosion and pollution, surface runoff in urban areas is a primary cause of urban flooding which can result in property damage, damp and mold in basements, and street flooding.

- **Effects of Surface Runoff:**

Erosion and deposition

Surface runoff can cause erosion of the Earth's surface; eroded material may be deposited a considerable distance away.

There are four main types of soil erosion by water:

- Splash Erosion,
- Sheet Erosion,
- Rill Erosion,
- Gully Erosion.

Splash erosion is the result of mechanical collision of raindrops with the soil surface: soil particles which are dislodged by the impact then move with the surface runoff.

Sheet erosion is the overland transport of sediment by runoff without a well-defined channel.

Soil surface roughness causes may cause runoff to become concentrated into narrower flow paths: as these incise, the small but well-defined channels which are formed are known as **rills.** These channels can be as small as one-centimeter-wide or as large as several meters.

If runoff continue to incise and enlarge rills, they may eventually grow to become **gullies.**

Figure 10.9: Soil erosion by water on intensively-tilled farmland.

Gully erosion can transport large amounts of eroded material in a small time period. Reduced crop productivity usually results from erosion, and these effects are studied in the field of soil conservation. The soil particles carried in runoff vary in size from about .001 millimetre to 1.0 millimetre in diameter. Larger particles settle over short transport distances, whereas small particles can be carried over long distances suspended in the water column.

There are many sediment transport equations which are suitable for use in the prediction of the replenishment rate of rivers/ watershed. Some of the Famous sediment transport equations are:

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1. Dandy–Bolton Equation
2. Yang Equations
3. Engelund-Hansen Equation
4. Modified Universal Soil Loss Equation (MUSLE)

- **Dandy-Bolton Equation:**

Dandy-Bolton formula is often used to calculate the sedimentation yield. But use of these equations to predict sediment yield for a specific location would be unwise because of the wide variability caused by local factors not considered in the equations development. However, they may provide a quick, rough approximation of mean sediment yields on a regional basis for preliminary watershed planning. They include climate, drainage area, soils, geology, topography, vegetation and land use. Studies revealed that sediment yield per unit area generally decreases as drainage area increases. As drainage area increases, average land slopes usually decrease; and there is less probability of an intense rainstorm over the entire basin. Both phenomena tend to decrease sediment yield per unit area. In arid regions, sparse precipitation and low run-off are the limiting factors. As precipitation increases, density of vegetation also increases, resulting in less erosion. In areas with adequate and evenly distributed precipitation, vegetation thus becomes the limiting factor. The accuracy of the sedimentation surveys varied, ranging from reconnaissance type measurements of sediment deposits to detailed surveys consisting of closely spaced cross-sections or contours. Runoff data are translated to inches per year per unit area and sediment deposition data to tons per year per square mile of net drainage area. Net drainage area is defined as the sediment-contributing area and normally excluded areas above upstream reservoirs or other structures that were effective sediment traps. Actual sediment yields undoubtedly were slightly higher because most reservoirs do not trap inflowing sediment.

Sediment Yield vs. Drainage Area: - On the average, sediment yield is inversely proportional to the 0.16 power of drainage area between 1 and 30,000 miles^2.

Sediment Yield vs. Runoff: - Sediment yield increased sharply to about 1,860 tons per mile^2 per year as run-off increased from 0 to about 2 inches. As runoff increased from 2 to about 50 inches, sediment yield decreased exponentially. Because sediment yield must approach zero as runoff approaches zero, a curve through the plotted points must begin at the origin. The abrupt change in slope of a curve through the data points at Q equals 2 inches precluded the development of a continuous function that would adequately define this relationship. Thus, there are two equations derived for when Q was less than 2 inches and when Q was greater than 2 inches.

- **Combined Effect of Drainage area and Surface Run off on Sediment Yield**

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

Where: S = Sediment yield (tons/miles^2/yr.)
Q = Mean Annual runoff (inch)
A = Net drainage are in mile^2

For run off less than 2 inches.

(Q<2in) S=1289*(Q) 0.46*[1.43-0.26 Log (A)] F

For runoff more than 2 inches.

(Q>2in): S=1958*(e-0.055*Q) *[1.43-0.26Log (A)]

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- **Universal Soil Loss Equation:**

Sediment loss from water erosion
Modelling sediment loss

MUSLE is a modification of the Universal Soil Loss Equation (USLE). USLE is an estimate of sheet and rill soil movement down a uniform slope using rain- fall energy as the erosive force acting on the soil (Wischmeier and Smith 1978), Depending on soil characteristics (texture, structure, organic matter, and permeability), some soils erode easily while others are inherently more resistant to the erosive action of rain- fall.
MUSLE is similar to USLE except for the energy component. USLE depends strictly upon rainfall as the source of erosive energy. MUSLE uses storm-based runoff volumes and runoff peak flows to simulate erosion and sediment yield (Williams 1995). The use of runoff variables rather than rainfall erosivity as the driving force enables MUSLE to estimate sediment yields for individual storm events. The water erosion model uses an equation of the form:

$$Y = X \times EK \times CVF \times PE \times SL \times ROKF$$

where:

Y	=	sediment yield in tons per hectare
EK	=	soil erodibility factor
CVF	=	crop management factor that captures the relative effectiveness of soil and crop management systems in preventing soil loss
PE	=	erosion control practice factor (including management practices such as terraces, contour farming, and strip cropping)
SL	=	slope length and steepness factor
ROKF	=	coarse fragment factor

For estimating MUSLE, the energy factor, X, is represented by

$$X = 1.586 \times (Q \times q)^{0.56} \times WSA^{0.12}$$

where:

Q	=	runoff volume in millimeters
qp	=	peak runoff rate in millimeters per hour WSA = watershed area in hectares

Runoff volume is estimated using the SCS curve number method. Peak flow was estimated using a modification of the rational method which relates rainfall to peak flow on a proportional basis. The rational equation is:

$$Q = C \times i \times A$$

where:

q = peak flow rate
C = runoff coefficient representing watershed characteristics
i = rainfall intensity for the watershed's time of concentration
A = watershed area

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12. ADDITIONAL INFORMATION

12.1 Drainage system with description of main River:

Sl. No.	Name of the River	Area Drained (km²)	% Area Drained in the District
1	Gerua Nadi	4.9	0.23
2	Khanji Nadi	3.9	0.18
3	Chir Nadi	2.44	0.11
4	Bansloi	1.62	0.07

12.2 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 (in m)
1	Gerua Nadi	24.5	Tangajhar	64
2	Khanji Nadi	19.5	Banka Ghat	109
3	Chir Nadi	25.7	Mohani	110
4	Bansloi	20.3	Ambadiha	166

12.3 Replenishment Study of Sand Deposit Zones (Category 2):

REPLENISHMENT OF SAND ASSESSED BY "AFTER THE MONSOON" SURVEY (THIRD) CARRIED OUT DURING NOVEMBER 2022									
Pre-Monsoon (January to March 2022)				Post-Monsoon (October to December 2022)					
Sl. No.	Sand Bar Code	Surface RL	Surface Area	Surface RL	Thickness Replenished	Volume Replenished	Depth of Sand Deposit	Volume of Sand Deposit	Rate of Replenishment
		in m	in m²	in m	in m	in m³	in m	in m³	in %
1	GO_Z2_GE_1	-9.54	19700.04	-8.84	0.7	13790	1.0	19700	70.0
2	GO_Z3_GE_2	-2.19	9261.30	-1.39	0.8	7409	1.0	9261	80.0
3	GO_Z5_CHI_3	-0.32	35183.74	-0.12	0.2	7037	0.5	17592	40.0
4	GO_Z5_CHI_4	1.22	30340.51	2.32	1.1	33375	2.0	60681	55.0
5	GO_Z9_KAJ_5	25.96	27131.41	26.06	0.1	2713	0.5	13566	20.0
6	GO_Z10_KAJ_6	37.61	18239.67	37.91	0.3	5472	0.8	14592	37.5
7	GO_Z12_SAK_7	54.41	55115.09	54.71	0.3	16535	1.2	66138	25.0
8	GO_Z13_SAK_8	58.08	25921.45	58.58	1.2	31106	1.7	44066	70.6
9	GO_Z14_RIB_9	43.98	112943.26	44.28	0.3	33883	0.8	90355	37.5
10	GO_Z15_CHI_10	6.31	23932.43	6.71	0.4	9573	0.8	19146	50.0
11	GO_Z16_CHI_11	7.87	21040.74	8.37	0.5	10520	0.8	16833	62.5
12	GO_Z17_CHI_12	58.52	35461.76	59.62	1.1	39008	2.0	70924	55.0
13	GO_Z18_CHI_13	55.66	10617.42	55.86	0.2	2123	0.5	5309	40.0
14	GO_Z5_CHI_14	3.27	39841.29	3.67	0.4	15937	0.8	31873	50.0
15	GO_Z5_CHI_15	0.75	18180.09	1.05	0.3	5454	0.7	12726	42.9
16	GO_Z2_GE_16	-7.16	23652.03	-6.46	0.7	16556	1.0	23652	70.0
TOTAL						250490		516413	48.5

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Note:

To estimate the replenishment of sand, the pre-monsoon (First & Second Survey) data has been assessed through data provided by District Mining Office to establish the initial level of mining lease before the monsoon.

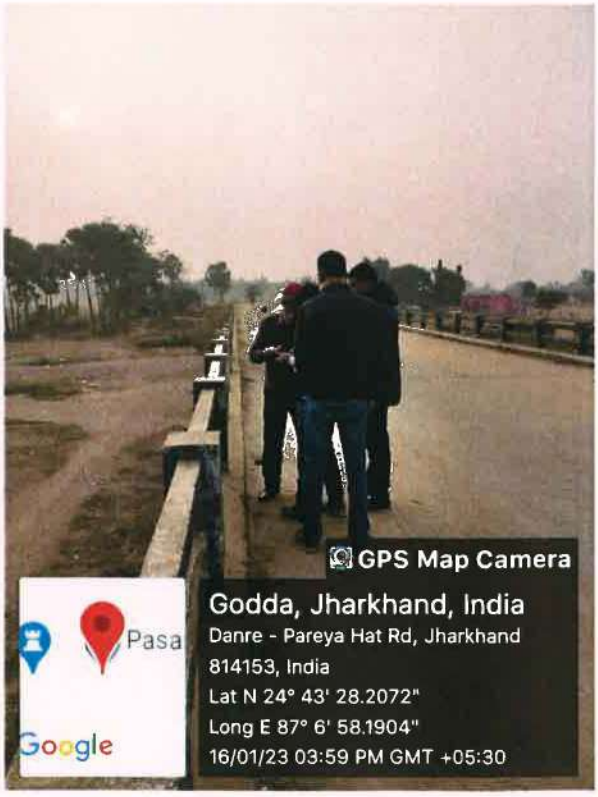
Keeping in view the 'Generic Structure of Replenishment Study' (as per EMGSM 2020); Third Survey after the monsoon has been carried out to estimate the quantum of material deposited/replenished in the mining lease.

The Fourth Survey shall be carry out at the end of March in coming year to know the quantity of material excavated during the financial year.

The results of year-wise surveys help the State Government to establish the replenishment rate of the river. Based on the replenishment rate future auction may be planned.

12.4 Photographs showing Sand Ghats Visit by Sub-Divisional Committee, Godda:

13 Sub-Divisional Officer, Godda
14 District Mining Officer, Godda
15 Assistant Director, Geology, Dumka
16 Executive Engineer, Irrigation, Godda
17 Representative of Sathi Planners Pvt. Ltd.



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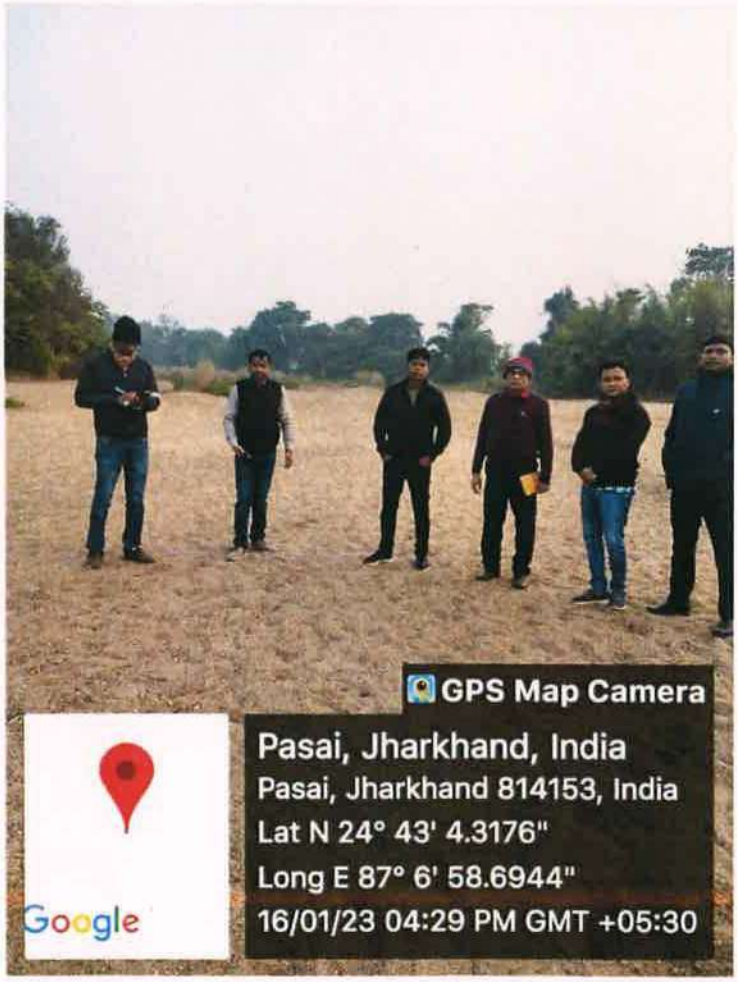

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- **Management of Sand Deposits of Category-2 Streams/Rivers: -**

a. The Sand deposits of Category-2 shall be managed by State Government through Jharkhand State Mineral Development Corporation Limited (JSMDC).
b. All the sand deposits in Category-2 shall be allocated to JSMDC for a minimum period of 5 years or more as decided by the Government.
c. Sand shall be sold by the JSMDC on commercial basis.
d. The sale price of sand shall be decided by JSMDC in consultation with the Government.
e. JSMDC shall obtain all clearances such as Environmental Clearance, Mining Plan or any other statutory requirements for sand mining, storage and sale.
f. JSMDC shall ensure compliance of all applicable rules, regulations, guidelines, directives of honourable courts etc.
g. JSMDC shall ensure that no Sand mining is carried out in any such zone or depth as prohibited under MoEF&CC Guidelines.
h. JSMDC shall adopt scientific and sustainable mining practices and shall ensure a transparent, fair and effective delivery system.
i. JSMDC shall adopt appropriate technology such as RFID/GPS tracking of vehicles, CCTV surveillance, central monitoring, cashless online sale etc. to prevent illegal mining and transportation of sand.
j. State shall reimburse the entire expenditure incurred by JSMDC for operation and maintenance of sand ghats and also pay suitable agency commission as fixed by the Government.
The Government may review the Sand Mining Policy in future as and when required and issue Guidelines or Amendments accordingly.

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Sand deposit zones has been identified through field survey and study of satellite imageries over the entire stretch of the river within the district. After physical verification of those deposition zones, only sand potential areas are considered for Sand Ghats. After leaving safe distance from all physical structures, forest, habitation etc. as per statute, limiting coordinates of each Sand Ghat has been fixed.
In order to reduce the cluster formation, size of a Sand Ghat has been kept as large as possible, covering the entire sand bar inside single Sand Ghat after leaving statutory distances.
Apparently all the Sand Ghats which are located on 1st and 2nd order of stream, are considered as *Category-1* Sand Ghats. Apart from this, all such Sand Ghats, which don't comply with the statutory norms in terms of distance from habitation and forest to obtain Environment Clearance for commercial mining are also considered as *Category-1* Sand Ghats, which shall be consumed by local villagers for their domestic use. All other identified Sand Ghats are considered as *Category-2* Sand Ghats, proposed for commercial mining.

Table No. - 12.4: Details of Sand Ghats - Category 1

Sl. No.	Sand Ghat Name	River	Area (in Ha.)	Block	Sub-Division	Mouza Name	Labels	Latitude	Longitude
1	Majhdiha Sand Ghat	Kajhia Nadi	2.80	Godda	Godda	Majhdiha	A	24° 46' 52.025" N	87° 17' 10.292" E
							B	24° 46' 53.433" N	87° 17' 12.743" E
							C	24° 46' 45.253" N	87° 17' 18.372" E
							D	24° 46' 43.179" N	87° 17' 15.393" E
2	Banka Sand Ghat	Kajhia Nadi	0.75			Ghat Banka	A	24° 46' 21.777" N	87° 18' 03.892" E
							B	24° 46' 25.122" N	87° 18' 00.978" E
							C	24° 46' 26.106" N	87° 18' 02.417" E
							D	24° 46' 23.029" N	87° 18' 05.726" E
3	Sarotiya Sand Ghat	Kajhia Nadi	1.33			Sarotiya	A	24° 49' 38.110" N	87° 14' 03.479" E
							B	24° 49' 34.541" N	87° 14' 10.570" E
							C	24° 49' 33.297" N	87° 14' 09.224" E
							D	24° 49' 36.348" N	87° 14' 02.013" E
4	Pindra Sand Ghat	Bansloi Nadi	0.23	Poreyahat		Pindra	A	24° 35' 01.583" N	87° 18' 59.312" E
							B	24° 35' 02.531" N	87° 18' 59.456" E
							C	24° 35' 01.479" N	87° 19' 02.459" E
							D	24° 35' 00.741" N	87° 19' 02.064" E
5	Durpat Sand Ghat	Chir Nadi	0.91			Durpat	A	24° 42' 15.073" N	87° 08' 05.367" E
							B	24° 42' 18.707" N	87° 08' 00.552" E
							C	24° 42' 19.996" N	87° 08' 02.017" E
							D	24° 42' 15.995" N	87° 08' 06.658" E
6	Sanuar Sand Ghat	Gerua Nadi	2.34	Basantrai		Sanuar	A	24° 58' 41.675" N	87° 08' 57.474" E
							B	24° 58' 49.060" N	87° 08' 58.676" E

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							C	24° 58' 48.362" N	87° 09' 00.380" E
							D	24° 58' 46.486" N	87° 09' 00.175" E
							E	24° 58' 43.914" N	87° 08' 59.472" E
							F	24° 58' 40.720" N	87° 08' 58.367" E
							G	24° 58' 37.241" N	87° 08' 56.474" E
							H	24° 58' 36.227" N	87° 08' 55.689" E
							I	24° 58' 35.249" N	87° 08' 55.154" E
							J	24° 58' 33.113" N	87° 08' 54.131" E
							K	24° 58' 30.665" N	87° 08' 52.819" E
							L	24° 58' 31.766" N	87° 08' 51.176" E
							M	24° 58' 34.036" N	87° 08' 52.961" E
							N	24° 58' 36.436" N	87° 08' 54.673" E
							O	24° 58' 38.882" N	87° 08' 56.259" E
7	Hilawe Sand Ghat	Gerua Nadi	2.32			Hilawe	A	24° 57' 01.019" N	87° 08' 43.750" E
							B	24° 57' 08.823" N	87° 08' 48.074" E
							C	24° 57' 07.574" N	87° 08' 51.181" E
							D	24° 57' 05.193" N	87° 08' 49.699" E
							E	24° 57' 03.025" N	87° 08' 48.009" E
							F	24° 56' 59.360" N	87° 08' 45.397" E
8	Bariyata Sand Ghat	Chir Nadi	0.99	Godda		Bariyata	A	24° 53' 32.519" N	87° 09' 54.874" E
							B	24° 53' 33.419" N	87° 09' 55.886" E
							C	24° 53' 29.201" N	87° 10' 03.041" E
							D	24° 53' 28.176" N	87° 10' 01.846" E
9	Teldiha Sand Ghat	Kajhia Nadi	1.32			Teldiha	A	24° 46' 02.420" N	87° 17' 45.241" E
							B	24° 46' 05.722" N	87° 17' 42.998" E
							C	24° 46' 06.447" N	87° 17' 44.236" E

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							D	24° 46' 04.257" N	87° 17' 46.257" E
							E	24° 46' 01.520" N	87° 17' 47.728" E
							F	24° 45' 58.436" N	87° 17' 47.603" E
							G	24° 45' 58.453" N	87° 17' 46.182" E
10	Sahikitta Sand Ghat	Gerua Nadi	0.69	Mahagama	Mahagama	Sahikitta			
							A	25° 04' 01.869" N	87° 11' 14.160" E
							B	25° 04' 02.786" N	87° 11' 13.546" E
							C	25° 04' 03.860" N	87° 11' 16.584" E
							D	25° 04' 04.513" N	87° 11' 20.027" E
							E	25° 04' 04.263" N	87° 11' 22.645" E
							F	25° 04' 03.449" N	87° 11' 22.439" E
							G	25° 04' 03.617" N	87° 11' 19.764" E
							H	25° 04' 03.165" N	87° 11' 17.261" E
11	Nonmati Sand Ghat	Kajhia Nadi	1.41	Godda	Godda	Nonmati			
							A	24° 48' 37.348" N	87° 14' 45.204" E
							B	24° 48' 36.501" N	87° 14' 45.611" E
							C	24° 48' 34.922" N	87° 14' 45.578" E
							D	24° 48' 33.511" N	87° 14' 45.314" E
							E	24° 48' 33.615" N	87° 14' 44.329" E
							F	24° 48' 36.026" N	87° 14' 44.619" E
							G	24° 48' 38.332" N	87° 14' 43.594" E
12	Darghatti Sand Ghat	Chir Nadi	1.44			Darghatti			
							A	24° 51' 24.289" N	87° 07' 32.430" E
							B	24° 51' 25.560" N	87° 07' 31.803" E
							C	24° 51' 26.615" N	87° 07' 33.316" E
							D	24° 51' 30.766" N	87° 07' 38.344" E
							E	24° 51' 29.673" N	87° 07' 39.655" E
							F	24° 51' 26.985" N	87° 07' 37.496" E

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13	Dadhachak Sand Ghat	Harna Nadi	0.10			Dadhachak	A	24° 51' 44.725" N	87° 14' 12.692" E
							B	24° 51' 45.053" N	87° 14' 12.392" E
							C	24° 51' 45.916" N	87° 14' 14.231" E
							D	24° 51' 45.269" N	87° 14' 14.557" E
14	Biswaskhani Sand Ghat	Gerua Nadi	0.51	Mahagama	Mahagama	Biswaskhani	A	25° 02' 23.259" N	87° 10' 02.907" E
							B	25° 02' 26.818" N	87° 10' 04.166" E
							C	25° 02' 25.627" N	87° 10' 05.901" E
							D	25° 02' 22.646" N	87° 10' 03.902" E
15	Narottampur Sand Ghat	Sundargaria Nadi	0.33			Narottampur	A	25° 02' 37.944" N	87° 11' 21.481" E
							B	25° 02' 40.663" N	87° 11' 23.454" E
							C	25° 02' 40.302" N	87° 11' 24.636" E
							D	25° 02' 37.469" N	87° 11' 22.437" E
16	Sangrampur Sand Ghat	Sundargaria Nadi	0.38			Sangrampur	A	25° 03' 25.974" N	87° 11' 29.391" E
							B	25° 03' 27.622" N	87° 11' 30.235" E
							C	25° 03' 27.819" N	87° 11' 32.609" E
							D	25° 03' 26.444" N	87° 11' 32.988" E
17	Lohathi Sand Ghat	Sundargaria Nadi	0.06			Lohathi	A	24° 58' 30.806" N	87° 20' 12.599" E
							B	24° 58' 31.789" N	87° 20' 11.893" E
							C	24° 58' 32.131" N	87° 20' 12.405" E
							D	24° 58' 30.990" N	87° 20' 13.128" E
Forest Land adjacent to Potential Sand Deposit. i.e. <250m									
18	Chhota Dhamni_1 Sand Ghat	Gumani	2.71	Sundarpahari	Godda	Chhota Dhamni			
							A	24° 47' 13.405" N	87° 28' 45.363" E
							B	24° 47' 13.932" N	87° 28' 41.445" E
							C	24° 47' 15.496" N	87° 28' 41.421" E

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							D	24° 47' 15.149" N	87° 28' 42.559" E
							E	24° 47' 14.815" N	87° 28' 43.973" E
							F	24° 47' 14.726" N	87° 28' 46.141" E
							G	24° 47' 14.792" N	87° 28' 47.547" E
							H	24° 47' 14.816" N	87° 28' 50.314" E
							I	24° 47' 15.311" N	87° 28' 51.652" E
							J	24° 47' 16.047" N	87° 28' 53.762" E
							K	24° 47' 16.960" N	87° 28' 56.025" E
							L	24° 47' 17.734" N	87° 28' 57.490" E
							M	24° 47' 18.175" N	87° 28' 58.548" E
							N	24° 47' 18.859" N	87° 28' 59.617" E
							O	24° 47' 17.931" N	87° 29' 00.039" E
							P	24° 47' 17.056" N	87° 28' 59.967" E
							Q	24° 47' 16.072" N	87° 28' 58.126" E
							R	24° 47' 15.205" N	87° 28' 56.770" E
							S	24° 47' 13.874" N	87° 28' 53.140" E
							T	24° 47' 13.127" N	87° 28' 50.163" E
19	Bada Dhamni Sand Ghat	Gumani	1.86			Bada Dhamni			
							A	24° 47' 26.547" N	87° 28' 13.466" E
							B	24° 47' 29.108" N	87° 28' 09.041" E
							C	24° 47' 31.680" N	87° 28' 05.772" E
							D	24° 47' 34.108" N	87° 28' 04.082" E
							E	24° 47' 35.305" N	87° 28' 04.545" E
							F	24° 47' 31.644" N	87° 28' 09.141" E
							G	24° 47' 28.272" N	87° 28' 13.532" E
20	Saurpachisa Sand Ghat	Guhaka	2.49			Saurpachisaa			
							A	87° 9' 22.292" E	24° 53' 14.251" N
							B	87° 9' 22.482" E	24° 53' 3.714" N
							C	87° 9' 20.858" E	24° 53' 3.749" N

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							D	87° 9' 20.702" E	24° 53' 14.288" N
							E	87° 9' 20.875" E	24° 53' 22.112" N
							F	87° 9' 22.350" E	24° 53' 22.076" N
21	Marchaitari Sand Ghat	Gumani	0.62			Marchaitari			
							A	24° 47' 10.411" N	87° 27' 25.566" E
							B	24° 47' 11.900" N	87° 27' 25.618" E
							C	24° 47' 11.471" N	87° 27' 28.522" E
							D	24° 47' 12.688" N	87° 27' 31.847" E
							E	24° 47' 11.336" N	87° 27' 32.570" E
22	Pokharia Sand Ghat	Gumani	0.85			Pokharia			
							A	24° 46' 54.158" N	87° 27' 20.524" E
							B	24° 47' 00.622" N	87° 27' 16.767" E
							C	24° 47' 01.185" N	87° 27' 18.041" E
							D	24° 46' 53.862" N	87° 27' 21.504" E
23	Kairasul Sand Ghat	Gumani	1.01			Kairasul			
							A	24° 46' 32.485" N	87° 26' 58.474" E
							B	24° 46' 28.849" N	87° 26' 57.610" E
							C	24° 46' 24.045" N	87° 26' 57.736" E
							D	24° 46' 23.963" N	87° 26' 57.133" E
							E	24° 46' 26.842" N	87° 26' 56.034" E
							F	24° 46' 29.600" N	87° 26' 56.187" E
							G	24° 46' 32.693" N	87° 26' 57.294" E
24	Chhota Dhamni 2 Sand Ghat	Gumani	5.09			Chhota Dhamni			
							A	24° 47' 18.585" N	87° 29' 02.220" E
							B	24° 47' 19.807" N	87° 29' 00.954" E
							C	24° 47' 20.497" N	87° 29' 02.442" E
							D	24° 47' 21.290" N	87° 29' 03.816" E
							E	24° 47' 22.438" N	87° 29' 05.109" E
							F	24° 47' 22.963" N	87° 29' 07.015" E

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G	24° 47' 22.724" N	87° 29' 08.882" E
H	24° 47' 22.351" N	87° 29' 10.367" E
I	24° 47' 22.121" N	87° 29' 12.113" E
J	24° 47' 21.003" N	87° 29' 13.672" E
K	24° 47' 19.822" N	87° 29' 14.449" E
L	24° 47' 18.293" N	87° 29' 14.600" E
M	24° 47' 16.265" N	87° 29' 14.352" E
N	24° 47' 14.585" N	87° 29' 14.065" E
O	24° 47' 13.617" N	87° 29' 14.037" E
P	24° 47' 12.112" N	87° 29' 13.800" E
Q	24° 47' 12.025" N	87° 29' 13.797" E
R	24° 47' 11.897" N	87° 29' 13.748" E
S	24° 47' 10.774" N	87° 29' 13.468" E
T	24° 47' 09.182" N	87° 29' 13.501" E
U	24° 47' 08.679" N	87° 29' 15.340" E
V	24° 47' 09.946" N	87° 29' 17.328" E
W	24° 47' 10.458" N	87° 29' 19.217" E
X	24° 47' 10.364" N	87° 29' 19.926" E
Y	24° 47' 09.512" N	87° 29' 21.681" E
Z	24° 47' 08.441" N	87° 29' 23.574" E
A1	24° 47' 07.611" N	87° 29' 25.135" E
B1	24° 47' 07.160" N	87° 29' 26.874" E
C1	24° 47' 06.847" N	87° 29' 28.874" E
D1	24° 47' 06.570" N	87° 29' 30.458" E
E1	24° 47' 06.383" N	87° 29' 32.303" E
F1	24° 47' 05.651" N	87° 29' 34.420" E
G1	24° 47' 05.050" N	87° 29' 35.963" E
H1	24° 47' 04.193" N	87° 29' 35.587" E
I1	24° 47' 05.067" N	87° 29' 32.737" E

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							J1	24° 47' 05.763" N	87° 29' 30.612" E
							K1	24° 47' 06.242" N	87° 29' 28.039" E
							L1	24° 47' 06.734" N	87° 29' 25.226" E
							M1	24° 47' 08.107" N	87° 29' 22.625" E
							N1	24° 47' 08.767" N	87° 29' 20.718" E
							O1	24° 47' 09.413" N	87° 29' 18.533" E
							P1	24° 47' 08.606" N	87° 29' 17.105" E
							Q1	24° 47' 07.903" N	87° 29' 15.854" E
							R1	24° 47' 07.919" N	87° 29' 14.100" E
							S1	24° 47' 08.638" N	87° 29' 12.719" E
							T1	24° 47' 09.736" N	87° 29' 12.312" E
							U1	24° 47' 12.561" N	87° 29' 12.561" E
							V1	24° 47' 15.299" N	87° 29' 13.085" E
							W1	24° 47' 18.036" N	87° 29' 12.725" E
							X1	24° 47' 20.828" N	87° 29' 11.971" E
							Y1	24° 47' 21.432" N	87° 29' 10.198" E
							Z1	24° 47' 20.819" N	87° 29' 07.324" E
							A2	24° 47' 19.774" N	87° 29' 04.346" E

Table No. - 12.5: Details of Sand Ghats - Category 2

Sl. No.	Code	Circle/Block	River	Mouza	Thana No.	Khata No.	Plot No.		Area	ID	Latitude	Longitude
							As per JSAC	As per Cadastral Sheet	(in Ha.)			
1	GO_Z2_GE_1	Basantrai	Gerua Nadi	Raha	4	129	79, 188	188	1.97	A	25° 01' 17.211" N	87° 08' 51.559" E
										B	25° 01' 23.482" N	87° 08' 56.527" E
										C	25° 01' 22.396" N	87° 08' 57.953" E
										D	25° 01' 18.798" N	87° 08' 54.511" E
										E	25° 01' 16.702" N	87° 08' 52.583" E

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										F	25° 01' 14.094" N	87° 08' 49.180" E
										G	25° 01' 12.710" N	87° 08' 48.116" E
										H	25° 01' 10.515" N	87° 08' 47.083" E
										I	25° 01' 07.347" N	87° 08' 46.618" E
										J	25° 01' 05.793" N	87° 08' 46.507" E
										K	25° 01' 05.969" N	87° 08' 45.451" E
										L	25° 01' 10.526" N	87° 08' 46.175" E
										M	25° 01' 14.561" N	87° 08' 48.441" E
2	GO_Z3_GE_2	Basantrai	Gerua Nadi	Deshbarag	74	46	160, 605	160, 22	0.93	A	24° 58' 06.847" N	87° 08' 57.164" E
										B	24° 58' 09.091" N	87° 08' 56.994" E
										C	24° 58' 11.143" N	87° 08' 55.830" E
										D	24° 58' 11.367" N	87° 08' 56.911" E
										E	24° 58' 09.459" N	87° 08' 57.876" E
										F	24° 58' 08.096" N	87° 08' 57.995" E
										E	24° 58' 05.339" N	87° 08' 57.378" E
										G	24° 58' 03.190" N	87° 08' 56.237" E
										H	24° 57' 59.720" N	87° 08' 54.265" E
										I	24° 58' 00.223" N	87° 08' 53.483" E
										J	24° 58' 03.807" N	87° 08' 55.632" E
										K	24° 58' 04.437" N	87° 08' 55.965" E
3	GO_Z5_CHI_3	Pathargama	Chir Nadi	Chakwa	262	26	4, 166		3.52	A	24° 55' 20.184" N	87° 08' 36.658" E
										B	24° 55' 29.236" N	87° 08' 51.763" E
										C	24° 55' 28.173" N	87° 08' 52.095" E
										D	24° 55' 25.080" N	87° 08' 47.034" E
										E	24° 55' 21.750" N	87° 08' 41.566" E
										F	24° 55' 18.255" N	87° 08' 38.093" E
										G	24° 55' 12.871" N	87° 08' 35.888" E
										H	24° 55' 13.494" N	87° 08' 33.315" E

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										I	24° 55' 16.235" N	87° 08' 34.026 ' E
4	GO_Z5_CHI_4	Pathargama	Chir Nadi	Jasmata	263	2	13	13	3.03	A	24° 54' 19.926" N	87° 08' 53.529" E
										B	24° 54' 19.927" N	87° 09' 01.582" E
										C	24° 54' 14.838" N	87° 09' 03.550 ' E
										D	24° 54' 16.323" N	87° 08' 56.796" E
										E	24° 54' 16.235" N	87° 08' 54.137" E
5	GO_Z9_KAJ_5	Godda	Kajhia Nadi						2.71	A	24° 49' 12.465" N	87° 14' 41.798' E
										B	24° 49' 16.627" N	87° 14' 37.490" E
										C	24° 49' 21.797" N	87° 14' 31.343' E
										D	24° 49' 23.151" N	87° 14' 32.038" E
										E	24° 49' 20.304" N	87° 14' 37.450" E
										F	24° 49' 18.080" N	87° 14' 39.709" E
				Haripur	489	109	408, 278	278		G	24° 49' 15.049" N	87° 14' 41.799' E
				Garbana	377	132	1, 1256			H	24° 49' 12.972" N	87° 14' 42.586" E
6	GO_Z10_KAJ_6	Godda	Kajhia Nadi	Ghat Jhilua	530	21	300, 27, 192, 3085		1.82	A	24° 47' 58.555" N	87° 15' 52.988" E
										B	24° 48' 05.485" N	87° 15' 49.074" E
										C	24° 48' 06.120" N	87° 15' 49.971' E
										D	24° 47' 53.048" N	87° 15' 56.582" E
										E	24° 47' 50.774" N	87° 15' 57.814" E
										F	24° 47' 50.145" N	87° 15' 56.777" E
										G	24° 47' 52.425" N	87° 15' 54.800" E
										H	24° 47' 54.128" N	87° 15' 53.891" E
7	GO_Z12_SAK_7	Poreyahat	Sakri Nadi						5.51	A	24° 43' 58.008" N	87° 06' 19.616' E
										B	24° 44' 02.237" N	87° 06' 16.831' E
										C	24° 44' 07.182" N	87° 06' 14.092" E
										D	24° 44' 07.955" N	87° 06' 15.763' E
										E	24° 44' 06.122" N	87° 06' 16.588" E
										F	24° 44' 04.138" N	87° 06' 17.293' E

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										G	24° 44' 01.729" N	87° 06' 18.440" E
										H	24° 43' 57.260" N	87° 06' 22.240" E
										I	24° 43' 56.332" N	87° 06' 24.097" E
										J	24° 43' 56.181" N	87° 06' 25.462" E
										K	24° 43' 55.977" N	87° 06' 26.918" E
										L	24° 43' 54.424" N	87° 06' 31.445" E
										M	24° 43' 52.832" N	87° 06' 35.750" E
										N	24° 43' 52.132" N	87° 06' 38.100" E
										O	24° 43' 51.506" N	87° 06' 39.714" E
										P	24° 43' 49.872" N	87° 06' 41.817" E
										Q	24° 43' 47.454" N	87° 06' 43.376" E
										R	24° 43' 43.180" N	87° 06' 44.471" E
										S	24° 43' 42.877" N	87° 06' 42.873" E
										T	24° 43' 45.963" N	87° 06' 42.010" E
										U	24° 43' 49.127" N	87° 06' 40.308" E
										V	24° 43' 51.115" N	87° 06' 36.896" E
										W	24° 43' 52.003" N	87° 06' 33.343" E
										X	24° 43' 52.800" N	87° 06' 30.534" E
				Lauamahua			389	389		Y	24° 43' 54.303" N	87° 06' 26.088" E
				Pasai	62	264	389	389		Z	24° 43' 55.171" N	87° 06' 22.794" E
8	GO_Z13_SAK_8	Poreyahat	Sakri Nadi						2.59	A	24° 43' 07.887" N	87° 06' 58.529" E
										B	24° 43' 12.912" N	87° 06' 58.521" E
										C	24° 43' 12.958" N	87° 07' 00.016" E
										D	24° 43' 10.096" N	87° 06' 59.673" E
										E	24° 43' 08.097" N	87° 06' 59.461" E
										F	24° 43' 05.602" N	87° 06' 59.303" E
										G	24° 43' 03.697" N	87° 06' 59.238" E
										H	24° 43' 01.029" N	87° 07' 01.080" E

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										I	24° 42' 59.462" N	87° 07' 04.653" E
										J	24° 42' 57.264" N	87° 07' 10.029" E
										K	24° 42' 55.578" N	87° 07' 18.825" E
										L	24° 42' 54.790" N	87° 07' 18.509" E
										M	24° 42' 55.734" N	87° 07' 13.857" E
										N	24° 42' 56.192" N	87° 07' 10.288" E
										O	24° 42' 57.888" N	87° 07' 05.605" E
										P	24° 42' 59.709" N	87° 07' 01.587" E
										Q	24° 43' 00.738" N	87° 07' 00.073" E
				Pasai	62	264	2866, 789	789		R	24° 43' 02.418" N	87° 06' 59.048" E
				Garhi	75	77	789			S	24° 43' 03.169" N	87° 06' 58.598" E
9	GO_Z14_RIB_9	Poreyahat	Ribani Nadi							A	24° 46' 07.506" N	87° 05' 03.738" E
										B	24° 46' 20.459" N	87° 05' 04.035" E
										C	24° 46' 21.298" N	87° 05' 07.537" E
										D	24° 46' 18.161" N	87° 05' 07.563" E
										E	24° 46' 13.797" N	87° 05' 06.472" E
										F	24° 46' 09.976" N	87° 05' 05.376" E
										G	24° 46' 03.915" N	87° 05' 05.502" E
										H	24° 45' 58.308" N	87° 05' 06.746" E
										I	24° 45' 51.434" N	87° 05' 09.514" E
										J	24° 45' 48.391" N	87° 05' 13.121" E
										K	24° 45' 43.787" N	87° 05' 16.843" E
										L	24° 45' 40.781" N	87° 05' 18.226" E
										M	24° 45' 39.300" N	87° 05' 13.713" E
										N	24° 45' 43.093" N	87° 05' 10.679" E
				Asarimadhuri	19	208	1082, 1587, 1131, 1116	1082, 1587	11.29	O	24° 45' 45.766" N	87° 05' 8.624" E
				Teliyatikar	36	59	34			P	24° 45' 55.061" N	87° 05' 5.387" E
10	GO_Z15_CHI_10	Godda		Dhodhari	276	54	77, 658	77	2.39	A	24° 52' 49.697" N	87° 09' 11.663" E

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			Chir Nadi							B	24° 52' 59.176" N	87° 09' 18.330" E
										C	24° 52' 57.556" N	87° 09' 20.982" E
										D	24° 52' 55.567" N	87° 09' 19.233" E
										E	24° 52' 51.249" N	87° 09' 15.325" E
										F	24° 52' 48.827" N	87° 09' 12.822" E
11	GO_Z16_CHI_11	Godda	Chir Nadi						2.10	A	24° 52' 08.761" N	87° 08' 44.424" E
										B	24° 52' 14.831" N	87° 08' 49.746" E
										C	24° 52' 19.657" N	87° 08' 53.903" E
										D	24° 52' 19.357" N	87° 08' 54.847" E
										E	24° 52' 15.900" N	87° 08' 51.818" E
										F	24° 52' 12.139" N	87° 08' 49.104" E
										G	24° 52' 08.886" N	87° 08' 47.229" E
										H	24° 52' 07.272" N	87° 08' 45.553" E
				Dalpatpur			77	16		I	24° 52' 05.954" N	87° 08' 42.690" E
				Sirsa	278	11	16, 1			J	24° 52' 07.251" N	87° 08' 41.800" E
12	GO_Z17_CHI_12	Poreyahat	Chir Nadi						3.55	A	24° 43' 33.825" N	87° 07' 56.980" E
										B	24° 43' 37.360" N	87° 07' 59.451" E
										C	24° 43' 36.614" N	87° 08' 00.280" E
										D	24° 43' 32.949" N	87° 07' 57.850" E
										E	24° 43' 29.622" N	87° 07' 53.782" E
										F	24° 43' 27.875" N	87° 07' 52.749" E
										G	24° 43' 26.278" N	87° 07' 53.129" E
										H	24° 43' 23.886" N	87° 07' 55.641" E
										I	24° 43' 22.701" N	87° 07' 58.578" E
										J	24° 43' 20.979" N	87° 08' 04.395" E
										K	24° 43' 19.797" N	87° 08' 05.997" E
										L	24° 43' 17.424" N	87° 08' 06.883" E
										M	24° 43' 17.184" N	87° 08' 06.327" E

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										N	24° 43' 19.852" N	87° 08' 04.441" E
										O	24° 43' 21.221" N	87° 08' 01.007" E
										P	24° 43' 21.975" N	87° 07' 58.088" E
										Q	24° 43' 23.197" N	87° 07' 54.962" E
										R	24° 43' 26.189" N	87° 07' 50.952" E
				Amjora	57	38	167, 200, 199, 198	167, 428		S	24° 43' 28.075" N	87° 07' 50.284" E
				Surapaparwa	55	43	735, 726			T	24° 43' 29.848" N	87° 07' 50.787" E
				Machkhara	64	80	428, 723			U	24° 43' 32.336" N	87° 07' 54.592" E
13	GO_Z18_CHI_13	Poreyahat	Chir Nadi						1.06	A	24° 43' 56.621" N	87° 07' 31.773" E
										B	24° 43' 57.206" N	87° 07' 26.244" E
										C	24° 43' 57.876" N	87° 07' 26.321" E
										D	24° 43' 57.660" N	87° 07' 28.931" E
										E	24° 43' 57.424" N	87° 07' 31.834" E
										F	24° 43' 56.548" N	87° 07' 35.200" E
										G	24° 43' 55.272" N	87° 07' 38.628" E
				Taratikar	61	63	1, 202, 45, 38			H	24° 43' 54.130" N	87° 07' 40.294" E
				Pakariya	59	58	45, 38	45		I	24° 43' 53.537" N	87° 07' 39.866" E
				Bargaon	60	43	45, 38			J	24° 43' 55.512" N	87° 07' 35.396" E
14	GO_Z5_CHI_14	Pathargama	Chir Nadi	Sanatan	265	75	184, 5	184	3.98	A	24° 54' 01.695" N	87° 09' 14.217" E
										B	24° 54' 03.008" N	87° 09' 17.513" E
										C	24° 53' 51.621" N	87° 09' 24.264" E
										D	24° 53' 50.239" N	87° 09' 21.080" E
15	GO_Z5_CHI_15	Pathargama	Chir Nadi	Jasmata	263	2	13	13	1.82	A	24° 54' 47.649" N	87° 08' 34.061" E
										B	24° 54' 48.365" N	87° 08' 36.323" E
										C	24° 54' 46.410" N	87° 08' 36.613" E
										D	24° 54' 40.739" N	87° 08' 41.742" E
										E	24° 54' 39.727" N	87° 08' 39.108" E
										F	24° 54' 43.128" N	87° 08' 36.509" E

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16	GO_Z2_GE_16	Basantrai	Gerua Nadi	Bade		20	1		2.37	A	25° 00' 42.368" N	87° 08' 47.390" E
										B	25° 00' 42.199" N	87° 08' 48.510" E
										C	25° 00' 38.703" N	87° 08' 47.606" E
										D	25° 00' 34.670" N	87° 08' 46.706" E
										E	25° 00' 30.972" N	87° 08' 48.743" E
										F	25° 00' 28.094" N	87° 08' 51.575" E
										G	25° 00' 26.774" N	87° 08' 52.816" E
										H	25° 00' 25.488" N	87° 08' 53.650" E
										I	25° 00' 24.255" N	87° 08' 54.569" E
										J	25° 00' 23.178" N	87° 08' 53.524" E
										K	25° 00' 27.947" N	87° 08' 49.730' E
										L	25° 00' 34.445" N	87° 08' 45.276" E

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12.7 Details of Sand Deposit Zones:

Table No. – 12.6: Details of Sand Deposit Zones in Godda District of Jharkhand State.

Sl. No.	Zone No.	Zone Boundary Coordinates	Reference Point Coordinates	No. of Sand Ghats Within Zone & Total Area
1	Zone-1	87°12'36.621"E, 25°05'1.890"N to 87°10'45.140"E, 25°03'56.080"N	No Sand Ghat identified due to very low Sand deposit.	
2	Zone-2	87°09'45.921"E, 25°02'06.462"N to 87°09'02.398"E, 24°59'31.020"N	87°11'21.633"E, 25°2'57.401"N	2 Nos., Total 4.33 Ha.
3	Zone-3	87°09'03.131"E, 24°59'02.919"N to 87°08'52.458"E, 24°56'15.970"N	87°08'54.764"E, 24°59'04.592"N	1 No., 0.92 Ha.
4	Zone-4	87°10'21.620"E, 24°52'55.950"N to 87°12'54.440"E, 24°50'54.050"N	No Sand Ghat identified due to very low sand deposit.	
5	Zone-5	87°09'05.473"E, 24°55'51.753"N to 87°09'36.452"E, 24°53'34.835"N	87°09'12.018"E, 24°56'02.044"N	4 Nos., Total 12.6 Ha.
6	Zone-6	87°10'29.580"E, 25°01'28.040"N to 87°10'14.680"E, 25°01'05.570"N	No Sand Ghat identified due to very low Sand deposit.	
7	Zone-7	87°11'23.750"E, 25°02'48.700"N to 87°10'20.070"E, 25°01'51.280"N		
8	Zone-8	87°13'15.500"E, 24°50'03.360"N to 87°13'33.170"E, 24°49'47.110"N		
9	Zone-9	87°14'02.521"E, 24°49'38.748"N to 87°14'50.094"E, 24°49'10.957"N	87°14'23.137"E, 24°49'27.614"N	1 No., 2.71 Ha.
10	Zone-10	87°15'37.541"E, 24°48'10.992"N to 87°17'32.872"E, 24°46'35.642"N	87°15'31.206"E, 24°48'17.503"N	1 No., 1.82 Ha.
11	Zone-11	87°18'44.740"E, 24°35'20.160"N to 87°19'33.910"E, 24°34'39.980"N	No Sand Ghat identified due to very low sand deposit.	
12	Zone-12	87°06'14.791"E, 24°44'08.364"N to 87°06'42.610"E, 24°43'42.513"N	87°06'01.922"E, 24°044'18.016"N	1 No., 5.51 Ha.
13	Zone-13	87°06'58.695"E, 24°43'13.971"N to 87°07'18.991"E, 24°42'53.057"N	87°07'03.652"E, 24°43'28.875"N	1 No., 2.59 Ha.
14	Zone-14	87°05'05.895"E, 24°46'25.500"N to 87°05'16.622"E, 24°45'37.014"N	87°05'20.731"E, 24°46'27.714"N	1 No., 11.29 Ha.
15	Zone-15	87°09'30.642"E, 24°53'12.412"N to 87°09'09.399"E, 24°52'47.042"N	87°09'18.942"E, 24°53'12.311"N	1 No., 2.39 Ha.
16	Zone-16	87°08'54.094"E, 24°52'20.851"N to 87°08'35.224"E, 24°52'7.210"N	87° 09'07.127"E, 24°52'32.458"N	1 No., 2.1 Ha.
17	Zone-17	87°08'00.261"E, 24°43'38.309"N to 87°08'06.346"E, 24°43'13.723"N	87° 07'58.026"E, 24°43'43.531"N	1 No., 3.54 Ha.
18	Zone-18	87°07'25.293"E, 24°43'57.890"N to 87°07'41.164"E, 24°43'53.856"N	87° 07'25.269"E, 24°44'01.423"N	1 No., 1.06 Ha.

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12.8 Distance from Bridges & NH/SH for each Sand Ghat:

Table No. – 12.7: Distance from Bridges & NH/SH for each Sand Ghat in Godda District of Jharkhand State.

Sl. No.	Sand Ghat Code	Aerial Distance from Nearest Bridge	Name of Bridge	Whether on NH or SH
1	GO_Z2_GE_1	> 1 km	Gerua River Bridge	No
2	GO_Z3_GE_2	> 1 km	Sanor Road Bridge	No
3	GO_Z5_CHI_3	> 1 km	Biraniya Bridge	No
4	GO_Z5_CHI_4	> 1 km	Biraniya Bridge	No
5	GO_Z9_KAJ_5	> 500 m	Nimotari Bridge	No
6	GO_Z10_KAJ_6	> 500 m	Singhwahini Bridge	No
7	GO_Z12_SAK_7	> 500 m	Triwahini Bridge	No
8	GO_Z13_SAK_8	> 500 m	Pasai Bridge	No
9	GO_Z14_RIB_9	> 2 km	Danre Dam	No
10	GO_Z15_CHI_10	> 500 m	Motanga Bridge	No
11	GO_Z16_CHI_11	> 500 m	Motanga Bridge	No
12	GO_Z17_CHI_12	> 1 km	Taratikar Pool	No
13	GO_Z18_CHI_13	> 500 m	Taratikar Pool	No
14	GO_Z5_CHI_14	> 1 km	Biraniya Bridge	No
15	GO_Z5_CHI_15	> 1 km	Biraniya Bridge	No
16	GO_Z2_GE_16	> 1 km	Gerua River Bridge	No

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12.9 Replenishment Study of Sand Deposit Zones (Category 2): (Verified & Approved)

REPLENISHMENT OF SAND ASSESSED BY "AFTER THE MONSOON" SURVEY (THIRD) CARRIED OUT DURING NOVEMBER 2022									
Pre-Monsoon (January to March 2022)				Post-Monsoon (October to December 2022)					
Sl. No.	Sand Bar Code	Surface RL	Surface Area	Surface RL	Thickness Replenished	Volume Replenished	Depth of Sand Deposit	Volume of Sand Deposit	Rate of Replenishment
		in m	in m^2	in m	in m	in m^3	in m	in m^3	in %
1	GO_Z2_GE_1	-9.54	19700.04	-8.84	0.7	13790	1.0	19700	70.0
2	GO_Z3_GE_2	-2.19	9261.30	-1.39	0.8	7409	1.0	9261	80.0
3	GO_Z5_CHI_3	-0.32	35183.74	-0.12	0.2	7037	0.5	17592	40.0
4	GO_Z5_CHI_4	1.22	30340.51	2.32	1.1	33375	2.0	60681	55.0
5	GO_Z9_KAJ_5	25.96	27131.41	26.06	0.1	2713	0.5	13566	20.0
6	GO_Z10_KAJ_6	37.61	18239.67	37.91	0.3	5472	0.8	14592	37.5
7	GO_Z12_SAK_7	54.41	55115.09	54.71	0.3	16535	1.2	66138	25.0
8	GO_Z13_SAK_8	58.08	25921.45	58.58	1.2	31106	1.7	44066	70.6
9	GO_Z14_RIB_9	43.98	112943.26	44.28	0.3	33883	0.8	90355	37.5
10	GO_Z15_CHI_10	6.31	23932.43	6.71	0.4	9573	0.8	19146	50.0
11	GO_Z16_CHI_11	7.87	21040.74	8.37	0.5	10520	0.8	16833	62.5
12	GO_Z17_CHI_12	58.52	35461.76	59.62	1.1	39008	2.0	70924	55.0
13	GO_Z18_CHI_13	55.66	10617.42	55.86	0.2	2123	0.5	5309	40.0
14	GO_Z5_CHI_14	3.27	39841.29	3.67	0.4	15937	0.8	31873	50.0
15	GO_Z5_CHI_15	0.75	18180.09	1.05	0.3	5454	0.7	12726	42.9
16	GO_Z2_GE_16	-7.16	23652.03	-6.46	0.7	16556	1.0	23652	70.0
TOTAL						250490		516413	48.5

(DMO Godda)

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13. DETAILS OF ECO-SENSITIVE AREA IN THE DISTRICT

As per notification of MoEF & CC, no any Eco Sensitive Zone falls in this district.

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14. IMPACT ON THE ENVIRONMENT DUE TO MINING

14.1 For Sand Mining:

The environmental components that are likely to be influenced or modified by the continuation of mining activities are: Air, Water, Noise, Soil, Hydrology, Ecology & Bio-diversity, Socio-economic status etc.

Major activities involve in the operation phase are -

- Excavation,
- Loading of material on truck by excavator
- Movement of vehicle on 'kaccha' road of villages

✓ Air Pollution

In mining activity, the only source of air pollution is excavation, transportation, loading and handling of minerals etc. The proposed mining operations are not anticipated to raise the concentration of pollutants beyond prescribed limits. However, the measures are suggested to mitigate the negative impact of the proposed mining activity to control the pollutants by plantation of trees along haul roads, specially near settlements, to help to reduce the impact of dust on the nearby villages; planning transportation routes of mined material so as to reach the nearest paved roads by shortest route (minimize transportation over unpaved road); regular water sprinkling on unpaved roads to avoid dust generation during transportation etc.

Emission of PM_{10}

The major sources of PM10 emission in case of sand mining project are the loading activity at mine site (loading of material over trucks/trucks by excavators) and the movement of vehicles on unpaved haul roads.

Loading of Material

The excavated materials will be loaded on dumpers using excavators.

Emission of PM10 due to Transportation

The hauling of minerals from the mine lease area to the end users via haul road (unpaved road) will cause emission of particulate matters. This emission will be limited to the extent of unpaved haul road starting from mining pit to nearest paved road connectivity.

Emission of CO from Vehicles

The excavated minerals will be transported outside the mining area for end use. The ARAI emission factors for CO emitting from heavy vehicles (diesel) is 3.92 gm/km or 6.32 g/mile.

Air Emissions

- Dust and air emission particularly due to the excavation, construction and movement of vehicles resulting in air pollution.
- No. of PCU/Hr. will increase due to mining in existing traffic scenario lead to air pollution which can cause adverse effect on human health of neighboring villagers like effect on breathing and respiratory system, damage to lung tissue, cancer and premature death, influenza or asthma.

✓ Noise Pollution

- Noise Impact due to mining activities.
- Human Noise from the machinery can cause hypertension, high stress level, hearing loss, sleep disturbance etc. due to prolonged exposure.
- Increase in the existing traffic due to this mining activity may occur unwanted sound and can also cause impact on human health of neighbouring villagers like effect on breathing and respiratory system, damage to lung tissue, cancer and premature death, influenza or asthma.

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✓ Water Pollution

- Flow pattern might be changed due to river bed mining.
- Mining activities depth will be increased, which may result in increase of flow velocity.
- Change in surface water quality and ground water quality.
- Impact on ground water recharge potential as the thickness of the natural filter materials (sediments) is reduce causing less infiltration.
- Waste water discharge.

✓ Soil Environment

- Mining activity may increase the soil erosion and soil degradation which have adverse impact on soil fertility.
- Top soil extraction from outside river-bed may also affect the soil fertility and productivity.
- During the flood, the soil erosion may occur.

✓ Solid Waste Generation/Management

- Flow pattern might be changed due to river bed mining.
- Mining activities depth will be increased, which may result in increase of flow velocity.
- Waste water discharge.

✓ Land Use

- The mining activity in the outside riverbed will be converted into the pit, which may cause soil erosion, soil degradation etc.
- Mining in the river-bed may change complete land use pattern including channel geometry, bed elevation, sediment transportation capacity which can reduce flow of the river and downstream erosion.

✓ Hydrology

- The mining in the riverbed area may cause the ground water contamination due to intersection of the water table.
- Change the topography will divert the river flow.
- Change in topography can change the river flow and flood may occur.
- Slope of mining area will change which can create soil erosion and divert rain water runoff channel.

✓ Topography, Drainage and Ground Water Contamination

- Spillage of oil from construction/transportation vehicles and equipment.

✓ Biological Environment

- Transportation of sand in the trucks/dumper will disturb the movement of wild animals like jungle cat, jackal, and other reptiles. Fugitive emission from vehicle movement will form a layer in leaves thus reducing the gaseous exchange process. This ultimately affects the growth of plants. Chances of vehicle collisions with wildlife attempting to cross roads are possible.
- Any human settlement in the mining area will disturb the vegetation cover and reptiles.
- Indiscriminate mining from active channels of rivers causes many adverse effects on the benthic fauna, which inhabits the bottom sandy substratum. Excessive sand extraction from rivers affects the eco-biology of many terrestrial insects whose initial life history begins in aquatic environments
- Stomatal index may be minimized due to dust deposit on leaf.

✓ Socio-economic

- Such shops along the roads will generate solid waste and waste water which will have adverse impact on human health.
- Further, the deep pits created in the channel also can contribute to an increase in accidents in the working environment.

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Adequate control measures will be adopted to check not only the wash-off from soil erosion but also uncontrolled flow of mine water.

✓ Noise Pollution

Mining operations involve deployment of mining machineries, drilling, blasting, excavation and transportation of stone. Noise may be generated by the impact from drill bits and mechanical vibration from drill casings, as well as impulse noise from exhaust and ancillary equipment such as fans and blowers for mine ventilation.

✓ Land Environment

The creation of landscape blots like open pits and piles of waste rocks due to mining operations can lead to the physical destruction of the land at the mining site. Such disruptions can contribute to the deterioration of the area's flora and fauna. There is also a huge possibility that many of the surface features that were present before mining activities cannot be replaced after the process has ended. The removal of soil layers and deep underground digging can destabilize the ground which threatens the future of roads and buildings in the area.

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15. REMEDIAL MEASURES TO MITIGATE THE IMPACT OF MINING ON THE ENVIRONMENT

15.1 Remedial Measures for Sand Mining:

✓ Air Environment:

During mining activity, the only source of air pollution is excavation, transportation, loading and handling of minerals etc. However, the measures are suggested to mitigate the negative impact of the proposed mining activity to control the pollutants by plantation of trees along haul roads, specially near settlements, to help to reduce the impact of dust on the nearby villages; planning transportation routes of mined material so as to reach the nearest paved roads by shortest route (minimize transportation over unpaved road); regular water sprinkling on unpaved roads to avoid dust generation during transportation etc.

Impact	Mitigation Measures
Air Emissions • Dust and air emission particularly due to the excavation, construction and movement of vehicles resulting in air pollution.	• Provision of spraying water to reduce dust emission on roads and particularly near existing settlements. • Excavated topsoil to be preserved and reused for landscaping. • The amount of exposed ground and stockpiles will be minimized so that re-suspension due to wind and subsequent dust fall is prevented. Heights of stock piles should control dust fall in nearby areas. • Arrangement of the soil will be such that existing drainage pattern, though altered, will still ensure that runoff does not carry away topsoil but reaches the water bodies with which it is linked. Ensuring all vehicles, generators and compressors are well maintained and regularly serviced.

The following measures are suggested to mitigate any negative impacts of mining:

- Planned multiple transportation routes in different direction to minimize the dust generation.
- Planned paved roads outside mine lease area to minimize the dust generation. Alternatively, planning transportation routes so as to reach the nearest paved roads by shortest route. (Minimize transportation over unpaved road).
- Frequent water sprinkling on unpaved roads (>2L/m²).
- Plantation of trees along haul roads, especially near settlements, to reduce the impact of dust on the nearby villages.
- Dust mask shall be provided to the workers engaged at dust ge1neration points like excavations and loading points.
- Transportation of material shall be carried out during day time only.
- The speed of trucks plying on the haul road should limited to 20 km/hour to avoid generation of dust.
- Covering of material by tarpaulin during transportation on trucks to prevent spillage of materials from the trucks.
- Overloading shall be avoided.

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Movement of Traffic-

Impact	Mitigation Measures
• No. of PCU/Hr. will increase due to mining in existing traffic scenario lead to air pollution which can cause adverse effect on human health of neighboring villagers like effect on breathing and respiratory system, damage to lung tissue, cancer and premature death, influenza or asthma.	• Vehicles with PUC Certificate will be hired. Regular maintenance of vehicles will be done to ensure smooth running of vehicle. It is proposed to plant local species trees per year with consultation of Forest department with some fruit bearing and medicinal trees, along the haul roads, outer periphery within the lease area to prevent the impact of dust in the nearby village. Regular Health checkup camps will be organized.
• No. of PCU /Hr. will increase in the existing traffic due to this mining activity hence vehicle collation may occur unwanted sound and can also cause impact on human health.	• In addition, truck drivers will be instructed to make minimum use of horns in the village area and sensitive zones. It is proposed to plant local species trees per year with consultation of Forest department with some fruit bearing and medicinal trees, along the haul roads, outer periphery within the lease area to reduce the impact of noise in the study area. Regular Health checkup camps will be organized.
• Accidents may be occurring due to fast movement of vehicles.	• To avoid accidents, the speed of vehicles will be low near habitation areas.

✓ **Noise Pollution:**

It can be stated that the impact on the present noise levels due to mining operations will be minimal and shall be restricted to transportation route only. There is no drilling and blasting envisaged in the sand mining so there is no impact of vibration.

Impact	Mitigation Measures
• Noise Impact due to mining activities. • Human Noise from the machinery can cause hypertension, high stress level, hearing loss, sleep disturbance etc. due to prolonged exposure. • Increase in the existing traffic due to the mining activity may occur unwanted sound and can also cause impact on human health of neighboring villagers like effect on breathing and respiratory system, damage to lung tissue, cancer and premature death, influenza or asthma.	• Noise generated be this equipment will be intermittent and does not cause much adverse impact. • The noise measurement data indicated that present noise levels in the study area is within the permissible limits of National Ambient Noise Quality Standards. • Periodical monitoring of noise will be done. • No other equipment except the transportation vehicles and excavator for loading will be allowed. • Proper maintenance of all equipment / machines will be carried out which help in reducing noise during operations. • In addition, truck drivers will be instructed to make minimum use of horns in the village area and sensitive zones. • Plantation will be taken up along the approach roads and vicinity of river bank. The plantation minimizes propagation of noise and also arrests dust. • Ear muffs will be provided while working on mining equipment. • Regular health check-ups will be conducted for any such health implications

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✓ **Water Environment:**

Impact	Mitigation Measures
• Flow pattern might be changed due to river bed mining. • Mining activities depth will be increased, which may result in increase of flow velocity.	• No diversion is anticipated. There will not be any adverse impact on flow pattern, surface hydrology and ground water regime. • Mining activities will be restricted to maximum 3 m depth, which will not cause much change in flow pattern of the river.
• Change in surface water quality and ground water quality.	• The mining will not be allowed below the water table. • Regular monitoring of water samples will be done as precautionary measures.
• Impact on ground water recharge potential as the thickness of the natural filter materials (sediments) is reduce causing less infiltration.	• Mining will be done as per approved Mine Plan and applicable Rules & Regulation, so that there is no damage on ground water recharge potential due to sand mining.
• Waste water discharge.	• Portable Bio-toilets will be used; hence no sewage/liquid effluent will be generated and contamination is also not expected due to percolation.

✓ **Soil Environment:**

Impact	Mitigation Measures
• Mining activity may increase the soil erosion and soil degradation which have adverse impact on soil fertility.	• It is already proposed to plant local species trees per year with consultation of Forest department with some fruit bearing and medicinal trees, along the haul roads, outer periphery within the mining area which enhances the binding property of the soil to check the erosion. • Water will be sprinkled on unpaved roads to avoid dust generation and soil erosion.
• Top soil extraction from outside riverbed may also affect the soil fertility and productivity.	• In case of riverbed, no top soil will be generated during the mining activity.
• During the flood, the soil erosion may occur.	• Mine lease area has been proposed leaving a safety distance from the bank inwards which will protect the banks. Check dams have been constructed at various places for protection of banks against direct attack of the rivers and avoid bank cutting.

✓ **Solid Waste Generation/Management:**

Impact	Mitigation Measures
• Flow pattern might be changed due to river bed mining. • Mining activities depth will be increased, which may result in increase of flow velocity.	• No diversion is proposed. There will not be any adverse impact on flow pattern, surface hydrology and ground water regime. • Mining activities will be restricted to maximum 3 m depth, which will not cause much change in flow pattern of the river.

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Impact	Mitigation Measures
• Waste water discharge.	• Portable Bio-toilets will be used; hence no sewage/liquid effluent will be generated and contamination is also not expected due to percolation.

✓ **Land Use:**

Impact	Mitigation Measures
• The mining activity in the outside riverbed will be converted into the pit. Which may cause soil erosion, soil degradation etc.	• It is proposed to plant of local species trees per year with consultation of Forest department with some fruit bearing and medicinal trees, along the haul roads, outer periphery within the mining area which enhances the binding property of the soil.
• Mining in the riverbed may change complete land use pattern including channel geometry, bed elevation, sediment transportation capacity which can reduce flow of the river and downstream erosion.	• The mining is planned in non-monsoon seasons only so that the excavated area will be replenished naturally during the subsequent rainy season for the river bed mining block. • Mine lease area has been proposed leaving a safety distance from the bank inwards which will protect the banks so channel geometry will not be disturbed. Check dams have been constructed at various places for protection of banks against direct attack of the rivers and avoid bank cutting. • Pre and post monsoon survey for sedimentation in the riverbed will be done regularly

✓ **Hydrogeology:**

Impact	Mitigation Measures
• The mining in the riverbed area may cause the ground water contamination due to intersection of the water table.	• The water table will not be intersected during mining in the riverbed as ultimate depth is limited Proper analysis/Monitoring will be done to check the ground and surface water
• Change the topography will divert the river flow.	• There is no proposal of any stream modification/diversion due to this mining activity hence there will be no any impact on flow of the river.
• Change in topography can change the river flow and flood may occur.	• Mining will be prohibited in monsoon season.
• Slope of mining area will change which can create soil erosion and divert rain water runoff channel.	• The maximum depth of mining in the river bed will not exceed 3 meters and the maximum depth of mining in outside riverbed will not exceed.

✓ **Topography, Drainage and Ground Water Contamination:**

Impact	Mitigation Measures
• Spillage of oil from construction/transportation vehicles and equipment.	• Spillage of oil from construction vehicles and equipment will be avoided. These should be inspected by supervisor for any leakage of oil. • Collection of water in pits will be avoided. • Contamination of soil will be avoided by suitable soil conservation measures.

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✓ **Biological Environment:**

Impact	Mitigation Measures
• Transportation of sand in the trucks/dumper will disturb the movement of wild animals like jungle cat, jackal, and other reptiles. Fugitive emission from vehicle movement will form a layer in leaves thus reducing the gaseous exchange process. This ultimately affects the growth of plants. Chances of vehicle collisions with wildlife attempting to cross roads are possible.	• Transportation of sand will only be day time. Access roads will not encroach into the riparian zones.
• Any human settlement in the mining area will disturb the vegetation cover and reptiles	• No human settlement will be permitted in the lease mining or nearby area. No mining will be carried out during the rainy season to minimize impact on aquatic life.
• Indiscriminate mining from active channels of rivers causes many adverse effects on the benthic fauna, which inhabits the bottom sandy substratum. Excessive sand extraction from rivers affects the eco-biology of many terrestrial insects whose initial life history begins in aquatic environments.	• Mining will be done only in riverbed and outside riverbed as per provided by DMG so there will be no impact on benthic fauna in riverbed hence no mitigation will be required.

✓ **Socio-economic:**

Impact	Mitigation Measures
• Due to mining and transportation of sand will generate the small shops, dhabas, garage, restaurant, vegetable shops etc. along the road and generate direct employment.	• Positive Impact
• Mining activity will generate direct employment which will be employed locally and preference will be given to local people.	• Positive Impact
• Such shops along the roads will generate solid waste and waste water which will have adverse impact on human health.	• Garbage bins will be provided for proper disposal of solid waste.
• Further, the deep pits created in the channel also can contribute to an increase in accidents in the working environment.	• The mined-out area outside river bed block will be reclaimed and any stored water will be pumped out.
• This creates serious threat to residents in the area who depend on river water for their domestic purposes.	• The mining is planned in non-monsoon seasons only so that the excavated area will be replenished naturally during the subsequent rainy season for the river bed mining block.
• The major source of socio-health impacts of transportation will generate from truck, dust etc. Increase in accidents as a result of rash	• It is proposed to plant of local species per year with consultation of Forest department with some fruit bearing and medicinal trees,

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Impact	Mitigation Measures
driving of dumpers carrying mineral through the roads may be possible.	along the haul roads, outer periphery within the mining area to control the dust. • Planning transportation routes of mined material so as to reach the nearest paved roads by shortest route. (minimize transportation over unpaved road). Alternatively, gravelled road may be constructed between mine lease area and nearest paved road connectivity; The speed of trucks plying on the haul road should limited to avoid generation of dust; and Covering of material during transportation on trucks to prevent spillage of sand from the trucks. The trucks will be covered by tarpaulin. Overloading will be avoided. • Regular water sprinkling on unpaved roads to avoid dust generation during transportation.

15.2 Remedial Measures for other than Sand Mining:

▪ Remedial Measures for Air Pollution:

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

▪ Remedial Measures for Water Pollution:

- Mining is proposed to plan above the ground water table. Therefore, pumping of ground water from mine pit does not arise in this mine. The rain water during rainy season is proposed to settle in a pit and shall be use for dust suppression and plantation. Excess water, if any shall be discharged in natural stream after settling of suspended particles in the pit. Pump having required capacity will be installed to lift accumulated rain water from working pit and pumped to the settling tank.
- Garland drain shall be made around the Waste dump and the rain water shall be collected in garland drain and allowed to settle in a small pit for settling suspended particles before allowing discharge to natural drainage system.
- For domestic waste water Septic Tank with Soak Pit shall be provided, discharge from Soak Pit, if any shall be used for plantation

▪ Remedial Measures for Noise Pollution:

- Diesel powered machineries, which is major source of noise in open cast mining shall be properly maintained. Attention shall be paid towards rigorous maintenance of the silencer of the diesel engines.
- Protective devices shall be provided for use of persons employed in the vicinity of high noise areas.

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- With the adoption of controlled blasting techniques, the ground vibrations will be minimized.
- Plantation around the lease boundary will cut the noise levels.

▪ Remedial Measures for Land Environment:

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

- The mining activities will be restricted within the lease area only.
- The waste material will be utilized for the construction of road and also will be used by the local people for construction work.
- The surface run off from the lease area will be retain within the lease and used for plantation, dust suppression and block cutting. So, there will be no soil erosion from the lease area and its surrounding due to mining activity.
- The dump will have inward slope with catch drains at inward side of the terrace and the catch drain of the individual terrace will be connected to the garland drain outside the periphery of the dump. Retaining wall and garland drain will be constructed around the dumps and the surface runoff water pass through the garland drain and finally settled in a settling pit before released outside.
- Retaining wall and garland drains for the proposed waste dump will be constructed to arrest wash offs from the dump.
- Maintenance/repair of vehicles and machineries will not be inside the mining area. However, steel trays will be used for any emergency repair and sudden leakage of oil.

▪ Remedial Measures for Waste Management:

The solid waste shall be dumped systematically with proper repose angle and stabilization as follows:

- Gradation of dump shall be done automatically as coarser materials go to the bottom and finer at the top and therefore drain of rain water flow freely to the bottom without endangering the stability of dump.
- Stabilization of dump with top soil and tree plantation shall make the dump more stable on long. Dump should be terraced for every 5 m height and stabilized.
- 1m height parapet shall be constructed for dumps more than 6m height along the toe to prevent and control wash out from dumps entering into natural system through rain water.
- Garland drainage around dump shall prevent under wash of dump by hydrostatic pressure to be developed by surface water and control wash outs and collapse.

▪ Remedial Measures for Flora and Fauna:

Extensive plantation comprising of pollutant resistant trees will be undertaken, which will serve not only as pollution sink but also as a noise barrier. It is proposed to include azadirachta Indica, and ficus Religiosa in the plantation program as they serve as sinks for gaseous emissions.

The impact on the fauna due to the mining activity will be insignificant. The progressive plantation over a period of time will reduce the impact, if any, on the fauna.

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16. RISK ASSESSMENT & DISASTER MANAGEMENT PLAN

16.1 Risk Assessment for Sand Mining:

Since, Sand Mining operation does not attract Mine Act 1952, it does not require any statutory personals, however the entire operation must be under the supervision of experience qualified person who can handle the labour employment effectively. The person must have knowledge of transportation activities with traffic rule & safety. It is always advisable to appoint such person who can understand the language of Mine plan & implement the same.

1. As such in case of sand mining activities does not have any short of risk in operational activity except prior to start the monsoon period all the manpower & equipment's to be withdrawn to safe location.
2. In case of temporary discontinuation of operation due to natural calamity or labour strike & Risk management plan to be developed based in the local condition.

- **Accidents due to Transportation and Movement of Mining Machineries**

Risks:
Most of the accidents occur during transportation by tippers/trucks and movement of Mining machineries.

Mitigation Measures:

- This can be prevented by regular training of all vehicle/machinery drivers/operators, regular maintenance of equipment and ensuring safe operations.
- All safety precautions and provision of MMR 1961 shall be strictly followed during all mining operations.
- Regular maintenance and testing of all mining equipment as per manufacturer's guidelines.
- All transportation within the main working area should be carried out under the direct supervision and control of the management;
- The vehicles must be maintained in good repairs and checked thoroughly at least once a week by a competent person authorized for this purpose by the management;
- Broad signs should be provided at each and every turning point especially for the guidance of the drivers of vehicles.
- To avoid dangers while reversing the trackless vehicles, especially at the embankment and tripping points, all areas for reversing of lorries should, as far as possible, be made man free, and there should be a light and sound device to indicate reversing of trucks; and
- A statutory provision of the fence, constant education, training etc. will go a long way in reducing the incidence of such accidents.

- **Risk Assessment:**

Hazard Identification & Risk Assessment (Hira)

The entire mining operation will be done under the supervision of the Mines Engineer/Mines manager having second class mines manager's certificate of competency and supported by a team of competent persons. Nevertheless, the following natural/industrial problems may by encountered during the mining operation:

- Accident due to Transportation or movement of heavy machineries
- Operation of mining equipment
- Accident due to storage of Fuel
- Filling of Mine due to excessive rain

Risk and Mitigation Measures:

Over Burden

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Risks:

The overburden dumps may cause landslides. High overburden dumps created at the quarry edge may cause sliding of the overburden dump or may cause failure of the pit slope due to excessive loading, thereby causing loss of life and property. Siltation of surface water may also cause run-off from overburden dumps.

Mitigation Measures:

- To prevent the failure of overburden slopes, especially during the rainy season, proper garland drain & bund are constructed around the dump.
- To prevent this, height of overburden dumps will be restricted. Further, no stone or loose rock or loose tree will be allowed to remain within 3 meters of the edge of the quarry. To prevent siltation of surface water, retaining wall will be constructed on the down side of each OB dump.

Accidents Due to Transportation and Movement of Mining Machineries

Risks:

Most of the accidents occur during transportation by tippers/trucks and movement of Mining machineries.

- Operations of jack hammers are often attributable to mechanical failures and human errors.

Mitigation Measures:

- This can be prevented by regular training of all vehicle/machinery drivers/operators, regular maintenance of equipment and ensuring safe operations.
- All safety precautions and provision of MMR 1961 shall be strictly followed during all mining operations.
- Regular maintenance and testing of all mining equipment as per manufacturer's guidelines.
- All transportation within the main working area should be carried out under the direct supervision and control of the management;
- The vehicles must be maintained in good repairs and checked thoroughly at least once a week by a competent person authorized for this purpose by the management;
- Broad signs should be provided at each and every turning point specially for the guidance of the drivers of vehicles.
- To avoid dangers while reversing the trackless vehicles, especially at the embankment and tripping points, all areas for reversing of lorries should, as far as possible, be made man free, and there should be a light and sound device to indicate reversing of trucks; and
- A statutory provision of the fence, constant education, training etc. will go a long way in reducing the incidence of such accidents.

Fuel Storage:

- No major storage of fuel envisaged in the mining lease area.

Water Logging:

Risks:

Filling of mine pit with excessive rain

Mitigation Measures:

- Provision of adequate capacity pumps for pumping out water from the mining pit with standby arrangements.
- Checking and regular maintenance of garland drainage and earthen bunds to avoid any inflow of surface water into the mine pit.

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- Proper drainage will be maintained to eliminate inundation of working pits during rains from run-off water. Suitable garland drain will be provided around pit along with sedimentation pits on each side.
- There is no danger of flood or inundation as the ground level is well below the plateau top, where mining will be carried out.

Safety Measures at Mine:

- The gradient of the haul road inside the pit, access trench and on the dumps will not be steeper than 1 in 16.
- The quarries will be protected by garland drains around the periphery for storm water drainage;

Care and Maintenance during Temporary Discontinuance:

In case of emergency arise as situation of temporary discontinuance due to court order or due to statutory requirements or any other unforeseen circumstances pit will be fenced and locked properly so as no one can enter in pit. All plantation will be protected with all due care for their survival. Maintenance and monitoring of discontinued mining operations i.e. maintenance of haul roads, will be done in view of re-open in near future.

16.2 Disaster Management Plan:

High risk incidents like land slide subsidence, flood, inundation, in the mine, fire, tailing damp failures etc. may occur for which an emergency plan for individual mine to ebb proposed for quick evacuation of men & machinery.

16.3 Vulnerability of the State:

Almost all the 24 districts are affected by different kind of disaster. There is great need to strengthen the capacity of State, District, Block and newly formed Panchayat level of departments, institutions and functionaries to respond to the Disaster at their own level in participation of community. Jharkhand is vulnerable to following kind of Hazards: -

- Drought,
- Mining Accidents,
- Chemical and Industrial Hazards,
- Lightning,
- Bird Flu,
- Flood,
- Earthquake,
- Fire/Forest Fire,
- Elephant Attacks,
- Climate Change, Biodiversity loss,
- Naxalism/Landmine Blasts etc.

Major Hazards affected districts	Name of Hazards	No. of districts affected	Name of the district
1.	Drought	All the 24 Districts (2010)	All districts affected
2.	Flood	01	(Sahibganj)
3.	Flash Flood	03	(Jamshedpur, Saraikela , Ranchi)
4.	Forest Fire	09	(Garhwa, Palamau, Latehar, Chatra, Hazaribagh, E. & W. Singhbhum, Simdega, Gumla)

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5.	Lightening	09	(Palamau, Chatra, Latehar, Koderma, Ranchi, Giridih)
6.	Mining Hazards	09	(Hazaribagh, Lohardaga, Dumka) Latehar, Ramgarh, Dhanbad, Lohardaga, Giridih E & W Singhbhum & Koderma
7.	Earthquake Hazard- Zone – IV Zone – III Zone - II	02 Districts 15 Districts 7 Districts	(Godda & Sahibganj – Partially) (Godda, Sahibganj, Garhwa, Palamu, Chatra, Hazaribagh, Koderma, Giridih, Bokaro, Dhanbad, Deoghar, Dumka, Godda, Pakur, Jamtara) (Lohardaga, Ranchi, Ramgarh, Khunti, Gumla, E & W Singhbhum)

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Godda.

A Report of Living Organisms of Rivers of Godda District.

By

Dr. Sudhi Vatsa
Head, Department of Zoology
Mahila Mahavidyalaya ,Godda

The rivers of Godda District are home to a diverse range of aquatic life as fishes, molluscs, amphibia, reptiles, birds, crustaceans, benthic fauna, algae and macrophytes. Kajhia, Gerua, Chir, Sakri, Sunder, Harna, etc. are seasonal rivers of Godda. Many fishes like Notopterus (Pholui), Anguilla bengalensis (Boa), Tengra (Mystus tengra), Rohu (Labeo rohita), Chela, Mrigala, Kalbasu, Catla, Pangas, Mangur, Sal, Bili, Bata, Garai and many more are the main food of local people. The leading food of these fishes is zooplanktons and phytoplankton of the rivers. Producers and consumers both maintain the food chain of the rivers. Various varieties of frogs and snakes are available here. But many species of Turtles, Crocodiles, and Dolphins are endangered nowadays, are not found in above rivers in this district. We have to take proper care to save our mother rivers to save the biota here.

12·03·2023
Dr.
HOD Zoo
Mahila College

District Mining Officer,
Godda.

अंचल कार्यालय, बसंतराय

cobsr592@gmail.com
पत्रांक 29 /रा0.

प्रेषक,

अंचल अधिकारी
बसंतराय।

सेवा में,

जिला खनन पदाधिकारी
गोड्डा।

बसंतराय, दिनांक 12 /01/2023

विषय :- **बालू खनिज का जिला सर्वेक्षण रिपोर्ट (DSR) के आंतरिम प्रतिवेदन में चिन्हित बालू घाटों का जाँच प्रतिवेदन के संबंध में।**

प्रसंग :- **आपका पत्रांक-12/एम0, दिनांक-07.12.2022**

महाशय,

उपर्युक्त विषयक प्रसांगिक पत्र के आलोक में राजस्व उप निरीक्षक एवं प्रभारी अंचल निरीक्षक से जाँच कराया गया। जाँचोपरान्त इस अंचल अन्तर्गत बालू घाटों का सर्वेक्षण निम्न प्रकार है :-

क्र0	मौजा का नाम	थाना न0.	खाता न0.	दाग न0.	रकवा	किस्म	नदी का नाम
1	राहा	4	129	188	18-06-08	गैरमजरूआ	गेरूआ
2	महेशटिकरी	6	42	79	09-04-12		
3	सनौर	71	79	605	18-04-16		
4	देशवर्ग	74	46	112/160	19-08-10		
5	उरकुसिया	225	09	33	10-06-08		

उपरोक्त बालूघाटों का बिन्दुवार प्रतिवेदन निम्न है :-

1. आवेदिका/चिन्हित भूमि का किस्म क्या है ? नही
2. क्या चिन्हित भूमि की कोटि सर्वे खतियान यथा रजिस्टर-2 में जंगल झाडी के रूप में दर्ज है? नही
3. क्या 500 मीटर की दूरी के अंदर कोइमानव बसोवास ;ंइपजंजपवदद्ध स्थित है ? (हॉ/नही) नही
4. क्या 500 मीटर की दूरी के अंदर कोइजलीय निकास (Dam Reservoir) स्थित है ? (हाँ/नही) नहीं
5. क्या 500 मीटर की दूरी के अंदर कोइ नदी (River) स्थित है ? (हाँ/नही) हाँ
6. क्या 500 मीटर की दूरी के अंदर कोइ शैक्षणिक संस्थान (Edcational institute) स्थित है ? (हाँ/नही) नही
7. क्या 500 मीटर की दूरी के अंदर कोइ चिकित्सालय (Hospital) स्थित है ? (हाँ/नही) हाँ
8. क्या 500 मीटर की दूरी के अंदर कोइ अन्तराज्जीय सीमा है ? (हाँ/नही) हाँ

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9. क्या 500 मीटर की दूरी के अंदर कोइ राष्ट्रीय धरोहर/पुरातात्विक ?
(Monuments/Archaelogical) महत्व के सील स्थित है ? (हाँ/नही) नही
10- प्रस्तावित खनिज का अनुमानित उत्पादन -
(क) नदी किनारे से खनन परिषर की दूरी क्या है ? शून्य है।
(ख) नदी की कूल चौड़ाई का 1/5 भाग कितने मीटर में है
11- क्या प्रस्तावित परियोजना के कारण भंत्विपूर्ण जलागम (Water intak) या जलबहाव क्षेत्र में परिवर्त्तन होगा ? (यदि हाँ 4तो परिवर्त्तन का विवरण दें)-
अनुलग्नक - यथोक्त

अंचल अधिकारी
बसंतराय।
14/1/23

District Mining Officer,
Godda

सेवा में,

अंचल अधिकारी
बसंतराय।

बसंतराय, दिनांक...../01/2023

विषय :- बालू खनिज का जिला सर्वेक्षण रिपोर्ट (DSR) के आंतरिम प्रतिवेदन में चिन्हित बालू घाटों का जाँच प्रतिवेदन के संबंध में।

प्रसंग :- आपका पत्रांक-12/एम0, दिनांक-07.12.2022

महाशय,

उपर्युक्त विषयक प्रसांगिक पत्र के आलोक में राजस्व उप निरीक्षक एवं प्रभारी अंचल निरीक्षक से जॉच कराया गया। जॉचोपरान्त इस अंचल अन्तर्गत बालू घाटों का सर्वेक्षण निम्न प्रकार है :-

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उपरोक्त बालूघाटो का बिन्दुवार प्रतिवेदन निम्न है :-

1. आवेदिका/चिन्हित भूमि का किस्म क्या है ? नही
2. क्या चिन्हित भूमि की कोटि सर्वे खतियान यथा रजिस्टर-2 में जंगल झाड़ी के रूप में दर्ज है? नहीं
3- क्या 500 मीटर की दूरी के अंदर कोइमानव बसोवास ;भ्इपजंजपवदद्ध स्थित है ? (हॉ/नही) नही
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7. क्या 500 मीटर की दूरी के अंदर कोइ चिकित्सालय (Hospital) स्थित है ? (हाँ/नही) हाँ
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9. क्या 500 मीटर की दूरी के अंदर कोइ राष्ट्रीय धरोहर/पुरातात्विक ? (Monuments/Archaelogical) महत्व के सील स्थित है ? (हाँ/नही) नही
10- प्रस्तावित खनिज का अनुमानित उत्पादन -
    (क) नदी किनारे से खनन परिषर की दूरी क्या है ? शून्य है।
    (ख) नदी की कूल चौड़ाई का 1/5 भाग कितने मीटर मे है
11- क्या प्रस्तावित परियोजना के कारण भंत्विपूर्ण जलागम (Water intak) या जलवहाव क्षेत्र में परिवर्त्तन होगा ? (यदि हाँ 4तो परिवर्त्तन का विवरण दें)-

अंचल अमीन
बसंतराय।

राजस्व उप निरीक्षक
हल्का-01

प्रभारी अंचल निरीक्षक
बसंतराय।

District Mining Officer,
Godda.

कार्यालय, अंचल अधिकारी, पथरगामा।

पत्रांक 841 /रा0,

प्रेषक,

अंचल अधिकारी,
पथरगामा।

सेवा में,

जिला खनन पदाधिकारी,
गोड्डा।

पथरगामा, दिनांक 28/12/2022

विषय :– बालू खनिज का जिला सर्वेक्षण जिला सर्वेक्षण रिपोर्ट (DSR) के आंतरिम प्रतिवेदन में चिन्हित बालू घाटों का जाँच प्रतिवेदन।

प्रसंग :– आपके कार्यालय के पत्रांक 1172/एम0 दिनांक 25.11.2022

महाशय,

उपरोक्त विषय के आलोक में राजस्व उपनिरीक्षक–सह– अंचल निरीक्षक से जाँच कराई गई। जाचोंपरान्त पाया कि अंचल पथरगामा अन्तर्गत निम्न बालू घाट हैं :–

क्र0	मौजा का नाम	थाना नं0	खाता नं0	दाग नं0	रकवा	रकवा (एकड़ में)	किस्म
1	सनातन	265	75	184	22–08–00 धूर	14 एकड़	नदी
2	सिमरिया	264	32	108	38–04–16 धूर	23.90 एकड़	नदी
3				160	13–10–08 धूर	8.45 एकड़	नदी
4				671	16–06–08 धूर	10.20 एकड़	नदी
5				201/672	03–05–18 धूर	2.05 एकड़	नदी
6	कन्हाई पकड़िया	258	20	16	29–15–04 धूर	18.6 एकड़	नदी
7	चकवा	262	26	466	15–06–15 धूर	9.58 एकड़	नदी

उपरोक्त बालू घाटों का बिन्दुवार प्रतिवेदन निम्न है :–

1. आवेदित/चिन्हित भूमि का किस्म क्या है? नदी।
2. क्या निन्हित भूमि की कोटि सर्वे खतियान यथा रजिस्टर 2 में जंगल झाड़ी के रूप में दर्ज है? नहीं।
3. क्या 500 मीटर की दूरी के अन्दर कोई मानव बसाहट (HABITATION) स्थित है? नहीं।

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District Mining Officer,
Godda.

4. क्या 500 मीटर की दूरी के अन्दर कोई जलीय निकाय (Dam/Resevor) स्थित है?
   नदी है एवं जल का प्रवाह होता है।
5. क्या 500 मीटर की दूरी के अन्दर कोई शैक्षणिक संस्थान (Educational Institute) है? नहीं।
6. क्या 500 मीटर की दूरी के अन्दर कोई चिकित्सालय (Hospital) है? नहीं।
7. क्या 10 कि0मी0 की दूरी की परिधी में कोई अंतर्राज्यीय (Inter State) सीमा है?
   हाँ (उरकुसिया बॉर्डर है)
8. क्या 500 मीटर की दूरी के अन्दर कोई राष्ट्रीय धरोहर/पुरातत्वीय (Monuments/Archaelogical) महत्व के स्थल स्थित हैं ? नहीं।
9. प्रस्तावित खनिज का अनुमानित उत्पादन– –
10. नदी से रेत खनन के प्रकरण में
    (अ) नदी किनारे से खनन परिषर की दूरी क्या है ? –
    (ब) नदी की कुल चौड़ाई का 1/5 भाग कितने मीटर में है ? –
11. क्या प्रस्तावित परियोजना के कारण भंत्विपूर्ण जलागम (Water intake) या जलबहाव क्षेत्र में परिवर्त्तन होगा ? (यदि हाँ तो परिवर्त्तन का विवरण दें) –

जाँच प्रतिवेदन अग्रेतर कार्रवाई हेतु प्रेषित।

विश्वासभाजन

अंचल अधिकारी,
पथरगामा

अंचल अधिकारी
पथरगामा, गोड्डा

अनुलग्नक :– यथोक्त।

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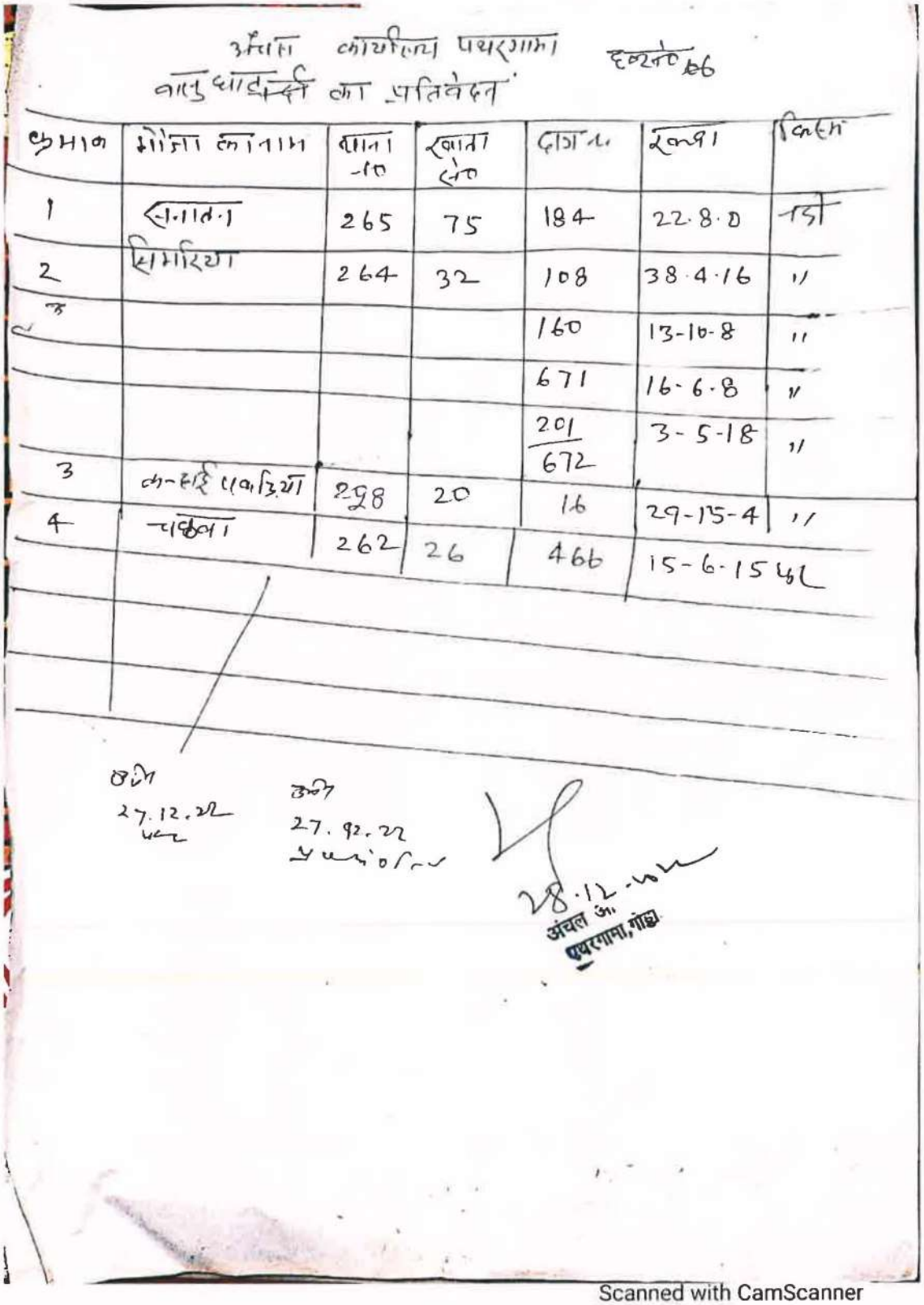
District Mining Officer,
Godda.



अंचल कार्यालय पथरगामा दिनांक 66
वालुका उत्खनन का प्रतिवेदन

क्रमांक	मौजा का नाम	खाता नं०	खसरा नं०	दाग नं०	रकबा	किस्म
1	सनातन	265	75	184	22.8.0	रेत
2	सिमरिया	264	32	108	38.4.16	"
				160	13-10-8	"
				671	16-6-8	"
				201/672	3-5-18	"
3	कनहई पवरिया	298	20	16	29-15-4	"
4	चकला	262	26	466	15-6-15 4L	

सही
27.12.22

सही
27.12.22

28.12.22
अंचल अ.
पथरगामा, गोड्डा

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District Mining Officer,
Godda.

कार्यालय, अंचल अधिकारी, पथरगामा।

gmail-copgama@gmail.com

पत्रांक– 35 A /रा0

प्रेषक,

अंचल अधिकारी,
पथरगामा।

सेवा में,

जिला खनन पदाधिकारी,
गोड्डा।

पथरगामा, दिनांक– 16 /01/2023

विषय :– बालु घाट से संबंधित प्रतिवेदन के संबंध में।

महाशय,

उपर्युक्त विषय के आलोक में सूचित करना है कि राजस्व उपनिरीक्षक एवं अंचल निरीक्षक से जांच कराई गई जांचोपरान्त पाया कि मौजा जसमता थाना नं0 263 गैरमजरूआ खाता स0 02 दाग न0 13 किस्म नदी (गैरूआ) रकवा 31–15–10 धूर खतियान में दर्ज है। भूमि का विवरणी निम्न है –

क्र0स0	मौजा का नाम	थाना न0	खाता सं0	दाग नं0	रकवा	किस्म
1	जसमता	263	02	13	31–15–10 19.86 एकड	नदी

अनुलंग्नक :– यथोक्त।

विश्वासभाजन

अंचल अधिकारी,
पथरगामा। 2023

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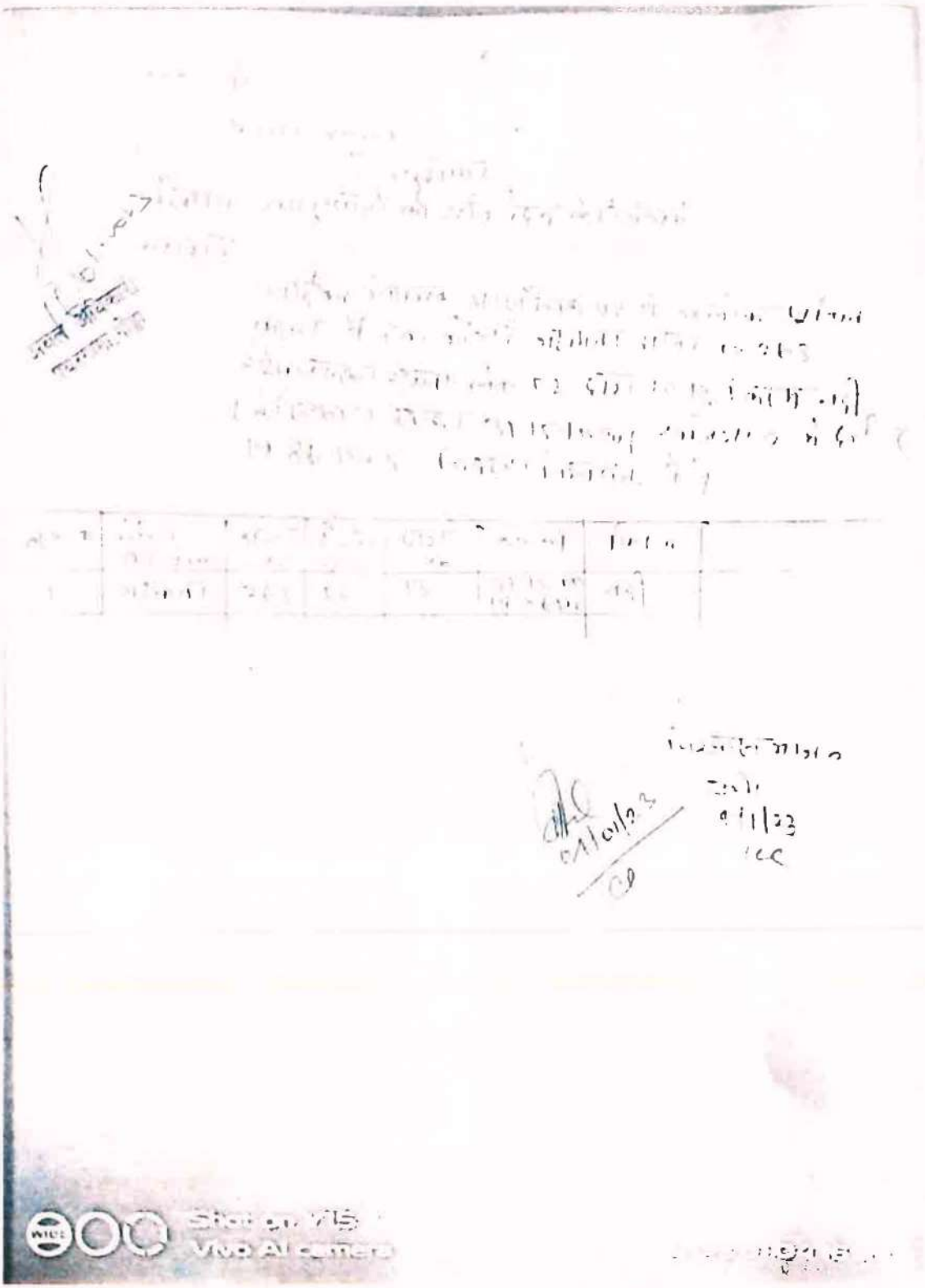
District Mining Officer,
Godda.



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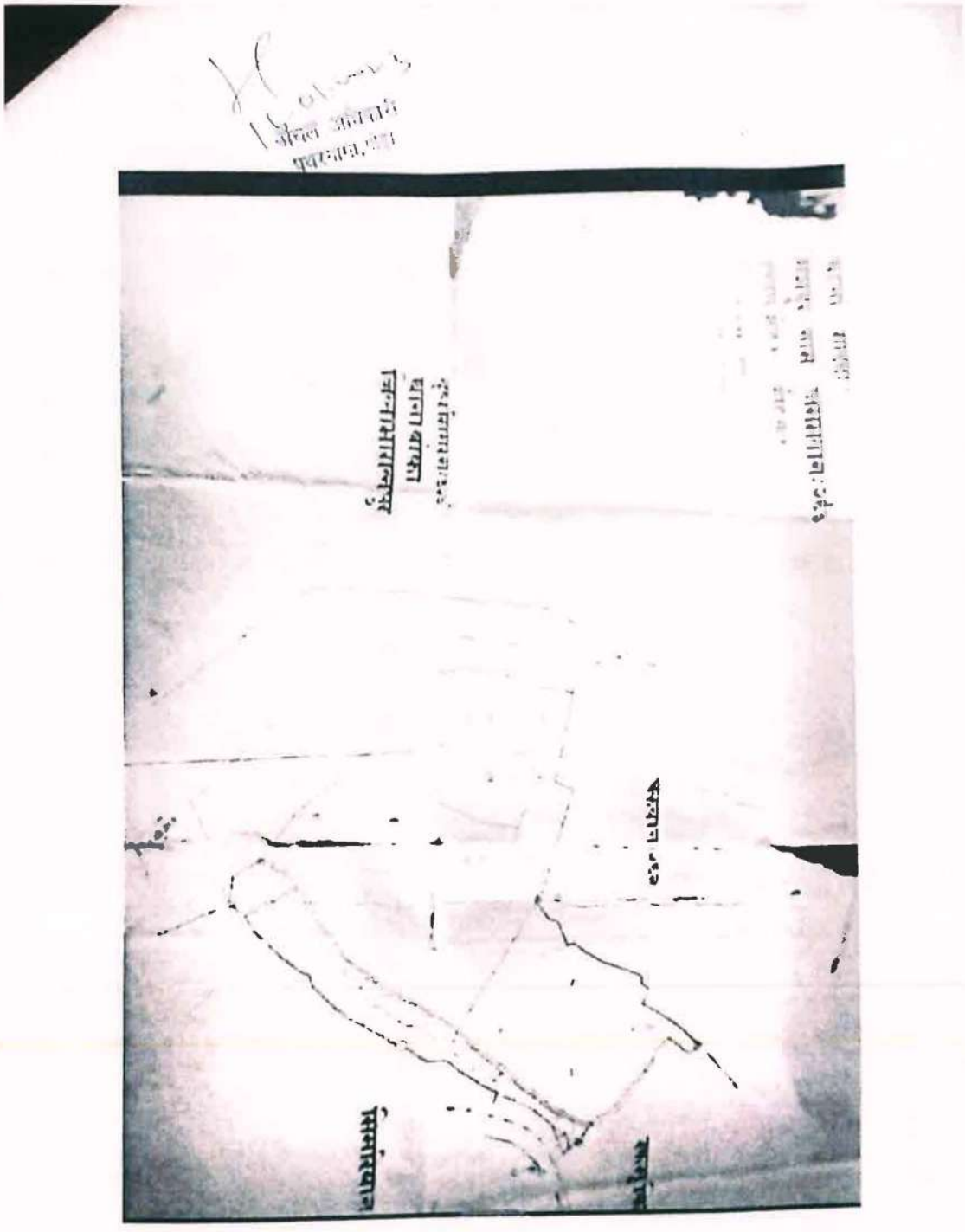
District Mining Officer,
Godda



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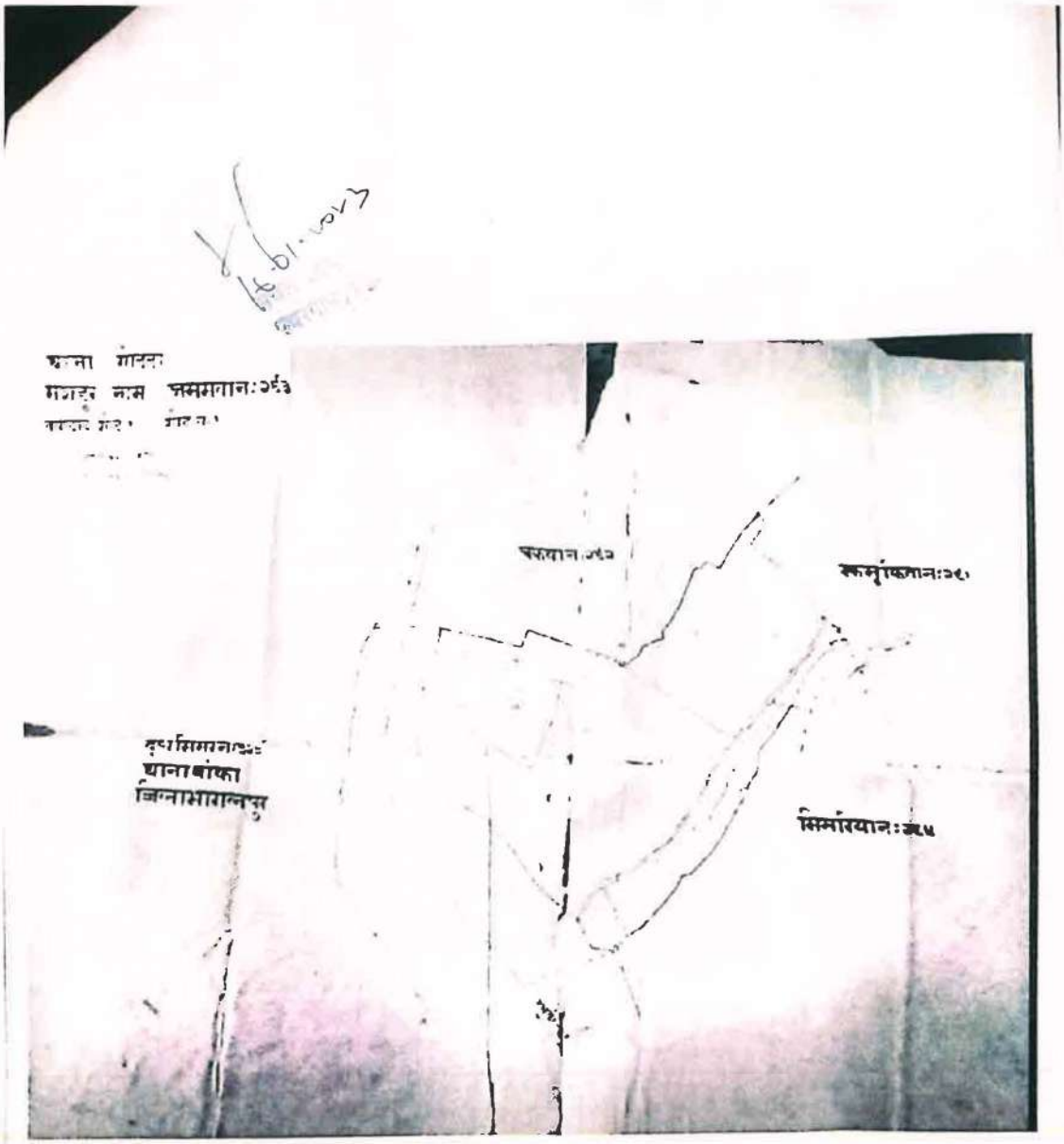
District Mining Officer,
Godda.



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District Mining Officer,
Godda.

arbhoomi.jharkhand.gov.in

झारखंड सरकार
राजस्व एवं भूमि सुधार विभाग
अधिकार अभिलेख

जमीनदार नाम

रैयत का नाम, अभिभावक का नाम, रिश्ता

जिला का नाम गोड्डा अंचल का नाम पथरगामा हलका का नाम हल्का 6 मौजा का नाम जरामता खतियान प्रकार

खेवट नम्बर खाता नम्बर 2 थाना का नाम पथरगामा थाना नम्बर 263

खाता नम्बर	खेसरा नम्बर	चौहद्दी उत्तर 3 चौहद्दी दक्खिन 4	किस्म जमीन	मिजान	कैफियत / अभ्युक्ति	हाकिम के तहकीकात मुताबिक लगान/मेस	लगान		
(1)	(2)	(3)	किआरी संख्या (5)	क्षेत्र	(8)	(9)	रै (10)	आ (11)	
	1	अ अ	— 1	0 (बीघा) 5 (कठा) 9 (धुर)	नाला		0	0	0
	6	अ अ	— 1	2 (बीघा) 12 (कठा) 10 (धुर)	रास्ता		0	0	0
	7	अ अ	— 1	1 (बीघा) 19 (कठा) 14 (धुर)	परती बर्टीम		0	0	0
2	8	अ अ	— 1	2 (बीघा) 2 (कठा) 2 (धुर)	नदी निम्नादेह हजार डी निसफ मौजा सेमरजा न० 264		0	0	0
	11	अ अ	— 1	0 (बीघा) 6 (कठा) 8 (धुर)	घोटा		0	0	0
	13	अ अ	— 1	31 (बीघा) 15 (कठा) 10 (धुर)	गैरजा नदी निम्नादेह हजार डी निसफ मौजा सेमरजा न० न० 264		0	0	0

खाता मे कुल प्लोट संख्या 6 खाता का कुल मिजान 39 (बीघा) 1 (कठा) 16 (धुर) खाता का कुल 0 0

यह एक कंप्यूटर जनित प्रति है

1/4/2023 4:38:49 PM

यह प्रपत्र केवल प्रार्थी की जानकारी के लिए है

किसी भी प्रकार की अशुद्धियों के लिए सम्बन्धित अंचलाधिकारी से संपर्क करें |

प्लाट का नक्शा देखने के लिए प्लाट नंबर क्लिक करें |

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District Mining Officer,
Godda.

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अंचल अधिकारी का कार्यालय, गोड्डा सदर।

संशोधित प्रपत्र में सभी जिला सर्वे रिपोर्ट (District Survey Report) DSR हेतु बालुघाटों से संबंधित प्रतिवेदन।

क्रम	खदान का नाम	खदान ग्राम / थाना	खदान का प्रकार	खसरा / खाता नं०	रैयती/सरकारी खसरा नं०	खसरा नं०	रकबा (Acreage)	प्रखण्ड	क्या प्रस्तावित खदान से 500 मीटर के दायरे में कोई सार्वजनिक संरचना (संरचना से तात्पर्य आबादी के क्षेत्र में दर्ज है? (हाँ / नहीं)	क्या 500 मीटर की दूरी के अंदर कोई पर्यावरण संवेदनशील स्थान (Habitation) स्थित है? (हाँ / नहीं)	क्या 500 मीटर की दूरी के अंदर कोई जलीय निकाय (Dam Reservoir) है / नहीं	क्या 500 मीटर की दूरी के अंदर कोई नदी (River) स्थित है (हाँ / नहीं)	क्या 500 मीटर की दूरी के अंदर कोई शैक्षणिक संस्थान (Educational institute) स्थित है? (हाँ / नहीं)	क्या 500 मीटर की दूरी के अंदर कोई चिकित्सालय (Hospital) स्थित है? (हाँ / नहीं)	क्या 10 किलोमीटर की परिधि में कोई अंतर्राष्ट्रीय सीमा है? (हाँ / नहीं)	क्या 500 फीट की दूरी के अंदर कोई राष्ट्रीय धरोहर / पुरातात्विक महत्व के स्मारक स्थित है? (हाँ / नहीं)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	[illegible]	[illegible]	[illegible]	दरियू - 409	406	775	13-10-22	सदी	नहीं	नहीं	नहीं	नहीं	नहीं	नहीं	नहीं
				गाटा-8 / 327	132	1756	10-10-08	सदी							
2	अदाला	[illegible]	[illegible]	खाता दियारा / 530	21	930	07-08-04	सदी	नहीं	नहीं	नहीं	नहीं	नहीं	नहीं	नहीं
						192	15-01-19	सदी							
3	डी।	[illegible]	[illegible]	[illegible] / 276	54	77	13-10-19	सदी	नहीं	हाँ	नहीं	नहीं	हाँ	नहीं	नहीं
4	दो	[illegible]	[illegible]	[illegible] / 278	11	16	02-04-14	सदी	नहीं	नहीं	नहीं	नहीं	नहीं	नहीं	हाँ	नहीं
						1	08-12-08	सदी							

03/01/23

03/01/23
राजस्व उपनिरीक्षक

03/01/2023
अंचल निरीक्षक

03/01/23
अंचल अधिकारी,
गोड्डा सदर।

क्रमांक 14 /सा0, दिनांक 03/01/2023

प्रतिलिपि– जिला खनन पदाधिकारी गोड्डा को उनके पत्रांक–1172/एम्0, दि०क०–23.11.2022 के आलोक में सूचनार्थ एवं आवश्यक कार्रवाई हेतु प्रेषित।

03/01/23
अंचल अधिकारी,
गोड्डा सदर।

District Mining Officer,
Godda

अंचल कार्यालय, पोड़ैयाहाट

पत्रांक 33 /रा0

प्रेषक,

अंचल अधिकारी,
पोड़ैयाहाट।

सेवा में,

जिला खनन पदाधिकारी,
गोड्डा।

पोड़ैयाहाट, दिनांक–07.01.2023

विषयः– बालू खनिज का जिला सर्वेक्षण रिपोर्ट (DSR) के आंतरिम प्रतिवेदन में चिन्हित बालू घाटों का जाँच प्रतिवेदन के संबंध में।

प्रसंगः– आपका पत्रांक 12/एम0 दिनांक 07.12.2022

महाशय,

उपर्युक्त विषयक प्रासंगिक पत्र के संबंध में राजस्व उपनिरीक्षक एवं प्रभारी अंचल निरीक्षक से जाँच कराया गया। जाँचोपरान्त इस अंचल अन्तर्गत बालू घाटों का सर्वेक्षण प्रतिवेदन निम्नवत है:–

क्र0	नदी का नाम	मौजा /बालू घाटों का नाम	थाना नं0	आनावादी खाता संख्या	खेसरा नं0	रकवा (एकड)में	किस्म
1	मोहानी से आसाढी माधुरी	आसाढी माधुरी	19	208	1141	31 एकड	नदी
		तेलियाटीकर	36	59	34	28 एकड	नदी
		मोहानी	39	61	246	14 एकड	नदी
2	ताराटीकर से डॉडे	ताराटीकर	61	63	254	12 एकड	नदी
		पसई	62	264	402	12 एकड	नदी
		डॉडे	41–43	473	1531	43 एकड	नदी
					4932	15 एकड	नदी
					1771	11 एकड	नदी
3	द्रोपद से मचखार	गढी	75	77	53	30 एकड	नदी
		मचखार	64	80	789	12 एकड	नदी
					84	65 एकड	नदी
4	मचखार से पसई	पसई	62	264	685	8 एकड	नदी
					2866	9 एकड	नदी

District Mining Officer,
Godda.

5	पसई से डॉडे	पसई	62	264	389	61 एकड	नदी
					303	61 एकड	नदी
6	बोडाचापड से लत्ता दिकवानी	बोडाचापड	69	85	527	23 एकड	नदी
					524		नदी
					666		नदी
		मटिहानी	68	75	2517	17 एकड	नदी
		लत्ता संताली	53	25	946	10.5 एकड	नदी
		लत्ता दिकवानी	54	46	439	10 एकड	नदी
7	लत्ता दिकवानी से ताराटीकर	सुरापपरवा	55	43	843	8 एकड	नदी
					902	10 एकड	नदी
		मचखार	64	80	735	5 एकड	नदी
		अमजोरा	57	38	167	16 एकड	नदी
		पकडीया	59	8	86	6.5 एकड	नदी
		बडगाँव	60	43	9	6 एकड	नदी

उपरोक्त बालू घाटों का बिन्दुवार प्रतिवेदन निम्न है :–

1. आवेदिका / चिन्हित भूमि का किस्म क्या है ? नदी
2. क्या चिन्हित भूमि की कोटि सर्वे खतियान यथा रजिस्टर 2 में जंगल झाडी के रूप में दर्ज है ? नहीं
3. क्या 500 मीटर की दूरी के अन्दर कोई मानव बसाहट (Habitation) स्थित है ? नही
4. क्या 500 मीटर की दूरी के अन्दर कोई जलीय निकाय (Dam/Reservior) स्थित है ? नदी है एवं जल का प्रवाह होता है।
5. कया 500 मीटर की दूरी के अन्दर कोई शैक्षणिक संस्थान (Educational Institute) है ? नहीं
6. क्या 500 मीटर की दूरी के अन्दर कोई चिकित्सालय (Hospital) है ? नही
7. क्या 10 कि0मी0 की दूरी की परिधि में कोई अंतर्राज्यीय (Inter State) सीमा है ? हाँ (बिहार राज्य सीमा)
8. क्या 500 मीटर की दूरी के अन्दर कोई राष्ट्रीय धरोहर / पुरातत्वीय (Monuments/Archaelogical) महत्व के स्थल स्थित है ? नहीं
9. प्रस्तावित खनिज का अनुमानित उत्पादन–
10. नदी से रेत खनन के प्रकरण में
    (अ) नदी किनारे से खनन परिषर की दूरी क्या है ? –

District Mining Officer,
Godda

(ब) नदी की कूल चौडाई का 1/5 भाग कितने मीटर में है ? –

11. क्या प्रस्तावित परियोजना के कारण भंत्विपूर्ण जलागम (Water intake) या जलबहाव क्षेत्र में परिवर्त्तन होगा ? (यदि हाँ 4तो परिवर्त्तन का विवरण दें) – जाँच प्रतिवेदन अग्रेत्तर कार्रवाई हेतु प्रेषित।

अनुलग्नकः– यथोक्त्।

विश्वासभाजन

7/12/23

अंचल अधिकारी,
पोड़ैयाहाट।

District Mining Officer,
Godda

सेवा में,

अंचल अधिकारी,
पोडैयाहाट।

विषयः– बालू खनिज का जिला सर्वेक्षण रिपोर्ट (DSR) के आंतरिम प्रतिवेदन में चिन्हित बालू घाटों का जाँच प्रतिवेदन के संबंध में।

प्रसंगः– जिला खनन पदाधिकारी, गोड्डा का पत्रांक 12/एम0 दिनांक 07.12.2022

महाशय,

उपर्युक्त विषयक प्रासंगिक पत्र के संबंध में इस अंचल अन्तर्गत बालू घाटों का सर्वेक्षण प्रतिवेदन निम्नवत हैः–

क्र0	नदी का नाम	मौजा /बालू घाटों का नाम	थाना नं0	आनावादी खाता संख्या	खेसरा नं0	रकवा (एकड)में	किस्म
1	मोहानी से आसाढी माधुरी	आसाढी माधुरी	19	208	1141	31 एकड	नदी
		तेलियाटीकर	36	59	34	28 एकड	नदी
		मोहानी	39	61	246	14 एकड	नदी
2	ताराटीकर से डॉडे	ताराटीकर	61	63	254	12 एकड	नदी
		पसई	62	264	402	12 एकड	नदी
		डॉडे	41–43	473	1531	43 एकड	नदी
					4932	15 एकड	नदी
					1771	11 एकड	नदी
3	दोपद से मचखार	गढी	75	77	53	30 एकड	नदी
		मचखार	64	80	789	12 एकड	नदी
					84	6.5 एकड	नदी
4	मचखार से पसई	पसई	62	264	685	8 एकड	नदी
					2866	9 एकड	नदी
5	पसई से डॉडे	पसई	62	264	389	61 एकड	नदी
					303	61 एकड	नदी
6	बोडाचापड से लत्ता दिकवानी	बोडाचापड	69	85	527	23 एकड	नदी
					524		नदी
					666		नदी
		मटिहानी	68	75	2517	17 एकड	नदी
		लत्ता संताली	53	25	946	10.5 एकड	नदी

District Mining Officer,
Godda.

		लत्ता दिकवानी	54	46	439	10 एकड	नदी
7	लत्ता दिकवानी से ताराटीकर	सुरापपरवा	55	43	843	8 एकड	नदी
					902	10 एकड	नदी
		मचखार	64	80	735	5 एकड	नदी
		अमजोरा	57	38	167	16 एकड	नदी
		पकडीया	59	8	86	6.5 एकड	नदी
		बडगाँव	60	43	9	6 एकड	नदी

उपरोक्त बालू घाटों का बिन्दुवार प्रतिवेदन निम्न है :–

1. आवेदिका / चिन्हित भूमि का किस्म क्या है ? नदी
2. क्या चिन्हित भूमि की कोटि सर्वे खतियान यथा रजिस्टर 2 में जंगल झाडी के रूप में दर्ज है ? नहीं
3. क्या 500 मीटर की दूरी के अन्दर कोई मानव बसाहट (Habitation) स्थित है ? नही
4. क्या 500 मीटर की दूरी के अन्दर कोई जलीय निकाय (Dam/Reservior) स्थित है ? नदी है एवं जल का प्रवाह होता है।
5. कया 500 मीटर की दूरी के अन्दर कोई शैक्षणिक संस्थान (Educational Institute) है ? नहीं
6. क्या 500 मीटर की दूरी के अन्दर कोई चिकित्सालय (Hospital) है ? नही
7. क्या 10 कि0मी0 की दूरी की परिधि में कोई अंतर्राज्यीय (Inter State) सीमा है ? हाँ (बिहार राज्य सीमा)
8. क्या 500 मीटर की दूरी के अन्दर कोई राष्ट्रीय धरोहर / पुरातत्वीय (Monuments/Archaelogical) महत्व के स्थल स्थित है ? नहीं
9. प्रस्तावित खनिज का अनुमानित उत्पादन–
10. नदी से रेत खनन के प्रकरण में
    (अ) नदी किनारे से खनन परिषर की दूरी क्या है ? –
    (ब) नदी की कूल चौडाई का 1 / 5 भाग कितने मीटर में है ? –
11. क्या प्रस्तावित परियोजना के कारण भत्विपूर्ण जलागम (Water intake) या जलबहाव क्षेत्र में परिवर्त्तन होगा ? (यदि हाँ 4तो परिवर्त्तन का विवरण दें) –

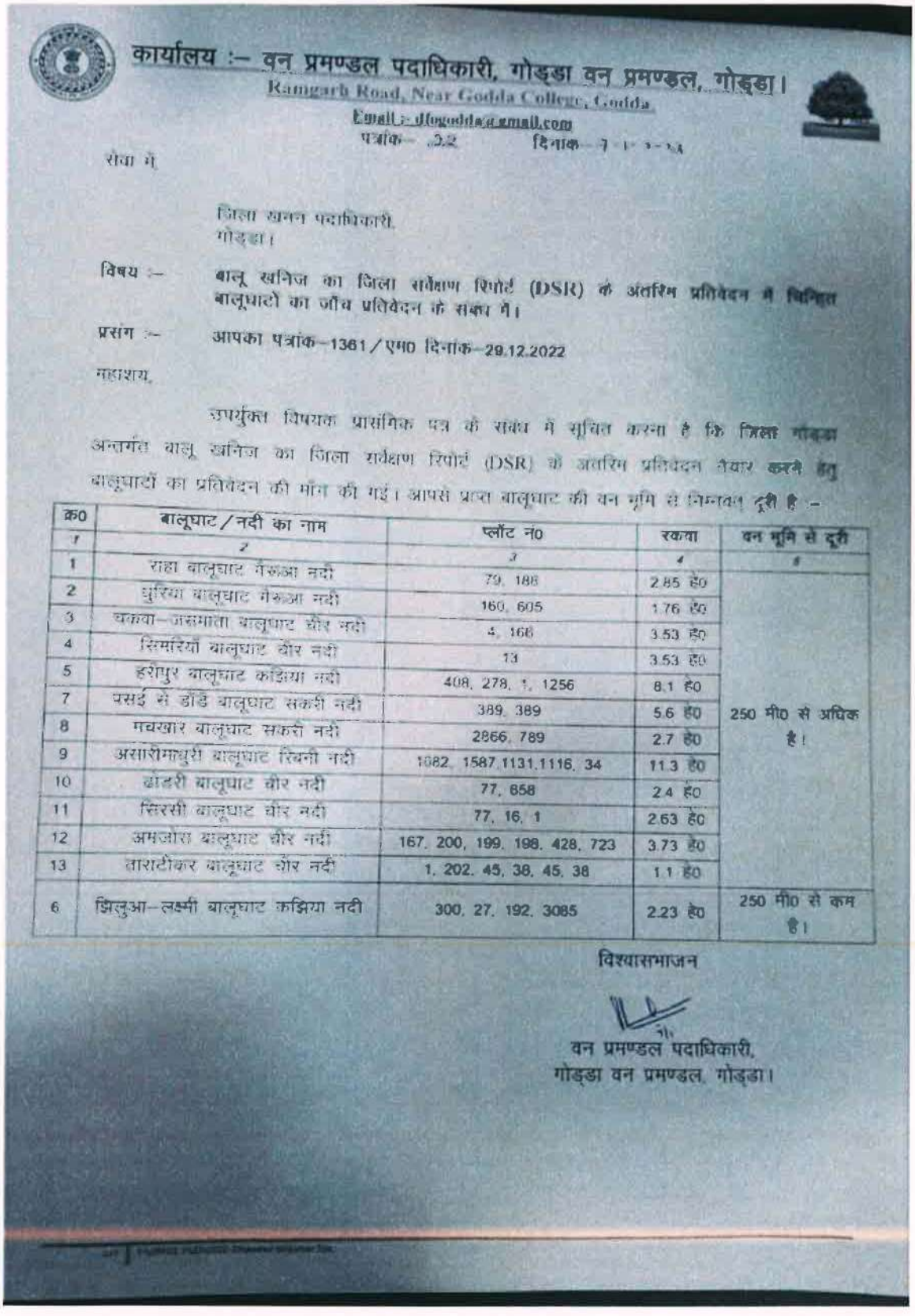
अतः सादर समर्पित।

अंचल अमीन
पोड़ैयाहाट

राजस्व उपनिरीक्षक
हल्का 04 एवं 06

प्रभारी अंचल निरीक्षक
पोड़ैयाहाट।

District Mining Officer,
Godda.



कार्यालय :– वन प्रमण्डल पदाधिकारी, गोड्डा वन प्रमण्डल, गोड्डा।
Ramgarh Road, Near Godda College, Godda
Email :- dfogodda@gmail.com
पत्रांक– 22 दिनांक– 7/1/23

सेवा में,

जिला खनन पदाधिकारी,
गोड्डा।

विषय :– बालू खनिज का जिला सर्वेक्षण रिपोर्ट (DSR) के अंतरिम प्रतिवेदन में चिन्हित बालूघाटों का जाँच प्रतिवेदन के संबंध में।

प्रसंग :– आपका पत्रांक–1361/एम0 दिनांक–29.12.2022

महाशय,

उपर्युक्त विषयक प्रासंगिक पत्र के संबंध में सूचित करना है कि जिला गोड्डा अन्तर्गत बालू खनिज का जिला सर्वेक्षण रिपोर्ट (DSR) के अंतरिम प्रतिवेदन तैयार करने हेतु बालूघाटों का प्रतिवेदन की माँग की गई। आपसे प्राप्त बालूघाट की वन भूमि से निम्नवत् दूरी है :–

क्र0	बालूघाट/नदी का नाम	प्लॉट नं0	रकबा	वन भूमि से दूरी
1	2	3	4	5
1	राहा बालूघाट मेरुआ नदी	79, 188	2.85 हे0	250 मी0 से अधिक है।
2	धुरिया बालूघाट मेरुआ नदी	160, 605	1.76 हे0	
3	चकवा–जसमाता बालूघाट चीर नदी	4, 166	3.53 हे0	
4	सिमरियाँ बालूघाट चीर नदी	13	3.53 हे0	
5	हरेपुर बालूघाट कांझिया नदी	408, 278, 1, 1256	8.1 हे0	
7	पसई से डोडे बालूघाट सकरी नदी	389, 389	5.6 हे0	
8	मचखार बालूघाट सकरी नदी	2866, 789	2.7 हे0	
9	असारीमाधुरी बालूघाट रिंगनी नदी	1082, 1587,1131,1116, 34	11.3 हे0	
10	डोडरी बालूघाट चीर नदी	77, 658	2.4 हे0	
11	सिरसी बालूघाट चीर नदी	77, 16, 1	2.63 हे0	
12	अमजोरा बालूघाट चीर नदी	167, 200, 199, 198, 428, 723	3.73 हे0	
13	तारातीकर बालूघाट चीर नदी	1, 202, 45, 38, 45, 38	1.1 हे0	
6	झिलुआ–लक्ष्मी बालूघाट कझिया नदी	300, 27, 192, 3085	2.23 हे0	250 मी0 से कम है।

विश्वासभाजन

वन प्रमण्डल पदाधिकारी,
गोड्डा वन प्रमण्डल, गोड्डा।

District Mining Officer,
Godda.

कार्यालय :– वन प्रमण्डल पदाधिकारी, गोड्डा वन प्रमण्डल, गोड्डा।

Ramgarh Road, Near Godda College, Godda.
Email :- dfogodda@gmail.com

पत्रांक– 1839 दिनांक– 30/12/2022

सेवा में,

जिला खनन पदाधिकारी,
गोड्डा।

विषय :– बालू खनिज का जिला सर्वेक्षण रिपोर्ट (DSR) के अंतरिम प्रतिवेदन में चिन्हित बालूघाटों का जाँच प्रतिवेदन के संबंध में।

प्रसंग :– आपका पत्रांक–1361/एम0 दिनांक–29.12.2022

महाशय,

उपर्युक्त विषयक प्रासंगिक पत्र के संबंध में सूचित करना है कि जिला गोड्डा अन्तर्गत बालू खनिज का जिला सर्वेक्षण रिपोर्ट (DSR) के अंतरिम प्रतिवेदन तैयार करने हेतु बालूघाटों का प्रतिवेदन की माँग की गई है। प्रखण्ड–बसंतराय एवं पथरगामा अन्तर्गत अधिसूचित वन भूमि नही है। अतः उपरोक्त प्रखण्ड के निम्नलिखित प्रस्तावित बालूघाट वन भूमि सीमा अन्तर्गत नही है।

1. राहा बालूघाट गैरूआ नदी–2.85 हे0
2. धुरिया बालूघाट गैरूआ नदी–1.76 हे0
3. चकवा–जसमाता बालूघाट चीर नदी–3.53 हे0
4. सिमरियाँ बालूघाट चीर नदी–8.1 हे0

विश्वासभाजन

30/12/22

वन प्रमण्डल पदाधिकारी,
गोड्डा वन प्रमण्डल, गोड्डा।

District Mining Officer,
Godda

झारखण्ड सरकार
खान एवं भूतत्व विभाग
भूतत्व निदेशालय
अभियंत्रण छात्रावास–2, द्वितीय तल, धुर्वा, राँची
फोन–0651–3511681, ई–मेल–dir-geology@jharkhandmail.gov.in

पत्रांक – भू0नि0अन्वे–95 / 2021 राँची, दिनांक–

प्रेषक,

निदेशक, भूतत्व
झारखण्ड, राँची।

सेवा में,

सभी सहायक निदेशक, भूतत्व
झारखण्ड।

विषय– जलीय जीवों के संबंध में सूचना एकत्र करने के संबंध में।

महाशय,

उपर्युक्त विषय के संबंध में कहना है कि SEAC के 99th बैठक में कतिपय जिलों के DSR (For Sand) के प्रस्तुतीकरण के दौरान जलीय जीवों के संबंध में सूचना DSR में संलग्न कराने का Observation दिया गया है।

अनुरोध है कि Zoological Survey of India अन्य संबंधित संस्थानों या जिला मत्स्य पदाधिकारी से जलीय जीवों से संबंधित सूचना प्राप्त कर DSR में संलग्न करते हेतु अग्रेतर कार्रवाई सुनिश्चित करें।

विश्वासभाजन

ह0 / –
(मनोज कुमार)
निदेशक, भूतत्व

ज्ञापांक– भू0नि0अन्वे–95 / 2021 77 राँची, दिनांक– 31.01.23

प्रतिलिपि:– सभी सहायक / जिला खनन पदाधिकारी, झारखण्ड को सूचनार्थ एवं आवश्यक कार्रवाई हेतु प्रेषित।

31.1.2023
निदेशक, भूतत्व

District Mining Officer,
Godda

कार्यालय, जिला मत्स्य पदाधिकारी –सह– मुख्य कार्यपालक पदाधिकारी, गोड्डा।
(E-Mail-dfogodda101@gmail.com)
पत्रांक ...16.../

प्रेषक,

जिला मत्स्य पदाधिकारी –सह–
मुख्य कार्यपालक पदाधिकारी, गोड्डा।

सेवा में,

सहायक निदेशक भूतत्व,
जिला भूतात्विक कार्यालय,
दुमका।

By Mail

मत्स्य / गोड्डा, दिनांक– 01.02.2023 /

विषय :– गोड्डा जिलान्तर्गत गेरूआ, चिर, कझिया, सकरी एवं रिबानी नदियों में प्रस्तावित बालु घाटों में उपस्थित जलीय जीवों के संबंध में सूचना उपलब्ध कराने के संबंध में।

प्रसंग :– भवदीय पत्रांक– 15 दिनांक– 01.02.2023

महाशय,

उपरोक्त प्रसंगाधीन विषयक सूचित करते हुए कहना है कि गोड्डा जिलान्तर्गत अवस्थित किसी भी बालु घाटों / नदियों में मत्स्य विभाग, गोड्डा द्वारा कोई भी योजना संचालित नहीं है तथा न हीं किसी जगहों पर मत्स्य पालन से संबंधित कार्य संचालित है।

अतः प्रसंगाधीन पत्र में संलग्न विवरणी के प्रस्तावित बालु घाटों में उपस्थित जलीय जीवों की सूचना को शून्य समझा जाय।

विश्वासभाजन

01/02/23

जिला मत्स्य पदाधिकारी –सह–
मुख्य कार्यपालक पदाधिकारी, गोड्डा।

District Mining Officer,
Godda.

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अपना बिजनेस

11

वित्त मंत्रालय में बजट पर मंथन तेज

बजट में रोजगार वृद्धि पर जोर हो

तैयारी

कारोबारियों के प्रस्ताव को सुरेश मंजूरी मिले

रफ्तार बढ़ाने वाले उपाय बेहद जरूरी

एयरटेल ने हरियाणा में 57% महंगा किया शुल्क

स्टार्टअप नए क्षेत्रों में कर रहे विस्तार

रसना के संस्थापक अंबाटा का निधन

शुल्क हटने से इस्पात उद्योग तेजी से बढ़ेगा

ई-कॉमर्स पर उत्पाद समीक्षा मानक 25 नवंबर से लागू

भारत मानक बनाने वाला

समाहरणालय, गोड्डा
(जिला खनिज शाखा)
E-Mail- goddadmo2@gmail.com

प्रपत्र VI
प्रारंभिक अधिसूचना
(अधिनियम-30/2015 की धारा-11 (1) के अधीन)

18.11.2022

जिला खनन कार्यालय, गोड्डा।
– आम–सूचना –

एतद द्वारा सर्वसाधारण को सूचित किया जाता है कि गोड्डा जिला का वालू खनिज का जिला सर्वेक्षण रिपोर्ट (DSR) का प्रारंभिक प्रतिवेदन गोड्डा जिला के Website- https://godda.nic.in पर प्रकाशित किया गया है। उक्त DSR का प्रारंभिक प्रतिवेदन आम जनता की जानकारी हेतु उपलब्ध करायी जाती है। आम जनों से अनुरोध है कि इस प्रतिवेदन में यदि कोई आपत्ति या सुझाव है तो 30 दिनों के अन्दर जिला खनन कार्यालय गोड्डा का e-mail ID- dmo-godda@jharkhandmail.gov.in पर प्रेषित किया जा सकता है।

जिला खनन पदाधिकारी,
गोड्डा।

कार्यालय नगर पंचायत, महागामा (गोड्डा)
npmahagama@gmail.com

अल्पकालीन ई-निविदा आमंत्रण सूचना

संख्या - UDD/NPM/18/2022-23

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डिस्क्लेमर: इस वेबसाइट पर मौजूद सामग्री का कमर्शियल यूज़ (HTML) के पास है। अखबार के डिजिटल एडिशन पूरी तरह से सुरक्षित करने लायक कोई भी सामग्री का उपयोग व्यक्तिगत उपयोग के लिए ही किया जा सकता है। यहां मौजूद सामग्री और प्रोफाइल (डिजिटल या किसी और माध्यम में) का रेप्र-अधिकृति, बिना अनुमति, बिना लाइसेंस के उपयोग अथवा उपयोग, प्रचार या वितरण सख्त मीडिया अथवा किसी भी अन्य माध्यम से करना निषेध है।

District Mining Officer,
Godda

Annexure – I

Details of Sand/M-Sand Sources:

a) Rivers:

Sl. No.	River Name	Total Stretch of River (in Km)	Type of River (Perennial/Non-Perennial)
1	Gerua Nadi	24.5	Non-Perennial
2	Khanji Nadi	19.5	Non-Perennial
3	Chir Nadi	25.7	Non-Perennial
4	Bansloi	20.3	Non-Perennial

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

Sl. No.	Name of Reservoir/Dams	Maintain/Controlled by State Govt./PSU etc.	Location	District	Tehsil	Village	Size (Ha.)
1	Nil	Nil	Nil	Nil	Nil	Nil	Nil

c) Patta Lands/Khatedari Land:

Sl. No.	Owner	Sy. No	Area (Ha.)	District	Tehsil	Village	Agricultural Land (Yes/No)
1	Nil	Nil	Nil	Nil	Nil	Nil	Nil

d) M-Sand Plants:

Sl. No.	Plant Name	Owner	District	Tehsil	Village	Geo-location	Quantity Tonnes/Annum
1	Nil	Nil	Nil	Nil	Nil	Nil	Nil

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

District Mining Officer,
Godda.

Annexure – II

List of Potential Mining Leases (existing & proposed):

a) Rivers:

Sl. No.	River Details	Lease Details	Area	Distance from PA/BR/WC	Distance from Forest Area	Mining Leases within 500m (if yes, Cluster area)	Total excavation (Mine depth max as 3 m)	Bulk Density	Total excavation	Mineral to be mined (Sand/Bajri/RBM etc.)	Existing /Proposed
		Mouza	(in Ha.)	(in KM)	(in KM)		in (m^3/Yr.)	Tonne/m^3	(Tonne/Yr.)		
1	Gerua Nadi	Raha	1.97	>0.25 Km	>0.25 Km	No	19700	1.71	33687.0	Sand	Proposed
2	Gerua Nadi	Deshbarag	0.93	>0.25 Km	>0.25 Km	No	9261	1.71	15836.3	Sand	Proposed
3	Chir Nadi	Chakwa	3.52	>0.25 Km	>0.25 Km	No	17592	1.72	30258.3	Sand	Proposed
4	Chir Nadi	Jasmata	3.03	>0.25 Km	>0.25 Km	No	60681	1.70	103157.7	Sand	Proposed
5	Kajhia Nadi	Haripur, Garbana	2.71	>0.25 Km	>0.25 Km	No	13566	1.73	23469.2	Sand	Proposed
6	Kajhia Nadi	Ghat Jhilua	1.82	>0.25 Km	>0.25 Km	No	14592	1.71	24952.3	Sand	Proposed
7	Sakri Nadi	Lauamahua, Pasai	5.51	>0.25 Km	>0.25 Km	No	66138	1.74	115080.2	Sand	Proposed
8	Sakri Nadi	Pasai, Garhi	2.59	>0.25 Km	>0.25 Km	No	44066	1.72	75793.5	Sand	Proposed
9	Ribani Nadi	Asarimadhuri, Teliyatikar	11.29	>0.25 Km	>0.25 Km	No	90355	1.70	153603.5	Sand	Proposed
10	Chir Nadi	Dhodhari	2.39	>0.25 Km	>0.25 Km	No	19146	1.71	32739.7	Sand	Proposed
11	Chir Nadi	Dalpatpur, Sirsa	2.10	>0.25 Km	>0.25 Km	No	16833	1.70	28616.1	Sand	Proposed
12	Chir Nadi	Amjora, Surapaparwa, Machkhara	3.55	>0.25 Km	>0.25 Km	No	70924	1.72	121989.3	Sand	Proposed
13	Chir Nadi	Taratikar, Pakariya, Bargaon	1.06	>0.25 Km	>0.25 Km	No	5309	1.71	9078.4	Sand	Proposed
14	Chir Nadi	Sanatan	3.98	>0.25 Km	>0.25 Km	No	31873	1.74	55459.1	Sand	Proposed
15	Chir Nadi	Jasmata	1.82	>0.25 Km	>0.25 Km	No	12726	1.71	21761.5	Sand	Proposed
16	Gerua Nadi	Bade	2.37	>0.25 Km	>0.25 Km	No	23652	1.72	40681.5	Sand	Proposed

District Mining Officer,
Godda.

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

Sl. No.	Name of Reservoir /Dams	Maintained/Controlled by State Govt./PSU etc.	Location	District	Tehsil	Village	Size (Ha.)	Quantity MT/Year	Existing /Proposed
1	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

c) Patta Lands/Khatedari Land:

Sl. No.	Owner	Sy. No	Area	District	Tehsil	Village	Total Reserve (MT)	Total Mineral to be mined (MT)	Existing /Proposed
1	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

d) M-Sand Plants:

Sl. No.	Plant Name	Owner	District	Tehsil	Village	Geo-location	Quantity Tonnes/Annum	Existing/Proposed
1	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

District Mining Officer,
Godda

Annexure – III

Cluster & Contiguous Cluster details:

Clusters:

Sl. No.	River Name	Cluster No.	Lease No.	Location (River-bed /Patta Land)	Village	Area (in Ha.)	Total Excavation (Ton)	Total Mineral Excavation (Ton)
1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Contiguous Clusters:

Sl. No.	River Name	Contiguous Cluster No.	Cluster No.	Number of leases in the Cluster	Location (River-bed /Patta Land)	Distance between Clusters	Village	Area of Cluster (Ha.)	Total Mineral Excavation (Ton)
1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

District Mining Office
Godda

Annexure – IV

Transportation Routes for individual leases and leases in Cluster:

Sl. No.	Lease No.	Transportation Route No.	Number of tippers/day of lease	Number of tippers/day of all the lease on route	Length of Route in KM	Type of Road (Black Topped/unpaved)	Recommendation for road (Black Topped/unpaved)	The road will be Constructed by Govt./Lease Owner	Route Map & Location
1	1	1	@16 Tonne/Tipper (Avg.)	@16 Tonne/Tipper (Avg.)	41.10	Unpaved	Black Topped	Lease Owner	Attached as Map No. D1
2	2	2			20.92	Unpaved	Black Topped	Lease Owner	D2
3	3	3			12.34	Unpaved	Black Topped	Lease Owner	D3
4	4	4			12.34	Unpaved	Black Topped	Lease Owner	D4
5	5	5			3.50	Unpaved	Black Topped	Lease Owner	D5
6	6	6			0.71	Unpaved	Black Topped	Lease Owner	D6
7	7	7			11.8	Unpaved	Black Topped	Lease Owner	D7
8	8	8			10.91	Unpaved	Black Topped	Lease Owner	D8
9	9	9			11.93	Unpaved	Black Topped	Lease Owner	D9
10	10	10			8.24	Unpaved	Black Topped	Lease Owner	D10
11	11	11			9.61	Unpaved	Black Topped	Lease Owner	D11
12	12	12			6.49	Unpaved	Black Topped	Lease Owner	D12
13	13	13			8.93	Unpaved	Black Topped	Lease Owner	D13
14	14	14			12.34	Unpaved	Black Topped	Lease Owner	D14
15	15	15			12.34	Unpaved	Black Topped	Lease Owner	D15
16	16	16			41.10	Unpaved	Black Topped	Lease Owner	D16

District Mining Officer,
Godda.

Transportation Routes for individual leases and leases in Cluster:

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

District Mining Officer,
Godda.

Annexure – V

Final List of Potential Mining Leases (existing & proposed):

a) Rivers:

Sl. No.	River Details	Lease Details	Area	Distance from PA/BR/WC	Distance from Forest Area	Mining Leases within 500m (if yes, Cluster area)	Total excavation (Mine depth max as 3 m)	Bulk Density	Total excavation	Mineral to be mined (Sand/Bajri/RBM etc.)	Existing /Proposed
		Mouza	(in Ha.)	(in KM)	(in KM)		in (m^3/Yr.)	Tonne/m^3	(Tonne/Yr.)		
1	Gerua Nadi	Raha	1.97	>0.25 Km	>0.25 Km	No	19700	1.71	33687.0	Sand	Proposed
2	Gerua Nadi	Deshbarag	0.93	>0.25 Km	>0.25 Km	No	9261	1.71	15836.3	Sand	Proposed
3	Chir Nadi	Chakwa	3.52	>0.25 Km	>0.25 Km	No	17592	1.72	30258.3	Sand	Proposed
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5	Kajhia Nadi	Haripur, Garbana	2.71	>0.25 Km	>0.25 Km	No	13566	1.73	23469.2	Sand	Proposed
6	Kajhia Nadi	Ghat Jhilua	1.82	>0.25 Km	>0.25 Km	No	14592	1.71	24952.3	Sand	Proposed
7	Sakri Nadi	Lauamahua, Pasai	5.51	>0.25 Km	>0.25 Km	No	66138	1.74	115080.2	Sand	Proposed
8	Sakri Nadi	Pasai, Garhi	2.59	>0.25 Km	>0.25 Km	No	44066	1.72	75793.5	Sand	Proposed
9	Ribani Nadi	Asarimadhuri, Teliyatikar	11.29	>0.25 Km	>0.25 Km	No	90355	1.70	153603.5	Sand	Proposed
10	Chir Nadi	Dhodhari	2.39	>0.25 Km	>0.25 Km	No	19146	1.71	32739.7	Sand	Proposed
11	Chir Nadi	Dalpatpur, Sirsa	2.10	>0.25 Km	>0.25 Km	No	16833	1.70	28616.1	Sand	Proposed
12	Chir Nadi	Amjora, Surapaparwa, Machkhara	3.55	>0.25 Km	>0.25 Km	No	70924	1.72	121989.3	Sand	Proposed
13	Chir Nadi	Taratikar, Pakariya, Bargaon	1.06	>0.25 Km	>0.25 Km	No	5309	1.71	9078.4	Sand	Proposed
14	Chir Nadi	Sanatan	3.98	>0.25 Km	>0.25 Km	No	31873	1.74	55459.1	Sand	Proposed
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16	Gerua Nadi	Bade	2.37	>0.25 Km	>0.25 Km	No	23652	1.72	40681.5	Sand	Proposed

District Mining Officer,
Godda.

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

Sl. No.	Name of Reservoir /Dams	Maintained/Controlled by State Govt./PSU etc.	Location	District	Tehsil	Village	Size (Ha.)	Quantity MT/Year	Existing /Proposed
1	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

c) Patta Lands/Khatedari Land:

Sl. No.	Owner	Sy. No	Area	District	Tehsil	Village	Total Reserve (MT)	Total Mineral to be mined (MT)	Existing /Proposed
1	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

d) M-Sand Plants:

Sl. No.	Plant Name	Owner	District	Tehsil	Village	Geo-location	Quantity Tonnes/Annum	Existing/Proposed
1	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

District Mining Officer,
Godda.

Annexure – VI

Final List of Cluster & Contiguous Cluster:

Clusters:

Sl. No.	River Name	Cluster No.	Lease No.	Location (River-bed /Patta Land)	Village	Area (in Ha.)	Total Excavation (Ton)	Total Mineral Excavation (Ton)
1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Contiguous Clusters:

Sl. No.	River Name	Contiguous Cluster No.	Cluster No.	Number of leases in the Cluster	Location (River-bed /Patta Land)	Distance between Clusters	Village	Area of Cluster (Ha.)	Total Mineral Excavation (Ton)
1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

District Mining Officer,
Godda

Annexure – VII

Final Transportation Routes for individual leases and leases in Cluster:

Sl. No.	Lease No.	Transportation Route No.	Number of tippers/day of lease	Number of tippers/day of all the lease on route	Length of Route in KM	Type of Road (Black Topped/unpaved)	Recommendation for road (Black Topped/unpaved)	The road will be Constructed by Govt./Lease Owner	Route Map & Location
1	1	1	@16 Tonne/Tipper (Avg.)	@16 Tonne/Tipper (Avg.)	41.10	Unpaved	Black Topped	Lease Owner	Attached as Map No. D1
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3	3	3			12.34	Unpaved	Black Topped	Lease Owner	D3
4	4	4			12.34	Unpaved	Black Topped	Lease Owner	D4
5	5	5			3.50	Unpaved	Black Topped	Lease Owner	D5
6	6	6			0.71	Unpaved	Black Topped	Lease Owner	D6
7	7	7			11.8	Unpaved	Black Topped	Lease Owner	D7
8	8	8			10.91	Unpaved	Black Topped	Lease Owner	D8
9	9	9			11.93	Unpaved	Black Topped	Lease Owner	D9
10	10	10			8.24	Unpaved	Black Topped	Lease Owner	D10
11	11	11			9.61	Unpaved	Black Topped	Lease Owner	D11
12	12	12			6.49	Unpaved	Black Topped	Lease Owner	D12
13	13	13			8.93	Unpaved	Black Topped	Lease Owner	D13
14	14	14			12.34	Unpaved	Black Topped	Lease Owner	D14
15	15	15			12.34	Unpaved	Black Topped	Lease Owner	D15
16	16	16			41.10	Unpaved	Black Topped	Lease Owner	D16

District Mining Officer,
Godda.

Final Transportation Routes for individual leases and leases in Cluster:

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

District Mining Officer,
Godda.

Annexe – II
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To whom it may concern

This is to certify that all sitting criteria/provisions of JSPCB & SEIAA, JHARKHAND has been complied.

As per JSPCB notification no. B-21, Ranchi dated 16/08/13.

Sl. No	Minimum distance from	Distance (in meter)
1	NH	100
2	SH	100
3	Distance metal road	50
4	Railway line	100
5	River	100
6	Any other river	100
7	Habitation	200
8	Forest/ Forest land	400

As per 58th-MOM-of-SEIAA Jharkhand

III. Revised format for PP to get the following information/certification from Circle Officer:-

क्रम सं०	निर्धारित बिन्दु	हाँ / नही
1.	क्या आवेदित भूमि की कोई भी खतियान यथा रजिस्टर–II में जंगल झाड़ी के रूप में दर्ज है?	
2.	क्या 500 मीटर की दूरी के अंदर कोई मानव बसाहट (Habitation) स्थित है?	
3.	क्या 500 मीटर की दूरी के अंदर कोई जलीय निकाय (Dam/Reservoir) स्थित है?	
4.	क्या 500 मीटर की दूरी के अंदर कोई नदी (River) स्थित है?	
5.	क्या 500 मीटर की दूरी के अंदर कोई शैक्षणिक संस्थान (Educational Institute) स्थित है?	
6.	क्या 500 मीटर की दूरी के अंदर कोई चिकित्सालय (Hospital) स्थित है?	
7.	क्या 10 किलोमीo की परिधि में कोई अंतर्राज्यीय (Interstate) सीमा है?	
8.	क्या 500 मीटर की दूरी के अंदर कोई राष्ट्रीय धरोहर/पुरातत्वीय (Monuments/Archaeological) महत्व के स्थल स्थित है?	

As per 67th-MOM-of-SEIAA Jharkhand

iv. Revised format for project proponent to get the following information / certification from Divisional Forest Officer concerned :-

क्रम सo	निर्धारित बिन्दु	हाँ / नही
1.	2.	3.
1.	क्या परियोजना स्थल से आरक्षित वन / संरक्षित वन भूमि से दूरी 250 मीo है?	
2.	क्या परियोजना स्थल No Mining Zone अंतर्गत आता है?	
3.	क्या परियोजना स्थल से 10 किलो मीटर की दूरी के अंदर कोई नेशनल पार्क है?	
4.	क्या परियोजना स्थल से 10 किलो मीटर की दूरी के अंदर कोई अभ्यारण्य एवं जैव विविधता क्षेत्र है?	
5.	क्या परियोजना स्थल से 10 किलो मीटर की दूरी के अंदर कोई इको सेंसिटिव जोन (Eco Sensitive Zone) है?	
6.	क्या आवेदित परियोजना ESZ के अन्तर्गत प्रवधित श्रेणी मे आता है अथवा नही?	

District Mining officer

Godda .

EcoCare

Phone : (0341) 2252011
Fax : (0341) 2252011
Email : ecocareasansol@rediffmail.com
Manoj Talkies Basement, Kumarpur
Asansol - 713304
Paschim Bardhaman (W.B.)

Specialised Hoouse on Environmental Monitoring, Analysis, Assessment & Management
ISO 9001:2015 Certified, OHSAS 45001:2018 Certified

ULR No. TC510923000000459F

Date of Print: 02.01.2023

Sand Texture Analysis Report

Client Name: Sathi Planners Private Limited
Client Address: Lake Avenue, Kanke Road, Ranchi,
Jharkhand, PIN - 834008
Sample Type: Riverbed Sand
Period of Sampling: 15. 12. 2022 to 20.12.2022
Sampling Density: Two per Hectare

Source: Multiple Rivers in Godda District
Period of Analysis: 22.12.2022 to 30.12.2022
Sample Condition: Sealed

Sand Ghat ID	Area (Ha)	Length (m)	No. of Samples	Sand Sample Collected for texture analysis						Bulk Density (Ton/m³)
				4.75mm to 2.00 mm		2.00mm to 425 micron		425 to 75 micron		
				Nos.	%	Nos.	%	Nos.	%	
GO_Z2_GE_16	2.37	662	5	0	0	3	60	2	40	1.71
GO_Z5_CHI_14	3.98	402	8	1	12.5	5	62.5	2	25	1.71
GO_Z5_CHI_4	3.03	252	7	1	14.29	4	57.14	2	28.57	1.72
GO_Z5_CHI_15	1.82	285	4	0	0	3	75	1	25	1.70
GO_Z2_GE_1	1.97	634	4	0	0	3	75	1	25	1.73
GO_Z3_GE_2	0.93	380	2	0	0	2	100	0	0	1.71
GO_Z5_CHI_3	3.52	705	8	1	12.5	5	62.5	2	25	1.74
GO_Z9_KAJ_5	2.71	422	6	1	16.67	4	66.67	1	16.67	1.72
GO_Z10_KAJ_6	1.82	521	4	0	0	3	75	1	25	1.70
GO_Z12_SAK_7	5.51	1188	12	1	8.33	7	58.33	4	33.33	1.71
GO_Z13_SAK_8	2.59	927	6	1	16.67	4	66.67	1	16.67	1.70
GO_Z14_RIB_9	11.29	1325	23	4	17.39	13	56.52	6	26.09	1.72
GO_Z15_CHI_10	2.39	349	5	1	20	3	60	1	20	1.71
GO_Z16_CHI_11	2.10	528	5	0	0	3	60	2	40	1.74
GO_Z17_CHI_12	3.55	933	8	1	12.5	5	62.5	2	25	1.71
GO_Z18_CHI_13	1.06	410	3	0	0	2	66.67	1	33.33	1.72

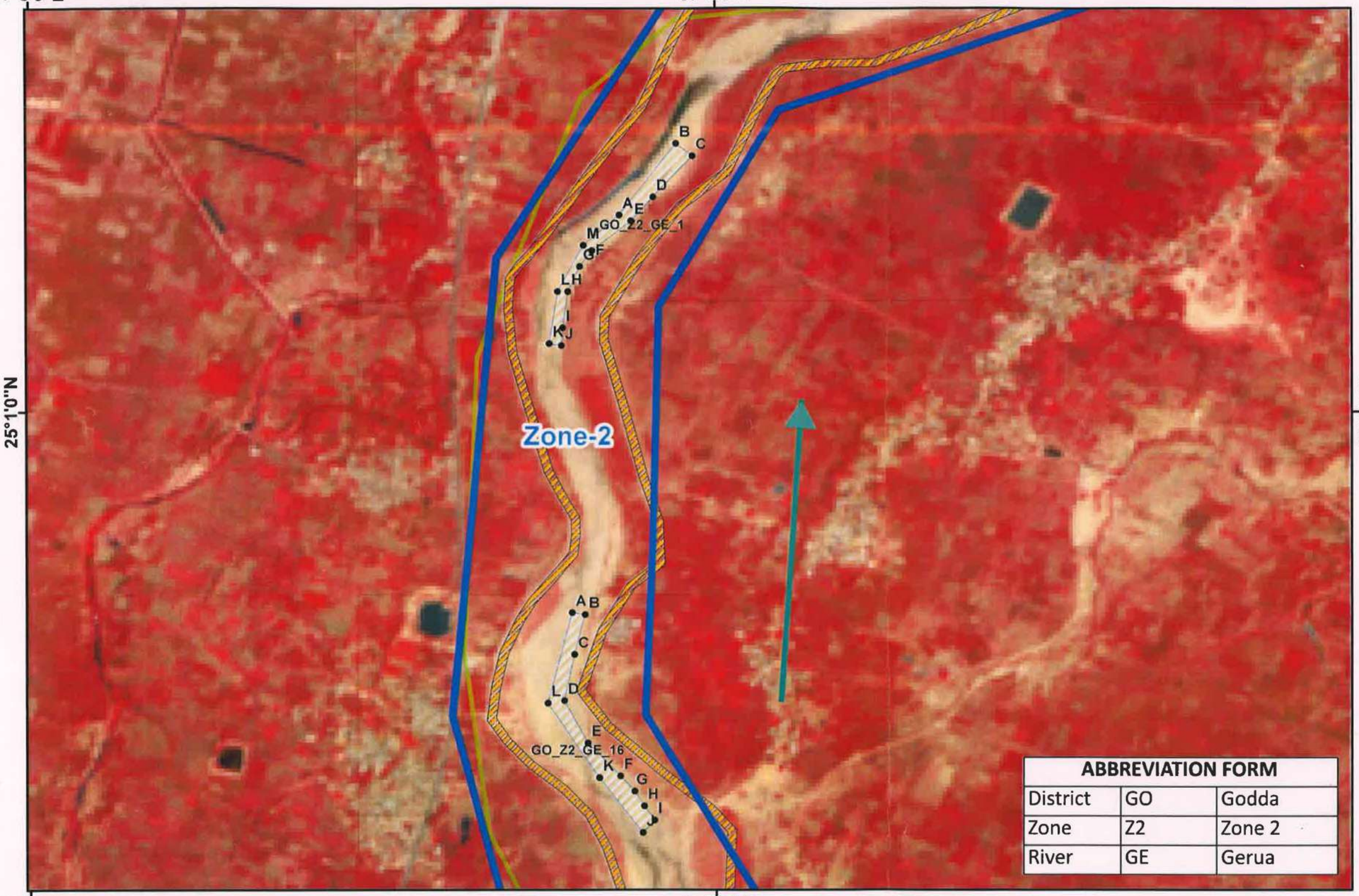
1. Test values are reported based on the samples received.
2. Samples will be destroyed after 7 days from the date of issues of the Test Report, subject to nature of preservation sample will be preserved as per the standard method.
3. The Test report shall not be reproduced without the written approval of the laboratory.

District Mining Officer,
Godda

Authorised Signatory

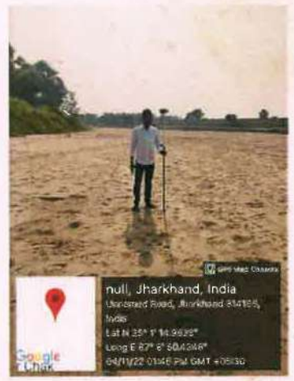
Dr. Mousumi Pal
Ph.D (Env.), Scientist
Authorised Signatory

Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Godda District, Jharkhand



ABBREVIATION FORM		
District	GO	Godda
Zone	Z2	Zone 2
River	GE	Gerua

Geo-Tagged Site Photograph



District Mining Officer
Godda.

Legend

- Godda District Boundary
- Railway
- Bridge
- Sand Ghat
- No Mining Zone
- Safety Barrier
- Sand Deposit Zone
- River Flow Direction

Limiting Coordinates of Zone 2	
Starting Point	87°9'45.921"E 25°2'6.462"N
Ending point	87°9'2.398"E 24°59'31.02"N

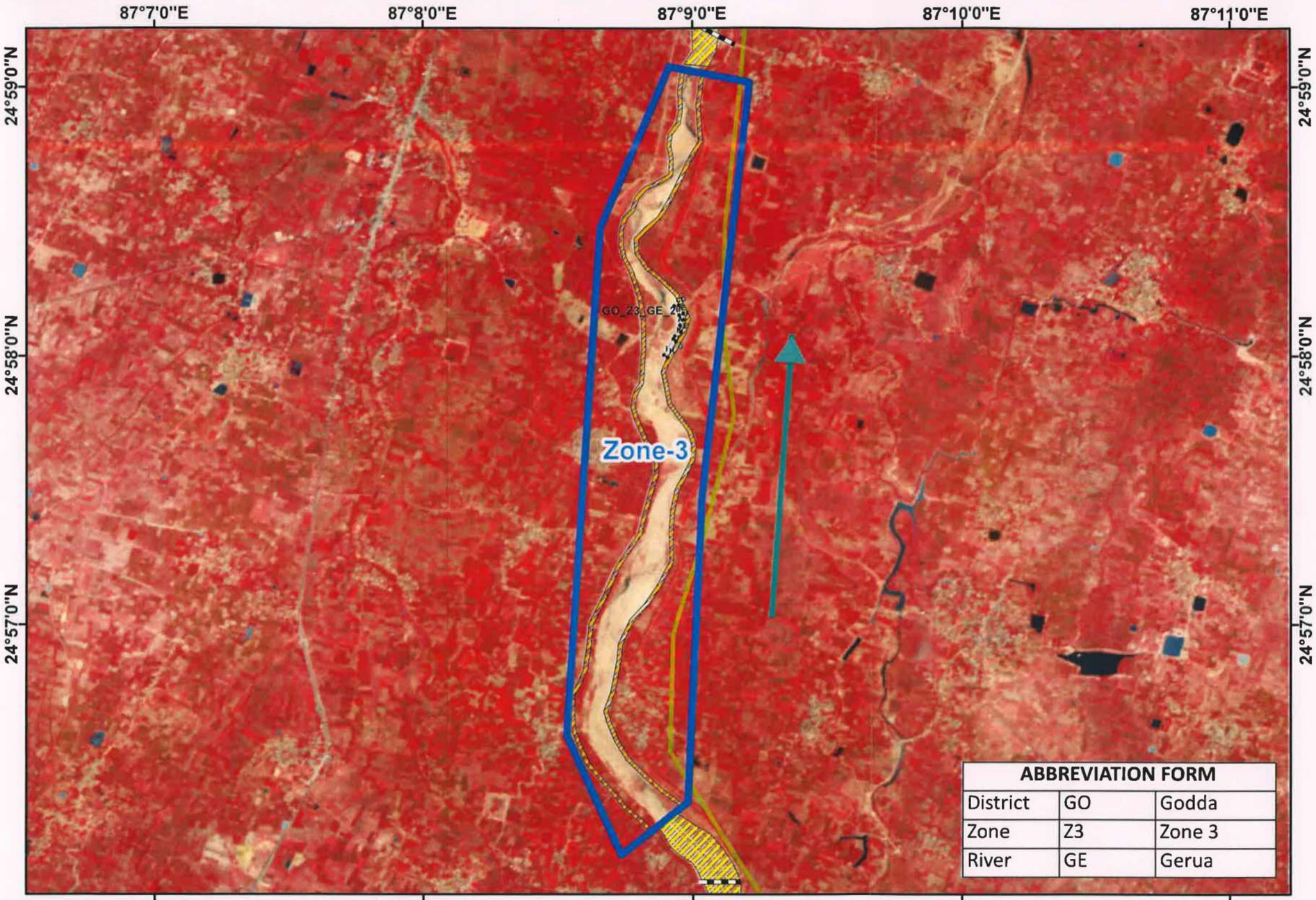
Sand Ghat Code	Area (in Ha)
GO_Z2_GE_16	2.36
GO_Z2_GE_1	1.97

River: Gerua Nadi
Sentinel 2 Satellite Imagery
Date of Capture: February, 2022 (Post-Monsoon)
Spatial Resolution: 10m

N W E S

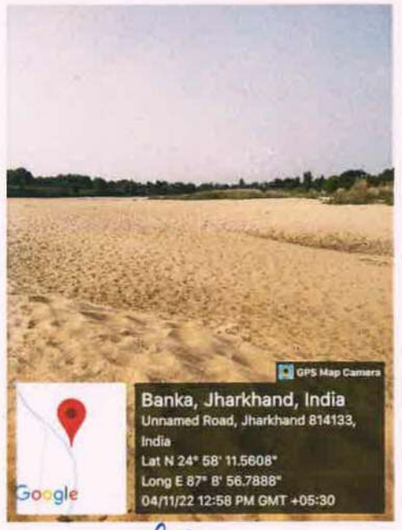
0 225 450 900 1,350 Meters

Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Godda District, Jharkhand



ABBREVIATION FORM		
District	GO	Godda
Zone	Z3	Zone 3
River	GE	Gerua

Geo-Tagged Site Photograph



District Mining Officer,
Godda.

Legend

- Godda District Boundary
- Railway
- River Flow Direction
- Bridge
- Sand Deposit Zone
- No Mining Zone
- Safety Barrier
- Sand Cover Area
- Sand Ghat

Sand Ghat Code	Area (in Ha)
GO_Z3_GE_2	0.92

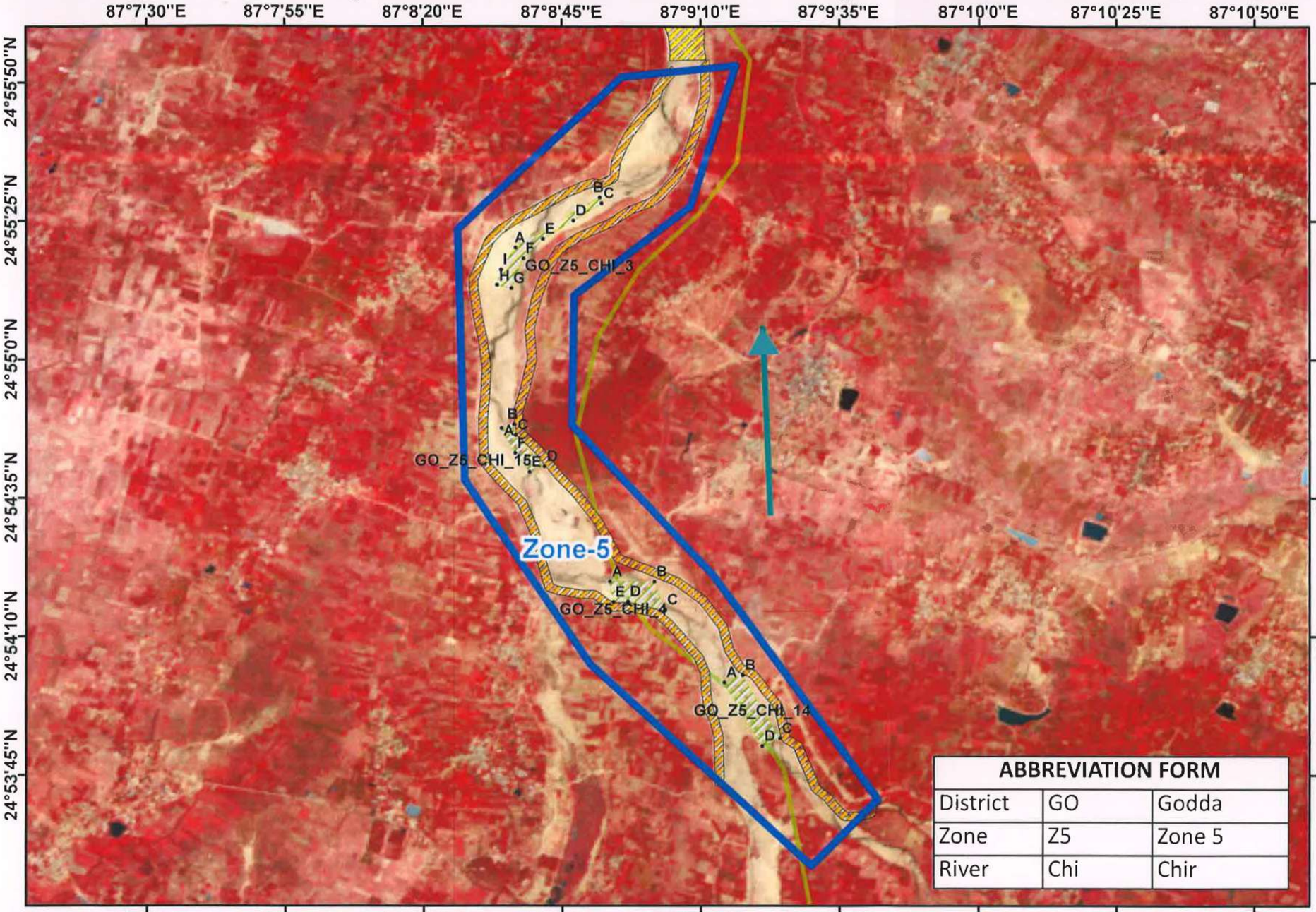
Limiting Coordinates of Zone 3	
Starting Point	87°9'3.131"E 24°59'2.919"N
Ending point	87°8'52.458"E 24°56'15.97"N

River: Gerua Nadi
Sentinel 2 Satellite Imagery
Date of Capture:November, 2022 (Post-Monsoon)
Spatial Resolution: 10m

0 500 1,000 2,000 3,000 Meters

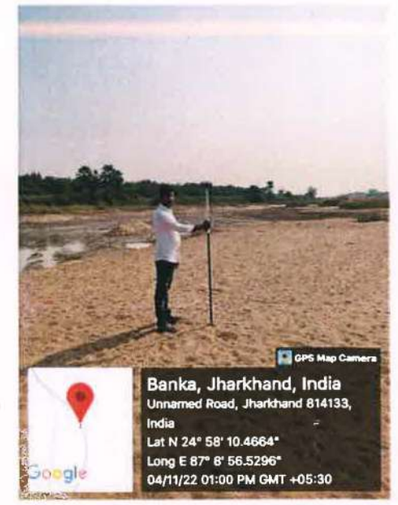
N W E S

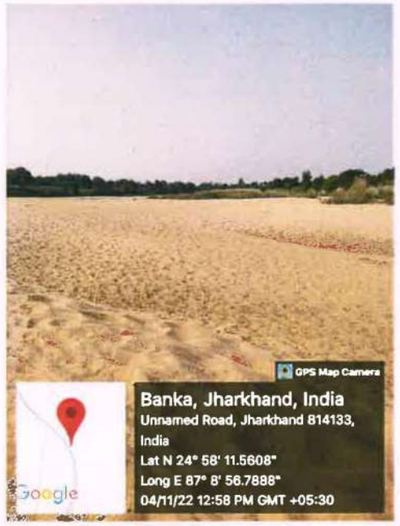
Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Godda District, Jharkhand



ABBREVIATION FORM		
District	GO	Godda
Zone	Z5	Zone 5
River	Chi	Chir

Geo-Tagged Site Photograph





Legend

- Godda District Boundary
- Railway
- Bridge
- Sand Deposit Zone
- No Mining Zone
- Safety Barrier
- Sand Ghat
- River Flow Direction

Sand Ghat Code	Area(in Ha)
GO_Z5_CHI_3	3.51
GO_Z5_CHI_4	3.3
GO_Z5_CHI_14	3.98
GO_Z5_CHI_15	1.81

Limiting Coordinates of Zone 5	
Starting Point	87°9'5.473"E 24°55'51.753"N
Ending point	87°9'36.452"E 24°53'34.835"N

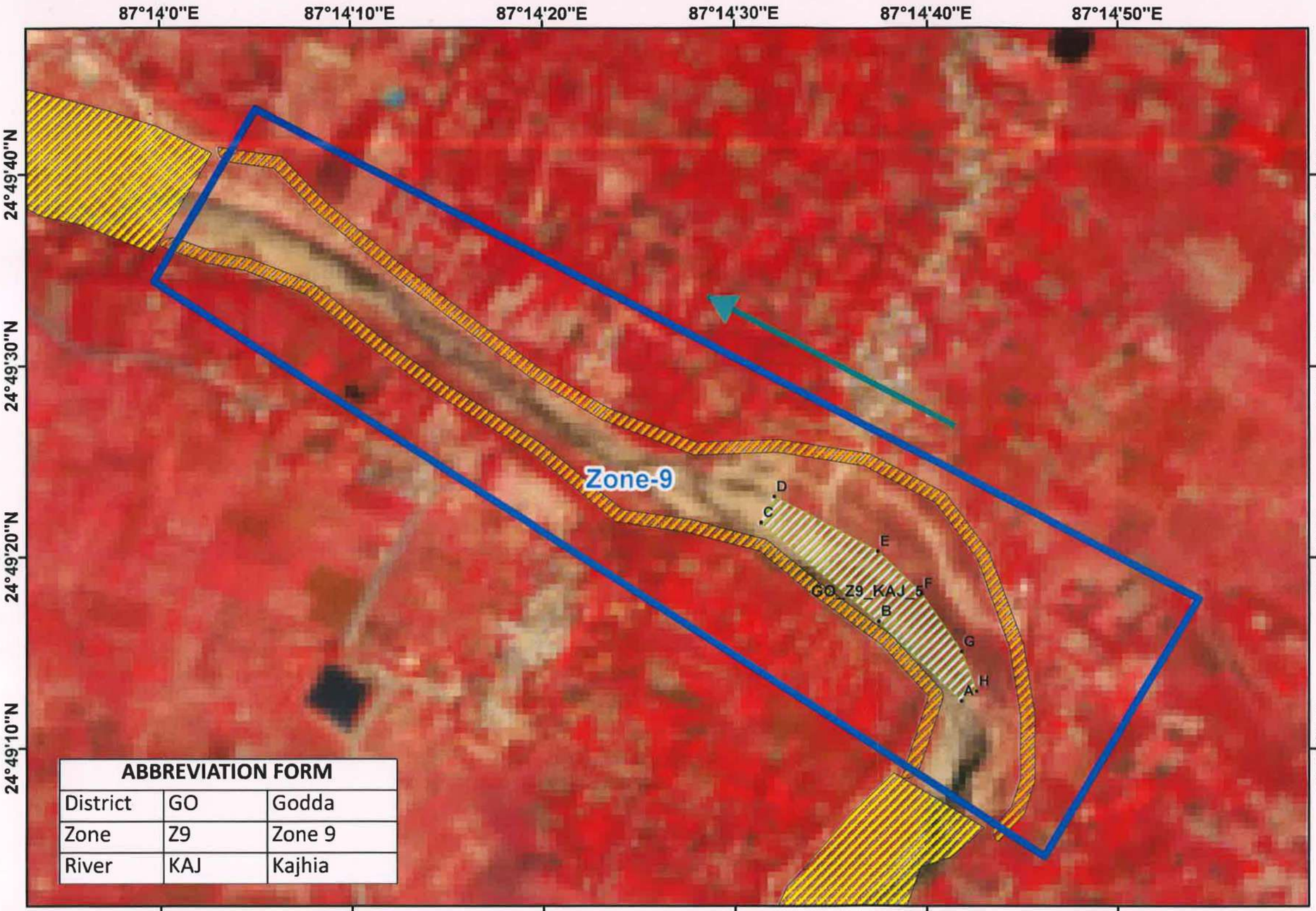
River: Chir Nadi
Sentinel 2 Satellite Imagery
Date of Capture: November, 2022 (Post-Monsoon)
Spatial Resolution: 10m

District Mining Officer,
Godda.

N
W E
S

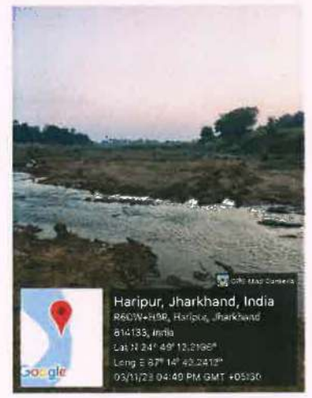
0 470 940 1,880 2,820
Meters

Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Godda District, Jharkhand



ABBREVIATION FORM		
District	GO	Godda
Zone	Z9	Zone 9
River	KAJ	Kajhia

Geo-Tagged Site Photograph



Legend

- Godda District Boundary
- Railway
- Bridge
- Sand Deposit Zone
- No Mining Zone
- Safety Barrier
- Sand Ghat
- River Flow Direction

Sand Ghat Code	Area (in Ha)
GO_Z9_KAJ_5	2.71

Limiting Coordinates of Zone 9	
Starting Point	87°14'2.521"E 24°49'38.748"N
Ending point	87°14'50.094"E 24°49'10.957"N

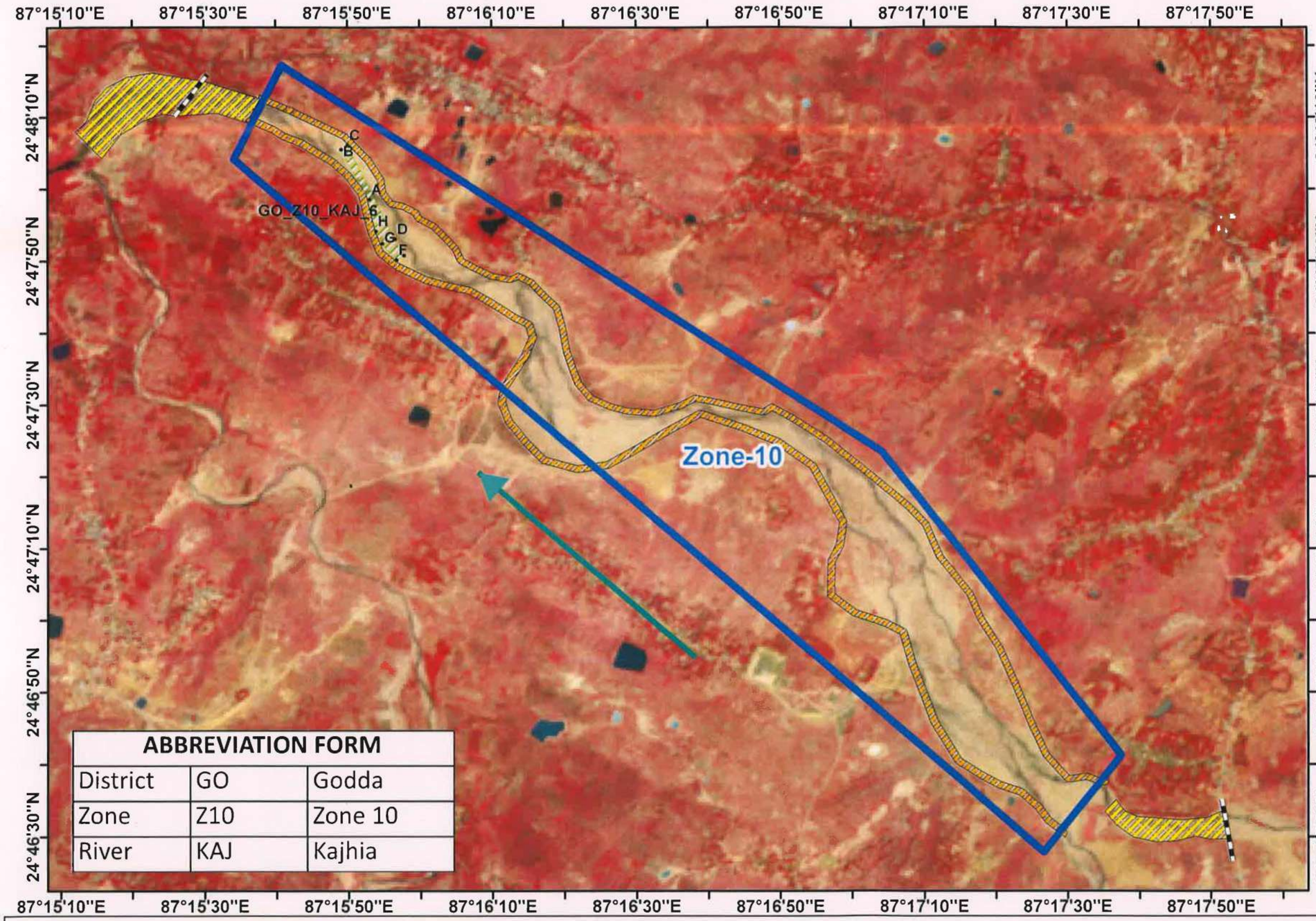
River: Kajhia Nadi
Sentinel 2 Satellite Imagery
Date of Capture: November, 2022 (Post-Monsoon)
Spatial Resolution: 10m

District Mining Officer,
Godda.

N W E S

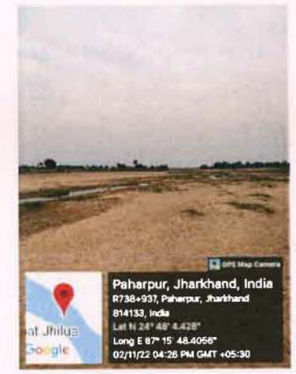
0 135 270 540 810
Meters

Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Godda District, Jharkhand



ABBREVIATION FORM		
District	GO	Godda
Zone	Z10	Zone 10
River	KAJ	Kajhia

Geo-Tagged Site Photograph



District Mining Officer
Godda.

Legend

- Godda District Boundary
- Railway
- Bridge
- Sand Deposit Zone
- No Mining Zone
- Safety Barrier
- Sand Ghat
- River Flow Direction

Sand Ghat Code	Area (in Ha)
GO_Z10_KAJ_6	1.82

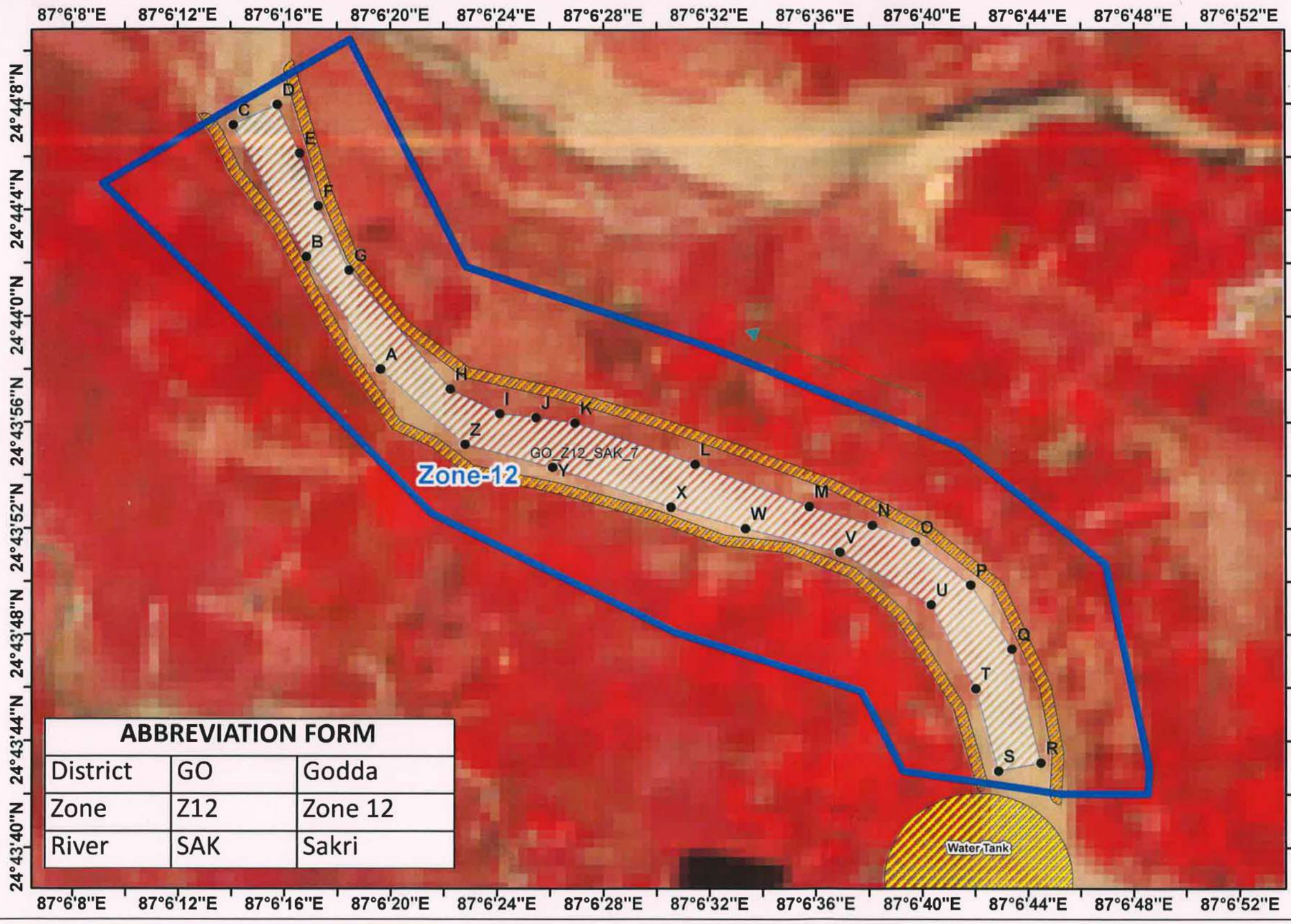
Limiting Coordinates of Zone 10	
Starting Point	87°15'37.541"E 24°48'10.992"N
Ending point	87°17'32.872"E 24°46'35.642"N

River: Kajhia Nadi
Sentinel 2 Satellite Imagery
Date of Capture: November, 2022 (Post-Monsoon)
Spatial Resolution: 10m

N W E S

0 355 710 1,420 2,130 Meters

Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Godda District, Jharkhand



ABBREVIATION FORM		
District	GO	Godda
Zone	Z12	Zone 12
River	SAK	Sakri

Geo-Tagged Site Photographs

Legend

- Godda District Boundary
- Railway
- Bridge
- Sand Deposit Zone
- No Mining Zone
- Safety Barrier
- Sand Ghat
- River Flow Direction

Sand Ghat Code	Area (in Ha)
GO_Z12_SAK_7	5.51

Limiting Coordinates of Zone 12	
Starting Point	87°6'14.791"E 24°44'8.364"N
Ending point	87°6'42.61"E 24°43'42.513"N

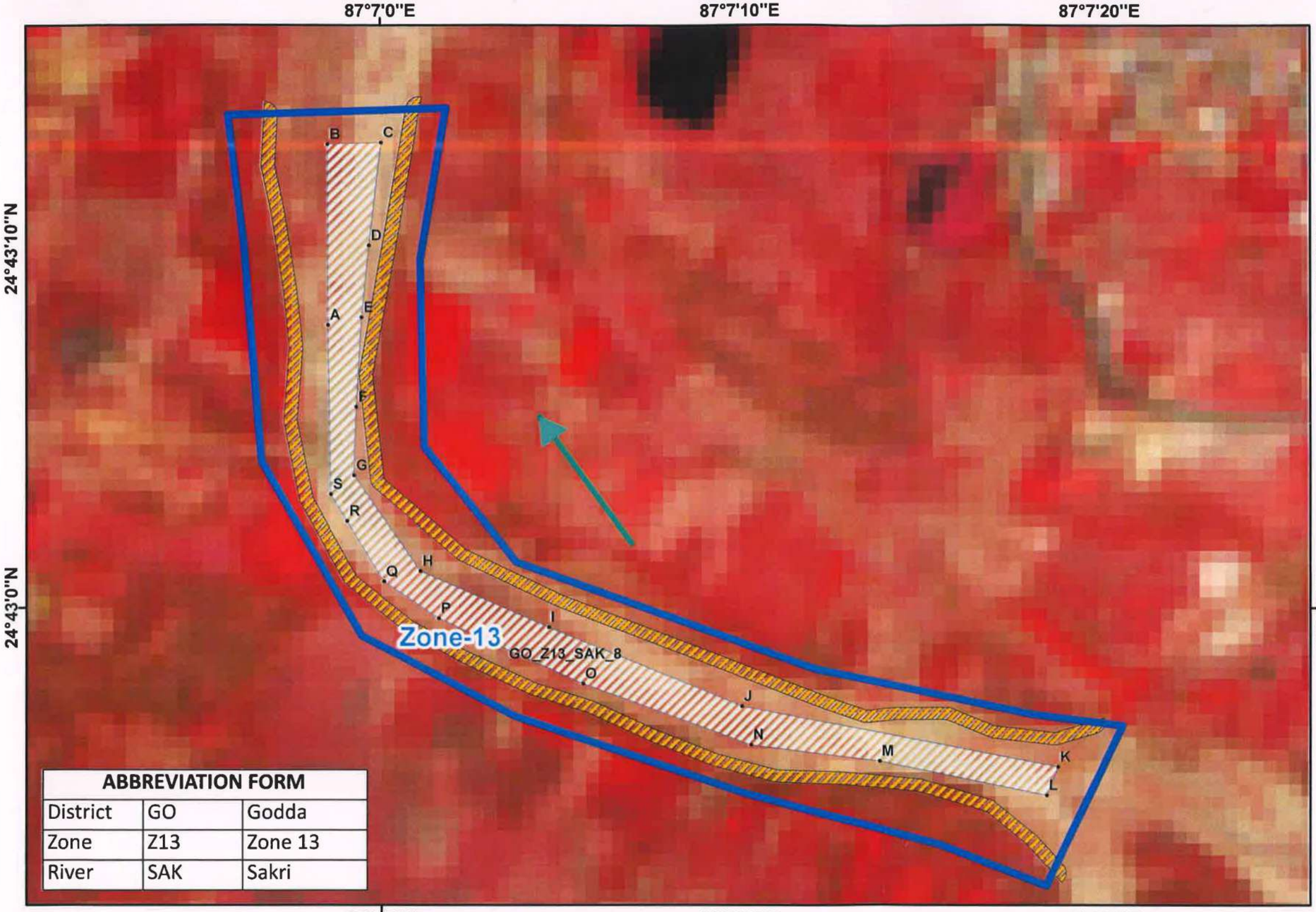
River: Sakri Nadi
Sentinel 2 Satellite Imagery
Date of Capture: November, 2022 (Post-Monsoon)
Spatial Resolution: 10m

District Mining Officer
Godda

N
W E
S

0 95 190 380 570
Meters

Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Godda District, Jharkhand



ABBREVIATION FORM		
District	GO	Godda
Zone	Z13	Zone 13
River	SAK	Sakri

Geo-Tagged Site Photograph

District Mining Officer
Godda

Legend

- Godda District Boundary
- Railway
- Bridge
- Sand Deposit Zone
- No Mining Zone
- Safety Barrier
- Sand Ghat
- River Flow Direction

Sand Ghat Code	Area (in Ha)
GO_Z13_SAK_8	2.59

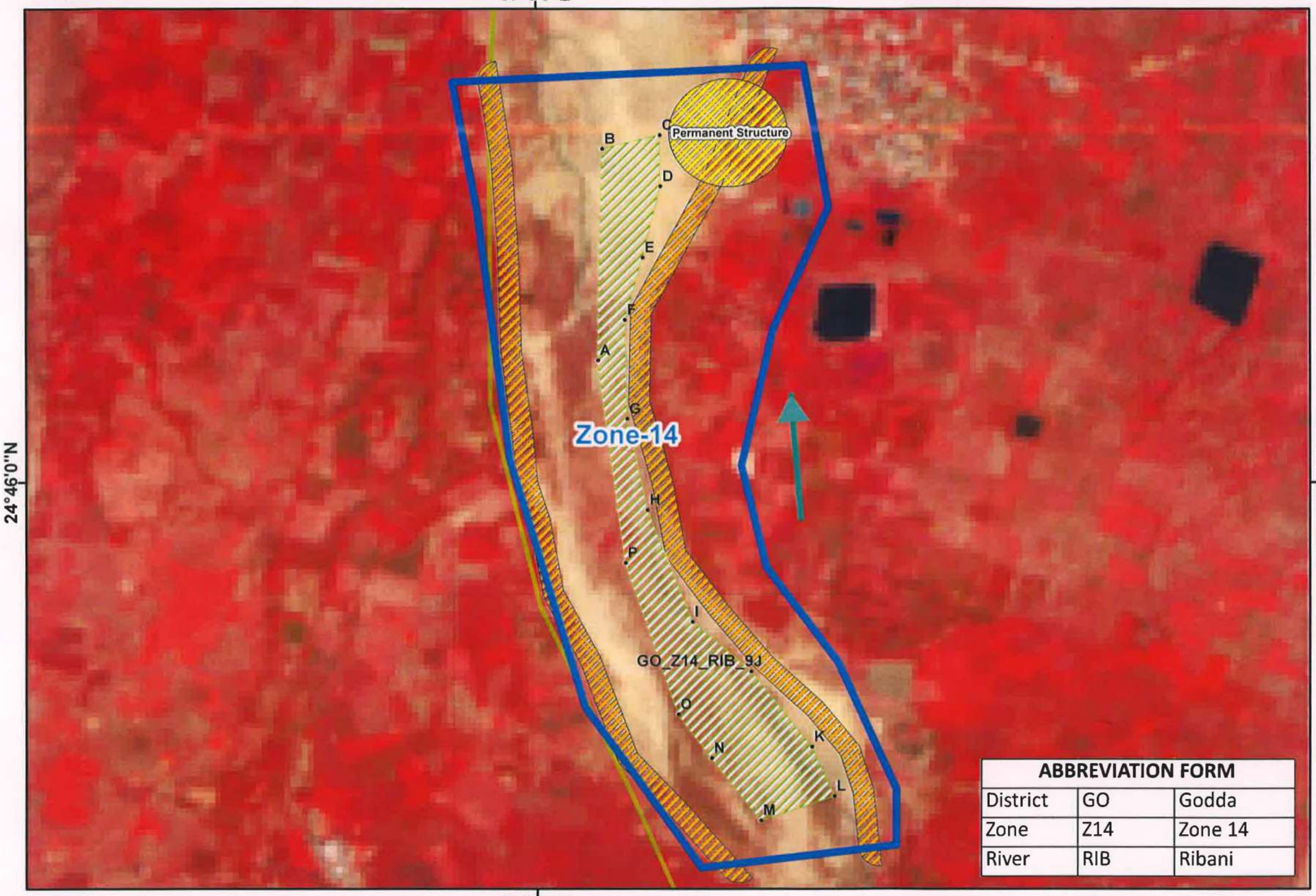
Limiting Coordinates of Zone 13	
Starting Point	87°6'58.695"E 24°43'13.971"N
Ending point	87°7'18.991"E 24°42'53.057"N

River: Sakri Nadi
Sentinel 2 Satellite Imagery
Date of Capture: November, 2022 (Post-Monsoon)
Spatial Resolution: 10m

N
W E
S

0 70 140 280 420 Meters

Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Godda District, Jharkhand



ABBREVIATION FORM		
District	GO	Godda
Zone	Z14	Zone 14
River	RIB	Ribani

Geo-Tagged Site Photograph

District Mining Officer,
Godda.

Legend

- Godda District Boundary
- Railway
- Bridge
- Sand Deposit Zone
- No Mining Zone
- Safety Barrier
- Sand Ghat
- River Flow Direction

Sand Ghat Code	Area (in Ha)
GO_Z14_RIB_9	11.29

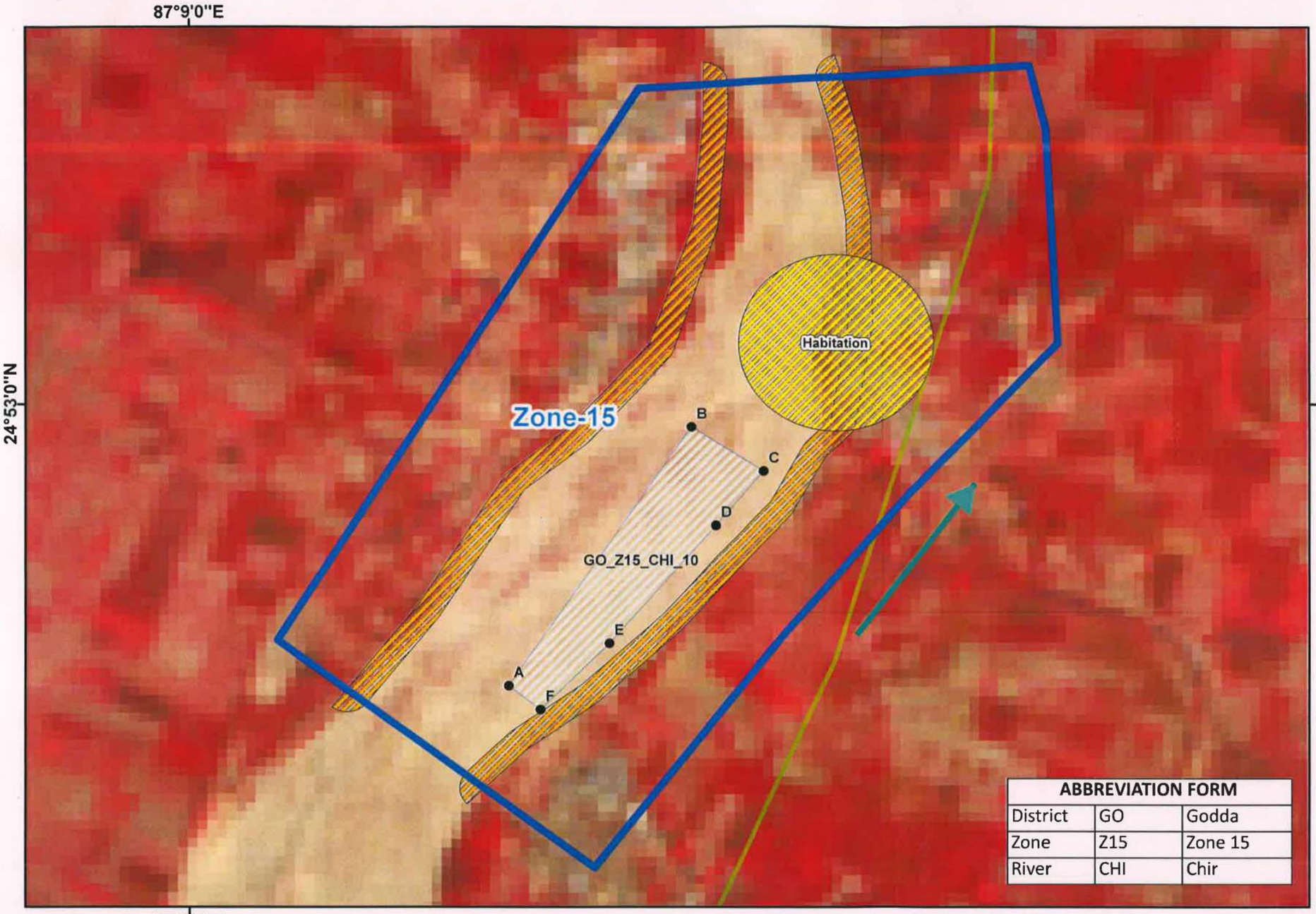
Limiting Coordinates of Zone 14	
Starting Point	87°5'5.895"E 24°46'25.5"N
Ending point	87°5'16.622"E 24°45'37.014"N

River: Ribani Nadi
Sentinel 2 Satellite Imagery
Date of Capture: November, 2022 (Post-Monsoon)
Spatial Resolution: 10m

N W E S

0 160 320 640 960
Meters

Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Godda District, Jharkhand



ABBREVIATION FORM		
District	GO	Godda
Zone	Z15	Zone 15
River	CHI	Chir

Drone Imagery from Field Survey

District Mining Officer,
Godda.

Legend

- Godda District Boundary
- Railway
- Bridge
- Sand Deposit Zone
- No Mining Zone
- Safety Barrier
- River Flow Direction
- Sand Ghat

Sand Ghat Code	Area (in Ha)
GO_Z15_CHI_10	2.39

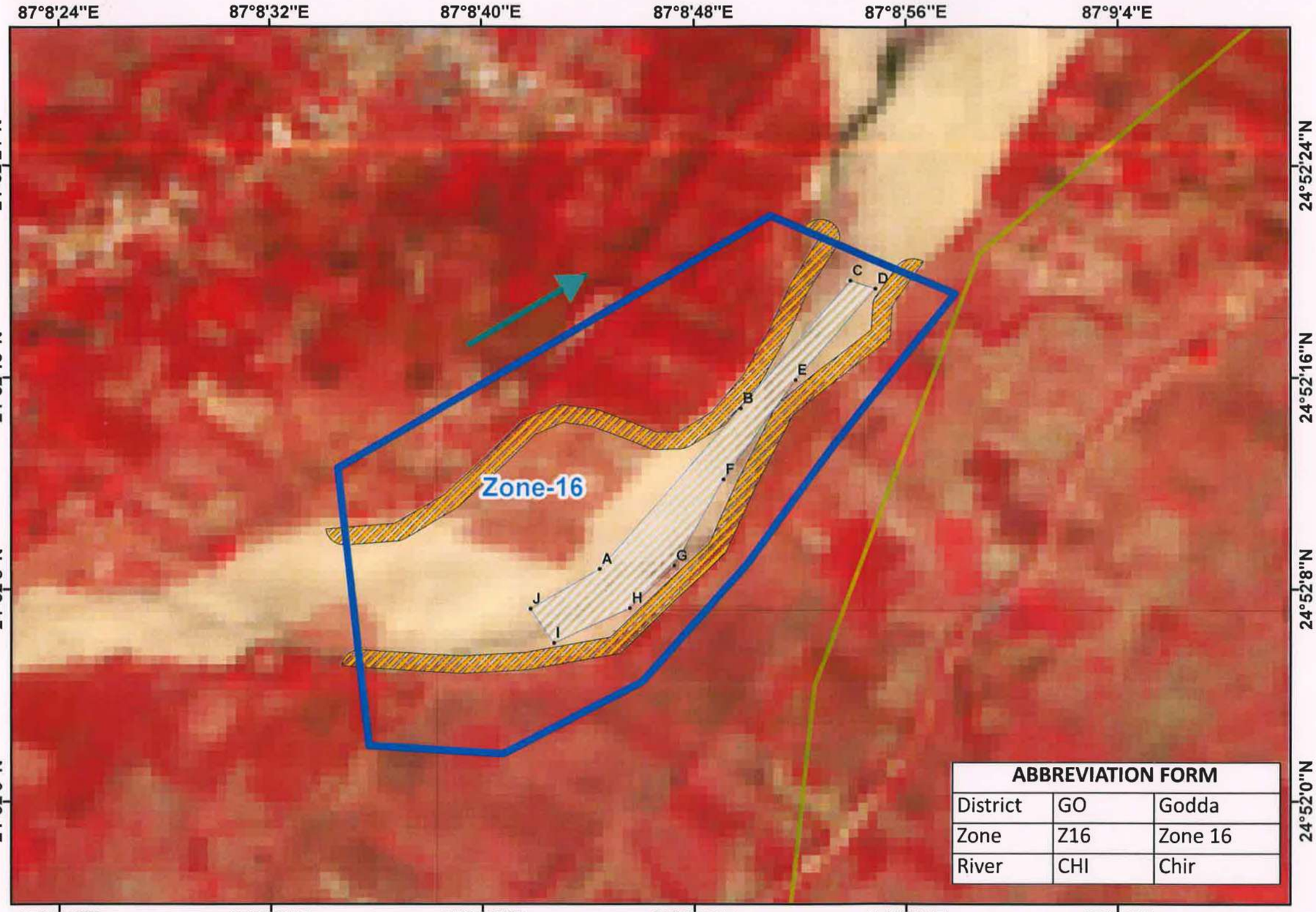
Limiting Coordinates of Zone 15	
Starting Point	87°9'30.642"E 24°53'12.412"N
Ending point	87°9'9.399"E 24°52'47.042"N

River: Chir Nadi
Sentinel 2 Satellite Imagery
Date of Capture: November, 2022 (Post-Monsoon)
Spatial Resolution: 10m

N
W E
S

0 95 190 380 570
Meters

Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Godda District, Jharkhand



ABBREVIATION FORM		
District	GO	Godda
Zone	Z16	Zone 16
River	CHI	Chir

Drone Imagery from Field Survey

District Mining Officer
Godda.

Legend

- Godda District Boundary
- Railway
- Bridge
- Sand Deposit Zone
- No Mining Zone
- Safety Barrier
- Sand Ghat
- River Flow Direction

Sand Ghat Code	Area (in Ha)
GO_Z16_CHI_11	2.1

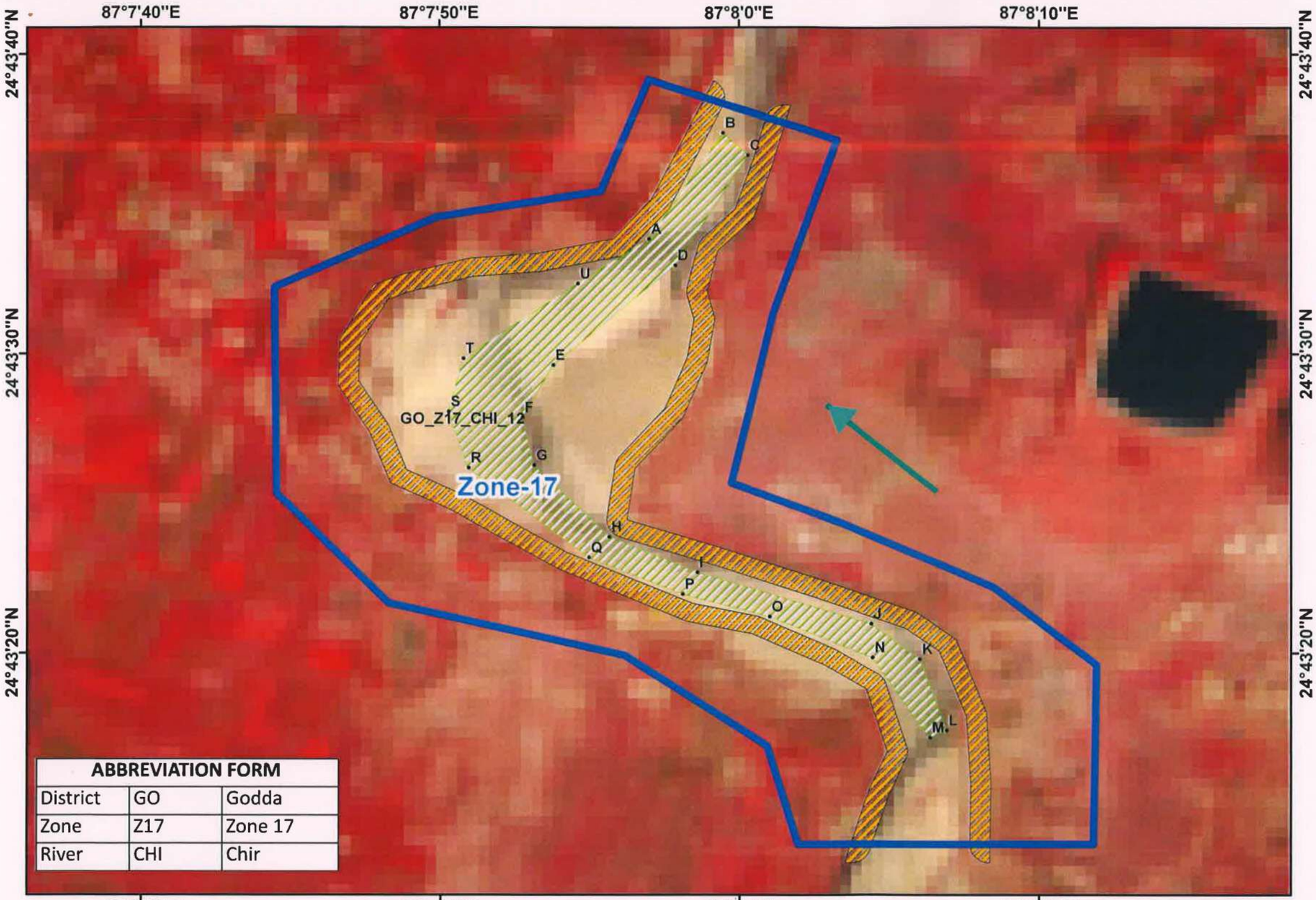
Limiting Coordinates of Zone 16	
Starting Point	87°8'54.094"E 24°52'20.851"N
Ending point	87°8'35.224"E 24°52'7.21"N

River: Chir Nadi
Sentinel 2 Satellite Imagery
Date of Capture: November, 2022 (Post-Monsoon)
Spatial Resolution: 10m

N
W E
S

0 95 190 380 570
Meters

Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Godda District, Jharkhand



ABBREVIATION FORM		
District	GO	Godda
Zone	Z17	Zone 17
River	CHI	Chir

Geo-Tagged Site Photograph

District Mining Officer
Godda

Legend

- Godda District Boundary
- Railway
- Bridge
- Sand Deposit Zone
- No Mining Zone
- Safety Barrier
- Sand Ghat
- River Flow Direction

Sand Ghat Code	Area (in Ha)
GO_Z17_CHI_12	3.54

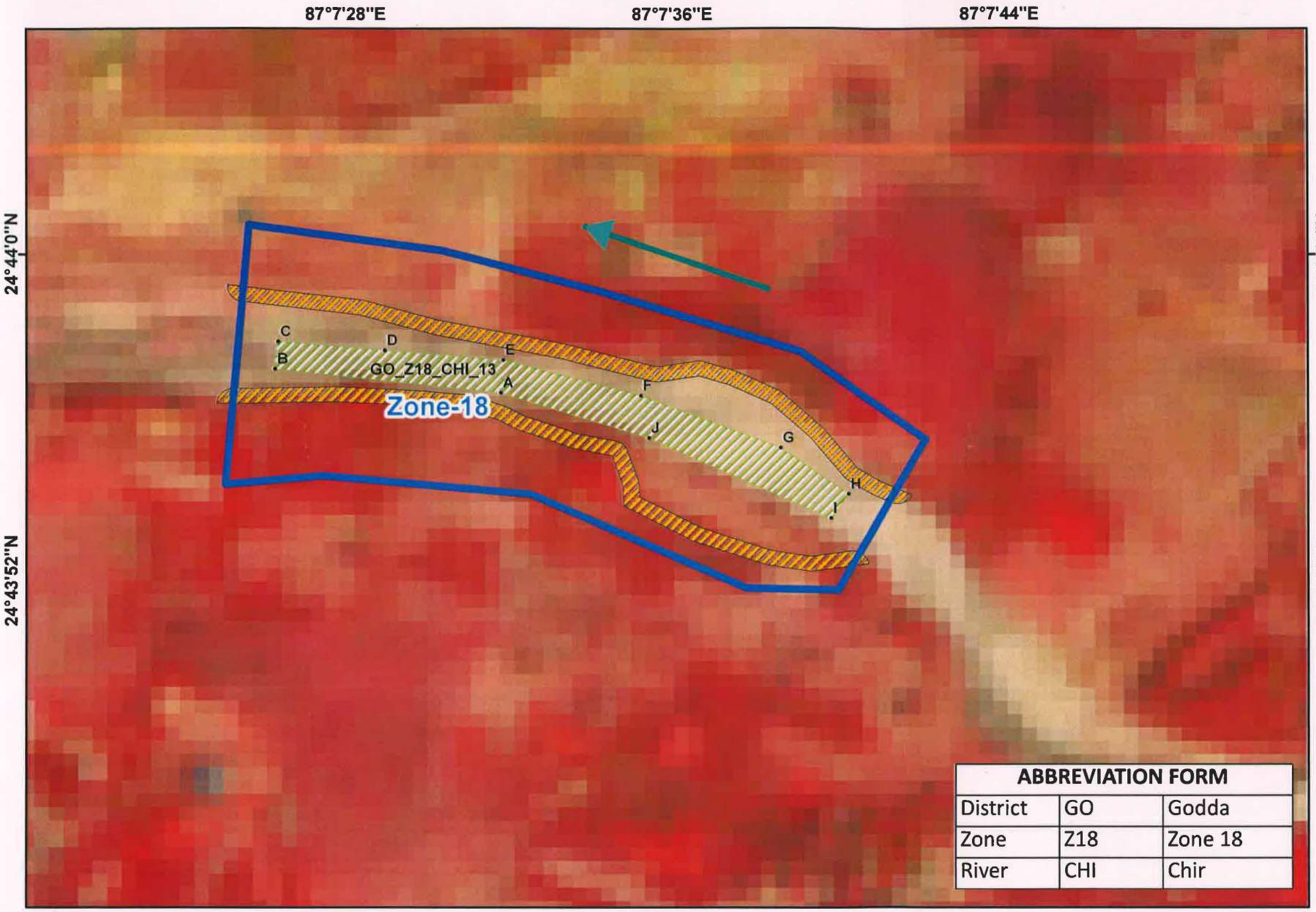
Limiting Coordinates of Zone 17	
Starting Point	87°8'0.261"E 24°43'38.309"N
Ending point	87°8'6.346"E 24°43'13.723"N

River: Chir Nadi
Sentinel 2 Satellite Imagery
Date of Capture: November, 2022 (Post-Monsoon)
Spatial Resolution: 10m

N W E S

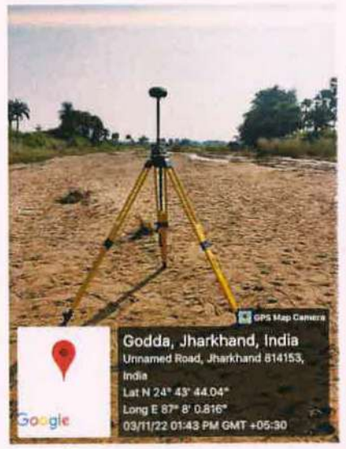
0 85 170 340 510 Meters

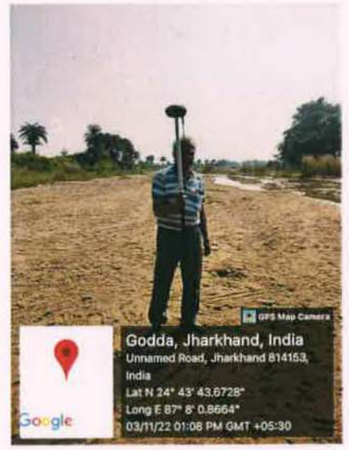
Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Godda District, Jharkhand



ABBREVIATION FORM		
District	GO	Godda
Zone	Z18	Zone 18
River	CHI	Chir

Geo-Tagged Site Photograph





District Mining Officer,
Godda.

Legend

- Godda District Boundary
- Railway
- Bridge
- Sand Deposit Zone
- No Mining Zone
- Safety Barrier
- River Flow Direction
- Sand Ghat

Sand Ghat Code	Area (in Ha)
GO_Z18_CHI_13	1.06

Limiting Coordinates of Zone 18	
Starting Point	87°7'25.293"E 24°43'57.89"N
Ending point	87°7'41.164"E 24°43'53.856"N

River: Chir Nadi
Sentinel 2 Satellite Imagery
Date of Capture: November, 2022 (Post-Monsoon)
Spatial Resolution: 10m

N
W E
S

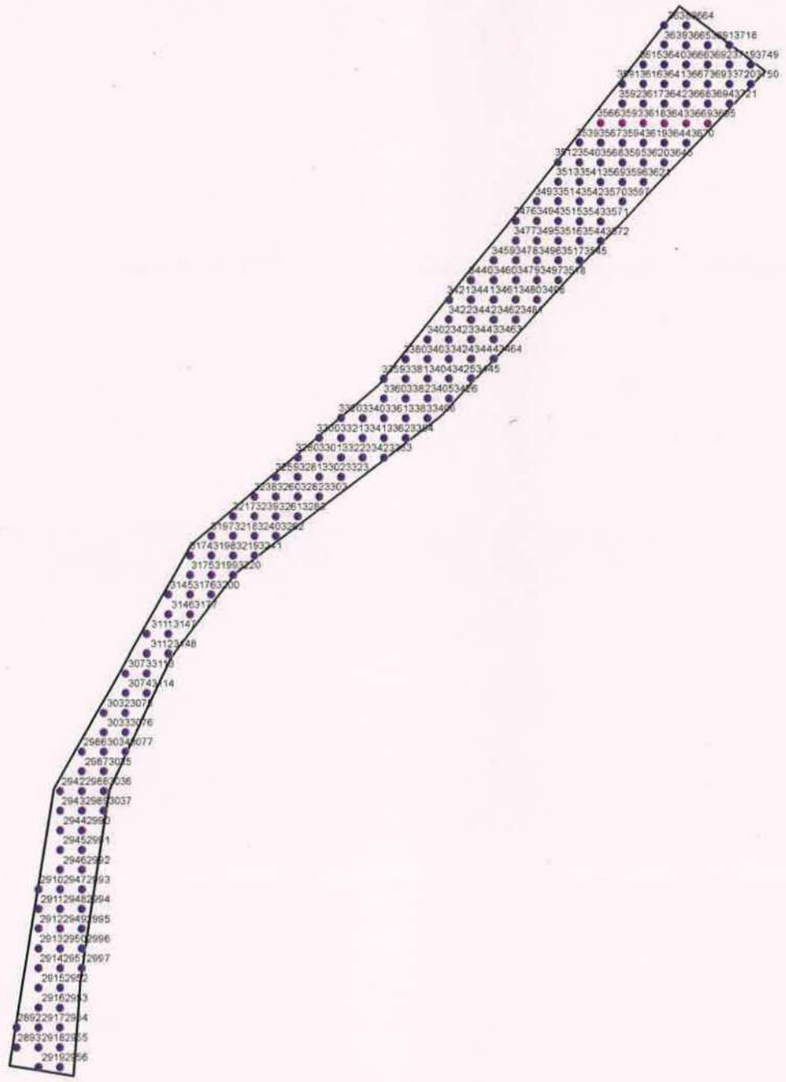
0 62.5 125 250 375
Meters

Map showing 10m x 10m Grid Points Inside Sand Ghat In Gerua River In Godda District

87°8'40"E

87°9'0"E

25°1'20"N



N

ABBREVIATION FORM		
District	GO	Godda
Zone	Z2	Zone 2
River	GE	Gerua

87°8'40"E

87°9'0"E

District Mining Officer
Godda

Legend

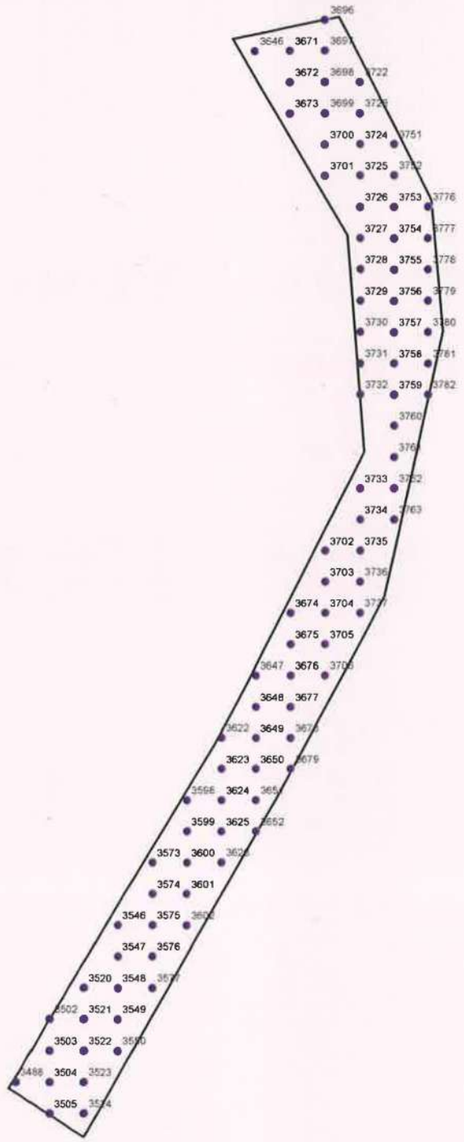
- Sand Ghat Boundary
- Sand Ghat Grid Points

Sand Ghat Code	Area (in Ha)
GO_Z2_GE_1	1.97

0 45 90 180 270 360 Meters

Map showing 10m x 10m Grid Points Inside Sand Ghat In Gerua River In Godda District

87°9'0"E



N

24°58'0"N

24°58'0"N

87°9'0"E

ABBREVIATION FORM		
District	GO	Godda
Zone	Z3	Zone 3
River	GE	Gerua

Legend

- Sand Ghat Boundary
- Sand Ghat Grid Points

Sand Ghat Code	Area (in Ha)
GO_Z3_GE_2	0.92

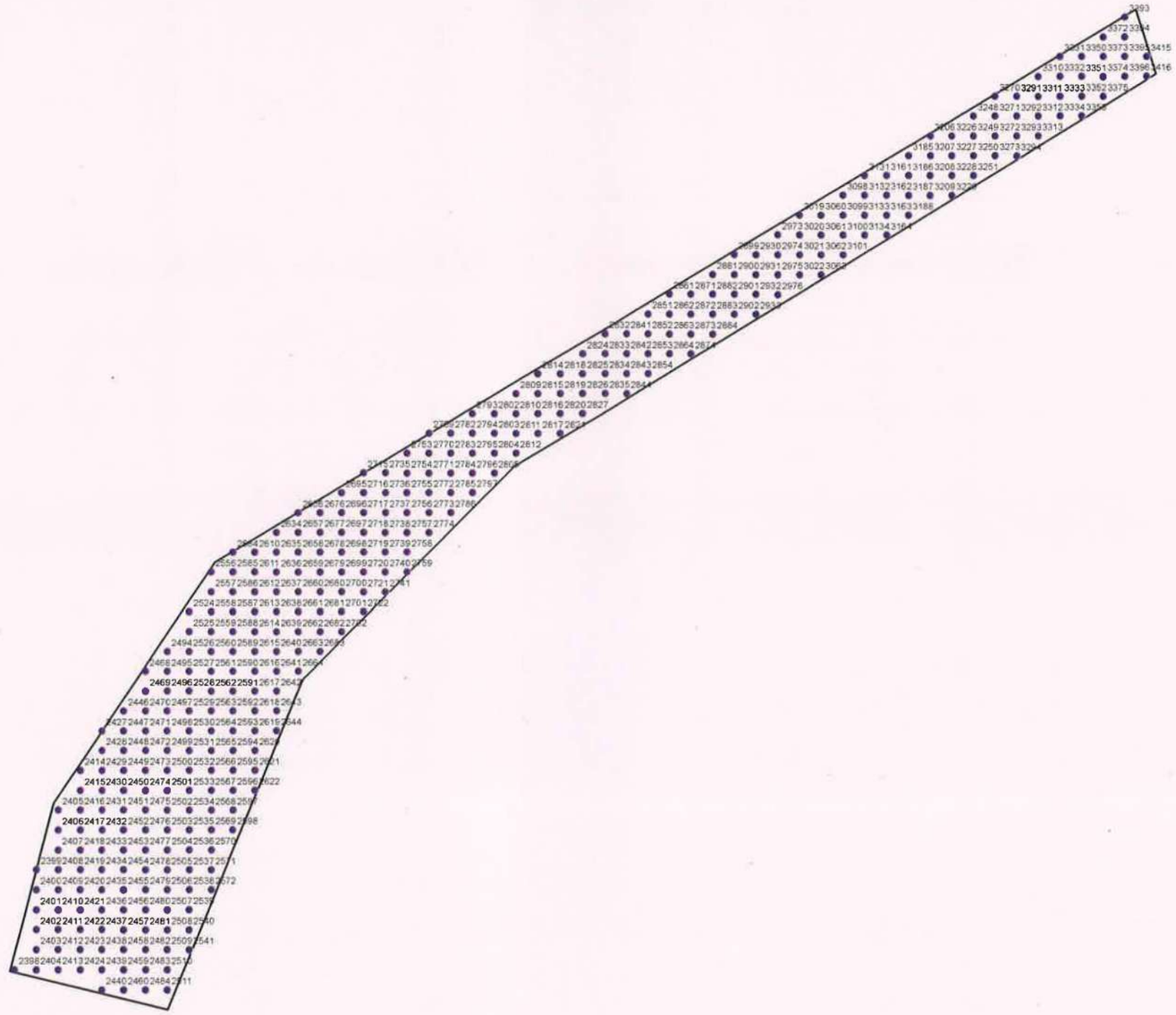
0 25 50 100 150 200 Meters

District Mining Officer,
Godda.

Map showing 10m x 10m Grid Points Inside Sand Ghat In Chir River In Godda District

87°8'40"E

24°55'20"N



ABBREVIATION FORM		
District	GO	Godda
Zone	Z5	Zone 5
River	CHI	Chir

87°8'40"E

District Mining Officer
Godda.

Legend

- Sand Ghat Boundary
- Sand Ghat Grid Points

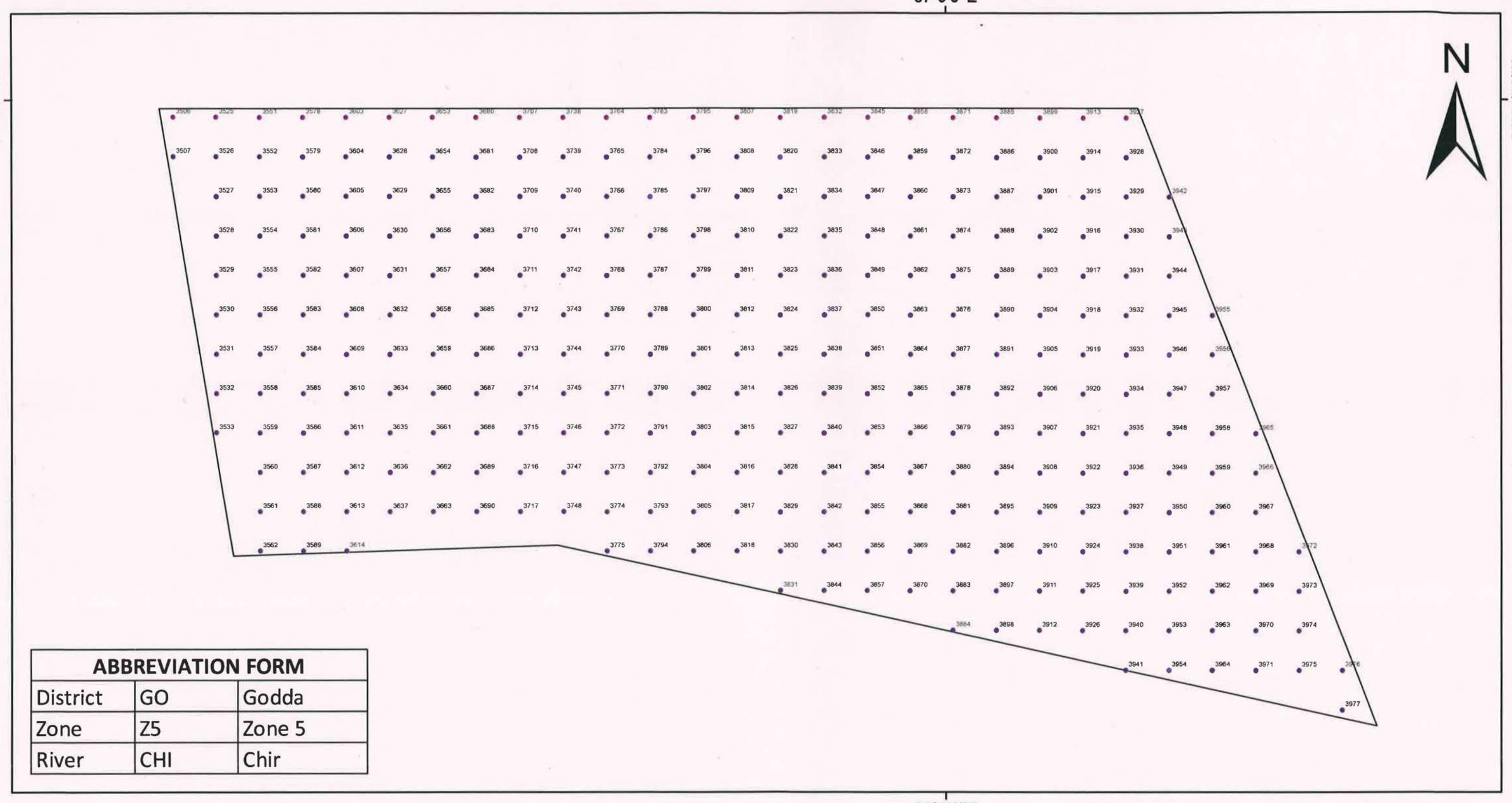
Sand Ghat Code	Area (in Ha)
GO_Z5_CHI_3	3.51

0 40 80 160 240 320 Meters

Map showing 10m x 10m Grid Points Inside Sand Ghat In Chir River In Godda District

87°9'0"E

24°54'20"N



ABBREVIATION FORM		
District	GO	Godda
Zone	Z5	Zone 5
River	CHI	Chir

87°9'0"E

Legend

- Sand Ghat Boundary
- Sand Ghat Grid Points

Sand Ghat Code	Area (in Ha)
GO_Z5_CHI_4	3.03

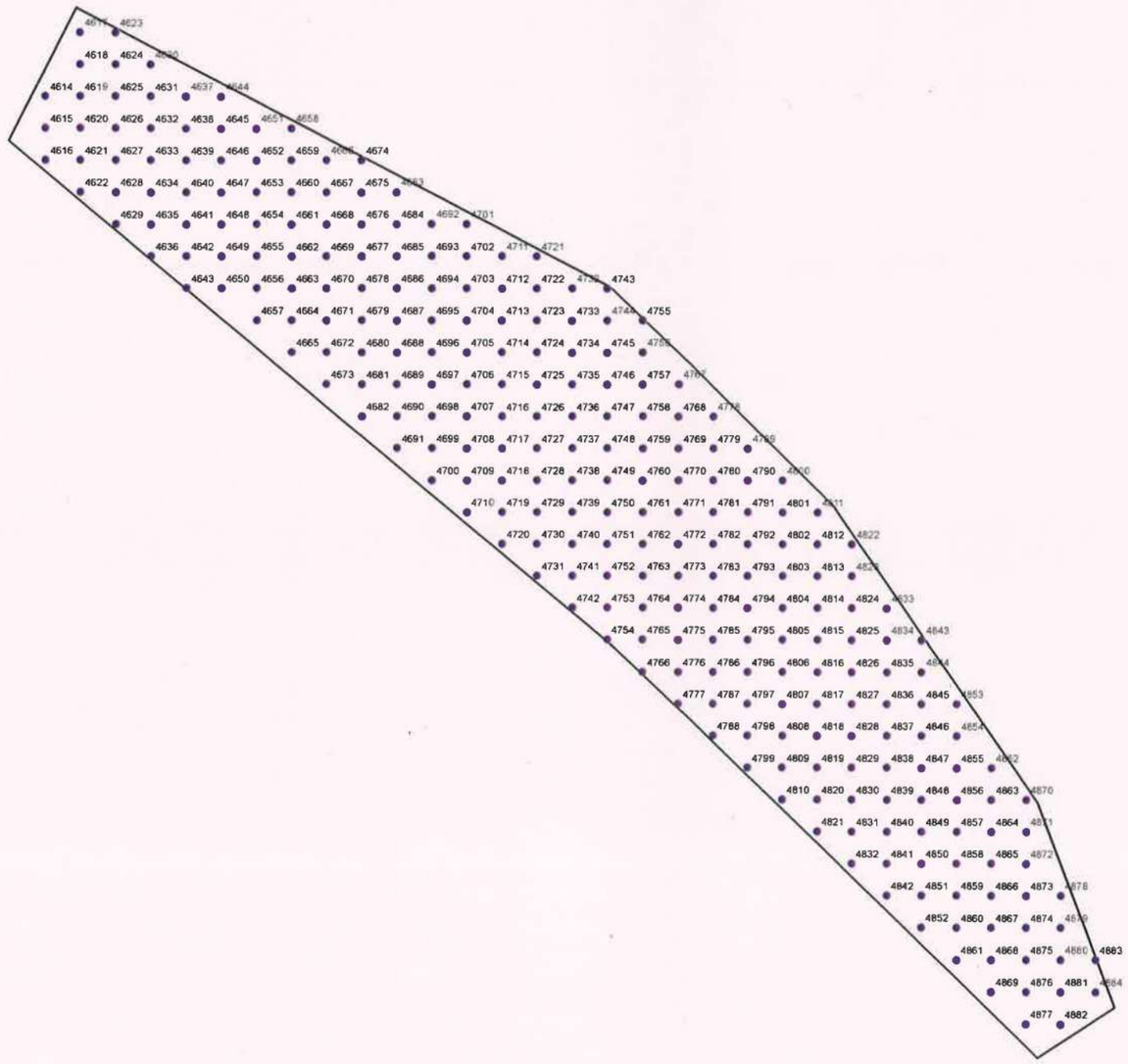
District Mining Officer,
Godda.

0 12.5 25 50 75 100 Meters

Map showing 10m x 10m Grid Points Inside Sand Ghat In Kajhia River In Godda District

87°14'40"E

24°49'20"N



N

ABBREVIATION FORM		
District	GO	Godda
Zone	Z9	Zone 9
River	KAJ	Kajhia

87°14'40"E

Legend

- Sand Ghat Boundary
- Sand Ghat Grid Points

Sand Ghat Code	Area (in Ha)
GO_Z9_KAJ_5	2.7

District Mining Officer,
Godda.

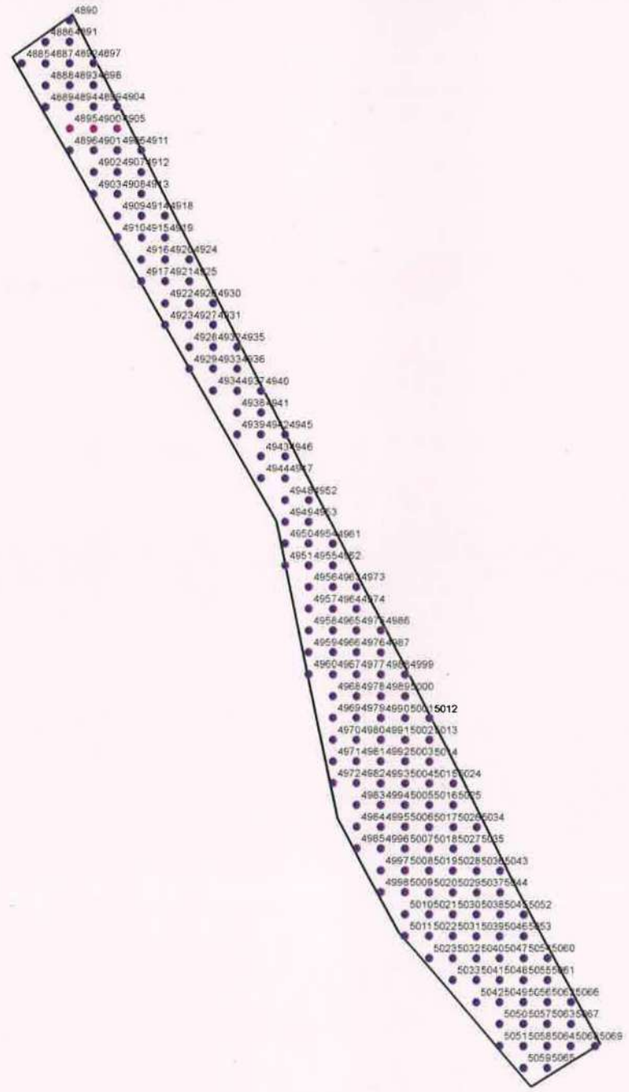
0 25 50 100 150 200 Meters

Map showing 10m x 10m Grid Points Inside Sand Ghat In Kajhia River In Godda District

87°15'40"E

87°16'0"E

24°48'0"N



N

ABBREVIATION FORM		
District	GO	Godda
Zone	Z10	Zone 10
River	KAJ	Kajhia

87°15'40"E

87°16'0"E

Legend

Sand Ghat Boundary

Sand Ghat Grid Points

Sand Ghat Code	Area (in Ha)
GO_Z10_KAJ_6	1.82

0 40 80 160 240 320

Meters

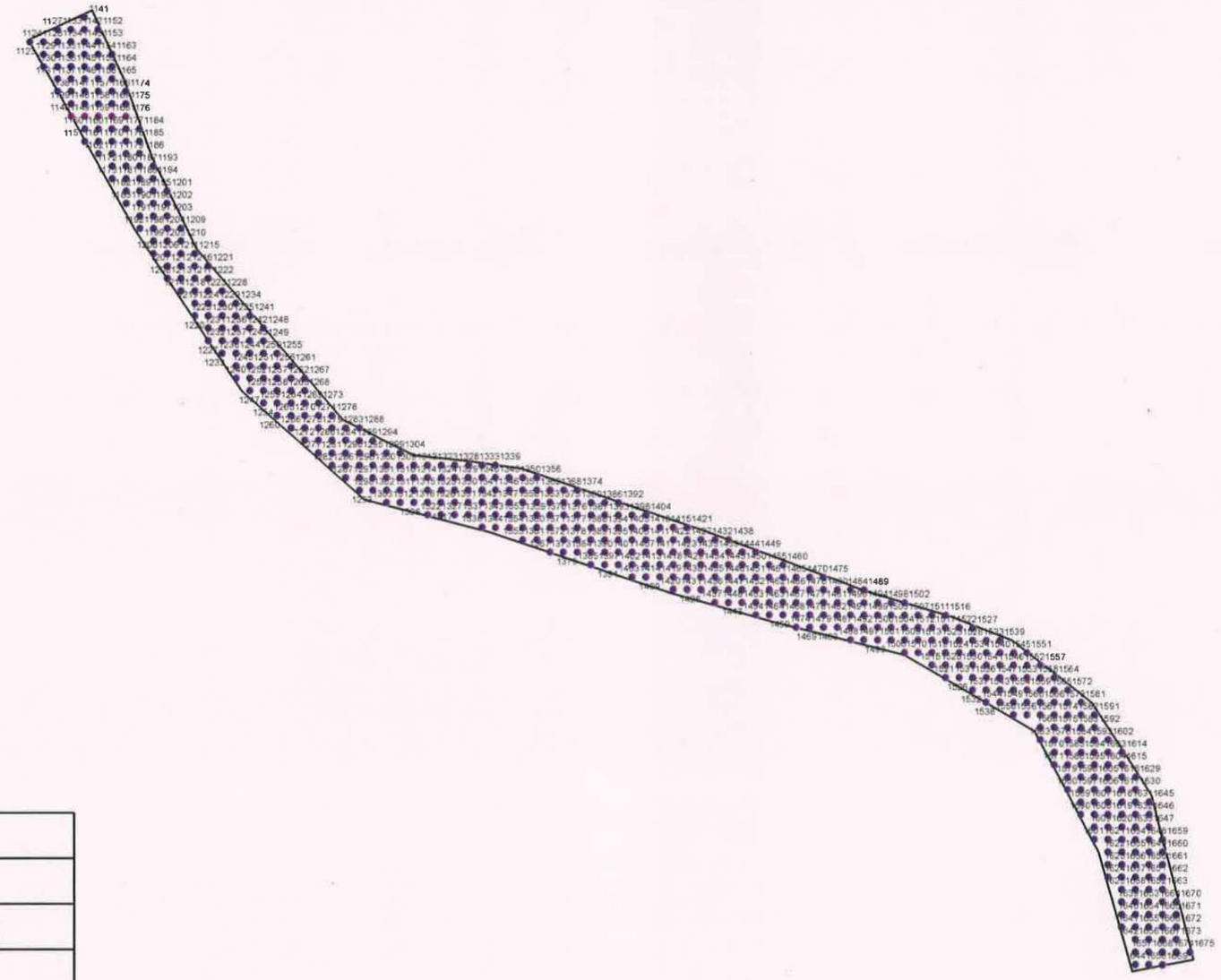
District Mining Officer,
Godda.

Map showing 10m x 10m Grid Points Inside Sand Ghat In Sakri River In Godda District

87°6'20"E

87°6'40"E

24°44'0"N



ABBREVIATION FORM		
District	GO	Godda
Zone	Z12	Zone 12
River	SAK	Sakri

Legend

- Sand Ghat Boundary
- Sand Ghat Grid Points

Sand Ghat Code	Area (in Ha)
GO_Z12_SAK_7	5.51

District Mining Officer,
Godda.

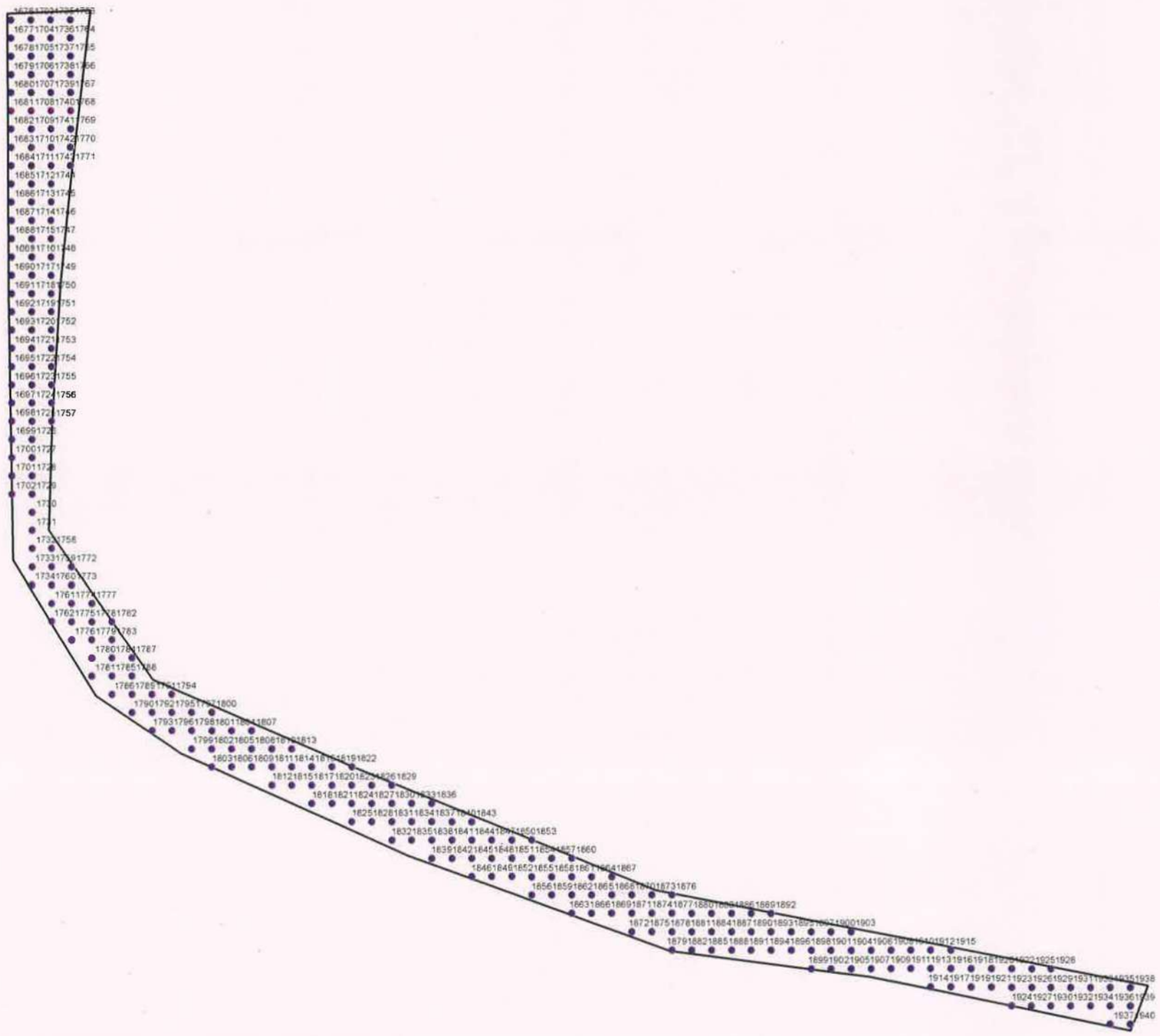
0 65 130 260 390 520
Meters

Map showing 10m x 10m Grid Points Inside Sand Ghat In Sakri River In Godda District

87°7'0"E

87°7'20"E

24°43'0"N



N

ABBREVIATION FORM		
District	GO	Godda
Zone	Z13	Zone 13
River	SAK	Sakri

Legend

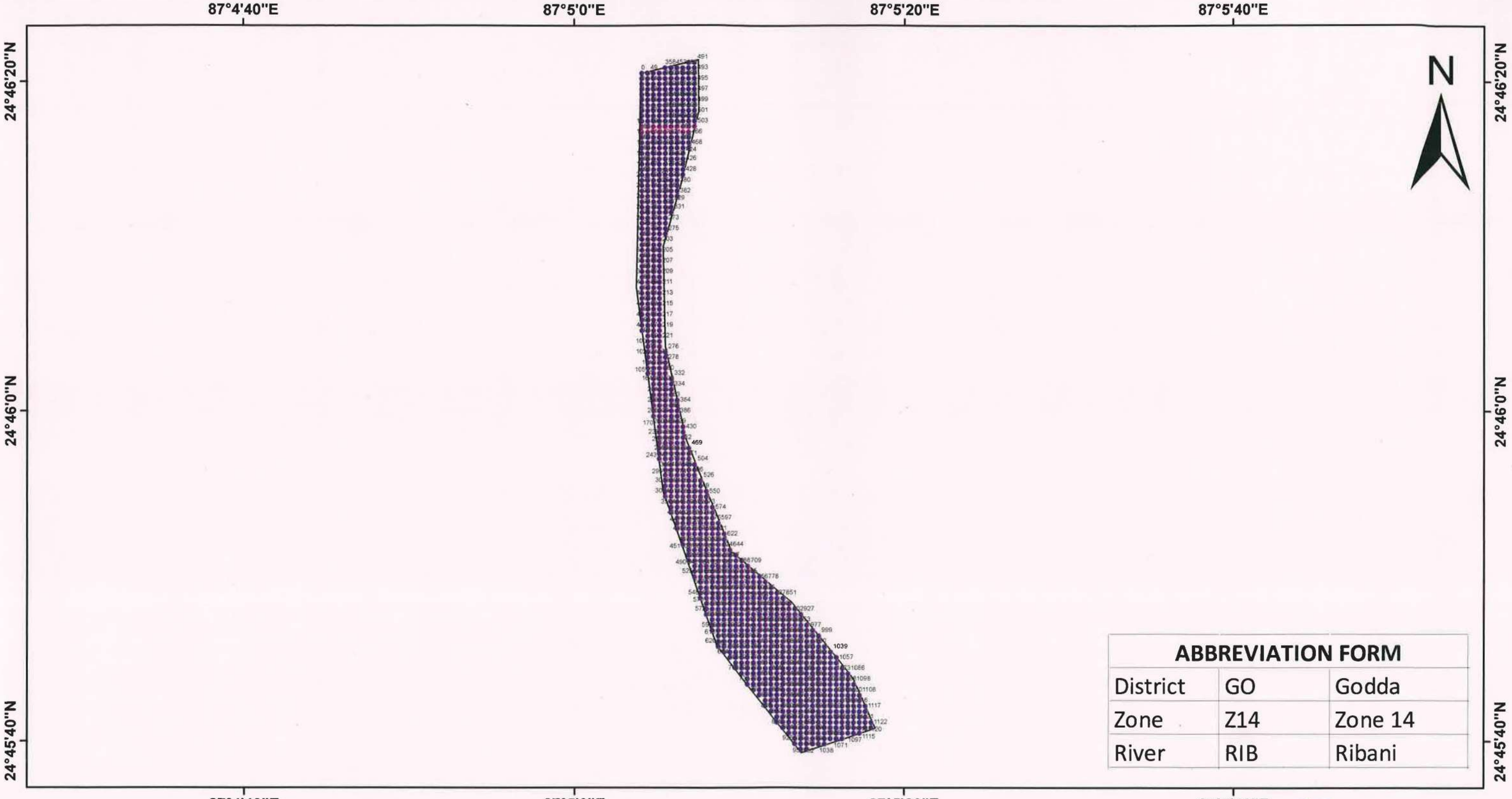
- Sand Ghat Boundary
- Sand Ghat Grid Points

Sand Ghat Code	Area (in Ha)
GO_Z13_SAK_8	2.59

District Mining Officer,
Godda.

0 40 80 160 240 320 Meters

Map showing 10m x 10m Grid Points Inside Sand Ghat In Ribani River In Godda District



ABBREVIATION FORM		
District	GO	Godda
Zone	Z14	Zone 14
River	RIB	Ribani

Legend

- Sand Ghat Boundary
- Sand Ghat Grid Points

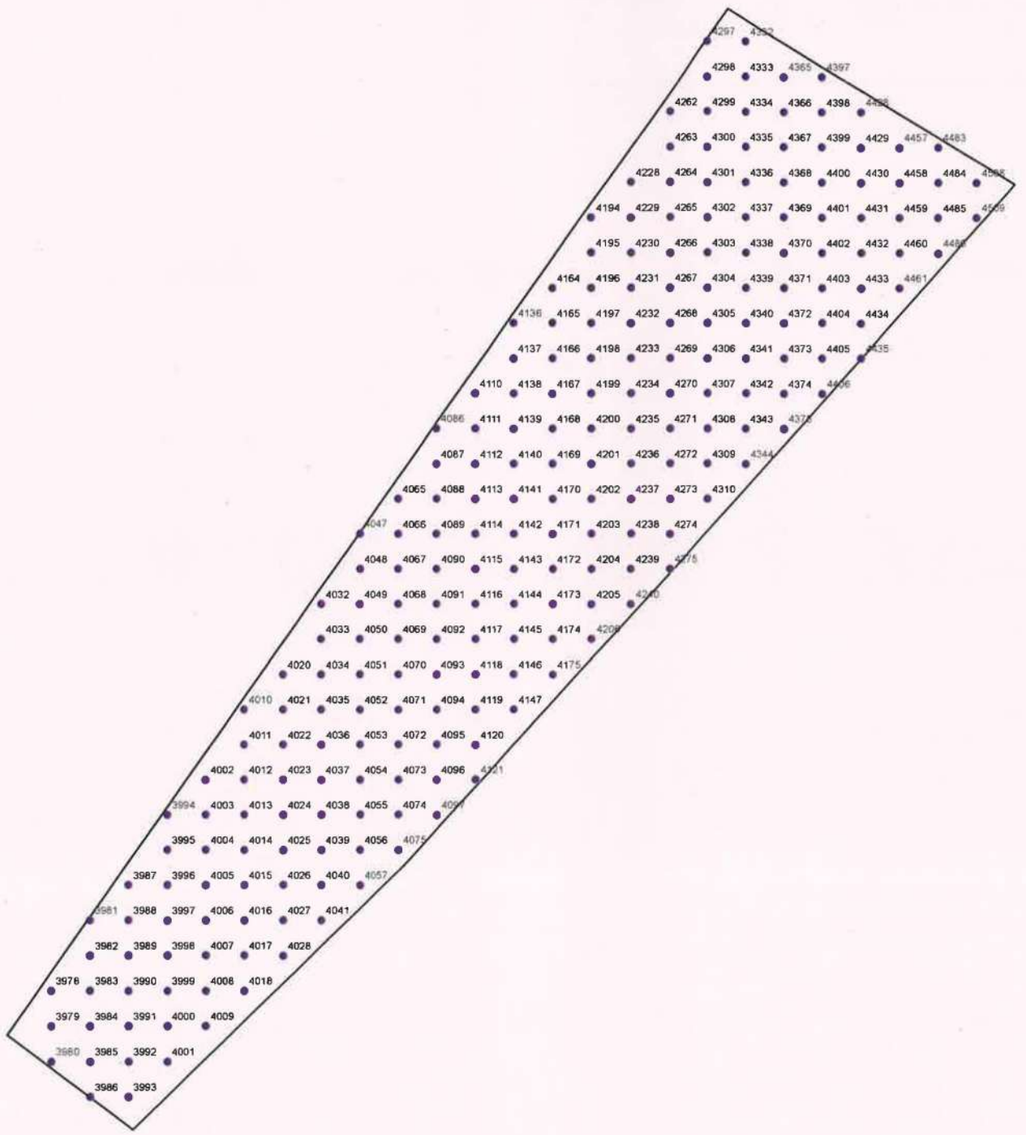
Sand Ghat Code	Area (in Ha)
GO_Z14_RIB_9	11.29

District Mining Officer
Godda.

0 100 200 400 600 800
Meters

Map showing 10m x 10m Grid Points Inside Sand Ghat In Chir River In Godda District

87°9'20"E



ABBREVIATION FORM		
District	GO	Godda
Zone	Z15	Zone 15
River	CHI	Chir

87°9'20"E

Legend

- Sand Ghat Boundary
- Sand Ghat Grid Points

Sand Ghat Code	Area (in Ha)
GO_Z15_CHI_10	2.39

District Mining Officer
Godda.

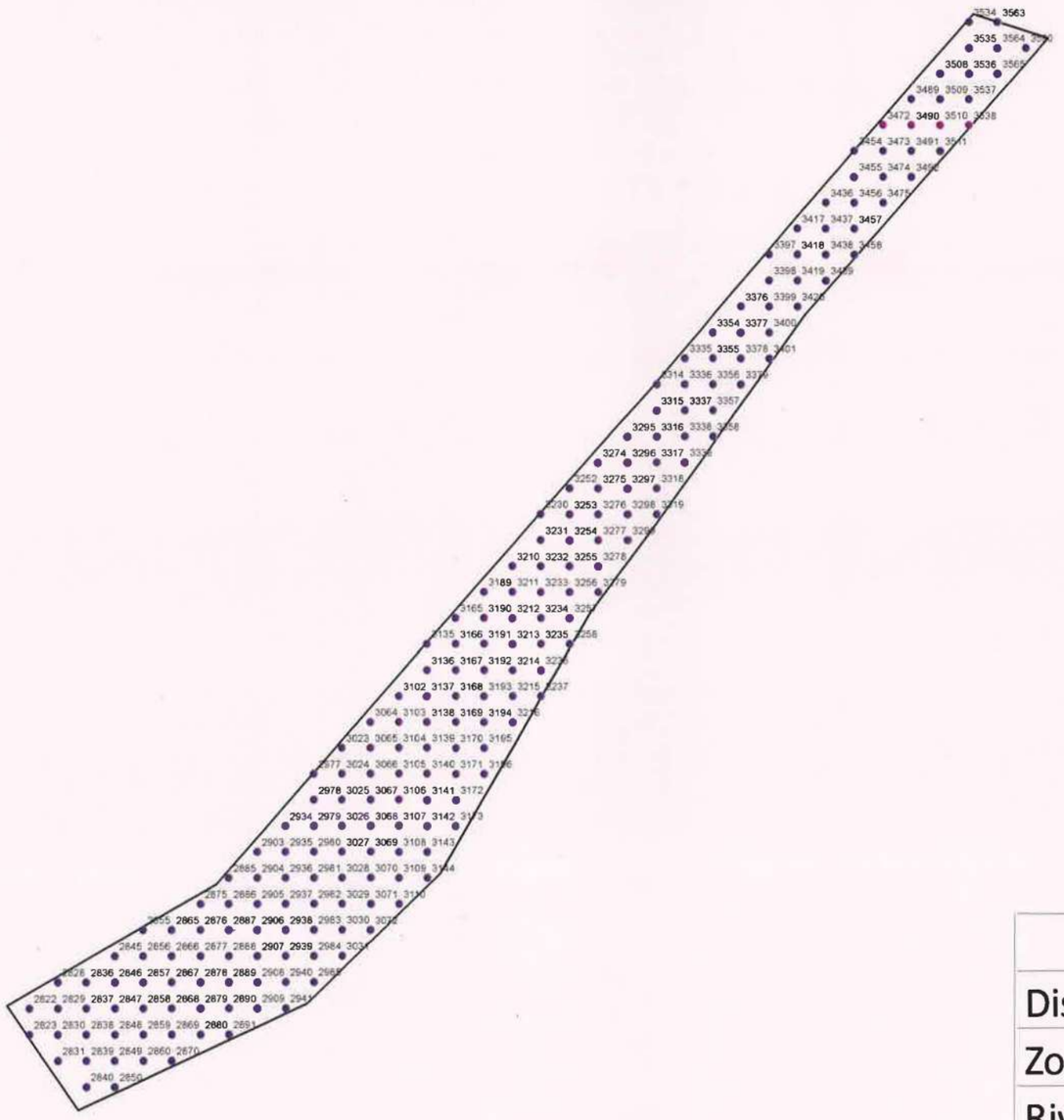
0 25 50 100 150 200 Meters

Map showing 10m x 10m Grid Points Inside Sand Ghat In Chir River In Godda District

87°8'40"E

87°9'0"E

24°52'20"N



N

ABBREVIATION FORM		
District	GO	Godda
Zone	Z16	Zone 16
River	CHI	Chir

87°8'40"E

87°9'0"E

Legend

- Sand Ghat Boundary
- Sand Ghat Grid Points

Sand Ghat Code	Area (in Ha)
GO_Z16_CHI_11	2.1

District Mining Officer,
Godda.

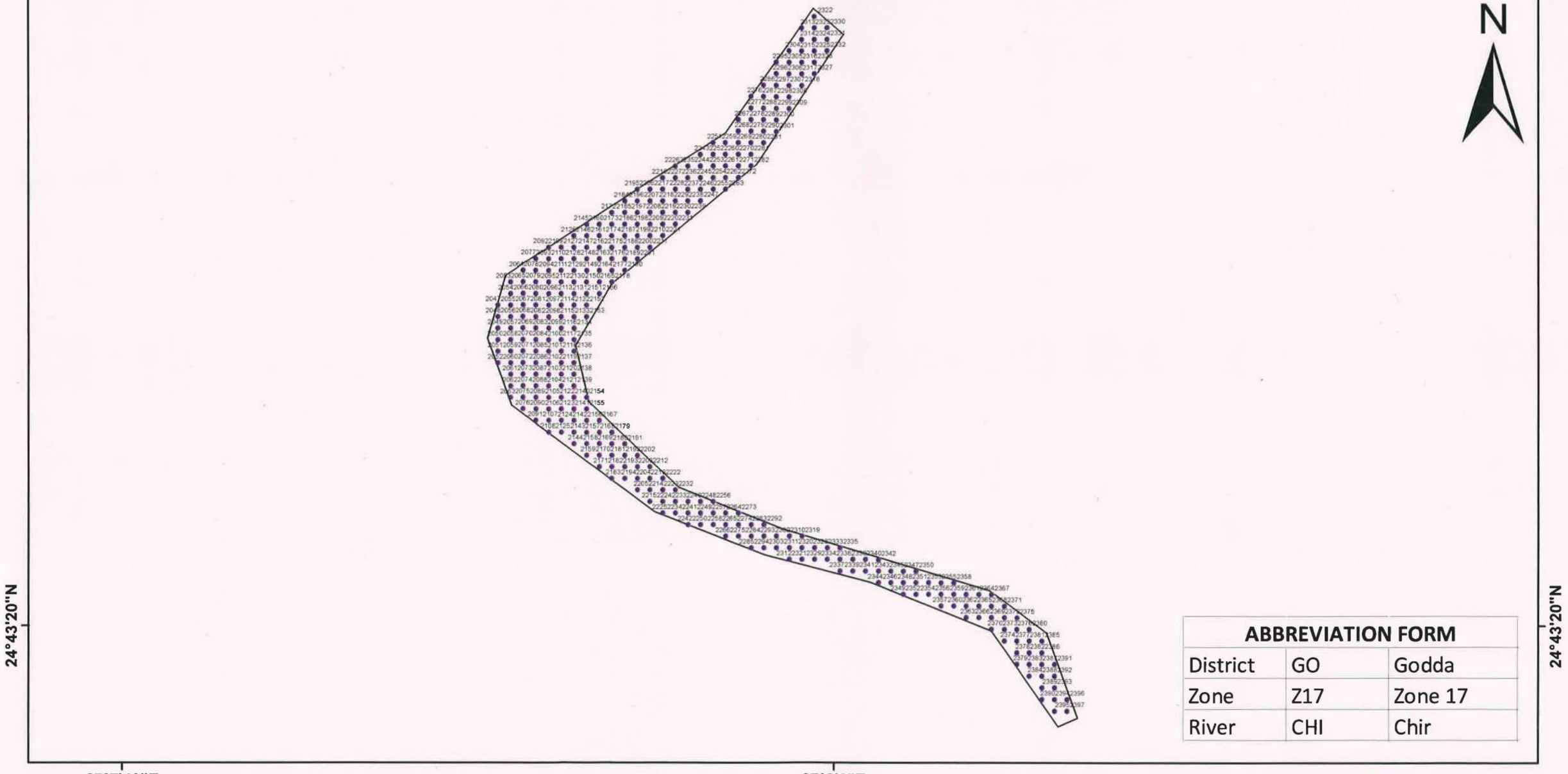
0 30 60 120 180 240 Meters

Map showing 10m x 10m Grid Points Inside Sand Ghat In Chir River In Godda District

87°7'40"E

87°8'0"E

24°43'20"N



N

ABBREVIATION FORM		
District	GO	Godda
Zone	Z17	Zone 17
River	CHI	Chir

87°7'40"E

87°8'0"E

24°43'20"N

Legend

- Sand Ghat Boundary
- Sand Ghat Grid Points

Sand Ghat Code	Area (in Ha)
GO_Z17_CHI_12	3.54

District Mining Officer
Godda.

0 50 100 200 300 400 Meters

Map showing 10m x 10m Grid Points Inside Sand Ghat In Chir River In Godda District

87°7'40"E

N

ABBREVIATION FORM		
District	GO	Godda
Zone	Z18	Zone 18
River	CHI	Chir

87°7'40"E

Legend

- Sand Ghat Boundary
- Sand Ghat Grid Points

Sand Ghat Code	Area (in Ha)
GO_Z18_CHI_13	1.06

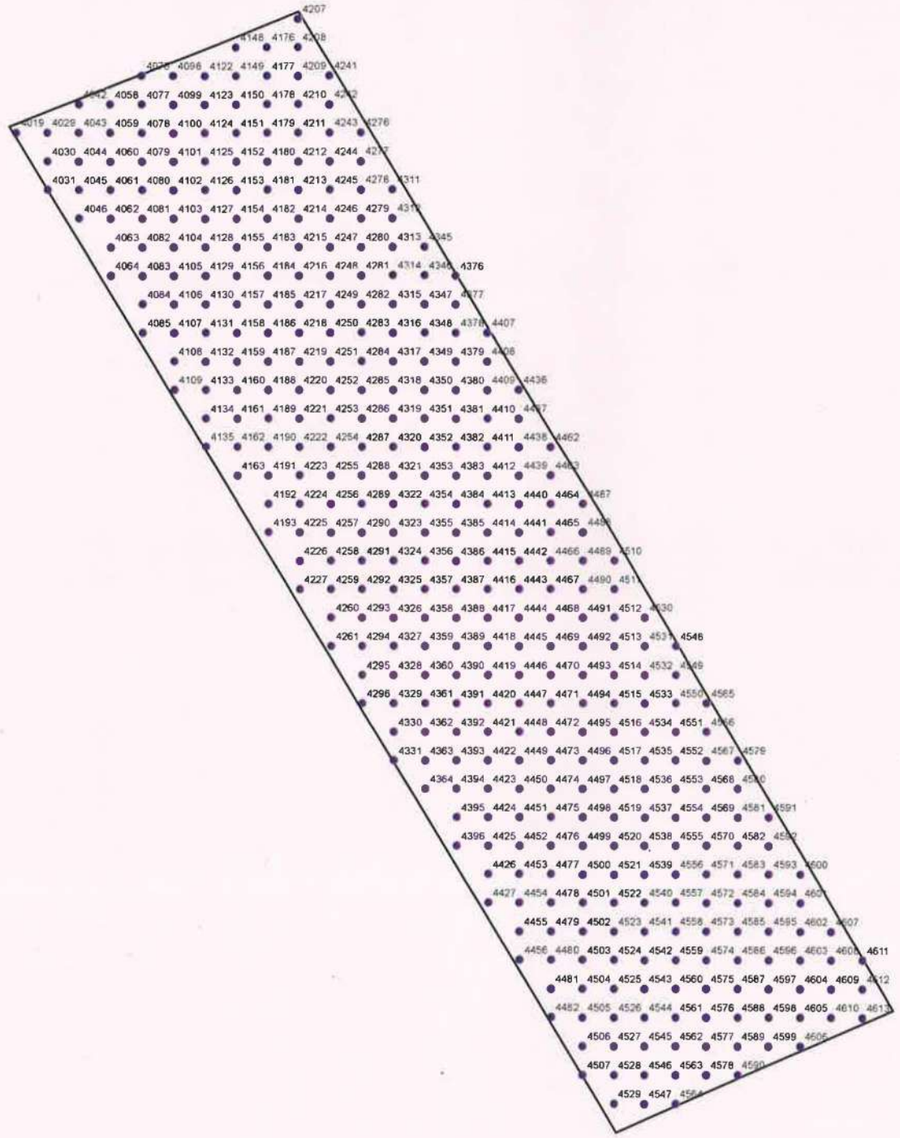
District Mining Officer,
Godda.

0 15 30 60 90 120
Meters

Map showing 10m x 10m Grid Points Inside Sand Ghat In Chir River In Godda District

87°9'20"E

24°54'0"N



N

24°54'0"N

87°9'20"E

ABBREVIATION FORM		
District	GO	Godda
Zone	Z5	Zone 5
River	CHI	Chir

Legend

- Sand Ghat Boundary
- Sand Ghat Grid Points

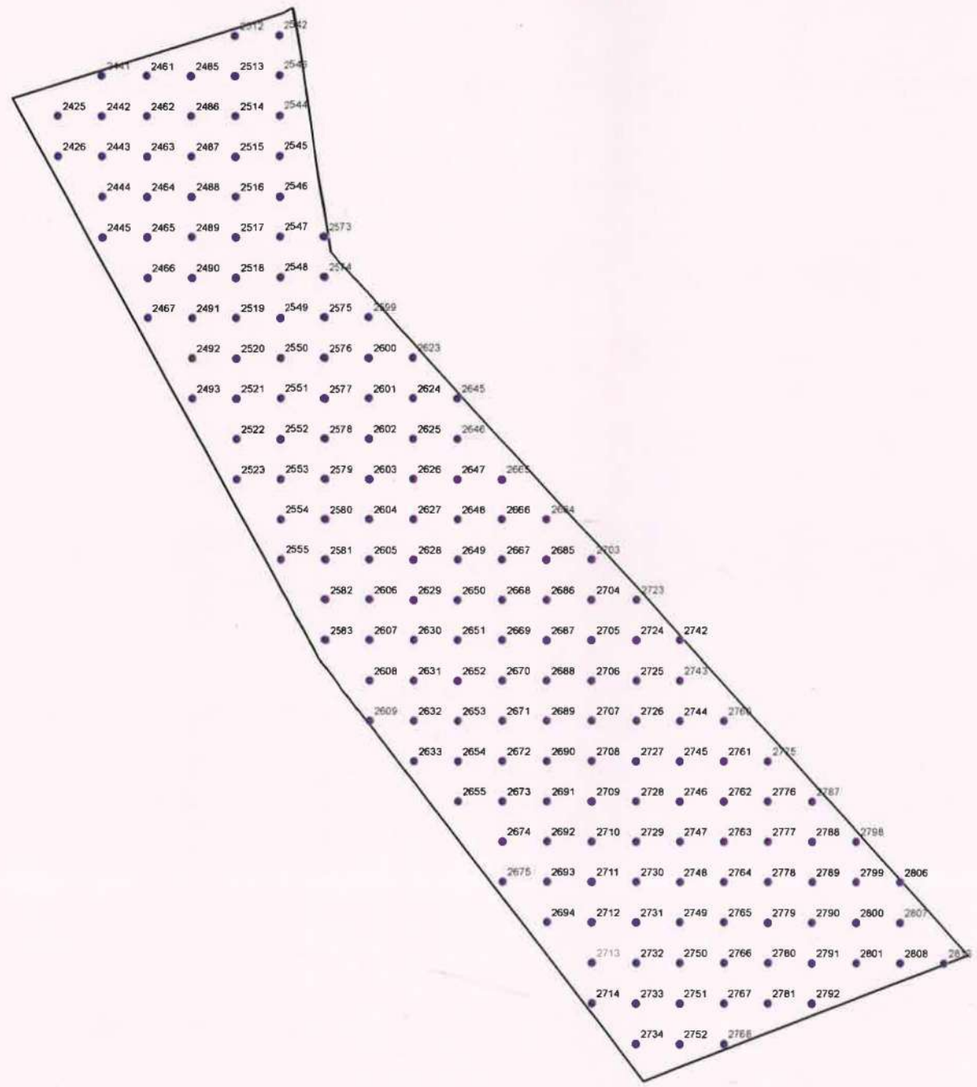
Sand Ghat Code	Area (in Ha)
GO_Z5_CHI_14	3.98

District Mining Officer,
Godda.

0 30 60 120 180 240 Meters

Map showing 10m x 10m Grid Points Inside Sand Ghat In Chir River In Godda District

87°8'40"E



N

24°54'40"N

24°54'40"N

87°8'40"E

ABBREVIATION FORM		
District	GO	Godda
Zone	Z5	Zone 5
River	Chi	Chir

Legend

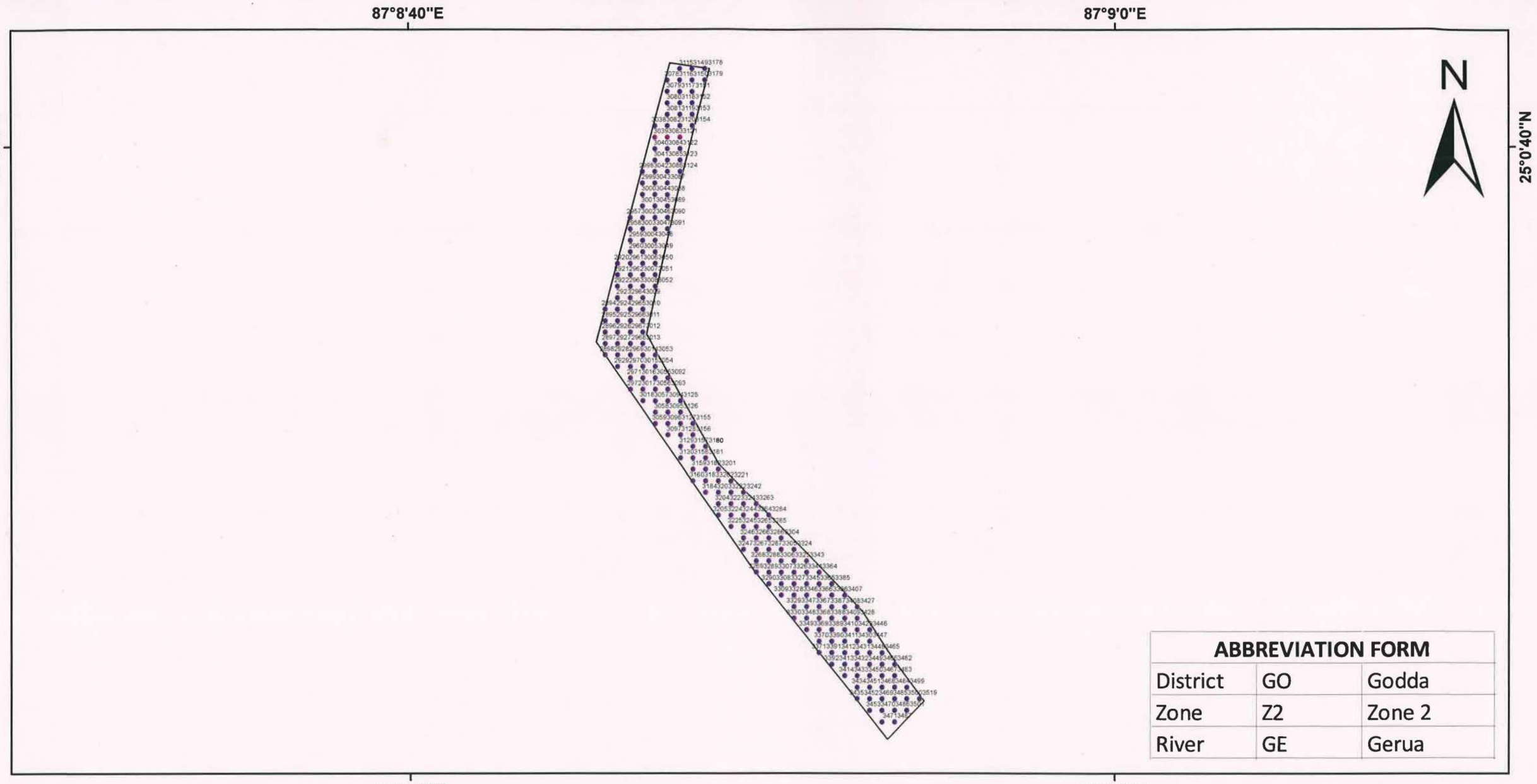
- Sand Ghat Boundary
- Sand Ghat Grid Points

Sand Ghat Code	Area (in Ha)
GO_Z5_CHI_15	1.81

District Mining Officer,
Godda.

0 20 40 80 120 160 Meters

Map showing 10m x 10m Grid Points Inside Sand Ghat In Gerua River In Godda District



ABBREVIATION FORM		
District	GO	Godda
Zone	Z2	Zone 2
River	GE	Gerua

Legend

- Sand Ghat Boundary
- Sand Ghat Grid Points

Sand Ghat Code	Area (in Ha)
GO_Z2_GE_16	2.36

District Mining Officer
Godda.

0 50 100 200 300 400 Meters

TABLE REPRESENTING ELEVATION (in m) WITH RESPECT TO 10m X 10m GRID WITHIN POTENTIAL SAND GHATS IN GODDA DISTRICT OF JHARKHAND

ANNEXURE - B17

FID	Sand Ghat Code	Latitude	Longitude	Elevation (in m)
0	GO_Z14_RIB_9	24° 46' 20.471" N	87° 5' 4.103" E	42.06
1	GO_Z14_RIB_9	24° 46' 20.146" N	87° 5' 4.103" E	42.30
2	GO_Z14_RIB_9	24° 46' 19.821" N	87° 5' 4.103" E	42.13
3	GO_Z14_RIB_9	24° 46' 19.496" N	87° 5' 4.102" E	42.25
4	GO_Z14_RIB_9	24° 46' 19.171" N	87° 5' 4.102" E	42.41
5	GO_Z14_RIB_9	24° 46' 18.846" N	87° 5' 4.102" E	42.47
6	GO_Z14_RIB_9	24° 46' 18.521" N	87° 5' 4.102" E	42.46
7	GO_Z14_RIB_9	24° 46' 18.195" N	87° 5' 4.102" E	42.51
8	GO_Z14_RIB_9	24° 46' 17.870" N	87° 5' 4.101" E	42.45
9	GO_Z14_RIB_9	24° 46' 17.545" N	87° 5' 4.101" E	42.45
10	GO_Z14_RIB_9	24° 46' 17.220" N	87° 5' 4.101" E	42.33
11	GO_Z14_RIB_9	24° 46' 16.895" N	87° 5' 4.101" E	42.79
12	GO_Z14_RIB_9	24° 46' 16.570" N	87° 5' 4.101" E	43.11
13	GO_Z14_RIB_9	24° 46' 16.245" N	87° 5' 4.100" E	42.85
14	GO_Z14_RIB_9	24° 46' 15.919" N	87° 5' 4.100" E	42.97
15	GO_Z14_RIB_9	24° 46' 15.594" N	87° 5' 4.100" E	42.74
16	GO_Z14_RIB_9	24° 46' 15.269" N	87° 5' 4.100" E	42.53
17	GO_Z14_RIB_9	24° 46' 14.944" N	87° 5' 4.099" E	42.62
18	GO_Z14_RIB_9	24° 46' 14.619" N	87° 5' 4.099" E	42.78
19	GO_Z14_RIB_9	24° 46' 14.294" N	87° 5' 4.099" E	42.72
20	GO_Z14_RIB_9	24° 46' 13.969" N	87° 5' 4.099" E	42.86
21	GO_Z14_RIB_9	24° 46' 13.644" N	87° 5' 4.099" E	42.78
22	GO_Z14_RIB_9	24° 46' 13.318" N	87° 5' 4.098" E	42.79
23	GO_Z14_RIB_9	24° 46' 12.993" N	87° 5' 4.098" E	43.06
24	GO_Z14_RIB_9	24° 46' 12.668" N	87° 5' 4.098" E	42.94
25	GO_Z14_RIB_9	24° 46' 12.343" N	87° 5' 4.098" E	43.37
26	GO_Z14_RIB_9	24° 46' 12.018" N	87° 5' 4.097" E	42.98
27	GO_Z14_RIB_9	24° 46' 11.693" N	87° 5' 4.097" E	42.97
28	GO_Z14_RIB_9	24° 46' 11.368" N	87° 5' 4.097" E	42.98
29	GO_Z14_RIB_9	24° 46' 11.043" N	87° 5' 4.097" E	43.45
30	GO_Z14_RIB_9	24° 46' 10.717" N	87° 5' 4.097" E	44.28
31	GO_Z14_RIB_9	24° 46' 10.392" N	87° 5' 4.096" E	43.89
32	GO_Z14_RIB_9	24° 46' 10.067" N	87° 5' 4.096" E	43.52
33	GO_Z14_RIB_9	24° 46' 9.742" N	87° 5' 4.096" E	45.04
34	GO_Z14_RIB_9	24° 46' 9.417" N	87° 5' 4.096" E	42.68
35	GO_Z14_RIB_9	24° 46' 9.092" N	87° 5' 4.095" E	43.56
36	GO_Z14_RIB_9	24° 46' 8.767" N	87° 5' 4.095" E	43.51
37	GO_Z14_RIB_9	24° 46' 8.442" N	87° 5' 4.095" E	42.71
38	GO_Z14_RIB_9	24° 46' 8.116" N	87° 5' 4.095" E	42.77
39	GO_Z14_RIB_9	24° 46' 7.791" N	87° 5' 4.095" E	42.83
40	GO_Z14_RIB_9	24° 46' 7.466" N	87° 5' 4.094" E	42.56
41	GO_Z14_RIB_9	24° 46' 7.141" N	87° 5' 4.094" E	42.77
42	GO_Z14_RIB_9	24° 46' 6.816" N	87° 5' 4.094" E	42.92
43	GO_Z14_RIB_9	24° 46' 6.491" N	87° 5' 4.094" E	43.02
44	GO_Z14_RIB_9	24° 46' 6.166" N	87° 5' 4.093" E	43.06
45	GO_Z14_RIB_9	24° 46' 5.840" N	87° 5' 4.093" E	43.16
46	GO_Z14_RIB_9	24° 46' 5.515" N	87° 5' 4.093" E	43.32
47	GO_Z14_RIB_9	24° 46' 5.190" N	87° 5' 4.093" E	43.22
48	GO_Z14_RIB_9	24° 46' 4.865" N	87° 5' 4.093" E	43.55
49	GO_Z14_RIB_9	24° 46' 20.471" N	87° 5' 4.459" E	42.53
50	GO_Z14_RIB_9	24° 46' 20.146" N	87° 5' 4.459" E	42.60
51	GO_Z14_RIB_9	24° 46' 19.821" N	87° 5' 4.459" E	42.59
52	GO_Z14_RIB_9	24° 46' 19.496" N	87° 5' 4.459" E	42.48
53	GO_Z14_RIB_9	24° 46' 19.171" N	87° 5' 4.458" E	42.53
54	GO_Z14_RIB_9	24° 46' 18.845" N	87° 5' 4.458" E	42.51
55	GO_Z14_RIB_9	24° 46' 18.520" N	87° 5' 4.458" E	42.64
56	GO_Z14_RIB_9	24° 46' 18.195" N	87° 5' 4.458" E	42.70
57	GO_Z14_RIB_9	24° 46' 17.870" N	87° 5' 4.457" E	42.76
58	GO_Z14_RIB_9	24° 46' 17.545" N	87° 5' 4.457" E	43.16
59	GO_Z14_RIB_9	24° 46' 17.220" N	87° 5' 4.457" E	42.53
60	GO_Z14_RIB_9	24° 46' 16.895" N	87° 5' 4.457" E	42.69
61	GO_Z14_RIB_9	24° 46' 16.570" N	87° 5' 4.457" E	42.83
62	GO_Z14_RIB_9	24° 46' 16.244" N	87° 5' 4.456" E	43.01
63	GO_Z14_RIB_9	24° 46' 15.919" N	87° 5' 4.456" E	43.08
64	GO_Z14_RIB_9	24° 46' 15.594" N	87° 5' 4.456" E	43.24
65	GO_Z14_RIB_9	24° 46' 15.269" N	87° 5' 4.456" E	42.97
66	GO_Z14_RIB_9	24° 46' 14.944" N	87° 5' 4.456" E	42.73
67	GO_Z14_RIB_9	24° 46' 14.619" N	87° 5' 4.455" E	42.70
68	GO_Z14_RIB_9	24° 46' 14.294" N	87° 5' 4.455" E	42.73
69	GO_Z14_RIB_9	24° 46' 13.969" N	87° 5' 4.455" E	42.79
70	GO_Z14_RIB_9	24° 46' 13.643" N	87° 5' 4.455" E	42.75
71	GO_Z14_RIB_9	24° 46' 13.318" N	87° 5' 4.454" E	42.59
72	GO_Z14_RIB_9	24° 46' 12.993" N	87° 5' 4.454" E	42.68
73	GO_Z14_RIB_9	24° 46' 12.668" N	87° 5' 4.454" E	43.54
74	GO_Z14_RIB_9	24° 46' 12.343" N	87° 5' 4.454" E	42.94
75	GO_Z14_RIB_9	24° 46' 12.018" N	87° 5' 4.454" E	42.99
76	GO_Z14_RIB_9	24° 46' 11.693" N	87° 5' 4.453" E	42.97
77	GO_Z14_RIB_9	24° 46' 11.367" N	87° 5' 4.453" E	42.77
78	GO_Z14_RIB_9	24° 46' 11.042" N	87° 5' 4.453" E	44.31
79	GO_Z14_RIB_9	24° 46' 10.717" N	87° 5' 4.453" E	42.61
80	GO_Z14_RIB_9	24° 46' 10.392" N	87° 5' 4.452" E	42.63
81	GO_Z14_RIB_9	24° 46' 10.067" N	87° 5' 4.452" E	43.10
82	GO_Z14_RIB_9	24° 46' 9.742" N	87° 5' 4.452" E	42.86
83	GO_Z14_RIB_9	24° 46' 9.417" N	87° 5' 4.452" E	42.71
84	GO_Z14_RIB_9	24° 46' 9.092" N	87° 5' 4.452" E	42.57
85	GO_Z14_RIB_9	24° 46' 8.766" N	87° 5' 4.451" E	42.54
86	GO_Z14_RIB_9	24° 46' 8.441" N	87° 5' 4.451" E	42.65
87	GO_Z14_RIB_9	24° 46' 8.116" N	87° 5' 4.451" E	42.66
88	GO_Z14_RIB_9	24° 46' 7.791" N	87° 5' 4.451" E	42.77
89	GO_Z14_RIB_9	24° 46' 7.466" N	87° 5' 4.450" E	42.70
90	GO_Z14_RIB_9	24° 46' 7.141" N	87° 5' 4.450" E	42.58
91	GO_Z14_RIB_9	24° 46' 6.816" N	87° 5' 4.450" E	42.89
92	GO_Z14_RIB_9	24° 46' 6.491" N	87° 5' 4.450" E	43.01
93	GO_Z14_RIB_9	24° 46' 6.165" N	87° 5' 4.450" E	43.08
94	GO_Z14_RIB_9	24° 46' 5.840" N	87° 5' 4.449" E	43.18
95	GO_Z14_RIB_9	24° 46' 5.515" N	87° 5' 4.449" E	43.09
96	GO_Z14_RIB_9	24° 46' 5.190" N	87° 5' 4.449" E	43.49
97	GO_Z14_RIB_9	24° 46' 4.865" N	87° 5' 4.449" E	43.64
98	GO_Z14_RIB_9	24° 46' 4.540" N	87° 5' 4.448" E	43.62
99	GO_Z14_RIB_9	24° 46' 4.215" N	87° 5' 4.448" E	43.98
100	GO_Z14_RIB_9	24° 46' 3.890" N	87° 5' 4.448" E	43.77
101	GO_Z14_RIB_9	24° 46' 3.564" N	87° 5' 4.448" E	43.54
102	GO_Z14_RIB_9	24° 46' 3.239" N	87° 5' 4.448" E	44.04
103	GO_Z14_RIB_9	24° 46' 2.914" N	87° 5' 4.447" E	44.18
104	GO_Z14_RIB_9	24° 46' 2.589" N	87° 5' 4.447" E	43.33
105	GO_Z14_RIB_9	24° 46' 2.264" N	87° 5' 4.447" E	43.83
106	GO_Z14_RIB_9	24° 46' 20.471" N	87° 5' 4.815" E	42.55
107	GO_Z14_RIB_9	24° 46' 20.146" N	87° 5' 4.815" E	42.62
108	GO_Z14_RIB_9	24° 46' 19.821" N	87° 5' 4.815" E	42.68
109	GO_Z14_RIB_9	24° 46' 19.495" N	87° 5' 4.815" E	42.74
110	GO_Z14_RIB_9	24° 46' 19.170" N	87° 5' 4.814" E	42.83
111	GO_Z14_RIB_9	24° 46' 18.845" N	87° 5' 4.814" E	42.85
112	GO_Z14_RIB_9	24° 46' 18.520" N	87° 5' 4.814" E	42.84
113	GO_Z14_RIB_9	24° 46' 18.195" N	87° 5' 4.814" E	42.81
114	GO_Z14_RIB_9	24° 46' 17.870" N	87° 5' 4.814" E	42.81
115	GO_Z14_RIB_9	24° 46' 17.545" N	87° 5' 4.813" E	42.78
116	GO_Z14_RIB_9	24° 46' 17.220" N	87° 5' 4.813" E	42.79
117	GO_Z14_RIB_9	24° 46' 16.894" N	87° 5' 4.813" E	42.95
118	GO_Z14_RIB_9	24° 46' 16.569" N	87° 5' 4.813" E	42.84
119	GO_Z14_RIB_9	24° 46' 16.244" N	87° 5' 4.812" E	42.94
120	GO_Z14_RIB_9	24° 46' 15.919" N	87° 5' 4.812" E	43.16
121	GO_Z14_RIB_9	24° 46' 15.594" N	87° 5' 4.812" E	43.04
122	GO_Z14_RIB_9	24° 46' 15.269" N	87° 5' 4.812" E	42.94
123	GO_Z14_RIB_9	24° 46' 14.944" N	87° 5' 4.812" E	43.08
124	GO_Z14_RIB_9	24° 46' 14.619" N	87° 5' 4.811" E	43.05
125	GO_Z14_RIB_9	24° 46' 14.293" N	87° 5' 4.811" E	42.84
126	GO_Z14_RIB_9	24° 46' 13.968" N	87° 5' 4.811" E	42.79
127	GO_Z14_RIB_9	24° 46' 13.643" N	87° 5' 4.811" E	42.93
128	GO_Z14_RIB_9	24° 46' 13.318" N	87° 5' 4.810" E	42.82
129	GO_Z14_RIB_9	24° 46' 12.993" N	87° 5' 4.810" E	42.82
130	GO_Z14_RIB_9	24° 46' 12.668" N	87° 5' 4.810" E	42.79
131	GO_Z14_RIB_9	24° 46' 12.343" N	87° 5' 4.810" E	42.93
132	GO_Z14_RIB_9	24° 46' 12.018" N	87° 5' 4.810" E	42.77
133	GO_Z14_RIB_9	24° 46' 11.692" N	87° 5' 4.809" E	43.28
134	GO_Z14_RIB_9	24° 46' 11.367" N	87° 5' 4.809" E	43.85
135	GO_Z14_RIB_9	24° 46' 11.042" N	87° 5' 4.809" E	44.41
136	GO_Z14_RIB_9	24° 46' 10.717" N	87° 5' 4.809" E	43.05
137	GO_Z14_RIB_9	24° 46' 10.392" N	87° 5' 4.809" E	43.87
138	GO_Z14_RIB_9	24° 46' 10.067" N	87° 5' 4.808" E	42.87
139	GO_Z14_RIB_9	24° 46' 9.742" N	87° 5' 4.808" E	42.64
140	GO_Z14_RIB_9	24° 46' 9.417" N	87° 5' 4.808" E	42.73
141	GO_Z14_RIB_9	24° 46' 9.091" N	87° 5' 4.808" E	42.73
142	GO_Z14_RIB_9	24° 46' 8.766" N	87° 5' 4.807" E	42.72
143	GO_Z14_RIB_9	24° 46' 8.441" N	87° 5' 4.807" E	42.68
144	GO_Z14_RIB_9	24° 46' 8.116" N	87° 5' 4.807" E	42.65
145	GO_Z14_RIB_9	24° 46' 7.791" N	87° 5' 4.807" E	42.74
146	GO_Z14_RIB_9	24° 46' 7.466" N	87° 5' 4.807" E	43.09
147	GO_Z14_RIB_9	24° 46' 7.141" N	87° 5' 4.806" E	42.81
148	GO_Z14_RIB_9	24° 46' 6.815" N	87° 5' 4.806" E	42.60
149	GO_Z14_RIB_9	24° 46' 6.490" N	87° 5' 4.806" E	43.81
150	GO_Z14_RIB_9	24° 46' 6.165" N	87° 5' 4.806" E	43.74
151	GO_Z14_RIB_9	24° 46' 5.840" N	87° 5' 4.805" E	43.87
152	GO_Z14_RIB_9	24° 46' 5.515" N	87° 5' 4.805" E	43.37
153	GO_Z14_RIB_9	24° 46' 5.190" N	87° 5' 4.805" E	43.16
154	GO_Z14_RIB_9	24° 46' 4.865" N	87° 5' 4.805" E	43.07
155	GO_Z14_RIB_9	24° 46' 4.540" N	87° 5' 4.805" E	43.09
156	GO_Z14_RIB_9	24° 46' 4.214" N	87° 5' 4.804" E	43.69
157	GO_Z14_RIB_9	24° 46' 3.889" N	87° 5' 4.804" E	43.69
158	GO_Z14_RIB_9	24° 46' 3.564" N	87° 5' 4.804" E	43.09
159	GO_Z14_RIB_9	24° 46' 3.239" N	87° 5' 4.804" E	43.64
160	GO_Z14_RIB_9	24° 46' 2.914" N	87° 5' 4.803" E	43.78
161	GO_Z14_RIB_9	24° 46' 2.589" N	87° 5' 4.803" E	43.82
162	GO_Z14_RIB_9	24° 46' 2.264" N	87° 5' 4.803" E	43.80
163	GO_Z14_RIB_9	24° 46' 1.939" N	87° 5' 4.803" E	44.05
164	GO_Z14_RIB_9	24° 46' 1.613" N	87° 5' 4.803" E	43.95
165	GO_Z14_RIB_9	24° 46' 1.288" N	87° 5' 4.802" E	44.25
166	GO_Z14_RIB_9	24° 46' 0.963" N	87° 5' 4.802" E	44.01
167	GO_Z14_RIB_9	24° 46' 0.638" N	87° 5' 4.802" E	44.59
168	GO_Z14_RIB_9	24° 46' 0.313" N	87° 5' 4.802" E	44.25
169	GO_Z14_RIB_9	24° 45' 59.988" N	87° 5' 4.801" E	44.58
170	GO_Z14_RIB_9	24° 45' 59.663" N	87° 5' 4.801" E	44.02
171	GO_Z14_RIB_9	24° 46' 20.471" N	87° 5' 5.171" E	42.69
172	GO_Z14_RIB_9	24° 46' 20.146" N	87° 5' 5.171" E	42.71
173	GO_Z14_RIB_9	24° 46' 19.820" N	87° 5' 5.171" E	42.73
174	GO_Z14_RIB_9	24° 46' 19.495" N	87° 5' 5.171" E	42.79
175	GO_Z14_RIB_9	24° 46' 19.170" N	87° 5' 5.171" E	42.88
176	GO_Z14_RIB_9	24° 46' 18.845" N	87° 5' 5.170" E	42.82
177	GO_Z14_RIB_9	24° 46' 18.520" N	87° 5' 5.170" E	42.83
178	GO_Z14_RIB_9	24° 46' 18.195" N	87° 5' 5.170" E	42.94
179	GO_Z14_RIB_9	24° 46' 17.870" N	87° 5' 5.170" E	42.83
180	GO_Z14_RIB_9	24° 46' 17.545" N	87° 5' 5.169" E	42.81
181	GO_Z14_RIB_9	24° 46' 17.219" N	87° 5' 5.169" E	42.83
182	GO_Z14_RIB_9	24° 46' 16.894" N	87° 5' 5.169" E	42.62
183	GO_Z14_RIB_9	24° 46' 16.569" N	87° 5' 5.169" E	42.79
184	GO_Z14_RIB_9	24° 46' 16.244" N	87° 5' 5.169" E	42.81
185	GO_Z14_RIB_9	24° 46' 15.919" N	87° 5' 5.168" E	43.40
186	GO_Z14_RIB_9	24° 46' 15.594" N	87° 5' 5.168" E	43.05
187	GO_Z14_RIB_9	24° 46' 15.269" N	87° 5' 5.168" E	43.06
188	GO_Z14_RIB_9	24° 46' 14.943" N	87° 5' 5.168" E	43.04
189	GO_Z14_RIB_9	24° 46' 14.618" N	87° 5' 5.167" E	43.01
190	GO_Z14_RIB_9	24° 46' 14.293" N	87° 5' 5.167" E	43.01
191	GO_Z14_RIB_9	24° 46' 13.968" N	87° 5' 5.167" E	42.98
192	GO_Z14_RIB_9	24° 46' 13.643" N	87° 5' 5.167" E	43.41
193	GO_Z14_RIB_9	24° 46' 13.318" N	87° 5' 5.167" E	42.96
194	GO_Z14_RIB_9	24° 46' 12.993" N	87° 5' 5.166" E	42.81
195	GO_Z14_RIB_9	24° 46' 12.668" N	87° 5' 5.166" E	42.75
196	GO_Z14_RIB_9	24° 46' 12.342" N	87° 5' 5.166" E	42.78
197	GO_Z14_RIB_9	24° 46' 12.017" N	87° 5' 5.166" E	42.88
198	GO_Z14_RIB_9	24° 46' 11.692" N	87° 5' 5.165" E	42.91
199	GO_Z14_RIB_9	24° 46' 11.367" N	87° 5' 5.165" E	42.82
200	GO_Z14_RIB_9	24° 46' 11.042" N	87° 5' 5.165" E	42.80
201	GO_Z14_RIB_9	24° 46' 10.717" N	87° 5' 5.165" E	42.83
202	GO_Z14_RIB_9	24° 46' 10.392" N	87° 5' 5.165" E	42.81
203	GO_Z14_RIB_9	24° 46' 10.067" N	87° 5' 5.164" E	42.89
204	GO_Z14_RIB_9	24° 46' 9.741" N	87° 5' 5.164" E	42.87
205	GO_Z14_RIB_9	24° 46' 9.416" N	87° 5' 5.164" E	42.75
206	GO_Z14_RIB_9	24° 46' 9.091" N	87° 5' 5.164" E	42.77
207	GO_Z14_RIB_9	24° 46' 8.766" N	87° 5' 5.163" E	42.66
208	GO_Z14_RIB_9	24° 46' 8.441" N	87° 5' 5.163" E	42.73
209	GO_Z14_RIB_9	24° 46' 8.116" N	87° 5' 5.163" E	42.68
210	GO_Z14_RIB_9	24° 46' 7.791" N	87° 5' 5.163" E	42.79
211	GO_Z14_RIB_9	24° 46' 7.466" N	87° 5' 5.163" E	42.86
212	GO_Z14_RIB_9	24° 46' 7.140" N	87° 5' 5.162" E	42.98
213	GO_Z14_RIB_9	24° 46' 6.815" N	87° 5' 5.162" E	43.01
214	GO_Z14_RIB_9	24° 46' 6.490" N	87° 5' 5.162" E	43.06
215	GO_Z14_RIB_9	24° 46' 6.165" N	87° 5' 5.162" E	42.96
216	GO_Z14_RIB_9	24° 46' 5.840" N	87° 5' 5.162" E	44.18
217	GO_Z14_RIB_9	24° 46' 5.515" N	87° 5' 5.161" E	43.17
218	GO_Z14_RIB_9	24° 46' 5.190" N	87° 5' 5.161" E	44.01
219	GO_Z14_RIB_9	24° 46' 4.864" N	87° 5' 5.161" E	43.09
220	GO_Z14_RIB_9	24° 46' 4.539" N	87° 5' 5.161" E	43.22
221	GO_Z14_RIB_9	24° 46' 4.214" N	87° 5' 5.160" E	43.67
222	GO_Z14_RIB_9	24° 46' 3.889" N	87° 5' 5.160" E	44.21
223	GO_Z14_RIB_9	24° 46' 3.564" N	87° 5' 5.160" E	43.93
224	GO_Z14_RIB_9	24° 46' 3.239" N	87° 5' 5.160" E	44.14
225	GO_Z14_RIB_9	24° 46' 2.914" N	87° 5' 5.160" E	44.54
226	GO_Z14_RIB_9	24° 46' 2.589" N	87° 5' 5.159" E	44.41
227	GO_Z14_RIB_9	24° 46' 2.263" N	87° 5' 5.159" E	43.85
228	GO_Z14_RIB_9	24° 46' 1.938" N	87° 5' 5.159" E	43.67
229	GO_Z14_RIB_9	24° 46' 1.613" N	87° 5' 5.159" E	43.58
230	GO_Z14_RIB_9	24° 46' 1.288" N	87° 5' 5.158" E	43.73
231	GO_Z14_RIB_9	24° 46' 0.963" N	87° 5' 5.158" E	44.00
232	GO_Z14_RIB_9	24° 46' 0.638" N	87° 5' 5.158" E	43.62
233	GO_Z14_RIB_9	24° 46' 0.313" N	87° 5' 5.158" E	43.68
234	GO_Z14_RIB_9	24° 45' 59.988" N	87° 5' 5.158" E	43.90
235	GO_Z14_RIB_9	24° 45' 59.662" N	87° 5' 5.157" E	44.30
236	GO_Z14_RIB_9	24° 45' 59.337" N	87° 5' 5.157" E	43.56
237	GO_Z14_RIB_9	24° 45' 59.012" N	87° 5' 5.157" E	43.82
238	GO_Z14_RIB_9	24° 45' 58.687" N	87° 5' 5.157" E	43.58
239	GO_Z14_RIB_9	24° 45' 58.362" N	87° 5' 5.156" E	44.14
240	GO_Z14_RIB_9	24° 45' 58.037" N	87° 5' 5.156" E	45.26
241	GO_Z14_RIB_9	24° 45' 57.712" N	87° 5' 5.156" E	45.18
242	GO_Z14_RIB_9	24° 45' 57.387" N	87° 5' 5.156" E	45.68
243	GO_Z14_RIB_9	24° 45' 57.061" N	87° 5' 5.156" E	45.45
244	GO_Z14_RIB_9	24° 46' 20.796" N	87° 5' 5.528" E	43.04
245	GO_Z14_RIB_9	24° 46' 20.470" N	87° 5' 5.528" E	43.06
246	GO_Z14_RIB_9	24° 46' 20.145" N	87° 5' 5.527" E	43.20
247	GO_Z14_RIB_9	24° 46' 19.820" N	87° 5' 5.527" E	43.11
248	GO_Z14_RIB_9	24° 46' 19.495" N	87° 5' 5.527" E	42.99
249	GO_Z14_RIB_9	24° 46' 19.170" N	87° 5' 5.527" E	43.02
250	GO_Z14_RIB_9	24° 46' 18.845" N	87° 5' 5.526" E	42.99
251	GO_Z14_RIB_9	24° 46' 18.520" N	87° 5' 5.526" E	42.99
252	GO_Z14_RIB_9	24° 46' 18.195" N	87° 5' 5.526" E	43.06
253	GO_Z14_RIB_9	24° 46' 17.869" N	87° 5' 5.526" E	43.15
254	GO_Z14_RIB_9	24° 46' 17.544" N	87° 5' 5.526" E	43.25
255	GO_Z14_RIB_9	24° 46' 17.219" N	87° 5' 5.525" E	42.88
256	GO_Z14_RIB_9	24° 46' 16.894" N	87° 5' 5.525" E	42.70
257	GO_Z14_RIB_9	24° 46' 16.569" N	87° 5' 5.525" E	42.82
258	GO_Z14_RIB_9	24° 46' 16.244" N	87° 5' 5.525" E	42.77
259	GO_Z14_RIB_9	24° 46' 15.919" N	87° 5' 5.524" E	42.90
260	GO_Z14_RIB_9	24° 46' 15.594" N	87° 5' 5.524" E	43.04
261	GO_Z14_RIB_9	24° 46' 15.268" N	87° 5' 5.524" E	44.07
262	GO_Z14_RIB_9	24° 46' 14.943" N	87° 5' 5.524" E	43.18
263	GO_Z14_RIB_9	24° 46' 14.618" N	87° 5' 5.524" E	43.32
264	GO_Z14_RIB_9	24° 46' 14.293" N	87° 5' 5.523" E	43.12
265	GO_Z14_RIB_9	24° 46' 13.968" N	87° 5' 5.523" E	43.12
266	GO_Z14_RIB_9	24° 46' 13.643" N	87° 5' 5.523" E	43.22
267	GO_Z14_RIB_9	24° 46' 13.318" N	87° 5' 5.523" E	43.07
268	GO_Z14_RIB_9	24° 46' 12.993" N	87° 5' 5.522" E	42.95
269	GO_Z14_RIB_9	24° 46' 12.667" N	87° 5' 5.522" E	42.95
270	GO_Z14_RIB_9	24° 46' 12.342" N	87° 5' 5.522" E	42.83
271	GO_Z14_RIB_9	24° 46' 12.017" N	87° 5' 5.522" E	42.80
272	GO_Z14_RIB_9	24° 46' 11.692" N	87° 5' 5.522" E	42.83
273	GO_Z14_RIB_9	24° 46' 11.367" N	87° 5' 5.521" E	42.76
274	GO_Z14_RIB_9	24° 46' 11.042" N	87° 5' 5.521" E	42.85
275	GO_Z14_RIB_9	24° 46' 10.717" N	87° 5' 5.521" E	42.90
276	GO_Z14_RIB_9	24° 46' 3.564" N	87° 5' 5.516" E	43.59
277	GO_Z14_RIB_9	24° 46' 3.239" N	87° 5' 5.516" E	43.53
278	GO_Z14_RIB_9	24° 46' 2.914" N	87° 5' 5.516" E	44.42
279	GO_Z14_RIB_9	24° 46' 2.588" N	87° 5' 5.515" E	44.13
280	GO_Z14_RIB_9	24° 46' 2.263" N	87° 5' 5.515" E	44.45
281	GO_Z14_RIB_9	24° 46' 1.938" N	87° 5' 5.515" E	44.18
282	GO_Z14_RIB_9	24° 46' 1.613" N	87° 5' 5.515" E	44.08
283	GO_Z14_RIB_9	24° 46' 1.288" N	87° 5' 5.515" E	44.63
284	GO_Z14_RIB_9	24° 46' 0.963" N	87° 5' 5.514" E	45.17
285	GO_Z14_RIB_9	24° 46' 0.638" N	87° 5' 5.514" E	44.72
286	GO_Z14_RIB_9	24° 46' 0.312" N	87° 5' 5.514" E	44.74
287	GO_Z14_RIB_9	24° 45' 59.987" N	87° 5' 5.514" E	44.44
288	GO_Z14_RIB_9	24° 45' 59.662" N	87° 5' 5.513" E	44.47
289	GO_Z14_RIB_9	24° 45' 59.337" N	87° 5' 5.513" E	44.86
290	GO_Z14_RIB_9	24° 45' 59.012" N	87° 5' 5.513" E	44.15
291	GO_Z14_RIB_9	24° 45' 58.687" N	87° 5' 5.513" E	45.53
292	GO_Z14_RIB_9	24° 45' 58.362" N	87° 5' 5.513" E	44.66
293	GO_Z14_RIB_9	24° 45' 58.037" N	87° 5' 5.512" E	44.88
294	GO_Z14_RIB_9	24° 45' 57.711" N	87° 5' 5.512" E	44.67
295	GO_Z14_RIB_9	24° 45' 57.386" N	87° 5' 5.512" E	44.58
296	GO_Z14_RIB_9	24° 45' 57.061" N	87° 5' 5.512" E	45.22
297	GO_Z14_RIB_9	24° 45' 56.736" N	87° 5' 5.511" E	44.85
298	GO_Z14_RIB_9	24° 45' 56.411" N	87° 5' 5.511" E	44.53
299	GO_Z14_RIB_9	24° 45' 56.086" N	87° 5' 5.511" E	44.35
300	GO_Z14_RIB_9	24° 45' 55.761" N	87° 5' 5.511" E	44.14
301	GO_Z14_RIB_9	24° 45' 55.436" N	87° 5' 5.511" E	44.36
302	GO_Z14_RIB_9	24° 45' 55.110" N	87° 5' 5.510" E	44.67
303	GO_Z14_RIB_9	24° 45' 54.785" N	87° 5' 5.510" E	44.57
304	GO_Z14_RIB_9	24° 46' 20.795" N	87° 5' 5.884" E	43.12
305	GO_Z14_RIB_9	24° 46' 20.470" N	87° 5' 5.884" E	43.24
306	GO_Z14_RIB_9	24° 46' 20.145" N	87° 5' 5.883" E	43.20
307	GO_Z14_RIB_9	24° 46' 19.820" N	87° 5' 5.883" E	43.25
308	GO_Z14_RIB_9	24° 46' 19.495" N	87° 5' 5.883" E	43.26
309	GO_Z14_RIB_9	24° 46' 19.170" N	87° 5' 5.883" E	43.01
310	GO_Z14_RIB_9	24° 46' 18.845" N	87° 5' 5.883" E	43.11
311	GO_Z14_RIB_9	24° 46' 18.520" N	87° 5' 5.882" E	43.01
312	GO_Z14_RIB_9	24° 46' 18.194" N	87° 5' 5.882" E	42.93
313	GO_Z14_RIB_9	24° 46' 17.869" N	87° 5' 5.882" E	42.96
314	GO_Z14_RIB_9	24° 46' 17.544" N	87° 5' 5.882" E	43.02
315	GO_Z14_RIB_9	24° 46' 17.219" N	87° 5' 5.881" E	43.30
316	GO_Z14_RIB_9	24° 46' 16.894" N	87° 5' 5.881" E	42.72
317	GO_Z14_RIB_9	24° 46' 16.569" N	87° 5' 5.881" E	42.91
318	GO_Z14_RIB_9	24° 46' 16.244" N	87° 5' 5.881" E	42.81
319	GO_Z14_RIB_9	24° 46' 15.918" N	87° 5' 5.881" E	42.82
320	GO_Z14_RIB_9	24° 46' 15.593" N	87° 5' 5.880" E	42.82
321	GO_Z14_RIB_9	24° 46' 15.268" N	87° 5' 5.880" E	43.10
322	GO_Z14_RIB_9	24° 46' 14.943" N	87° 5' 5.880" E	43.10
323	GO_Z14_RIB_9	24° 46' 14.618" N	87° 5' 5.880" E	43.11
324	GO_Z14_RIB_9	24° 46' 14.293" N	87° 5' 5.879" E	43.17
325	GO_Z14_RIB_9	24° 46' 13.968" N	87° 5' 5.879" E	43.14
326	GO_Z14_RIB_9	24° 46' 13.643" N	87° 5' 5.879" E	43.15
327	GO_Z14_RIB_9	24° 46' 13.317" N	87° 5' 5.879" E	43.12
328	GO_Z14_RIB_9	24° 46' 12.992" N	87° 5' 5.879" E	43.12
329	GO_Z14_RIB_9	24° 46' 12.667" N	87° 5' 5.878" E	42.84
330	GO_Z14_RIB_9	24° 46' 12.342" N	87° 5' 5.878" E	43.17
331	GO_Z14_RIB_9	24° 46' 12.017" N	87° 5' 5.878" E	43.16
332	GO_Z14_RIB_9	24° 46' 1.938" N	87° 5' 5.871" E	43.28
333	GO_Z14_RIB_9	24° 46' 1.613" N	87° 5' 5.871" E	43.92
334	GO_Z14_RIB_9	24° 46' 1.288" N	87° 5' 5.871" E	43.68
335	GO_Z14_RIB_9	24° 46' 0.963" N	87° 5' 5.870" E	43.35
336	GO_Z14_RIB_9	24° 46' 0.637" N	87° 5' 5.870" E	43.41
337	GO_Z14_RIB_9	24° 46' 0.312" N	87° 5' 5.870" E	43.29
338	GO_Z14_RIB_9	24° 45' 59.987" N	87° 5' 5.870" E	43.36
339	GO_Z14_RIB_9	24° 45' 59.662" N	87° 5' 5.869" E	43.29
340	GO_Z14_RIB_9	24° 45' 59.337" N	87° 5' 5.869" E	43.24
341	GO_Z14_RIB_9	24° 45' 59.012" N	87° 5' 5.869" E	43.67
342	GO_Z14_RIB_9	24° 45' 58.687" N	87° 5' 5.869" E	43.65
343	GO_Z14_RIB_9	24° 45' 58.362" N	87° 5' 5.869" E	44.20
344	GO_Z14_RIB_9	24° 45' 58.036" N	87° 5' 5.868" E	44.16
345	GO_Z14_RIB_9	24° 45' 57.711" N	87° 5' 5.868" E	43.59
346	GO_Z14_RIB_9	24° 45' 57.386" N	87° 5' 5.868" E	44.96
347	GO_Z14_RIB_9	24° 45' 57.061" N	87° 5' 5.868" E	45.05
348	GO_Z14_RIB_9	24° 45' 56.736" N	87° 5' 5.867" E	44.58
349	GO_Z14_RIB_9	24° 45' 56.411" N	87° 5' 5.867" E	44.63
350	GO_Z14_RIB_9	24° 45' 56.086" N	87° 5' 5.867" E	44.26
351	GO_Z14_RIB_9	24° 45' 55.760" N	87° 5' 5.867" E	44.18
352	GO_Z14_RIB_9	24° 45' 55.435" N	87° 5' 5.867" E	44.62
353	GO_Z14_RIB_9	24° 45' 55.110" N	87° 5' 5.866" E	44.57
354	GO_Z14_RIB_9	24° 45' 54.785" N	87° 5' 5.866" E	44.20
355	GO_Z14_RIB_9	24° 45' 54.460" N	87° 5' 5.866" E	44.20
356	GO_Z14_RIB_9	24° 45' 54.135" N	87° 5' 5.866" E	44.54
357	GO_Z14_RIB_9	24° 45' 53.810" N	87° 5' 5.866" E	44.46
358	GO_Z14_RIB_9	24° 46' 20.795" N	87° 5' 6.240" E	43.34
359	GO_Z14_RIB_9	24° 46' 20.470" N	87° 5' 6.240" E	43.41
360	GO_Z14_RIB_9	24° 46' 20.145" N	87° 5' 6.240" E	43.45
361	GO_Z14_RIB_9	24° 46' 19.820" N	87° 5' 6.239" E	43.57
362	GO_Z14_RIB_9	24° 46' 19.495" N	87° 5' 6.239" E	43.57
363	GO_Z14_RIB_9	24° 46' 19.170" N	87° 5' 6.239" E	43.60
364	GO_Z14_RIB_9	24° 46' 18.844" N	87° 5' 6.239" E	43.57
365	GO_Z14_RIB_9	24° 46' 18.519" N	87° 5' 6.238" E	43.45
366	GO_Z14_RIB_9	24° 46' 18.194" N	87° 5' 6.238" E	43.49
367	GO_Z14_RIB_9	24° 46' 17.869" N	87° 5' 6.238" E	43.37
368	GO_Z14_RIB_9	24° 46' 17.544" N	87° 5' 6.238" E	43.11
369	GO_Z14_RIB_9	24° 46' 17.219" N	87° 5' 6.238" E	43.04
370	GO_Z14_RIB_9	24° 46' 16.894" N	87° 5' 6.237" E	42.81
371	GO_Z14_RIB_9	24° 46' 16.569" N	87° 5' 6.237" E	43.07
372	GO_Z14_RIB_9	24° 46' 16.243" N	87° 5' 6.237" E	42.96
373	GO_Z14_RIB_9	24° 46' 15.918" N	87° 5' 6.237" E	42.96
374	GO_Z14_RIB_9	24° 46' 15.593" N	87° 5' 6.236" E	42.93
375	GO_Z14_RIB_9	24° 46' 15.268" N	87° 5' 6.236" E	42.90
376	GO_Z14_RIB_9	24° 46' 14.943" N	87° 5' 6.236" E	42.93
377	GO_Z14_RIB_9	24° 46' 14.618" N	87° 5' 6.236" E	43.12
378	GO_Z14_RIB_9	24° 46' 14.293" N	87° 5' 6.236" E	43.19
379	GO_Z14_RIB_9	24° 46' 13.967" N	87° 5' 6.235" E	43.25
380	GO_Z14_RIB_9	24° 46' 13.642" N	87° 5' 6.235" E	43.22
381	GO_Z14_RIB_9	24° 46' 13.317" N	87° 5' 6.235" E	43.15
382	GO_Z14_RIB_9	24° 46' 12.992" N	87° 5' 6.235" E	43.20
383	GO_Z14_RIB_9	24° 46' 0.637" N	87° 5' 6.226" E	43.27
384	GO_Z14_RIB_9	24° 46' 0.312" N	87° 5' 6.226" E	43.31
385	GO_Z14_RIB_9	24° 45' 59.987" N	87° 5' 6.226" E	43.25
386	GO_Z14_RIB_9	24° 45' 59.662" N	87° 5' 6.226" E	43.55
387	GO_Z14_RIB_9	24° 45' 59.337" N	87° 5' 6.225" E	43.96
388	GO_Z14_RIB_9	24° 45' 59.012" N	87° 5' 6.225" E	43.23
389	GO_Z14_RIB_9	24° 45' 58.686" N	87° 5' 6.225" E	43.35
390	GO_Z14_RIB_9	24° 45' 58.361" N	87° 5' 6.225" E	43.77
391	GO_Z14_RIB_9	24° 45' 58.036" N	87° 5' 6.224" E	43.30
392	GO_Z14_RIB_9	24° 45' 57.711" N	87° 5' 6.224" E	43.52
393	GO_Z14_RIB_9	24° 45' 57.386" N	87° 5' 6.224" E	43.61
394	GO_Z14_RIB_9	24° 45' 57.061" N	87° 5' 6.224" E	43.81
395	GO_Z14_RIB_9	24° 45' 56.736" N	87° 5' 6.224" E	44.65
396	GO_Z14_RIB_9	24° 45' 56.411" N	87° 5' 6.223" E	44.69
397	GO_Z14_RIB_9	24° 45' 56.085" N	87° 5' 6.223" E	44.89
398	GO_Z14_RIB_9	24° 45' 55.760" N	87° 5' 6.223" E	45.04
399	GO_Z14_RIB_9	24° 45' 55.435" N	87° 5' 6.223" E	44.79
400	GO_Z14_RIB_9	24° 45' 55.110" N	87° 5' 6.222" E	44.51
401	GO_Z14_RIB_9	24° 45' 54.785" N	87° 5' 6.222" E	44.72
402	GO_Z14_RIB_9	24° 45' 54.460" N	87° 5' 6.222" E	44.48
403	GO_Z14_RIB_9	24° 45' 54.135" N	87° 5' 6.222" E	44.53
404	GO_Z14_RIB_9	24° 45' 53.809" N	87° 5' 6.222" E	44.15
405	GO_Z14_RIB_9	24° 45' 53.484" N	87° 5' 6.221" E	44.38
406	GO_Z14_RIB_9	24° 45' 53.159" N	87° 5' 6.221" E	44.54
407	GO_Z14_RIB_9	24° 45' 52.834" N	87° 5' 6.221" E	44.78
408	GO_Z14_RIB_9	24° 46' 20.795" N	87° 5' 6.596" E	43.47
409	GO_Z14_RIB_9	24° 46' 20.470" N	87° 5' 6.596" E	43.46
410	GO_Z14_RIB_9	24° 46' 20.145" N	87° 5' 6.596" E	43.49
411	GO_Z14_RIB_9	24° 46' 19.820" N	87° 5' 6.595" E	43.52
412	GO_Z14_RIB_9	24° 46' 19.494" N	87° 5' 6.595" E	43.58
413	GO_Z14_RIB_9	24° 46' 19.169" N	87° 5' 6.595" E	43.68
414	GO_Z14_RIB_9	24° 46' 18.844" N	87° 5' 6.595" E	43.68
415	GO_Z14_RIB_9	24° 46' 18.519" N	87° 5' 6.595" E	43.74
416	GO_Z14_RIB_9	24° 46' 18.194" N	87° 5' 6.594" E	43.68
417	GO_Z14_RIB_9	24° 46' 17.869" N	87° 5' 6.594" E	43.60
418	GO_Z14_RIB_9	24° 46' 17.544" N	87° 5' 6.594" E	43.51
419	GO_Z14_RIB_9	24° 46' 17.219" N	87° 5' 6.594" E	43.37
420	GO_Z14_RIB_9	24° 46' 16.893" N	87° 5' 6.593" E	42.87
421	GO_Z14_RIB_9	24° 46' 16.568" N	87° 5' 6.593" E	43.40
422	GO_Z14_RIB_9	24° 46' 16.243" N	87° 5' 6.593" E	43.37
423	GO_Z14_RIB_9	24° 46' 15.918" N	87° 5' 6.593" E	43.23
424	GO_Z14_RIB_9	24° 46' 15.593" N	87° 5' 6.593" E	43.04
425	GO_Z14_RIB_9	24° 46' 15.268" N	87° 5' 6.592" E	43.00
426	GO_Z14_RIB_9	24° 46' 14.943" N	87° 5' 6.592" E	42.92
427	GO_Z14_RIB_9	24° 46' 14.618" N	87° 5' 6.592" E	42.93
428	GO_Z14_RIB_9	24° 46' 14.292" N	87° 5' 6.592" E	43.02
429	GO_Z14_RIB_9	24° 45' 59.011" N	87° 5' 6.581" E	43.74
430	GO_Z14_RIB_9	24° 45' 58.686" N	87° 5' 6.581" E	43.31
431	GO_Z14_RIB_9	24° 45' 58.361" N	87° 5' 6.581" E	43.25
432	GO_Z14_RIB_9	24° 45' 58.036" N	87° 5' 6.581" E	43.26
433	GO_Z14_RIB_9	24° 45' 57.711" N	87° 5' 6.580" E	43.29
434	GO_Z14_RIB_9	24° 45' 57.386" N	87° 5' 6.580" E	43.32
435	GO_Z14_RIB_9	24° 45' 57.061" N	87° 5' 6.580" E	43.45
436	GO_Z14_RIB_9	24° 45' 56.735" N	87° 5' 6.580" E	43.33
437	GO_Z14_RIB_9	24° 45' 56.410" N	87° 5' 6.579" E	44.42
438	GO_Z14_RIB_9	24° 45' 56.085" N	87° 5' 6.579" E	43.61
439	GO_Z14_RIB_9	24° 45' 55.760" N	87° 5' 6.579" E	43.61
440	GO_Z14_RIB_9	24° 45' 55.435" N	87° 5' 6.579" E	43.81
441	GO_Z14_RIB_9	24° 45' 55.110" N	87° 5' 6.579" E	44.80
442	GO_Z14_RIB_9	24° 45' 54.785" N	87° 5' 6.578" E	44.67
443	GO_Z14_RIB_9	24° 45' 54.460" N	87° 5' 6.578" E	44.65
444	GO_Z14_RIB_9	24° 45' 54.134" N	87° 5' 6.578" E	44.65
445	GO_Z14_RIB_9	24° 45' 53.809" N	87° 5' 6.578" E	44.49
446	GO_Z14_RIB_9	24° 45' 53.484" N	87° 5' 6.577" E	44.53
447	GO_Z14_RIB_9	24° 45' 53.159" N	87° 5' 6.577" E	44.34
448	GO_Z14_RIB_9	24° 45' 52.834" N	87° 5' 6.577" E	44.53
449	GO_Z14_RIB_9	24° 45' 52.509" N	87° 5' 6.577" E	44.47
450	GO_Z14_RIB_9	24° 45' 52.184" N	87° 5' 6.577" E	44.29
451	GO_Z14_RIB_9	24° 45' 51.859" N	87° 5' 6.576" E	44.54
452	GO_Z14_RIB_9	24° 46' 21.120" N	87° 5' 6.952" E	43.60
453	GO_Z14_RIB_9	24° 46' 20.795" N	87° 5' 6.952" E	43.56
454	GO_Z14_RIB_9	24° 46' 20.470" N	87° 5' 6.952" E	43.55
455	GO_Z14_RIB_9	24° 46' 20.145" N	87° 5' 6.952" E	43.57
456	GO_Z14_RIB_9	24° 46' 19.819" N	87° 5' 6.952" E	43.57
457	GO_Z14_RIB_9	24° 46' 19.494" N	87° 5' 6.951" E	43.60
458	GO_Z14_RIB_9	24° 46' 19.169" N	87° 5' 6.951" E	43.57
459	GO_Z14_RIB_9	24° 46' 18.844" N	87° 5' 6.951" E	43.67
460	GO_Z14_RIB_9	24° 46' 18.519" N	87° 5' 6.951" E	43.61
461	GO_Z14_RIB_9	24° 46' 18.194" N	87° 5' 6.950" E	43.68
462	GO_Z14_RIB_9	24° 46' 17.869" N	87° 5' 6.950" E	43.76
463	GO_Z14_RIB_9	24° 46' 17.544" N	87° 5' 6.950" E	43.74
464	GO_Z14_RIB_9	24° 46' 17.218" N	87° 5' 6.950" E	43.63
465	GO_Z14_RIB_9	24° 46' 16.893" N	87° 5' 6.950" E	42.97
466	GO_Z14_RIB_9	24° 46' 16.568" N	87° 5' 6.949" E	42.92
467	GO_Z14_RIB_9	24° 46' 16.243" N	87° 5' 6.949" E	43.50
468	GO_Z14_RIB_9	24° 46' 15.918" N	87° 5' 6.949" E	43.50
469	GO_Z14_RIB_9	24° 45' 57.711" N	87° 5' 6.936" E	44.19
470	GO_Z14_RIB_9	24° 45' 57.386" N	87° 5' 6.936" E	43.16
471	GO_Z14_RIB_9	24° 45' 57.060" N	87° 5' 6.936" E	43.22
472	GO_Z14_RIB_9	24° 45' 56.735" N	87° 5' 6.936" E	43.32
473	GO_Z14_RIB_9	24° 45' 56.410" N	87° 5' 6.936" E	43.35
474	GO_Z14_RIB_9	24° 45' 56.085" N	87° 5' 6.935" E	43.24
475	GO_Z14_RIB_9	24° 45' 55.760" N	87° 5' 6.935" E	43.25
476	GO_Z14_RIB_9	24° 45' 55.435" N	87° 5' 6.935" E	43.50
477	GO_Z14_RIB_9	24° 45' 55.110" N	87° 5' 6.935" E	44.30
478	GO_Z14_RIB_9	24° 45' 54.784" N	87° 5' 6.934" E	43.78
479	GO_Z14_RIB_9	24° 45' 54.459" N	87° 5' 6.934" E	44.40
480	GO_Z14_RIB_9	24° 45' 54.134" N	87° 5' 6.934" E	44.51
481	GO_Z14_RIB_9	24° 45' 53.809" N	87° 5' 6.934" E	44.57
482	GO_Z14_RIB_9	24° 45' 53.484" N	87° 5' 6.934" E	44.45
483	GO_Z14_RIB_9	24° 45' 53.159" N	87° 5' 6.933" E	44.67
484	GO_Z14_RIB_9	24° 45' 52.834" N	87° 5' 6.933" E	44.49
485	GO_Z14_RIB_9	24° 45' 52.509" N	87° 5' 6.933" E	44.52
486	GO_Z14_RIB_9	24° 45' 52.183" N	87° 5' 6.933" E	44.77
487	GO_Z14_RIB_9	24° 45' 51.858" N	87° 5' 6.932" E	44.33
488	GO_Z14_RIB_9	24° 45' 51.533" N	87° 5' 6.932" E	44.90
489	GO_Z14_RIB_9	24° 45' 51.208" N	87° 5' 6.932" E	44.41
490	GO_Z14_RIB_9	24° 45' 50.883" N	87° 5' 6.932" E	44.56
491	GO_Z14_RIB_9	24° 46' 21.120" N	87° 5' 7.308" E	43.67
492	GO_Z14_RIB_9	24° 46' 20.795" N	87° 5' 7.308" E	43.70
493	GO_Z14_RIB_9	24° 46' 20.469" N	87° 5' 7.308" E	43.69
494	GO_Z14_RIB_9	24° 46' 20.144" N	87° 5' 7.308" E	43.68
495	GO_Z14_RIB_9	24° 46' 19.819" N	87° 5' 7.308" E	43.65
496	GO_Z14_RIB_9	24° 46' 19.494" N	87° 5' 7.307" E	43.68
497	GO_Z14_RIB_9	24° 46' 19.169" N	87° 5' 7.307" E	43.67
498	GO_Z14_RIB_9	24° 46' 18.844" N	87° 5' 7.307" E	43.71
499	GO_Z14_RIB_9	24° 46' 18.519" N	87° 5' 7.307" E	43.80
500	GO_Z14_RIB_9	24° 46' 18.194" N	87° 5' 7.306" E	43.73
501	GO_Z14_RIB_9	24° 46' 17.868" N	87° 5' 7.306" E	43.72
502	GO_Z14_RIB_9	24° 46' 17.543" N	87° 5' 7.306" E	43.76
503	GO_Z14_RIB_9	24° 46' 17.218" N	87° 5' 7.306" E	43.85
504	GO_Z14_RIB_9	24° 45' 56.735" N	87° 5' 7.292" E	45.49
505	GO_Z14_RIB_9	24° 45' 56.410" N	87° 5' 7.292" E	43.08
506	GO_Z14_RIB_9	24° 45' 56.085" N	87° 5' 7.291" E	43.65
507	GO_Z14_RIB_9	24° 45' 55.760" N	87° 5' 7.291" E	43.65
508	GO_Z14_RIB_9	24° 45' 55.435" N	87° 5' 7.291" E	44.12
509	GO_Z14_RIB_9	24° 45' 55.109" N	87° 5' 7.291" E	43.62
510	GO_Z14_RIB_9	24° 45' 54.784" N	87° 5' 7.290" E	44.85
511	GO_Z14_RIB_9	24° 45' 54.459" N	87° 5' 7.290" E	44.75
512	GO_Z14_RIB_9	24° 45' 54.134" N	87° 5' 7.290" E	43.27
513	GO_Z14_RIB_9	24° 45' 53.809" N	87° 5' 7.290" E	43.57
514	GO_Z14_RIB_9	24° 45' 53.484" N	87° 5' 7.290" E	45.09
515	GO_Z14_RIB_9	24° 45' 53.159" N	87° 5' 7.289" E	44.71
516	GO_Z14_RIB_9	24° 45' 52.834" N	87° 5' 7.289" E	44.32
517	GO_Z14_RIB_9	24° 45' 52.508" N	87° 5' 7.289" E	44.50
518	GO_Z14_RIB_9	24° 45' 52.183" N	87° 5' 7.289" E	45.11
519	GO_Z14_RIB_9	24° 45' 51.858" N	87° 5' 7.288" E	44.23
520	GO_Z14_RIB_9	24° 45' 51.533" N	87° 5' 7.288" E	44.61
521	GO_Z14_RIB_9	24° 45' 51.208" N	87° 5' 7.288" E	44.18
522	GO_Z14_RIB_9	24° 45' 50.883" N	87° 5' 7.288" E	44.41
523	GO_Z14_RIB_9	24° 45' 50.558" N	87° 5' 7.288" E	44.47
524	GO_Z14_RIB_9	24° 45' 50.232" N	87° 5' 7.287" E	44.57
525	GO_Z14_RIB_9	24° 45' 49.907" N	87° 5' 7.287" E	44.64
526	GO_Z14_RIB_9	24° 45' 55.759" N	87° 5' 7.647" E	43.33
527	GO_Z14_RIB_9	24° 45' 55.434" N	87° 5' 7.647" E	43.59
528	GO_Z14_RIB_9	24° 45' 55.109" N	87° 5' 7.647" E	43.59
529	GO_Z14_RIB_9	24° 45' 54.784" N	87° 5' 7.647" E	44.04
530	GO_Z14_RIB_9	24° 45' 54.459" N	87° 5' 7.646" E	45.73
531	GO_Z14_RIB_9	24° 45' 54.134" N	87° 5' 7.646" E	45.60
532	GO_Z14_RIB_9	24° 45' 53.809" N	87° 5' 7.646" E	44.11
533	GO_Z14_RIB_9	24° 45' 53.484" N	87° 5' 7.646" E	44.76
534	GO_Z14_RIB_9	24° 45' 53.158" N	87° 5' 7.645" E	44.53
535	GO_Z14_RIB_9	24° 45' 52.833" N	87° 5' 7.645" E	44.24
536	GO_Z14_RIB_9	24° 45' 52.508" N	87° 5' 7.645" E	44.25
537	GO_Z14_RIB_9	24° 45' 52.183" N	87° 5' 7.645" E	44.25
538	GO_Z14_RIB_9	24° 45' 51.858" N	87° 5' 7.645" E	44.50
539	GO_Z14_RIB_9	24° 45' 51.533" N	87° 5' 7.644" E	44.62
540	GO_Z14_RIB_9	24° 45' 51.208" N	87° 5' 7.644" E	44.63
541	GO_Z14_RIB_9	24° 45' 50.883" N	87° 5' 7.644" E	45.00
542	GO_Z14_RIB_9	24° 45' 50.557" N	87° 5' 7.644" E	45.08
543	GO_Z14_RIB_9	24° 45' 50.232" N	87° 5' 7.643" E	44.50
544	GO_Z14_RIB_9	24° 45' 49.907" N	87° 5' 7.643" E	44.75
545	GO_Z14_RIB_9	24° 45' 49.582" N	87° 5' 7.643" E	44.40
546	GO_Z14_RIB_9	24° 45' 49.257" N	87° 5' 7.643" E	44.71
547	GO_Z14_RIB_9	24° 45' 48.932" N	87° 5' 7.643" E	44.69
548	GO_Z14_RIB_9	24° 45' 48.607" N	87° 5' 7.642" E	44.67
549	GO_Z14_RIB_9	24° 45' 55.109" N	87° 5' 8.003" E	43.42
550	GO_Z14_RIB_9	24° 45' 54.784" N	87° 5' 8.003" E	43.66
551	GO_Z14_RIB_9	24° 45' 54.459" N	87° 5' 8.002" E	43.58
552	GO_Z14_RIB_9	24° 45' 54.134" N	87° 5' 8.002" E	43.65
553	GO_Z14_RIB_9	24° 45' 53.808" N	87° 5' 8.002" E	45.28
554	GO_Z14_RIB_9	24° 45' 53.483" N	87° 5' 8.002" E	44.84
555	GO_Z14_RIB_9	24° 45' 53.158" N	87° 5' 8.002" E	43.34
556	GO_Z14_RIB_9	24° 45' 52.833" N	87° 5' 8.001" E	43.86
557	GO_Z14_RIB_9	24° 45' 52.508" N	87° 5' 8.001" E	44.61
558	GO_Z14_RIB_9	24° 45' 52.183" N	87° 5' 8.001" E	44.62
559	GO_Z14_RIB_9	24° 45' 51.858" N	87° 5' 8.001" E	44.63
560	GO_Z14_RIB_9	24° 45' 51.533" N	87° 5' 8.000" E	43.66
561	GO_Z14_RIB_9	24° 45' 51.207" N	87° 5' 8.000" E	44.81
562	GO_Z14_RIB_9	24° 45' 50.882" N	87° 5' 8.000" E	44.73
563	GO_Z14_RIB_9	24° 45' 50.557" N	87° 5' 8.000" E	44.21
564	GO_Z14_RIB_9	24° 45' 50.232" N	87° 5' 8.000" E	44.51
565	GO_Z14_RIB_9	24° 45' 49.907" N	87° 5' 7.999" E	44.58
566	GO_Z14_RIB_9	24° 45' 49.582" N	87° 5' 7.999" E	44.67
567	GO_Z14_RIB_9	24° 45' 49.257" N	87° 5' 7.999" E	44.71
568	GO_Z14_RIB_9	24° 45' 48.932" N	87° 5' 7.999" E	44.95
569	GO_Z14_RIB_9	24° 45' 48.606" N	87° 5' 7.998" E	44.86
570	GO_Z14_RIB_9	24° 45' 48.281" N	87° 5' 7.998" E	44.91
571	GO_Z14_RIB_9	24° 45' 47.956" N	87° 5' 7.998" E	44.61
572	GO_Z14_RIB_9	24° 45' 47.631" N	87° 5' 7.998" E	44.41
573	GO_Z14_RIB_9	24° 45' 54.133" N	87° 5' 8.358" E	45.66
574	GO_Z14_RIB_9	24° 45' 53.808" N	87° 5' 8.358" E	45.41
575	GO_Z14_RIB_9	24° 45' 53.483" N	87° 5' 8.358" E	43.69
576	GO_Z14_RIB_9	24° 45' 53.158" N	87° 5' 8.358" E	43.68
577	GO_Z14_RIB_9	24° 45' 52.833" N	87° 5' 8.357" E	43.43
578	GO_Z14_RIB_9	24° 45' 52.508" N	87° 5' 8.357" E	43.51
579	GO_Z14_RIB_9	24° 45' 52.183" N	87° 5' 8.357" E	43.54
580	GO_Z14_RIB_9	24° 45' 51.858" N	87° 5' 8.357" E	43.80
581	GO_Z14_RIB_9	24° 45' 51.532" N	87° 5' 8.357" E	43.90
582	GO_Z14_RIB_9	24° 45' 51.207" N	87° 5' 8.356" E	44.38
583	GO_Z14_RIB_9	24° 45' 50.882" N	87° 5' 8.356" E	44.77
584	GO_Z14_RIB_9	24° 45' 50.557" N	87° 5' 8.356" E	45.01
585	GO_Z14_RIB_9	24° 45' 50.232" N	87° 5' 8.356" E	44.56
586	GO_Z14_RIB_9	24° 45' 49.907" N	87° 5' 8.355" E	44.96
587	GO_Z14_RIB_9	24° 45' 49.582" N	87° 5' 8.355" E	44.77
588	GO_Z14_RIB_9	24° 45' 49.256" N	87° 5' 8.355" E	44.68
589	GO_Z14_RIB_9	24° 45' 48.931" N	87° 5' 8.355" E	45.02
590	GO_Z14_RIB_9	24° 45' 48.606" N	87° 5' 8.354" E	45.15
591	GO_Z14_RIB_9	24° 45' 48.281" N	87° 5' 8.354" E	44.74
592	GO_Z14_RIB_9	24° 45' 47.956" N	87° 5' 8.354" E	44.88
593	GO_Z14_RIB_9	24° 45' 47.631" N	87° 5' 8.354" E	44.64
594	GO_Z14_RIB_9	24° 45' 47.306" N	87° 5' 8.354" E	44.84
595	GO_Z14_RIB_9	24° 45' 46.981" N	87° 5' 8.353" E	46.66
596	GO_Z14_RIB_9	24° 45' 46.655" N	87° 5' 8.353" E	46.58
597	GO_Z14_RIB_9	24° 45' 53.158" N	87° 5' 8.714" E	44.29

District Mining Officer
Godda

TABLE REPRESENTING ELEVATION (in m) WITH RESPECT TO 10m X 10m GRID WITHIN POTENTIAL SAND GHATS IN GODDA DISTRICT OF JHARKHAND

ANNEXURE - B17

598	GO_Z14_RIB_9	24° 45' 52.833" N	87° 5' 8.713" E	44.58
599	GO_Z14_RIB_9	24° 45' 52.508" N	87° 5' 8.713" E	43.51
600	GO_Z14_RIB_9	24° 45' 52.182" N	87° 5' 8.713" E	43.39
601	GO_Z14_RIB_9	24° 45' 51.857" N	87° 5' 8.713" E	43.63
602	GO_Z14_RIB_9	24° 45' 51.532" N	87° 5' 8.713" E	44.05
603	GO_Z14_RIB_9	24° 45' 51.207" N	87° 5' 8.712" E	43.67
604	GO_Z14_RIB_9	24° 45' 50.882" N	87° 5' 8.712" E	44.01
605	GO_Z14_RIB_9	24° 45' 50.557" N	87° 5' 8.712" E	44.84
606	GO_Z14_RIB_9	24° 45' 50.232" N	87° 5' 8.712" E	44.69
607	GO_Z14_RIB_9	24° 45' 49.907" N	87° 5' 8.711" E	44.67
608	GO_Z14_RIB_9	24° 45' 49.581" N	87° 5' 8.711" E	44.48
609	GO_Z14_RIB_9	24° 45' 49.256" N	87° 5' 8.711" E	45.00
610	GO_Z14_RIB_9	24° 45' 48.931" N	87° 5' 8.711" E	44.65
611	GO_Z14_RIB_9	24° 45' 48.606" N	87° 5' 8.711" E	44.96
612	GO_Z14_RIB_9	24° 45' 48.281" N	87° 5' 8.710" E	44.86
613	GO_Z14_RIB_9	24° 45' 47.956" N	87° 5' 8.710" E	44.89
614	GO_Z14_RIB_9	24° 45' 47.631" N	87° 5' 8.710" E	44.70
615	GO_Z14_RIB_9	24° 45' 47.305" N	87° 5' 8.710" E	44.83
616	GO_Z14_RIB_9	24° 45' 46.980" N	87° 5' 8.709" E	44.98
617	GO_Z14_RIB_9	24° 45' 46.655" N	87° 5' 8.709" E	45.29
618	GO_Z14_RIB_9	24° 45' 46.330" N	87° 5' 8.709" E	45.79
619	GO_Z14_RIB_9	24° 45' 46.005" N	87° 5' 8.709" E	46.87
620	GO_Z14_RIB_9	24° 45' 45.680" N	87° 5' 8.709" E	46.75
621	GO_Z14_RIB_9	24° 45' 52.507" N	87° 5' 9.069" E	44.40
622	GO_Z14_RIB_9	24° 45' 52.182" N	87° 5' 9.069" E	43.62
623	GO_Z14_RIB_9	24° 45' 51.857" N	87° 5' 9.069" E	45.40
624	GO_Z14_RIB_9	24° 45' 51.532" N	87° 5' 9.069" E	43.70
625	GO_Z14_RIB_9	24° 45' 51.207" N	87° 5' 9.068" E	43.67
626	GO_Z14_RIB_9	24° 45' 50.882" N	87° 5' 9.068" E	43.51
627	GO_Z14_RIB_9	24° 45' 50.557" N	87° 5' 9.068" E	43.48
628	GO_Z14_RIB_9	24° 45' 50.231" N	87° 5' 9.068" E	44.28
629	GO_Z14_RIB_9	24° 45' 49.906" N	87° 5' 9.068" E	44.61
630	GO_Z14_RIB_9	24° 45' 49.581" N	87° 5' 9.067" E	44.35
631	GO_Z14_RIB_9	24° 45' 49.256" N	87° 5' 9.067" E	44.89
632	GO_Z14_RIB_9	24° 45' 48.931" N	87° 5' 9.067" E	44.88
633	GO_Z14_RIB_9	24° 45' 48.606" N	87° 5' 9.067" E	44.84
634	GO_Z14_RIB_9	24° 45' 48.281" N	87° 5' 9.066" E	44.70
635	GO_Z14_RIB_9	24° 45' 47.956" N	87° 5' 9.066" E	44.58
636	GO_Z14_RIB_9	24° 45' 47.630" N	87° 5' 9.066" E	44.77
637	GO_Z14_RIB_9	24° 45' 47.305" N	87° 5' 9.066" E	44.77
638	GO_Z14_RIB_9	24° 45' 46.980" N	87° 5' 9.066" E	44.92
639	GO_Z14_RIB_9	24° 45' 46.655" N	87° 5' 9.065" E	44.75
640	GO_Z14_RIB_9	24° 45' 46.330" N	87° 5' 9.065" E	45.49
641	GO_Z14_RIB_9	24° 45' 46.005" N	87° 5' 9.065" E	46.42
642	GO_Z14_RIB_9	24° 45' 45.680" N	87° 5' 9.065" E	44.77
643	GO_Z14_RIB_9	24° 45' 45.355" N	87° 5' 9.064" E	44.87
644	GO_Z14_RIB_9	24° 45' 51.532" N	87° 5' 9.425" E	43.86
645	GO_Z14_RIB_9	24° 45' 51.207" N	87° 5' 9.425" E	43.93
646	GO_Z14_RIB_9	24° 45' 50.882" N	87° 5' 9.424" E	44.13
647	GO_Z14_RIB_9	24° 45' 50.556" N	87° 5' 9.424" E	45.69
648	GO_Z14_RIB_9	24° 45' 50.231" N	87° 5' 9.424" E	44.40
649	GO_Z14_RIB_9	24° 45' 49.906" N	87° 5' 9.424" E	43.92
650	GO_Z14_RIB_9	24° 45' 49.581" N	87° 5' 9.423" E	44.64
651	GO_Z14_RIB_9	24° 45' 49.256" N	87° 5' 9.423" E	44.57
652	GO_Z14_RIB_9	24° 45' 48.931" N	87° 5' 9.423" E	44.83
653	GO_Z14_RIB_9	24° 45' 48.606" N	87° 5' 9.423" E	44.86
654	GO_Z14_RIB_9	24° 45' 48.280" N	87° 5' 9.423" E	44.77
655	GO_Z14_RIB_9	24° 45' 47.955" N	87° 5' 9.422" E	45.62
656	GO_Z14_RIB_9	24° 45' 47.630" N	87° 5' 9.422" E	44.84
657	GO_Z14_RIB_9	24° 45' 47.305" N	87° 5' 9.422" E	45.37
658	GO_Z14_RIB_9	24° 45' 46.980" N	87° 5' 9.422" E	45.64
659	GO_Z14_RIB_9	24° 45' 46.655" N	87° 5' 9.421" E	45.74
660	GO_Z14_RIB_9	24° 45' 46.330" N	87° 5' 9.421" E	45.75
661	GO_Z14_RIB_9	24° 45' 46.005" N	87° 5' 9.421" E	44.96
662	GO_Z14_RIB_9	24° 45' 45.679" N	87° 5' 9.421" E	45.02
663	GO_Z14_RIB_9	24° 45' 45.354" N	87° 5' 9.420" E	44.99
664	GO_Z14_RIB_9	24° 45' 45.029" N	87° 5' 9.420" E	44.99
665	GO_Z14_RIB_9	24° 45' 51.206" N	87° 5' 9.781" E	43.79
666	GO_Z14_RIB_9	24° 45' 50.881" N	87° 5' 9.780" E	43.73
667	GO_Z14_RIB_9	24° 45' 50.556" N	87° 5' 9.780" E	43.86
668	GO_Z14_RIB_9	24° 45' 50.231" N	87° 5' 9.780" E	44.66
669	GO_Z14_RIB_9	24° 45' 49.906" N	87° 5' 9.780" E	44.28
670	GO_Z14_RIB_9	24° 45' 49.581" N	87° 5' 9.779" E	43.87
671	GO_Z14_RIB_9	24° 45' 49.256" N	87° 5' 9.779" E	44.30
672	GO_Z14_RIB_9	24° 45' 48.931" N	87° 5' 9.779" E	44.53
673	GO_Z14_RIB_9	24° 45' 48.605" N	87° 5' 9.779" E	44.41
674	GO_Z14_RIB_9	24° 45' 48.280" N	87° 5' 9.779" E	44.82
675	GO_Z14_RIB_9	24° 45' 47.955" N	87° 5' 9.778" E	45.17
676	GO_Z14_RIB_9	24° 45' 47.630" N	87° 5' 9.778" E	44.72
677	GO_Z14_RIB_9	24° 45' 47.305" N	87° 5' 8.778" E	44.69
678	GO_Z14_RIB_9	24° 45' 46.980" N	87° 5' 9.778" E	44.86
679	GO_Z14_RIB_9	24° 45' 46.655" N	87° 5' 9.777" E	44.97
680	GO_Z14_RIB_9	24° 45' 46.329" N	87° 5' 9.777" E	45.12
681	GO_Z14_RIB_9	24° 45' 46.004" N	87° 5' 9.777" E	45.29
682	GO_Z14_RIB_9	24° 45' 45.679" N	87° 5' 9.777" E	45.23
683	GO_Z14_RIB_9	24° 45' 45.354" N	87° 5' 9.777" E	45.56
684	GO_Z14_RIB_9	24° 45' 45.029" N	87° 5' 9.776" E	44.95
685	GO_Z14_RIB_9	24° 45' 44.704" N	87° 5' 9.776" E	45.99
686	GO_Z14_RIB_9	24° 45' 44.379" N	87° 5' 9.776" E	46.48
687	GO_Z14_RIB_9	24° 45' 50.881" N	87° 5' 10.136" E	44.23
688	GO_Z14_RIB_9	24° 45' 50.556" N	87° 5' 10.136" E	43.88
689	GO_Z14_RIB_9	24° 45' 50.231" N	87° 5' 10.136" E	43.81
690	GO_Z14_RIB_9	24° 45' 49.906" N	87° 5' 10.136" E	43.84
691	GO_Z14_RIB_9	24° 45' 49.581" N	87° 5' 10.136" E	43.52
692	GO_Z14_RIB_9	24° 45' 49.255" N	87° 5' 10.135" E	44.74
693	GO_Z14_RIB_9	24° 45' 48.930" N	87° 5' 10.135" E	44.08
694	GO_Z14_RIB_9	24° 45' 48.605" N	87° 5' 10.135" E	43.76
695	GO_Z14_RIB_9	24° 45' 48.280" N	87° 5' 10.135" E	44.63
696	GO_Z14_RIB_9	24° 45' 47.955" N	87° 5' 10.134" E	45.38
697	GO_Z14_RIB_9	24° 45' 47.630" N	87° 5' 10.134" E	44.53
698	GO_Z14_RIB_9	24° 45' 47.305" N	87° 5' 10.134" E	45.25
699	GO_Z14_RIB_9	24° 45' 46.980" N	87° 5' 10.134" E	45.81
700	GO_Z14_RIB_9	24° 45' 46.654" N	87° 5' 10.134" E	44.94
701	GO_Z14_RIB_9	24° 45' 46.329" N	87° 5' 10.133" E	45.49
702	GO_Z14_RIB_9	24° 45' 46.004" N	87° 5' 10.133" E	44.69
703	GO_Z14_RIB_9	24° 45' 45.679" N	87° 5' 10.133" E	46.29
704	GO_Z14_RIB_9	24° 45' 45.354" N	87° 5' 10.133" E	46.82
705	GO_Z14_RIB_9	24° 45' 45.029" N	87° 5' 10.132" E	45.64
706	GO_Z14_RIB_9	24° 45' 44.704" N	87° 5' 10.132" E	46.26
707	GO_Z14_RIB_9	24° 45' 44.379" N	87° 5' 10.132" E	45.17
708	GO_Z14_RIB_9	24° 45' 44.053" N	87° 5' 10.132" E	45.92
709	GO_Z14_RIB_9	24° 45' 50.556" N	87° 5' 10.492" E	44.29
710	GO_Z14_RIB_9	24° 45' 50.231" N	87° 5' 10.492" E	44.53
711	GO_Z14_RIB_9	24° 45' 49.906" N	87° 5' 10.492" E	44.45
712	GO_Z14_RIB_9	24° 45' 49.580" N	87° 5' 10.492" E	44.02
713	GO_Z14_RIB_9	24° 45' 49.255" N	87° 5' 10.491" E	43.54
714	GO_Z14_RIB_9	24° 45' 48.930" N	87° 5' 10.491" E	44.03
715	GO_Z14_RIB_9	24° 45' 48.605" N	87° 5' 10.491" E	44.19
716	GO_Z14_RIB_9	24° 45' 48.280" N	87° 5' 10.491" E	44.50
717	GO_Z14_RIB_9	24° 45' 47.955" N	87° 5' 10.491" E	44.29
718	GO_Z14_RIB_9	24° 45' 47.630" N	87° 5' 10.490" E	45.11
719	GO_Z14_RIB_9	24° 45' 47.304" N	87° 5' 10.490" E	44.30
720	GO_Z14_RIB_9	24° 45' 46.979" N	87° 5' 10.490" E	46.09
721	GO_Z14_RIB_9	24° 45' 46.654" N	87° 5' 10.490" E	46.14
722	GO_Z14_RIB_9	24° 45' 46.329" N	87° 5' 10.489" E	44.79
723	GO_Z14_RIB_9	24° 45' 46.004" N	87° 5' 10.489" E	45.65
724	GO_Z14_RIB_9	24° 45' 45.679" N	87° 5' 10.489" E	46.56
725	GO_Z14_RIB_9	24° 45' 45.354" N	87° 5' 10.489" E	44.80
726	GO_Z14_RIB_9	24° 45' 45.029" N	87° 5' 10.488" E	46.01
727	GO_Z14_RIB_9	24° 45' 44.703" N	87° 5' 10.488" E	45.54
728	GO_Z14_RIB_9	24° 45' 44.378" N	87° 5' 10.488" E	45.76
729	GO_Z14_RIB_9	24° 45' 44.053" N	87° 5' 10.488" E	45.06
730	GO_Z14_RIB_9	24° 45' 43.728" N	87° 5' 10.488" E	45.08
731	GO_Z14_RIB_9	24° 45' 43.403" N	87° 5' 10.487" E	45.16
732	GO_Z14_RIB_9	24° 45' 50.230" N	87° 5' 10.848" E	44.25
733	GO_Z14_RIB_9	24° 45' 49.905" N	87° 5' 10.848" E	44.54
734	GO_Z14_RIB_9	24° 45' 49.580" N	87° 5' 10.848" E	44.37
735	GO_Z14_RIB_9	24° 45' 49.255" N	87° 5' 10.847" E	44.79
736	GO_Z14_RIB_9	24° 45' 48.930" N	87° 5' 10.847" E	44.62
737	GO_Z14_RIB_9	24° 45' 48.605" N	87° 5' 10.847" E	44.32
738	GO_Z14_RIB_9	24° 45' 48.280" N	87° 5' 10.847" E	45.86
739	GO_Z14_RIB_9	24° 45' 47.955" N	87° 5' 10.847" E	44.38
740	GO_Z14_RIB_9	24° 45' 47.629" N	87° 5' 10.846" E	44.87
741	GO_Z14_RIB_9	24° 45' 47.304" N	87° 5' 10.846" E	44.68
742	GO_Z14_RIB_9	24° 45' 46.979" N	87° 5' 10.846" E	44.49
743	GO_Z14_RIB_9	24° 45' 46.654" N	87° 5' 10.846" E	44.29
744	GO_Z14_RIB_9	24° 45' 46.329" N	87° 5' 10.845" E	46.83
745	GO_Z14_RIB_9	24° 45' 46.004" N	87° 5' 10.845" E	45.51
746	GO_Z14_RIB_9	24° 45' 45.679" N	87° 5' 10.845" E	45.77
747	GO_Z14_RIB_9	24° 45' 45.353" N	87° 5' 10.845" E	45.67
748	GO_Z14_RIB_9	24° 45' 45.028" N	87° 5' 10.845" E	46.46
749	GO_Z14_RIB_9	24° 45' 44.703" N	87° 5' 10.844" E	45.14
750	GO_Z14_RIB_9	24° 45' 44.378" N	87° 5' 10.844" E	45.15
751	GO_Z14_RIB_9	24° 45' 44.053" N	87° 5' 10.844" E	44.95
752	GO_Z14_RIB_9	24° 45' 43.728" N	87° 5' 10.844" E	44.97
753	GO_Z14_RIB_9	24° 45' 43.403" N	87° 5' 10.843" E	45.38
754	GO_Z14_RIB_9	24° 45' 43.078" N	87° 5' 10.843" E	45.57
755	GO_Z14_RIB_9	24° 45' 49.905" N	87° 5' 11.204" E	44.22
756	GO_Z14_RIB_9	24° 45' 49.580" N	87° 5' 11.204" E	44.47
757	GO_Z14_RIB_9	24° 45' 49.255" N	87° 5' 11.204" E	44.86
758	GO_Z14_RIB_9	24° 45' 48.930" N	87° 5' 11.203" E	43.70
759	GO_Z14_RIB_9	24° 45' 48.605" N	87° 5' 11.203" E	44.37
760	GO_Z14_RIB_9	24° 45' 48.279" N	87° 5' 11.203" E	43.92
761	GO_Z14_RIB_9	24° 45' 47.954" N	87° 5' 11.203" E	44.50
762	GO_Z14_RIB_9	24° 45' 47.629" N	87° 5' 11.202" E	44.54
763	GO_Z14_RIB_9	24° 45' 47.304" N	87° 5' 11.202" E	44.65
764	GO_Z14_RIB_9	24° 45' 46.979" N	87° 5' 11.202" E	44.79
765	GO_Z14_RIB_9	24° 45' 46.654" N	87° 5' 11.202" E	45.24
766	GO_Z14_RIB_9	24° 45' 46.329" N	87° 5' 11.202" E	44.77
767	GO_Z14_RIB_9	24° 45' 46.004" N	87° 5' 11.201" E	44.36
768	GO_Z14_RIB_9	24° 45' 45.678" N	87° 5' 11.201" E	45.02
769	GO_Z14_RIB_9	24° 45' 45.353" N	87° 5' 11.201" E	46.21
770	GO_Z14_RIB_9	24° 45' 45.028" N	87° 5' 11.201" E	44.98
771	GO_Z14_RIB_9	24° 45' 44.703" N	87° 5' 11.200" E	45.00
772	GO_Z14_RIB_9	24° 45' 44.378" N	87° 5' 11.200" E	45.04
773	GO_Z14_RIB_9	24° 45' 44.053" N	87° 5' 11.200" E	45.00
774	GO_Z14_RIB_9	24° 45' 43.728" N	87° 5' 11.200" E	44.62
775	GO_Z14_RIB_9	24° 45' 43.403" N	87° 5' 11.200" E	44.89
776	GO_Z14_RIB_9	24° 45' 43.077" N	87° 5' 11.199" E	45.35
777	GO_Z14_RIB_9	24° 45' 42.752" N	87° 5' 11.199" E	45.53
778	GO_Z14_RIB_9	24° 45' 49.580" N	87° 5' 11.560" E	44.74
779	GO_Z14_RIB_9	24° 45' 49.255" N	87° 5' 11.560" E	44.72
780	GO_Z14_RIB_9	24° 45' 48.929" N	87° 5' 11.559" E	44.29
781	GO_Z14_RIB_9	24° 45' 48.604" N	87° 5' 11.559" E	43.72
782	GO_Z14_RIB_9	24° 45' 48.279" N	87° 5' 11.559" E	44.43
783	GO_Z14_RIB_9	24° 45' 47.954" N	87° 5' 11.559" E	44.44
784	GO_Z14_RIB_9	24° 45' 47.629" N	87° 5' 11.559" E	44.49
785	GO_Z14_RIB_9	24° 45' 47.304" N	87° 5' 11.558" E	44.81
786	GO_Z14_RIB_9	24° 45' 46.979" N	87° 5' 11.558" E	44.86
787	GO_Z14_RIB_9	24° 45' 46.654" N	87° 5' 11.558" E	46.13
788	GO_Z14_RIB_9	24° 45' 46.328" N	87° 5' 11.558" E	44.84
789	GO_Z14_RIB_9	24° 45' 46.003" N	87° 5' 11.557" E	44.88
790	GO_Z14_RIB_9	24° 45' 45.678" N	87° 5' 11.557" E	44.73
791	GO_Z14_RIB_9	24° 45' 45.353" N	87° 5' 11.557" E	44.60
792	GO_Z14_RIB_9	24° 45' 45.028" N	87° 5' 11.557" E	44.31
793	GO_Z14_RIB_9	24° 45' 44.703" N	87° 5' 11.556" E	44.58
794	GO_Z14_RIB_9	24° 45' 44.378" N	87° 5' 11.556" E	45.17
795	GO_Z14_RIB_9	24° 45' 44.053" N	87° 5' 11.556" E	44.87
796	GO_Z14_RIB_9	24° 45' 43.727" N	87° 5' 11.556" E	46.15
797	GO_Z14_RIB_9	24° 45' 43.402" N	87° 5' 11.556" E	46.73
798	GO_Z14_RIB_9	24° 45' 43.077" N	87° 5' 11.555" E	45.09
799	GO_Z14_RIB_9	24° 45' 42.752" N	87° 5' 11.555" E	46.04
800	GO_Z14_RIB_9	24° 45' 42.427" N	87° 5' 11.555" E	45.11
801	GO_Z14_RIB_9	24° 45' 42.102" N	87° 5' 11.555" E	45.59
802	GO_Z14_RIB_9	24° 45' 49.254" N	87° 5' 11.916" E	44.97
803	GO_Z14_RIB_9	24° 45' 48.929" N	87° 5' 11.915" E	45.39
804	GO_Z14_RIB_9	24° 45' 48.604" N	87° 5' 11.915" E	44.38
805	GO_Z14_RIB_9	24° 45' 48.279" N	87° 5' 11.915" E	44.07
806	GO_Z14_RIB_9	24° 45' 47.954" N	87° 5' 11.915" E	44.96
807	GO_Z14_RIB_9	24° 45' 47.629" N	87° 5' 11.915" E	44.57
808	GO_Z14_RIB_9	24° 45' 47.304" N	87° 5' 11.914" E	44.81
809	GO_Z14_RIB_9	24° 45' 46.979" N	87° 5' 11.914" E	44.78
810	GO_Z14_RIB_9	24° 45' 46.653" N	87° 5' 11.914" E	44.58
811	GO_Z14_RIB_9	24° 45' 46.328" N	87° 5' 11.914" E	44.83
812	GO_Z14_RIB_9	24° 45' 46.003" N	87° 5' 11.913" E	44.49
813	GO_Z14_RIB_9	24° 45' 45.678" N	87° 5' 11.913" E	44.99
814	GO_Z14_RIB_9	24° 45' 45.353" N	87° 5' 11.913" E	45.13
815	GO_Z14_RIB_9	24° 45' 45.028" N	87° 5' 11.913" E	44.96
816	GO_Z14_RIB_9	24° 45' 44.703" N	87° 5' 11.913" E	45.58
817	GO_Z14_RIB_9	24° 45' 44.377" N	87° 5' 11.912" E	45.10
818	GO_Z14_RIB_9	24° 45' 44.052" N	87° 5' 11.912" E	45.35
819	GO_Z14_RIB_9	24° 45' 43.727" N	87° 5' 11.912" E	45.77
820	GO_Z14_RIB_9	24° 45' 43.402" N	87° 5' 11.912" E	45.12
821	GO_Z14_RIB_9	24° 45' 43.077" N	87° 5' 11.911" E	45.29
822	GO_Z14_RIB_9	24° 45' 42.752" N	87° 5' 11.911" E	45.85
823	GO_Z14_RIB_9	24° 45' 42.427" N	87° 5' 11.911" E	46.55
824	GO_Z14_RIB_9	24° 45' 42.102" N	87° 5' 11.911" E	45.80
825	GO_Z14_RIB_9	24° 45' 41.776" N	87° 5' 11.911" E	45.46
826	GO_Z14_RIB_9	24° 45' 48.929" N	87° 5' 12.272" E	44.94
827	GO_Z14_RIB_9	24° 45' 48.604" N	87° 5' 12.271" E	44.84
828	GO_Z14_RIB_9	24° 45' 48.279" N	87° 5' 12.271" E	43.73
829	GO_Z14_RIB_9	24° 45' 47.954" N	87° 5' 12.271" E	45.88
830	GO_Z14_RIB_9	24° 45' 47.629" N	87° 5' 12.271" E	44.82
831	GO_Z14_RIB_9	24° 45' 47.303" N	87° 5' 12.270" E	45.00
832	GO_Z14_RIB_9	24° 45' 46.978" N	87° 5' 12.270" E	44.74
833	GO_Z14_RIB_9	24° 45' 46.653" N	87° 5' 12.270" E	44.83
834	GO_Z14_RIB_9	24° 45' 46.328" N	87° 5' 12.270" E	45.00
835	GO_Z14_RIB_9	24° 45' 46.003" N	87° 5' 12.270" E	45.30
836	GO_Z14_RIB_9	24° 45' 45.678" N	87° 5' 12.269" E	45.20
837	GO_Z14_RIB_9	24° 45' 45.353" N	87° 5' 12.269" E	45.17
838	GO_Z14_RIB_9	24° 45' 45.028" N	87° 5' 12.269" E	44.64
839	GO_Z14_RIB_9	24° 45' 44.702" N	87° 5' 12.269" E	44.87
840	GO_Z14_RIB_9	24° 45' 44.377" N	87° 5' 12.268" E	44.94
841	GO_Z14_RIB_9	24° 45' 44.052" N	87° 5' 12.268" E	45.39
842	GO_Z14_RIB_9	24° 45' 43.727" N	87° 5' 12.268" E	45.34
843	GO_Z14_RIB_9	24° 45' 43.402" N	87° 5' 12.268" E	45.22
844	GO_Z14_RIB_9	24° 45' 43.077" N	87° 5' 12.267" E	45.15
845	GO_Z14_RIB_9	24° 45' 42.752" N	87° 5' 12.267" E	45.54
846	GO_Z14_RIB_9	24° 45' 42.427" N	87° 5' 12.267" E	45.26
847	GO_Z14_RIB_9	24° 45' 42.101" N	87° 5' 12.267" E	47.05
848	GO_Z14_RIB_9	24° 45' 41.776" N	87° 5' 12.267" E	45.36
849	GO_Z14_RIB_9	24° 45' 41.451" N	87° 5' 12.266" E	45.72
850	GO_Z14_RIB_9	24° 45' 41.126" N	87° 5' 12.266" E	44.74
851	GO_Z14_RIB_9	24° 45' 48.604" N	87° 5' 12.627" E	44.52
852	GO_Z14_RIB_9	24° 45' 48.279" N	87° 5' 12.627" E	44.68
853	GO_Z14_RIB_9	24° 45' 47.953" N	87° 5' 12.627" E	44.75
854	GO_Z14_RIB_9	24° 45' 47.628" N	87° 5' 12.627" E	45.49
855	GO_Z14_RIB_9	24° 45' 47.303" N	87° 5' 12.626" E	45.38
856	GO_Z14_RIB_9	24° 45' 46.978" N	87° 5' 12.626" E	45.01
857	GO_Z14_RIB_9	24° 45' 46.653" N	87° 5' 12.626" E	45.00
858	GO_Z14_RIB_9	24° 45' 46.328" N	87° 5' 12.626" E	45.12
859	GO_Z14_RIB_9	24° 45' 46.003" N	87° 5' 12.626" E	45.02
860	GO_Z14_RIB_9	24° 45' 45.678" N	87° 5' 12.625" E	45.02
861	GO_Z14_RIB_9	24° 45' 45.352" N	87° 5' 12.625" E	45.30
862	GO_Z14_RIB_9	24° 45' 45.027" N	87° 5' 12.625" E	45.20
863	GO_Z14_RIB_9	24° 45' 44.702" N	87° 5' 12.625" E	45.20
864	GO_Z14_RIB_9	24° 45' 44.377" N	87° 5' 12.624" E	45.26
865	GO_Z14_RIB_9	24° 45' 44.052" N	87° 5' 12.624" E	45.24
866	GO_Z14_RIB_9	24° 45' 43.727" N	87° 5' 12.624" E	45.13
867	GO_Z14_RIB_9	24° 45' 43.402" N	87° 5' 12.624" E	45.09
868	GO_Z14_RIB_9	24° 45' 43.077" N	87° 5' 12.624" E	45.16
869	GO_Z14_RIB_9	24° 45' 42.751" N	87° 5' 12.623" E	45.40
870	GO_Z14_RIB_9	24° 45' 42.426" N	87° 5' 12.623" E	45.56
871	GO_Z14_RIB_9	24° 45' 42.101" N	87° 5' 12.623" E	45.59
872	GO_Z14_RIB_9	24° 45' 41.776" N	87° 5' 12.623" E	45.73
873	GO_Z14_RIB_9	24° 45' 41.451" N	87° 5' 12.622" E	45.45
874	GO_Z14_RIB_9	24° 45' 41.126" N	87° 5' 12.622" E	46.64
875	GO_Z14_RIB_9	24° 45' 40.801" N	87° 5' 12.622" E	45.90
876	GO_Z14_RIB_9	24° 45' 48.278" N	87° 5' 12.983" E	44.58
877	GO_Z14_RIB_9	24° 45' 47.953" N	87° 5' 12.983" E	45.14
878	GO_Z14_RIB_9	24° 45' 47.628" N	87° 5' 12.983" E	43.86
879	GO_Z14_RIB_9	24° 45' 47.303" N	87° 5' 12.983" E	45.77
880	GO_Z14_RIB_9	24° 45' 46.978" N	87° 5' 12.982" E	44.89
881	GO_Z14_RIB_9	24° 45' 46.653" N	87° 5' 12.982" E	45.15
882	GO_Z14_RIB_9	24° 45' 46.328" N	87° 5' 12.982" E	45.10
883	GO_Z14_RIB_9	24° 45' 46.003" N	87° 5' 12.982" E	45.22
884	GO_Z14_RIB_9	24° 45' 45.677" N	87° 5' 12.981" E	45.31
885	GO_Z14_RIB_9	24° 45' 45.352" N	87° 5' 12.981" E	45.21
886	GO_Z14_RIB_9	24° 45' 45.027" N	87° 5' 12.981" E	45.67
887	GO_Z14_RIB_9	24° 45' 44.702" N	87° 5' 12.981" E	45.46
888	GO_Z14_RIB_9	24° 45' 44.377" N	87° 5' 12.981" E	45.36
889	GO_Z14_RIB_9	24° 45' 44.052" N	87° 5' 12.980" E	45.37
890	GO_Z14_RIB_9	24° 45' 43.727" N	87° 5' 12.980" E	45.46
891	GO_Z14_RIB_9	24° 45' 43.401" N	87° 5' 12.980" E	45.16
892	GO_Z14_RIB_9	24° 45' 43.076" N	87° 5' 12.980" E	44.93
893	GO_Z14_RIB_9	24° 45' 42.751" N	87° 5' 12.979" E	45.03
894	GO_Z14_RIB_9	24° 45' 42.426" N	87° 5' 12.979" E	45.35
895	GO_Z14_RIB_9	24° 45' 42.101" N	87° 5' 12.979" E	45.49
896	GO_Z14_RIB_9	24° 45' 41.776" N	87° 5' 12.979" E	45.58
897	GO_Z14_RIB_9	24° 45' 41.451" N	87° 5' 12.979" E	45.41
898	GO_Z14_RIB_9	24° 45' 41.126" N	87° 5' 12.978" E	45.59
899	GO_Z14_RIB_9	24° 45' 40.800" N	87° 5' 12.978" E	45.54
900	GO_Z14_RIB_9	24° 45' 40.475" N	87° 5' 12.978" E	45.66
901	GO_Z14_RIB_9	24° 45' 47.953" N	87° 5' 13.339" E	44.45
902	GO_Z14_RIB_9	24° 45' 47.628" N	87° 5' 13.339" E	44.26
903	GO_Z14_RIB_9	24° 45' 47.303" N	87° 5' 13.339" E	45.77
904	GO_Z14_RIB_9	24° 45' 46.978" N	87° 5' 13.338" E	45.99
905	GO_Z14_RIB_9	24° 45' 46.653" N	87° 5' 13.338" E	44.98
906	GO_Z14_RIB_9	24° 45' 46.327" N	87° 5' 13.338" E	45.21
907	GO_Z14_RIB_9	24° 45' 46.002" N	87° 5' 13.338" E	45.15
908	GO_Z14_RIB_9	24° 45' 45.677" N	87° 5' 13.338" E	45.60
909	GO_Z14_RIB_9	24° 45' 45.352" N	87° 5' 13.337" E	45.16
910	GO_Z14_RIB_9	24° 45' 45.027" N	87° 5' 13.337" E	45.04
911	GO_Z14_RIB_9	24° 45' 44.702" N	87° 5' 13.337" E	45.53
912	GO_Z14_RIB_9	24° 45' 44.377" N	87° 5' 13.337" E	45.43
913	GO_Z14_RIB_9	24° 45' 44.052" N	87° 5' 13.336" E	45.48
914	GO_Z14_RIB_9	24° 45' 43.726" N	87° 5' 13.336" E	45.45
915	GO_Z14_RIB_9	24° 45' 43.401" N	87° 5' 13.336" E	45.42
916	GO_Z14_RIB_9	24° 45' 43.076" N	87° 5' 13.336" E	45.64
917	GO_Z14_RIB_9	24° 45' 42.751" N	87° 5' 13.335" E	45.44
918	GO_Z14_RIB_9	24° 45' 42.426" N	87° 5' 13.335" E	44.92
919	GO_Z14_RIB_9	24° 45' 42.101" N	87° 5' 13.335" E	45.20
920	GO_Z14_RIB_9	24° 45' 41.776" N	87° 5' 13.335" E	45.57
921	GO_Z14_RIB_9	24° 45' 41.450" N	87° 5' 13.335" E	45.73
922	GO_Z14_RIB_9	24° 45' 41.125" N	87° 5' 13.334" E	45.41
923	GO_Z14_RIB_9	24° 45' 40.800" N	87° 5' 13.334" E	45.19
924	GO_Z14_RIB_9	24° 45' 40.475" N	87° 5' 13.334" E	45.56
925	GO_Z14_RIB_9	24° 45' 40.150" N	87° 5' 13.334" E	45.64
926	GO_Z14_RIB_9	24° 45' 39.825" N	87° 5' 13.333" E	45.60
927	GO_Z14_RIB_9	24° 45' 47.628" N	87° 5' 13.695" E	44.63
928	GO_Z14_RIB_9	24° 45' 47.303" N	87° 5' 13.695" E	44.59
929	GO_Z14_RIB_9	24° 45' 46.977" N	87° 5' 13.694" E	43.87
930	GO_Z14_RIB_9	24° 45' 46.652" N	87° 5' 13.694" E	46.65
931	GO_Z14_RIB_9	24° 45' 46.327" N	87° 5' 13.694" E	44.83
932	GO_Z14_RIB_9	24° 45' 46.002" N	87° 5' 13.694" E	45.36
933	GO_Z14_RIB_9	24° 45' 45.677" N	87° 5' 13.694" E	45.42
934	GO_Z14_RIB_9	24° 45' 45.352" N	87° 5' 13.693" E	45.29
935	GO_Z14_RIB_9	24° 45' 45.027" N	87° 5' 13.693" E	45.31
936	GO_Z14_RIB_9	24° 45' 44.702" N	87° 5' 13.693" E	45.72
937	GO_Z14_RIB_9	24° 45' 44.376" N	87° 5' 13.693" E	45.43
938	GO_Z14_RIB_9	24° 45' 44.051" N	87° 5' 13.692" E	45.56
939	GO_Z14_RIB_9	24° 45' 43.726" N	87° 5' 13.692" E	45.46
940	GO_Z14_RIB_9	24° 45' 43.401" N	87° 5' 13.692" E	45.44
941	GO_Z14_RIB_9	24° 45' 43.076" N	87° 5' 13.692" E	45.50
942	GO_Z14_RIB_9	24° 45' 42.751" N	87° 5' 13.692" E	45.08
943	GO_Z14_RIB_9	24° 45' 42.426" N	87° 5' 13.691" E	45.35
944	GO_Z14_RIB_9	24° 45' 42.101" N	87° 5' 13.691" E	45.09
945	GO_Z14_RIB_9	24° 45' 41.775" N	87° 5' 13.691" E	44.95
946	GO_Z14_RIB_9	24° 45' 41.450" N	87° 5' 13.691" E	44.97
947	GO_Z14_RIB_9	24° 45' 41.125" N	87° 5' 13.690" E	45.50
948	GO_Z14_RIB_9	24° 45' 40.800" N	87° 5' 13.690" E	46.25
949	GO_Z14_RIB_9	24° 45' 40.475" N	87° 5' 13.690" E	45.30
950	GO_Z14_RIB_9	24° 45' 40.150" N	87° 5' 13.690" E	45.71
951	GO_Z14_RIB_9	24° 45' 39.825" N	87° 5' 13.690" E	44.97
952	GO_Z14_RIB_9	24° 45' 39.500" N	87° 5' 13.689" E	44.90
953	GO_Z14_RIB_9	24° 45' 46.977" N	87° 5' 14.051" E	45.68
954	GO_Z14_RIB_9	24° 45' 46.652" N	87° 5' 14.050" E	44.48
955	GO_Z14_RIB_9	24° 45' 46.327" N	87° 5' 14.050" E	44.98
956	GO_Z14_RIB_9	24° 45' 46.002" N	87° 5' 14.050" E	45.09
957	GO_Z14_RIB_9	24° 45' 45.677" N	87° 5' 14.050" E	44.97
958	GO_Z14_RIB_9	24° 45' 45.352" N	87° 5' 14.049" E	44.88
959	GO_Z14_RIB_9	24° 45' 45.027" N	87° 5' 14.049" E	45.37
960	GO_Z14_RIB_9	24° 45' 44.701" N	87° 5' 14.049" E	45.14
961	GO_Z14_RIB_9	24° 45' 44.376" N	87° 5' 14.049" E	45.44
962	GO_Z14_RIB_9	24° 45' 44.051" N	87° 5' 14.049" E	45.53
963	GO_Z14_RIB_9	24° 45' 43.726" N	87° 5' 14.048" E	45.58
964	GO_Z14_RIB_9	24° 45' 43.401" N	87° 5' 14.048" E	45.59
965	GO_Z14_RIB_9	24° 45' 43.076" N	87° 5' 14.048" E	45.61
966	GO_Z14_RIB_9	24° 45' 42.751" N	87° 5' 14.048" E	45.59
967	GO_Z14_RIB_9	24° 45' 42.425" N	87° 5' 14.047" E	45.56
968	GO_Z14_RIB_9	24° 45' 42.100" N	87° 5' 14.047" E	45.66
969	GO_Z14_RIB_9	24° 45' 41.775" N	87° 5' 14.047" E	45.54
970	GO_Z14_RIB_9	24° 45' 41.450" N	87° 5' 14.047" E	45.57
971	GO_Z14_RIB_9	24° 45' 41.125" N	87° 5' 14.046" E	44.95
972	GO_Z14_RIB_9	24° 45' 40.800" N	87° 5' 14.046" E	47.00
973	GO_Z14_RIB_9	24° 45' 40.475" N	87° 5' 14.046" E	45.53
974	GO_Z14_RIB_9	24° 45' 40.150" N	87° 5' 14.046" E	45.56
975	GO_Z14_RIB_9	24° 45' 39.824" N	87° 5' 14.046" E	46.38
976	GO_Z14_RIB_9	24° 45' 39.499" N	87° 5' 14.045" E	46.48
977	GO_Z14_RIB_9	24° 45' 46.652" N	87° 5' 14.406" E	43.94
978	GO_Z14_RIB_9	24° 45' 46.327" N	87° 5' 14.406" E	44.01
979	GO_Z14_RIB_9	24° 45' 46.002" N	87° 5' 14.406" E	43.95
980	GO_Z14_RIB_9	24° 45' 45.677" N	87° 5' 14.406" E	45.94
981	GO_Z14_RIB_9	24° 45' 45.351" N	87° 5' 14.406" E	44.38
982	GO_Z14_RIB_9	24° 45' 45.026" N	87° 5' 14.405" E	44.29
983	GO_Z14_RIB_9	24° 45' 44.701" N	87° 5' 14.405" E	45.58
984	GO_Z14_RIB_9	24° 45' 44.376" N	87° 5' 14.405" E	46.27
985	GO_Z14_RIB_9	24° 45' 44.051" N	87° 5' 14.405" E	45.37
986	GO_Z14_RIB_9	24° 45' 43.726" N	87° 5' 14.404" E	45.47
987	GO_Z14_RIB_9	24° 45' 43.401" N	87° 5' 14.404" E	45.44
988	GO_Z14_RIB_9	24° 45' 43.076" N	87° 5' 14.404" E	45.51
989	GO_Z14_RIB_9	24° 45' 42.750" N	87° 5' 14.404" E	45.54
990	GO_Z14_RIB_9	24° 45' 42.425" N	87° 5' 14.403" E	45.55
991	GO_Z14_RIB_9	24° 45' 42.100" N	87° 5' 14.403" E	45.66
992	GO_Z14_RIB_9	24° 45' 41.775" N	87° 5' 14.403" E	45.63
993	GO_Z14_RIB_9	24° 45' 41.450" N	87° 5' 14.403" E	45.57
994	GO_Z14_RIB_9	24° 45' 41.125" N	87° 5' 14.403" E	45.52
995	GO_Z14_RIB_9	24° 45' 40.800" N	87° 5' 14.402" E	45.76
996	GO_Z14_RIB_9	24° 45' 40.474" N	87° 5' 14.402" E	45.68
997	GO_Z14_RIB_9	24° 45' 40.149" N	87° 5' 14.402" E	46.07
998	GO_Z14_RIB_9	24° 45' 39.824" N	87° 5' 14.402" E	45.94
999	GO_Z14_RIB_9	24° 45' 46.327" N	87° 5' 14.762" E	45.04
1000	GO_Z14_RIB_9	24° 45' 46.001" N	87° 5' 14.762" E	44.00
1001	GO_Z14_RIB_9	24° 45' 45.676" N	87° 5' 14.762" E	44.11
1002	GO_Z14_RIB_9	24° 45' 45.351" N	87° 5' 14.762" E	44.10
1003	GO_Z14_RIB_9	24° 45' 45.026" N	87° 5' 14.761" E	44.33
1004	GO_Z14_RIB_9	24° 45' 44.701" N	87° 5' 14.761" E	44.23
1005	GO_Z14_RIB_9	24° 45' 44.376" N	87° 5' 14.761" E	45.01
1006	GO_Z14_RIB_9	24° 45' 44.051" N	87° 5' 14.761" E	45.24
1007	GO_Z14_RIB_9	24° 45' 43.726" N	87° 5' 14.760" E	45.39
1008	GO_Z14_RIB_9	24° 45' 43.400" N	87° 5' 14.760" E	45.45
1009	GO_Z14_RIB_9	24° 45' 43.075" N	87° 5' 14.760" E	45.53
1010	GO_Z14_RIB_9	24° 45' 42.750" N	87° 5' 14.760" E	45.56
1011	GO_Z14_RIB_9	24° 45' 42.425" N	87° 5' 14.760" E	45.55
1012	GO_Z14_RIB_9	24° 45' 42.100" N	87° 5' 14.759" E	45.51
1013	GO_Z14_RIB_9	24° 45' 41.775" N	87° 5' 14.759" E	45.81
1014	GO_Z14_RIB_9	24° 45' 41.450" N	87° 5' 14.759" E	45.49
1015	GO_Z14_RIB_9	24° 45' 41.125" N	87° 5' 14.759" E	45.49
1016	GO_Z14_RIB_9	24° 45' 40.799" N	87° 5' 14.758" E	45.64
1017	GO_Z14_RIB_9	24° 45' 40.474" N	87° 5' 14.758" E	45.71
1018	GO_Z14_RIB_9	24° 45' 40.149" N	87° 5' 14.758" E	45.87
1019	GO_Z14_RIB_9	24° 45' 39.824" N	87° 5' 14.758" E	45.75
1020	GO_Z14_RIB_9	24° 45' 45.676" N	87° 5' 15.118" E	44.21
1021	GO_Z14_RIB_9	24° 45' 45.351" N	87° 5' 15.118" E	44.16
1022	GO_Z14_RIB_9	24° 45' 45.026" N	87° 5' 15.117" E	44.15
1023	GO_Z14_RIB_9	24° 45' 44.701" N	87° 5' 15.117" E	44.15
1024	GO_Z14_RIB_9	24° 45' 44.376" N	87° 5' 15.117" E	44.19
1025	GO_Z14_RIB_9	24° 45' 44.050" N	87° 5' 15.117" E	44.16
1026	GO_Z14_RIB_9	24° 45' 43.725" N	87° 5' 15.117" E	45.35
1027	GO_Z14_RIB_9	24° 45' 43.400" N	87° 5' 15.116" E	44.91
1028	GO_Z14_RIB_9	24° 45' 43.075" N	87° 5' 15.116" E	45.55
1029	GO_Z14_RIB_9	24° 45' 42.750" N	87° 5' 15.116" E	45.31
1030	GO_Z14_RIB_9	24° 45' 42.425" N	87° 5' 15.116" E	45.37
1031	GO_Z14_RIB_9	24° 45' 42.100" N	87° 5' 15.115" E	45.45
1032	GO_Z14_RIB_9	24° 45' 41.775" N	87° 5' 15.115" E	45.54
1033	GO_Z14_RIB_9	24° 45' 41.449" N	87° 5' 15.115" E	45.51
1034	GO_Z14_RIB_9	24° 45' 41.124" N	87° 5' 15.115" E	45.39
1035	GO_Z14_RIB_9	24° 45' 40.799" N	87° 5' 15.114" E	45.35
1036	GO_Z14_RIB_9	24° 45' 40.474" N	87° 5' 15.114" E	45.46
1037	GO_Z14_RIB_9	24° 45' 40.149" N	87° 5' 15.114" E	45.40
1038	GO_Z14_RIB_9	24° 45' 39.824" N	87° 5' 15.114" E	45.63
1039	GO_Z14_RIB_9	24° 45' 45.351" N	87° 5' 15.474" E	44.90
1040	GO_Z14_RIB_9	24° 45' 45.026" N	87° 5' 15.473" E	45.14
1041	GO_Z14_RIB_9	24° 45' 44.701" N	87° 5' 15.473" E	45.27
1042	GO_Z14_RIB_9	24° 45' 44.375" N	87° 5' 15.473" E	44.57
1043	GO_Z14_RIB_9	24° 45' 44.050" N	87° 5' 15.473" E	44.06
1044	GO_Z14_RIB_9	24° 45' 43.725" N	87° 5' 15.473" E	44.27
1045	GO_Z14_RIB_9	24° 45' 43.400" N	87° 5' 15.472" E	44.19
1046	GO_Z14_RIB_9	24° 45' 43.075" N	87° 5' 15.472" E	44.30
1047	GO_Z14_RIB_9	24° 45' 42.750" N	87° 5' 15.472" E	44.28
1048	GO_Z14_RIB_9	24° 45' 42.425" N	87° 5' 15.472" E	44.96
1049	GO_Z14_RIB_9	24° 45' 42.100" N	87° 5' 15.471" E	44.96
1050	GO_Z14_RIB_9	24° 45' 41.774" N	87° 5' 15.471" E	45.06
1051	GO_Z14_RIB_9	24° 45' 41.449" N	87° 5' 15.471" E	45.28
1052	GO_Z14_RIB_9	24° 45' 41.124" N	87° 5' 15.471" E	45.33
1053	GO_Z14_RIB_9	24° 45' 40.799" N	87° 5' 15.471" E	45.31
1054	GO_Z14_RIB_9	24° 45' 40.474" N	87° 5' 15.470" E	45.29
1055	GO_Z14_RIB_9	24° 45' 40.149" N	87° 5' 15.470" E	45.41
1056	GO_Z14_RIB_9	24° 45' 45.025" N	87° 5' 15.830" E	44.95
1057	GO_Z14_RIB_9	24° 45' 44.700" N	87° 5' 15.829" E	45.06
1058	GO_Z14_RIB_9	24° 45' 44.375" N	87° 5' 15.829" E	45.26
1059	GO_Z14_RIB_9	24° 45' 44.050" N	87° 5' 15.829" E	45.43
1060	GO_Z14_RIB_9	24° 45' 43.725" N	87° 5' 15.829" E	44.39
1061	GO_Z14_RIB_9	24° 45' 43.400" N	87° 5' 15.828" E	44.20
1062	GO_Z14_RIB_9	24° 45' 43.075" N	87° 5' 15.828" E	44.17
1063	GO_Z14_RIB_9	24° 45' 42.750" N	87° 5' 15.828" E	44.64
1064	GO_Z14_RIB_9	24° 45' 42.424" N	87° 5' 15.828" E	44.61
1065	GO_Z14_RIB_9	24° 45' 42.099" N	87° 5' 15.828" E	44.92
1066	GO_Z14_RIB_9	24° 45' 41.774" N	87° 5' 15.827" E	44.83
1067	GO_Z14_RIB_9	24° 45' 41.449" N	87° 5' 15.827" E	44.83
1068	GO_Z14_RIB_9	24° 45' 41.124" N	87° 5' 15.827" E	45.85
1069	GO_Z14_RIB_9	24° 45' 40.799" N	87° 5' 15.827" E	45.30
1070	GO_Z14_RIB_9	24° 45' 40.474" N	87° 5' 15.826" E	45.24
1071	GO_Z14_RIB_9	24° 45' 40.149" N	87° 5' 15.826" E	45.39
1072	GO_Z14_RIB_9	24° 45' 44.375" N	87° 5' 16.185" E	45.06
1073	GO_Z14_RIB_9	24° 45' 44.050" N	87° 5' 16.185" E	45.07
1074	GO_Z14_RIB_9	24° 45' 43.725" N	87° 5' 16.185" E	45.00
1075	GO_Z14_RIB_9	24° 45' 43.400" N	87° 5' 16.185" E	45.96
1076	GO_Z14_RIB_9	24° 45' 43.074" N	87° 5' 16.184" E	44.34
1077	GO_Z14_RIB_9	24° 45' 42.749" N	87° 5' 16.184" E	44.17
1078	GO_Z14_RIB_9	24° 45' 42.424" N	87° 5' 16.184" E	45.26
1079	GO_Z14_RIB_9	24° 45' 42.099" N	87° 5' 16.184" E	45.86
1080	GO_Z14_RIB_9	24° 45' 41.774" N	87° 5' 16.183" E	45.04
1081	GO_Z14_RIB_9	24° 45' 41.449" N	87° 5' 16.183" E	44.97
1082	GO_Z14_RIB_9	24° 45' 41.124" N	87° 5' 16.183" E	45.68
1083	GO_Z14_RIB_9	24° 45' 40.799" N	87° 5' 16.183" E	44.92
1084	GO_Z14_RIB_9	24° 45' 40.473" N	87° 5' 16.182" E	45.10
1085	GO_Z14_RIB_9	24° 45' 40.148" N	87° 5' 16.182" E	45.35
1086	GO_Z14_RIB_9	24° 45' 44.050" N	87° 5' 16.541" E	45.11
1087	GO_Z14_RIB_9	24° 45' 43.725" N	87° 5' 16.541" E	44.99
1088	GO_Z14_RIB_9	24° 45' 43.399" N	87° 5' 16.541" E	45.06
1089	GO_Z14_RIB_9	24° 45' 43.074" N	87° 5' 16.540" E	44.75
1090	GO_Z14_RIB_9	24° 45' 42.749" N	87° 5' 16.540" E	45.55
1091	GO_Z14_RIB_9	24° 45' 42.424" N	87° 5' 16.540" E	44.25
1092	GO_Z14_RIB_9	24° 45' 42.099" N	87° 5' 16.540" E	44.13
1093	GO_Z14_RIB_9	24° 45' 41.774" N	87° 5' 16.539" E	46.75
1094	GO_Z14_RIB_9	24° 45' 41.449" N	87° 5' 16.539" E	46.66
1095	GO_Z14_RIB_9	24° 45' 41.123" N	87° 5' 16.539" E	46.35
1096	GO_Z14_RIB_9	24° 45' 40.798" N	87° 5' 16.539" E	45.61
1097	GO_Z14_RIB_9	24° 45' 40.473" N	87° 5' 16.539" E	45.18
1098	GO_Z14_RIB_9	24° 45' 43.399" N	87° 5' 16.897" E	45.17
1099	GO_Z14_RIB_9	24° 45' 43.074" N	87° 5' 16.896" E	45.23
1100	GO_Z14_RIB_9	24° 45' 42.749" N	87° 5' 16.896" E	44.86
1101	GO_Z14_RIB_9	24° 45' 42.424" N	87° 5' 16.896" E	45.64
1102	GO_Z14_RIB_9	24° 45' 42.099" N	87° 5' 16.896" E	44.58
1103	GO_Z14_RIB_9	24° 45' 41.774" N	87° 5' 16.895" E	44.37
1104	GO_Z14_RIB_9	24° 45' 41.448" N	87° 5' 16.895" E	46.65
1105	GO_Z14_RIB_9	24° 45' 41.123" N	87° 5' 16.895" E	46.46
1106	GO_Z14_RIB_9	24° 45' 40.798" N	87° 5' 16.895" E	45.55
1107	GO_Z14_RIB_9	24° 45' 40.473" N	87° 5' 16.895" E	46.48
1108	GO_Z14_RIB_9	24° 45' 42.749" N	87° 5' 17.252" E	44.59
1109	GO_Z14_RIB_9	24° 45' 42.424" N	87° 5' 17.252" E	46.51
1110	GO_Z14_RIB_9	24° 45' 42.098" N	87° 5' 17.252" E	45.68
1111	GO_Z14_RIB_9	24° 45' 41.773" N	87° 5' 17.252" E	44.26
1112	GO_Z14_RIB_9	24° 45' 41.448" N	87° 5' 17.251" E	44.44
1113	GO_Z14_RIB_9	24° 45' 41.123" N	87° 5' 17.251" E	46.64
1114	GO_Z14_RIB_9	24° 45' 40.798" N	87° 5' 17.251" E	46.01
1115	GO_Z14_RIB_9	24° 45' 40.473" N	87° 5' 17.251" E	46.16
1116	GO_Z14_RIB_9	24° 45' 42.098" N	87° 5' 17.608" E	44.79
1117	GO_Z14_RIB_9	24° 45' 41.773" N	87° 5' 17.608" E	44.96
1118	GO_Z14_RIB_9	24° 45' 41.448" N	87° 5' 17.607" E	44.18
1119	GO_Z14_RIB_9	24° 45' 41.123" N	87° 5' 17.607" E	44.35
1120	GO_Z14_RIB_9	24° 45' 40.798" N	87° 5' 17.607" E	46.63
1121	GO_Z14_RIB_9	24° 45' 41.123" N	87° 5' 17.963" E	47.44
1122	GO_Z14_RIB_9	24° 45' 40.798" N	87° 5' 17.963" E	46.25
1123	GO_Z12_SAK_7	24° 44' 7.124" N	87° 6' 14.144" E	52.74
1124	GO_Z12_SAK_7	24° 44' 7.124" N	87° 6' 14.500" E	52.88
1125	GO_Z12_SAK_7	24° 44' 6.799" N	87° 6' 14.500" E	53.17
1126	GO_Z12_SAK_7	24° 44' 6.474" N	87° 6' 14.500" E	55.11
1127	GO_Z12_SAK_7	24° 44' 7.449" N	87° 6' 14.856" E	52.99
1128	GO_Z12_SAK_7	24° 44' 7.124" N	87° 6' 14.856" E	52.79
1129	GO_Z12_SAK_7	24° 44' 6.798" N	87° 6' 14.856" E	53.66
1130	GO_Z12_SAK_7	24° 44' 6.473" N	87° 6' 14.856" E	53.45
1131	GO_Z12_SAK_7	24° 44' 6.148" N	87° 6' 14.855" E	53.32
1132	GO_Z12_SAK_7	24° 44' 5.823" N	87° 6' 14.855" E	53.94
1133	GO_Z12_SAK_7	24° 44' 7.448" N	87° 6' 15.212" E	52.76
1134	GO_Z12_SAK_7	24° 44' 7.123" N	87° 6' 15.212" E	52.78
1135	GO_Z12_SAK_7	24° 44' 6.798" N	87° 6' 15.212" E	52.88
1136	GO_Z12_SAK_7	24° 44' 6.473" N	87° 6' 15.212" E	52.87
1137	GO_Z12_SAK_7	24° 44' 6.148" N	87° 6' 15.211" E	53.25
1138	GO_Z12_SAK_7	24° 44' 5.823" N	87° 6' 15.211" E	53.74
1139	GO_Z12_SAK_7	24° 44' 5.498" N	87° 6' 15.211" E	53.23
1140	GO_Z12_SAK_7	24° 44' 5.173" N	87° 6' 15.210" E	54.03
1141	GO_Z12_SAK_7	24° 44' 7.773" N	87° 6' 15.569" E	53.89
1142	GO_Z12_SAK_7	24° 44' 7.448" N	87° 6' 15.568" E	53.92
1143	GO_Z12_SAK_7	24° 44' 7.123" N	87° 6' 15.568" E	53.54
1144	GO_Z12_SAK_7	24° 44' 6.798" N	87° 6' 15.568" E	52.94
1145	GO_Z12_SAK_7	24° 44' 6.473" N	87° 6' 15.568" E	53.14
1146	GO_Z12_SAK_7	24° 44' 6.148" N	87° 6' 15.567" E	53.33
1147	GO_Z12_SAK_7	24° 44' 5.823" N	87° 6' 15.567" E	53.55
1148	GO_Z12_SAK_7	24° 44' 5.497" N	87° 6' 15.567" E	54.23
1149	GO_Z12_SAK_7	24° 44' 5.172" N	87° 6' 15.566" E	53.50
1150	GO_Z12_SAK_7	24° 44' 4.847" N	87° 6' 15.566" E	53.97
1151	GO_Z12_SAK_7	24° 44' 4.522" N	87° 6' 15.566" E	54.20
1152	GO_Z12_SAK_7	24° 44' 7.448" N	87° 6' 15.924" E	53.51
1153	GO_Z12_SAK_7	24° 44' 7.123" N	87° 6' 15.924" E	53.74
1154	GO_Z12_SAK_7	24° 44' 6.798" N	87° 6' 15.924" E	53.37
1155	GO_Z12_SAK_7	24° 44' 6.473" N	87° 6' 15.924" E	53.43
1156	GO_Z12_SAK_7	24° 44' 6.147" N	87° 6' 15.923" E	53.16
1157	GO_Z12_SAK_7	24° 44' 5.822" N	87° 6' 15.923" E	53.22
1158	GO_Z12_SAK_7	24° 44' 5.497" N	87° 6' 15.923" E	53.63
1159	GO_Z12_SAK_7	24° 44' 5.172" N	87° 6' 15.922" E	53.85
1160	GO_Z12_SAK_7	24° 44' 4.847" N	87° 6' 15.922" E	54.55
1161	GO_Z12_SAK_7	24° 44' 4.522" N	87° 6' 15.922" E	54.15
1162	GO_Z12_SAK_7	24° 44' 4.197" N	87° 6' 15.922" E	53.87
1163	GO_Z12_SAK_7	24° 44' 6.797" N	87° 6' 16.280" E	53.78
1164	GO_Z12_SAK_7	24° 44' 6.472" N	87° 6' 16.280" E	53.76
1165	GO_Z12_SAK_7	24° 44' 6.147" N	87° 6' 16.279" E	53.10
1166	GO_Z12_SAK_7	24° 44' 5.822" N	87° 6' 16.279" E	53.29
1167	GO_Z12_SAK_7	24° 44' 5.497" N	87° 6' 16.279" E	53.52
1168	GO_Z12_SAK_7	24° 44' 5.172" N	87° 6' 16.278" E	53.09
1169	GO_Z12_SAK_7	24° 44' 4.847" N	87° 6' 16.278" E	53.48
1170	GO_Z12_SAK_7	24° 44' 4.522" N	87° 6' 16.278" E	53.78
1171	GO_Z12_SAK_7	24° 44' 4.196" N	87° 6' 16.278" E	54.24
1172	GO_Z12_SAK_7	24° 44' 3.871" N	87° 6' 16.277" E	53.83
1173	GO_Z12_SAK_7	24° 44' 3.546" N	87° 6' 16.277" E	53.15
1174	GO_Z12_SAK_7	24° 44' 5.822" N	87° 6' 16.635" E	54.24
1175	GO_Z12_SAK_7	24° 44' 5.497" N	87° 6' 16.635" E	53.18
1176	GO_Z12_SAK_7	24° 44' 5.172" N	87° 6' 16.634" E	53.30
1177	GO_Z12_SAK_7	24° 44' 4.846" N	87° 6' 16.634" E	53.26
1178	GO_Z12_SAK_7	24° 44' 4.521" N	87° 6' 16.634" E	53.05
1179	GO_Z12_SAK_7	24° 44' 4.196" N	87° 6' 16.634" E	54.95
1180	GO_Z12_SAK_7	24° 44' 3.871" N	87° 6' 16.633" E	53.73
1181	GO_Z12_SAK_7	24° 44' 3.546" N	87° 6' 16.633" E	53.16
1182	GO_Z12_SAK_7	24° 44' 3.221" N	87° 6' 16.633" E	55.65
1183	GO_Z12_SAK_7	24° 44' 2.896" N	87° 6' 16.633" E	53.91
1184	GO_Z12_SAK_7	24° 44' 4.846" N	87° 6' 16.990" E	53.70
1185	GO_Z12_SAK_7	24° 44' 4.521" N	87° 6' 16.990" E	53.31
1186	GO_Z12_SAK_7	24° 44' 4.196" N	87° 6' 16.990" E	53.06
1187	GO_Z12_SAK_7	24° 44' 3.871" N	87° 6' 16.989" E	53.04
1188	GO_Z12_SAK_7	24° 44' 3.546" N	87° 6' 16.989" E	53.14
1189	GO_Z12_SAK_7	24° 44' 3.221" N	87° 6' 16.989" E	53.61
1190	GO_Z12_SAK_7	24° 44' 2.895" N	87° 6' 16.989" E	53.48
1191	GO_Z12_SAK_7	24° 44' 2.570" N	87° 6' 16.988" E	53.20
1192	GO_Z12_SAK_7	24° 44' 2.245" N	87° 6' 16.988" E	53.04
1193	GO_Z12_SAK_7	24° 44' 3.871" N	87° 6' 17.345" E	53.28
1194	GO_Z12_SAK_7	24° 44' 3.545" N	87° 6' 17.345" E	53.14
1195	GO_Z12_SAK_7	24° 44' 3.220" N	87° 6' 17.345" E	53.21
1196	GO_Z12_SAK_7	24° 44' 2.895" N	87° 6' 17.345" E	53.16
1197	GO_Z12_SAK_7	24° 44' 2.570" N	87° 6' 17.344" E	53.67

District Mining Officer,
Godda

TABLE REPRESENTING ELEVATION (in m) WITH RESPECT TO 10m X 10m GRID WITHIN POTENTIAL SAND GHATS IN GODDA DISTRICT OF JHARKHAND

ANNEXURE - B17

598	GO_Z14_RIB_9	24° 45' 52.833" N	87° 5' 8.713" E	44.56
599	GO_Z14_RIB_9	24° 45' 52.508" N	87° 5' 8.713" E	43.51
600	GO_Z14_RIB_9	24° 45' 52.182" N	87° 5' 8.713" E	43.39
601	GO_Z14_RIB_9	24° 45' 51.857" N	87° 5' 8.713" E	43.63
602	GO_Z14_RIB_9	24° 45' 51.532" N	87° 5' 8.713" E	44.05
603	GO_Z14_RIB_9	24° 45' 51.207" N	87° 5' 8.712" E	43.67
604	GO_Z14_RIB_9	24° 45' 50.882" N	87° 5' 8.712" E	44.01
605	GO_Z14_RIB_9	24° 45' 50.557" N	87° 5' 8.712" E	44.84
606	GO_Z14_RIB_9	24° 45' 50.232" N	87° 5' 8.712" E	44.69
607	GO_Z14_RIB_9	24° 45' 49.907" N	87° 5' 8.711" E	44.67
608	GO_Z14_RIB_9	24° 45' 49.581" N	87° 5' 8.711" E	44.48
609	GO_Z14_RIB_9	24° 45' 49.256" N	87° 5' 8.711" E	45.00
610	GO_Z14_RIB_9	24° 45' 48.931" N	87° 5' 8.711" E	44.65
611	GO_Z14_RIB_9	24° 45' 48.606" N	87° 5' 8.711" E	44.96
612	GO_Z14_RIB_9	24° 45' 48.281" N	87° 5' 8.710" E	44.86
613	GO_Z14_RIB_9	24° 45' 47.956" N	87° 5' 8.710" E	44.89
614	GO_Z14_RIB_9	24° 45' 47.631" N	87° 5' 8.710" E	44.70
615	GO_Z14_RIB_9	24° 45' 47.305" N	87° 5' 8.710" E	44.83
616	GO_Z14_RIB_9	24° 45' 46.980" N	87° 5' 8.709" E	44.98
617	GO_Z14_RIB_9	24° 45' 46.655" N	87° 5' 8.709" E	45.29
618	GO_Z14_RIB_9	24° 45' 46.330" N	87° 5' 8.709" E	45.79
619	GO_Z14_RIB_9	24° 45' 46.005" N	87° 5' 8.709" E	46.87
620	GO_Z14_RIB_9	24° 45' 45.680" N	87° 5' 8.709" E	46.75
621	GO_Z14_RIB_9	24° 45' 52.507" N	87° 5' 9.069" E	44.40
622	GO_Z14_RIB_9	24° 45' 52.182" N	87° 5' 9.069" E	43.62
623	GO_Z14_RIB_9	24° 45' 51.857" N	87° 5' 9.069" E	45.40
624	GO_Z14_RIB_9	24° 45' 51.532" N	87° 5' 9.069" E	43.70
625	GO_Z14_RIB_9	24° 45' 51.207" N	87° 5' 9.068" E	43.67
626	GO_Z14_RIB_9	24° 45' 50.882" N	87° 5' 9.068" E	43.51
627	GO_Z14_RIB_9	24° 45' 50.557" N	87° 5' 9.068" E	43.48
628	GO_Z14_RIB_9	24° 45' 50.231" N	87° 5' 9.068" E	44.28
629	GO_Z14_RIB_9	24° 45' 49.906" N	87° 5' 9.068" E	44.81
630	GO_Z14_RIB_9	24° 45' 49.581" N	87° 5' 9.067" E	44.35
631	GO_Z14_RIB_9	24° 45' 49.256" N	87° 5' 9.067" E	44.89
632	GO_Z14_RIB_9	24° 45' 48.931" N	87° 5' 9.067" E	44.88
633	GO_Z14_RIB_9	24° 45' 48.606" N	87° 5' 9.067" E	44.84
634	GO_Z14_RIB_9	24° 45' 48.281" N	87° 5' 9.066" E	44.70
635	GO_Z14_RIB_9	24° 45' 47.956" N	87° 5' 9.066" E	44.58
636	GO_Z14_RIB_9	24° 45' 47.630" N	87° 5' 9.066" E	44.77
637	GO_Z14_RIB_9	24° 45' 47.305" N	87° 5' 9.066" E	44.77
638	GO_Z14_RIB_9	24° 45' 46.980" N	87° 5' 9.066" E	44.92
639	GO_Z14_RIB_9	24° 45' 46.655" N	87° 5' 9.065" E	44.75
640	GO_Z14_RIB_9	24° 45' 46.330" N	87° 5' 9.065" E	45.49
641	GO_Z14_RIB_9	24° 45' 46.005" N	87° 5' 9.065" E	46.42
642	GO_Z14_RIB_9	24° 45' 45.680" N	87° 5' 9.065" E	44.77
643	GO_Z14_RIB_9	24° 45' 45.355" N	87° 5' 9.064" E	44.87
644	GO_Z14_RIB_9	24° 45' 51.532" N	87° 5' 9.425" E	43.86
645	GO_Z14_RIB_9	24° 45' 51.207" N	87° 5' 9.425" E	43.93
646	GO_Z14_RIB_9	24° 45' 50.882" N	87° 5' 9.424" E	44.13
647	GO_Z14_RIB_9	24° 45' 50.556" N	87° 5' 9.424" E	45.69
648	GO_Z14_RIB_9	24° 45' 50.231" N	87° 5' 9.424" E	44.40
649	GO_Z14_RIB_9	24° 45' 49.906" N	87° 5' 9.424" E	43.92
650	GO_Z14_RIB_9	24° 45' 49.581" N	87° 5' 9.423" E	44.64
651	GO_Z14_RIB_9	24° 45' 49.256" N	87° 5' 9.423" E	44.57
652	GO_Z14_RIB_9	24° 45' 48.931" N	87° 5' 9.423" E	44.83
653	GO_Z14_RIB_9	24° 45' 48.606" N	87° 5' 9.423" E	44.86
654	GO_Z14_RIB_9	24° 45' 48.280" N	87° 5' 9.423" E	44.77
655	GO_Z14_RIB_9	24° 45' 47.955" N	87° 5' 9.422" E	45.62
656	GO_Z14_RIB_9	24° 45' 47.630" N	87° 5' 9.422" E	44.84
657	GO_Z14_RIB_9	24° 45' 47.305" N	87° 5' 9.422" E	45.37
658	GO_Z14_RIB_9	24° 45' 46.980" N	87° 5' 9.422" E	45.64
659	GO_Z14_RIB_9	24° 45' 46.655" N	87° 5' 9.421" E	45.74
660	GO_Z14_RIB_9	24° 45' 46.330" N	87° 5' 9.421" E	45.75
661	GO_Z14_RIB_9	24° 45' 46.005" N	87° 5' 9.421" E	44.96
662	GO_Z14_RIB_9	24° 45' 45.679" N	87° 5' 9.421" E	45.02
663	GO_Z14_RIB_9	24° 45' 45.354" N	87° 5' 9.420" E	44.99
664	GO_Z14_RIB_9	24° 45' 45.029" N	87° 5' 9.420" E	44.99
665	GO_Z14_RIB_9	24° 45' 51.206" N	87° 5' 9.781" E	43.79
666	GO_Z14_RIB_9	24° 45' 50.881" N	87° 5' 9.780" E	43.73
667	GO_Z14_RIB_9	24° 45' 50.556" N	87° 5' 9.780" E	43.86
668	GO_Z14_RIB_9	24° 45' 50.231" N	87° 5' 9.780" E	44.66
669	GO_Z14_RIB_9	24° 45' 49.906" N	87° 5' 9.780" E	44.28
670	GO_Z14_RIB_9	24° 45' 49.581" N	87° 5' 9.779" E	43.87
671	GO_Z14_RIB_9	24° 45' 49.256" N	87° 5' 9.779" E	44.30
672	GO_Z14_RIB_9	24° 45' 48.931" N	87° 5' 9.779" E	44.53
673	GO_Z14_RIB_9	24° 45' 48.605" N	87° 5' 9.779" E	44.41
674	GO_Z14_RIB_9	24° 45' 48.280" N	87° 5' 9.779" E	44.82
675	GO_Z14_RIB_9	24° 45' 47.955" N	87° 5' 9.778" E	45.17
676	GO_Z14_RIB_9	24° 45' 47.630" N	87° 5' 9.778" E	44.72
677	GO_Z14_RIB_9	24° 45' 47.305" N	87° 5' 9.778" E	44.69
678	GO_Z14_RIB_9	24° 45' 46.980" N	87° 5' 9.778" E	44.86
679	GO_Z14_RIB_9	24° 45' 46.655" N	87° 5' 9.777" E	44.97
680	GO_Z14_RIB_9	24° 45' 46.329" N	87° 5' 9.777" E	45.12
681	GO_Z14_RIB_9	24° 45' 46.004" N	87° 5' 9.777" E	45.29
682	GO_Z14_RIB_9	24° 45' 45.679" N	87° 5' 9.777" E	45.23
683	GO_Z14_RIB_9	24° 45' 45.354" N	87° 5' 9.777" E	45.56
684	GO_Z14_RIB_9	24° 45' 45.029" N	87° 5' 9.776" E	44.95
685	GO_Z14_RIB_9	24° 45' 44.704" N	87° 5' 9.776" E	45.99
686	GO_Z14_RIB_9	24° 45' 44.379" N	87° 5' 9.776" E	46.48
687	GO_Z14_RIB_9	24° 45' 50.881" N	87° 5' 10.136" E	44.23
688	GO_Z14_RIB_9	24° 45' 50.556" N	87° 5' 10.136" E	43.88
689	GO_Z14_RIB_9	24° 45' 50.231" N	87° 5' 10.136" E	43.81
690	GO_Z14_RIB_9	24° 45' 49.906" N	87° 5' 10.136" E	43.84
691	GO_Z14_RIB_9	24° 45' 49.581" N	87° 5' 10.136" E	43.52
692	GO_Z14_RIB_9	24° 45' 49.255" N	87° 5' 10.135" E	44.74
693	GO_Z14_RIB_9	24° 45' 48.930" N	87° 5' 10.135" E	44.08
694	GO_Z14_RIB_9	24° 45' 48.605" N	87° 5' 10.135" E	43.76
695	GO_Z14_RIB_9	24° 45' 48.280" N	87° 5' 10.135" E	44.63
696	GO_Z14_RIB_9	24° 45' 47.955" N	87° 5' 10.134" E	45.38
697	GO_Z14_RIB_9	24° 45' 47.630" N	87° 5' 10.134" E	44.53
698	GO_Z14_RIB_9	24° 45' 47.305" N	87° 5' 10.134" E	45.25
699	GO_Z14_RIB_9	24° 45' 46.980" N	87° 5' 10.134" E	45.81
700	GO_Z14_RIB_9	24° 45' 46.654" N	87° 5' 10.134" E	44.94
701	GO_Z14_RIB_9	24° 45' 46.329" N	87° 5' 10.133" E	45.49
702	GO_Z14_RIB_9	24° 45' 46.004" N	87° 5' 10.133" E	44.69
703	GO_Z14_RIB_9	24° 45' 45.679" N	87° 5' 10.133" E	46.29
704	GO_Z14_RIB_9	24° 45' 45.354" N	87° 5' 10.133" E	46.82
705	GO_Z14_RIB_9	24° 45' 45.029" N	87° 5' 10.132" E	45.64
706	GO_Z14_RIB_9	24° 45' 44.704" N	87° 5' 10.132" E	46.26
707	GO_Z14_RIB_9	24° 45' 44.379" N	87° 5' 10.132" E	45.17
708	GO_Z14_RIB_9	24° 45' 44.053" N	87° 5' 10.132" E	45.92
709	GO_Z14_RIB_9	24° 45' 50.556" N	87° 5' 10.492" E	44.29
710	GO_Z14_RIB_9	24° 45' 50.231" N	87° 5' 10.492" E	44.53
711	GO_Z14_RIB_9	24° 45' 49.906" N	87° 5' 10.492" E	44.45
712	GO_Z14_RIB_9	24° 45' 49.580" N	87° 5' 10.492" E	44.02
713	GO_Z14_RIB_9	24° 45' 49.255" N	87° 5' 10.491" E	43.54
714	GO_Z14_RIB_9	24° 45' 48.930" N	87° 5' 10.491" E	44.03
715	GO_Z14_RIB_9	24° 45' 48.605" N	87° 5' 10.491" E	44.19
716	GO_Z14_RIB_9	24° 45' 48.280" N	87° 5' 10.491" E	44.50
717	GO_Z14_RIB_9	24° 45' 47.955" N	87° 5' 10.491" E	44.29
718	GO_Z14_RIB_9	24° 45' 47.630" N	87° 5' 10.490" E	45.11
719	GO_Z14_RIB_9	24° 45' 47.304" N	87° 5' 10.490" E	44.30
720	GO_Z14_RIB_9	24° 45' 46.979" N	87° 5' 10.490" E	46.09
721	GO_Z14_RIB_9	24° 45' 46.654" N	87° 5' 10.490" E	46.14
722	GO_Z14_RIB_9	24° 45' 46.329" N	87° 5' 10.489" E	44.79
723	GO_Z14_RIB_9	24° 45' 46.004" N	87° 5' 10.489" E	45.65
724	GO_Z14_RIB_9	24° 45' 45.679" N	87° 5' 10.489" E	46.56
725	GO_Z14_RIB_9	24° 45' 45.354" N	87° 5' 10.489" E	44.80
726	GO_Z14_RIB_9	24° 45' 45.029" N	87° 5' 10.488" E	46.01
727	GO_Z14_RIB_9	24° 45' 44.703" N	87° 5' 10.488" E	45.54
728	GO_Z14_RIB_9	24° 45' 44.378" N	87° 5' 10.488" E	45.76
729	GO_Z14_RIB_9	24° 45' 44.053" N	87° 5' 10.488" E	45.06
730	GO_Z14_RIB_9	24° 45' 43.728" N	87° 5' 10.488" E	45.08
731	GO_Z14_RIB_9	24° 45' 43.403" N	87° 5' 10.487" E	45.16
732	GO_Z14_RIB_9	24° 45' 50.230" N	87° 5' 10.848" E	44.25
733	GO_Z14_RIB_9	24° 45' 49.905" N	87° 5' 10.848" E	44.54
734	GO_Z14_RIB_9	24° 45' 49.580" N	87° 5' 10.848" E	44.37
735	GO_Z14_RIB_9	24° 45' 49.255" N	87° 5' 10.847" E	44.79
736	GO_Z14_RIB_9	24° 45' 48.930" N	87° 5' 10.847" E	44.62
737	GO_Z14_RIB_9	24° 45' 48.605" N	87° 5' 10.847" E	44.32
738	GO_Z14_RIB_9	24° 45' 48.280" N	87° 5' 10.847" E	45.86
739	GO_Z14_RIB_9	24° 45' 47.955" N	87° 5' 10.847" E	44.38
740	GO_Z14_RIB_9	24° 45' 47.629" N	87° 5' 10.846" E	44.87
741	GO_Z14_RIB_9	24° 45' 47.304" N	87° 5' 10.846" E	44.68
742	GO_Z14_RIB_9	24° 45' 46.979" N	87° 5' 10.846" E	44.49
743	GO_Z14_RIB_9	24° 45' 46.654" N	87° 5' 10.846" E	44.29
744	GO_Z14_RIB_9	24° 45' 46.329" N	87° 5' 10.845" E	46.83
745	GO_Z14_RIB_9	24° 45' 46.004" N	87° 5' 10.845" E	45.51
746	GO_Z14_RIB_9	24° 45' 45.679" N	87° 5' 10.845" E	45.77
747	GO_Z14_RIB_9	24° 45' 45.353" N	87° 5' 10.845" E	45.67
748	GO_Z14_RIB_9	24° 45' 45.028" N	87° 5' 10.845" E	46.46
749	GO_Z14_RIB_9	24° 45' 44.703" N	87° 5' 10.844" E	45.14
750	GO_Z14_RIB_9	24° 45' 44.378" N	87° 5' 10.844" E	45.15
751	GO_Z14_RIB_9	24° 45' 44.053" N	87° 5' 10.844" E	44.95
752	GO_Z14_RIB_9	24° 45' 43.728" N	87° 5' 10.844" E	44.97
753	GO_Z14_RIB_9	24° 45' 43.403" N	87° 5' 10.843" E	45.38
754	GO_Z14_RIB_9	24° 45' 43.078" N	87° 5' 10.843" E	45.57
755	GO_Z14_RIB_9	24° 45' 49.905" N	87° 5' 11.204" E	44.22
756	GO_Z14_RIB_9	24° 45' 49.580" N	87° 5' 11.204" E	44.47
757	GO_Z14_RIB_9	24° 45' 49.255" N	87° 5' 11.204" E	44.86
758	GO_Z14_RIB_9	24° 45' 48.930" N	87° 5' 11.203" E	43.70
759	GO_Z14_RIB_9	24° 45' 48.605" N	87° 5' 11.203" E	44.37
760	GO_Z14_RIB_9	24° 45' 48.279" N	87° 5' 11.203" E	43.92
761	GO_Z14_RIB_9	24° 45' 47.954" N	87° 5' 11.203" E	44.50
762	GO_Z14_RIB_9	24° 45' 47.629" N	87° 5' 11.202" E	44.54
763	GO_Z14_RIB_9	24° 45' 47.304" N	87° 5' 11.202" E	44.65
764	GO_Z14_RIB_9	24° 45' 46.979" N	87° 5' 11.202" E	44.79
765	GO_Z14_RIB_9	24° 45' 46.654" N	87° 5' 11.202" E	45.24
766	GO_Z14_RIB_9	24° 45' 46.329" N	87° 5' 11.202" E	44.77
767	GO_Z14_RIB_9	24° 45' 46.004" N	87° 5' 11.201" E	44.36
768	GO_Z14_RIB_9	24° 45' 45.678" N	87° 5' 11.201" E	45.02
769	GO_Z14_RIB_9	24° 45' 45.353" N	87° 5' 11.201" E	46.21
770	GO_Z14_RIB_9	24° 45' 45.028" N	87° 5' 11.201" E	44.98
771	GO_Z14_RIB_9	24° 45' 44.703" N	87° 5' 11.200" E	45.00
772	GO_Z14_RIB_9	24° 45' 44.378" N	87° 5' 11.200" E	45.04
773	GO_Z14_RIB_9	24° 45' 44.053" N	87° 5' 11.200" E	45.00
774	GO_Z14_RIB_9	24° 45' 43.728" N	87° 5' 11.200" E	44.62
775	GO_Z14_RIB_9	24° 45' 43.403" N	87° 5' 11.200" E	44.89
776	GO_Z14_RIB_9	24° 45' 43.077" N	87° 5' 11.199" E	45.35
777	GO_Z14_RIB_9	24° 45' 42.752" N	87° 5' 11.199" E	45.53
778	GO_Z14_RIB_9	24° 45' 49.580" N	87° 5' 11.560" E	44.74
779	GO_Z14_RIB_9	24° 45' 49.255" N	87° 5' 11.560" E	44.72
780	GO_Z14_RIB_9	24° 45' 48.929" N	87° 5' 11.559" E	44.29
781	GO_Z14_RIB_9	24° 45' 48.604" N	87° 5' 11.559" E	43.72
782	GO_Z14_RIB_9	24° 45' 48.279" N	87° 5' 11.559" E	44.43
783	GO_Z14_RIB_9	24° 45' 47.954" N	87° 5' 11.559" E	44.44
784	GO_Z14_RIB_9	24° 45' 47.629" N	87° 5' 11.559" E	44.49
785	GO_Z14_RIB_9	24° 45' 47.304" N	87° 5' 11.558" E	44.81
786	GO_Z14_RIB_9	24° 45' 46.979" N	87° 5' 11.558" E	44.86
787	GO_Z14_RIB_9	24° 45' 46.654" N	87° 5' 11.558" E	46.13
788	GO_Z14_RIB_9	24° 45' 46.328" N	87° 5' 11.558" E	44.84
789	GO_Z14_RIB_9	24° 45' 46.003" N	87° 5' 11.557" E	44.88
790	GO_Z14_RIB_9	24° 45' 45.678" N	87° 5' 11.557" E	44.73
791	GO_Z14_RIB_9	24° 45' 45.353" N	87° 5' 11.557" E	44.80
792	GO_Z14_RIB_9	24° 45' 45.028" N	87° 5' 11.557" E	44.31
793	GO_Z14_RIB_9	24° 45' 44.703" N	87° 5' 11.556" E	44.58
794	GO_Z14_RIB_9	24° 45' 44.378" N	87° 5' 11.556" E	45.17
795	GO_Z14_RIB_9	24° 45' 44.053" N	87° 5' 11.556" E	44.87
796	GO_Z14_RIB_9	24° 45' 43.727" N	87° 5' 11.556" E	46.15
797	GO_Z14_RIB_9	24° 45' 43.402" N	87° 5' 11.556" E	46.73
798	GO_Z14_RIB_9	24° 45' 43.077" N	87° 5' 11.555" E	45.09
799	GO_Z14_RIB_9	24° 45' 42.752" N	87° 5' 11.555" E	46.04
800	GO_Z14_RIB_9	24° 45' 42.427" N	87° 5' 11.555" E	45.11
801	GO_Z14_RIB_9	24° 45' 42.102" N	87° 5' 11.555" E	45.59
802	GO_Z14_RIB_9	24° 45' 49.254" N	87° 5' 11.916" E	44.97
803	GO_Z14_RIB_9	24° 45' 48.929" N	87° 5' 11.915" E	45.39
804	GO_Z14_RIB_9	24° 45' 48.604" N	87° 5' 11.915" E	44.38
805	GO_Z14_RIB_9	24° 45' 48.279" N	87° 5' 11.915" E	44.07
806	GO_Z14_RIB_9	24° 45' 47.954" N	87° 5' 11.915" E	44.96
807	GO_Z14_RIB_9	24° 45' 47.629" N	87° 5' 11.915" E	44.57
808	GO_Z14_RIB_9	24° 45' 47.304" N	87° 5' 11.914" E	44.81
809	GO_Z14_RIB_9	24° 45' 46.979" N	87° 5' 11.914" E	44.78
810	GO_Z14_RIB_9	24° 45' 46.653" N	87° 5' 11.914" E	44.58
811	GO_Z14_RIB_9	24° 45' 46.328" N	87° 5' 11.914" E	44.83
812	GO_Z14_RIB_9	24° 45' 46.003" N	87° 5' 11.913" E	44.49
813	GO_Z14_RIB_9	24° 45' 45.678" N	87° 5' 11.913" E	44.99
814	GO_Z14_RIB_9	24° 45' 45.353" N	87° 5' 11.913" E	45.13
815	GO_Z14_RIB_9	24° 45' 45.028" N	87° 5' 11.913" E	44.96
816	GO_Z14_RIB_9	24° 45' 44.703" N	87° 5' 11.913" E	45.58
817	GO_Z14_RIB_9	24° 45' 44.377" N	87° 5' 11.912" E	45.10
818	GO_Z14_RIB_9	24° 45' 44.052" N	87° 5' 11.912" E	45.35
819	GO_Z14_RIB_9	24° 45' 43.727" N	87° 5' 11.912" E	45.77
820	GO_Z14_RIB_9	24° 45' 43.402" N	87° 5' 11.912" E	45.12
821	GO_Z14_RIB_9	24° 45' 43.077" N	87° 5' 11.911" E	45.29
822	GO_Z14_RIB_9	24° 45' 42.752" N	87° 5' 11.911" E	45.85
823	GO_Z14_RIB_9	24° 45' 42.427" N	87° 5' 11.911" E	46.55
824	GO_Z14_RIB_9	24° 45' 42.102" N	87° 5' 11.911" E	45.80
825	GO_Z14_RIB_9	24° 45' 41.776" N	87° 5' 11.911" E	45.46
826	GO_Z14_RIB_9	24° 45' 48.929" N	87° 5' 12.272" E	44.94
827	GO_Z14_RIB_9	24° 45' 48.604" N	87° 5' 12.271" E	44.84
828	GO_Z14_RIB_9	24° 45' 48.279" N	87° 5' 12.271" E	43.73
829	GO_Z14_RIB_9	24° 45' 47.954" N	87° 5' 12.271" E	45.88
830	GO_Z14_RIB_9	24° 45' 47.629" N	87° 5' 12.271" E	44.82
831	GO_Z14_RIB_9	24° 45' 47.303" N	87° 5' 12.270" E	45.00
832	GO_Z14_RIB_9	24° 45' 46.978" N	87° 5' 12.270" E	44.74
833	GO_Z14_RIB_9	24° 45' 46.653" N	87° 5' 12.270" E	44.83
834	GO_Z14_RIB_9	24° 45' 46.328" N	87° 5' 12.270" E	45.00
835	GO_Z14_RIB_9	24° 45' 46.003" N	87° 5' 12.270" E	45.30
836	GO_Z14_RIB_9	24° 45' 45.678" N	87° 5' 12.269" E	45.20
837	GO_Z14_RIB_9	24° 45' 45.353" N	87° 5' 12.269" E	45.17
838	GO_Z14_RIB_9	24° 45' 45.028" N	87° 5' 12.269" E	44.64
839	GO_Z14_RIB_9	24° 45' 44.702" N	87° 5' 12.269" E	44.87
840	GO_Z14_RIB_9	24° 45' 44.377" N	87° 5' 12.268" E	44.94
841	GO_Z14_RIB_9	24° 45' 44.052" N	87° 5' 12.268" E	45.39
842	GO_Z14_RIB_9	24° 45' 43.727" N	87° 5' 12.268" E	45.34
843	GO_Z14_RIB_9	24° 45' 43.402" N	87° 5' 12.268" E	45.22
844	GO_Z14_RIB_9	24° 45' 43.077" N	87° 5' 12.267" E	45.15
845	GO_Z14_RIB_9	24° 45' 42.752" N	87° 5' 12.267" E	45.54
846	GO_Z14_RIB_9	24° 45' 42.427" N	87° 5' 12.267" E	45.26
847	GO_Z14_RIB_9	24° 45' 42.101" N	87° 5' 12.267" E	47.05
848	GO_Z14_RIB_9	24° 45' 41.776" N	87° 5' 12.267" E	45.36
849	GO_Z14_RIB_9	24° 45' 41.451" N	87° 5' 12.266" E	45.72
850	GO_Z14_RIB_9	24° 45' 41.126" N	87° 5' 12.266" E	44.74
851	GO_Z14_RIB_9	24° 45' 48.604" N	87° 5' 12.627" E	44.52
852	GO_Z14_RIB_9	24° 45' 48.279" N	87° 5' 12.627" E	44.68
853	GO_Z14_RIB_9	24° 45' 47.953" N	87° 5' 12.627" E	44.75
854	GO_Z14_RIB_9	24° 45' 47.628" N	87° 5' 12.627" E	45.49
855	GO_Z14_RIB_9	24° 45' 47.303" N	87° 5' 12.626" E	45.38
856	GO_Z14_RIB_9	24° 45' 46.978" N	87° 5' 12.626" E	45.01
857	GO_Z14_RIB_9	24° 45' 46.653" N	87° 5' 12.626" E	45.00
858	GO_Z14_RIB_9	24° 45' 46.328" N	87° 5' 12.626" E	45.12
859	GO_Z14_RIB_9	24° 45' 46.003" N	87° 5' 12.626" E	45.02
860	GO_Z14_RIB_9	24° 45' 45.678" N	87° 5' 12.625" E	45.02
861	GO_Z14_RIB_9	24° 45' 45.352" N	87° 5' 12.625" E	45.30
862	GO_Z14_RIB_9	24° 45' 45.027" N	87° 5' 12.625" E	45.20
863	GO_Z14_RIB_9	24° 45' 44.702" N	87° 5' 12.625" E	45.20
864	GO_Z14_RIB_9	24° 45' 44.377" N	87° 5' 12.624" E	45.26
865	GO_Z14_RIB_9	24° 45' 44.052" N	87° 5' 12.624" E	45.24
866	GO_Z14_RIB_9	24° 45' 43.727" N	87° 5' 12.624" E	45.13
867	GO_Z14_RIB_9	24° 45' 43.402" N	87° 5' 12.624" E	45.09
868	GO_Z14_RIB_9	24° 45' 43.077" N	87° 5' 12.624" E	45.16
869	GO_Z14_RIB_9	24° 45' 42.751" N	87° 5' 12.623" E	45.40
870	GO_Z14_RIB_9	24° 45' 42.426" N	87° 5' 12.623" E	45.56
871	GO_Z14_RIB_9	24° 45' 42.101" N	87° 5' 12.623" E	45.59
872	GO_Z14_RIB_9	24° 45' 41.776" N	87° 5' 12.623" E	45.73
873	GO_Z14_RIB_9	24° 45' 41.451" N	87° 5' 12.622" E	45.45
874	GO_Z14_RIB_9	24° 45' 41.126" N	87° 5' 12.622" E	46.64
875	GO_Z14_RIB_9	24° 45' 40.801" N	87° 5' 12.622" E	45.90
876	GO_Z14_RIB_9	24° 45' 48.278" N	87° 5' 12.983" E	44.58
877	GO_Z14_RIB_9	24° 45' 47.953" N	87° 5' 12.983" E	45.14
878	GO_Z14_RIB_9	24° 45' 47.628" N	87° 5' 12.983" E	43.86
879	GO_Z14_RIB_9	24° 45' 47.303" N	87° 5' 12.983" E	45.77
880	GO_Z14_RIB_9	24° 45' 46.978" N	87° 5' 12.982" E	44.89
881	GO_Z14_RIB_9	24° 45' 46.653" N	87° 5' 12.982" E	45.15
882	GO_Z14_RIB_9	24° 45' 46.328" N	87° 5' 12.982" E	45.10
883	GO_Z14_RIB_9	24° 45' 46.003" N	87° 5' 12.982" E	45.22
884	GO_Z14_RIB_9	24° 45' 45.677" N	87° 5' 12.981" E	45.31
885	GO_Z14_RIB_9	24° 45' 45.352" N	87° 5' 12.981" E	45.21
886	GO_Z14_RIB_9	24° 45' 45.027" N	87° 5' 12.981" E	45.67
887	GO_Z14_RIB_9	24° 45' 44.702" N	87° 5' 12.981" E	45.46
888	GO_Z14_RIB_9	24° 45' 44.377" N	87° 5' 12.981" E	45.36
889	GO_Z14_RIB_9	24° 45' 44.052" N	87° 5' 12.980" E	45.37
890	GO_Z14_RIB_9	24° 45' 43.727" N	87° 5' 12.980" E	45.46
891	GO_Z14_RIB_9	24° 45' 43.401" N	87° 5' 12.980" E	45.16
892	GO_Z14_RIB_9	24° 45' 43.076" N	87° 5' 12.980" E	44.93
893	GO_Z14_RIB_9	24° 45' 42.751" N	87° 5' 12.979" E	45.03
894	GO_Z14_RIB_9	24° 45' 42.426" N	87° 5' 12.979" E	45.35
895	GO_Z14_RIB_9	24° 45' 42.101" N	87° 5' 12.979" E	45.49
896	GO_Z14_RIB_9	24° 45' 41.776" N	87° 5' 12.979" E	45.58
897	GO_Z14_RIB_9	24° 45' 41.451" N	87° 5' 12.979" E	45.41
898	GO_Z14_RIB_9	24° 45' 41.126" N	87° 5' 12.978" E	45.59
899	GO_Z14_RIB_9	24° 45' 40.800" N	87° 5' 12.978" E	45.54
900	GO_Z14_RIB_9	24° 45' 40.475" N	87° 5' 12.978" E	45.66
901	GO_Z14_RIB_9	24° 45' 47.953" N	87° 5' 13.339" E	44.45
902	GO_Z14_RIB_9	24° 45' 47.628" N	87° 5' 13.339" E	44.26
903	GO_Z14_RIB_9	24° 45' 47.303" N	87° 5' 13.339" E	45.77
904	GO_Z14_RIB_9	24° 45' 46.978" N	87° 5' 13.338" E	45.99
905	GO_Z14_RIB_9	24° 45' 46.653" N	87° 5' 13.338" E	44.98
906	GO_Z14_RIB_9	24° 45' 46.327" N	87° 5' 13.338" E	45.21
907	GO_Z14_RIB_9	24° 45' 46.002" N	87° 5' 13.338" E	45.15
908	GO_Z14_RIB_9	24° 45' 45.677" N	87° 5' 13.338" E	45.60
909	GO_Z14_RIB_9	24° 45' 45.352" N	87° 5' 13.337" E	45.16
910	GO_Z14_RIB_9	24° 45' 45.027" N	87° 5' 13.337" E	45.04
911	GO_Z14_RIB_9	24° 45' 44.702" N	87° 5' 13.337" E	45.53
912	GO_Z14_RIB_9	24° 45' 44.377" N	87° 5' 13.337" E	45.43
913	GO_Z14_RIB_9	24° 45' 44.052" N	87° 5' 13.336" E	45.48
914	GO_Z14_RIB_9	24° 45' 43.726" N	87° 5' 13.336" E	45.45
915	GO_Z14_RIB_9	24° 45' 43.401" N	87° 5' 13.336" E	45.42
916	GO_Z14_RIB_9	24° 45' 43.076" N	87° 5' 13.336" E	45.64
917	GO_Z14_RIB_9	24° 45' 42.751" N	87° 5' 13.335" E	45.44
918	GO_Z14_RIB_9	24° 45' 42.426" N	87° 5' 13.335" E	44.92
919	GO_Z14_RIB_9	24° 45' 42.101" N	87° 5' 13.335" E	45.20
920	GO_Z14_RIB_9	24° 45' 41.776" N	87° 5' 13.335" E	45.57
921	GO_Z14_RIB_9	24° 45' 41.450" N	87° 5' 13.335" E	45.73
922	GO_Z14_RIB_9	24° 45' 41.125" N	87° 5' 13.334" E	45.41
923	GO_Z14_RIB_9	24° 45' 40.800" N	87° 5' 13.334" E	45.19
924	GO_Z14_RIB_9	24° 45' 40.475" N	87° 5' 13.334" E	45.56
925	GO_Z14_RIB_9	24° 45' 40.150" N	87° 5' 13.334" E	45.64
926	GO_Z14_RIB_9	24° 45' 39.825" N	87° 5' 13.333" E	45.60
927	GO_Z14_RIB_9	24° 45' 47.628" N	87° 5' 13.695" E	44.63
928	GO_Z14_RIB_9	24° 45' 47.303" N	87° 5' 13.695" E	44.59
929	GO_Z14_RIB_9	24° 45' 46.977" N	87° 5' 13.694" E	43.87
930	GO_Z14_RIB_9	24° 45' 46.652" N	87° 5' 13.694" E	46.65
931	GO_Z14_RIB_9	24° 45' 46.327" N	87° 5' 13.694" E	44.83
932	GO_Z14_RIB_9	24° 45' 46.002" N	87° 5' 13.694" E	45.36
933	GO_Z14_RIB_9	24° 45' 45.677" N	87° 5' 13.694" E	45.42
934	GO_Z14_RIB_9	24° 45' 45.352" N	87° 5' 13.693" E	45.29
935	GO_Z14_RIB_9	24° 45' 45.027" N	87° 5' 13.693" E	45.31
936	GO_Z14_RIB_9	24° 45' 44.702" N	87° 5' 13.693" E	45.72
937	GO_Z14_RIB_9	24° 45' 44.376" N	87° 5' 13.693" E	45.43
938	GO_Z14_RIB_9	24° 45' 44.051" N	87° 5' 13.692" E	45.56
939	GO_Z14_RIB_9	24° 45' 43.726" N	87° 5' 13.692" E	45.46
940	GO_Z14_RIB_9	24° 45' 43.401" N	87° 5' 13.692" E	45.44
941	GO_Z14_RIB_9	24° 45' 43.076" N	87° 5' 13.692" E	45.50
942	GO_Z14_RIB_9	24° 45' 42.751" N	87° 5' 13.692" E	45.08
943	GO_Z14_RIB_9	24° 45' 42.426" N	87° 5' 13.691" E	45.35
944	GO_Z14_RIB_9	24° 45' 42.101" N	87° 5' 13.691" E	45.09
945	GO_Z14_RIB_9	24° 45' 41.775" N	87° 5' 13.691" E	44.95
946	GO_Z14_RIB_9	24° 45' 41.450" N	87° 5' 13.691" E	44.97
947	GO_Z14_RIB_9	24° 45' 41.125" N	87° 5' 13.690" E	45.50
948	GO_Z14_RIB_9	24° 45' 40.800" N	87° 5' 13.690" E	46.25
949	GO_Z14_RIB_9	24° 45' 40.475" N	87° 5' 13.690" E	45.30
950	GO_Z14_RIB_9	24° 45' 40.150" N	87° 5' 13.690" E	45.71
951	GO_Z14_RIB_9	24° 45' 39.825" N	87° 5' 13.690" E	44.97
952	GO_Z14_RIB_9	24° 45' 39.500" N	87° 5' 13.689" E	44.90
953	GO_Z14_RIB_9	24° 45' 46.977" N	87° 5' 14.051" E	45.68
954	GO_Z14_RIB_9	24° 45' 46.652" N	87° 5' 14.050" E	44.48
955	GO_Z14_RIB_9	24° 45' 46.327" N	87° 5' 14.050" E	44.98
956	GO_Z14_RIB_9	24° 45' 46.002" N	87° 5' 14.050" E	45.09
957	GO_Z14_RIB_9	24° 45' 45.677" N	87° 5' 14.050" E	44.97
958	GO_Z14_RIB_9	24° 45' 45.352" N	87° 5' 14.049" E	44.88
959	GO_Z14_RIB_9	24° 45' 45.027" N	87° 5' 14.049" E	45.37
960	GO_Z14_RIB_9	24° 45' 44.701" N	87° 5' 14.049" E	45.14
961	GO_Z14_RIB_9	24° 45' 44.376" N	87° 5' 14.049" E	45.44
962	GO_Z14_RIB_9	24° 45' 44.051" N	87° 5' 14.049" E	45.53
963	GO_Z14_RIB_9	24° 45' 43.726" N	87° 5' 14.048" E	45.58
964	GO_Z14_RIB_9	24° 45' 43.401" N	87° 5' 14.048" E	45.59
965	GO_Z14_RIB_9	24° 45' 43.076" N	87° 5' 14.048" E	45.61
966	GO_Z14_RIB_9	24° 45' 42.751" N	87° 5' 14.048" E	45.59
967	GO_Z14_RIB_9	24° 45' 42.425" N	87° 5' 14.047" E	45.56
968	GO_Z14_RIB_9	24° 45' 42.100" N	87° 5' 14.047" E	45.66
969	GO_Z14_RIB_9	24° 45' 41.775" N	87° 5' 14.047" E	45.54
970	GO_Z14_RIB_9	24° 45' 41.450" N	87° 5' 14.047" E	45.57
971	GO_Z14_RIB_9	24° 45' 41.125" N	87° 5' 14.046" E	44.95
972	GO_Z14_RIB_9	24° 45' 40.800" N	87° 5' 14.046" E	47.00
973	GO_Z14_RIB_9	24° 45' 40.475" N	87° 5' 14.046" E	45.53
974	GO_Z14_RIB_9	24° 45' 40.150" N	87° 5' 14.046" E	45.56
975	GO_Z14_RIB_9	24° 45' 39.824" N	87° 5' 14.046" E	46.38
976	GO_Z14_RIB_9	24° 45' 39.499" N	87° 5' 14.045" E	46.48
977	GO_Z14_RIB_9	24° 45' 46.652" N	87° 5' 14.406" E	43.94
978	GO_Z14_RIB_9	24° 45' 46.327" N	87° 5' 14.406" E	44.01
979	GO_Z14_RIB_9	24° 45' 46.002" N	87° 5' 14.406" E	43.95
980	GO_Z14_RIB_9	24° 45' 45.677" N	87° 5' 14.406" E	45.94
981	GO_Z14_RIB_9	24° 45' 45.351" N	87° 5' 14.406" E	44.38
982	GO_Z14_RIB_9	24° 45' 45.026" N	87° 5' 14.405" E	44.29
983	GO_Z14_RIB_9	24° 45' 44.701" N	87° 5' 14.405" E	45.58
984	GO_Z14_RIB_9	24° 45' 44.376" N	87° 5' 14.405" E	46.27
985	GO_Z14_RIB_9	24° 45' 44.051" N	87° 5' 14.405" E	45.37
986	GO_Z14_RIB_9	24° 45' 43.726" N	87° 5' 14.404" E	45.47
987	GO_Z14_RIB_9	24° 45' 43.401" N	87° 5' 14.404" E	45.44
988	GO_Z14_RIB_9	24° 45' 43.076" N	87° 5' 14.404" E	45.51
989	GO_Z14_RIB_9	24° 45' 42.750" N	87° 5' 14.404" E	45.54
990	GO_Z14_RIB_9	24° 45' 42.425" N	87° 5' 14.403" E	45.55
991	GO_Z14_RIB_9	24° 45' 42.100" N	87° 5' 14.403" E	45.66
992	GO_Z14_RIB_9	24° 45' 41.775" N	87° 5' 14.403" E	45.63
993	GO_Z14_RIB_9	24° 45' 41.450" N	87° 5' 14.403" E	45.57
994	GO_Z14_RIB_9	24° 45' 41.125" N	87° 5' 14.403" E	45.52
995	GO_Z14_RIB_9	24° 45' 40.800" N	87° 5' 14.402" E	45.76
996	GO_Z14_RIB_9	24° 45' 40.474" N	87° 5' 14.402" E	45.68
997	GO_Z14_RIB_9	24° 45' 40.149" N	87° 5' 14.402" E	46.07
998	GO_Z14_RIB_9	24° 45' 39.824" N	87° 5' 14.402" E	45.94
999	GO_Z14_RIB_9	24° 45' 46.327" N	87° 5' 14.762" E	45.04
1000	GO_Z14_RIB_9	24° 45' 46.001" N	87° 5' 14.762" E	44.00
1001	GO_Z14_RIB_9	24° 45' 45.676" N	87° 5' 14.762" E	44.11
1002	GO_Z14_RIB_9	24° 45' 45.351" N	87° 5' 14.762" E	44.10
1003	GO_Z14_RIB_9	24° 45' 45.026" N	87° 5' 14.761" E	44.33
1004	GO_Z14_RIB_9	24° 45' 44.701" N	87° 5' 14.761" E	44.23
1005	GO_Z14_RIB_9	24° 45' 44.376" N	87° 5' 14.761" E	45.01
1006	GO_Z14_RIB_9	24° 45' 44.051" N	87° 5' 14.761" E	45.24
1007	GO_Z14_RIB_9	24° 45' 43.726" N	87° 5' 14.760" E	45.39
1008	GO_Z14_RIB_9	24° 45' 43.400" N	87° 5' 14.760" E	45.45
1009	GO_Z14_RIB_9	24° 45' 43.075" N	87° 5' 14.760" E	45.53
1010	GO_Z14_RIB_9	24° 45' 42.750" N	87° 5' 14.760" E	45.56
1011	GO_Z14_RIB_9	24° 45' 42.425" N	87° 5' 14.760" E	45.55
1012	GO_Z14_RIB_9	24° 45' 42.100" N	87° 5' 14.759" E	45.51
1013	GO_Z14_RIB_9	24° 45' 41.775" N	87° 5' 14.759" E	45.81
1014	GO_Z14_RIB_9	24° 45' 41.450" N	87° 5' 14.759" E	45.49
1015	GO_Z14_RIB_9	24° 45' 41.125" N	87° 5' 14.759" E	45.49
1016	GO_Z14_RIB_9	24° 45' 40.799" N	87° 5' 14.758" E	45.64
1017	GO_Z14_RIB_9	24° 45' 40.474" N	87° 5' 14.758" E	45.71
1018	GO_Z14_RIB_9	24° 45' 40.149" N	87° 5' 14.758" E	45.87
1019	GO_Z14_RIB_9	24° 45' 39.824" N	87° 5' 14.758" E	45.75
1020	GO_Z14_RIB_9	24° 45' 45.676" N	87° 5' 15.118" E	44.21
1021	GO_Z14_RIB_9	24° 45' 45.351" N	87° 5' 15.118" E	44.16
1022	GO_Z14_RIB_9	24° 45' 45.026" N	87° 5' 15.117" E	44.15
1023	GO_Z14_RIB_9	24° 45' 44.701" N	87° 5' 15.117" E	44.15
1024	GO_Z14_RIB_9	24° 45' 44.376" N	87° 5' 15.117" E	44.19
1025	GO_Z14_RIB_9	24° 45' 44.050" N	87° 5' 15.117" E	44.16
1026	GO_Z14_RIB_9	24° 45' 43.725" N	87° 5' 15.117" E	45.35
1027	GO_Z14_RIB_9	24° 45' 43.400" N	87° 5' 15.116" E	44.91
1028	GO_Z14_RIB_9	24° 45' 43.075" N	87° 5' 15.116" E	45.55
1029	GO_Z14_RIB_9	24° 45' 42.750" N	87° 5' 15.116" E	45.31
1030	GO_Z14_RIB_9	24° 45' 42.425" N	87° 5' 15.116" E	45.37
1031	GO_Z14_RIB_9	24° 45' 42.100" N	87° 5' 15.115" E	45.45
1032	GO_Z14_RIB_9	24° 45' 41.775" N	87° 5' 15.115" E	45.54
1033	GO_Z14_RIB_9	24° 45' 41.449" N	87° 5' 15.115" E	45.51
1034	GO_Z14_RIB_9	24° 45' 41.124" N	87° 5' 15.115" E	45.39
1035	GO_Z14_RIB_9	24° 45' 40.799" N	87° 5' 15.114" E	45.35
1036	GO_Z14_RIB_9	24° 45' 40.474" N	87° 5' 15.114" E	45.46
1037	GO_Z14_RIB_9	24° 45' 40.149" N	87° 5' 15.114" E	45.40
1038	GO_Z14_RIB_9	24° 45' 39.824" N	87° 5' 15.114" E	45.63
1039	GO_Z14_RIB_9	24° 45' 45.351" N	87° 5' 15.474" E	44.90
1040	GO_Z14_RIB_9	24° 45' 45.026" N	87° 5' 15.473" E	45.14
1041	GO_Z14_RIB_9	24° 45' 44.701" N	87° 5' 15.473" E	45.27
1042	GO_Z14_RIB_9	24° 45' 44.375" N	87° 5' 15.473" E	44.57
1043	GO_Z14_RIB_9	24° 45' 44.050" N	87° 5' 15.473" E	44.06
1044	GO_Z14_RIB_9	24° 45' 43.725" N	87° 5' 15.473" E	44.27
1045	GO_Z14_RIB_9	24° 45' 43.400" N	87° 5' 15.472" E	44.19
1046	GO_Z14_RIB_9	24° 45' 43.075" N	87° 5' 15.472" E	44.30
1047	GO_Z14_RIB_9	24° 45' 42.750" N	87° 5' 15.472" E	44.28
1048	GO_Z14_RIB_9	24° 45' 42.425" N	87° 5' 15.472" E	44.96
1049	GO_Z14_RIB_9	24° 45' 42.100" N	87° 5' 15.471" E	44.96
1050	GO_Z14_RIB_9	24° 45' 41.774" N	87° 5' 15.471" E	45.06
1051	GO_Z14_RIB_9	24° 45' 41.449" N	87° 5' 15.471" E	45.28
1052	GO_Z14_RIB_9	24° 45' 41.124" N	87° 5' 15.471" E	45.33
1053	GO_Z14_RIB_9	24° 45' 40.799" N	87° 5' 15.471" E	45.31
1054	GO_Z14_RIB_9	24° 45' 40.474" N	87° 5' 15.470" E	45.29
1055	GO_Z14_RIB_9	24° 45' 40.149" N	87° 5' 15.470" E	45.41
1056	GO_Z14_RIB_9	24° 45' 45.025" N	87° 5' 15.830" E	44.95
1057	GO_Z14_RIB_9	24° 45' 44.700" N	87° 5' 15.829" E	45.06
1058	GO_Z14_RIB_9	24° 45' 44.375" N	87° 5' 15.829" E	45.26
1059	GO_Z14_RIB_9	24° 45' 44.050" N	87° 5' 15.829" E	45.43
1060	GO_Z14_RIB_9	24° 45' 43.725" N	87° 5' 15.829" E	44.39
1061	GO_Z14_RIB_9	24° 45' 43.400" N	87° 5' 15.828" E	44.20
1062	GO_Z14_RIB_9	24° 45' 43.075" N	87° 5' 15.828" E	44.17
1063	GO_Z14_RIB_9	24° 45' 42.750" N	87° 5' 15.828" E	44.64
1064	GO_Z14_RIB_9	24° 45' 42.424" N	87° 5' 15.828" E	44.61
1065	GO_Z14_RIB_9	24° 45' 42.099" N	87° 5' 15.828" E	44.92
1066	GO_Z14_RIB_9	24° 45' 41.774" N	87° 5' 15.827" E	44.83
1067	GO_Z14_RIB_9	24° 45' 41.449" N	87° 5' 15.827" E	44.83
1068	GO_Z14_RIB_9	24° 45' 41.124" N	87° 5' 15.827" E	45.85
1069	GO_Z14_RIB_9	24° 45' 40.799" N	87° 5' 15.827" E	45.30
1070	GO_Z14_RIB_9	24° 45' 40.474" N	87° 5' 15.826" E	45.24
1071	GO_Z14_RIB_9	24° 45' 40.149" N	87° 5' 15.826" E	45.39
1072	GO_Z14_RIB_9	24° 45' 44.375" N	87° 5' 16.185" E	45.06
1073	GO_Z14_RIB_9	24° 45' 44.050" N	87° 5' 16.185" E	45.07
1074	GO_Z14_RIB_9	24° 45' 43.725" N	87° 5' 16.185" E	45.00
1075	GO_Z14_RIB_9	24° 45' 43.400" N	87° 5' 16.185" E	45.96
1076	GO_Z14_RIB_9	24° 45' 43.074" N	87° 5' 16.184" E	44.34
1077	GO_Z14_RIB_9	24° 45' 42.749" N	87° 5' 16.184" E	44.17
1078	GO_Z14_RIB_9	24° 45' 42.424" N	87° 5' 16.184" E	45.26
1079	GO_Z14_RIB_9	24° 45' 42.099" N	87° 5' 16.184" E	45.86
1080	GO_Z14_RIB_9	24° 45' 41.774" N	87° 5' 16.183" E	45.04
1081	GO_Z14_RIB_9	24° 45' 41.449" N	87° 5' 16.183" E	44.97
1082	GO_Z14_RIB_9	24° 45' 41.124" N	87° 5' 16.183" E	45.68
1083	GO_Z14_RIB_9	24° 45' 40.799" N	87° 5' 16.183" E	44.92
1084	GO_Z14_RIB_9	24° 45' 40.473" N	87° 5' 16.182" E	45.10
1085	GO_Z14_RIB_9	24° 45' 40.148" N	87° 5' 16.182" E	45.35
1086	GO_Z14_RIB_9	24° 45' 44.050" N	87° 5' 16.541" E	45.11
1087	GO_Z14_RIB_9	24° 45' 43.725" N	87° 5' 16.541" E	44.99
1088	GO_Z14_RIB_9	24° 45' 43.399" N	87° 5' 16.541" E	45.06
1089	GO_Z14_RIB_9	24° 45' 43.074" N	87° 5' 16.540" E	44.75
1090	GO_Z14_RIB_9	24° 45' 42.749" N	87° 5' 16.540" E	45.55
1091	GO_Z14_RIB_9	24° 45' 42.424" N	87° 5' 16.540" E	44.25
1092	GO_Z14_RIB_9	24° 45' 42.099" N	87° 5' 16.540" E	44.13
1093	GO_Z14_RIB_9	24° 45' 41.774" N	87° 5' 16.539" E	46.75
1094	GO_Z14_RIB_9	24° 45' 41.449" N	87° 5' 16.539" E	46.66
1095	GO_Z14_RIB_9	24° 45' 41.123" N	87° 5' 16.539" E	46.35
1096	GO_Z14_RIB_9	24° 45' 40.798" N	87° 5' 16.539" E	45.61
1097	GO_Z14_RIB_9	24° 45' 40.473" N	87° 5' 16.539" E	45.18
1098	GO_Z14_RIB_9	24° 45' 43.399" N	87° 5' 16.897" E	45.17
1099	GO_Z14_RIB_9	24° 45' 43.074" N	87° 5' 16.896" E	45.23
1100	GO_Z14_RIB_9	24° 45' 42.749" N	87° 5' 16.896" E	44.86
1101	GO_Z14_RIB_9	24° 45' 42.424" N	87° 5' 16.896" E	45.64
1102	GO_Z14_RIB_9	24° 45' 42.099" N	87° 5' 16.896" E	44.58
1103	GO_Z14_RIB_9	24° 45' 41.774" N	87° 5' 16.895" E	44.37
1104	GO_Z14_RIB_9	24° 45' 41.448" N	87° 5' 16.895" E	46.65
1105	GO_Z14_RIB_9	24° 45' 41.123" N	87° 5' 16.895" E	46.46
1106	GO_Z14_RIB_9	24° 45' 40.798" N	87° 5' 16.895" E	45.55
1107	GO_Z14_RIB_9	24° 45' 40.473" N	87° 5' 16.895" E	46.48
1108	GO_Z14_RIB_9	24° 45' 42.749" N	87° 5' 17.252" E	44.59
1109	GO_Z14_RIB_9	24° 45' 42.424" N	87° 5' 17.252" E	46.51
1110	GO_Z14_RIB_9	24° 45' 42.098" N	87° 5' 17.252" E	45.68
1111	GO_Z14_RIB_9	24° 45' 41.773" N	87° 5' 17.252" E	44.26
1112	GO_Z14_RIB_9	24° 45' 41.448" N	87° 5' 17.251" E	44.44
1113	GO_Z14_RIB_9	24° 45' 41.123" N	87° 5' 17.251" E	46.64
1114	GO_Z14_RIB_9	24° 45' 40.798" N	87° 5' 17.251" E	46.01
1115	GO_Z14_RIB_9	24° 45' 40.473" N	87° 5' 17.251" E	46.16
1116	GO_Z14_RIB_9	24° 45' 42.098" N	87° 5' 17.608" E	44.79
1117	GO_Z14_RIB_9	24° 45' 41.773" N	87° 5' 17.608" E	44.96
1118	GO_Z14_RIB_9	24° 45' 41.448" N	87° 5' 17.607" E	44.18
1119	GO_Z14_RIB_9	24° 45' 41.123" N	87° 5' 17.607" E	44.35
1120	GO_Z14_RIB_9	24° 45' 40.798" N	87° 5' 17.607" E	46.63
1121	GO_Z14_RIB_9	24° 45' 41.123" N	87° 5' 17.963" E	47.44
1122	GO_Z14_RIB_9	24° 45' 40.798" N	87° 5' 17.963" E	46.25
1123	GO_Z12_SAK_7	24° 44' 7.124" N	87° 6' 14.144" E	52.74
1124	GO_Z12_SAK_7	24° 44' 7.124" N	87° 6' 14.500" E	52.88
1125	GO_Z12_SAK_7	24° 44' 6.799" N	87° 6' 14.500" E	53.17
1126	GO_Z12_SAK_7	24° 44' 6.474" N	87° 6' 14.500" E	55.11
1127	GO_Z12_SAK_7	24° 44' 7.449" N	87° 6' 14.856" E	52.99
1128	GO_Z12_SAK_7	24° 44' 7.124" N	87° 6' 14.856" E	52.79
1129	GO_Z12_SAK_7	24° 44' 6.798" N	87° 6' 14.856" E	53.66
1130	GO_Z12_SAK_7	24° 44' 6.473" N	87° 6' 14.856" E	53.45
1131	GO_Z12_SAK_7	24° 44' 6.148" N	87° 6' 14.855" E	53.32
1132	GO_Z12_SAK_7	24° 44' 5.823" N	87° 6' 14.855" E	53.94
1133	GO_Z12_SAK_7	24° 44' 7.448" N	87° 6' 15.212" E	52.76
1134	GO_Z12_SAK_7	24° 44' 7.123" N	87° 6' 15.212" E	52.78
1135	GO_Z12_SAK_7	24° 44' 6.798" N	87° 6' 15.212" E	52.88
1136	GO_Z12_SAK_7	24° 44' 6.473" N	87° 6' 15.212" E	52.87
1137	GO_Z12_SAK_7	24° 44' 6.148" N	87° 6' 15.211" E	53.25
1138	GO_Z12_SAK_7	24° 44' 5.823" N	87° 6' 15.211" E	53.74
1139	GO_Z12_SAK_7	24° 44' 5.498" N	87° 6' 15.211" E	53.23
1140	GO_Z12_SAK_7	24° 44' 5.173" N	87° 6' 15.210" E	54.03
1141	GO_Z12_SAK_7	24° 44' 7.773" N	87° 6' 15.569" E	53.89
1142	GO_Z12_SAK_7	24° 44' 7.448" N	87° 6' 15.568" E	53.92
1143	GO_Z12_SAK_7	24° 44' 7.123" N	87° 6' 15.568" E	53.54
1144	GO_Z12_SAK_7	24° 44' 6.798" N	87° 6' 15.568" E	52.94
1145	GO_Z12_SAK_7	24° 44' 6.473" N	87° 6' 15.568" E	53.14
1146	GO_Z12_SAK_7	24° 44' 6.148" N	87° 6' 15.567" E	53.33
1147	GO_Z12_SAK_7	24° 44' 5.823" N	87° 6' 15.567" E	53.55
1148	GO_Z12_SAK_7	24° 44' 5.497" N	87° 6' 15.567" E	54.23
1149	GO_Z12_SAK_7	24° 44' 5.172" N	87° 6' 15.566" E	53.50
1150	GO_Z12_SAK_7	24° 44' 4.847" N	87° 6' 15.566" E	53.97
1151	GO_Z12_SAK_7	24° 44' 4.522" N	87° 6' 15.566" E	54.20
1152	GO_Z12_SAK_7	24° 44' 7.448" N	87° 6' 15.924" E	53.51
1153	GO_Z12_SAK_7	24° 44' 7.123" N	87° 6' 15.924" E	53.74
1154	GO_Z12_SAK_7	24° 44' 6.798" N	87° 6' 15.924" E	53.37
1155	GO_Z12_SAK_7	24° 44' 6.473" N	87° 6' 15.924" E	53.43
1156	GO_Z12_SAK_7	24° 44' 6.147" N	87° 6' 15.923" E	53.16
1157	GO_Z12_SAK_7	24° 44' 5.822" N	87° 6' 15.923" E	53.22
1158	GO_Z12_SAK_7	24° 44' 5.497" N	87° 6' 15.923" E	53.63
1159	GO_Z12_SAK_7	24° 44' 5.172" N	87° 6' 15.922" E	53.85
1160	GO_Z12_SAK_7	24° 44' 4.847" N	87° 6' 15.922" E	54.55
1161	GO_Z12_SAK_7	24° 44' 4.522" N	87° 6' 15.922" E	54.15
1162	GO_Z12_SAK_7	24° 44' 4.197" N	87° 6' 15.922" E	53.87
1163	GO_Z12_SAK_7	24° 44' 6.797" N	87° 6' 16.280" E	53.78
1164	GO_Z12_SAK_7	24° 44' 6.472" N	87° 6' 16.280" E	53.76
1165	GO_Z12_SAK_7	24° 44' 6.147" N	87° 6' 16.279" E	53.10
1166	GO_Z12_SAK_7	24° 44' 5.822" N	87° 6' 16.279" E	53.29
1167	GO_Z12_SAK_7	24° 44' 5.497" N	87° 6' 16.279" E	53.52
1168	GO_Z12_SAK_7	24° 44' 5.172" N	87° 6' 16.278" E	53.09
1169	GO_Z12_SAK_7	24° 44' 4.847" N	87° 6' 16.278" E	53.48
1170	GO_Z12_SAK_7	24° 44' 4.522" N	87° 6' 16.278" E	53.78
1171	GO_Z12_SAK_7	24° 44' 4.196" N	87° 6' 16.278" E	54.24
1172	GO_Z12_SAK_7	24° 44' 3.871" N	87° 6' 16.277" E	53.83
1173	GO_Z12_SAK_7	24° 44' 3.546" N	87° 6' 16.277" E	53.15
1174	GO_Z12_SAK_7	24° 44' 5.822" N	87° 6' 16.635" E	54.24
1175	GO_Z12_SAK_7	24° 44' 5.497" N	87° 6' 16.635" E	53.18
1176	GO_Z12_SAK_7	24° 44' 5.172" N	87° 6' 16.634" E	53.30
1177	GO_Z12_SAK_7	24° 44' 4.846" N	87° 6' 16.634" E	53.26
1178	GO_Z12_SAK_7	24° 44' 4.521" N	87° 6' 16.634" E	53.05
1179	GO_Z12_SAK_7	24° 44' 4.196" N	87° 6' 16.634" E	54.95
1180	GO_Z12_SAK_7	24° 44' 3.871" N	87° 6' 16.633" E	53.73
1181	GO_Z12_SAK_7	24° 44' 3.546" N	87° 6' 16.633" E	53.16
1182	GO_Z12_SAK_7	24° 44' 3.221" N	87° 6' 16.633" E	55.65
1183	GO_Z12_SAK_7	24° 44' 2.896" N	87° 6' 16.633" E	53.91
1184	GO_Z12_SAK_7	24° 44' 4.846" N	87° 6' 16.990" E	53.70
1185	GO_Z12_SAK_7	24° 44' 4.521" N	87° 6' 16.990" E	53.31
1186	GO_Z12_SAK_7	24° 44' 4.196" N	87° 6' 16.990" E	53.06
1187	GO_Z12_SAK_7	24° 44' 3.871" N	87° 6' 16.989" E	53.04
1188	GO_Z12_SAK_7	24° 44' 3.546" N	87° 6' 16.989" E	53.14
1189	GO_Z12_SAK_7	24° 44' 3.221" N	87° 6' 16.989" E	53.61
1190	GO_Z12_SAK_7	24° 44' 2.895" N	87° 6' 16.989" E	53.48
1191	GO_Z12_SAK_7	24° 44' 2.570" N	87° 6' 16.988" E	53.20
1192	GO_Z12_SAK_7	24° 44' 2.245" N	87° 6' 16.988" E	53.04
1193	GO_Z12_SAK_7	24° 44' 3.871" N	87° 6' 17.345" E	53.28
1194	GO_Z12_SAK_7	24° 44' 3.545" N	87° 6' 17.345" E	53.14
1195	GO_Z12_SAK_7	24° 44' 3.220" N	87° 6' 17.345" E	53.21
1196	GO_Z12_SAK_7	24° 44' 2.895" N	87° 6' 17.345" E	53.16
1197	GO_Z12_SAK_7	24° 44' 2.570" N	87° 6' 17.344" E	53.67

District Mining Officer
Godda

TABLE REPRESENTING ELEVATION (in m) WITH RESPECT TO 10m X 10m GRID WITHIN POTENTIAL SAND GHATS IN GODDA DISTRICT OF JHARKHAND

ANNEXURE - B17

1798	GO_Z13_SAK_8	24° 43' 0.112" N	87° 7' 1.785" E	58.64
1799	GO_Z13_SAK_8	24° 42' 59.787" N	87° 7' 1.784" E	59.30
1800	GO_Z13_SAK_8	24° 43' 0.437" N	87° 7' 2.141" E	59.66
1801	GO_Z13_SAK_8	24° 43' 0.112" N	87° 7' 2.141" E	60.01
1802	GO_Z13_SAK_8	24° 42' 59.787" N	87° 7' 2.140" E	59.65
1803	GO_Z13_SAK_8	24° 42' 59.461" N	87° 7' 2.140" E	59.82
1804	GO_Z13_SAK_8	24° 43' 0.111" N	87° 7' 2.497" E	60.11
1805	GO_Z13_SAK_8	24° 42' 59.786" N	87° 7' 2.496" E	59.66
1806	GO_Z13_SAK_8	24° 42' 59.461" N	87° 7' 2.496" E	59.18
1807	GO_Z13_SAK_8	24° 43' 0.111" N	87° 7' 2.853" E	59.67
1808	GO_Z13_SAK_8	24° 42' 59.786" N	87° 7' 2.852" E	60.13
1809	GO_Z13_SAK_8	24° 42' 59.461" N	87° 7' 2.852" E	59.75
1810	GO_Z13_SAK_8	24° 42' 59.786" N	87° 7' 3.208" E	60.03
1811	GO_Z13_SAK_8	24° 42' 59.461" N	87° 7' 3.208" E	60.06
1812	GO_Z13_SAK_8	24° 42' 59.135" N	87° 7' 3.208" E	59.10
1813	GO_Z13_SAK_8	24° 42' 59.785" N	87° 7' 3.564" E	60.35
1814	GO_Z13_SAK_8	24° 42' 59.460" N	87° 7' 3.564" E	60.41
1815	GO_Z13_SAK_8	24° 42' 59.135" N	87° 7' 3.563" E	59.25
1816	GO_Z13_SAK_8	24° 42' 59.460" N	87° 7' 3.920" E	59.80
1817	GO_Z13_SAK_8	24° 42' 59.135" N	87° 7' 3.919" E	59.24
1818	GO_Z13_SAK_8	24° 42' 58.810" N	87° 7' 3.919" E	60.05
1819	GO_Z13_SAK_8	24° 42' 59.460" N	87° 7' 4.276" E	59.54
1820	GO_Z13_SAK_8	24° 42' 59.135" N	87° 7' 4.275" E	59.02
1821	GO_Z13_SAK_8	24° 42' 58.810" N	87° 7' 4.275" E	59.57
1822	GO_Z13_SAK_8	24° 42' 59.459" N	87° 7' 4.632" E	58.92
1823	GO_Z13_SAK_8	24° 42' 59.134" N	87° 7' 4.631" E	59.59
1824	GO_Z13_SAK_8	24° 42' 58.809" N	87° 7' 4.631" E	59.79
1825	GO_Z13_SAK_8	24° 42' 58.484" N	87° 7' 4.631" E	60.05
1826	GO_Z13_SAK_8	24° 42' 59.134" N	87° 7' 4.987" E	59.11
1827	GO_Z13_SAK_8	24° 42' 58.809" N	87° 7' 4.987" E	59.48
1828	GO_Z13_SAK_8	24° 42' 58.484" N	87° 7' 4.987" E	60.88
1829	GO_Z13_SAK_8	24° 42' 59.134" N	87° 7' 5.343" E	60.21
1830	GO_Z13_SAK_8	24° 42' 58.809" N	87° 7' 5.343" E	59.08
1831	GO_Z13_SAK_8	24° 42' 58.484" N	87° 7' 5.343" E	61.10
1832	GO_Z13_SAK_8	24° 42' 58.158" N	87° 7' 5.342" E	59.26
1833	GO_Z13_SAK_8	24° 42' 58.808" N	87° 7' 5.699" E	59.21
1834	GO_Z13_SAK_8	24° 42' 58.483" N	87° 7' 5.699" E	59.68
1835	GO_Z13_SAK_8	24° 42' 58.158" N	87° 7' 5.698" E	61.09
1836	GO_Z13_SAK_8	24° 42' 58.808" N	87° 7' 6.055" E	59.42
1837	GO_Z13_SAK_8	24° 42' 58.483" N	87° 7' 6.054" E	59.19
1838	GO_Z13_SAK_8	24° 42' 58.158" N	87° 7' 6.054" E	59.84
1839	GO_Z13_SAK_8	24° 42' 57.833" N	87° 7' 6.054" E	60.20
1840	GO_Z13_SAK_8	24° 42' 58.483" N	87° 7' 6.410" E	59.32
1841	GO_Z13_SAK_8	24° 42' 58.158" N	87° 7' 6.410" E	59.30
1842	GO_Z13_SAK_8	24° 42' 57.832" N	87° 7' 6.410" E	59.41
1843	GO_Z13_SAK_8	24° 42' 58.482" N	87° 7' 6.766" E	60.29
1844	GO_Z13_SAK_8	24° 42' 58.157" N	87° 7' 6.766" E	59.98
1845	GO_Z13_SAK_8	24° 42' 57.832" N	87° 7' 6.766" E	59.22
1846	GO_Z13_SAK_8	24° 42' 57.507" N	87° 7' 6.765" E	59.35
1847	GO_Z13_SAK_8	24° 42' 58.157" N	87° 7' 7.122" E	59.57
1848	GO_Z13_SAK_8	24° 42' 57.832" N	87° 7' 7.122" E	60.02
1849	GO_Z13_SAK_8	24° 42' 57.507" N	87° 7' 7.121" E	60.01
1850	GO_Z13_SAK_8	24° 42' 58.157" N	87° 7' 7.478" E	60.10
1851	GO_Z13_SAK_8	24° 42' 57.832" N	87° 7' 7.478" E	59.55
1852	GO_Z13_SAK_8	24° 42' 57.506" N	87° 7' 7.477" E	60.63
1853	GO_Z13_SAK_8	24° 42' 58.156" N	87° 7' 7.834" E	59.84
1854	GO_Z13_SAK_8	24° 42' 57.831" N	87° 7' 7.834" E	59.63
1855	GO_Z13_SAK_8	24° 42' 57.506" N	87° 7' 7.833" E	60.16
1856	GO_Z13_SAK_8	24° 42' 57.181" N	87° 7' 7.833" E	61.02
1857	GO_Z13_SAK_8	24° 42' 57.831" N	87° 7' 8.189" E	59.62
1858	GO_Z13_SAK_8	24° 42' 57.506" N	87° 7' 8.189" E	60.40
1859	GO_Z13_SAK_8	24° 42' 57.181" N	87° 7' 8.189" E	59.77
1860	GO_Z13_SAK_8	24° 42' 57.831" N	87° 7' 8.545" E	59.71
1861	GO_Z13_SAK_8	24° 42' 57.506" N	87° 7' 8.545" E	61.60
1862	GO_Z13_SAK_8	24° 42' 57.180" N	87° 7' 8.545" E	60.08
1863	GO_Z13_SAK_8	24° 42' 56.855" N	87° 7' 8.545" E	60.31
1864	GO_Z13_SAK_8	24° 42' 57.505" N	87° 7' 8.901" E	60.47
1865	GO_Z13_SAK_8	24° 42' 57.180" N	87° 7' 8.901" E	60.41
1866	GO_Z13_SAK_8	24° 42' 56.855" N	87° 7' 8.900" E	60.42
1867	GO_Z13_SAK_8	24° 42' 57.505" N	87° 7' 9.257" E	59.82
1868	GO_Z13_SAK_8	24° 42' 57.180" N	87° 7' 9.257" E	60.29
1869	GO_Z13_SAK_8	24° 42' 56.855" N	87° 7' 9.256" E	59.49
1870	GO_Z13_SAK_8	24° 42' 57.180" N	87° 7' 9.613" E	60.34
1871	GO_Z13_SAK_8	24° 42' 56.855" N	87° 7' 9.612" E	61.16
1872	GO_Z13_SAK_8	24° 42' 56.529" N	87° 7' 9.612" E	59.63
1873	GO_Z13_SAK_8	24° 42' 57.179" N	87° 7' 9.969" E	60.27
1874	GO_Z13_SAK_8	24° 42' 56.854" N	87° 7' 9.968" E	60.05
1875	GO_Z13_SAK_8	24° 42' 56.529" N	87° 7' 9.968" E	59.64
1876	GO_Z13_SAK_8	24° 42' 57.179" N	87° 7' 10.325" E	60.53
1877	GO_Z13_SAK_8	24° 42' 56.854" N	87° 7' 10.324" E	60.69
1878	GO_Z13_SAK_8	24° 42' 56.529" N	87° 7' 10.324" E	59.71
1879	GO_Z13_SAK_8	24° 42' 56.204" N	87° 7' 10.324" E	60.41
1880	GO_Z13_SAK_8	24° 42' 56.854" N	87° 7' 10.680" E	59.91
1881	GO_Z13_SAK_8	24° 42' 56.529" N	87° 7' 10.680" E	60.65
1882	GO_Z13_SAK_8	24° 42' 56.203" N	87° 7' 10.680" E	60.46
1883	GO_Z13_SAK_8	24° 42' 56.853" N	87° 7' 11.036" E	59.99
1884	GO_Z13_SAK_8	24° 42' 56.528" N	87° 7' 11.036" E	59.68
1885	GO_Z13_SAK_8	24° 42' 56.203" N	87° 7' 11.035" E	60.51
1886	GO_Z13_SAK_8	24° 42' 56.853" N	87° 7' 11.392" E	59.53
1887	GO_Z13_SAK_8	24° 42' 56.528" N	87° 7' 11.392" E	59.67
1888	GO_Z13_SAK_8	24° 42' 56.203" N	87° 7' 11.391" E	59.33
1889	GO_Z13_SAK_8	24° 42' 56.853" N	87° 7' 11.748" E	59.56
1890	GO_Z13_SAK_8	24° 42' 56.528" N	87° 7' 11.748" E	59.48
1891	GO_Z13_SAK_8	24° 42' 56.203" N	87° 7' 11.747" E	60.59
1892	GO_Z13_SAK_8	24° 42' 56.853" N	87° 7' 12.104" E	59.66
1893	GO_Z13_SAK_8	24° 42' 56.527" N	87° 7' 12.104" E	59.51
1894	GO_Z13_SAK_8	24° 42' 56.202" N	87° 7' 12.103" E	62.04
1895	GO_Z13_SAK_8	24° 42' 56.527" N	87° 7' 12.460" E	59.74
1896	GO_Z13_SAK_8	24° 42' 56.202" N	87° 7' 12.459" E	61.09
1897	GO_Z13_SAK_8	24° 42' 56.527" N	87° 7' 12.815" E	59.83
1898	GO_Z13_SAK_8	24° 42' 56.202" N	87° 7' 12.815" E	60.87
1899	GO_Z13_SAK_8	24° 42' 55.877" N	87° 7' 12.815" E	60.46
1900	GO_Z13_SAK_8	24° 42' 56.527" N	87° 7' 13.171" E	59.75
1901	GO_Z13_SAK_8	24° 42' 56.201" N	87° 7' 13.171" E	60.38
1902	GO_Z13_SAK_8	24° 42' 55.876" N	87° 7' 13.171" E	61.67
1903	GO_Z13_SAK_8	24° 42' 56.526" N	87° 7' 13.527" E	59.83
1904	GO_Z13_SAK_8	24° 42' 56.201" N	87° 7' 13.527" E	59.87
1905	GO_Z13_SAK_8	24° 42' 55.876" N	87° 7' 13.527" E	60.68
1906	GO_Z13_SAK_8	24° 42' 56.201" N	87° 7' 13.883" E	59.90
1907	GO_Z13_SAK_8	24° 42' 55.876" N	87° 7' 13.883" E	60.21
1908	GO_Z13_SAK_8	24° 42' 56.201" N	87° 7' 14.239" E	60.04
1909	GO_Z13_SAK_8	24° 42' 55.875" N	87° 7' 14.239" E	59.98
1910	GO_Z13_SAK_8	24° 42' 56.200" N	87° 7' 14.595" E	60.12
1911	GO_Z13_SAK_8	24° 42' 55.875" N	87° 7' 14.595" E	60.22
1912	GO_Z13_SAK_8	24° 42' 56.200" N	87° 7' 14.951" E	59.67
1913	GO_Z13_SAK_8	24° 42' 55.875" N	87° 7' 14.950" E	60.39
1914	GO_Z13_SAK_8	24° 42' 55.550" N	87° 7' 14.950" E	60.34
1915	GO_Z13_SAK_8	24° 42' 56.200" N	87° 7' 15.307" E	59.75
1916	GO_Z13_SAK_8	24° 42' 55.875" N	87° 7' 15.306" E	59.91
1917	GO_Z13_SAK_8	24° 42' 55.549" N	87° 7' 15.306" E	60.49
1918	GO_Z13_SAK_8	24° 42' 55.874" N	87° 7' 15.662" E	59.98
1919	GO_Z13_SAK_8	24° 42' 55.549" N	87° 7' 15.662" E	60.36
1920	GO_Z13_SAK_8	24° 42' 55.874" N	87° 7' 16.018" E	59.76
1921	GO_Z13_SAK_8	24° 42' 55.549" N	87° 7' 16.018" E	59.90
1922	GO_Z13_SAK_8	24° 42' 55.874" N	87° 7' 16.374" E	60.26
1923	GO_Z13_SAK_8	24° 42' 55.549" N	87° 7' 16.374" E	59.87
1924	GO_Z13_SAK_8	24° 42' 55.223" N	87° 7' 16.374" E	60.17
1925	GO_Z13_SAK_8	24° 42' 55.873" N	87° 7' 16.730" E	60.51
1926	GO_Z13_SAK_8	24° 42' 55.548" N	87° 7' 16.730" E	60.04
1927	GO_Z13_SAK_8	24° 42' 55.223" N	87° 7' 16.730" E	60.23
1928	GO_Z13_SAK_8	24° 42' 55.873" N	87° 7' 17.086" E	60.75
1929	GO_Z13_SAK_8	24° 42' 55.548" N	87° 7' 17.086" E	59.88
1930	GO_Z13_SAK_8	24° 42' 55.223" N	87° 7' 17.085" E	60.24
1931	GO_Z13_SAK_8	24° 42' 55.548" N	87° 7' 17.442" E	60.60
1932	GO_Z13_SAK_8	24° 42' 55.223" N	87° 7' 17.441" E	60.24
1933	GO_Z13_SAK_8	24° 42' 55.547" N	87° 7' 17.798" E	60.82
1934	GO_Z13_SAK_8	24° 42' 55.222" N	87° 7' 17.797" E	60.14
1935	GO_Z13_SAK_8	24° 42' 55.547" N	87° 7' 18.154" E	60.81
1936	GO_Z13_SAK_8	24° 42' 55.222" N	87° 7' 18.153" E	60.00
1937	GO_Z13_SAK_8	24° 42' 54.897" N	87° 7' 18.153" E	60.18
1938	GO_Z13_SAK_8	24° 42' 55.547" N	87° 7' 18.510" E	60.89
1939	GO_Z13_SAK_8	24° 42' 55.222" N	87° 7' 18.509" E	60.95
1940	GO_Z13_SAK_8	24° 42' 54.897" N	87° 7' 18.509" E	59.92
1941	GO_Z18_CHI_13	24° 43' 57.640" N	87° 7' 26.402" E	55.57
1942	GO_Z18_CHI_13	24° 43' 57.315" N	87° 7' 26.401" E	55.48
1943	GO_Z18_CHI_13	24° 43' 57.640" N	87° 7' 26.758" E	55.62
1944	GO_Z18_CHI_13	24° 43' 57.315" N	87° 7' 26.757" E	55.65
1945	GO_Z18_CHI_13	24° 43' 57.640" N	87° 7' 27.114" E	55.69
1946	GO_Z18_CHI_13	24° 43' 57.315" N	87° 7' 27.113" E	55.56
1947	GO_Z18_CHI_13	24° 43' 57.639" N	87° 7' 27.470" E	55.53
1948	GO_Z18_CHI_13	24° 43' 57.314" N	87° 7' 27.469" E	55.59
1949	GO_Z18_CHI_13	24° 43' 57.639" N	87° 7' 27.826" E	55.47
1950	GO_Z18_CHI_13	24° 43' 57.314" N	87° 7' 27.825" E	55.72
1951	GO_Z18_CHI_13	24° 43' 57.639" N	87° 7' 28.182" E	55.57
1952	GO_Z18_CHI_13	24° 43' 57.314" N	87° 7' 28.181" E	55.85
1953	GO_Z18_CHI_13	24° 43' 57.639" N	87° 7' 28.538" E	55.62
1954	GO_Z18_CHI_13	24° 43' 57.313" N	87° 7' 28.537" E	55.64
1955	GO_Z18_CHI_13	24° 43' 56.988" N	87° 7' 28.537" E	55.58
1956	GO_Z18_CHI_13	24° 43' 57.638" N	87° 7' 28.894" E	55.65
1957	GO_Z18_CHI_13	24° 43' 57.313" N	87° 7' 28.893" E	55.67
1958	GO_Z18_CHI_13	24° 43' 56.988" N	87° 7' 28.893" E	55.62
1959	GO_Z18_CHI_13	24° 43' 57.313" N	87° 7' 29.249" E	55.60
1960	GO_Z18_CHI_13	24° 43' 56.988" N	87° 7' 29.249" E	55.68
1961	GO_Z18_CHI_13	24° 43' 57.313" N	87° 7' 29.605" E	55.75
1962	GO_Z18_CHI_13	24° 43' 56.987" N	87° 7' 29.605" E	55.76
1963	GO_Z18_CHI_13	24° 43' 57.312" N	87° 7' 29.961" E	55.84
1964	GO_Z18_CHI_13	24° 43' 56.987" N	87° 7' 29.961" E	55.70
1965	GO_Z18_CHI_13	24° 43' 57.312" N	87° 7' 30.317" E	55.67
1966	GO_Z18_CHI_13	24° 43' 56.987" N	87° 7' 30.317" E	55.79
1967	GO_Z18_CHI_13	24° 43' 57.312" N	87° 7' 30.673" E	55.65
1968	GO_Z18_CHI_13	24° 43' 56.987" N	87° 7' 30.673" E	55.66
1969	GO_Z18_CHI_13	24° 43' 57.311" N	87° 7' 31.029" E	55.61
1970	GO_Z18_CHI_13	24° 43' 56.986" N	87° 7' 31.029" E	55.68
1971	GO_Z18_CHI_13	24° 43' 57.311" N	87° 7' 31.385" E	55.81
1972	GO_Z18_CHI_13	24° 43' 56.986" N	87° 7' 31.385" E	55.69
1973	GO_Z18_CHI_13	24° 43' 57.311" N	87° 7' 31.741" E	55.82
1974	GO_Z18_CHI_13	24° 43' 56.986" N	87° 7' 31.741" E	55.72
1975	GO_Z18_CHI_13	24° 43' 56.661" N	87° 7' 31.741" E	55.71
1976	GO_Z18_CHI_13	24° 43' 57.310" N	87° 7' 32.097" E	55.70
1977	GO_Z18_CHI_13	24° 43' 56.985" N	87° 7' 32.097" E	55.72
1978	GO_Z18_CHI_13	24° 43' 56.660" N	87° 7' 32.097" E	55.78
1979	GO_Z18_CHI_13	24° 43' 56.985" N	87° 7' 32.453" E	55.63
1980	GO_Z18_CHI_13	24° 43' 56.660" N	87° 7' 32.453" E	55.66
1981	GO_Z18_CHI_13	24° 43' 56.985" N	87° 7' 32.809" E	55.67
1982	GO_Z18_CHI_13	24° 43' 56.660" N	87° 7' 32.809" E	55.65
1983	GO_Z18_CHI_13	24° 43' 56.334" N	87° 7' 32.808" E	55.74
1984	GO_Z18_CHI_13	24° 43' 56.984" N	87° 7' 33.165" E	55.69
1985	GO_Z18_CHI_13	24° 43' 56.659" N	87° 7' 33.165" E	55.72
1986	GO_Z18_CHI_13	24° 43' 56.334" N	87° 7' 33.164" E	55.73
1987	GO_Z18_CHI_13	24° 43' 56.984" N	87° 7' 33.521" E	55.74
1988	GO_Z18_CHI_13	24° 43' 56.659" N	87° 7' 33.520" E	55.71
1989	GO_Z18_CHI_13	24° 43' 56.334" N	87° 7' 33.520" E	55.80
1990	GO_Z18_CHI_13	24° 43' 56.659" N	87° 7' 33.876" E	55.66
1991	GO_Z18_CHI_13	24° 43' 56.334" N	87° 7' 33.876" E	55.77
1992	GO_Z18_CHI_13	24° 43' 56.008" N	87° 7' 33.876" E	56.03
1993	GO_Z18_CHI_13	24° 43' 56.658" N	87° 7' 34.232" E	55.72
1994	GO_Z18_CHI_13	24° 43' 56.333" N	87° 7' 34.232" E	55.79
1995	GO_Z18_CHI_13	24° 43' 56.008" N	87° 7' 34.232" E	55.83
1996	GO_Z18_CHI_13	24° 43' 56.658" N	87° 7' 34.588" E	55.71
1997	GO_Z18_CHI_13	24° 43' 56.333" N	87° 7' 34.588" E	55.85
1998	GO_Z18_CHI_13	24° 43' 56.008" N	87° 7' 34.588" E	55.93
1999	GO_Z18_CHI_13	24° 43' 56.333" N	87° 7' 34.944" E	55.83
2000	GO_Z18_CHI_13	24° 43' 56.008" N	87° 7' 34.944" E	56.03
2001	GO_Z18_CHI_13	24° 43' 55.682" N	87° 7' 34.943" E	55.88
2002	GO_Z18_CHI_13	24° 43' 56.332" N	87° 7' 35.300" E	55.85
2003	GO_Z18_CHI_13	24° 43' 56.007" N	87° 7' 35.300" E	55.90
2004	GO_Z18_CHI_13	24° 43' 55.682" N	87° 7' 35.299" E	55.90
2005	GO_Z18_CHI_13	24° 43' 56.332" N	87° 7' 35.656" E	55.93
2006	GO_Z18_CHI_13	24° 43' 56.007" N	87° 7' 35.656" E	55.97
2007	GO_Z18_CHI_13	24° 43' 55.682" N	87° 7' 35.655" E	55.95
2008	GO_Z18_CHI_13	24° 43' 56.007" N	87° 7' 36.012" E	56.22
2009	GO_Z18_CHI_13	24° 43' 55.682" N	87° 7' 36.011" E	55.91
2010	GO_Z18_CHI_13	24° 43' 55.356" N	87° 7' 36.011" E	56.00
2011	GO_Z18_CHI_13	24° 43' 56.006" N	87° 7' 36.368" E	55.98
2012	GO_Z18_CHI_13	24° 43' 55.681" N	87° 7' 36.367" E	56.18
2013	GO_Z18_CHI_13	24° 43' 55.356" N	87° 7' 36.367" E	56.02
2014	GO_Z18_CHI_13	24° 43' 55.681" N	87° 7' 36.723" E	55.98
2015	GO_Z18_CHI_13	24° 43' 55.356" N	87° 7' 36.723" E	55.91
2016	GO_Z18_CHI_13	24° 43' 55.031" N	87° 7' 36.723" E	56.81
2017	GO_Z18_CHI_13	24° 43' 55.681" N	87° 7' 37.079" E	55.92
2018	GO_Z18_CHI_13	24° 43' 55.356" N	87° 7' 37.079" E	55.90
2019	GO_Z18_CHI_13	24° 43' 55.030" N	87° 7' 37.079" E	55.88
2020	GO_Z18_CHI_13	24° 43' 55.680" N	87° 7' 37.435" E	56.18
2021	GO_Z18_CHI_13	24° 43' 55.355" N	87° 7' 37.435" E	55.90
2022	GO_Z18_CHI_13	24° 43' 55.030" N	87° 7' 37.435" E	55.93
2023	GO_Z18_CHI_13	24° 43' 54.705" N	87° 7' 37.434" E	56.48
2024	GO_Z18_CHI_13	24° 43' 55.355" N	87° 7' 37.791" E	56.00
2025	GO_Z18_CHI_13	24° 43' 55.030" N	87° 7' 37.791" E	55.92
2026	GO_Z18_CHI_13	24° 43' 54.705" N	87° 7' 37.790" E	56.05
2027	GO_Z18_CHI_13	24° 43' 55.355" N	87° 7' 38.147" E	56.11
2028	GO_Z18_CHI_13	24° 43' 55.029" N	87° 7' 38.147" E	55.95
2029	GO_Z18_CHI_13	24° 43' 54.704" N	87° 7' 38.146" E	56.12
2030	GO_Z18_CHI_13	24° 43' 54.379" N	87° 7' 38.146" E	56.16
2031	GO_Z18_CHI_13	24° 43' 55.029" N	87° 7' 38.503" E	55.97
2032	GO_Z18_CHI_13	24° 43' 54.704" N	87° 7' 38.502" E	56.05
2033	GO_Z18_CHI_13	24° 43' 54.379" N	87° 7' 38.502" E	56.24
2034	GO_Z18_CHI_13	24° 43' 55.029" N	87° 7' 38.859" E	55.95
2035	GO_Z18_CHI_13	24° 43' 54.704" N	87° 7' 38.858" E	55.99
2036	GO_Z18_CHI_13	24° 43' 54.379" N	87° 7' 38.858" E	56.23
2037	GO_Z18_CHI_13	24° 43' 54.053" N	87° 7' 38.858" E	56.24
2038	GO_Z18_CHI_13	24° 43' 54.703" N	87° 7' 39.214" E	56.02
2039	GO_Z18_CHI_13	24° 43' 54.378" N	87° 7' 39.214" E	56.08
2040	GO_Z18_CHI_13	24° 43' 54.053" N	87° 7' 39.214" E	56.23
2041	GO_Z18_CHI_13	24° 43' 54.378" N	87° 7' 39.570" E	56.14
2042	GO_Z18_CHI_13	24° 43' 54.053" N	87° 7' 39.570" E	56.14
2043	GO_Z18_CHI_13	24° 43' 53.728" N	87° 7' 39.569" E	56.35
2044	GO_Z18_CHI_13	24° 43' 54.378" N	87° 7' 39.926" E	56.10
2045	GO_Z18_CHI_13	24° 43' 54.053" N	87° 7' 39.926" E	56.28
2046	GO_Z18_CHI_13	24° 43' 53.727" N	87° 7' 39.925" E	56.21
2047	GO_Z17_CHI_12	24° 43' 29.008" N	87° 7' 50.579" E	60.04
2048	GO_Z17_CHI_12	24° 43' 28.683" N	87° 7' 50.579" E	60.06
2049	GO_Z17_CHI_12	24° 43' 28.358" N	87° 7' 50.578" E	60.13
2050	GO_Z17_CHI_12	24° 43' 28.033" N	87° 7' 50.578" E	60.18
2051	GO_Z17_CHI_12	24° 43' 27.708" N	87° 7' 50.578" E	60.15
2052	GO_Z17_CHI_12	24° 43' 27.383" N	87° 7' 50.577" E	60.08
2053	GO_Z17_CHI_12	24° 43' 29.658" N	87° 7' 50.936" E	59.69
2054	GO_Z17_CHI_12	24° 43' 29.333" N	87° 7' 50.935" E	59.76
2055	GO_Z17_CHI_12	24° 43' 29.008" N	87° 7' 50.935" E	59.87
2056	GO_Z17_CHI_12	24° 43' 28.683" N	87° 7' 50.935" E	59.92
2057	GO_Z17_CHI_12	24° 43' 28.358" N	87° 7' 50.934" E	60.05
2058	GO_Z17_CHI_12	24° 43' 28.033" N	87° 7' 50.934" E	60.01
2059	GO_Z17_CHI_12	24° 43' 27.707" N	87° 7' 50.934" E	60.07
2060	GO_Z17_CHI_12	24° 43' 27.382" N	87° 7' 50.933" E	60.07
2061	GO_Z17_CHI_12	24° 43' 27.057" N	87° 7' 50.933" E	60.09
2062	GO_Z17_CHI_12	24° 43' 26.732" N	87° 7' 50.933" E	60.06
2063	GO_Z17_CHI_12	24° 43' 26.407" N	87° 7' 50.932" E	60.00
2064	GO_Z17_CHI_12	24° 43' 29.983" N	87° 7' 51.292" E	59.45
2065	GO_Z17_CHI_12	24° 43' 29.658" N	87° 7' 51.292" E	59.58
2066	GO_Z17_CHI_12	24° 43' 29.333" N	87° 7' 51.291" E	59.69
2067	GO_Z17_CHI_12	24° 43' 29.008" N	87° 7' 51.291" E	59.73
2068	GO_Z17_CHI_12	24° 43' 28.683" N	87° 7' 51.291" E	59.75
2069	GO_Z17_CHI_12	24° 43' 28.357" N	87° 7' 51.290" E	59.69
2070	GO_Z17_CHI_12	24° 43' 28.032" N	87° 7' 51.290" E	59.81
2071	GO_Z17_CHI_12	24° 43' 27.707" N	87° 7' 51.290" E	59.71
2072	GO_Z17_CHI_12	24° 43' 27.382" N	87° 7' 51.289" E	59.82
2073	GO_Z17_CHI_12	24° 43' 27.057" N	87° 7' 51.289" E	59.89
2074	GO_Z17_CHI_12	24° 43' 26.732" N	87° 7' 51.289" E	59.93
2075	GO_Z17_CHI_12	24° 43' 26.407" N	87° 7' 51.288" E	60.00
2076	GO_Z17_CHI_12	24° 43' 26.082" N	87° 7' 51.288" E	59.98
2077	GO_Z17_CHI_12	24° 43' 30.308" N	87° 7' 51.648" E	59.45
2078	GO_Z17_CHI_12	24° 43' 29.983" N	87° 7' 51.648" E	59.45
2079	GO_Z17_CHI_12	24° 43' 29.658" N	87° 7' 51.648" E	59.54
2080	GO_Z17_CHI_12	24° 43' 29.333" N	87° 7' 51.647" E	59.59
2081	GO_Z17_CHI_12	24° 43' 29.007" N	87° 7' 51.647" E	59.62
2082	GO_Z17_CHI_12	24° 43' 28.682" N	87° 7' 51.647" E	59.70
2083	GO_Z17_CHI_12	24° 43' 28.357" N	87° 7' 51.646" E	59.87
2084	GO_Z17_CHI_12	24° 43' 28.032" N	87° 7' 51.646" E	59.93
2085	GO_Z17_CHI_12	24° 43' 27.707" N	87° 7' 51.646" E	59.87
2086	GO_Z17_CHI_12	24° 43' 27.382" N	87° 7' 51.645" E	59.92
2087	GO_Z17_CHI_12	24° 43' 27.057" N	87° 7' 51.645" E	59.93
2088	GO_Z17_CHI_12	24° 43' 26.731" N	87° 7' 51.644" E	59.86
2089	GO_Z17_CHI_12	24° 43' 26.406" N	87° 7' 51.644" E	59.92
2090	GO_Z17_CHI_12	24° 43' 26.081" N	87° 7' 51.644" E	59.96
2091	GO_Z17_CHI_12	24° 43' 25.756" N	87° 7' 51.643" E	60.03
2092	GO_Z17_CHI_12	24° 43' 30.633" N	87° 7' 52.005" E	59.27
2093	GO_Z17_CHI_12	24° 43' 30.308" N	87° 7' 52.004" E	59.31
2094	GO_Z17_CHI_12	24° 43' 29.982" N	87° 7' 52.004" E	59.35
2095	GO_Z17_CHI_12	24° 43' 29.657" N	87° 7' 52.004" E	59.43
2096	GO_Z17_CHI_12	24° 43' 29.332" N	87° 7' 52.003" E	59.55
2097	GO_Z17_CHI_12	24° 43' 29.007" N	87° 7' 52.003" E	59.59
2098	GO_Z17_CHI_12	24° 43' 28.682" N	87° 7' 52.002" E	59.60
2099	GO_Z17_CHI_12	24° 43' 28.357" N	87° 7' 52.002" E	59.67
2100	GO_Z17_CHI_12	24° 43' 28.032" N	87° 7' 52.002" E	60.06
2101	GO_Z17_CHI_12	24° 43' 27.707" N	87° 7' 52.001" E	59.83
2102	GO_Z17_CHI_12	24° 43' 27.381" N	87° 7' 52.001" E	59.91
2103	GO_Z17_CHI_12	24° 43' 27.056" N	87° 7' 52.001" E	59.87
2104	GO_Z17_CHI_12	24° 43' 26.731" N	87° 7' 52.000" E	59.86
2105	GO_Z17_CHI_12	24° 43' 26.406" N	87° 7' 52.000" E	59.86
2106	GO_Z17_CHI_12	24° 43' 26.081" N	87° 7' 52.000" E	59.93
2107	GO_Z17_CHI_12	24° 43' 25.756" N	87° 7' 51.999" E	60.00
2108	GO_Z17_CHI_12	24° 43' 25.431" N	87° 7' 51.999" E	60.40
2109	GO_Z17_CHI_12	24° 43' 30.632" N	87° 7' 52.360" E	59.40
2110	GO_Z17_CHI_12	24° 43' 30.307" N	87° 7' 52.360" E	59.35
2111	GO_Z17_CHI_12	24° 43' 29.982" N	87° 7' 52.360" E	59.39
2112	GO_Z17_CHI_12	24° 43' 29.657" N	87° 7' 52.359" E	59.39
2113	GO_Z17_CHI_12	24° 43' 29.332" N	87° 7' 52.359" E	59.40
2114	GO_Z17_CHI_12	24° 43' 29.007" N	87° 7' 52.359" E	59.41
2115	GO_Z17_CHI_12	24° 43' 28.682" N	87° 7' 52.358" E	59.45
2116	GO_Z17_CHI_12	24° 43' 28.357" N	87° 7' 52.358" E	59.42
2117	GO_Z17_CHI_12	24° 43' 28.031" N	87° 7' 52.358" E	59.56
2118	GO_Z17_CHI_12	24° 43' 27.706" N	87° 7' 52.357" E	59.51
2119	GO_Z17_CHI_12	24° 43' 27.381" N	87° 7' 52.357" E	59.84
2120	GO_Z17_CHI_12	24° 43' 27.056" N	87° 7' 52.357" E	59.81
2121	GO_Z17_CHI_12	24° 43' 26.731" N	87° 7' 52.356" E	59.85
2122	GO_Z17_CHI_12	24° 43' 26.406" N	87° 7' 52.356" E	59.88
2123	GO_Z17_CHI_12	24° 43' 26.081" N	87° 7' 52.356" E	59.86
2124	GO_Z17_CHI_12	24° 43' 25.755" N	87° 7' 52.355" E	59.85
2125	GO_Z17_CHI_12	24° 43' 25.430" N	87° 7' 52.355" E	60.25
2126	GO_Z17_CHI_12	24° 43' 30.957" N	87° 7' 52.717" E	59.77
2127	GO_Z17_CHI_12	24° 43' 30.632" N	87° 7' 52.716" E	59.90
2128	GO_Z17_CHI_12	24° 43' 30.307" N	87° 7' 52.716" E	59.98
2129	GO_Z17_CHI_12	24° 43' 29.982" N	87° 7' 52.716" E	59.62
2130	GO_Z17_CHI_12	24° 43' 29.657" N	87° 7' 52.715" E	59.63
2131	GO_Z17_CHI_12	24° 43' 29.332" N	87° 7' 52.715" E	59.32
2132	GO_Z17_CHI_12	24° 43' 29.006" N	87° 7' 52.715" E	59.37
2133	GO_Z17_CHI_12	24° 43' 28.681" N	87° 7' 52.714" E	59.34
2134	GO_Z17_CHI_12	24° 43' 28.356" N	87° 7' 52.714" E	59.42
2135	GO_Z17_CHI_12	24° 43' 28.031" N	87° 7' 52.714" E	59.41
2136	GO_Z17_CHI_12	24° 43' 27.706" N	87° 7' 52.713" E	59.37
2137	GO_Z17_CHI_12	24° 43' 27.381" N	87° 7' 52.713" E	59.38
2138	GO_Z17_CHI_12	24° 43' 27.056" N	87° 7' 52.713" E	59.41
2139	GO_Z17_CHI_12	24° 43' 26.731" N	87° 7' 52.712" E	59.39
2140	GO_Z17_CHI_12	24° 43' 26.405" N	87° 7' 52.712" E	59.46
2141	GO_Z17_CHI_12	24° 43' 26.080" N	87° 7' 52.712" E	59.48
2142	GO_Z17_CHI_12	24° 43' 25.755" N	87° 7' 52.711" E	59.46
2143	GO_Z17_CHI_12	24° 43' 25.430" N	87° 7' 52.711" E	59.89
2144	GO_Z17_CHI_12	24° 43' 25.105" N	87° 7' 52.711" E	60.32
2145	GO_Z17_CHI_12	24° 43' 31.282" N	87° 7' 53.073" E	59.73
2146	GO_Z17_CHI_12	24° 43' 30.957" N	87° 7' 53.073" E	59.77
2147	GO_Z17_CHI_12	24° 43' 30.632" N	87° 7' 53.072" E	59.87
2148	GO_Z17_CHI_12	24° 43' 30.307" N	87° 7' 53.072" E	59.96
2149	GO_Z17_CHI_12	24° 43' 29.982" N	87° 7' 53.072" E	59.94
2150	GO_Z17_CHI_12	24° 43' 29.656" N	87° 7' 53.071" E	60.14
2151	GO_Z17_CHI_12	24° 43' 29.331" N	87° 7' 53.071" E	60.00
2152	GO_Z17_CHI_12	24° 43' 29.006" N	87° 7' 53.071" E	59.79
2153	GO_Z17_CHI_12	24° 43' 28.681" N	87° 7' 53.070" E	59.37
2154	GO_Z17_CHI_12	24° 43' 26.405" N	87° 7' 53.068" E	59.49
2155	GO_Z17_CHI_12	24° 43' 26.080" N	87° 7' 53.068" E	59.49
2156	GO_Z17_CHI_12	24° 43' 25.755" N	87° 7' 53.067" E	59.53
2157	GO_Z17_CHI_12	24° 43' 25.430" N	87° 7' 53.067" E	59.52
2158	GO_Z17_CHI_12	24° 43' 25.105" N	87° 7' 53.067" E	61.05
2159	GO_Z17_CHI_12	24° 43' 24.779" N	87° 7' 53.066" E	60.34
2160	GO_Z17_CHI_12	24° 43' 31.282" N	87° 7' 53.429" E	59.67
2161	GO_Z17_CHI_12	24° 43' 30.957" N	87° 7' 53.429" E	59.73
2162	GO_Z17_CHI_12	24° 43' 30.631" N	87° 7' 53.428" E	59.76
2163	GO_Z17_CHI_12	24° 43' 30.306" N	87° 7' 53.428" E	59.61
2164	GO_Z17_CHI_12	24° 43' 29.981" N	87° 7' 53.428" E	59.79
2165	GO_Z17_CHI_12	24° 43' 29.656" N	87° 7' 53.427" E	59.84
2166	GO_Z17_CHI_12	24° 43' 29.331" N	87° 7' 53.427" E	59.62
2167	GO_Z17_CHI_12	24° 43' 25.755" N	87° 7' 53.423" E	59.53
2168	GO_Z17_CHI_12	24° 43' 25.429" N	87° 7' 53.423" E	59.56
2169	GO_Z17_CHI_12	24° 43' 25.104" N	87° 7' 53.423" E	59.59
2170	GO_Z17_CHI_12	24° 43' 24.779" N	87° 7' 53.422" E	60.50
2171	GO_Z17_CHI_12	24° 43' 24.454" N	87° 7' 53.422" E	60.57
2172	GO_Z17_CHI_12	24° 43' 31.607" N	87° 7' 53.785" E	59.53
2173	GO_Z17_CHI_12	24° 43' 31.281" N	87° 7' 53.785" E	59.83
2174	GO_Z17_CHI_12	24° 43' 30.956" N	87° 7' 53.785" E	59.64
2175	GO_Z17_CHI_12	24° 43' 30.631" N	87° 7' 53.784" E	59.57
2176	GO_Z17_CHI_12	24° 43' 30.306" N	87° 7' 53.784" E	59.81
2177	GO_Z17_CHI_12	24° 43' 29.981" N	87° 7' 53.784" E	59.67
2178	GO_Z17_CHI_12	24° 43' 29.656" N	87° 7' 53.783" E	59.66
2179	GO_Z17_CHI_12	24° 43' 25.429" N	87° 7' 53.779" E	59.68
2180	GO_Z17_CHI_12	24° 43' 25.104" N	87° 7' 53.779" E	59.55
2181	GO_Z17_CHI_12	24° 43' 24.779" N	87° 7' 53.778" E	59.68
2182	GO_Z17_CHI_12	24° 43' 24.454" N	87° 7' 53.778" E	60.49
2183	GO_Z17_CHI_12	24° 43' 24.129" N	87° 7' 53.778" E	60.10
2184	GO_Z17_CHI_12	24° 43' 31.931" N	87° 7' 54.142" E	59.57
2185	GO_Z17_CHI_12	24° 43' 31.606" N	87° 7' 54.141" E	59.52
2186	GO_Z17_CHI_12	24° 43' 31.281" N	87° 7' 54.141" E	59.65
2187	GO_Z17_CHI_12	24° 43' 30.956" N	87° 7' 54.141" E	59.69
2188	GO_Z17_CHI_12	24° 43' 30.631" N	87° 7' 54.140" E	59.81
2189	GO_Z17_CHI_12	24° 43' 30.306" N	87° 7' 54.140" E	59.66
2190	GO_Z17_CHI_12	24° 43' 29.981" N	87° 7' 54.140" E	59.79
2191	GO_Z17_CHI_12	24° 43' 25.104" N	87° 7' 54.135" E	59.71
2192	GO_Z17_CHI_12	24° 43' 24.779" N	87° 7' 54.134" E	59.64
2193	GO_Z17_CHI_12	24° 43' 24.453" N	87° 7' 54.134" E	59.74
2194	GO_Z17_CHI_12	24° 43' 24.128" N	87° 7' 54.133" E	60.03
2195	GO_Z17_CHI_12	24° 43' 32.256" N	87° 7' 54.498" E	59.46
2196	GO_Z17_CHI_12	24° 43' 31.931" N	87° 7' 54.498" E	59.43
2197	GO_Z17_CHI_12	24° 43' 31.606" N	87° 7' 54.497" E	59.70
2198	GO_Z17_CHI_12	24° 43' 31.281" N	87° 7' 54.497" E	59.88
2199	GO_Z17_CHI_12	24° 43' 30.956" N	87° 7' 54.497" E	59.69
2200	GO_Z17_CHI_12	24° 43' 30.631" N	87° 7' 54.496" E	59.70
2201	GO_Z17_CHI_12	24° 43' 30.305" N	87° 7' 54.496" E	59.63
2202	GO_Z17_CHI_12	24° 43' 24.778" N	87° 7' 54.490" E	59.67
2203	GO_Z17_CHI_12	24° 43' 24.453" N	87° 7' 54.490" E	59.66
2204	GO_Z17_CHI_12	24° 43' 24.128" N	87° 7' 54.489" E	59.63
2205	GO_Z17_CHI_12	24° 43' 23.803" N	87° 7' 54.489" E	60.18
2206	GO_Z17_CHI_12	24° 43' 32.256" N	87° 7' 54.854" E	59.40
2207	GO_Z17_CHI_12	24° 43' 31.931" N	87° 7' 54.854" E	59.55
2208	GO_Z17_CHI_12	24° 43' 31.606" N	87° 7' 54.853" E	60.01
2209	GO_Z17_CHI_12	24° 43' 31.280" N	87° 7' 54.853" E	59.78
2210	GO_Z17_CHI_12	24° 43' 30.955" N	87° 7' 54.853" E	59.61
2211	GO_Z17_CHI_12	24° 43' 30.630" N	87° 7' 54.852" E	59.64
2212	GO_Z17_CHI_12	24° 43' 24.453" N	87° 7' 54.846" E	59.65
2213	GO_Z17_CHI_12	24° 43' 24.128" N	87° 7' 54.845" E	59.63
2214	GO_Z17_CHI_12	24° 43' 23.802" N	87° 7' 54.845" E	60.11
2215	GO_Z17_CHI_12	24° 43' 23.477" N	87° 7' 54.845" E	60.84
2216	GO_Z17_CHI_12	24° 43' 32.581" N	87° 7' 55.210" E	59.28
2217	GO_Z17_CHI_12	24° 43' 32.256" N	87° 7' 55.210" E	59.32
2218	GO_Z17_CHI_12	24° 43' 31.930" N	87° 7' 55.210" E	59.35
2219	GO_Z17_CHI_12	24° 43' 31.605" N	87° 7' 55.209" E	59.91
2220	GO_Z17_CHI_12	24° 43' 31.280" N	87° 7' 55.209" E	59.68
2221	GO_Z17_CHI_12	24° 43' 30.955" N	87° 7' 55.209" E	59.69
2222	GO_Z17_CHI_12	24° 43' 24.127" N	87° 7' 55.201" E	59.73
2223	GO_Z17_CHI_12	24° 43' 23.802" N	87° 7' 55.201" E	59.65
2224	GO_Z17_CHI_12	24° 43' 23.477" N	87° 7' 55.201" E	60.00
2225	GO_Z17_CHI_12	24° 43' 23.152" N	87° 7' 55.200" E	61.11
2226	GO_Z17_CHI_12	24° 43' 32.906" N	87° 7' 55.567" E	59.20
2227	GO_Z17_CHI_12	24° 43' 32.580" N	87° 7' 55.566" E	59.21
2228	GO_Z17_CHI_12	24° 43' 32.255" N	87° 7' 55.566" E	59.60
2229	GO_Z17_CHI_12	24° 43' 31.930" N	87° 7' 55.566" E	59.68
2230	GO_Z17_CHI_12	24° 43' 31.605" N	87° 7' 55.565" E	59.63
2231	GO_Z17_CHI_12	24° 43' 31.280" N	87° 7' 55.565" E	59.54
2232	GO_Z17_CHI_12	24° 43' 23.802" N	87° 7' 55.557" E	59.77
2233	GO_Z17_CHI_12	24° 43' 23.477" N	87° 7' 55.557" E	59.84
2234	GO_Z17_CHI_12	24° 43' 23.152" N	87° 7' 55.556" E	60.11
2235	GO_Z17_CHI_12	24° 43' 32.905" N	87° 7' 55.923" E	59.15
2236	GO_Z17_CHI_12	24° 43' 32.580" N	87° 7' 55.922" E	59.20
2237	GO_Z17_CHI_12	24° 43' 32.255" N	87° 7' 55.922" E	59.21
2238	GO_Z17_CHI_12	24° 43' 31.930" N	87° 7' 55.922" E	59.34
2239	GO_Z17_CHI_12	24° 43' 31.605" N	87° 7' 55.921" E	59.56
2240	GO_Z17_CHI_12	24° 43' 23.476" N	87° 7' 55.913" E	59.78
2241	GO_Z17_CHI_12	24° 43' 23.151" N	87° 7' 55.912" E	59.97
2242	GO_Z17_CHI_12	24° 43' 22.826" N	87° 7' 55.912" E	60.51
2243	GO_Z17_CHI_12	24° 43' 33.230" N	87° 7' 56.279" E	59.07
2244	GO_Z17_CHI_12	24° 43' 32.905" N	87° 7' 56.279" E	59.06
2245	GO_Z17_CHI_12	24° 43' 32.580" N	87° 7' 56.278" E	59.24
2246	GO_Z17_CHI_12	24° 43' 32.255" N	87° 7' 56.278" E	59.29
2247	GO_Z17_CHI_12	24° 43' 31.930" N	87° 7' 56.277" E	59.34
2248	GO_Z17_CHI_12	24° 43' 23.476" N	87° 7' 56.269" E	59.89
2249	GO_Z17_CHI_12	24° 43' 23.151" N	87° 7' 56.268" E	59.78
2250	GO_Z17_CHI_12	24° 43' 22.826" N	87° 7' 56.268" E	59.96
2251	GO_Z17_CHI_12	24° 43' 33.555" N	87° 7' 56.635" E	58.94
2252	GO_Z17_CHI_12	24° 43' 33.230" N	87° 7' 56.635" E	59.08
2253	GO_Z17_CHI_12	24° 43' 32.905" N	87° 7' 56.634" E	59.05
2254	GO_Z17_CHI_12	24° 43' 32.579" N	87° 7' 56.634" E	59.37
2255	GO_Z17_CHI_12	24° 43' 32.254" N	87° 7' 56.634" E	59.31
2256	GO_Z17_CHI_12	24° 43' 23.476" N	87° 7' 56.625" E	59.77
2257	GO_Z17_CHI_12	24° 43' 23.151" N	87° 7' 56.624" E	59.90
2258	GO_Z17_CHI_12	24° 43' 22.826" N	87° 7' 56.624" E	59.99
2259	GO_Z17_CHI_12	24° 43' 33.555" N	87° 7' 56.991" E	58.94
2260	GO_Z17_CHI_12	24° 43' 33.229" N	87° 7' 56.991" E	59.04
2261	GO_Z17_CHI_12	24° 43' 32.904" N	87° 7' 56.990" E	59.31
2262	GO_Z17_CHI_12	24° 43' 32.579" N	87° 7' 56.990" E	59.20
2263	GO_Z17_CHI_12	24° 43' 32.254" N	87° 7' 56.990" E	59.15
2264	GO_Z17_CHI_12	24° 43' 23.150" N	87° 7' 56.980" E	59.89
2265	GO_Z17_CHI_12	24° 43' 22.825" N	87° 7' 56.980" E	59.92
2266	GO_Z17_CHI_12	24° 43' 22.500" N	87° 7' 56.979" E	59.97
2267	GO_Z17_CHI_12	24° 43' 34.204" N	87° 7' 57.348" E	58.85
2268	GO_Z17_CHI_12	24° 43' 33.879" N	87° 7' 57.347" E	58.91
2269	GO_Z17_CHI_12	24° 43' 33.554" N	87° 7' 57.347" E	58.94
2270	GO_Z17_CHI_12	24° 43' 33.229" N	87° 7' 57.347" E	58.99
2271	GO_Z17_CHI_12	24° 43' 32.904" N	87° 7' 57.346" E	59.74
2272	GO_Z17_CHI_12	24° 43' 32.579" N	87° 7' 57.346" E	59.18
2273	GO_Z17_CHI_12	24° 43' 23.150" N	87° 7' 57.336" E	59.84
2274	GO_Z17_CHI_12	24° 43' 22.825" N	87° 7' 57.336" E	59.97
2275	GO_Z17_CHI_12	24° 43' 22.500" N	87° 7' 57.335" E	60.06
2276	GO_Z17_CHI_12	24° 43' 34.854" N	87° 7' 57.704" E	59.27
2277	GO_Z17_CHI_12	24° 43' 34.529" N	87° 7' 57.704" E	58.91
2278	GO_Z17_CHI_12	24° 43' 34.204" N	87° 7' 57.704" E	58.86
2279	GO_Z17_CHI_12	24° 43' 33.879" N	87° 7' 57.703" E	58.91
2280	GO_Z17_CHI_12	24° 43' 33.554" N	87° 7' 57.703" E	58.90
2281	GO_Z17_CHI_12	24° 43' 33.229" N	87° 7' 57.703" E	58.95
2282	GO_Z17_CHI_12	24° 43' 32.904" N	87° 7' 57.702" E	59.32
2283	GO_Z17_CHI_12	24° 43' 22.825" N	87° 7' 57.692" E	59.86
2284	GO_Z17_CHI_12	24° 43' 22.499" N	87° 7' 57.691" E	60.00
2285	GO_Z17_CHI_12	24° 43' 22.174" N	87° 7' 57.691" E	59.98
2286	GO_Z17_CHI_12	24° 43' 35.179" N	87° 7' 58.061" E	59.25
2287	GO_Z17_CHI_12	24° 43' 34.854" N	87° 7' 58.060" E	59.11
2288	GO_Z17_CHI_12	24° 43' 34.529" N	87° 7' 58.060" E	58.91
2289	GO_Z17_CHI_12	24° 43' 34.204" N	87° 7' 58.060" E	58.86
2290	GO_Z17_CHI_12	24° 43' 33.879" N	87° 7' 58.059" E	58.88
2291	GO_Z17_CHI_12	24° 43' 33.554" N	87° 7' 58.059" E	58.90
2292	GO_Z17_CHI_12	24° 43' 22.824" N	87° 7' 58.048" E	59.84
2293	GO_Z17_CHI_12	24° 43' 22.499" N	87° 7' 58.047" E	59.93
2294	GO_Z17_CHI_12	24° 43' 22.174" N	87° 7' 58.047" E	59.99
2295	GO_Z17_CHI_12	24° 43' 35.829" N	87° 7' 58.417" E	59.42
2296	GO_Z17_CHI_12	24° 43' 35.504" N	87° 7' 58.417" E	59.27
2297	GO_Z17_CHI_12	24° 43' 35.179" N	87° 7' 58.417" E	59.10
2298	GO_Z17_CHI_12	24° 43' 34.854" N	87° 7' 58.416" E	58.88
2299	GO_Z17_CHI_12	24° 43' 34.529" N	87° 7' 58.416" E	58.95
2300	GO_Z17_CHI_12	24° 43' 34.204" N	87° 7' 58.416" E	58.80
2301	GO_Z17_CHI_12	24° 43' 33.878" N	87° 7' 58.415" E	58.77
2302	GO_Z17_CHI_12	24° 43' 22.499" N	87° 7' 58.403" E	60.10
2303	GO_Z17_CHI_12	24° 43' 22.174" N	87° 7' 58.403" E	60.02
2304	GO_Z17_CHI_12	24° 43' 36.154" N	87° 7' 58.774" E	59.10
2305	GO_Z17_CHI_12	24° 43' 35.829" N	87° 7' 58.773" E	59.27
2306	GO_Z17_CHI_12	24° 43' 35.504" N	87° 7' 58.773" E	59.07
2307	GO_Z17_CHI_12	24° 43' 35.179" N	87° 7' 58.773" E	58.86
2308	GO_Z17_CHI_12	24° 43' 34.853" N	87° 7' 58.772" E	58.88
2309	GO_Z17_CHI_12	24° 43' 34.528" N	87° 7' 58.772" E	58.91
2310	GO_Z17_CHI_12	24° 43' 22.499" N	87° 7' 58.759" E	60.10
2311	GO_Z17_CHI_12	24° 43' 22.173" N	87° 7' 58.759" E	60.20
2312	GO_Z17_CHI_12	24° 43' 21.848" N	87° 7' 58.759" E	60.23
2313	GO_Z17_CHI_12	24° 43' 36.804" N	87° 7' 59.130" E	58.95
2314	GO_Z17_CHI_12	24° 43' 36.479" N	87° 7' 59.130" E	58.85
2315	GO_Z17_CHI_12	24° 43' 36.154" N	87° 7' 59.130" E	59.15
2316	GO_Z17_CHI_12	24° 43' 35.829" N	87° 7' 59.129" E	59.05
2317	GO_Z17_CHI_12	24° 43' 35.503" N	87° 7' 59.129" E	59.10
2318	GO_Z17_CHI_12	24° 43' 35.178" N	87° 7' 59.129" E	58.86
2319	GO_Z17_CHI_12	24° 43' 22.498" N	87° 7' 59.115" E	60.15
2320	GO_Z17_CHI_12	24° 43' 22.173" N	87° 7' 59.115" E	60.16
2321	GO_Z17_CHI_12	24° 43' 21.848" N	87° 7' 59.115" E	60.27
2322	GO_Z17_CHI_12	24° 43' 37.129" N	87° 7' 59.487" E	0.00
2323	GO_Z17_CHI_12	24° 43' 36.804" N	87° 7' 59.486" E	58.85
2324	GO_Z17_CHI_12	24° 43' 36.478" N	87° 7' 59.486" E	58.91
2325	GO_Z17_CHI_12	24° 43' 36.153" N	87° 7' 59.486" E	58.86
2326	GO_Z17_CHI_12	24° 43' 35.828" N	87° 7' 59.485" E	58.89
2327	GO_Z17_CHI_12	24° 43' 35.503" N	87° 7' 59.485" E	58.95
2328	GO_Z17_CHI_12	24° 43' 22.173" N	87° 7' 59.471" E	60.19
2329	GO_Z17_CHI_12	24° 43' 21.848" N	87° 7' 59.470" E	60.09
2330	GO_Z17_CHI_12	24° 43' 36.803" N	87° 7' 59.842" E	58.77
2331	GO_Z17_CHI_12	24° 43' 36.478" N	87° 7' 59.842" E	58.89
2332	GO_Z17_CHI_12	24° 43' 36.153" N	87° 7' 59.842" E	58.79
2333	GO_Z17_CHI_12	24° 43' 22.172" N	87° 7' 59.827" E	60.18
2334	GO_Z17_CHI_12	24° 43' 21.847" N	87° 7' 59.826" E	60.18
2335	GO_Z17_CHI_12	24° 43' 22.172" N	87° 8' 0.183" E	60.29
2336	GO_Z17_CHI_12	24° 43' 21.847" N	87° 8' 0.182" E	60.19
2337	GO_Z17_CHI_12	24° 43' 21.522" N	87° 8' 0.182" E	60.23
2338	GO_Z17_CHI_12	24° 43' 21.847" N	87° 8' 0.538" E	60.31
2339	GO_Z17_CHI_12	24° 43' 21.522" N	87° 8' 0.538" E	60.16
2340	GO_Z17_CHI_12	24° 43' 21.846" N	87° 8' 0.894" E	60.26
2341	GO_Z17_CHI_12	24° 43' 21.521" N	87° 8' 0.894" E	60.16
2342	GO_Z17_CHI_12	24° 43' 21.846" N	87° 8' 1.250" E	60.33
2343	GO_Z17_CHI_12	24° 43' 21.521" N	87° 8' 1.250" E	60.27
2344	GO_Z17_CHI_12	24° 43' 21.196" N	87° 8' 1.250" E	60.29
2345	GO_Z17_CHI_12	24° 43' 21.521" N	87° 8' 1.606" E	60.26
2346	GO_Z17_CHI_12	24° 43' 21.195" N	87° 8' 1.606" E	60.25
2347	GO_Z17_CHI_12	24° 43' 21.520" N	87° 8' 1.962" E	60.23
2348	GO_Z17_CHI_12	24° 43' 21.195" N	87° 8' 1.961" E	60.34
2349	GO_Z17_CHI_12	24° 43' 20.870" N	87° 8' 1.961" E	60.22
2350	GO_Z17_CHI_12	24° 43' 21.520" N	87° 8' 2.318" E	60.58
2351	GO_Z17_CHI_12	24° 43' 21.195" N	87° 8' 2.317" E	60.45
2352	GO_Z17_CHI_12	24° 43' 20.870" N	87° 8' 2.317" E	60.57
2353	GO_Z17_CHI_12	24° 43' 21.195" N	87° 8' 2.673" E	60.33
2354	GO_Z17_CHI_12	24° 43' 20.869" N	87° 8' 2.673" E	60.39
2355	GO_Z17_CHI_12	24° 43' 21.194" N	87° 8' 3.029" E	60.52
2356	GO_Z17_CHI_12	24° 43' 20.869" N	87° 8' 3.029" E	60.50
2357	GO_Z17_CHI_12	24° 43' 20.544" N	87° 8' 3.029" E	61.07
2358	GO_Z17_CHI_12	24° 43' 21.194" N	87° 8' 3.385" E	60.62
2359	GO_Z17_CHI_12	24° 43' 20.869" N	87° 8' 3.385" E	60.32
2360	GO_Z17_CHI_12	24° 43' 20.544" N	87° 8' 3.385" E	60.80
2361	GO_Z17_CHI_12	24° 43' 20.868" N	87° 8' 3.741" E	60.58
2362	GO_Z17_CHI_12	24° 43' 20.543" N	87° 8' 3.741" E	60.55
2363	GO_Z17_CHI_12	24° 43' 20.218" N	87° 8' 3.740" E	61.02
2364	GO_Z17_CHI_12	24° 43' 20.868" N	87° 8' 4.097" E	60.58
2365	GO_Z17_CHI_12	24° 43' 20.543" N	87° 8' 4.097" E	60.68
2366	GO_Z17_CHI_12	24° 43' 20.218" N	87° 8' 4.096" E	60.86
2367	GO_Z17_CHI_12	24° 43' 20.868" N	87° 8' 4.453" E	60.39
2368	GO_Z17_CHI_12	24° 43' 20.543" N	87° 8' 4.452" E	60.48
2369	GO_Z17_CHI_12	24° 43' 20.218" N	87° 8' 4.452" E	60.73
2370	GO_Z17_CHI_12	24° 43' 19.892" N	87° 8' 4.452" E	60.90
2371	GO_Z17_CHI_12	24° 43' 20.542" N	87° 8' 4.808" E	60.61
2372	GO_Z17_CHI_12	24° 43' 20.217" N	87° 8' 4.808" E	60.43
2373	GO_Z17_CHI_12	24° 43' 19.892" N	87° 8' 4.808" E	60.60
2374	GO_Z17_CHI_12	24° 43' 19.567" N	87° 8' 4.807" E	60.69
2375	GO_Z17_CHI_12	24° 43' 20.217" N	87° 8' 5.164" E	60.43
2376	GO_Z17_CHI_12	24° 43' 19.892" N	87° 8' 5.164" E	60.65
2377	GO_Z17_CHI_12	24° 43' 19.567" N	87° 8' 5.163" E	60.54
2378	GO_Z17_CHI_12	24° 43' 19.241" N	87° 8' 5.163" E	60.65
2379	GO_Z17_CHI_12	24° 43' 18.916" N	87° 8' 5.163" E	60.86
2380	GO_Z17_CHI_12	24° 43' 19.891" N	87° 8' 5.520" E	60.34
2381	GO_Z17_CHI_12	24° 43' 19.566" N	87° 8' 5.519" E	60.58
2382	GO_Z17_CHI_12	24° 43' 19.241" N	87° 8' 5.519" E	60.52
2383	GO_Z17_CHI_12	24° 43' 18.916" N	87° 8' 5.519" E	60.53
2384	GO_Z17_CHI_12	24° 43' 18.591" N	87° 8' 5.518" E	60.54
2385	GO_Z17_CHI_12	24° 43' 19.566" N	87° 8' 5.875" E	60.41
2386	GO_Z17_CHI_12	24° 43' 19.241" N	87° 8' 5.875" E	60.96
2387	GO_Z17_CHI_12	24° 43' 18.916" N	87° 8' 5.875" E	61.13
2388	GO_Z17_CHI_12	24° 43' 18.591" N	87° 8' 5.874" E	60.81
2389	GO_Z17_CHI_12	24° 43' 18.265" N	87° 8' 5.874" E	60.74
2390	GO_Z17_CHI_12	24° 43' 17.940" N	87° 8' 5.874" E	60.64
2391	GO_Z17_CHI_12	24° 43' 18.915" N	87° 8' 6.231" E	60.64
2392	GO_Z17_CHI_12	24° 43' 18.590" N	87° 8' 6.230" E	60.74
2393	GO_Z17_CHI_12	24° 43' 18.265" N	87° 8' 6.230" E	60.89
2394	GO_Z17_CHI_12	24° 43' 17.940" N	87° 8' 6.229" E	60.91
2395	GO_Z17_CHI_12	24° 43' 17.615" N	87° 8' 6.229" E	60.81
2396	GO_Z17_CHI_12	24° 43' 17.940" N	87° 8' 6.585" E	60.63
2397	GO_Z17_CHI_12	24° 43' 17.615" N	87° 8' 6.585" E	60.72

District Mining Officer.
Godda.

TABLE REPRESENTING ELEVATION (in m) WITH RESPECT TO 10m X 10m GRID WITHIN POTENTIAL SAND GHATS IN GODDA DISTRICT OF JHARKHAND

ANNEXURE - B17

2398	GO_Z5_CHI_3	24° 55' 13.518" N	87° 8' 33.389" E	0.98	2548	GO_Z5_CHI_15	24° 54' 46.205" N	87° 8' 36.209" E	0.70	2698	GO_Z5_CHI_3	24° 55' 20.341" N	87° 8' 38.745" E	0.06	2848	GO_Z16_CHI_11	24° 52' 6.888" N	87° 8' 43.153" E	8.57
2399	GO_Z5_CHI_3	24° 55' 15.143" N	87° 8' 33.747" E	0.57	2549	GO_Z5_CHI_15	24° 54' 45.880" N	87° 8' 36.209" E	0.67	2699	GO_Z5_CHI_3	24° 55' 20.016" N	87° 8' 38.744" E	0.13	2849	GO_Z16_CHI_11	24° 52' 6.563" N	87° 8' 43.153" E	9.05
2400	GO_Z5_CHI_3	24° 55' 14.818" N	87° 8' 33.747" E	0.50	2550	GO_Z5_CHI_15	24° 54' 45.555" N	87° 8' 36.209" E	0.60	2700	GO_Z5_CHI_3	24° 55' 19.690" N	87° 8' 38.744" E	0.09	2850	GO_Z16_CHI_11	24° 52' 6.238" N	87° 8' 43.152" E	9.17
2401	GO_Z5_CHI_3	24° 55' 14.493" N	87° 8' 33.746" E	0.66	2551	GO_Z5_CHI_15	24° 54' 45.230" N	87° 8' 36.208" E	0.42	2701	GO_Z5_CHI_3	24° 55' 19.365" N	87° 8' 38.743" E	0.09	2851	GO_Z5_CHI_3	24° 55' 24.237" N	87° 8' 43.741" E	-0.08
2402	GO_Z5_CHI_3	24° 55' 14.168" N	87° 8' 33.746" E	0.59	2552	GO_Z5_CHI_15	24° 54' 44.905" N	87° 8' 36.208" E	0.26	2702	GO_Z5_CHI_3	24° 55' 19.040" N	87° 8' 38.743" E	-0.03	2852	GO_Z5_CHI_3	24° 55' 23.912" N	87° 8' 43.740" E	-0.19
2403	GO_Z5_CHI_3	24° 55' 13.843" N	87° 8' 33.746" E	0.90	2553	GO_Z5_CHI_15	24° 54' 44.580" N	87° 8' 36.208" E	0.26	2703	GO_Z5_CHI_15	24° 54' 43.927" N	87° 8' 38.702" E	1.46	2853	GO_Z5_CHI_3	24° 55' 23.587" N	87° 8' 43.740" E	-0.06
2404	GO_Z5_CHI_3	24° 55' 13.518" N	87° 8' 33.745" E	0.60	2554	GO_Z5_CHI_15	24° 54' 44.255" N	87° 8' 36.207" E	0.42	2704	GO_Z5_CHI_15	24° 54' 43.602" N	87° 8' 38.702" E	1.61	2854	GO_Z5_CHI_3	24° 55' 23.262" N	87° 8' 43.739" E	0.02
2405	GO_Z5_CHI_3	24° 55' 16.119" N	87° 8' 34.105" E	0.62	2555	GO_Z5_CHI_15	24° 54' 43.929" N	87° 8' 36.207" E	0.67	2705	GO_Z5_CHI_15	24° 54' 43.277" N	87° 8' 38.702" E	1.56	2855	GO_Z16_CHI_11	24° 52' 8.188" N	87° 8' 43.511" E	8.35
2406	GO_Z5_CHI_3	24° 55' 15.793" N	87° 8' 34.104" E	0.63	2556	GO_Z5_CHI_3	24° 55' 20.018" N	87° 8' 36.605" E	0.02	2706	GO_Z5_CHI_15	24° 54' 42.952" N	87° 8' 38.701" E	1.53	2856	GO_Z16_CHI_11	24° 52' 7.863" N	87° 8' 43.510" E	8.12
2407	GO_Z5_CHI_3	24° 55' 15.468" N	87° 8' 34.104" E	0.44	2557	GO_Z5_CHI_3	24° 55' 19.692" N	87° 8' 36.605" E	0.06	2707	GO_Z5_CHI_15	24° 54' 42.626" N	87° 8' 38.701" E	1.56	2857	GO_Z16_CHI_11	24° 52' 7.538" N	87° 8' 43.510" E	8.40
2408	GO_Z5_CHI_3	24° 55' 15.143" N	87° 8' 34.104" E	0.56	2558	GO_Z5_CHI_3	24° 55' 19.367" N	87° 8' 36.604" E	-0.03	2708	GO_Z5_CHI_15	24° 54' 42.301" N	87° 8' 38.700" E	1.56	2858	GO_Z16_CHI_11	24° 52' 7.213" N	87° 8' 43.510" E	8.24
2409	GO_Z5_CHI_3	24° 55' 14.818" N	87° 8' 34.103" E	0.62	2559	GO_Z5_CHI_3	24° 55' 19.042" N	87° 8' 36.604" E	-0.04	2709	GO_Z5_CHI_15	24° 54' 41.976" N	87° 8' 38.700" E	0.47	2859	GO_Z16_CHI_11	24° 52' 6.888" N	87° 8' 43.509" E	9.30
2410	GO_Z5_CHI_3	24° 55' 14.493" N	87° 8' 34.103" E	0.88	2560	GO_Z5_CHI_3	24° 55' 18.717" N	87° 8' 36.604" E	-0.01	2710	GO_Z5_CHI_15	24° 54' 41.651" N	87° 8' 38.700" E	0.83	2860	GO_Z16_CHI_11	24° 52' 6.563" N	87° 8' 43.509" E	9.25
2411	GO_Z5_CHI_3	24° 55' 14.168" N	87° 8' 34.103" E	0.79	2561	GO_Z5_CHI_3	24° 55' 18.392" N	87° 8' 36.603" E	-0.01	2711	GO_Z5_CHI_15	24° 54' 41.326" N	87° 8' 38.699" E	0.71	2861	GO_Z5_CHI_3	24° 55' 24.562" N	87° 8' 44.097" E	-0.15
2412	GO_Z5_CHI_3	24° 55' 13.843" N	87° 8' 34.102" E	0.73	2562	GO_Z5_CHI_3	24° 55' 18.067" N	87° 8' 36.603" E	-0.06	2712	GO_Z5_CHI_15	24° 54' 41.001" N	87° 8' 38.699" E	0.80	2862	GO_Z5_CHI_3	24° 55' 24.237" N	87° 8' 44.097" E	-0.10
2413	GO_Z5_CHI_3	24° 55' 13.518" N	87° 8' 34.102" E	0.76	2563	GO_Z5_CHI_3	24° 55' 17.742" N	87° 8' 36.602" E	-0.19	2713	GO_Z5_CHI_15	24° 54' 40.676" N	87° 8' 38.699" E	0.86	2863	GO_Z5_CHI_3	24° 55' 23.912" N	87° 8' 44.097" E	-0.21
2414	GO_Z5_CHI_3	24° 55' 16.768" N	87° 8' 34.462" E	0.27	2564	GO_Z5_CHI_3	24° 55' 17.417" N	87° 8' 36.602" E	-0.27	2714	GO_Z5_CHI_15	24° 54' 40.351" N	87° 8' 38.698" E	0.86	2864	GO_Z5_CHI_3	24° 55' 23.587" N	87° 8' 44.096" E	-0.08
2415	GO_Z5_CHI_3	24° 55' 16.443" N	87° 8' 34.462" E	0.33	2565	GO_Z5_CHI_3	24° 55' 17.091" N	87° 8' 36.602" E	-0.22	2715	GO_Z5_CHI_3	24° 55' 21.641" N	87° 8' 39.103" E	-0.60	2865	GO_Z16_CHI_11	24° 52' 8.188" N	87° 8' 43.867" E	8.16
2416	GO_Z5_CHI_3	24° 55' 16.118" N	87° 8' 34.461" E	0.27	2566	GO_Z5_CHI_3	24° 55' 16.766" N	87° 8' 36.601" E	-0.27	2716	GO_Z5_CHI_3	24° 55' 21.316" N	87° 8' 39.102" E	-0.55	2866	GO_Z16_CHI_11	24° 52' 7.863" N	87° 8' 43.867" E	8.36
2417	GO_Z5_CHI_3	24° 55' 15.793" N	87° 8' 34.461" E	0.54	2567	GO_Z5_CHI_3	24° 55' 16.441" N	87° 8' 36.601" E	-0.31	2717	GO_Z5_CHI_3	24° 55' 20.991" N	87° 8' 39.102" E	-0.45	2867	GO_Z16_CHI_11	24° 52' 7.538" N	87° 8' 43.866" E	8.41
2418	GO_Z5_CHI_3	24° 55' 15.468" N	87° 8' 34.461" E	0.49	2568	GO_Z5_CHI_3	24° 55' 16.116" N	87° 8' 36.601" E	-0.36	2718	GO_Z5_CHI_3	24° 55' 20.665" N	87° 8' 39.101" E	-0.33	2868	GO_Z16_CHI_11	24° 52' 7.212" N	87° 8' 43.866" E	8.69
2419	GO_Z5_CHI_3	24° 55' 15.143" N	87° 8' 34.460" E	0.66	2569	GO_Z5_CHI_3	24° 55' 15.791" N	87° 8' 36.600" E	-0.32	2719	GO_Z5_CHI_3	24° 55' 20.340" N	87° 8' 39.101" E	-0.39	2869	GO_Z16_CHI_11	24° 52' 6.887" N	87° 8' 43.866" E	8.86
2420	GO_Z5_CHI_3	24° 55' 14.818" N	87° 8' 34.460" E	0.56	2570	GO_Z5_CHI_3	24° 55' 15.466" N	87° 8' 36.600" E	-0.24	2720	GO_Z5_CHI_3	24° 55' 20.015" N	87° 8' 39.101" E	-0.26	2870	GO_Z16_CHI_11	24° 52' 6.562" N	87° 8' 43.865" E	9.10
2421	GO_Z5_CHI_3	24° 55' 14.493" N	87° 8' 34.459" E	0.62	2571	GO_Z5_CHI_3	24° 55' 15.141" N	87° 8' 36.599" E	0.02	2721	GO_Z5_CHI_3	24° 55' 19.690" N	87° 8' 39.100" E	-0.41	2871	GO_Z5_CHI_3	24° 55' 24.562" N	87° 8' 44.454" E	-0.02
2422	GO_Z5_CHI_3	24° 55' 14.167" N	87° 8' 34.459" E	0.52	2572	GO_Z5_CHI_3	24° 55' 14.816" N	87° 8' 36.599" E	0.10	2722	GO_Z5_CHI_3	24° 55' 19.365" N	87° 8' 39.100" E	-0.38	2872	GO_Z5_CHI_3	24° 55' 24.237" N	87° 8' 44.454" E	0.01
2423	GO_Z5_CHI_3	24° 55' 13.842" N	87° 8' 34.459" E	0.82	2573	GO_Z5_CHI_15	24° 54' 46.530" N	87° 8' 36.566" E	0.85	2723	GO_Z5_CHI_15	24° 54' 43.602" N	87° 8' 39.058" E	1.45	2873	GO_Z5_CHI_3	24° 55' 23.911" N	87° 8' 44.453" E	-0.15
2424	GO_Z5_CHI_3	24° 55' 13.517" N	87° 8' 34.458" E	0.78	2574	GO_Z5_CHI_15	24° 54' 46.205" N	87° 8' 36.566" E	0.82	2724	GO_Z5_CHI_15	24° 54' 43.276" N	87° 8' 39.058" E	1.51	2874	GO_Z5_CHI_3	24° 55' 23.586" N	87° 8' 44.453" E	-0.02
2425	GO_Z5_CHI_15	24° 54' 47.507" N	87° 8' 34.428" E	0.81	2575	GO_Z5_CHI_15	24° 54' 45.880" N	87° 8' 36.566" E	0.75	2725	GO_Z5_CHI_15	24° 54' 42.951" N	87° 8' 39.058" E	1.63	2875	GO_Z16_CHI_11	24° 52' 8.513" N	87° 8' 44.224" E	8.40
2426	GO_Z5_CHI_15	24° 54' 47.182" N	87° 8' 34.428" E	0.73	2576	GO_Z5_CHI_15	24° 54' 45.555" N	87° 8' 36.565" E	0.67	2726	GO_Z5_CHI_15	24° 54' 42.626" N	87° 8' 39.057" E	1.40	2876	GO_Z16_CHI_11	24° 52' 8.188" N	87° 8' 44.224" E	8.22
2427	GO_Z5_CHI_3	24° 55' 17.418" N	87° 8' 34.819" E	0.05	2577	GO_Z5_CHI_15	24° 54' 45.230" N	87° 8' 36.565" E	0.58	2727	GO_Z5_CHI_15	24° 54' 42.301" N	87° 8' 39.057" E	1.43	2877	GO_Z16_CHI_11	24° 52' 7.862" N	87° 8' 44.223" E	8.23
2428	GO_Z5_CHI_3	24° 55' 17.093" N	87° 8' 34.819" E	-0.08	2578	GO_Z5_CHI_15	24° 54' 44.904" N	87° 8' 36.564" E	0.41	2728	GO_Z5_CHI_15	24° 54' 41.976" N	87° 8' 39.057" E	1.39	2878	GO_Z16_CHI_11	24° 52' 7.537" N	87° 8' 44.223" E	8.37
2429	GO_Z5_CHI_3	24° 55' 16.768" N	87° 8' 34.819" E	0.02	2579	GO_Z5_CHI_15	24° 54' 44.579" N	87° 8' 36.564" E	0.20	2729	GO_Z5_CHI_15	24° 54' 41.651" N	87° 8' 39.056" E	0.59	2879	GO_Z16_CHI_11	24° 52' 7.212" N	87° 8' 44.222" E	9.25
2430	GO_Z5_CHI_3	24° 55' 16.443" N	87° 8' 34.818" E	0.39	2580	GO_Z5_CHI_15	24° 54' 44.254" N	87° 8' 36.564" E	0.10	2730	GO_Z5_CHI_15	24° 54' 41.326" N	87° 8' 39.056" E	0.66	2880	GO_Z16_CHI_11	24° 52' 6.887" N	87° 8' 44.222" E	9.43
2431	GO_Z5_CHI_3	24° 55' 16.118" N	87° 8' 34.818" E	0.56	2581	GO_Z5_CHI_15	24° 54' 43.929" N	87° 8' 36.563" E	0.16	2731	GO_Z5_CHI_15	24° 54' 41.001" N	87° 8' 39.055" E	0.86	2881	GO_Z5_CHI_3	24° 55' 24.886" N	87° 8' 44.811" E	-0.17
2432	GO_Z5_CHI_3	24° 55' 15.793" N	87° 8' 34.818" E	0.64	2582	GO_Z5_CHI_15	24° 54' 43.604" N	87° 8' 36.563" E	0.59	2732	GO_Z5_CHI_15	24° 54' 40.675" N	87° 8' 39.055" E	0.91	2882	GO_Z5_CHI_3	24° 55' 24.561" N	87° 8' 44.811" E	-0.55
2433	GO_Z5_CHI_3	24° 55' 15.468" N	87° 8' 34.817" E	0.70	2583	GO_Z5_CHI_15	24° 54' 43.279" N	87° 8' 36.563" E	0.59	2733	GO_Z5_CHI_15	24° 54' 40.350" N	87° 8' 39.055" E	0.83	2883	GO_Z5_CHI_3	24° 55' 24.236" N	87° 8' 44.810" E	-0.11
2434	GO_Z5_CHI_3	24° 55' 15.142" N	87° 8' 34.817" E	0.77	2584	GO_Z5_CHI_3	24° 55' 20.342" N	87° 8' 36.962" E	0.18	2734	GO_Z5_CHI_15	24° 54' 40.025" N	87° 8' 39.054" E	0.83	2884	GO_Z5_CHI_3	24° 55' 23.911" N	87° 8' 44.810" E	-0.02
2435	GO_Z5_CHI_3	24° 55' 14.817" N	87° 8' 34.816" E	0.66	2585	GO_Z5_CHI_3	24° 55' 20.017" N	87° 8' 36.962" E	0.12	2735	GO_Z5_CHI_3	24° 55' 21.640" N	87° 8' 39.459" E	-0.70	2885	GO_Z16_CHI_11	24° 52' 8.837" N	87° 8' 44.581" E	8.36
2436	GO_Z5_CHI_3	24° 55' 14.492" N	87° 8' 34.816" E	0.61	2586	GO_Z5_CHI_3	24° 55' 19.692" N	87° 8' 36.961" E	-0.05	2736	GO_Z5_CHI_3	24° 55' 21.315" N	87° 8' 39.459" E	-0.43	2886	GO_Z16_CHI_11	24° 52' 8.512" N	87° 8' 44.580" E	8.33
2437	GO_Z5_CHI_3	24° 55' 14.167" N	87° 8' 34.816" E	0.72	2587	GO_Z5_CHI_3	24° 55' 19.367" N	87° 8' 36.961" E	-0.14	2737	GO_Z5_CHI_3	24° 55' 20.990" N	87° 8' 39.458" E	-0.48	2887	GO_Z16_CHI_11	24° 52' 8.187" N	87° 8' 44.580" E	8.17
2438	GO_Z5_CHI_3	24° 55' 13.842" N	87° 8' 34.815" E	0.50	2588	GO_Z5_CHI_3	24° 55' 19.042" N	87° 8' 36.960" E	-0.10	2738	GO_Z5_CHI_3	24° 55' 20.665" N	87° 8' 39.458" E	-0.41	2888	GO_Z16_CHI_11	24° 52' 7.862" N	87° 8' 44.580" E	8.37
2439	GO_Z5_CHI_3	24° 55' 13.517" N	87° 8' 34.815" E	0.57	2589	GO_Z5_CHI_3	24° 55' 18.717" N	87° 8' 36.960" E	0.06	2739	GO_Z5_CHI_3	24° 55' 20.340" N	87° 8' 39.458" E	-0.47	2889	GO_Z16_CHI_11	24° 52' 7.537" N	87° 8' 44.579" E	8.78
2440	GO_Z5_CHI_3	24° 55' 13.192" N	87° 8' 34.815" E	0.75	2590	GO_Z5_CHI_3	24° 55' 18.392" N	87° 8' 36.960" E	-0.08	2740	GO_Z5_CHI_3	24° 55' 20.015" N	87° 8' 39.457" E	-0.67	2890	GO_Z16_CHI_11	24° 52' 7.212" N	87° 8' 44.579" E	9.22
2441	GO_Z5_CHI_15	24° 54' 47.832" N	87° 8' 34.785" E	0.87	2591	GO_Z5_CHI_3	24° 55' 18.067" N	87° 8' 36.959" E	-0.06	2741	GO_Z5_CHI_3	24° 55' 19.690" N	87° 8' 39.457" E	-0.56	2891	GO_Z16_CHI_11	24° 52' 6.887" N	87° 8' 44.578" E	9.64
2442	GO_Z5_CHI_15	24° 54' 47.507" N	87° 8' 34.785" E	0.63	2592	GO_Z5_CHI_3	24° 55' 17.741" N	87° 8' 36.959" E	-0.11	2742	GO_Z5_CHI_15	24° 54' 43.276" N	87° 8' 39.415" E	1.54	2892	GO_Z2_GE_1	25° 1' 6.587" N	87° 8' 45.571" E	-9.04
2443	GO_Z5_CHI_15	24° 54' 47.182" N	87° 8' 34.785" E	0.61	2593	GO_Z5_CHI_3	24° 55' 17.416" N	87° 8' 36.959" E	-0.28	2743	GO_Z5_CHI_15	24° 54' 42.951" N	87° 8' 39.414" E	1.64	2893	GO_Z2_GE_1	25° 1' 6.262" N	87° 8' 45.570" E	-9.11
2444	GO_Z5_CHI_15	24° 54' 46.857" N	87° 8' 34.784" E	0.62	2594	GO_Z5_CHI_3	24° 55' 17.091" N	87° 8' 36.958" E	-0.07	2744	GO_Z5_CHI_15	24° 54' 42.626" N	87° 8' 39.414" E	1.67	2894	GO_Z2_GE_16	25° 0' 35.375" N	87° 8' 45.534" E	-7.54
2445	GO_Z5_CHI_15	24° 54' 46.532" N	87° 8' 34.784" E	0.56	2595	GO_Z5_CHI_3	24° 55' 16.766" N	87° 8' 36.958" E	-0.02	2745	GO_Z5_CHI_15	24° 54' 42.301" N	87° 8' 39.413" E	1.59	2895	GO_Z2_GE_16	25° 0' 35.050" N	87° 8' 45.533" E	-7.75
2446	GO_Z5_CHI_3	24° 55' 17.743" N	87° 8' 35.176" E	-0.03	2596	GO_Z5_CHI_3	24° 55' 16.441" N	87° 8' 36.957" E	-0.05	2746	GO_Z5_CHI_15	24° 54' 41.976" N	87° 8' 39.413" E	1.57	2896	GO_Z2_GE_16	25° 0' 34.725" N	87° 8' 45.533" E	-7.62
2447	GO_Z5_CHI_3	24° 55' 17.418" N	87° 8' 35.176" E	0.09	2597	GO_Z5_CHI_3	24° 55' 16.116" N	87° 8' 36.957" E	0.07	2747	GO_Z5_CHI_15	24° 54' 41.650" N	87° 8' 39.413" E	1.66	2897	GO_Z2_GE_16	25° 0' 34.400" N	87° 8' 45.532" E	-7.63
2448	GO_Z5_CHI_3	24° 55' 17.093" N	87° 8' 35.176" E	-0.01	2598	GO_Z5_CHI_3	24° 55' 15.791" N	87° 8' 36.957" E	0.26	2748	GO_Z5_CHI_15	24° 54' 41.325" N	87° 8' 39.412" E	1.16	2898	GO_Z2_GE_16	25° 0' 34.075" N	87° 8' 45.532" E	-7.67
2449	GO_Z5_CHI_3	24° 55' 16.768" N	87° 8' 35.175" E	-0.04	2599	GO_Z5_CHI_15	24° 54' 45.879" N	87° 8' 36.922" E	0.97	2749	GO_Z5_CHI_15	24° 54' 41.000" N	87° 8' 39.412" E	0.70	2899	GO_Z5_CHI_3	24° 55' 25.211" N	87° 8' 45.168" E	-0.29
2450	GO_Z5_CHI_3	24° 55' 16.443" N	87° 8' 35.175" E	0.10	2600	GO_Z5_CHI_15	24° 54' 45.554" N	87° 8' 36.922" E	0.92	2750	GO_Z5_CHI_15	24° 54' 40.675" N	87° 8' 39.412" E	0.90	2900	GO_Z5_CHI_3	24° 55' 24.886" N	87° 8' 45.167" E	-0.19
2451	GO_Z5_CHI_3	24° 55' 16.117" N	87° 8' 35.174" E	0.05	2601	GO_Z5_CHI_15	24° 54' 45.229" N	87° 8' 36.921" E	0.80	2751	GO_Z5_CHI_15	24° 54' 40.350" N	87° 8' 39.411" E	0.89	2901	GO_Z5_CHI_3	24° 55' 24.561" N	87° 8' 45.167" E	-0.52
2452	GO_Z5_CHI_3	24° 55' 15.792" N	87° 8' 35.174" E	0.12	2602	GO_Z5_CHI_15	24° 54' 44.904" N	87° 8' 36.921" E	0.80	2752	GO_Z5_CHI_15	24° 54' 40.025" N	87° 8' 39.411" E	0.94	2902	GO_Z5_CHI_3	24° 55' 24.236" N	87° 8' 45.167" E	-0.36
2453	GO_Z5_CHI_3	24° 55' 15.467" N	87° 8' 35.174" E	0.22	2603	GO_Z5_CHI_15	24° 54' 44.579" N	87° 8' 36.921" E	0.64	2753	GO_Z5_CHI_3	24° 55' 21.965" N	87° 8' 39.816" E	-0.45	2903	GO_Z16_CHI_11	24° 52' 9.162" N	87° 8' 44.938" E	8.44
2454	GO_Z5_CHI_3	24° 55' 15.142" N	87° 8' 35.173" E	0.50	2604	GO_Z5_CHI_15	24° 54' 44.254" N	87° 8' 36.920" E	0.61	2754	GO_Z5_CHI_3	24° 55' 21.640" N	87° 8' 39.816" E	-0.48	2904	GO_Z16_CHI_11	24° 52' 8.837" N	87° 8' 44.937" E	8.38
2455	GO_Z5_CHI_3	24° 55' 14.817" N	87° 8' 35.173" E	0.40	2605	GO_Z5_CHI_15	24° 54' 43.929" N	87° 8' 36.920" E	0.51	2755	GO_Z5_CHI_3	24° 55' 21.315" N	87° 8' 39.815" E	-0.53	2905	GO_Z16_CHI_11	24° 52' 8.512" N	87° 8' 44.937" E	8.04
2456	GO_Z5_CHI_3	24° 55' 14.492" N	87° 8' 35.173" E	0.52	2606	GO_Z5_CHI_15	24° 54' 43.604" N	87° 8' 36.919" E	0.68	2756	GO_Z5_CHI_3	24° 55' 20.990" N	87° 8' 39.815" E	-0.50	2906	GO_Z16_CHI_11	24° 52' 8.187" N	87° 8' 44.936" E	8.25
2457	GO_Z5_CHI_3	24° 55' 14.167" N	87° 8' 35.172" E	0.60	2607	GO_Z5_CHI_15	24° 54' 43.278" N	87° 8' 36.919" E	0.64	2757	GO_Z5_CHI_3	24° 55' 20.665" N	87° 8' 39.815" E	-0.77	2907	GO_Z16_CHI_11	24° 52' 7.862" N	87° 8' 44.936" E	8.25
2458	GO_Z5_CHI_3	24° 55' 13.842" N	87° 8' 35.172" E	0.51	2608	GO_Z5_CHI_15	24° 54' 42.953" N	87° 8' 36.919" E	0.54	2758	GO_Z5_CHI_3	24° 55' 20.340" N	87° 8' 39.814" E	-0.59	2908	GO_Z16_CHI_11	24° 52' 7.537" N	87° 8' 44.936" E	9.16
2459	GO_Z5_CHI_3	24° 55' 13.517" N	87° 8' 35.171" E	0.76	2609	GO_Z5_CHI_15	24° 54' 42.628" N	87° 8' 36.918" E	0.66	2759	GO_Z5_CHI_3	24° 55' 20.014" N	87° 8' 39.814" E	-0.25	2909	GO_Z16_CHI_11	24° 52' 7.211" N	87° 8' 44.935" E	9.28
2460	GO_Z5_CHI_3	24° 55' 13.191" N	87° 8' 35.171" E	0.51	2610	GO_Z5_CHI_3	24° 55' 20.342" N	87° 8' 37.318" E	0.07	2760	GO_Z5_CHI_15	24° 54' 42.625" N	87° 8' 39.770" E	1.39	2910	GO_Z2_GE_1	25° 1' 8.862" N	87° 8' 45.930" E	-8.61
2461	GO_Z5_CHI_15	24° 54' 47.832" N	87° 8' 35.142" E	0.64	2611	GO_Z5_CHI_3	24° 55' 20.017" N	87° 8' 37.318" E	0.05	2761	GO_Z5_CHI_15	24° 54' 42.300" N	87° 8' 39.770" E	1.62	2911	GO_Z2_GE_1	25° 1' 8.537" N	87° 8' 45.930" E	-8.74
2462	GO_Z5_CHI_15	24° 54' 47.507" N	87° 8' 35.141" E	0.68	2612	GO_Z5_CHI_3	24° 55' 19.692" N	87° 8' 37.318" E	-0.05	2762	GO_Z5_CHI_15	24° 54' 41.975" N	87° 8' 39.770" E	1.67	2912	GO_Z2_GE_1	25° 1' 8.212" N	87° 8' 45.929" E	-8.59
2463	GO_Z5_CHI_15	24° 54' 47.182" N	87° 8' 35.141" E	0.65	2613	GO_Z5_CHI_3	24° 55' 19.367" N	87° 8' 37.317" E	0.07	2763	GO_Z5_CHI_15	24° 54' 41.650" N	87° 8' 39.769" E	1.58	2913	GO_Z2_GE_1	25° 1' 7.887" N	87° 8' 45.929" E	-8.67
2464	GO_Z5_CHI_15	24° 54' 46.857" N	87° 8' 35.141" E	0.67	2614	GO_Z5_CHI_3	24° 55' 19.042" N	87° 8' 37.317" E	0.05	2764	GO_Z5_CHI_15	24° 54' 41.325" N	87° 8' 39.769" E	1.40	2914	GO_Z2_GE_1	25° 1' 7.562" N	87° 8' 45.929" E	-8.73
2465	GO_Z5_CHI_15	24° 54' 46.531" N	87° 8' 35.140" E	0.65	2615	GO_Z5_CHI_3	24° 55' 18.716" N	87° 8' 37.317" E	0.00	2765	GO_Z5_CHI_15	24° 54' 41.000" N	87° 8' 39.768" E	1.42	2915	GO_Z2_GE_1	25° 1' 7.237" N	87° 8' 45.928" E	-8.91
2466	GO_Z5_CHI_15	24° 54' 46.206" N	87° 8' 35.140" E	0.62	2616	GO_Z5_CHI_3	24° 55' 18.391" N	87° 8' 37.316" E	-0.08	2766	GO_Z5_CHI_15	24° 54' 40.675" N	87° 8' 39.768" E	0.72	2916	GO_Z2_GE_1	25° 1' 6.911" N	87° 8' 45.928" E	-8.99
2467	GO_Z5_CHI_15	24° 54' 45.881" N	87° 8' 35.140" E	0.52	2617	GO_Z5_CHI_3	24° 55' 18.066" N	87° 8' 37.316" E	-0.05	2767	GO_Z5_CHI_15	24° 54' 40.350" N	87° 8' 39.768" E	0.80	2917	GO_Z2_GE_1	25° 1' 6.586" N	87° 8' 45.927" E	-8.97
2468	GO_Z5_CHI_3	24° 55' 18.393" N	87° 8' 35.534" E	0.04	2618	GO_Z5_CHI_3	24° 55' 17.741" N	87° 8' 37.315" E	-0.15	2768	GO_Z5_CHI_15	24° 54' 40.024" N	87° 8' 39.767" E	0.89	2918	GO_Z2_GE_1	25° 1' 6.261" N	87° 8' 45.927" E	-9.05
2469	GO_Z5_CHI_3	24° 55' 18.068" N	87° 8' 35.533" E	0.00	2619	GO_Z5_CHI_3	24° 55' 17.416" N	87° 8' 37.315" E	0.06	2769	GO_Z5_CHI_3	24° 55' 22.290" N	87° 8' 40.173" E	-0.45	2919	GO_Z2_GE_1	25° 1' 5.936" N	87° 8' 45.927" E	-8.91
2470	GO_Z5_CHI_3	24° 55' 17.743" N	87° 8' 35.533" E	-0.10	2620	GO_Z5_CHI_3	24° 55' 17.091" N	87° 8' 37.315" E	0.02	2770	GO_Z5_CHI_3	24° 55' 21.965" N	87° 8' 40.173" E	-0.45	2920	GO_Z2_GE_16	25° 0' 36.676" N	87° 8' 45.892" E	-7.71
2471	GO_Z5_CHI_3	24° 55' 17.418" N	87° 8' 35.532" E	-0.16	2621	GO_Z5_CHI_3	24° 55' 16.766" N	87° 8' 37.314" E	0.04	2771	GO_Z5_CHI_3	24° 55' 21.640" N	87° 8' 40.172" E	-0.52	2921	GO_Z2_GE_16	25° 0' 36.350" N	87° 8' 45.892" E	-7.59
2472	GO_Z5_CHI_3	24° 55' 17.093" N	87° 8' 35.532" E	-0.06	2622	GO_Z5_CHI_3	24° 55' 16.441" N	87° 8' 37.314" E	0.14	2772	GO_Z5_CHI_3	24° 55' 21.315" N	87° 8' 40.172" E	-0.53	2922	GO_Z2_GE_16	25° 0' 36.025" N	87° 8' 45.891" E	-7.53
2473	GO_Z5_CHI_3	24° 55' 16.767" N	87° 8' 35.532" E	0.09	2623	GO_Z5_CHI_15	24° 54' 45.554" N	87° 8' 37.278" E	0.90	2773	GO_Z5_CHI_3	24° 55' 20.989" N	87° 8' 40.171" E	-0.56	2923	GO_Z2_GE_16	25° 0' 35.700" N	87° 8' 45.891" E	-7.54
2474	GO_Z5_CHI_3	24° 55' 16.442" N	87° 8' 35.531" E	0.15	2624	GO_Z5_CHI_15	24° 54' 45.229" N	87° 8' 37.278" E	0.81	2774	GO_Z5_CHI_3	24° 55' 20.664" N	87° 8' 40.171" E	-0.28	2924	GO_Z2_GE_16	25° 0' 35.375" N	87° 8' 45.890" E	-7.57
2475	GO_Z5_CHI_3	24° 55' 16.117" N	87° 8' 35.531" E	0.13	2625	GO_Z5_CHI_15	24° 54' 44.904" N	87° 8' 37.277" E	1.07	2775	GO_Z5_CHI_15	24° 54' 42.300" N	87° 8' 40.126" E	1.75	2925	GO_Z2_GE_16	25° 0' 35.050" N	87° 8' 45.890" E	-7.49
2476	GO_Z5_CHI_3	24° 55' 15.792" N	87° 8' 35.531" E	0.20	2626	GO_Z5_CHI_15	24° 54' 44.579" N	87° 8' 37.277" E	0.97	2776	GO_Z5_CHI_15	24° 54' 41.975" N	87° 8' 40.126" E	1.66	2926	GO_Z2_GE_16	25° 0' 34.725" N	87° 8' 45.890" E	-7.55
2477	GO_Z5_CHI_3	24° 55' 15.467" N	87° 8' 35.530" E	0.27	2627	GO_Z5_CHI_15	24° 54' 44.253" N	87° 8' 37.277" E	0.78	2777	GO_Z5_CHI_15	24° 54' 41.650" N	87° 8' 40.126" E	1.83	2927	GO_Z2_GE_16	25° 0' 34.400" N	87° 8' 45.889" E	-7.49
2478	GO_Z5_CHI_3	24° 55' 15.142" N	87° 8' 35.530" E	0.26	2628	GO_Z5_CHI_15	24° 54' 43.928" N	87° 8' 37.276" E	0.57	2778	GO_Z5_CHI_15	24° 54' 41.325" N	87° 8' 40.125" E	1.91	2928	GO_Z2_GE_16	25° 0' 34.075" N	87° 8' 45.889" E	-7.56
2479	GO_Z5_CHI_3	24° 55' 14.817" N	87° 8' 35.529" E	0.26	2629	GO_Z5_CHI_15	24° 54' 43.603" N	87° 8' 37.276" E	0.61	2779	GO_Z5_CHI_15	24° 54' 41.000" N	87° 8' 40.125" E	1.94	2929	GO_Z2_GE_16	25° 0' 33.749" N	87° 8' 45.889" E	-7.67
2480	GO_Z5_CHI_3	24° 55' 14.492" N	87° 8' 35.529" E	0.44	2630	GO_Z5_CHI_15	24° 54' 43.278" N	87° 8' 37.276" E	0.64	2780	GO_Z5_CHI_15	24° 54' 40.674" N	87° 8' 40.124" E	1.87	2930	GO_Z5_CHI_3	24° 55' 25.211" N	87° 8' 45.524" E	-0.68
2481	GO_Z5_CHI_3	24° 55' 14.166" N	87° 8' 35.529" E	0.40	2631	GO_Z5_CHI_15	24° 54' 42.953" N	87° 8' 37.275" E	0.51	2781	GO_Z5_CHI_15	24° 54' 40.349" N	87° 8' 40.124" E	0.73	2931	GO_Z5_CHI_3	24° 55' 24.886" N	87° 8' 45.524" E	-0.57
2482	GO_Z5_CHI_3	24° 55' 13.841" N	87° 8' 35.528" E	0.49	2632	GO_Z5_CHI_15	24° 54' 42.628" N	87° 8' 37.275" E	0.70	2782	GO_Z5_CHI_3	24° 55' 22.290" N	87° 8' 40.530" E	-0.40	2932	GO_Z5_CHI_3	24° 55' 24.561" N	87° 8' 45.524" E	-0.44
2483	GO_Z5_CHI_3	24° 55' 13.516" N	87° 8' 35.528" E	0.31	2633	GO_Z5_CHI_15	24° 54' 42.303" N	87° 8' 37.274" E	0.81	2783	GO_Z5_CHI_3	24° 55' 21.965" N	87° 8' 40.529" E	-0.37	2933	GO_Z5_CHI_3	24° 55' 24.236" N	87° 8' 45.523" E	-0.30
2484	GO_Z5_CHI_3	24° 55' 13.191" N	87° 8' 35.528" E	0.43	2634	GO_Z5_CHI_3	24° 55' 20.667" N	87° 8' 37.675" E	0.00	2784	GO_Z5_CHI_3	24° 55' 21.639" N	87° 8' 40.529" E	-0.40	2934	GO_Z16_CHI_11	24° 52' 9.487" N	87° 8' 45.294" E	8.67
2485	GO_Z5_CHI_15	24° 54' 47.832" N	87° 8' 35.498" E	0.65	2635	GO_Z5_CHI_3	24° 55' 20.342" N	87° 8' 37.675" E	0.01	2785	GO_Z5_CHI_3	24° 55' 21.314" N	87° 8' 40.528" E	-0.43	2935	GO_Z16_CHI_11	24° 52' 9.162" N	87° 8' 45.294" E	8.41
2486	GO_Z5_CHI_15	24° 54' 47.506" N	87° 8' 35.498" E	0.59	2636	GO_Z5_CHI_3	24° 55' 20.017" N	87° 8' 37.675" E	-0.15	2786	GO_Z5_CHI_3	24° 55' 20.989" N	87° 8' 40.528" E	-0.01	2936	GO_Z16_CHI_11	24° 52' 8.837" N	87° 8' 45.294" E	8.23
2487	GO_Z5_CHI_15	24° 54' 47.181" N	87° 8' 35.498" E	0.58	2637	GO_Z5_CHI_3	24° 55' 19.691" N	87° 8' 37.674" E	0.00	2787	GO_Z5_CHI_15	24° 54' 41.975" N	87° 8' 40.483" E	1.64	2937	GO_Z16_CHI_11	24° 52' 8.512" N	87° 8' 45.293" E	8.39
2488	GO_Z5_CHI_15	24° 54' 46.856" N	87° 8' 35.497" E	0.60	2638	GO_Z5_CHI_3	24° 55' 19.366" N	87° 8' 37.674" E	-0.01	2788	GO_Z5_CHI_15	24° 54' 41.649" N	87° 8' 40.482" E	1.83	2938	GO_Z16_CHI_11	24° 52' 8.186" N	87° 8' 45.293" E	8.26
2489	GO_Z5_CHI_15	24° 54' 46.531" N	87° 8' 35.497" E	0.58	2639	GO_Z5_CHI_3	24° 55' 19.041" N	87° 8' 37.673" E	0.07	2789	GO_Z5_CHI_15	24° 54' 41.324" N	87° 8' 40.482" E	1.92	2939	GO_Z16_CHI_11	24° 52' 7.861" N	87° 8' 45.292" E	8.48
2490	GO_Z5_CHI_15	24° 54' 46.206" N	87° 8' 35.496" E	0.58	2640	GO_Z5_CHI_3	24° 55' 18.716" N	87° 8' 37.673" E	-0.01	2790	GO_Z5_CHI_15	24° 54' 40.999" N	87° 8' 40.481" E	1.99	2940	GO_Z16_CHI_11	24° 52' 7.536" N	87° 8' 45.292" E	9.77
2491	GO_Z5_CHI_15	24° 54' 45.881" N	87° 8' 35.496" E	0.54	2641	GO_Z5_CHI_3	24° 55' 18.391" N	87° 8' 37.673" E	-0.05	2791	GO_Z5_CHI_15	24° 54' 40.674" N	87° 8' 40.481" E	2.03	2941	GO_Z16_CHI_11	24° 52' 7.211" N	87° 8' 45.292" E	9.03
2492	GO_Z5_CHI_15	24° 54' 45.556" N	87° 8' 35.496" E	0.35	2642	GO_Z5_CHI_3	24° 55' 18.066" N	87° 8' 37.672" E	-0.01	2792	GO_Z5_CHI_15	24° 54' 40.349" N	87° 8' 40.481" E	2.01	2942	GO_Z2_GE_1	25° 1' 10.487" N	87° 8' 46.289" E	-8.71
2493	GO_Z5_CHI_15	24° 54' 45.231" N	87° 8' 35.495" E	0.45	2643	GO_Z5_CHI_3	24° 55' 17.741" N	87° 8' 37.672" E	-0.06	2793	GO_Z5_CHI_3	24° 55' 22.614" N	87° 8' 40.886" E	-0.31	2943	GO_Z2_GE_1	25° 1' 10.162" N	87° 8' 46.288" E	-8.36
2494	GO_Z5_CHI_3	24° 55' 18.718" N	87° 8' 35.890" E	0.09	2644	GO_Z5_CHI_3	24° 55' 17.416" N	87° 8' 37.672" E	0.03	2794	GO_Z5_CHI_3	24° 55' 22.289" N	87° 8' 40.886" E	-0.32	2944	GO_Z2_GE_1	25° 1' 9.837" N	87° 8' 46.288" E	-8.19
2495	GO_Z5_CHI_3	24° 55' 18.393" N	87° 8' 35.890" E	-0.03	2645	GO_Z5_CHI_15	24° 54' 45.229" N	87° 8' 37.634" E	0.99	2795	GO_Z5_CHI_3	24° 55' 21.964" N	87° 8' 40.886" E	-0.26	2945	GO_Z2_GE_1	25° 1' 9.512" N	87° 8' 46.288" E	-8.22
2496	GO_Z5_CHI_3	24° 55' 18.068" N	87° 8' 35.890" E	0.01	2646	GO_Z5_CHI_15	24° 54' 44.903" N	87° 8' 37.634" E	1.03	2796	GO_Z5_CHI_3	24° 55' 21.639" N	87° 8' 40.885" E	-0.29	2946	GO_Z2_GE_1	25° 1' 9.187" N	87° 8' 46.287" E	-8.24
2497	GO_Z5_CHI_3	24° 55' 17.742" N	87° 8' 35.889" E	0.09	2647	GO_Z5_CHI_15	24° 54' 44.578" N	87° 8' 37.634" E	1.02	2797	GO_Z5_CHI_3	24° 55' 21.314" N	87° 8' 40.885" E	-0.22	2947	GO_Z2_GE_1	25° 1' 8.862" N	87° 8' 46.287" E	-8.41
2498	GO_Z5_CHI_3	24° 55' 17.417" N	87° 8' 35.889" E	0.00	2648	GO_Z5_CHI_15	24° 54' 44.253" N	87° 8' 37.633" E	1.16	2798	GO_Z5_CHI_15	24° 54' 41.649" N	87° 8' 40.839" E	1.88	2948	GO_Z2_GE_1	25° 1' 8.537" N	87° 8' 46.286" E	-8.39
2499	GO_Z5_CHI_3	24° 55' 17.092" N	87° 8' 35.889" E	0.11	2649	GO_Z5_CHI_15	24° 54' 43.928" N	87° 8' 37.633" E	1.33	2799	GO_Z5_CHI_15	24° 54' 41.324" N	87° 8' 40.838" E	2.06	2949	GO_Z2_GE_1	25° 1' 8.212" N	87° 8' 46.286" E	-8.59
2500	GO_Z5_CHI_3	24° 55' 16.767" N	87° 8' 35.888" E	0.03	2650	GO_Z5_CHI_15	24° 54' 43.603" N	87° 8' 37.632" E	1.02	2800	GO_Z5_CHI_15	24° 54' 40.999" N	87° 8' 40.838" E	2.05	2950	GO_Z2_GE_1	25° 1' 7.886" N	87° 8' 46.286" E	-8.56
2501	GO_Z5_CHI_3	24° 55' 16.442" N	87° 8' 35.888" E	0.00	2651	GO_Z5_CHI_15	24° 54' 43.278" N	87° 8' 37.632" E	0.62	2801	GO_Z5_CHI_15	24° 54' 40.674" N	87° 8' 40.837" E	2.07	2951	GO_Z2_GE_1	25° 1' 7.561" N	87° 8' 46.285" E	-8.61
2502	GO_Z5_CHI_3	24° 55' 16.117" N	87° 8' 35.887" E	0.08	2652	GO_Z5_CHI_15	24° 54' 42.953" N	87° 8' 37.632" E	0.54	2802	GO_Z5_CHI_3	24° 55' 22.614" N	87° 8' 41.243" E	-0.46	2952	GO_Z2_GE_1	25° 1' 7.236" N	87° 8' 46.285" E	-8.58
2503	GO_Z5_CHI_3	24° 55' 15.792" N	87° 8' 35.887" E	0.06	2653	GO_Z5_CHI_15	24° 54' 42.628" N	87° 8' 37.631" E	0.68	2803	GO_Z5_CHI_3	24° 55' 22.289" N	87° 8' 41.243" E	-0.29	2953	GO_Z2_GE_1	25° 1' 6.911" N	87° 8' 46.285" E	-8.75
2504	GO_Z5_CHI_3	24° 55' 15.467" N	87° 8' 35.887" E	0.13	2654	GO_Z5_CHI_15	24° 54' 42.302" N	87° 8' 37.631" E	0.88	2804	GO_Z5_CHI_3	24° 55' 21.964" N	87° 8' 41.242" E	-0.19	2954	GO_Z2_GE_1	25° 1' 6.586" N	87° 8' 46.284" E	-8.66
2505	GO_Z5_CHI_3	24° 55' 15.141" N	87° 8' 35.886" E	0.07	2655	GO_Z5_CHI_15	24° 54' 41.977" N	87° 8' 37.631" E	0.83	2805	GO_Z5_CHI_3	24° 55' 21.639" N	87° 8' 41.242" E	-0.19	2955	GO_Z2_GE_1	25° 1' 6.261" N	87° 8' 46.284" E	-8.71
2506	GO_Z5_CHI_3	24° 55' 14.816" N	87° 8' 35.886" E	0.14	2656	GO_Z5_CHI_3	24° 55' 20.992" N	87° 8' 38.032" E	0.04	2806	GO_Z5_CHI_15	24° 54' 41.324" N	87° 8' 41.195" E	1.73	2956	GO_Z2_GE_1	25° 1' 5.936" N	87° 8' 46.283" E	-8.78
2507	GO_Z5_CHI_3	24° 55' 14.491" N	87° 8' 35.886" E	0.09	2657	GO_Z5_CHI_3	24° 55' 20.666" N	87° 8' 38.032" E	0.02	2807	GO_Z5_CHI_15	24° 54' 40.998" N	87° 8' 41.194" E	1.91	2957	GO_Z2_GE_16	25° 0' 37.976" N	87° 8' 46.250" E	-7.43
2508	GO_Z5_CHI_3	24° 55' 14.166" N	87° 8' 35.885" E	0.27	2658	GO_Z5_CHI_3	24° 55' 20.341" N	87° 8' 38.032" E	0.01	2808	GO_Z5_CHI_15	24° 54' 40.673" N	87° 8' 41.194" E	2.00	2958	GO_Z2_GE_16	25° 0' 37.651" N	87° 8' 46.250" E	-7.52
2509	GO_Z5_CHI_3	24° 55' 13.841" N	87° 8' 35.885" E	0.13	2659	GO_Z5_CHI_3	24° 55' 20.016" N	87° 8' 38.031" E	-0.05	2809	GO_Z5_CHI_3	24° 55' 22.939" N	87° 8' 41.600" E	-0.51	2959	GO_Z2_GE_16	25° 0' 37.325" N	87° 8' 46.250" E	-7.73
2510	GO_Z5_CHI_3	24° 55' 13.516" N	87° 8' 35.884" E	0.12	2660	GO_Z5_CHI_3	24° 55' 19.691" N	87° 8' 38.031" E	0.15	2810	GO_Z5_CHI_3	24° 55' 22.614" N	87° 8' 41.599" E	-0.41	2960	GO_Z2_GE_16	25° 0' 37.000" N	87° 8' 46.249" E	-7.72
2511	GO_Z5_CHI_3	24° 55' 13.191" N	87° 8' 35.884" E	0.03	2661	GO_Z5_CHI_3	24° 55' 19.366" N	87° 8' 38.030" E	0.20	2811	GO_Z5_CHI_3	24° 55' 22.289" N	87° 8' 41.599" E	-0.33	2961	GO_Z2_GE_16	25° 0' 36.675" N	87° 8' 46.249" E	-7.82
2512	GO_Z5_CHI_15	24° 54' 48.156" N	87° 8' 35.855" E	3.54	2662	GO_Z5_CHI_3	24° 55' 19.041" N	87° 8' 38.030" E	0.02	2812	GO_Z5_CHI_3	24° 55' 21.963" N	87° 8' 41.599" E	-0.18	2962	GO_Z2_GE_16	25° 0' 36.350" N	87° 8' 46.248" E	-7.58
2513	GO_Z5_CHI_15	24° 54' 47.831" N	87° 8' 35.855" E	3.06	2663	GO_Z5_CHI_3	24° 55' 18.716" N	87° 8' 38.030" E	0.01	2813	GO_Z5_CHI_15	24° 54' 40.673" N	87° 8' 41.550" E	1.90	2963	GO_Z2_GE_16	25° 0' 36.025" N	87° 8' 46.248" E	-7.48
2514	GO_Z5_CHI_15	24° 54' 47.506" N	87° 8' 35.854" E	0.42	2664	GO_Z5_CHI_3	24° 55' 18.391" N	87° 8' 38.029" E	-0.09	2814	GO_Z5_CHI_3	24° 55' 23.264" N	87° 8' 41.957" E	-0.34	2964	GO_Z2_GE_16	25° 0' 35.700" N	87° 8' 46.248" E	-7.53
2515	GO_Z5_CHI_15	24° 54' 47.181" N	87° 8' 35.854" E	0.78	2665	GO_Z5_CHI_15	24° 54' 44.578" N	87° 8' 37.990" E	1.42	2815	GO_Z5_CHI_3	24° 55' 22.938" N	87° 8' 41.956" E	-0.35	2965	GO_Z2_GE_16	25° 0' 35.375" N	87° 8' 46.247" E	-7.53
2516	GO_Z5_CHI_15	24° 54' 46.856" N	87° 8' 35.854" E	0.77	2666	GO_Z5_CHI_15	24° 54' 44.253" N	87° 8' 37.990" E	1.40	2816	GO_Z5_CHI_3	24° 55' 22.613" N	87° 8' 41.956" E	-0.24	2966	GO_Z2_GE_16	25° 0' 35.050" N	87° 8' 46.247" E	-7.55
2517	GO_Z5_CHI_15	24° 54' 46.531" N	87° 8' 35.853" E	0.70	2667	GO_Z5_CHI_15	24° 54' 43.928" N	87° 8' 37.989" E	1.30	2817	GO_Z5_CHI_3	24° 55' 22.288" N	87° 8' 41.956" E	-0.08	2967	GO_Z2_GE_16	25° 0' 34.724" N	87° 8' 46.246" E	-7.48
2518	GO_Z5_CHI_15	24° 54' 46.206" N	87° 8' 35.853" E	0.63	2668	GO_Z5_CHI_15	24° 54' 43.603" N	87° 8' 37.989" E	1.17	2818	GO_Z5_CHI_3	24° 55' 23.263" N	87° 8' 42.313" E	-0.31	2968	GO_Z2_GE_16	25° 0' 34.399" N	87° 8' 46.246" E	-7.51
2519	GO_Z5_CHI_15	24° 54' 45.880" N	87° 8' 35.853" E	0.58	2669	GO_Z5_CHI_15	24° 54' 43.277" N	87° 8' 37.989" E	1.03	2819	GO_Z5_CHI_3	24° 55' 22.938" N	87° 8' 42.313" E	-0.10	2969	GO_Z2_GE_16	25° 0' 34.074" N	87° 8' 46.246" E	-7.57
2520	GO_Z5_CHI_15	24° 54' 45.555" N	87° 8' 35.852" E	0.42	2670	GO_Z5_CHI_15	24° 54' 42.952" N	87° 8' 37.988" E	0.53	2820	GO_Z5_CHI_3	24° 55' 22.613" N	87° 8' 42.313" E	0.13	2970	GO_Z2_GE_16	25° 0' 33.749" N	87° 8' 46.245" E	-7.64
2521	GO_Z5_CHI_15	24° 54' 45.230" N	87° 8' 35.852" E	0.41	2671	GO_Z5_CHI_15	24° 54' 42.627" N	87° 8' 37.988" E	0.73	2821	GO_Z5_CHI_3	24° 55' 22.288" N	87° 8' 42.312" E	0.28	2971	GO_Z2_GE_16	25° 0' 33.424" N	87° 8' 46.245" E	-7.72
2522	GO_Z5_CHI_15	24° 54' 44.905" N	87° 8' 35.851" E	0.38	2672	GO_Z5_CHI_15	24° 54' 42.302" N	87° 8' 37.987" E	0.74	2822	GO_Z16_CHI_11	24° 52' 7.214" N	87° 8' 42.084" E	8.34	2972	GO_Z2_GE_16	25° 0' 33.099" N	87° 8' 46.245" E	-7.80
2523	GO_Z5_CHI_15	24° 54' 44.580" N	87° 8' 35.851" E	0.58	2673	GO_Z5_CHI_15	24° 54' 41.977" N	87° 8' 37.987" E	0.78	2823	GO_Z16_CHI_11	24° 52' 6.889" N	87° 8' 42.084" E	8.50	2973	GO_Z5_CHI_3	24° 55' 25.536" N	87° 8' 45.881" E	-0.42
2524	GO_Z5_CHI_3	24° 55' 19.368" N	87° 8' 36.248" E	-0.09	2674	GO_Z5_CHI_15	24° 54' 41.652" N	87° 8' 37.987" E	0.75	2824	GO_Z5_CHI_3	24° 55' 23.588" N	87° 8' 42.670" E	-0.21	2974	GO_Z5_CHI_3	24° 55' 25.211" N	87° 8' 45.881" E	-0.44
2525	GO_Z5_CHI_3	24° 55' 19.043" N	87° 8' 36.247" E	-0.08	2675	GO_Z5_CHI_15	24° 54' 41.327" N	87° 8' 37.986" E	0.80	2825	GO_Z5_CHI_3	24° 55' 23.263" N	87° 8' 42.670" E	0.04	2975	GO_Z5_CHI_3	24° 55' 24.885" N	87° 8' 45.881" E	-0.47
2526	GO_Z5_CHI_3	24° 55' 18.717" N	87° 8' 36.247" E	0.07	2676	GO_Z5_CHI_3	24° 55' 20.991" N	87° 8' 38.389" E	-0.16	2826	GO_Z5_CHI_3	24° 55' 22.938" N	87° 8' 42.669" E	0.10	2976	GO_Z5_CHI_3	24° 55' 24.560" N	87° 8' 45.880" E	-0.41
2527	GO_Z5_CHI_3	24° 55' 18.392" N	87° 8' 36.247" E	0.03	2677	GO_Z5_CHI_3	24° 55' 20.666" N	87° 8' 38.388" E	-0.18	2827	GO_Z5_CHI_3	24° 55' 22.613" N	87° 8' 42.669" E	0.24	2977	GO_Z16_CHI_11	24° 52' 10.137" N	87° 8' 45.651" E	8.87
2528	GO_Z5_CHI_3	24° 55' 18.067" N	87° 8' 36.246" E	0.00	2678	GO_Z5_CHI_3	24° 55' 20.341" N	87° 8' 38.388" E	-0.23	2828	GO_Z16_CHI_11	24° 52' 7.539" N	87° 8' 42.441" E	8.50	2978	GO_Z16_CHI_11	24° 52' 9.812" N	87° 8' 45.651" E	8.49
2529	GO_Z5_CHI_3	24° 55' 17.742" N	87° 8' 36.246" E	-0.02	2679	GO_Z5_CHI_3	24° 55' 20.016" N	87° 8' 38.388" E	-0.02	2829	GO_Z16_CHI_11	24° 52' 7.214" N	87° 8' 42.441" E	8.26	2979	GO_Z16_CHI_11	24° 52' 9.487" N	87° 8' 45.651" E	8.41
2530	GO_Z5_CHI_3	24° 55' 17.417" N	87° 8' 36.245" E	0.03	2680	GO_Z5_CHI_3	24° 55' 19.691" N	87° 8' 38.387" E	0.11	2830	GO_Z16_CHI_11	24° 52' 6.889" N	87° 8' 42.440" E	8.35	2980	GO_Z16_CHI_11	24° 52' 9.161" N	87° 8' 45.650" E	8.08
2531	GO_Z5_CHI_3	24° 55' 17.092" N	87° 8' 36.245" E	-0.09	2681	GO_Z5_CHI_3	24° 55' 19.366" N	87° 8' 38.387" E	0.02	2831	GO_Z16_CHI_11	24° 52' 6.564" N	87° 8' 42.440" E	8.26	2981	GO_Z16_CHI_11	24° 52' 8.836" N	87° 8' 45.650" E	8.24
2532	GO_Z5_CHI_3	24° 55' 16.767" N	87° 8' 36.245" E	-0.07	2682	GO_Z5_CHI_3	24° 55' 19.040" N	87° 8' 38.387" E	0.05	2832	GO_Z5_CHI_3	24° 55' 23.913" N	87° 8' 43.027" E	-0.20	2982	GO_Z16_CHI_11	24° 52' 8.511" N	87° 8' 45.650" E	8.20
2533	GO_Z5_CHI_3	24° 55' 16.442" N	87° 8' 36.244" E	-0.05	2683	GO_Z5_CHI_3	24° 55' 18.715" N	87° 8' 38.386" E	-0.04	2833	GO_Z5_CHI_3	24° 55' 23.588" N	87° 8' 43.027" E	0.00	2983	GO_Z16_CHI_11	24° 52' 8.186" N	87° 8' 45.649" E	8.24
2534	GO_Z5_CHI_3	24° 55' 16.116" N	87° 8' 36.244" E	-0.12	2684	GO_Z5_CHI_15	24° 54' 44.252" N	87° 8' 38.346" E	1.64	2834	GO_Z5_CHI_3	24° 55' 23.263" N	87° 8' 43.026" E	0.13	2984	GO_Z16_CHI_11	24° 52' 7.861" N	87° 8' 45.649" E	9.74
2535	GO_Z5_CHI_3	24° 55' 15.791" N	87° 8' 36.244" E	-0.01	2685	GO_Z5_CHI_15	24° 54' 43.927" N	87° 8' 38.346" E	1.53	2835	GO_Z5_CHI_3	24° 55' 22.937" N	87° 8' 43.026" E	0.10	2985	GO_Z16_CHI_11	24° 52' 7.536" N	87° 8' 45.648" E	9.03
2536	GO_Z5_CHI_3	24° 55' 15.466" N	87° 8' 36.243" E	-0.12	2686	GO_Z5_CHI_15	24° 54' 43.602" N	87° 8' 38.345" E	1.57	2836	GO_Z16_CHI_11	24° 52' 7.539" N	87° 8' 42.797" E	8.46	2986	GO_Z2_GE_1	25° 1' 11.137" N	87° 8' 46.646" E	-8.69
2537	GO_Z5_CHI_3	24° 55' 15.141" N	87° 8' 36.243" E	-0.17	2687	GO_Z5_CHI_15	24° 54' 43.277" N	87° 8' 38.345" E	1.59	2837	GO_Z16_CHI_11	24° 52' 7.214" N	87° 8' 42.797" E	8.19	2987	GO_Z2_GE_1	25° 1' 10.812" N	87° 8' 46.646" E	-8.32
2538	GO_Z5_CHI_3	24° 55' 14.816" N	87° 8' 36.242" E	-0.16	2688	GO_Z5_CHI_15	24° 54' 42.952" N	87° 8' 38.345" E	1.53	2838	GO_Z16_CHI_11	24° 52' 6.888" N	87° 8' 42.797" E	8.17	2988	GO_Z2_GE_1	25° 1' 10.487" N	87° 8' 46.646" E	-8.23
2539	GO_Z5_CHI_3	24° 55' 14.491" N	87° 8' 36.242" E	-0.22	2689	GO_Z5_CHI_15	24° 54' 42.627" N	87° 8' 38.344" E	0.74	2839	GO_Z16_CHI_11	24° 52' 6.563" N	87° 8' 42.796" E	8.85	2989	GO_Z2_GE_1	25° 1' 10.162" N	87° 8' 46.645" E	-8.24
2540	GO_Z5_CHI_3	24° 55' 14.166" N	87° 8' 36.242" E	-0.03	2690	GO_Z5_CHI_15	24° 54' 42.302" N	87° 8' 38.344" E	0.60	2840	GO_Z16_CHI_11	24° 52' 6.238" N	87° 8' 42.796" E	9.29	2990	GO_Z2_GE_1	25° 1' 9.837" N	87° 8' 46.645" E	-8.27
2541	GO_Z5_CHI_3	24° 55' 13.841" N	87° 8' 36.241" E	0.00	2691	GO_Z5_CHI_15	24° 54' 41.977" N	87° 8' 38.344" E	0.67	2841	GO_Z5_CHI_3	24° 55' 23.912" N	87° 8' 43.384" E	-0.24	2991	GO_Z2_GE_1	25° 1' 9.512" N	87° 8' 46.644" E	-8.33
2542	GO_Z5_CHI_15	24° 54' 48.156" N	87° 8' 36.212" E	3.76	2692	GO_Z5_CHI_15	24° 54' 41.651" N	87° 8' 38.343" E	0.60	2842	GO_Z5_CHI_3	24° 55' 23.587" N	87° 8' 43.383" E	-0.05	2992	GO_Z2_GE_1	25° 1' 9.187" N	87° 8' 46.644" E	-8.14
2543	GO_Z5_CHI_15	24° 54' 47.831" N	87° 8' 36.211" E	3.53	2693	GO_Z5_CHI_15	24° 54' 41.326" N	87° 8' 38.343" E	0.69	2843	GO_Z5_CHI_3	24° 55' 23.262" N	87° 8' 43.383" E	0.06	2993	GO_Z2_GE_1	25° 1' 8.861" N	87° 8' 46.644" E	-8.18
2544	GO_Z5_CHI_15	24° 54' 47.506" N	87° 8' 36.211" E	3.00	2694	GO_Z5_CHI_15	24° 54' 41.001" N	87° 8' 38.342" E	0.80	2844	GO_Z5_CHI_3	24° 55' 22.937" N	87° 8' 43.383" E	0.05	2994	GO_Z2_GE_1	25° 1' 8.536" N	87° 8' 46.643" E	-8.23
2545	GO_Z5_CHI_15	24° 54' 47.181" N	87° 8' 36.211" E	0.48	2695	GO_Z5_CHI_3	24° 55' 21.316" N	87° 8' 38.746" E	-0.38	2845	GO_Z16_CHI_11	24° 52' 7.863" N	87° 8' 43.154" E	8.48	2995	GO_Z2_GE_1	25° 1' 8.211" N	87° 8' 46.643" E	-8.28
2546	GO_Z5_CHI_15	24° 54' 46.855" N	87° 8' 36.210" E	0.75	2696	GO_Z5_CHI_3	24° 55' 20.991" N	87° 8' 38.745" E	-0.19	2846	GO_Z16_CHI_11	24° 52' 7.538" N	87° 8' 43.154" E	8.27	2996	GO_Z2_GE_1	25° 1' 7.886" N	87° 8' 46.643" E	-8.30
2547	GO_Z5_CHI_15	24° 54' 46.530" N	87° 8' 36.210" E	0.79	2697	GO_Z5_CHI_3	24° 55' 20.666" N	87° 8' 38.745" E	-0.31	2847	GO_Z16_CHI_11	24° 52' 7.213" N	87° 8' 43.153" E	8.32	2997	GO_Z2_GE_1	25° 1' 7.561" N	87° 8' 46.642" E	-8.39

District Mining Officer.
Godda.

TABLE REPRESENTING ELEVATION (in m) WITH RESPECT TO 10m X 10m GRID WITHIN POTENTIAL SAND GHATS IN GODDA DISTRICT OF JHARKHAND

ANNEXURE - B17

2998	GO_Z2_GE_16	25° 0' 39.276" N	87° 8' 46.609" E	-7.50
2999	GO_Z2_GE_16	25° 0' 38.951" N	87° 8' 46.608" E	-7.43
3000	GO_Z2_GE_16	25° 0' 38.626" N	87° 8' 46.608" E	-7.33
3001	GO_Z2_GE_16	25° 0' 38.300" N	87° 8' 46.607" E	-7.32
3002	GO_Z2_GE_16	25° 0' 37.975" N	87° 8' 46.607" E	-7.40
3003	GO_Z2_GE_16	25° 0' 37.650" N	87° 8' 46.607" E	-7.36
3004	GO_Z2_GE_16	25° 0' 37.325" N	87° 8' 46.606" E	-7.51
3005	GO_Z2_GE_16	25° 0' 37.000" N	87° 8' 46.606" E	-7.76
3006	GO_Z2_GE_16	25° 0' 36.675" N	87° 8' 46.606" E	-7.77
3007	GO_Z2_GE_16	25° 0' 36.350" N	87° 8' 46.605" E	-7.76
3008	GO_Z2_GE_16	25° 0' 36.025" N	87° 8' 46.605" E	-7.60
3009	GO_Z2_GE_16	25° 0' 35.699" N	87° 8' 46.604" E	-7.53
3010	GO_Z2_GE_16	25° 0' 35.374" N	87° 8' 46.604" E	-7.51
3011	GO_Z2_GE_16	25° 0' 35.049" N	87° 8' 46.604" E	-7.54
3012	GO_Z2_GE_16	25° 0' 34.724" N	87° 8' 46.603" E	-7.50
3013	GO_Z2_GE_16	25° 0' 34.399" N	87° 8' 46.603" E	-7.50
3014	GO_Z2_GE_16	25° 0' 34.074" N	87° 8' 46.602" E	-7.51
3015	GO_Z2_GE_16	25° 0' 33.749" N	87° 8' 46.602" E	-7.49
3016	GO_Z2_GE_16	25° 0' 33.424" N	87° 8' 46.602" E	-7.62
3017	GO_Z2_GE_16	25° 0' 33.099" N	87° 8' 46.601" E	-7.81
3018	GO_Z2_GE_16	25° 0' 32.773" N	87° 8' 46.601" E	-7.68
3019	GO_Z5_CHI_3	24° 55' 25.860" N	87° 8' 46.238" E	-0.76
3020	GO_Z5_CHI_3	24° 55' 25.535" N	87° 8' 46.238" E	-0.43
3021	GO_Z5_CHI_3	24° 55' 25.210" N	87° 8' 46.237" E	-0.63
3022	GO_Z5_CHI_3	24° 55' 24.885" N	87° 8' 46.237" E	-0.48
3023	GO_Z16_CHI_11	24° 52' 10.462" N	87° 8' 46.008" E	8.68
3024	GO_Z16_CHI_11	24° 52' 10.137" N	87° 8' 46.008" E	8.63
3025	GO_Z16_CHI_11	24° 52' 9.811" N	87° 8' 46.007" E	8.33
3026	GO_Z16_CHI_11	24° 52' 9.486" N	87° 8' 46.007" E	8.42
3027	GO_Z16_CHI_11	24° 52' 9.161" N	87° 8' 46.007" E	8.16
3028	GO_Z16_CHI_11	24° 52' 8.836" N	87° 8' 46.006" E	8.24
3029	GO_Z16_CHI_11	24° 52' 8.511" N	87° 8' 46.006" E	8.25
3030	GO_Z16_CHI_11	24° 52' 8.186" N	87° 8' 46.006" E	8.36
3031	GO_Z16_CHI_11	24° 52' 7.861" N	87° 8' 46.005" E	9.15
3032	GO_Z2_GE_1	25° 1' 11.787" N	87° 8' 47.004" E	-8.72
3033	GO_Z2_GE_1	25° 1' 11.462" N	87° 8' 47.004" E	-8.43
3034	GO_Z2_GE_1	25° 1' 11.137" N	87° 8' 47.003" E	-8.09
3035	GO_Z2_GE_1	25° 1' 10.812" N	87° 8' 47.003" E	-8.11
3036	GO_Z2_GE_1	25° 1' 10.487" N	87° 8' 47.002" E	-8.16
3037	GO_Z2_GE_1	25° 1' 10.162" N	87° 8' 47.002" E	-8.13
3038	GO_Z2_GE_16	25° 0' 40.576" N	87° 8' 46.967" E	-7.81
3039	GO_Z2_GE_16	25° 0' 40.251" N	87° 8' 46.967" E	-7.67
3040	GO_Z2_GE_16	25° 0' 39.926" N	87° 8' 46.966" E	-7.69
3041	GO_Z2_GE_16	25° 0' 39.601" N	87° 8' 46.966" E	-7.60
3042	GO_Z2_GE_16	25° 0' 39.275" N	87° 8' 46.965" E	-7.55
3043	GO_Z2_GE_16	25° 0' 38.950" N	87° 8' 46.965" E	-7.39
3044	GO_Z2_GE_16	25° 0' 38.625" N	87° 8' 46.965" E	-7.36
3045	GO_Z2_GE_16	25° 0' 38.300" N	87° 8' 46.964" E	-7.33
3046	GO_Z2_GE_16	25° 0' 37.975" N	87° 8' 46.964" E	-7.34
3047	GO_Z2_GE_16	25° 0' 37.650" N	87° 8' 46.963" E	-7.32
3048	GO_Z2_GE_16	25° 0' 37.325" N	87° 8' 46.963" E	-7.34
3049	GO_Z2_GE_16	25° 0' 37.000" N	87° 8' 46.963" E	-7.49
3050	GO_Z2_GE_16	25° 0' 36.674" N	87° 8' 46.962" E	-7.76
3051	GO_Z2_GE_16	25° 0' 36.349" N	87° 8' 46.962" E	-7.78
3052	GO_Z2_GE_16	25° 0' 36.024" N	87° 8' 46.962" E	-7.77
3053	GO_Z2_GE_16	25° 0' 34.074" N	87° 8' 46.959" E	-7.50
3054	GO_Z2_GE_16	25° 0' 33.748" N	87° 8' 46.959" E	-7.55
3055	GO_Z2_GE_16	25° 0' 33.423" N	87° 8' 46.958" E	-7.58
3056	GO_Z2_GE_16	25° 0' 33.098" N	87° 8' 46.958" E	-7.70
3057	GO_Z2_GE_16	25° 0' 32.773" N	87° 8' 46.958" E	-7.73
3058	GO_Z2_GE_16	25° 0' 32.448" N	87° 8' 46.957" E	-7.58
3059	GO_Z2_GE_16	25° 0' 32.123" N	87° 8' 46.957" E	-7.56
3060	GO_Z5_CHI_3	24° 55' 25.860" N	87° 8' 46.595" E	-0.64
3061	GO_Z5_CHI_3	24° 55' 25.535" N	87° 8' 46.594" E	-0.75
3062	GO_Z5_CHI_3	24° 55' 25.210" N	87° 8' 46.594" E	-0.65
3063	GO_Z5_CHI_3	24° 55' 24.885" N	87° 8' 46.594" E	-0.45
3064	GO_Z16_CHI_11	24° 52' 10.786" N	87° 8' 46.365" E	8.53
3065	GO_Z16_CHI_11	24° 52' 10.461" N	87° 8' 46.365" E	8.48
3066	GO_Z16_CHI_11	24° 52' 10.136" N	87° 8' 46.364" E	8.56
3067	GO_Z16_CHI_11	24° 52' 9.811" N	87° 8' 46.364" E	8.47
3068	GO_Z16_CHI_11	24° 52' 9.486" N	87° 8' 46.363" E	8.87
3069	GO_Z16_CHI_11	24° 52' 9.161" N	87° 8' 46.363" E	8.19
3070	GO_Z16_CHI_11	24° 52' 8.836" N	87° 8' 46.363" E	8.07
3071	GO_Z16_CHI_11	24° 52' 8.511" N	87° 8' 46.362" E	8.27
3072	GO_Z16_CHI_11	24° 52' 8.185" N	87° 8' 46.362" E	9.51
3073	GO_Z2_GE_1	25° 1' 12.437" N	87° 8' 47.362" E	-8.66
3074	GO_Z2_GE_1	25° 1' 12.112" N	87° 8' 47.361" E	-8.51
3075	GO_Z2_GE_1	25° 1' 11.787" N	87° 8' 47.361" E	-8.28
3076	GO_Z2_GE_1	25° 1' 11.462" N	87° 8' 47.360" E	-7.98
3077	GO_Z2_GE_1	25° 1' 11.137" N	87° 8' 47.360" E	-7.97
3078	GO_Z2_GE_16	25° 0' 41.876" N	87° 8' 47.325" E	-7.98
3079	GO_Z2_GE_16	25° 0' 41.551" N	87° 8' 47.325" E	-7.89
3080	GO_Z2_GE_16	25° 0' 41.226" N	87° 8' 47.325" E	-7.83
3081	GO_Z2_GE_16	25° 0' 40.901" N	87° 8' 47.324" E	-7.82
3082	GO_Z2_GE_16	25° 0' 40.576" N	87° 8' 47.324" E	-7.76
3083	GO_Z2_GE_16	25° 0' 40.250" N	87° 8' 47.323" E	-7.68
3084	GO_Z2_GE_16	25° 0' 39.925" N	87° 8' 47.323" E	-7.58
3085	GO_Z2_GE_16	25° 0' 39.600" N	87° 8' 47.323" E	-7.45
3086	GO_Z2_GE_16	25° 0' 39.275" N	87° 8' 47.322" E	-7.44
3087	GO_Z2_GE_16	25° 0' 38.950" N	87° 8' 47.322" E	-7.47
3088	GO_Z2_GE_16	25° 0' 38.625" N	87° 8' 47.321" E	-7.39
3089	GO_Z2_GE_16	25° 0' 38.300" N	87° 8' 47.321" E	-7.38
3090	GO_Z2_GE_16	25° 0' 37.975" N	87° 8' 47.321" E	-7.38
3091	GO_Z2_GE_16	25° 0' 37.649" N	87° 8' 47.320" E	-7.35
3092	GO_Z2_GE_16	25° 0' 33.423" N	87° 8' 47.315" E	-7.54
3093	GO_Z2_GE_16	25° 0' 33.098" N	87° 8' 47.315" E	-7.66
3094	GO_Z2_GE_16	25° 0' 32.773" N	87° 8' 47.314" E	-7.74
3095	GO_Z2_GE_16	25° 0' 32.448" N	87° 8' 47.314" E	-7.75
3096	GO_Z2_GE_16	25° 0' 32.122" N	87° 8' 47.314" E	-7.71
3097	GO_Z2_GE_16	25° 0' 31.797" N	87° 8' 47.313" E	-7.61
3098	GO_Z5_CHI_3	24° 55' 26.185" N	87° 8' 46.952" E	-0.87
3099	GO_Z5_CHI_3	24° 55' 25.860" N	87° 8' 46.951" E	-0.66
3100	GO_Z5_CHI_3	24° 55' 25.535" N	87° 8' 46.951" E	-0.57
3101	GO_Z5_CHI_3	24° 55' 25.209" N	87° 8' 46.951" E	-0.64
3102	GO_Z16_CHI_11	24° 52' 11.111" N	87° 8' 46.722" E	8.57
3103	GO_Z16_CHI_11	24° 52' 10.786" N	87° 8' 46.721" E	8.57
3104	GO_Z16_CHI_11	24° 52' 10.461" N	87° 8' 46.721" E	8.61
3105	GO_Z16_CHI_11	24° 52' 10.136" N	87° 8' 46.721" E	8.49
3106	GO_Z16_CHI_11	24° 52' 9.811" N	87° 8' 46.720" E	8.49
3107	GO_Z16_CHI_11	24° 52' 9.486" N	87° 8' 46.720" E	8.20
3108	GO_Z16_CHI_11	24° 52' 9.160" N	87° 8' 46.719" E	8.22
3109	GO_Z16_CHI_11	24° 52' 8.835" N	87° 8' 46.719" E	8.69
3110	GO_Z16_CHI_11	24° 52' 8.510" N	87° 8' 46.719" E	9.63
3111	GO_Z2_GE_1	25° 1' 13.087" N	87° 8' 47.719" E	-8.53
3112	GO_Z2_GE_1	25° 1' 12.762" N	87° 8' 47.719" E	-8.52
3113	GO_Z2_GE_1	25° 1' 12.437" N	87° 8' 47.718" E	-8.53
3114	GO_Z2_GE_1	25° 1' 12.112" N	87° 8' 47.718" E	-8.26
3115	GO_Z2_GE_16	25° 0' 42.201" N	87° 8' 47.682" E	-8.08
3116	GO_Z2_GE_16	25° 0' 41.876" N	87° 8' 47.682" E	-7.89
3117	GO_Z2_GE_16	25° 0' 41.551" N	87° 8' 47.682" E	-7.80
3118	GO_Z2_GE_16	25° 0' 41.225" N	87° 8' 47.681" E	-7.82
3119	GO_Z2_GE_16	25° 0' 40.900" N	87° 8' 47.681" E	-7.76
3120	GO_Z2_GE_16	25° 0' 40.575" N	87° 8' 47.681" E	-7.78
3121	GO_Z2_GE_16	25° 0' 40.250" N	87° 8' 47.680" E	-7.80
3122	GO_Z2_GE_16	25° 0' 39.925" N	87° 8' 47.680" E	-7.79
3123	GO_Z2_GE_16	25° 0' 39.600" N	87° 8' 47.679" E	-7.57
3124	GO_Z2_GE_16	25° 0' 39.275" N	87° 8' 47.679" E	-7.56
3125	GO_Z2_GE_16	25° 0' 32.772" N	87° 8' 47.671" E	-7.73
3126	GO_Z2_GE_16	25° 0' 32.447" N	87° 8' 47.671" E	-7.64
3127	GO_Z2_GE_16	25° 0' 32.122" N	87° 8' 47.670" E	-7.67
3128	GO_Z2_GE_16	25° 0' 31.797" N	87° 8' 47.670" E	-7.66
3129	GO_Z2_GE_16	25° 0' 31.472" N	87° 8' 47.670" E	-7.42
3130	GO_Z2_GE_16	25° 0' 31.147" N	87° 8' 47.669" E	-7.20
3131	GO_Z5_CHI_3	24° 55' 26.510" N	87° 8' 47.309" E	-0.81
3132	GO_Z5_CHI_3	24° 55' 26.184" N	87° 8' 47.308" E	-0.81
3133	GO_Z5_CHI_3	24° 55' 25.859" N	87° 8' 47.308" E	-0.43
3134	GO_Z5_CHI_3	24° 55' 25.534" N	87° 8' 47.307" E	-0.54
3135	GO_Z16_CHI_11	24° 52' 11.761" N	87° 8' 47.079" E	8.81
3136	GO_Z16_CHI_11	24° 52' 11.436" N	87° 8' 47.078" E	8.54
3137	GO_Z16_CHI_11	24° 52' 11.111" N	87° 8' 47.078" E	8.56
3138	GO_Z16_CHI_11	24° 52' 10.786" N	87° 8' 47.078" E	8.61
3139	GO_Z16_CHI_11	24° 52' 10.461" N	87° 8' 47.077" E	8.56
3140	GO_Z16_CHI_11	24° 52' 10.135" N	87° 8' 47.077" E	8.50
3141	GO_Z16_CHI_11	24° 52' 9.810" N	87° 8' 47.077" E	8.33
3142	GO_Z16_CHI_11	24° 52' 9.485" N	87° 8' 47.076" E	8.20
3143	GO_Z16_CHI_11	24° 52' 9.160" N	87° 8' 47.076" E	7.95
3144	GO_Z16_CHI_11	24° 52' 8.835" N	87° 8' 47.075" E	9.78
3145	GO_Z2_GE_1	25° 1' 13.737" N	87° 8' 48.077" E	-8.51
3146	GO_Z2_GE_1	25° 1' 13.412" N	87° 8' 48.076" E	-8.50
3147	GO_Z2_GE_1	25° 1' 13.087" N	87° 8' 48.076" E	-8.53
3148	GO_Z2_GE_1	25° 1' 12.761" N	87° 8' 48.076" E	-8.49
3149	GO_Z2_GE_16	25° 0' 42.200" N	87° 8' 48.039" E	-8.02
3150	GO_Z2_GE_16	25° 0' 41.875" N	87° 8' 48.039" E	-7.91
3151	GO_Z2_GE_16	25° 0' 41.550" N	87° 8' 48.038" E	-7.87
3152	GO_Z2_GE_16	25° 0' 41.225" N	87° 8' 48.038" E	-7.81
3153	GO_Z2_GE_16	25° 0' 40.900" N	87° 8' 48.038" E	-8.22
3154	GO_Z2_GE_16	25° 0' 40.575" N	87° 8' 48.037" E	-7.77
3155	GO_Z2_GE_16	25° 0' 32.122" N	87° 8' 48.027" E	-7.58
3156	GO_Z2_GE_16	25° 0' 31.797" N	87° 8' 48.027" E	-7.62
3157	GO_Z2_GE_16	25° 0' 31.472" N	87° 8' 48.026" E	-7.56
3158	GO_Z2_GE_16	25° 0' 31.146" N	87° 8' 48.026" E	-7.59
3159	GO_Z2_GE_16	25° 0' 30.821" N	87° 8' 48.026" E	-7.09
3160	GO_Z2_GE_16	25° 0' 30.496" N	87° 8' 48.025" E	-7.53
3161	GO_Z5_CHI_3	24° 55' 26.509" N	87° 8' 47.665" E	-0.82
3162	GO_Z5_CHI_3	24° 55' 26.184" N	87° 8' 47.665" E	-0.64
3163	GO_Z5_CHI_3	24° 55' 25.859" N	87° 8' 47.664" E	-0.48
3164	GO_Z5_CHI_3	24° 55' 25.534" N	87° 8' 47.664" E	-0.43
3165	GO_Z16_CHI_11	24° 52' 12.086" N	87° 8' 47.436" E	8.79
3166	GO_Z16_CHI_11	24° 52' 11.761" N	87° 8' 47.435" E	8.56
3167	GO_Z16_CHI_11	24° 52' 11.436" N	87° 8' 47.435" E	8.58
3168	GO_Z16_CHI_11	24° 52' 11.110" N	87° 8' 47.434" E	8.74
3169	GO_Z16_CHI_11	24° 52' 10.785" N	87° 8' 47.434" E	8.67
3170	GO_Z16_CHI_11	24° 52' 10.460" N	87° 8' 47.434" E	8.52
3171	GO_Z16_CHI_11	24° 52' 10.135" N	87° 8' 47.433" E	8.24
3172	GO_Z16_CHI_11	24° 52' 9.810" N	87° 8' 47.433" E	8.29
3173	GO_Z16_CHI_11	24° 52' 9.485" N	87° 8' 47.433" E	8.07
3174	GO_Z2_GE_1	25° 1' 14.387" N	87° 8' 48.434" E	-8.48
3175	GO_Z2_GE_1	25° 1' 14.062" N	87° 8' 48.434" E	-8.39
3176	GO_Z2_GE_1	25° 1' 13.736" N	87° 8' 48.434" E	-8.49
3177	GO_Z2_GE_1	25° 1' 13.411" N	87° 8' 48.433" E	-8.49
3178	GO_Z2_GE_16	25° 0' 42.200" N	87° 8' 48.396" E	-8.14
3179	GO_Z2_GE_16	25° 0' 41.875" N	87° 8' 48.396" E	-7.61
3180	GO_Z2_GE_16	25° 0' 31.471" N	87° 8' 48.383" E	-7.62
3181	GO_Z2_GE_16	25° 0' 31.146" N	87° 8' 48.383" E	-7.78
3182	GO_Z2_GE_16	25° 0' 30.821" N	87° 8' 48.382" E	-7.63
3183	GO_Z2_GE_16	25° 0' 30.496" N	87° 8' 48.382" E	-7.02
3184	GO_Z2_GE_16	25° 0' 30.171" N	87° 8' 48.382" E	-7.30
3185	GO_Z5_CHI_3	24° 55' 26.834" N	87° 8' 48.022" E	-0.77
3186	GO_Z5_CHI_3	24° 55' 26.509" N	87° 8' 48.022" E	-0.64
3187	GO_Z5_CHI_3	24° 55' 26.184" N	87° 8' 48.021" E	-0.65
3188	GO_Z5_CHI_3	24° 55' 25.859" N	87° 8' 48.021" E	-0.42
3189	GO_Z16_CHI_11	24° 52' 12.411" N	87° 8' 47.792" E	8.78
3190	GO_Z16_CHI_11	24° 52' 12.086" N	87° 8' 47.792" E	8.71
3191	GO_Z16_CHI_11	24° 52' 11.760" N	87° 8' 47.792" E	8.48
3192	GO_Z16_CHI_11	24° 52' 11.435" N	87° 8' 47.791" E	8.62
3193	GO_Z16_CHI_11	24° 52' 11.110" N	87° 8' 47.791" E	8.72
3194	GO_Z16_CHI_11	24° 52' 10.785" N	87° 8' 47.790" E	8.45
3195	GO_Z16_CHI_11	24° 52' 10.460" N	87° 8' 47.790" E	8.33
3196	GO_Z16_CHI_11	24° 52' 10.135" N	87° 8' 47.790" E	8.81
3197	GO_Z2_GE_1	25° 1' 14.711" N	87° 8' 48.791" E	-8.51
3198	GO_Z2_GE_1	25° 1' 14.386" N	87° 8' 48.791" E	-8.35
3199	GO_Z2_GE_1	25° 1' 14.061" N	87° 8' 48.791" E	-8.42
3200	GO_Z2_GE_1	25° 1' 13.736" N	87° 8' 48.790" E	-8.50
3201	GO_Z2_GE_16	25° 0' 30.821" N	87° 8' 48.739" E	-7.53
3202	GO_Z2_GE_16	25° 0' 30.495" N	87° 8' 48.739" E	-7.68
3203	GO_Z2_GE_16	25° 0' 30.170" N	87° 8' 48.739" E	-7.12
3204	GO_Z2_GE_16	25° 0' 29.845" N	87° 8' 48.738" E	-7.37
3205	GO_Z2_GE_16	25° 0' 29.520" N	87° 8' 48.738" E	-7.35
3206	GO_Z5_CHI_3	24° 55' 27.159" N	87° 8' 48.379" E	-0.76
3207	GO_Z5_CHI_3	24° 55' 26.834" N	87° 8' 48.379" E	-0.59
3208	GO_Z5_CHI_3	24° 55' 26.509" N	87° 8' 48.378" E	-0.46
3209	GO_Z5_CHI_3	24° 55' 26.183" N	87° 8' 48.378" E	-0.52
3210	GO_Z16_CHI_11	24° 52' 12.735" N	87° 8' 48.149" E	8.74
3211	GO_Z16_CHI_11	24° 52' 12.410" N	87° 8' 48.149" E	8.66
3212	GO_Z16_CHI_11	24° 52' 12.085" N	87° 8' 48.148" E	8.54
3213	GO_Z16_CHI_11	24° 52' 11.760" N	87° 8' 48.148" E	8.51
3214	GO_Z16_CHI_11	24° 52' 11.435" N	87° 8' 48.148" E	8.49
3215	GO_Z16_CHI_11	24° 52' 11.110" N	87° 8' 48.147" E	8.41
3216	GO_Z16_CHI_11	24° 52' 10.785" N	87° 8' 48.147" E	8.28
3217	GO_Z2_GE_1	25° 1' 15.036" N	87° 8' 49.149" E	-8.70
3218	GO_Z2_GE_1	25° 1' 14.711" N	87° 8' 49.148" E	-8.39
3219	GO_Z2_GE_1	25° 1' 14.386" N	87° 8' 49.148" E	-8.35
3220	GO_Z2_GE_1	25° 1' 14.061" N	87° 8' 49.148" E	-8.48
3221	GO_Z2_GE_16	25° 0' 30.495" N	87° 8' 49.096" E	-7.50
3222	GO_Z2_GE_16	25° 0' 30.170" N	87° 8' 49.095" E	-7.57
3223	GO_Z2_GE_16	25° 0' 29.845" N	87° 8' 49.095" E	-7.59
3224	GO_Z2_GE_16	25° 0' 29.520" N	87° 8' 49.095" E	-7.47
3225	GO_Z2_GE_16	25° 0' 29.195" N	87° 8' 49.094" E	-7.40
3226	GO_Z5_CHI_3	24° 55' 27.158" N	87° 8' 48.736" E	-0.82
3227	GO_Z5_CHI_3	24° 55' 26.833" N	87° 8' 48.735" E	-0.79
3228	GO_Z5_CHI_3	24° 55' 26.508" N	87° 8' 48.735" E	-0.43
3229	GO_Z5_CHI_3	24° 55' 26.183" N	87° 8' 48.734" E	-0.59
3230	GO_Z16_CHI_11	24° 52' 13.385" N	87° 8' 48.506" E	8.73
3231	GO_Z16_CHI_11	24° 52' 13.060" N	87° 8' 48.506" E	8.73
3232	GO_Z16_CHI_11	24° 52' 12.735" N	87° 8' 48.506" E	8.65
3233	GO_Z16_CHI_11	24° 52' 12.410" N	87° 8' 48.505" E	8.47
3234	GO_Z16_CHI_11	24° 52' 12.085" N	87° 8' 48.505" E	8.46
3235	GO_Z16_CHI_11	24° 52' 11.760" N	87° 8' 48.504" E	8.46
3236	GO_Z16_CHI_11	24° 52' 11.435" N	87° 8' 48.504" E	8.61
3237	GO_Z16_CHI_11	24° 52' 11.109" N	87° 8' 48.504" E	8.15
3238	GO_Z2_GE_1	25° 1' 15.361" N	87° 8' 49.506" E	-8.67
3239	GO_Z2_GE_1	25° 1' 15.036" N	87° 8' 49.506" E	-8.39
3240	GO_Z2_GE_1	25° 1' 14.711" N	87° 8' 49.505" E	-8.48
3241	GO_Z2_GE_1	25° 1' 14.386" N	87° 8' 49.505" E	-8.54
3242	GO_Z2_GE_16	25° 0' 30.170" N	87° 8' 49.452" E	-7.47
3243	GO_Z2_GE_16	25° 0' 29.845" N	87° 8' 49.452" E	-7.45
3244	GO_Z2_GE_16	25° 0' 29.519" N	87° 8' 49.451" E	-7.41
3245	GO_Z2_GE_16	25° 0' 29.194" N	87° 8' 49.451" E	-7.59
3246	GO_Z2_GE_16	25° 0' 28.869" N	87° 8' 49.451" E	-7.57
3247	GO_Z2_GE_16	25° 0' 28.544" N	87° 8' 49.450" E	-7.35
3248	GO_Z5_CHI_3	24° 55' 27.483" N	87° 8' 49.092" E	-0.94
3249	GO_Z5_CHI_3	24° 55' 27.158" N	87° 8' 49.092" E	-0.96
3250	GO_Z5_CHI_3	24° 55' 26.833" N	87° 8' 49.092" E	-0.72
3251	GO_Z5_CHI_3	24° 55' 26.508" N	87° 8' 49.091" E	-0.68
3252	GO_Z16_CHI_11	24° 52' 13.710" N	87° 8' 48.863" E	8.67
3253	GO_Z16_CHI_11	24° 52' 13.385" N	87° 8' 48.863" E	8.65
3254	GO_Z16_CHI_11	24° 52' 13.060" N	87° 8' 48.862" E	8.55
3255	GO_Z16_CHI_11	24° 52' 12.735" N	87° 8' 48.862" E	8.42
3256	GO_Z16_CHI_11	24° 52' 12.410" N	87° 8' 48.862" E	8.42
3257	GO_Z16_CHI_11	24° 52' 12.084" N	87° 8' 48.861" E	8.38
3258	GO_Z16_CHI_11	24° 52' 11.759" N	87° 8' 48.861" E	8.17
3259	GO_Z2_GE_1	25° 1' 15.686" N	87° 8' 49.863" E	-8.68
3260	GO_Z2_GE_1	25° 1' 15.361" N	87° 8' 49.863" E	-8.44
3261	GO_Z2_GE_1	25° 1' 15.036" N	87° 8' 49.862" E	-8.52
3262	GO_Z2_GE_1	25° 1' 14.710" N	87° 8' 49.862" E	-8.94
3263	GO_Z2_GE_16	25° 0' 29.844" N	87° 8' 49.808" E	-7.47
3264	GO_Z2_GE_16	25° 0' 29.519" N	87° 8' 49.808" E	-7.38
3265	GO_Z2_GE_16	25° 0' 29.194" N	87° 8' 49.808" E	-7.33
3266	GO_Z2_GE_16	25° 0' 28.869" N	87° 8' 49.807" E	-7.30
3267	GO_Z2_GE_16	25° 0' 28.544" N	87° 8' 49.807" E	-7.33
3268	GO_Z2_GE_16	25° 0' 28.219" N	87° 8' 49.807" E	-7.19
3269	GO_Z2_GE_16	25° 0' 27.893" N	87° 8' 49.806" E	-7.20
3270	GO_Z5_CHI_3	24° 55' 27.808" N	87° 8' 49.449" E	-0.54
3271	GO_Z5_CHI_3	24° 55' 27.483" N	87° 8' 49.449" E	-0.93
3272	GO_Z5_CHI_3	24° 55' 27.158" N	87° 8' 49.449" E	-0.85
3273	GO_Z5_CHI_3	24° 55' 26.833" N	87° 8' 49.448" E	-0.80
3274	GO_Z16_CHI_11	24° 52' 14.035" N	87° 8' 49.220" E	8.72
3275	GO_Z16_CHI_11	24° 52' 13.710" N	87° 8' 49.219" E	8.64
3276	GO_Z16_CHI_11	24° 52' 13.385" N	87° 8' 49.219" E	8.43
3277	GO_Z16_CHI_11	24° 52' 13.059" N	87° 8' 49.219" E	8.30
3278	GO_Z16_CHI_11	24° 52' 12.734" N	87° 8' 49.218" E	8.13
3279	GO_Z16_CHI_11	24° 52' 12.409" N	87° 8' 49.218" E	8.25
3280	GO_Z2_GE_1	25° 1' 16.011" N	87° 8' 50.220" E	-8.67
3281	GO_Z2_GE_1	25° 1' 15.685" N	87° 8' 50.220" E	-8.63
3282	GO_Z2_GE_1	25° 1' 15.360" N	87° 8' 50.220" E	-8.43
3283	GO_Z2_GE_1	25° 1' 15.035" N	87° 8' 50.219" E	-8.55
3284	GO_Z2_GE_16	25° 0' 29.519" N	87° 8' 50.165" E	-7.47
3285	GO_Z2_GE_16	25° 0' 29.194" N	87° 8' 50.164" E	-7.24
3286	GO_Z2_GE_16	25° 0' 28.868" N	87° 8' 50.164" E	-7.28
3287	GO_Z2_GE_16	25° 0' 28.543" N	87° 8' 50.164" E	-7.24
3288	GO_Z2_GE_16	25° 0' 28.218" N	87° 8' 50.163" E	-7.22
3289	GO_Z2_GE_16	25° 0' 27.893" N	87° 8' 50.163" E	-7.20
3290	GO_Z2_GE_16	25° 0' 27.568" N	87° 8' 50.163" E	-7.06
3291	GO_Z5_CHI_3	24° 55' 27.808" N	87° 8' 49.806" E	-0.94
3292	GO_Z5_CHI_3	24° 55' 27.483" N	87° 8' 49.805" E	-0.90
3293	GO_Z5_CHI_3	24° 55' 27.157" N	87° 8' 49.805" E	-0.85
3294	GO_Z5_CHI_3	24° 55' 26.832" N	87° 8' 49.805" E	-0.76
3295	GO_Z16_CHI_11	24° 52' 14.360" N	87° 8' 49.577" E	8.25
3296	GO_Z16_CHI_11	24° 52' 14.034" N	87° 8' 49.576" E	8.22
3297	GO_Z16_CHI_11	24° 52' 13.709" N	87° 8' 49.576" E	8.10
3298	GO_Z16_CHI_11	24° 52' 13.384" N	87° 8' 49.575" E	8.00
3299	GO_Z16_CHI_11	24° 52' 13.059" N	87° 8' 49.575" E	7.91
3300	GO_Z2_GE_1	25° 1' 16.335" N	87° 8' 50.577" E	-8.96
3301	GO_Z2_GE_1	25° 1' 16.010" N	87° 8' 50.577" E	-8.95
3302	GO_Z2_GE_1	25° 1' 15.685" N	87° 8' 50.577" E	-8.52
3303	GO_Z2_GE_1	25° 1' 15.360" N	87° 8' 50.576" E	-8.55
3304	GO_Z2_GE_16	25° 0' 28.868" N	87° 8' 50.521" E	-7.49
3305	GO_Z2_GE_16	25° 0' 28.543" N	87° 8' 50.520" E	-7.25
3306	GO_Z2_GE_16	25° 0' 28.218" N	87° 8' 50.520" E	-7.19
3307	GO_Z2_GE_16	25° 0' 27.893" N	87° 8' 50.520" E	-7.18
3308	GO_Z2_GE_16	25° 0' 27.568" N	87° 8' 50.519" E	-7.12
3309	GO_Z2_GE_16	25° 0' 27.243" N	87° 8' 50.519" E	-6.97
3310	GO_Z5_CHI_3	24° 55' 28.132" N	87° 8' 50.163" E	-0.56
3311	GO_Z5_CHI_3	24° 55' 27.807" N	87° 8' 50.162" E	-0.95
3312	GO_Z5_CHI_3	24° 55' 27.482" N	87° 8' 50.162" E	-0.81
3313	GO_Z5_CHI_3	24° 55' 27.157" N	87° 8' 50.162" E	-0.89
3314	GO_Z16_CHI_11	24° 52' 15.010" N	87° 8' 49.934" E	8.05
3315	GO_Z16_CHI_11	24° 52' 14.684" N	87° 8' 49.933" E	8.04
3316	GO_Z16_CHI_11	24° 52' 14.359" N	87° 8' 49.933" E	7.91
3317	GO_Z16_CHI_11	24° 52' 14.034" N	87° 8' 49.933" E	7.98
3318	GO_Z16_CHI_11	24° 52' 13.709" N	87° 8' 49.932" E	8.05
3319	GO_Z16_CHI_11	24° 52' 13.384" N	87° 8' 49.932" E	8.03
3320	GO_Z2_GE_1	25° 1' 16.660" N	87° 8' 50.935" E	-8.99
3321	GO_Z2_GE_1	25° 1' 16.335" N	87° 8' 50.934" E	-8.92
3322	GO_Z2_GE_1	25° 1' 16.010" N	87° 8' 50.934" E	-8.73
3323	GO_Z2_GE_1	25° 1' 15.685" N	87° 8' 50.934" E	-8.65
3324	GO_Z2_GE_16	25° 0' 28.543" N	87° 8' 50.877" E	-7.44
3325	GO_Z2_GE_16	25° 0' 28.218" N	87° 8' 50.877" E	-7.19
3326	GO_Z2_GE_16	25° 0' 27.892" N	87° 8' 50.876" E	-7.18
3327	GO_Z2_GE_16	25° 0' 27.567" N	87° 8' 50.876" E	-7.09
3328	GO_Z2_GE_16	25° 0' 27.242" N	87° 8' 50.876" E	-7.04
3329	GO_Z2_GE_16	25° 0' 26.917" N	87° 8' 50.875" E	-7.04
3330	GO_Z2_GE_16	25° 0' 26.592" N	87° 8' 50.875" E	-6.99
3331	GO_Z5_CHI_3	24° 55' 28.457" N	87° 8' 50.520" E	-0.52
3332	GO_Z5_CHI_3	24° 55' 28.132" N	87° 8' 50.519" E	-0.58
3333	GO_Z5_CHI_3	24° 55' 27.807" N	87° 8' 50.519" E	-0.95
3334	GO_Z5_CHI_3	24° 55' 27.482" N	87° 8' 50.519" E	-0.75
3335	GO_Z16_CHI_11	24° 52' 15.334" N	87° 8' 50.291" E	8.08
3336	GO_Z16_CHI_11	24° 52' 15.009" N	87° 8' 50.290" E	7.95
3337	GO_Z16_CHI_11	24° 52' 14.684" N	87° 8' 50.290" E	8.01
3338	GO_Z16_CHI_11	24° 52' 14.359" N	87° 8' 50.289" E	8.11
3339	GO_Z16_CHI_11	24° 52' 14.034" N	87° 8' 50.289" E	8.04
3340	GO_Z2_GE_1	25° 1' 16.660" N	87° 8' 51.292" E	-8.74
3341	GO_Z2_GE_1	25° 1' 16.335" N	87° 8' 51.291" E	-8.77
3342	GO_Z2_GE_1	25° 1' 16.009" N	87° 8' 51.291" E	-8.92
3343	GO_Z2_GE_16	25° 0' 28.217" N	87° 8' 51.234" E	-7.37
3344	GO_Z2_GE_16	25° 0' 27.892" N	87° 8' 51.233" E	-7.22
3345	GO_Z2_GE_16	25° 0' 27.567" N	87° 8' 51.233" E	-7.07
3346	GO_Z2_GE_16	25° 0' 27.242" N	87° 8' 51.232" E	-7.05
3347	GO_Z2_GE_16	25° 0' 26.917" N	87° 8' 51.232" E	-7.07
3348	GO_Z2_GE_16	25° 0' 26.592" N	87° 8' 51.232" E	-7.03
3349	GO_Z2_GE_16	25° 0' 26.266" N	87° 8' 51.231" E	-6.91
3350	GO_Z5_CHI_3	24° 55' 28.457" N	87° 8' 50.876" E	-0.48
3351	GO_Z5_CHI_3	24° 55' 28.132" N	87° 8' 50.876" E	-0.55
3352	GO_Z5_CHI_3	24° 55' 27.807" N	87° 8' 50.875" E	-0.53
3353	GO_Z5_CHI_3	24° 55' 27.481" N	87° 8' 50.875" E	-0.80
3354	GO_Z16_CHI_11	24° 52' 15.659" N	87° 8' 50.647" E	8.13
3355	GO_Z16_CHI_11	24° 52' 15.334" N	87° 8' 50.647" E	7.86
3356	GO_Z16_CHI_11	24° 52' 15.009" N	87° 8' 50.646" E	8.06
3357	GO_Z16_CHI_11	24° 52' 14.684" N	87° 8' 50.646" E	8.12
3358	GO_Z16_CHI_11	24° 52' 14.359" N	87° 8' 50.646" E	8.12
3359	GO_Z2_GE_1	25° 1' 17.310" N	87° 8' 51.649" E	-8.84
3360	GO_Z2_GE_1	25° 1' 16.984" N	87° 8' 51.649" E	-8.92
3361	GO_Z2_GE_1	25° 1' 16.659" N	87° 8' 51.648" E	-8.92
3362	GO_Z2_GE_1	25° 1' 16.334" N	87° 8' 51.648" E	-8.93
3363	GO_Z2_GE_1	25° 1' 16.009" N	87° 8' 51.648" E	-8.69
3364	GO_Z2_GE_16	25° 0' 27.892" N	87° 8' 51.590" E	-7.38
3365	GO_Z2_GE_16	25° 0' 27.567" N	87° 8' 51.590" E	-7.24
3366	GO_Z2_GE_16	25° 0' 27.241" N	87° 8' 51.589" E	-7.00
3367	GO_Z2_GE_16	25° 0' 26.916" N	87° 8' 51.589" E	-6.89
3368	GO_Z2_GE_16	25° 0' 26.591" N	87° 8' 51.588" E	-7.18
3369	GO_Z2_GE_16	25° 0' 26.266" N	87° 8' 51.588" E	-6.86
3370	GO_Z2_GE_16	25° 0' 25.941" N	87° 8' 51.588" E	-6.75
3371	GO_Z2_GE_16	25° 0' 25.616" N	87° 8' 51.587" E	0.00
3372	GO_Z5_CHI_3	24° 55' 28.782" N	87° 8' 51.233" E	-0.83
3373	GO_Z5_CHI_3	24° 55' 28.456" N	87° 8' 51.233" E	-0.47
3374	GO_Z5_CHI_3	24° 55' 28.131" N	87° 8' 51.232" E	-0.50
3375	GO_Z5_CHI_3	24° 55' 27.806" N	87° 8' 51.232" E	-0.45
3376	GO_Z16_CHI_11	24° 52' 15.984" N	87° 8' 51.004" E	8.03
3377	GO_Z16_CHI_11	24° 52' 15.659" N	87° 8' 51.004" E	8.02
3378	GO_Z16_CHI_11	24° 52' 15.334" N	87° 8' 51.003" E	8.22
3379	GO_Z16_CHI_11	24° 52' 15.008" N	87° 8' 51.003" E	8.19
3380	GO_Z2_GE_1	25° 1' 17.634" N	87° 8' 52.006" E	-8.86
3381	GO_Z2_GE_1	25° 1' 17.309" N	87° 8' 52.006" E	-8.73
3382	GO_Z2_GE_1	25° 1' 16.984" N	87° 8' 52.006" E	-8.89
3383	GO_Z2_GE_1	25° 1' 16.659" N	87° 8' 52.005" E	-8.91
3384	GO_Z2_GE_1	25° 1' 16.334" N	87° 8' 52.005" E	-8.85
3385	GO_Z2_GE_16	25° 0' 27.566" N	87° 8' 51.946" E	-7.32
3386	GO_Z2_GE_16	25° 0' 27.241" N	87° 8' 51.946" E	-7.16
3387	GO_Z2_GE_16	25° 0' 26.916" N	87° 8' 51.946" E	-6.97
3388	GO_Z2_GE_16	25° 0' 26.591" N	87° 8' 51.945" E	-6.98
3389	GO_Z2_GE_16	25° 0' 26.266" N	87° 8' 51.945" E	-7.00
3390	GO_Z2_GE_16	25° 0' 25.941" N	87° 8' 51.944" E	-6.70
3391	GO_Z2_GE_16	25° 0' 25.616" N	87° 8' 51.944" E	0.00
3392	GO_Z2_GE_16	25° 0' 25.290" N	87° 8' 51.944" E	0.00
3393	GO_Z5_CHI_3	24° 55' 29.106" N	87° 8' 51.590" E	-0.06
3394	GO_Z5_CHI_3	24° 55' 28.781" N	87° 8' 51.590" E	-0.74
3395	GO_Z5_CHI_3	24° 55' 28.456" N	87° 8' 51.589" E	-0.53
3396	GO_Z5_CHI_3	24° 55' 28.131" N	87° 8' 51.589" E	-0.48
3397	GO_Z16_CHI_11	24° 52' 16.634" N	87° 8' 51.361" E	8.12
3398	GO_Z16_CHI_11	24° 52' 16.309" N	87° 8' 51.361" E	8.26
3399	GO_Z16_CHI_11	24° 52' 15.983" N	87° 8' 51.360" E	8.38
3400	GO_Z16_CHI_11	24° 52' 15.658" N	87° 8' 51.360" E	8.38
3401	GO_Z16_CHI_11	24° 52' 15.333" N	87° 8' 51.360" E	8.51
3402	GO_Z2_GE_1	25° 1' 17.959" N	87° 8' 52.364" E	-8.92
3403	GO_Z2_GE_1	25° 1' 17.634" N	87° 8' 52.363" E	-8.11
3404	GO_Z2_GE_1	25° 1' 17.309" N	87° 8' 52.363" E	-8.75
3405	GO_Z2_GE_1	25° 1' 16.984" N	87° 8' 52.362" E	-9.00
3406	GO_Z2_GE_1	25° 1' 16.659" N	87° 8' 52.362" E	-8.91
3407	GO_Z2_GE_16	25° 0' 27.241" N	87° 8' 52.303" E	-7.56
3408	GO_Z2_GE_16	25° 0' 26.916" N	87° 8' 52.302" E	-7.20
3409	GO_Z2_GE_16	25° 0' 26.591" N	87° 8' 52.302" E	-7.06
3410	GO_Z2_GE_16	25° 0' 26.265" N	87° 8' 52.302" E	-7.25
3411	GO_Z2_GE_16	25° 0' 25.940" N	87° 8' 52.301" E	-6.59
3412	GO_Z2_GE_16	25° 0' 25.615" N	87° 8' 52.301" E	-6.64
3413	GO_Z2_GE_16	25° 0' 25.290" N	87° 8' 52.300" E	0.00
3414	GO_Z2_GE_16	25° 0' 24.965" N	87° 8' 52.300" E	0.00
3415	GO_Z5_CHI_3	24° 55' 28.456" N	87° 8' 51.946" E	-0.43
3416	GO_Z5_CHI_3	24° 55' 28.131" N	87° 8' 51.945" E	-0.45
3417	GO_Z16_CHI_11	24° 52' 16.959" N	87° 8' 51.718" E	8.14
3418	GO_Z16_CHI_11	24° 52' 16.633" N	87° 8' 51.718" E	8.37
3419	GO_Z16_CHI_11	24° 52' 16.308" N	87° 8' 51.717" E	8.36
3420	GO_Z16_CHI_11	24° 52' 15.983" N	87° 8' 51.717" E	8.27
3421	GO_Z2_GE_1	25° 1' 18.609" N	87° 8' 52.721" E	-9.14
3422	GO_Z2_GE_1	25° 1' 18.284" N	87° 8' 52.721" E	-8.97
3423	GO_Z2_GE_1	25° 1' 17.959" N	87° 8' 52.720" E	-8.17
3424	GO_Z2_GE_1	25° 1' 17.634" N	87° 8' 52.720" E	-7.84
3425	GO_Z2_GE_1	25° 1' 17.309" N	87° 8' 52.720" E	-8.91
3426	GO_Z2_GE_1	25° 1' 16.983" N	87° 8' 52.719" E	-9.01
3427	GO_Z2_GE_16	25° 0' 26.915" N	87° 8' 52.659" E	-7.47
3428	GO_Z2_GE_16	25° 0' 26.590" N	87° 8' 52.659" E	-7.64
3429	GO_Z2_GE_16	25° 0' 26.265" N	87° 8' 52.658" E	-7.59
3430	GO_Z2_GE_16	25° 0' 25.940" N	87° 8' 52.658" E	-7.06
3431	GO_Z2_GE_16	25° 0' 25.615" N	87° 8' 52.658" E	-6.66
3432	GO_Z2_GE_16	25° 0' 25.290" N	87° 8' 52.657" E	0.00
3433	GO_Z2_GE_16	25° 0' 24.965" N	87° 8' 52.657" E	0.00
3434	GO_Z2_GE_16	25° 0' 24.639" N	87° 8' 52.656" E	0.00
3435	GO_Z2_GE_16	25° 0' 24.314" N	87° 8' 52.656" E	0.00
3436	GO_Z16_CHI_11	24° 52' 17.283" N	87° 8' 52.075" E	8.25
3437	GO_Z16_CHI_11	24° 52' 16.958" N	87° 8' 52.074" E	8.21
3438	GO_Z16_CHI_11	24° 52' 16.633" N	87° 8' 52.074" E	8.30
3439	GO_Z16_CHI_11	24° 52' 16.308" N	87° 8' 52.074" E	8.29
3440	GO_Z2_GE_1	25° 1' 18.934" N	87° 8' 53.078" E	-9.08
3441	GO_Z2_GE_1	25° 1' 18.609" N	87° 8' 53.078" E	-9.09
3442	GO_Z2_GE_1	25° 1' 18.284" N	87° 8' 53.078" E	-8.98
3443	GO_Z2_GE_1	25° 1' 17.958" N	87° 8' 53.077" E	-8.64
3444	GO_Z2_GE_1	25° 1' 17.633" N	87° 8' 53.077" E	-9.03
3445	GO_Z2_GE_1	25° 1' 17.308" N	87° 8' 53.076" E	-9.06
3446	GO_Z2_GE_16	25° 0' 26.265" N	87° 8' 53.015" E	-7.72
3447	GO_Z2_GE_16	25° 0' 25.940" N	87° 8' 53.015" E	-7.41
3448	GO_Z2_GE_16	25° 0' 25.614" N	87° 8' 53.014" E	0.00
3449	GO_Z2_GE_16	25° 0' 25.289" N	87° 8' 53.014" E	0.00
3450	GO_Z2_GE_16	25° 0' 24.964" N	87° 8' 53.014" E	0.00
3451	GO_Z2_GE_16	25° 0' 24.639" N	87° 8' 53.013" E	0.00
3452	GO_Z2_GE_16	25° 0' 24.314" N	87° 8' 53.013" E	0.00
3453	GO_Z2_GE_16	25° 0' 23.989" N	87° 8' 53.012" E	0.00
3454	GO_Z16_CHI_11	24° 52' 17.933" N	87° 8' 52.432" E	8.04
3455	GO_Z16_CHI_11	24° 52' 17.608" N	87° 8' 52.432" E	8.13
3456	GO_Z16_CHI_11	24° 52' 17.283" N	87° 8' 52.431" E	8.30
3457	GO_Z16_CHI_11	24° 52' 16.958" N	87° 8' 52.431" E	8.03
3458	GO_Z16_CHI_11	24° 52' 16.633" N	87° 8' 52.430" E	8.57
3459	GO_Z2_GE_1	25° 1' 19.259" N	87° 8' 53.436" E	-9.38
3460	GO_Z2_GE_1	25° 1' 18.933" N	87° 8' 53.435" E	-9.38
3461	GO_Z2_GE_1	25° 1' 18.608" N	87° 8' 53.435" E	-9.23
3462	GO_Z2_GE_1	25° 1' 18.283" N	87° 8' 53.434" E	-9.05
3463	GO_Z2_GE_1	25° 1' 17.958" N	87° 8' 53.434" E	-8.90
3464	GO_Z2_GE_1	25° 1' 17.633" N	87° 8' 53.434" E	-9.14
3465	GO_Z2_GE_16	25° 0' 25.614" N	87° 8' 53.371" E	0.00
3466	GO_Z2_GE_16	25° 0' 25.289" N	87° 8' 53.371" E	0.00
3467	GO_Z2_GE_16	25° 0' 24.964" N	87° 8' 53.370" E	0.00
3468	GO_Z2_GE_16	25° 0' 24.639" N	87° 8' 53.370" E	0.00
3469	GO_Z2_GE_16	25° 0' 24.314" N	87° 8' 53.370" E	0.00
3470	GO_Z2_GE_16	25° 0' 23.989" N	87° 8' 53.369" E	0.00
3471	GO_Z2_GE_16	25° 0' 23.663" N	87° 8' 53.369" E	0.00
3472	GO_Z16_CHI_11	24° 52' 18.258" N	87° 8' 52.789" E	8.02
3473	GO_Z16_CHI_11	24° 52' 17.933" N	87° 8' 52.788" E	8.24
3474	GO_Z16_CHI_11	24° 52' 17.608" N	87° 8' 52.788" E	8.24
3475	GO_Z16_CHI_11	24° 52' 17.283" N	87° 8' 52.787" E	8.43
3476	GO_Z2_GE_1	25° 1' 19.908" N	87° 8' 53.793" E	-9.39
3477	GO_Z2_GE_1	25° 1' 19.583" N	87° 8' 53.793" E	-9.30
3478	GO_Z2_GE_1	25° 1' 19.258" N	87° 8' 53.792" E	-9.17
3479	GO_Z2_GE_1	25° 1' 18.933" N	87° 8' 53.792" E	-8.96
3480	GO_Z2_GE_1	25° 1' 18.608" N	87° 8' 53.792" E	-9.11
3481	GO_Z2_GE_1	25° 1' 18.283" N	87° 8' 53.791" E	-9.11
3482	GO_Z2_GE_16	25° 0' 25.289" N	87° 8' 53.728" E	0.00
3483	GO_Z2_GE_16	25° 0' 24.964" N	87° 8' 53.727" E	0.00
3484	GO_Z2_GE_16	25° 0' 24.638" N	87° 8' 53.727" E	0.00
3485	GO_Z2_GE_16	25° 0' 24.313" N	87° 8' 53.726" E	0.00
3486	GO_Z2_GE_16	25° 0' 23.988" N	87° 8' 53.726" E	0.00
3487	GO_Z2_GE_16	25° 0' 23.663" N	87° 8' 53.726" E	0.00
3488	GO_Z3_GE_2	24° 58' 0.286" N	87° 8' 53.554" E	-1.10
3489	GO_Z16_CHI_11	24° 52' 18.583" N	87° 8' 53.145" E	8.13
3490	GO_Z16_CHI_11	24° 52' 18.258" N	87° 8' 53.145" E	8.26
3491	GO_Z16_CHI_11	24° 52' 17.932" N	87° 8' 53.145" E	8.31
3492	GO_Z16_CHI_11	24° 52' 17.607" N	87° 8' 53.144" E	8.55
3493	GO_Z2_GE_1	25° 1' 20.233" N	87° 8' 54.150" E	-9.27
3494	GO_Z2_GE_1	25° 1' 19.908" N	87° 8' 54.150" E	-9.32
3495	GO_Z2_GE_1	25° 1' 19.583" N	87° 8' 54.150" E	-9.34
3496	GO_Z2_GE_1	25° 1' 19.258" N	87° 8' 54.149" E	-9.00
3497	GO_Z2_GE_1	25° 1' 18.933" N	87° 8' 54.149" E	-9.11
3498	GO_Z2_GE_1	25° 1' 18.608" N	87° 8' 54.148" E	-9.13
3499	GO_Z2_GE_16	25° 0' 24.638" N	87° 8' 54.084" E	0.00
3500	GO_Z2_GE_16	25° 0' 24.313" N	87° 8' 54.083" E	0.00
3501	GO_Z2_GE_16	25° 0' 23.988" N	87° 8' 54.083" E	0.00
3502	GO_Z3_GE_2	24° 58' 0.936" N	87° 8' 53.911" E	-1.06
3503	GO_Z3_GE_2	24° 58' 0.610" N	87° 8' 53.911" E	-0.89
3504	GO_Z3_GE_2	24° 58' 0.285" N	87° 8' 53.910" E	-0.76
3505	GO_Z3_GE_2	24° 57' 59.960" N	87° 8' 53.910" E	-0.85
3506	GO_Z5_CHI_4	24° 54' 19.853" N	87° 8' 53.647" E	0.00
3507	GO_Z5_CHI_4	24° 54' 19.528" N	87° 8' 53.646" E	0.00
3508	GO_Z16_CHI_11	24° 52' 18.907" N	87° 8' 53.502" E	8.27
3509	GO_Z16_CHI_11	24° 52' 18.582" N	87° 8' 53.502" E	8.13
3510	GO_Z16_CHI_11	24° 52' 18.257" N	87° 8' 53.501" E	8.37
3511	GO_Z16_CHI_11	24° 52' 17.932" N	87° 8' 53.501" E	8.55
3512	GO_Z2_GE_1	25° 1' 20.883" N	87° 8' 54.508" E	-9.16
3513	GO_Z2_GE_1	25° 1' 20.558" N	87° 8' 54.508" E	-9.21
3514	GO_Z2_GE_1	25° 1' 20.233" N	87° 8' 54.507" E	-9.29
3515	GO_Z2_GE_1	25° 1' 19.908" N	87° 8' 54.507" E	-9.29
3516	GO_Z2_GE_1	25° 1' 19.583" N	87° 8' 54.506" E	-9.12
3517	GO_Z2_GE_1	25° 1' 19.257" N	87° 8' 54.506" E	-9.26
3518	GO_Z2_GE_1	25° 1' 18.932" N	87° 8' 54.506" E	-9.32
3519	GO_Z2_GE_16	25° 0' 24.313" N	87° 8' 54.440" E	0.00
3520	GO_Z3_GE_2	24° 58' 1.260" N	87° 8' 54.268" E	-0.86
3521	GO_Z3_GE_2	24° 58' 0.935" N	87° 8' 54.268" E	-0.75
3522	GO_Z3_GE_2	24° 58' 0.610" N	87° 8' 54.267" E	-0.40
3523	GO_Z3_GE_2	24° 58' 0.285" N	87° 8' 54.267" E	-0.56
3524	GO_Z3_GE_2	24° 57' 59.960" N	87° 8' 54.267" E	-0.60
3525	GO_Z5_CHI_4	24° 54' 19.853" N	87° 8' 54.003" E	2.20
3526	GO_Z5_CHI_4	24° 54' 19.528" N	87° 8' 54.003" E	2.03
3527	GO_Z5_CHI_4	24° 54' 19.203" N	87° 8' 54.002" E	1.87
3528	GO_Z5_CHI_4	24° 54' 18.878" N	87° 8' 54.002" E	2.47
3529	GO_Z5_CHI_4	24° 54' 18.552" N	87° 8' 54.001" E	2.35
3530	GO_Z5_CHI_4	24° 54' 18.227" N	87° 8' 54.001" E	2.08
3531	GO_Z5_CHI_4	24° 54' 17.902" N	87° 8' 54.001" E	2.14
3532	GO_Z5_CHI_4	24° 54' 17.577" N	87° 8' 54.000" E	2.10
3533	GO_Z5_CHI_4	24° 54' 17.252" N	87° 8' 54.000" E	2.08
3534	GO_Z16_CHI_11	24° 52' 19.557" N	87° 8' 53.859" E	8.20
3535	GO_Z16_CHI_11	24° 52' 19.232" N	87° 8' 53.859" E	8.41
3536	GO_Z16_CHI_11	24° 52' 18.907" N	87° 8' 53.859" E	8.31
3537	GO_Z16_CHI_11	24° 52' 18.582" N	87° 8' 53.858" E	8.59
3538	GO_Z16_CHI_11	24° 52' 18.257" N	87° 8' 53.858" E	8.68
3539	GO_Z2_GE_1	25° 1' 21.208" N	87° 8' 54.865" E	-9.18
3540	GO_Z2_GE_1	25° 1' 20.883" N	87° 8' 54.865" E	-9.18
3541	GO_Z2_GE_1	25° 1' 20.558" N	87° 8' 54.864" E	-9.14
3542	GO_Z2_GE_1	25° 1' 20.232" N	87° 8' 54.864" E	-9.50
3543	GO_Z2_GE_1	25° 1' 19.907" N	87° 8' 54.864" E	-9.29
3544	GO_Z2_GE_1	25° 1' 19.582" N	87° 8' 54.863" E	-9.31
3545	GO_Z2_GE_1	25° 1' 19.257" N	87° 8' 54.863" E	-9.30
3546	GO_Z3_GE_2	24° 58' 1.910" N	87° 8' 54.626" E	-0.60
3547	GO_Z3_GE_2	24° 58' 1.585" N	87° 8' 54.625" E	-0.14
3548	GO_Z3_GE_2	24° 58' 1.260" N	87° 8' 54.625" E	-0.53
3549	GO_Z3_GE_2	24° 58' 0.935" N	87° 8' 54.624" E	-0.58
3550	GO_Z3_GE_2	24° 58' 0.610" N	87° 8' 54.624" E	-0.41
3551	GO_Z5_CHI_4	24° 54' 19.853" N	87° 8' 54.360" E	2.41
3552	GO_Z5_CHI_4	24° 54' 19.527" N	87° 8' 54.359" E	2.28
3553	GO_Z5_CHI_4	24° 54' 19.202" N	87° 8' 54.359" E	2.06
3554	GO_Z5_CHI_4	24° 54' 18.877" N	87° 8' 54.358" E	2.15
3555	GO_Z5_CHI_4	24° 54' 18.552" N	87° 8' 54.358" E	2.06
3556	GO_Z5_CHI_4	24° 54' 18.227" N	87° 8' 54.358" E	2.13
3557	GO_Z5_CHI_4	24° 54' 17.902" N	87° 8' 54.357" E	2.13
3558	GO_Z5_CHI_4	24° 54' 17.577" N	87° 8' 54.357" E	2.05
3559	GO_Z5_CHI_4	24° 54' 17.252" N	87° 8' 54.356" E	2.09
3560	GO_Z5_CHI_4	24° 54' 16.926" N	87° 8' 54.356" E	2.10
3561	GO_Z5_CHI_4	24° 54' 16.601" N	87° 8' 54.356" E	2.71
3562	GO_Z5_CHI_4	24° 54' 16.276" N	87° 8' 54.355" E	2.80
3563	GO_Z16_CHI_11	24° 52' 19.557" N	87° 8' 54.216" E	0.00
3564	GO_Z16_CHI_11	24° 52' 19.232" N	87° 8' 54.215" E	8.46
3565	GO_Z16_CHI_11	24° 52' 18.907" N	87° 8' 54.215" E	8.53
3566	GO_Z2_GE_1	25° 1' 21.533" N	87° 8' 55.222" E	-9.35
3567	GO_Z2_GE_1	25° 1' 21.207" N	87° 8' 55.222" E	-9.22
3568	GO_Z2_GE_1	25° 1' 20.882" N	87° 8' 55.222" E	-9.29
3569	GO_Z2_GE_1	25° 1' 20.557" N	87° 8' 55.221" E	-9.31
3570	GO_Z2_GE_1	25° 1' 20.232" N	87° 8' 55.221" E	-9.20
3571	GO_Z2_GE_1	25° 1' 19.907" N	87° 8' 55.220" E	-9.28
3572	GO_Z2_GE_1	25° 1' 19.582" N	87° 8' 55.220" E	-9.28
3573	GO_Z3_GE_2	24° 58' 2.560" N	87° 8' 54.983" E	-0.61
3574	GO_Z3_GE_2	24° 58' 2.235" N	87° 8' 54.983" E	-0.58
3575	GO_Z3_GE_2	24° 58' 1.910" N	87° 8' 54.982" E	-0.55
3576	GO_Z3_GE_2	24° 58' 1.585" N	87° 8' 54.982" E	-0.53
3577	GO_Z3_GE_2	24° 58' 1.260" N	87° 8' 54.981" E	-0.48
3578	GO_Z5_CHI_4	24° 54' 19.852" N	87° 8' 54.716" E	2.08
3579	GO_Z5_CHI_4	24° 54' 19.527" N	87° 8' 54.716" E	2.33
3580	GO_Z5_CHI_4	24° 54' 19.202" N	87° 8' 54.715" E	2.16
3581	GO_Z5_CHI_4	24° 54' 18.877" N	87° 8' 54.715" E	2.02
3582	GO_Z5_CHI_4	24° 54' 18.552" N	87° 8' 54.714" E	2.03
3583	GO_Z5_CHI_4	24° 54' 18.227" N	87° 8' 54.714" E	2.02
3584	GO_Z5_CHI_4	24° 54' 17.901" N	87° 8' 54.714" E	2.23
3585	GO_Z5_CHI_4	24° 54' 17.576" N	87° 8' 54.713" E	2.23
3586	GO_Z5_CHI_4	24° 54' 17.251" N	87° 8' 54.713" E	2.25
3587	GO_Z5_CHI_4	24° 54' 16.926" N	87° 8' 54.712" E	2.11
3588	GO_Z5_CHI_4	24° 54' 16.601" N	87° 8' 54.712" E	2.46
3589	GO_Z5_CHI_4	24° 54' 16.276" N	87° 8' 54.712" E	3.32
3590	GO_Z16_CHI_11	24° 52' 19.232" N	87° 8' 54.572" E	0.00
3591	GO_Z2_GE_1	25° 1' 22.182" N	87° 8' 55.580" E	-9.18
3592	GO_Z2_GE_1	25° 1' 21.857" N	87° 8' 55.580" E	-9.22
3593	GO_Z2_GE_1	25° 1' 21.532" N	87° 8' 55.579" E	-9.30
3594	GO_Z2_GE_1	25° 1' 21.207" N	87° 8' 55.579" E	-9.28
3595	GO_Z2_GE_1	25° 1' 20.882" N	87° 8' 55.578" E	-9.33
3596	GO_Z2_GE_1	25° 1' 20.557" N	87° 8' 55.578" E	-9.27
3597	GO_Z2_GE_1	25° 1' 20.232" N	87° 8' 55.578" E	-9.27

District Mining Officer,
Godda

TABLE REPRESENTING ELEVATION (in m) WITH RESPECT TO 10m X 10m GRID WITHIN POTENTIAL SAND GHATS IN GODDA DISTRICT OF JHARKHAND

ANNEXURE - B17

3598	GC_Z3_GE_2	24° 58' 3.210" N	87° 8' 55.340" E	-1.99
3599	GC_Z3_GE_2	24° 58' 2.885" N	87° 8' 55.340" E	-0.59
3600	GC_Z3_GE_2	24° 58' 2.560" N	87° 8' 55.340" E	-0.47
3601	GC_Z3_GE_2	24° 58' 2.235" N	87° 8' 55.339" E	-0.42
3602	GC_Z3_GE_2	24° 58' 1.909" N	87° 8' 55.339" E	-0.61
3603	GC_Z5_CHI_4	24° 54' 19.852" N	87° 8' 55.072" E	2.27
3604	GC_Z5_CHI_4	24° 54' 19.527" N	87° 8' 55.072" E	2.46
3605	GC_Z5_CHI_4	24° 54' 19.202" N	87° 8' 55.072" E	2.20
3606	GC_Z5_CHI_4	24° 54' 18.876" N	87° 8' 55.071" E	2.24
3607	GC_Z5_CHI_4	24° 54' 18.551" N	87° 8' 55.071" E	2.06
3608	GC_Z5_CHI_4	24° 54' 18.226" N	87° 8' 55.071" E	2.14
3609	GO_Z5_CHI_4	24° 54' 17.901" N	87° 8' 55.070" E	2.19
3610	GO_Z5_CHI_4	24° 54' 17.576" N	87° 8' 55.070" E	2.22
3611	GO_Z5_CHI_4	24° 54' 17.251" N	87° 8' 55.069" E	2.11
3612	GO_Z5_CHI_4	24° 54' 16.926" N	87° 8' 55.069" E	2.22
3613	GO_Z5_CHI_4	24° 54' 16.601" N	87° 8' 55.069" E	2.47
3614	GO_Z5_CHI_4	24° 54' 16.276" N	87° 8' 55.068" E	3.42
3615	GO_Z2_GE_1	25° 1' 22.507" N	87° 8' 55.937" E	-8.96
3616	GO_Z2_GE_1	25° 1' 22.182" N	87° 8' 55.937" E	-9.24
3617	GO_Z2_GE_1	25° 1' 21.857" N	87° 8' 55.936" E	-9.19
3618	GO_Z2_GE_1	25° 1' 21.532" N	87° 8' 55.936" E	-9.26
3619	GO_Z2_GE_1	25° 1' 21.207" N	87° 8' 55.936" E	-9.25
3620	GO_Z2_GE_1	25° 1' 20.882" N	87° 8' 55.935" E	-9.13
3621	GO_Z2_GE_1	25° 1' 20.557" N	87° 8' 55.935" E	-9.22
3622	GO_Z3_GE_2	24° 58' 3.860" N	87° 8' 55.698" E	-2.33
3623	GO_Z3_GE_2	24° 58' 3.535" N	87° 8' 55.698" E	-2.20
3624	GO_Z3_GE_2	24° 58' 3.210" N	87° 8' 55.697" E	-0.84
3625	GO_Z3_GE_2	24° 58' 2.884" N	87° 8' 55.697" E	-0.51
3626	GO_Z3_GE_2	24° 58' 2.559" N	87° 8' 55.696" E	-0.55
3627	GO_Z5_CHI_4	24° 54' 19.851" N	87° 8' 55.429" E	2.09
3628	GO_Z5_CHI_4	24° 54' 19.526" N	87° 8' 55.429" E	2.08
3629	GO_Z5_CHI_4	24° 54' 19.201" N	87° 8' 55.428" E	2.12
3630	GO_Z5_CHI_4	24° 54' 18.876" N	87° 8' 55.428" E	2.13
3631	GO_Z5_CHI_4	24° 54' 18.551" N	87° 8' 55.427" E	2.11
3632	GO_Z5_CHI_4	24° 54' 18.226" N	87° 8' 55.427" E	2.06
3633	GO_Z5_CHI_4	24° 54' 17.901" N	87° 8' 55.427" E	2.15
3634	GO_Z5_CHI_4	24° 54' 17.576" N	87° 8' 55.426" E	2.05
3635	GO_Z5_CHI_4	24° 54' 17.251" N	87° 8' 55.426" E	2.26
3636	GO_Z5_CHI_4	24° 54' 16.925" N	87° 8' 55.425" E	2.16
3637	GO_Z5_CHI_4	24° 54' 16.600" N	87° 8' 55.425" E	2.03
3638	GO_Z2_GE_1	25° 1' 23.157" N	87° 8' 56.295" E	-8.91
3639	GO_Z2_GE_1	25° 1' 22.832" N	87° 8' 56.294" E	-9.19
3640	GO_Z2_GE_1	25° 1' 22.507" N	87° 8' 56.294" E	-9.17
3641	GO_Z2_GE_1	25° 1' 22.182" N	87° 8' 56.294" E	-9.21
3642	GO_Z2_GE_1	25° 1' 21.857" N	87° 8' 56.293" E	-9.24
3643	GO_Z2_GE_1	25° 1' 21.532" N	87° 8' 56.293" E	-9.20
3644	GO_Z2_GE_1	25° 1' 21.206" N	87° 8' 56.292" E	-9.20
3645	GO_Z2_GE_1	25° 1' 20.881" N	87° 8' 56.292" E	-9.25
3646	GO_Z3_GE_2	24° 58' 11.012" N	87° 8' 56.063" E	-0.49
3647	GO_Z3_GE_2	24° 58' 4.510" N	87° 8' 56.055" E	-0.81
3648	GO_Z3_GE_2	24° 58' 4.185" N	87° 8' 56.055" E	-0.85
3649	GO_Z3_GE_2	24° 58' 3.859" N	87° 8' 56.055" E	-1.98
3650	GO_Z3_GE_2	24° 58' 3.534" N	87° 8' 56.054" E	-2.04
3651	GO_Z3_GE_2	24° 58' 3.209" N	87° 8' 56.054" E	-0.63
3652	GO_Z3_GE_2	24° 58' 2.884" N	87° 8' 56.053" E	-0.56
3653	GO_Z5_CHI_4	24° 54' 19.851" N	87° 8' 55.785" E	2.23
3654	GO_Z5_CHI_4	24° 54' 19.526" N	87° 8' 55.785" E	2.05
3655	GO_Z5_CHI_4	24° 54' 19.201" N	87° 8' 55.785" E	2.13
3656	GO_Z5_CHI_4	24° 54' 18.876" N	87° 8' 55.784" E	2.17
3657	GO_Z5_CHI_4	24° 54' 18.551" N	87° 8' 55.784" E	2.11
3658	GO_Z5_CHI_4	24° 54' 18.226" N	87° 8' 55.783" E	2.21
3659	GO_Z5_CHI_4	24° 54' 17.900" N	87° 8' 55.783" E	2.17
3660	GO_Z5_CHI_4	24° 54' 17.575" N	87° 8' 55.783" E	2.17
3661	GO_Z5_CHI_4	24° 54' 17.250" N	87° 8' 55.782" E	2.15
3662	GO_Z5_CHI_4	24° 54' 16.925" N	87° 8' 55.782" E	2.25
3663	GO_Z5_CHI_4	24° 54' 16.600" N	87° 8' 55.782" E	2.18
3664	GO_Z2_GE_1	25° 1' 23.157" N	87° 8' 56.652" E	-8.98
3665	GO_Z2_GE_1	25° 1' 22.832" N	87° 8' 56.651" E	-9.16
3666	GO_Z2_GE_1	25° 1' 22.506" N	87° 8' 56.651" E	-9.13
3667	GO_Z2_GE_1	25° 1' 22.181" N	87° 8' 56.650" E	-9.12
3668	GO_Z2_GE_1	25° 1' 21.856" N	87° 8' 56.650" E	-9.09
3669	GO_Z2_GE_1	25° 1' 21.531" N	87° 8' 56.650" E	-9.04
3670	GO_Z2_GE_1	25° 1' 21.206" N	87° 8' 56.649" E	-9.13
3671	GO_Z3_GE_2	24° 58' 11.012" N	87° 8' 56.420" E	-0.67
3672	GO_Z3_GE_2	24° 58' 10.687" N	87° 8' 56.419" E	-0.64
3673	GO_Z3_GE_2	24° 58' 10.362" N	87° 8' 56.419" E	-0.65
3674	GO_Z3_GE_2	24° 58' 5.160" N	87° 8' 56.413" E	-0.73
3675	GO_Z3_GE_2	24° 58' 4.834" N	87° 8' 56.412" E	-0.76
3676	GO_Z3_GE_2	24° 58' 4.509" N	87° 8' 56.412" E	-0.81
3677	GO_Z3_GE_2	24° 58' 4.184" N	87° 8' 56.412" E	-2.11
3678	GO_Z3_GE_2	24° 58' 3.859" N	87° 8' 56.411" E	-1.85
3679	GO_Z3_GE_2	24° 58' 3.534" N	87° 8' 56.411" E	-1.06
3680	GO_Z5_CHI_4	24° 54' 19.851" N	87° 8' 56.142" E	2.13
3681	GO_Z5_CHI_4	24° 54' 19.526" N	87° 8' 56.142" E	2.25
3682	GO_Z5_CHI_4	24° 54' 19.201" N	87° 8' 56.141" E	2.13
3683	GO_Z5_CHI_4	24° 54' 18.875" N	87° 8' 56.141" E	2.14
3684	GO_Z5_CHI_4	24° 54' 18.550" N	87° 8' 56.140" E	2.19
3685	GO_Z5_CHI_4	24° 54' 18.225" N	87° 8' 56.140" E	2.39
3686	GO_Z5_CHI_4	24° 54' 17.900" N	87° 8' 56.140" E	2.05
3687	GO_Z5_CHI_4	24° 54' 17.575" N	87° 8' 56.139" E	2.20
3688	GO_Z5_CHI_4	24° 54' 17.250" N	87° 8' 56.139" E	2.46
3689	GO_Z5_CHI_4	24° 54' 16.925" N	87° 8' 56.138" E	2.26
3690	GO_Z5_CHI_4	24° 54' 16.600" N	87° 8' 56.138" E	2.12
3691	GO_Z2_GE_1	25° 1' 22.831" N	87° 8' 57.008" E	-9.22
3692	GO_Z2_GE_1	25° 1' 22.506" N	87° 8' 57.008" E	-9.17
3693	GO_Z2_GE_1	25° 1' 22.181" N	87° 8' 57.007" E	-9.12
3694	GO_Z2_GE_1	25° 1' 21.856" N	87° 8' 57.007" E	-9.10
3695	GO_Z2_GE_1	25° 1' 21.531" N	87° 8' 57.006" E	-9.04
3696	GO_Z3_GE_2	24° 58' 11.337" N	87° 8' 56.777" E	-1.66
3697	GO_Z3_GE_2	24° 58' 11.011" N	87° 8' 56.777" E	-1.43
3698	GO_Z3_GE_2	24° 58' 10.686" N	87° 8' 56.776" E	-0.87
3699	GO_Z3_GE_2	24° 58' 10.361" N	87° 8' 56.776" E	-0.84
3700	GO_Z3_GE_2	24° 58' 10.036" N	87° 8' 56.775" E	-1.50
3701	GO_Z3_GE_2	24° 58' 9.711" N	87° 8' 56.775" E	-1.98
3702	GO_Z3_GE_2	24° 58' 5.810" N	87° 8' 56.770" E	-1.48
3703	GO_Z3_GE_2	24° 58' 5.484" N	87° 8' 56.770" E	-1.02
3704	GO_Z3_GE_2	24° 58' 5.159" N	87° 8' 56.769" E	-0.98
3705	GO_Z3_GE_2	24° 58' 4.834" N	87° 8' 56.769" E	-0.91
3706	GO_Z3_GE_2	24° 58' 4.509" N	87° 8' 56.769" E	-1.18
3707	GO_Z5_CHI_4	24° 54' 19.850" N	87° 8' 56.498" E	2.26
3708	GO_Z5_CHI_4	24° 54' 19.525" N	87° 8' 56.498" E	2.17
3709	GO_Z5_CHI_4	24° 54' 19.200" N	87° 8' 56.498" E	2.31
3710	GO_Z5_CHI_4	24° 54' 18.875" N	87° 8' 56.497" E	2.27
3711	GO_Z5_CHI_4	24° 54' 18.550" N	87° 8' 56.497" E	2.24
3712	GO_Z5_CHI_4	24° 54' 18.225" N	87° 8' 56.496" E	2.07
3713	GO_Z5_CHI_4	24° 54' 17.900" N	87° 8' 56.496" E	2.09
3714	GO_Z5_CHI_4	24° 54' 17.575" N	87° 8' 56.496" E	2.31
3715	GO_Z5_CHI_4	24° 54' 17.249" N	87° 8' 56.495" E	2.50
3716	GO_Z5_CHI_4	24° 54' 16.924" N	87° 8' 56.495" E	2.12
3717	GO_Z5_CHI_4	24° 54' 16.599" N	87° 8' 56.495" E	2.22
3718	GO_Z2_GE_1	25° 1' 22.831" N	87° 8' 57.365" E	-9.26
3719	GO_Z2_GE_1	25° 1' 22.506" N	87° 8' 57.364" E	-9.14
3720	GO_Z2_GE_1	25° 1' 22.181" N	87° 8' 57.364" E	-9.15
3721	GO_Z2_GE_1	25° 1' 21.856" N	87° 8' 57.364" E	-9.26
3722	GO_Z3_GE_2	24° 58' 10.686" N	87° 8' 57.133" E	-2.39
3723	GO_Z3_GE_2	24° 58' 10.361" N	87° 8' 57.132" E	-2.42
3724	GO_Z3_GE_2	24° 58' 10.036" N	87° 8' 57.132" E	-2.39
3725	GO_Z3_GE_2	24° 58' 9.711" N	87° 8' 57.132" E	-2.37
3726	GO_Z3_GE_2	24° 58' 9.385" N	87° 8' 57.131" E	-2.48
3727	GO_Z3_GE_2	24° 58' 9.060" N	87° 8' 57.131" E	-2.35
3728	GO_Z3_GE_2	24° 58' 8.735" N	87° 8' 57.130" E	-2.36
3729	GO_Z3_GE_2	24° 58' 8.410" N	87° 8' 57.130" E	-2.38
3730	GO_Z3_GE_2	24° 58' 8.085" N	87° 8' 57.130" E	-1.99
3731	GO_Z3_GE_2	24° 58' 7.760" N	87° 8' 57.129" E	-2.01
3732	GO_Z3_GE_2	24° 58' 7.435" N	87° 8' 57.129" E	-1.83
3733	GO_Z3_GE_2	24° 58' 6.459" N	87° 8' 57.128" E	-1.70
3734	GO_Z3_GE_2	24° 58' 6.134" N	87° 8' 57.127" E	-1.82
3735	GO_Z3_GE_2	24° 58' 5.809" N	87° 8' 57.127" E	-2.09
3736	GO_Z3_GE_2	24° 58' 5.484" N	87° 8' 57.127" E	-1.67
3737	GO_Z3_GE_2	24° 58' 5.159" N	87° 8' 57.126" E	-1.14
3738	GO_Z5_CHI_4	24° 54' 19.850" N	87° 8' 56.855" E	2.33
3739	GO_Z5_CHI_4	24° 54' 19.525" N	87° 8' 56.854" E	2.23
3740	GO_Z5_CHI_4	24° 54' 19.200" N	87° 8' 56.854" E	2.14
3741	GO_Z5_CHI_4	24° 54' 18.875" N	87° 8' 56.854" E	2.14
3742	GO_Z5_CHI_4	24° 54' 18.550" N	87° 8' 56.853" E	2.09
3743	GO_Z5_CHI_4	24° 54' 18.224" N	87° 8' 56.853" E	2.23
3744	GO_Z5_CHI_4	24° 54' 17.899" N	87° 8' 56.853" E	2.07
3745	GO_Z5_CHI_4	24° 54' 17.574" N	87° 8' 56.852" E	2.25
3746	GO_Z5_CHI_4	24° 54' 17.249" N	87° 8' 56.852" E	2.25
3747	GO_Z5_CHI_4	24° 54' 16.924" N	87° 8' 56.851" E	2.33
3748	GO_Z5_CHI_4	24° 54' 16.598" N	87° 8' 56.851" E	2.08
3749	GO_Z2_GE_1	25° 1' 22.505" N	87° 8' 57.721" E	-9.18
3750	GO_Z2_GE_1	25° 1' 22.180" N	87° 8' 57.721" E	-8.35
3751	GO_Z3_GE_2	24° 58' 10.035" N	87° 8' 57.489" E	-2.41
3752	GO_Z3_GE_2	24° 58' 9.710" N	87° 8' 57.488" E	-2.46
3753	GO_Z3_GE_2	24° 58' 9.385" N	87° 8' 57.488" E	-2.36
3754	GO_Z3_GE_2	24° 58' 9.060" N	87° 8' 57.487" E	-2.33
3755	GO_Z3_GE_2	24° 58' 8.735" N	87° 8' 57.487" E	-2.30
3756	GO_Z3_GE_2	24° 58' 8.410" N	87° 8' 57.487" E	-2.33
3757	GO_Z3_GE_2	24° 58' 8.085" N	87° 8' 57.486" E	-2.22
3758	GO_Z3_GE_2	24° 58' 7.760" N	87° 8' 57.486" E	-1.96
3759	GO_Z3_GE_2	24° 58' 7.434" N	87° 8' 57.486" E	-1.82
3760	GO_Z3_GE_2	24° 58' 7.109" N	87° 8' 57.485" E	-1.87
3761	GO_Z3_GE_2	24° 58' 6.784" N	87° 8' 57.485" E	-1.70
3762	GO_Z3_GE_2	24° 58' 6.459" N	87° 8' 57.484" E	-1.76
3763	GO_Z3_GE_2	24° 58' 6.134" N	87° 8' 57.484" E	-1.67
3764	GO_Z5_CHI_4	24° 54' 19.850" N	87° 8' 57.211" E	2.27
3765	GO_Z5_CHI_4	24° 54' 19.525" N	87° 8' 57.211" E	2.37
3766	GO_Z5_CHI_4	24° 54' 19.199" N	87° 8' 57.211" E	2.25
3767	GO_Z5_CHI_4	24° 54' 18.874" N	87° 8' 57.210" E	2.30
3768	GO_Z5_CHI_4	24° 54' 18.549" N	87° 8' 57.210" E	2.31
3769	GO_Z5_CHI_4	24° 54' 18.224" N	87° 8' 57.209" E	2.25
3770	GO_Z5_CHI_4	24° 54' 17.899" N	87° 8' 57.209" E	2.04
3771	GO_Z5_CHI_4	24° 54' 17.574" N	87° 8' 57.209" E	2.12
3772	GO_Z5_CHI_4	24° 54' 17.249" N	87° 8' 57.208" E	2.23
3773	GO_Z5_CHI_4	24° 54' 16.924" N	87° 8' 57.208" E	2.29
3774	GO_Z5_CHI_4	24° 54' 16.598" N	87° 8' 57.207" E	2.30
3775	GO_Z5_CHI_4	24° 54' 16.273" N	87° 8' 57.207" E	2.44
3776	GO_Z3_GE_2	24° 58' 9.385" N	87° 8' 57.845" E	-2.35
3777	GO_Z3_GE_2	24° 58' 9.060" N	87° 8' 57.844" E	-2.26
3778	GO_Z3_GE_2	24° 58' 8.735" N	87° 8' 57.844" E	-2.23
3779	GO_Z3_GE_2	24° 58' 8.409" N	87° 8' 57.843" E	-2.32
3780	GO_Z3_GE_2	24° 58' 8.084" N	87° 8' 57.843" E	-2.09
3781	GO_Z3_GE_2	24° 58' 7.759" N	87° 8' 57.843" E	-2.28
3782	GO_Z3_GE_2	24° 58' 7.434" N	87° 8' 57.842" E	-1.83
3783	GO_Z5_CHI_4	24° 54' 19.849" N	87° 8' 57.568" E	2.19
3784	GO_Z5_CHI_4	24° 54' 19.524" N	87° 8' 57.567" E	2.36
3785	GO_Z5_CHI_4	24° 54' 19.199" N	87° 8' 57.567" E	2.59
3786	GO_Z5_CHI_4	24° 54' 18.874" N	87° 8' 57.567" E	2.15
3787	GO_Z5_CHI_4	24° 54' 18.549" N	87° 8' 57.566" E	2.25
3788	GO_Z5_CHI_4	24° 54' 18.224" N	87° 8' 57.566" E	2.18
3789	GO_Z5_CHI_4	24° 54' 17.899" N	87° 8' 57.566" E	2.50
3790	GO_Z5_CHI_4	24° 54' 17.573" N	87° 8' 57.565" E	2.25
3791	GO_Z5_CHI_4	24° 54' 17.248" N	87° 8' 57.565" E	2.25
3792	GO_Z5_CHI_4	24° 54' 16.923" N	87° 8' 57.564" E	2.29
3793	GO_Z5_CHI_4	24° 54' 16.598" N	87° 8' 57.564" E	2.39
3794	GO_Z5_CHI_4	24° 54' 16.273" N	87° 8' 57.564" E	2.41
3795	GO_Z5_CHI_4	24° 54' 19.849" N	87° 8' 57.924" E	2.39
3796	GO_Z5_CHI_4	24° 54' 19.524" N	87° 8' 57.924" E	2.36
3797	GO_Z5_CHI_4	24° 54' 19.199" N	87° 8' 57.924" E	2.51
3798	GO_Z5_CHI_4	24° 54' 18.874" N	87° 8' 57.923" E	2.27
3799	GO_Z5_CHI_4	24° 54' 18.549" N	87° 8' 57.923" E	2.21
3800	GO_Z5_CHI_4	24° 54' 18.223" N	87° 8' 57.922" E	2.33
3801	GO_Z5_CHI_4	24° 54' 17.898" N	87° 8' 57.922" E	2.71
3802	GO_Z5_CHI_4	24° 54' 17.573" N	87° 8' 57.922" E	2.14
3803	GO_Z5_CHI_4	24° 54' 17.248" N	87° 8' 57.921" E	2.18
3804	GO_Z5_CHI_4	24° 54' 16.923" N	87° 8' 57.921" E	2.10
3805	GO_Z5_CHI_4	24° 54' 16.598" N	87° 8' 57.920" E	2.35
3806	GO_Z5_CHI_4	24° 54' 16.273" N	87° 8' 57.920" E	2.42
3807	GO_Z5_CHI_4	24° 54' 19.849" N	87° 8' 58.281" E	2.81
3808	GO_Z5_CHI_4	24° 54' 19.524" N	87° 8' 58.280" E	3.32
3809	GO_Z5_CHI_4	24° 54' 19.198" N	87° 8' 58.280" E	2.46
3810	GO_Z5_CHI_4	24° 54' 18.873" N	87° 8' 58.280" E	2.51
3811	GO_Z5_CHI_4	24° 54' 18.548" N	87° 8' 58.279" E	2.30
3812	GO_Z5_CHI_4	24° 54' 18.223" N	87° 8' 58.279" E	2.22
3813	GO_Z5_CHI_4	24° 54' 17.898" N	87° 8' 58.278" E	2.61
3814	GO_Z5_CHI_4	24° 54' 17.573" N	87° 8' 58.278" E	2.30
3815	GO_Z5_CHI_4	24° 54' 17.248" N	87° 8' 58.278" E	2.31
3816	GO_Z5_CHI_4	24° 54' 16.923" N	87° 8' 58.277" E	2.23
3817	GO_Z5_CHI_4	24° 54' 16.597" N	87° 8' 58.277" E	2.38
3818	GO_Z5_CHI_4	24° 54' 16.272" N	87° 8' 58.277" E	2.47
3819	GO_Z5_CHI_4	24° 54' 19.848" N	87° 8' 58.637" E	2.26
3820	GO_Z5_CHI_4	24° 54' 19.523" N	87° 8' 58.637" E	2.43
3821	GO_Z5_CHI_4	24° 54' 19.198" N	87° 8' 58.637" E	2.34
3822	GO_Z5_CHI_4	24° 54' 18.873" N	87° 8' 58.636" E	2.61
3823	GO_Z5_CHI_4	24° 54' 18.548" N	87° 8' 58.636" E	2.45
3824	GO_Z5_CHI_4	24° 54' 18.223" N	87° 8' 58.635" E	2.19
3825	GO_Z5_CHI_4	24° 54' 17.898" N	87° 8' 58.635" E	2.45
3826	GO_Z5_CHI_4	24° 54' 17.572" N	87° 8' 58.635" E	2.48
3827	GO_Z5_CHI_4	24° 54' 17.247" N	87° 8' 58.634" E	2.33
3828	GO_Z5_CHI_4	24° 54' 16.922" N	87° 8' 58.634" E	2.21
3829	GO_Z5_CHI_4	24° 54' 16.597" N	87° 8' 58.633" E	2.21
3830	GO_Z5_CHI_4	24° 54' 16.272" N	87° 8' 58.633" E	2.23
3831	GO_Z5_CHI_4	24° 54' 15.947" N	87° 8' 58.633" E	2.20
3832	GO_Z5_CHI_4	24° 54' 19.848" N	87° 8' 58.994" E	2.14
3833	GO_Z5_CHI_4	24° 54' 19.523" N	87° 8' 58.993" E	2.09
3834	GO_Z5_CHI_4	24° 54' 19.198" N	87° 8' 58.993" E	2.46
3835	GO_Z5_CHI_4	24° 54' 18.873" N	87° 8' 58.993" E	2.78
3836	GO_Z5_CHI_4	24° 54' 18.547" N	87° 8' 58.992" E	2.50
3837	GO_Z5_CHI_4	24° 54' 18.222" N	87° 8' 58.992" E	2.21
3838	GO_Z5_CHI_4	24° 54' 17.897" N	87° 8' 58.991" E	2.31
3839	GO_Z5_CHI_4	24° 54' 17.572" N	87° 8' 58.991" E	2.50
3840	GO_Z5_CHI_4	24° 54' 17.247" N	87° 8' 58.991" E	2.27
3841	GO_Z5_CHI_4	24° 54' 16.922" N	87° 8' 58.990" E	2.15
3842	GO_Z5_CHI_4	24° 54' 16.597" N	87° 8' 58.990" E	2.19
3843	GO_Z5_CHI_4	24° 54' 16.272" N	87° 8' 58.989" E	2.20
3844	GO_Z5_CHI_4	24° 54' 15.946" N	87° 8' 58.989" E	2.20
3845	GO_Z5_CHI_4	24° 54' 19.848" N	87° 8' 59.350" E	1.99
3846	GO_Z5_CHI_4	24° 54' 19.522" N	87° 8' 59.350" E	2.36
3847	GO_Z5_CHI_4	24° 54' 19.197" N	87° 8' 59.349" E	2.02
3848	GO_Z5_CHI_4	24° 54' 18.872" N	87° 8' 59.349" E	2.52
3849	GO_Z5_CHI_4	24° 54' 18.547" N	87° 8' 59.349" E	3.18
3850	GO_Z5_CHI_4	24° 54' 18.222" N	87° 8' 59.348" E	2.22
3851	GO_Z5_CHI_4	24° 54' 17.897" N	87° 8' 59.348" E	2.37
3852	GO_Z5_CHI_4	24° 54' 17.572" N	87° 8' 59.348" E	2.23
3853	GO_Z5_CHI_4	24° 54' 17.247" N	87° 8' 59.347" E	2.22
3854	GO_Z5_CHI_4	24° 54' 16.921" N	87° 8' 59.347" E	2.17
3855	GO_Z5_CHI_4	24° 54' 16.596" N	87° 8' 59.346" E	2.28
3856	GO_Z5_CHI_4	24° 54' 16.271" N	87° 8' 59.346" E	2.46
3857	GO_Z5_CHI_4	24° 54' 15.946" N	87° 8' 59.346" E	2.53
3858	GO_Z5_CHI_4	24° 54' 19.847" N	87° 8' 59.707" E	2.39
3859	GO_Z5_CHI_4	24° 54' 19.522" N	87° 8' 59.706" E	2.06
3860	GO_Z5_CHI_4	24° 54' 19.197" N	87° 8' 59.706" E	2.44
3861	GO_Z5_CHI_4	24° 54' 18.872" N	87° 8' 59.706" E	2.07
3862	GO_Z5_CHI_4	24° 54' 18.547" N	87° 8' 59.705" E	3.00
3863	GO_Z5_CHI_4	24° 54' 18.222" N	87° 8' 59.705" E	2.21
3864	GO_Z5_CHI_4	24° 54' 17.896" N	87° 8' 59.704" E	2.33
3865	GO_Z5_CHI_4	24° 54' 17.571" N	87° 8' 59.704" E	2.23
3866	GO_Z5_CHI_4	24° 54' 17.246" N	87° 8' 59.704" E	2.22
3867	GO_Z5_CHI_4	24° 54' 16.921" N	87° 8' 59.703" E	2.18
3868	GO_Z5_CHI_4	24° 54' 16.596" N	87° 8' 59.703" E	2.18
3869	GO_Z5_CHI_4	24° 54' 16.271" N	87° 8' 59.702" E	2.50
3870	GO_Z5_CHI_4	24° 54' 15.946" N	87° 8' 59.702" E	2.53
3871	GO_Z5_CHI_4	24° 54' 19.847" N	87° 9' 0.063" E	2.63
3872	GO_Z5_CHI_4	24° 54' 19.522" N	87° 9' 0.063" E	2.29
3873	GO_Z5_CHI_4	24° 54' 19.197" N	87° 9' 0.062" E	2.05
3874	GO_Z5_CHI_4	24° 54' 18.871" N	87° 9' 0.062" E	3.19
3875	GO_Z5_CHI_4	24° 54' 18.546" N	87° 9' 0.062" E	2.54
3876	GO_Z5_CHI_4	24° 54' 18.221" N	87° 9' 0.061" E	2.14
3877	GO_Z5_CHI_4	24° 54' 17.896" N	87° 9' 0.061" E	2.27
3878	GO_Z5_CHI_4	24° 54' 17.571" N	87° 9' 0.060" E	2.21
3879	GO_Z5_CHI_4	24° 54' 17.246" N	87° 9' 0.060" E	2.38
3880	GO_Z5_CHI_4	24° 54' 16.921" N	87° 9' 0.060" E	2.51
3881	GO_Z5_CHI_4	24° 54' 16.596" N	87° 9' 0.059" E	2.22
3882	GO_Z5_CHI_4	24° 54' 16.271" N	87° 9' 0.059" E	2.42
3883	GO_Z5_CHI_4	24° 54' 15.945" N	87° 9' 0.059" E	2.38
3884	GO_Z5_CHI_4	24° 54' 15.620" N	87° 9' 0.058" E	2.51
3885	GO_Z5_CHI_4	24° 54' 19.846" N	87° 9' 0.420" E	2.53
3886	GO_Z5_CHI_4	24° 54' 19.521" N	87° 9' 0.419" E	1.95
3887	GO_Z5_CHI_4	24° 54' 19.196" N	87° 9' 0.419" E	2.52
3888	GO_Z5_CHI_4	24° 54' 18.871" N	87° 9' 0.419" E	2.41
3889	GO_Z5_CHI_4	24° 54' 18.546" N	87° 9' 0.418" E	2.18
3890	GO_Z5_CHI_4	24° 54' 18.221" N	87° 9' 0.418" E	2.25
3891	GO_Z5_CHI_4	24° 54' 17.896" N	87° 9' 0.417" E	2.24
3892	GO_Z5_CHI_4	24° 54' 17.571" N	87° 9' 0.417" E	2.17
3893	GO_Z5_CHI_4	24° 54' 17.246" N	87° 9' 0.417" E	2.33
3894	GO_Z5_CHI_4	24° 54' 16.920" N	87° 9' 0.416" E	2.46
3895	GO_Z5_CHI_4	24° 54' 16.595" N	87° 9' 0.416" E	2.14
3896	GO_Z5_CHI_4	24° 54' 16.270" N	87° 9' 0.415" E	2.41
3897	GO_Z5_CHI_4	24° 54' 15.945" N	87° 9' 0.415" E	2.49
3898	GO_Z5_CHI_4	24° 54' 15.620" N	87° 9' 0.415" E	2.38
3899	GO_Z5_CHI_4	24° 54' 19.846" N	87° 9' 0.776" E	2.86
3900	GO_Z5_CHI_4	24° 54' 19.521" N	87° 9' 0.776" E	2.02
3901	GO_Z5_CHI_4	24° 54' 19.196" N	87° 9' 0.775" E	2.10
3902	GO_Z5_CHI_4	24° 54' 18.871" N	87° 9' 0.775" E	2.39
3903	GO_Z5_CHI_4	24° 54' 18.546" N	87° 9' 0.775" E	2.31
3904	GO_Z5_CHI_4	24° 54' 18.221" N	87° 9' 0.774" E	2.24
3905	GO_Z5_CHI_4	24° 54' 17.895" N	87° 9' 0.774" E	2.32
3906	GO_Z5_CHI_4	24° 54' 17.570" N	87° 9' 0.773" E	2.23
3907	GO_Z5_CHI_4	24° 54' 17.245" N	87° 9' 0.773" E	2.34
3908	GO_Z5_CHI_4	24° 54' 16.920" N	87° 9' 0.773" E	2.20
3909	GO_Z5_CHI_4	24° 54' 16.595" N	87° 9' 0.772" E	2.24
3910	GO_Z5_CHI_4	24° 54' 16.270" N	87° 9' 0.772" E	2.43
3911	GO_Z5_CHI_4	24° 54' 15.945" N	87° 9' 0.771" E	2.49
3912	GO_Z5_CHI_4	24° 54' 15.620" N	87° 9' 0.771" E	2.45
3913	GO_Z5_CHI_4	24° 54' 19.846" N	87° 9' 1.133" E	2.93
3914	GO_Z5_CHI_4	24° 54' 19.521" N	87° 9' 1.132" E	2.96
3915	GO_Z5_CHI_4	24° 54' 19.196" N	87° 9' 1.132" E	2.24
3916	GO_Z5_CHI_4	24° 54' 18.870" N	87° 9' 1.131" E	2.31
3917	GO_Z5_CHI_4	24° 54' 18.545" N	87° 9' 1.131" E	2.53
3918	GO_Z5_CHI_4	24° 54' 18.220" N	87° 9' 1.131" E	2.44
3919	GO_Z5_CHI_4	24° 54' 17.895" N	87° 9' 1.130" E	2.27
3920	GO_Z5_CHI_4	24° 54' 17.570" N	87° 9' 1.130" E	2.34
3921	GO_Z5_CHI_4	24° 54' 17.245" N	87° 9' 1.130" E	2.21
3922	GO_Z5_CHI_4	24° 54' 16.920" N	87° 9' 1.129" E	2.12
3923	GO_Z5_CHI_4	24° 54' 16.595" N	87° 9' 1.129" E	2.25
3924	GO_Z5_CHI_4	24° 54' 16.269" N	87° 9' 1.128" E	2.35
3925	GO_Z5_CHI_4	24° 54' 15.944" N	87° 9' 1.128" E	2.42
3926	GO_Z5_CHI_4	24° 54' 15.619" N	87° 9' 1.128" E	2.46
3927	GO_Z5_CHI_4	24° 54' 19.845" N	87° 9' 1.489" E	3.05
3928	GO_Z5_CHI_4	24° 54' 19.520" N	87° 9' 1.489" E	2.85
3929	GO_Z5_CHI_4	24° 54' 19.195" N	87° 9' 1.488" E	2.13
3930	GO_Z5_CHI_4	24° 54' 18.870" N	87° 9' 1.488" E	2.11
3931	GO_Z5_CHI_4	24° 54' 18.545" N	87° 9' 1.488" E	2.43
3932	GO_Z5_CHI_4	24° 54' 18.220" N	87° 9' 1.487" E	2.84
3933	GO_Z5_CHI_4	24° 54' 17.895" N	87° 9' 1.487" E	3.32
3934	GO_Z5_CHI_4	24° 54' 17.570" N	87° 9' 1.486" E	2.23
3935	GO_Z5_CHI_4	24° 54' 17.244" N	87° 9' 1.486" E	2.23
3936	GO_Z5_CHI_4	24° 54' 16.919" N	87° 9' 1.486" E	2.21
3937	GO_Z5_CHI_4	24° 54' 16.594" N	87° 9' 1.485" E	2.14
3938	GO_Z5_CHI_4	24° 54' 16.269" N	87° 9' 1.485" E	2.56
3939	GO_Z5_CHI_4	24° 54' 15.944" N	87° 9' 1.484" E	2.42
3940	GO_Z5_CHI_4	24° 54' 15.619" N	87° 9' 1.484" E	2.50
3941	GO_Z5_CHI_4	24° 54' 15.294" N	87° 9' 1.484" E	2.54
3942	GO_Z5_CHI_4	24° 54' 19.195" N	87° 9' 1.845" E	3.29
3943	GO_Z5_CHI_4	24° 54' 18.870" N	87° 9' 1.844" E	3.25
3944	GO_Z5_CHI_4	24° 54' 18.545" N	87° 9' 1.844" E	2.25
3945	GO_Z5_CHI_4	24° 54' 18.219" N	87° 9' 1.844" E	2.35
3946	GO_Z5_CHI_4	24° 54' 17.894" N	87° 9' 1.843" E	3.32
3947	GO_Z5_CHI_4	24° 54' 17.569" N	87° 9' 1.843" E	2.94
3948	GO_Z5_CHI_4	24° 54' 17.244" N	87° 9' 1.842" E	2.83
3949	GO_Z5_CHI_4	24° 54' 16.919" N	87° 9' 1.842" E	2.27
3950	GO_Z5_CHI_4	24° 54' 16.594" N	87° 9' 1.842" E	2.21
3951	GO_Z5_CHI_4	24° 54' 16.269" N	87° 9' 1.841" E	2.54
3952	GO_Z5_CHI_4	24° 54' 15.944" N	87° 9' 1.841" E	2.36
3953	GO_Z5_CHI_4	24° 54' 15.618" N	87° 9' 1.840" E	2.47
3954	GO_Z5_CHI_4	24° 54' 15.293" N	87° 9' 1.840" E	2.52
3955	GO_Z5_CHI_4	24° 54' 18.219" N	87° 9' 2.200" E	2.21
3956	GO_Z5_CHI_4	24° 54' 17.894" N	87° 9' 2.200" E	2.13
3957	GO_Z5_CHI_4	24° 54' 17.569" N	87° 9' 2.199" E	2.13
3958	GO_Z5_CHI_4	24° 54' 17.244" N	87° 9' 2.199" E	2.20
3959	GO_Z5_CHI_4	24° 54' 16.919" N	87° 9' 2.199" E	2.23
3960	GO_Z5_CHI_4	24° 54' 16.593" N	87° 9' 2.198" E	2.25
3961	GO_Z5_CHI_4	24° 54' 16.268" N	87° 9' 2.198" E	2.27
3962	GO_Z5_CHI_4	24° 54' 15.943" N	87° 9' 2.197" E	2.35
3963	GO_Z5_CHI_4	24° 54' 15.618" N	87° 9' 2.197" E	2.54
3964	GO_Z5_CHI_4	24° 54' 15.293" N	87° 9' 2.197" E	2.61
3965	GO_Z5_CHI_4	24° 54' 17.243" N	87° 9' 2.555" E	3.33
3966	GO_Z5_CHI_4	24° 54' 16.918" N	87° 9' 2.555" E	2.22
3967	GO_Z5_CHI_4	24° 54' 16.593" N	87° 9' 2.555" E	2.26
3968	GO_Z5_CHI_4	24° 54' 16.268" N	87° 9' 2.554" E	2.26
3969	GO_Z5_CHI_4	24° 54' 15.943" N	87° 9' 2.554" E	2.27
3970	GO_Z5_CHI_4	24° 54' 15.618" N	87° 9' 2.553" E	2.34
3971	GO_Z5_CHI_4	24° 54' 15.293" N	87° 9' 2.553" E	2.32
3972	GO_Z5_CHI_4	24° 54' 16.268" N	87° 9' 2.911" E	2.34
3973	GO_Z5_CHI_4	24° 54' 15.943" N	87° 9' 2.910" E	2.23
3974	GO_Z5_CHI_4	24° 54' 15.617" N	87° 9' 2.910" E	2.38
3975	GO_Z5_CHI_4	24° 54' 15.292" N	87° 9' 2.910" E	2.42
3976	GO_Z5_CHI_4	24° 54' 15.292" N	87° 9' 3.266" E	2.44
3977	GO_Z5_CHI_4	24° 54' 14.967" N	87° 9' 3.266" E	2.52
3978	GO_Z15_CHI_10	24° 52' 50.101" N	87° 9' 12.073" E	7.78
3979	GO_Z15_CHI_10	24° 52' 49.776" N	87° 9' 12.072" E	6.77
3980	GO_Z15_CHI_10	24° 52' 49.450" N	87° 9' 12.072" E	6.63
3981	GO_Z15_CHI_10	24° 52' 50.751" N	87° 9' 12.430" E	7.51
3982	GO_Z15_CHI_10	24° 52' 50.425" N	87° 9' 12.430" E	7.06
3983	GO_Z15_CHI_10	24° 52' 50.100" N	87° 9' 12.429" E	6.89
3984	GO_Z15_CHI_10	24° 52' 49.775" N	87° 9' 12.429" E	6.75
3985	GO_Z15_CHI_10	24° 52' 49.450" N	87° 9' 12.428" E	6.97
3986	GO_Z15_CHI_10	24° 52' 49.125" N	87° 9' 12.428" E	6.92
3987	GO_Z15_CHI_10	24° 52' 51.075" N	87° 9' 12.787" E	7.14
3988	GO_Z15_CHI_10	24° 52' 50.750" N	87° 9' 12.786" E	7.31
3989	GO_Z15_CHI_10	24° 52' 50.425" N	87° 9' 12.786" E	7.07
3990	GO_Z15_CHI_10	24° 52' 50.100" N	87° 9' 12.786" E	6.83
3991	GO_Z15_CHI_10	24° 52' 49.775" N	87° 9' 12.785" E	6.97
3992	GO_Z15_CHI_10	24° 52' 49.450" N	87° 9' 12.785" E	6.80
3993	GO_Z15_CHI_10	24° 52' 49.125" N	87° 9' 12.784" E	7.01
3994	GO_Z15_CHI_10	24° 52' 51.725" N	87° 9' 13.144" E	7.09
3995	GO_Z15_CHI_10	24° 52' 51.400" N	87° 9' 13.144" E	7.08
3996	GO_Z15_CHI_10	24° 52' 51.075" N	87° 9' 13.143" E	7.51
3997	GO_Z15_CHI_10	24° 52' 50.750" N	87° 9' 13.143" E	6.63
3998	GO_Z15_CHI_10	24° 52' 50.425" N	87° 9' 13.142" E	6.89
3999	GO_Z15_CHI_10	24° 52' 50.100" N	87° 9' 13.142" E	6.97
4000	GO_Z15_CHI_10	24° 52' 49.774" N	87° 9' 13.142" E	7.03
4001	GO_Z15_CHI_10	24° 52' 49.449" N	87° 9' 13.141" E	6.96
4002	GO_Z15_CHI_10	24° 52' 52.050" N	87° 9' 13.501" E	6.94
4003	GO_Z15_CHI_10	24° 52' 51.725" N	87° 9' 13.500" E	7.31
4004	GO_Z15_CHI_10	24° 52' 51.400" N	87° 9' 13.500" E	7.43
4005	GO_Z15_CHI_10	24° 52' 51.075" N	87° 9' 13.500" E	7.52
4006	GO_Z15_CHI_10	24° 52' 50.749" N	87° 9' 13.499" E	6.82
4007	GO_Z15_CHI_10	24° 52' 50.424" N	87° 9' 13.499" E	6.79
4008	GO_Z15_CHI_10	24° 52' 50.099" N	87° 9' 13.498" E	7.10
4009	GO_Z15_CHI_10	24° 52' 49.774" N	87° 9' 13.498" E	6.88
4010	GO_Z15_CHI_10	24° 52' 52.700" N	87° 9' 13.858" E	6.09
4011	GO_Z15_CHI_10	24° 52' 52.375" N	87° 9' 13.858" E	6.76
4012	GO_Z15_CHI_10	24° 52' 52.050" N	87° 9' 13.857" E	7.30
4013	GO_Z15_CHI_10	24° 52' 51.724" N	87° 9' 13.857" E	7.25
4014	GO_Z15_CHI_10	24° 52' 51.399" N	87° 9' 13.856" E	6.77
4015	GO_Z15_CHI_10	24° 52' 51.074" N	87° 9' 13.856" E	6.66
4016	GO_Z15_CHI_10	24° 52' 50.749" N	87° 9' 13.856" E	6.87
4017	GO_Z15_CHI_10	24° 52' 50.424" N	87° 9' 13.855" E	6.95
4018	GO_Z15_CHI_10	24° 52' 50.099" N	87° 9' 13.855" E	7.13
4019	GO_Z5_CHI_14	24° 54' 1.625" N	87° 9' 14.300" E	3.07
4020	GO_Z15_CHI_10	24° 52' 53.025" N	87° 9' 14.215" E	6.11
4021	GO_Z15_CHI_10	24° 52' 52.699" N	87° 9' 14.214" E	6.29
4022	GO_Z15_CHI_10	24° 52' 52.374" N	87° 9' 14.214" E	7.13
4023	GO_Z15_CHI_10	24° 52' 52.049" N	87° 9' 14.214" E	6.75
4024	GO_Z15_CHI_10	24° 52' 51.724" N	87° 9' 14.213" E	6.86
4025	GO_Z15_CHI_10	24° 52' 51.399" N	87° 9' 14.213" E	7.05
4026	GO_Z15_CHI_10	24° 52' 51.074" N	87° 9' 14.212" E	6.85
4027	GO_Z15_CHI_10	24° 52' 50.749" N	87° 9' 14.212" E	7.04
4028	GO_Z15_CHI_10	24° 52' 50.424" N	87° 9' 14.212" E	7.11
4029	GO_Z5_CHI_14	24° 54' 1.625" N	87° 9' 14.656" E	3.01
4030	GO_Z5_CHI_14	24° 54' 1.300" N	87° 9' 14.656" E	3.04
4031	GO_Z5_CHI_14	24° 54' 0.975" N	87° 9' 14.656" E	3.03
4032	GO_Z15_CHI_10	24° 52' 53.674" N	87° 9' 14.572" E	6.05
4033	GO_Z15_CHI_10	24° 52' 53.349" N	87° 9' 14.572" E	6.26
4034	GO_Z15_CHI_10	24° 52' 53.024" N	87° 9' 14.571" E	6.15
4035	GO_Z15_CHI_10	24° 52' 52.699" N	87° 9' 14.571" E	7.41
4036	GO_Z15_CHI_10	24° 52' 52.374" N	87° 9' 14.570" E	6.73
4037	GO_Z15_CHI_10	24° 52' 52.049" N	87° 9' 14.570" E	6.99
4038	GO_Z15_CHI_10	24° 52' 51.724" N	87° 9' 14.570" E	6.85
4039	GO_Z15_CHI_10	24° 52' 51.399" N	87° 9' 14.569" E	6.86
4040	GO_Z15_CHI_10	24° 52' 51.073" N	87° 9' 14.569" E	7.13
4041	GO_Z15_CHI_10	24° 52' 50.748" N	87° 9' 14.568" E	7.21
4042	GO_Z5_CHI_14	24° 54' 1.950" N	87° 9' 15.013" E	3.05
4043	GO_Z5_CHI_14	24° 54' 1.625" N	87° 9' 15.013" E	3.01
4044	GO_Z5_CHI_14	24° 54' 1.300" N	87° 9' 15.012" E	2.98
4045	GO_Z5_CHI_14	24° 54' 0.974" N	87° 9' 15.012" E	3.04
4046	GO_Z5_CHI_14	24° 54' 0.649" N	87° 9' 15.012" E	3.19
4047	GO_Z15_CHI_10	24° 52' 54.324" N	87° 9' 14.929" E	6.14
4048	GO_Z15_CHI_10	24° 52' 53.999" N	87° 9' 14.929" E	6.28
4049	GO_Z15_CHI_10	24° 52' 53.674" N	87° 9' 14.928" E	6.16
4050	GO_Z15_CHI_10	24° 52' 53.349" N	87° 9' 14.928" E	6.65
4051	GO_Z15_CHI_10	24° 52' 53.024" N	87° 9' 14.928" E	6.90
4052	GO_Z15_CHI_10	24° 52' 52.699" N	87° 9' 14.927" E	6.73
4053	GO_Z15_CHI_10	24° 52' 52.374" N	87° 9' 14.927" E	6.86
4054	GO_Z15_CHI_10	24° 52' 52.048" N	87° 9' 14.926" E	7.00
4055	GO_Z15_CHI_10	24° 52' 51.723" N	87° 9' 14.926" E	7.24
4056	GO_Z15_CHI_10	24° 52' 51.398" N	87° 9' 14.926" E	7.11
4057	GO_Z15_CHI_10	24° 52' 51.073" N	87° 9' 14.925" E	7.32
4058	GO_Z5_CHI_14	24° 54' 1.949" N	87° 9' 15.370" E	3.03
4059	GO_Z5_CHI_14	24° 54' 1.624" N	87° 9' 15.369" E	3.13
4060	GO_Z5_CHI_14	24° 54' 1.299" N	87° 9' 15.369" E	3.22
4061	GO_Z5_CHI_14	24° 54' 0.974" N	87° 9' 15.368" E	2.97
4062	GO_Z5_CHI_14	24° 54' 0.649" N	87° 9' 15.368" E	3.15
4063	GO_Z5_CHI_14	24° 54' 0.324" N	87° 9' 15.368" E	3.23
4064	GO_Z5_CHI_14	24° 54' 0.000" N	87° 9' 15.367" E	3.44
4065	GO_Z15_CHI_10	24° 52' 54.649" N	87° 9' 15.286" E	6.17
4066	GO_Z15_CHI_10	24° 52' 54.324" N	87° 9' 15.286" E	6.23
4067	GO_Z15_CHI_10	24° 52' 53.999" N	87° 9' 15.285" E	6.09
4068	GO_Z15_CHI_10	24° 52' 53.674" N	87° 9' 15.285" E	6.23
4069	GO_Z15_CHI_10	24° 52' 53.349" N	87° 9' 15.284" E	7.13
4070	GO_Z15_CHI_10	24° 52' 53.023" N	87° 9' 15.284" E	6.82
4071	GO_Z15_CHI_10	24° 52' 52.698" N	87° 9' 15.284" E	6.80
4072	GO_Z15_CHI_10	24° 52' 52.373" N	87° 9' 15.283" E	6.94
4073	GO_Z15_CHI_10	24° 52' 52.048" N	87° 9' 15.283" E	7.12
4074	GO_Z15_CHI_10	24° 52' 51.723" N	87° 9' 15.282" E	7.03
4075	GO_Z15_CHI_10	24° 52' 51.398" N	87° 9' 15.282" E	7.62
4076	GO_Z5_CHI_14	24° 54' 2.274" N	87° 9' 15.727" E	3.47
4077	GO_Z5_CHI_14	24° 54' 1.949" N	87° 9' 15.726" E	3.42
4078	GO_Z5_CHI_14	24° 54' 1.624" N	87° 9' 15.726" E	3.10
4079	GO_Z5_CHI_14	24° 54' 1.299" N	87° 9' 15.725" E	3.09
4080	GO_Z5_CHI_14	24° 54' 0.974" N	87° 9' 15.725" E	3.09
4081	GO_Z5_CHI_14	24° 54' 0.649" N	87° 9' 15.725" E	3.13
4082	GO_Z5_CHI_14	24° 54' 0.324" N	87° 9' 15.724" E	3.11
4083	GO_Z5_CHI_14	24° 54' 0.000" N	87° 9' 15.724" E	3.11
4084	GO_Z5_CHI_14	24° 53' 59.673" N	87° 9' 15.723" E	3.30
4085	GO_Z5_CHI_14	24° 53' 59.348" N	87° 9' 15.723" E	3.31
4086	GO_Z15_CHI_10	24° 52' 55.299" N	87° 9' 15.643" E	7.15
4087	GO_Z15_CHI_10	24° 52' 54.974" N	87° 9' 15.643" E	6.15
4088	GO_Z15_CHI_10	24° 52' 54.649" N	87° 9' 15.642" E	6.24
4089	GO_Z15_CHI_10	24° 52' 54.324" N	87° 9' 15.642" E	7.09
4090	GO_Z15_CHI_10	24° 52' 53.998" N	87° 9' 15.642" E	6.43
4091	GO_Z15_CHI_10	24° 52' 53.673" N	87° 9' 15.641" E	6.31
4092	GO_Z15_CHI_10	24° 52' 53.348" N	87° 9' 15.641" E	7.55
4093	GO_Z15_CHI_10	24° 52' 53.023" N	87° 9' 15.640" E	7.01
4094	GO_Z15_CHI_10	24° 52' 52.698" N	87° 9' 15.640" E	7.64
4095	GO_Z15_CHI_10	24° 52' 52.373" N	87° 9' 15.640" E	7.00
4096	GO_Z15_CHI_10	24° 52' 52.048" N	87° 9' 15.639" E	7.12
4097	GO_Z15_CHI_10	24° 52' 51.723" N	87° 9' 15.639" E	7.04
4098	GO_Z5_CHI_14	24° 54' 2.274" N	87° 9' 16.083" E	3.28
4099	GO_Z5_CHI_14	24° 54' 1.949" N	87° 9' 16.083" E	3.38
4100	GO_Z5_CHI_14	24° 54' 1.624" N	87° 9' 16.082" E	3.29
4101	GO_Z5_CHI_14	24° 54' 1.299" N	87° 9' 16.082" E	3.13
4102	GO_Z5_CHI_14	24° 54' 0.973" N	87° 9' 16.081" E	3.22
4103	GO_Z5_CHI_14	24° 54' 0.648" N	87° 9' 16.081" E	3.19
4104	GO_Z5_CHI_14	24° 54' 0.323" N	87° 9' 16.081" E	3.25
4105	GO_Z5_CHI_14	24° 54' 0.000" N	87° 9' 16.080" E	3.15
4106	GO_Z5_CHI_14	24° 53' 59.673" N	87° 9' 16.080" E	3.14
4107	GO_Z5_CHI_14	24° 53' 59.348" N	87° 9' 16.079" E	3.24
4108	GO_Z5_CHI_14	24° 53' 59.023" N	87° 9' 16.079" E	3.25
4109	GO_Z5_CHI_14	24° 53' 58.698" N	87° 9' 16.079" E	3.30
4110	GO_Z15_CHI_10	24° 52' 55.624" N	87° 9' 16.000" E	7.12
4111	GO_Z15_CHI_10	24° 52' 55.299" N	87° 9' 16.000" E	7.13
4112	GO_Z15_CHI_10	24° 52' 54.973" N	87° 9' 15.999" E	6.34
4113	GO_Z15_CHI_10	24° 52' 54.648" N	87° 9' 15.999" E	6.34
4114	GO_Z15_CHI_10	24° 52' 54.323" N	87° 9' 15.998" E	6.25
4115	GO_Z15_CHI_10	24° 52' 53.998" N	87° 9' 15.998" E	6.56
4116	GO_Z15_CHI_10	24° 52' 53.673" N	87° 9' 15.998" E	6.43
4117	GO_Z15_CHI_10	24° 52' 53.348" N	87° 9' 15.997" E	7.02
4118	GO_Z15_CHI_10	24° 52' 53.023" N	87° 9' 15.997" E	6.91
4119	GO_Z15_CHI_10	24° 52' 52.698" N	87° 9' 15.996" E	7.14
4120	GO_Z15_CHI_10	24° 52' 52.372" N	87° 9' 15.996" E	7.17
4121	GO_Z15_CHI_10	24° 52' 52.047" N	87° 9' 15.996" E	7.10
4122	GO_Z5_CHI_14	24° 54' 2.274" N	87° 9' 16.439" E	3.90
4123	GO_Z5_CHI_14	24° 54' 1.948" N	87° 9' 16.439" E	3.71
4124	GO_Z5_CHI_14	24° 54' 1.623" N	87° 9' 16.439" E	3.82
4125	GO_Z5_CHI_14	24° 54' 1.298" N	87° 9' 16.438" E	3.49
4126	GO_Z5_CHI_14	24° 54' 0.973" N	87° 9' 16.438" E	3.17
4127	GO_Z5_CHI_14	24° 54' 0.648" N	87° 9' 16.437" E	3.24
4128	GO_Z5_CHI_14	24° 54' 0.323" N	87° 9' 16.437" E	3.35
4129	GO_Z5_CHI_14	24° 54' 0.000" N	87° 9' 16.437" E	3.12
4130	GO_Z5_CHI_14	24° 53' 59.673" N	87° 9' 16.436" E	3.38
4131	GO_Z5_CHI_14	24° 53' 59.347" N	87° 9' 16.436" E	3.24
4132	GO_Z5_CHI_14	24° 53' 59.022" N	87° 9' 16.435" E	3.23
4133	GO_Z5_CHI_14	24° 53' 58.697" N	87° 9' 16.435" E	3.39
4134	GO_Z5_CHI_14	24° 53' 58.372" N	87° 9' 16.435" E	3.35
4135	GO_Z5_CHI_14	24° 53' 58.047" N	87° 9' 16.434" E	3.35
4136	GO_Z15_CHI_10	24° 52' 56.274" N	87° 9' 16.357" E	6.61
4137	GO_Z15_CHI_10	24° 52' 55.948" N	87° 9' 16.357" E	7.25
4138	GO_Z15_CHI_10	24° 52' 55.623" N	87° 9' 16.357" E	7.10
4139	GO_Z15_CHI_10	24° 52' 55.298" N	87° 9' 16.356" E	6.45
4140	GO_Z15_CHI_10	24° 52' 54.973" N	87° 9' 16.356" E	6.59
4141	GO_Z15_CHI_10	24° 52' 54.648" N	87° 9' 16.355" E	6.30
4142	GO_Z15_CHI_10	24° 52' 54.323" N	87° 9' 16.355" E	6.62
4143	GO_Z15_CHI_10	24° 52' 53.998" N	87° 9' 16.355" E	6.55
4144	GO_Z15_CHI_10	24° 52' 53.673" N	87° 9' 16.354" E	6.87
4145	GO_Z15_CHI_10	24° 52' 53.347" N	87° 9' 16.354" E	7.14
4146	GO_Z15_CHI_10	24° 52' 53.022" N	87° 9' 16.353" E	7.19
4147	GO_Z15_CHI_10	24° 52' 52.697" N	87° 9' 16.353" E	7.05
4148	GO_Z5_CHI_14	24° 54' 2.598" N	87° 9' 16.796" E	3.88
4149	GO_Z5_CHI_14	24° 54' 2.273" N	87° 9' 16.796" E	3.89
4150	GO_Z5_CHI_14	24° 54' 1.948" N	87° 9' 16.796" E	3.81
4151	GO_Z5_CHI_14	24° 54' 1.623" N	87° 9' 16.795" E	4.05
4152	GO_Z5_CHI_14	24° 54' 1.298" N	87° 9' 16.795" E	3.76
4153	GO_Z5_CHI_14	24° 54' 0.973" N	87° 9' 16.794" E	3.96
4154	GO_Z5_CHI_14	24° 54' 0.648" N	87° 9' 16.794" E	3.21
4155	GO_Z5_CHI_14	24° 54' 0.322" N	87° 9' 16.794" E	3.50
4156	GO_Z5_CHI_14	24° 54' 0.000" N	87° 9' 16.793" E	3.20
4157	GO_Z5_CHI_14	24° 53' 59.672" N	87° 9' 16.793" E	3.44
4158	GO_Z5_CHI_14	24° 53' 59.347" N	87° 9' 16.792" E	3.67
4159	GO_Z5_CHI_14	24° 53' 59.022" N	87° 9' 16.792" E	3.70
4160	GO_Z5_CHI_14	24° 53' 58.697" N	87° 9' 16.791" E	3.25
4161	GO_Z5_CHI_14	24° 53' 58.372" N	87° 9' 16.791" E	3.52
4162	GO_Z5_CHI_14	24° 53' 58.047" N	87° 9' 16.791" E	3.29
4163	GO_Z5_CHI_14	24° 53' 57.721" N	87° 9' 16.790" E	3.42
4164	GO_Z15_CHI_10	24° 52' 56.598" N	87° 9' 16.714" E	6.47
4165	GO_Z15_CHI_10	24° 52' 56.273" N	87° 9' 16.714" E	7.06
4166	GO_Z15_CHI_10	24° 52' 55.948" N	87° 9' 16.713" E	7.28
4167	GO_Z15_CHI_10	24° 52' 55.623" N	87° 9' 16.713" E	6.51
4168	GO_Z15_CHI_10	24° 52' 55.298" N	87° 9' 16.713" E	6.83
4169	GO_Z15_CHI_10	24° 52' 54.973" N	87° 9' 16.712" E	6.60
4170	GO_Z15_CHI_10	24° 52' 54.648" N	87° 9' 16.712" E	6.42
4171	GO_Z15_CHI_10	24° 52' 54.322" N	87° 9' 16.711" E	6.64
4172	GO_Z15_CHI_10	24° 52' 53.997" N	87° 9' 16.711" E	6.60
4173	GO_Z15_CHI_10	24° 52' 53.672" N	87° 9' 16.711" E	7.45
4174	GO_Z15_CHI_10	24° 52' 53.347" N	87° 9' 16.710" E	7.27
4175	GO_Z15_CHI_10	24° 52' 53.022" N	87° 9' 16.710" E	7.08
4176	GO_Z5_CHI_14	24° 54' 2.598" N	87° 9' 17.153" E	4.17
4177	GO_Z5_CHI_14	24° 54' 2.273" N	87° 9' 17.152" E	3.93
4178	GO_Z5_CHI_14	24° 54' 1.948" N	87° 9' 17.152" E	3.82
4179	GO_Z5_CHI_14	24° 54' 1.623" N	87° 9' 17.152" E	4.40
4180	GO_Z5_CHI_14	24° 54' 1.297" N	87° 9' 17.151" E	4.21
4181	GO_Z5_CHI_14	24° 54' 0.972" N	87° 9' 17.151" E	4.17
4182	GO_Z5_CHI_14	24° 54' 0.647" N	87° 9' 17.150" E	3.29
4183	GO_Z5_CHI_14	24° 54' 0.322" N	87° 9' 17.150" E	3.24
4184	GO_Z5_CHI_14	24° 54' 0.000" N	87° 9' 17.150" E	3.28
4185	GO_Z5_CHI_14	24° 53' 59.672" N	87° 9' 17.149" E	3.36
4186	GO_Z5_CHI_14	24° 53' 59.347" N	87° 9' 17.149" E	3.34
4187	GO_Z5_CHI_14	24° 53' 59.022" N	87° 9' 17.148" E	4.05
4188	GO_Z5_CHI_14	24° 53' 58.696" N	87° 9' 17.148" E	3.49
4189	GO_Z5_CHI_14	24° 53' 58.371" N	87° 9' 17.148" E	3.47
4190	GO_Z5_CHI_14	24° 53' 58.046" N	87° 9' 17.147" E	3.32
4191	GO_Z5_CHI_14	24° 53' 57.721" N	87° 9' 17.147" E	3.42
4192	GO_Z5_CHI_14	24° 53' 57.396" N	87° 9' 17.146" E	3.45
4193	GO_Z5_CHI_14	24° 53' 57.071" N	87° 9' 17.146" E	3.36
4194	GO_Z15_CHI_10	24° 52' 57.248" N	87° 9' 17.071" E	6.84
4195	GO_Z15_CHI_10	24° 52' 56.923" N	87° 9' 17.071" E	6.47
4196	GO_Z15_CHI_10	24° 52' 56.598" N	87° 9' 17.071" E	6.87
4197	GO_Z15_CHI_10	24° 52' 56.273" N	87° 9' 17.070" E	7.01

District Mining Officer,
Godda

TABLE REPRESENTING ELEVATION (in m) WITH RESPECT TO 10m X 10m GRID WITHIN POTENTIAL SAND GHATS IN GODDA DISTRICT OF JHARKHAND

ANNEXURE - B17

4198	GO_Z15_CHI_10	24° 52' 55.948" N	87° 9' 17.070" E	6.89
4199	GO_Z15_CHI_10	24° 52' 55.623" N	87° 9' 17.069" E	6.96
4200	GO_Z15_CHI_10	24° 52' 55.297" N	87° 9' 17.069" E	7.56
4201	GO_Z15_CHI_10	24° 52' 54.972" N	87° 9' 17.069" E	6.68
4202	GO_Z15_CHI_10	24° 52' 54.647" N	87° 9' 17.068" E	6.52
4203	GO_Z15_CHI_10	24° 52' 54.322" N	87° 9' 17.068" E	6.66
4204	GO_Z15_CHI_10	24° 52' 53.997" N	87° 9' 17.067" E	6.78
4205	GO_Z15_CHI_10	24° 52' 53.672" N	87° 9' 17.067" E	7.63
4206	GO_Z15_CHI_10	24° 52' 53.347" N	87° 9' 17.067" E	7.07
4207	GO_Z5_CHI_14	24° 54' 2.923" N	87° 9' 17.510" E	3.92
4208	GO_Z5_CHI_14	24° 54' 2.598" N	87° 9' 17.509" E	4.04
4209	GO_Z5_CHI_14	24° 54' 2.272" N	87° 9' 17.509" E	3.79
4210	GO_Z5_CHI_14	24° 54' 1.947" N	87° 9' 17.508" E	4.27
4211	GO_Z5_CHI_14	24° 54' 1.622" N	87° 9' 17.508" E	4.01
4212	GO_Z5_CHI_14	24° 54' 1.297" N	87° 9' 17.508" E	4.20
4213	GO_Z5_CHI_14	24° 54' 0.972" N	87° 9' 17.507" E	4.14
4214	GO_Z5_CHI_14	24° 54' 0.647" N	87° 9' 17.507" E	3.55
4215	GO_Z5_CHI_14	24° 54' 0.322" N	87° 9' 17.506" E	3.40
4216	GO_Z5_CHI_14	24° 54' 0.000" N	87° 9' 17.506" E	3.50
4217	GO_Z5_CHI_14	24° 53' 59.671" N	87° 9' 17.506" E	3.29
4218	GO_Z5_CHI_14	24° 53' 59.346" N	87° 9' 17.505" E	3.46
4219	GO_Z5_CHI_14	24° 53' 59.021" N	87° 9' 17.505" E	4.04
4220	GO_Z5_CHI_14	24° 53' 58.696" N	87° 9' 17.504" E	3.67
4221	GO_Z5_CHI_14	24° 53' 58.371" N	87° 9' 17.504" E	3.29
4222	GO_Z5_CHI_14	24° 53' 58.046" N	87° 9' 17.504" E	3.47
4223	GO_Z5_CHI_14	24° 53' 57.721" N	87° 9' 17.503" E	3.34
4224	GO_Z5_CHI_14	24° 53' 57.396" N	87° 9' 17.503" E	3.42
4225	GO_Z5_CHI_14	24° 53' 57.070" N	87° 9' 17.502" E	3.55
4226	GO_Z5_CHI_14	24° 53' 56.745" N	87° 9' 17.502" E	3.50
4227	GO_Z5_CHI_14	24° 53' 56.420" N	87° 9' 17.502" E	3.54
4228	GO_Z15_CHI_10	24° 52' 57.573" N	87° 9' 17.428" E	6.65
4229	GO_Z15_CHI_10	24° 52' 57.248" N	87° 9' 17.428" E	6.52
4230	GO_Z15_CHI_10	24° 52' 56.923" N	87° 9' 17.427" E	6.57
4231	GO_Z15_CHI_10	24° 52' 56.598" N	87° 9' 17.427" E	6.65
4232	GO_Z15_CHI_10	24° 52' 56.272" N	87° 9' 17.427" E	6.91
4233	GO_Z15_CHI_10	24° 52' 55.947" N	87° 9' 17.426" E	6.63
4234	GO_Z15_CHI_10	24° 52' 55.622" N	87° 9' 17.426" E	7.46
4235	GO_Z15_CHI_10	24° 52' 55.297" N	87° 9' 17.425" E	7.61
4236	GO_Z15_CHI_10	24° 52' 54.972" N	87° 9' 17.425" E	6.66
4237	GO_Z15_CHI_10	24° 52' 54.647" N	87° 9' 17.425" E	6.73
4238	GO_Z15_CHI_10	24° 52' 54.322" N	87° 9' 17.424" E	6.87
4239	GO_Z15_CHI_10	24° 52' 53.997" N	87° 9' 17.424" E	7.60
4240	GO_Z15_CHI_10	24° 52' 53.671" N	87° 9' 17.423" E	7.23
4241	GO_Z5_CHI_14	24° 54' 2.272" N	87° 9' 17.865" E	3.56
4242	GO_Z5_CHI_14	24° 54' 1.947" N	87° 9' 17.865" E	4.15
4243	GO_Z5_CHI_14	24° 54' 1.622" N	87° 9' 17.865" E	4.11
4244	GO_Z5_CHI_14	24° 54' 1.297" N	87° 9' 17.864" E	4.04
4245	GO_Z5_CHI_14	24° 54' 0.972" N	87° 9' 17.864" E	4.09
4246	GO_Z5_CHI_14	24° 54' 0.646" N	87° 9' 17.863" E	3.37
4247	GO_Z5_CHI_14	24° 54' 0.321" N	87° 9' 17.863" E	3.78
4248	GO_Z5_CHI_14	24° 54' 0.000" N	87° 9' 17.863" E	3.53
4249	GO_Z5_CHI_14	24° 53' 59.671" N	87° 9' 17.862" E	3.48
4250	GO_Z5_CHI_14	24° 53' 59.346" N	87° 9' 17.862" E	3.26
4251	GO_Z5_CHI_14	24° 53' 59.021" N	87° 9' 17.861" E	3.52
4252	GO_Z5_CHI_14	24° 53' 58.696" N	87° 9' 17.861" E	3.86
4253	GO_Z5_CHI_14	24° 53' 58.371" N	87° 9' 17.860" E	3.98
4254	GO_Z5_CHI_14	24° 53' 58.045" N	87° 9' 17.860" E	3.42
4255	GO_Z5_CHI_14	24° 53' 57.720" N	87° 9' 17.860" E	3.40
4256	GO_Z5_CHI_14	24° 53' 57.395" N	87° 9' 17.859" E	3.49
4257	GO_Z5_CHI_14	24° 53' 57.070" N	87° 9' 17.859" E	3.62
4258	GO_Z5_CHI_14	24° 53' 56.745" N	87° 9' 17.858" E	3.46
4259	GO_Z5_CHI_14	24° 53' 56.420" N	87° 9' 17.858" E	3.44
4260	GO_Z5_CHI_14	24° 53' 56.095" N	87° 9' 17.858" E	3.49
4261	GO_Z5_CHI_14	24° 53' 55.770" N	87° 9' 17.857" E	3.59
4262	GO_Z15_CHI_10	24° 52' 58.223" N	87° 9' 17.785" E	6.75
4263	GO_Z15_CHI_10	24° 52' 57.898" N	87° 9' 17.785" E	6.94
4264	GO_Z15_CHI_10	24° 52' 57.573" N	87° 9' 17.785" E	7.12
4265	GO_Z15_CHI_10	24° 52' 57.247" N	87° 9' 17.784" E	7.28
4266	GO_Z15_CHI_10	24° 52' 56.922" N	87° 9' 17.784" E	7.16
4267	GO_Z15_CHI_10	24° 52' 56.597" N	87° 9' 17.783" E	7.04
4268	GO_Z15_CHI_10	24° 52' 56.272" N	87° 9' 17.783" E	6.58
4269	GO_Z15_CHI_10	24° 52' 55.947" N	87° 9' 17.783" E	7.67
4270	GO_Z15_CHI_10	24° 52' 55.622" N	87° 9' 17.782" E	7.02
4271	GO_Z15_CHI_10	24° 52' 55.297" N	87° 9' 17.782" E	6.66
4272	GO_Z15_CHI_10	24° 52' 54.972" N	87° 9' 17.781" E	6.73
4273	GO_Z15_CHI_10	24° 52' 54.646" N	87° 9' 17.781" E	6.80
4274	GO_Z15_CHI_10	24° 52' 54.321" N	87° 9' 17.781" E	6.99
4275	GO_Z15_CHI_10	24° 52' 53.996" N	87° 9' 17.780" E	7.80
4276	GO_Z5_CHI_14	24° 54' 1.621" N	87° 9' 18.221" E	3.42
4277	GO_Z5_CHI_14	24° 54' 1.296" N	87° 9' 18.221" E	3.28
4278	GO_Z5_CHI_14	24° 54' 0.971" N	87° 9' 18.220" E	3.20
4279	GO_Z5_CHI_14	24° 54' 0.646" N	87° 9' 18.220" E	3.61
4280	GO_Z5_CHI_14	24° 54' 0.321" N	87° 9' 18.219" E	3.73
4281	GO_Z5_CHI_14	24° 54' 0.000" N	87° 9' 18.219" E	3.62
4282	GO_Z5_CHI_14	24° 53' 59.671" N	87° 9' 18.219" E	3.39
4283	GO_Z5_CHI_14	24° 53' 59.346" N	87° 9' 18.218" E	3.47
4284	GO_Z5_CHI_14	24° 53' 59.020" N	87° 9' 18.218" E	3.28
4285	GO_Z5_CHI_14	24° 53' 58.695" N	87° 9' 18.217" E	3.35
4286	GO_Z5_CHI_14	24° 53' 58.370" N	87° 9' 18.217" E	3.60
4287	GO_Z5_CHI_14	24° 53' 58.045" N	87° 9' 18.217" E	3.43
4288	GO_Z5_CHI_14	24° 53' 57.720" N	87° 9' 18.216" E	3.41
4289	GO_Z5_CHI_14	24° 53' 57.395" N	87° 9' 18.216" E	3.48
4290	GO_Z5_CHI_14	24° 53' 57.070" N	87° 9' 18.215" E	3.54
4291	GO_Z5_CHI_14	24° 53' 56.745" N	87° 9' 18.215" E	3.43
4292	GO_Z5_CHI_14	24° 53' 56.419" N	87° 9' 18.215" E	3.44
4293	GO_Z5_CHI_14	24° 53' 56.094" N	87° 9' 18.214" E	3.60
4294	GO_Z5_CHI_14	24° 53' 55.769" N	87° 9' 18.214" E	3.50
4295	GO_Z5_CHI_14	24° 53' 55.444" N	87° 9' 18.213" E	3.60
4296	GO_Z5_CHI_14	24° 53' 55.119" N	87° 9' 18.213" E	3.65
4297	GO_Z15_CHI_10	24° 52' 58.873" N	87° 9' 18.143" E	6.71
4298	GO_Z15_CHI_10	24° 52' 58.548" N	87° 9' 18.142" E	6.58
4299	GO_Z15_CHI_10	24° 52' 58.222" N	87° 9' 18.142" E	6.69
4300	GO_Z15_CHI_10	24° 52' 57.897" N	87° 9' 18.141" E	7.06
4301	GO_Z15_CHI_10	24° 52' 57.572" N	87° 9' 18.141" E	6.81
4302	GO_Z15_CHI_10	24° 52' 57.247" N	87° 9' 18.141" E	7.64
4303	GO_Z15_CHI_10	24° 52' 56.922" N	87° 9' 18.140" E	6.97
4304	GO_Z15_CHI_10	24° 52' 56.597" N	87° 9' 18.140" E	6.59
4305	GO_Z15_CHI_10	24° 52' 56.272" N	87° 9' 18.139" E	7.46
4306	GO_Z15_CHI_10	24° 52' 55.947" N	87° 9' 18.139" E	6.92
4307	GO_Z15_CHI_10	24° 52' 55.621" N	87° 9' 18.139" E	6.86
4308	GO_Z15_CHI_10	24° 52' 55.296" N	87° 9' 18.138" E	7.49
4309	GO_Z15_CHI_10	24° 52' 54.971" N	87° 9' 18.138" E	6.71
4310	GO_Z15_CHI_10	24° 52' 54.646" N	87° 9' 18.137" E	6.97
4311	GO_Z5_CHI_14	24° 54' 0.971" N	87° 9' 18.577" E	3.48
4312	GO_Z5_CHI_14	24° 54' 0.646" N	87° 9' 18.576" E	3.35
4313	GO_Z5_CHI_14	24° 54' 0.321" N	87° 9' 18.576" E	3.44
4314	GO_Z5_CHI_14	24° 54' 0.000" N	87° 9' 18.575" E	3.49
4315	GO_Z5_CHI_14	24° 53' 59.670" N	87° 9' 18.575" E	3.65
4316	GO_Z5_CHI_14	24° 53' 59.345" N	87° 9' 18.575" E	3.63
4317	GO_Z5_CHI_14	24° 53' 59.020" N	87° 9' 18.574" E	3.64
4318	GO_Z5_CHI_14	24° 53' 58.695" N	87° 9' 18.574" E	3.37
4319	GO_Z5_CHI_14	24° 53' 58.370" N	87° 9' 18.573" E	3.42
4320	GO_Z5_CHI_14	24° 53' 58.045" N	87° 9' 18.573" E	3.35
4321	GO_Z5_CHI_14	24° 53' 57.720" N	87° 9' 18.573" E	3.41
4322	GO_Z5_CHI_14	24° 53' 57.394" N	87° 9' 18.572" E	3.47
4323	GO_Z5_CHI_14	24° 53' 57.069" N	87° 9' 18.572" E	3.42
4324	GO_Z5_CHI_14	24° 53' 56.744" N	87° 9' 18.571" E	3.63
4325	GO_Z5_CHI_14	24° 53' 56.419" N	87° 9' 18.571" E	3.56
4326	GO_Z5_CHI_14	24° 53' 56.094" N	87° 9' 18.571" E	3.53
4327	GO_Z5_CHI_14	24° 53' 55.769" N	87° 9' 18.570" E	3.60
4328	GO_Z5_CHI_14	24° 53' 55.444" N	87° 9' 18.570" E	3.56
4329	GO_Z5_CHI_14	24° 53' 55.119" N	87° 9' 18.569" E	3.55
4330	GO_Z5_CHI_14	24° 53' 54.793" N	87° 9' 18.569" E	3.65
4331	GO_Z5_CHI_14	24° 53' 54.468" N	87° 9' 18.569" E	3.56
4332	GO_Z15_CHI_10	24° 52' 58.872" N	87° 9' 18.499" E	0.00
4333	GO_Z15_CHI_10	24° 52' 58.547" N	87° 9' 18.499" E	6.87
4334	GO_Z15_CHI_10	24° 52' 58.222" N	87° 9' 18.498" E	7.01
4335	GO_Z15_CHI_10	24° 52' 57.897" N	87° 9' 18.498" E	6.56
4336	GO_Z15_CHI_10	24° 52' 57.572" N	87° 9' 18.497" E	7.35
4337	GO_Z15_CHI_10	24° 52' 57.247" N	87° 9' 18.497" E	7.55
4338	GO_Z15_CHI_10	24° 52' 56.922" N	87° 9' 18.497" E	7.22
4339	GO_Z15_CHI_10	24° 52' 56.596" N	87° 9' 18.496" E	7.11
4340	GO_Z15_CHI_10	24° 52' 56.271" N	87° 9' 18.496" E	6.91
4341	GO_Z15_CHI_10	24° 52' 55.946" N	87° 9' 18.495" E	6.94
4342	GO_Z15_CHI_10	24° 52' 55.621" N	87° 9' 18.495" E	7.21
4343	GO_Z15_CHI_10	24° 52' 55.296" N	87° 9' 18.495" E	6.85
4344	GO_Z15_CHI_10	24° 52' 54.971" N	87° 9' 18.494" E	7.15
4345	GO_Z5_CHI_14	24° 54' 0.320" N	87° 9' 18.932" E	3.65
4346	GO_Z5_CHI_14	24° 54' 0.000" N	87° 9' 18.932" E	3.69
4347	GO_Z5_CHI_14	24° 53' 59.670" N	87° 9' 18.932" E	3.56
4348	GO_Z5_CHI_14	24° 53' 59.345" N	87° 9' 18.931" E	3.46
4349	GO_Z5_CHI_14	24° 53' 59.020" N	87° 9' 18.931" E	3.51
4350	GO_Z5_CHI_14	24° 53' 58.695" N	87° 9' 18.930" E	3.66
4351	GO_Z5_CHI_14	24° 53' 58.369" N	87° 9' 18.930" E	3.55
4352	GO_Z5_CHI_14	24° 53' 58.044" N	87° 9' 18.929" E	3.47
4353	GO_Z5_CHI_14	24° 53' 57.719" N	87° 9' 18.929" E	3.45
4354	GO_Z5_CHI_14	24° 53' 57.394" N	87° 9' 18.929" E	3.53
4355	GO_Z5_CHI_14	24° 53' 57.069" N	87° 9' 18.928" E	3.63
4356	GO_Z5_CHI_14	24° 53' 56.744" N	87° 9' 18.928" E	3.63
4357	GO_Z5_CHI_14	24° 53' 56.419" N	87° 9' 18.927" E	3.52
4358	GO_Z5_CHI_14	24° 53' 56.094" N	87° 9' 18.927" E	3.58
4359	GO_Z5_CHI_14	24° 53' 55.768" N	87° 9' 18.927" E	3.56
4360	GO_Z5_CHI_14	24° 53' 55.443" N	87° 9' 18.926" E	3.56
4361	GO_Z5_CHI_14	24° 53' 55.118" N	87° 9' 18.926" E	3.62
4362	GO_Z5_CHI_14	24° 53' 54.793" N	87° 9' 18.925" E	3.54
4363	GO_Z5_CHI_14	24° 53' 54.468" N	87° 9' 18.925" E	3.69
4364	GO_Z5_CHI_14	24° 53' 54.143" N	87° 9' 18.925" E	3.73
4365	GO_Z15_CHI_10	24° 52' 58.547" N	87° 9' 18.855" E	0.00
4366	GO_Z15_CHI_10	24° 52' 58.222" N	87° 9' 18.855" E	6.63
4367	GO_Z15_CHI_10	24° 52' 57.897" N	87° 9' 18.854" E	7.35
4368	GO_Z15_CHI_10	24° 52' 57.571" N	87° 9' 18.854" E	7.55
4369	GO_Z15_CHI_10	24° 52' 57.246" N	87° 9' 18.853" E	7.54
4370	GO_Z15_CHI_10	24° 52' 56.921" N	87° 9' 18.853" E	6.98
4371	GO_Z15_CHI_10	24° 52' 56.596" N	87° 9' 18.853" E	6.81
4372	GO_Z15_CHI_10	24° 52' 56.271" N	87° 9' 18.852" E	7.84
4373	GO_Z15_CHI_10	24° 52' 55.946" N	87° 9' 18.852" E	6.84
4374	GO_Z15_CHI_10	24° 52' 55.621" N	87° 9' 18.851" E	6.89
4375	GO_Z15_CHI_10	24° 52' 55.296" N	87° 9' 18.851" E	6.73
4376	GO_Z5_CHI_14	24° 54' 0.000" N	87° 9' 19.288" E	3.45
4377	GO_Z5_CHI_14	24° 53' 59.670" N	87° 9' 19.288" E	3.99
4378	GO_Z5_CHI_14	24° 53' 59.344" N	87° 9' 19.288" E	3.64
4379	GO_Z5_CHI_14	24° 53' 59.019" N	87° 9' 19.287" E	3.81
4380	GO_Z5_CHI_14	24° 53' 58.694" N	87° 9' 19.287" E	3.73
4381	GO_Z5_CHI_14	24° 53' 58.369" N	87° 9' 19.286" E	3.54
4382	GO_Z5_CHI_14	24° 53' 58.044" N	87° 9' 19.286" E	3.64
4383	GO_Z5_CHI_14	24° 53' 57.719" N	87° 9' 19.286" E	3.60
4384	GO_Z5_CHI_14	24° 53' 57.394" N	87° 9' 19.285" E	3.67
4385	GO_Z5_CHI_14	24° 53' 57.069" N	87° 9' 19.285" E	3.35
4386	GO_Z5_CHI_14	24° 53' 56.743" N	87° 9' 19.284" E	3.40
4387	GO_Z5_CHI_14	24° 53' 56.418" N	87° 9' 19.284" E	3.68
4388	GO_Z5_CHI_14	24° 53' 56.093" N	87° 9' 19.283" E	3.55
4389	GO_Z5_CHI_14	24° 53' 55.768" N	87° 9' 19.283" E	3.53
4390	GO_Z5_CHI_14	24° 53' 55.443" N	87° 9' 19.283" E	3.57
4391	GO_Z5_CHI_14	24° 53' 55.118" N	87° 9' 19.282" E	3.65
4392	GO_Z5_CHI_14	24° 53' 54.793" N	87° 9' 19.282" E	3.63
4393	GO_Z5_CHI_14	24° 53' 54.468" N	87° 9' 19.281" E	3.67
4394	GO_Z5_CHI_14	24° 53' 54.142" N	87° 9' 19.281" E	3.75
4395	GO_Z5_CHI_14	24° 53' 53.817" N	87° 9' 19.281" E	3.81
4396	GO_Z5_CHI_14	24° 53' 53.492" N	87° 9' 19.280" E	3.77
4397	GO_Z15_CHI_10	24° 52' 58.546" N	87° 9' 19.211" E	0.00
4398	GO_Z15_CHI_10	24° 52' 58.221" N	87° 9' 19.211" E	7.40
4399	GO_Z15_CHI_10	24° 52' 57.896" N	87° 9' 19.211" E	7.38
4400	GO_Z15_CHI_10	24° 52' 57.571" N	87° 9' 19.210" E	7.11
4401	GO_Z15_CHI_10	24° 52' 57.246" N	87° 9' 19.210" E	7.00
4402	GO_Z15_CHI_10	24° 52' 56.921" N	87° 9' 19.209" E	6.68
4403	GO_Z15_CHI_10	24° 52' 56.596" N	87° 9' 19.209" E	6.89
4404	GO_Z15_CHI_10	24° 52' 56.271" N	87° 9' 19.209" E	7.35
4405	GO_Z15_CHI_10	24° 52' 55.945" N	87° 9' 19.208" E	6.82
4406	GO_Z15_CHI_10	24° 52' 55.620" N	87° 9' 19.208" E	7.09
4407	GO_Z5_CHI_14	24° 53' 59.344" N	87° 9' 19.644" E	3.92
4408	GO_Z5_CHI_14	24° 53' 59.019" N	87° 9' 19.644" E	4.09
4409	GO_Z5_CHI_14	24° 53' 58.694" N	87° 9' 19.643" E	3.67
4410	GO_Z5_CHI_14	24° 53' 58.369" N	87° 9' 19.643" E	3.75
4411	GO_Z5_CHI_14	24° 53' 58.044" N	87° 9' 19.642" E	3.64
4412	GO_Z5_CHI_14	24° 53' 57.718" N	87° 9' 19.642" E	3.50
4413	GO_Z5_CHI_14	24° 53' 57.393" N	87° 9' 19.642" E	3.82
4414	GO_Z5_CHI_14	24° 53' 57.068" N	87° 9' 19.641" E	3.56
4415	GO_Z5_CHI_14	24° 53' 56.743" N	87° 9' 19.641" E	3.54
4416	GO_Z5_CHI_14	24° 53' 56.418" N	87° 9' 19.640" E	3.48
4417	GO_Z5_CHI_14	24° 53' 56.093" N	87° 9' 19.640" E	3.45
4418	GO_Z5_CHI_14	24° 53' 55.768" N	87° 9' 19.640" E	3.62
4419	GO_Z5_CHI_14	24° 53' 55.443" N	87° 9' 19.639" E	3.58
4420	GO_Z5_CHI_14	24° 53' 55.117" N	87° 9' 19.639" E	3.63
4421	GO_Z5_CHI_14	24° 53' 54.792" N	87° 9' 19.638" E	3.73
4422	GO_Z5_CHI_14	24° 53' 54.467" N	87° 9' 19.638" E	3.74
4423	GO_Z5_CHI_14	24° 53' 54.142" N	87° 9' 19.638" E	3.49
4424	GO_Z5_CHI_14	24° 53' 53.817" N	87° 9' 19.637" E	3.79
4425	GO_Z5_CHI_14	24° 53' 53.492" N	87° 9' 19.637" E	3.78
4426	GO_Z5_CHI_14	24° 53' 53.167" N	87° 9' 19.636" E	3.84
4427	GO_Z5_CHI_14	24° 53' 52.842" N	87° 9' 19.636" E	3.84
4428	GO_Z15_CHI_10	24° 52' 58.221" N	87° 9' 19.568" E	0.00
4429	GO_Z15_CHI_10	24° 52' 57.896" N	87° 9' 19.567" E	6.97
4430	GO_Z15_CHI_10	24° 52' 57.571" N	87° 9' 19.567" E	7.50
4431	GO_Z15_CHI_10	24° 52' 57.246" N	87° 9' 19.566" E	6.57
4432	GO_Z15_CHI_10	24° 52' 56.920" N	87° 9' 19.566" E	6.87
4433	GO_Z15_CHI_10	24° 52' 56.595" N	87° 9' 19.565" E	7.97
4434	GO_Z15_CHI_10	24° 52' 56.270" N	87° 9' 19.565" E	6.75
4435	GO_Z15_CHI_10	24° 52' 55.945" N	87° 9' 19.565" E	7.03
4436	GO_Z5_CHI_14	24° 53' 58.693" N	87° 9' 20.000" E	3.90
4437	GO_Z5_CHI_14	24° 53' 58.368" N	87° 9' 19.999" E	3.87
4438	GO_Z5_CHI_14	24° 53' 58.043" N	87° 9' 19.999" E	4.21
4439	GO_Z5_CHI_14	24° 53' 57.718" N	87° 9' 19.998" E	4.26
4440	GO_Z5_CHI_14	24° 53' 57.393" N	87° 9' 19.998" E	3.57
4441	GO_Z5_CHI_14	24° 53' 57.068" N	87° 9' 19.998" E	3.75
4442	GO_Z5_CHI_14	24° 53' 56.743" N	87° 9' 19.997" E	3.73
4443	GO_Z5_CHI_14	24° 53' 56.418" N	87° 9' 19.997" E	3.58
4444	GO_Z5_CHI_14	24° 53' 56.092" N	87° 9' 19.996" E	3.53
4445	GO_Z5_CHI_14	24° 53' 55.767" N	87° 9' 19.996" E	3.53
4446	GO_Z5_CHI_14	24° 53' 55.442" N	87° 9' 19.996" E	3.74
4447	GO_Z5_CHI_14	24° 53' 55.117" N	87° 9' 19.995" E	3.68
4448	GO_Z5_CHI_14	24° 53' 54.792" N	87° 9' 19.995" E	3.64
4449	GO_Z5_CHI_14	24° 53' 54.467" N	87° 9' 19.994" E	3.67
4450	GO_Z5_CHI_14	24° 53' 54.142" N	87° 9' 19.994" E	3.81
4451	GO_Z5_CHI_14	24° 53' 53.817" N	87° 9' 19.994" E	3.79
4452	GO_Z5_CHI_14	24° 53' 53.491" N	87° 9' 19.993" E	3.76
4453	GO_Z5_CHI_14	24° 53' 53.166" N	87° 9' 19.993" E	3.81
4454	GO_Z5_CHI_14	24° 53' 52.841" N	87° 9' 19.992" E	3.87
4455	GO_Z5_CHI_14	24° 53' 52.516" N	87° 9' 19.992" E	3.88
4456	GO_Z5_CHI_14	24° 53' 52.191" N	87° 9' 19.992" E	3.80
4457	GO_Z15_CHI_10	24° 52' 57.895" N	87° 9' 19.924" E	0.00
4458	GO_Z15_CHI_10	24° 52' 57.570" N	87° 9' 19.923" E	6.74
4459	GO_Z15_CHI_10	24° 52' 57.245" N	87° 9' 19.923" E	7.36
4460	GO_Z15_CHI_10	24° 52' 56.920" N	87° 9' 19.922" E	7.73
4461	GO_Z15_CHI_10	24° 52' 56.595" N	87° 9' 19.922" E	7.28
4462	GO_Z5_CHI_14	24° 53' 58.043" N	87° 9' 20.355" E	4.07
4463	GO_Z5_CHI_14	24° 53' 57.718" N	87° 9' 20.355" E	3.99
4464	GO_Z5_CHI_14	24° 53' 57.393" N	87° 9' 20.355" E	3.82
4465	GO_Z5_CHI_14	24° 53' 57.067" N	87° 9' 20.354" E	3.63
4466	GO_Z5_CHI_14	24° 53' 56.742" N	87° 9' 20.354" E	3.62
4467	GO_Z5_CHI_14	24° 53' 56.417" N	87° 9' 20.353" E	3.69
4468	GO_Z5_CHI_14	24° 53' 56.092" N	87° 9' 20.353" E	3.51
4469	GO_Z5_CHI_14	24° 53' 55.767" N	87° 9' 20.352" E	3.67
4470	GO_Z5_CHI_14	24° 53' 55.442" N	87° 9' 20.352" E	3.58
4471	GO_Z5_CHI_14	24° 53' 55.117" N	87° 9' 20.352" E	3.67
4472	GO_Z5_CHI_14	24° 53' 54.792" N	87° 9' 20.351" E	3.61
4473	GO_Z5_CHI_14	24° 53' 54.466" N	87° 9' 20.351" E	4.12
4474	GO_Z5_CHI_14	24° 53' 54.141" N	87° 9' 20.350" E	3.72
4475	GO_Z5_CHI_14	24° 53' 53.816" N	87° 9' 20.350" E	3.81
4476	GO_Z5_CHI_14	24° 53' 53.491" N	87° 9' 20.350" E	3.74
4477	GO_Z5_CHI_14	24° 53' 53.166" N	87° 9' 20.349" E	3.69
4478	GO_Z5_CHI_14	24° 53' 52.841" N	87° 9' 20.349" E	3.66
4479	GO_Z5_CHI_14	24° 53' 52.516" N	87° 9' 20.348" E	3.99
4480	GO_Z5_CHI_14	24° 53' 52.191" N	87° 9' 20.348" E	3.92
4481	GO_Z5_CHI_14	24° 53' 51.866" N	87° 9' 20.348" E	3.89
4482	GO_Z5_CHI_14	24° 53' 51.540" N	87° 9' 20.347" E	3.62
4483	GO_Z15_CHI_10	24° 52' 57.895" N	87° 9' 20.280" E	0.00
4484	GO_Z15_CHI_10	24° 52' 57.570" N	87° 9' 20.280" E	0.00
4485	GO_Z15_CHI_10	24° 52' 57.245" N	87° 9' 20.279" E	7.01
4486	GO_Z15_CHI_10	24° 52' 56.920" N	87° 9' 20.279" E	7.23
4487	GO_Z5_CHI_14	24° 53' 57.392" N	87° 9' 20.711" E	4.12
4488	GO_Z5_CHI_14	24° 53' 57.067" N	87° 9' 20.711" E	4.15
4489	GO_Z5_CHI_14	24° 53' 56.742" N	87° 9' 20.710" E	3.94
4490	GO_Z5_CHI_14	24° 53' 56.417" N	87° 9' 20.710" E	3.76
4491	GO_Z5_CHI_14	24° 53' 56.092" N	87° 9' 20.709" E	3.67
4492	GO_Z5_CHI_14	24° 53' 55.767" N	87° 9' 20.709" E	3.55
4493	GO_Z5_CHI_14	24° 53' 55.441" N	87° 9' 20.709" E	3.73
4494	GO_Z5_CHI_14	24° 53' 55.116" N	87° 9' 20.708" E	3.55
4495	GO_Z5_CHI_14	24° 53' 54.791" N	87° 9' 20.708" E	3.72
4496	GO_Z5_CHI_14	24° 53' 54.466" N	87° 9' 20.707" E	3.67
4497	GO_Z5_CHI_14	24° 53' 54.141" N	87° 9' 20.707" E	3.64
4498	GO_Z5_CHI_14	24° 53' 53.816" N	87° 9' 20.706" E	4.03
4499	GO_Z5_CHI_14	24° 53' 53.491" N	87° 9' 20.706" E	3.76
4500	GO_Z5_CHI_14	24° 53' 53.166" N	87° 9' 20.706" E	3.67
4501	GO_Z5_CHI_14	24° 53' 52.841" N	87° 9' 20.705" E	3.60
4502	GO_Z5_CHI_14	24° 53' 52.515" N	87° 9' 20.705" E	3.86
4503	GO_Z5_CHI_14	24° 53' 52.190" N	87° 9' 20.704" E	3.99
4504	GO_Z5_CHI_14	24° 53' 51.865" N	87° 9' 20.704" E	3.87
4505	GO_Z5_CHI_14	24° 53' 51.540" N	87° 9' 20.704" E	3.68
4506	GO_Z5_CHI_14	24° 53' 51.215" N	87° 9' 20.703" E	3.87
4507	GO_Z5_CHI_14	24° 53' 50.890" N	87° 9' 20.703" E	3.94
4508	GO_Z15_CHI_10	24° 52' 57.570" N	87° 9' 20.636" E	0.00
4509	GO_Z15_CHI_10	24° 52' 57.244" N	87° 9' 20.636" E	7.24
4510	GO_Z5_CHI_14	24° 53' 56.742" N	87° 9' 21.067" E	4.64
4511	GO_Z5_CHI_14	24° 53' 56.416" N	87° 9' 21.066" E	5.25
4512	GO_Z5_CHI_14	24° 53' 56.091" N	87° 9' 21.066" E	5.30
4513	GO_Z5_CHI_14	24° 53' 55.766" N	87° 9' 21.065" E	3.65
4514	GO_Z5_CHI_14	24° 53' 55.441" N	87° 9' 21.065" E	3.82
4515	GO_Z5_CHI_14	24° 53' 55.116" N	87° 9' 21.065" E	3.63
4516	GO_Z5_CHI_14	24° 53' 54.791" N	87° 9' 21.064" E	3.73
4517	GO_Z5_CHI_14	24° 53' 54.466" N	87° 9' 21.064" E	3.62
4518	GO_Z5_CHI_14	24° 53' 54.141" N	87° 9' 21.063" E	3.68
4519	GO_Z5_CHI_14	24° 53' 53.815" N	87° 9' 21.063" E	3.70
4520	GO_Z5_CHI_14	24° 53' 53.490" N	87° 9' 21.063" E	3.84
4521	GO_Z5_CHI_14	24° 53' 53.165" N	87° 9' 21.062" E	3.71
4522	GO_Z5_CHI_14	24° 53' 52.840" N	87° 9' 21.062" E	3.57
4523	GO_Z5_CHI_14	24° 53' 52.515" N	87° 9' 21.061" E	3.84
4524	GO_Z5_CHI_14	24° 53' 52.190" N	87° 9' 21.061" E	4.02
4525	GO_Z5_CHI_14	24° 53' 51.865" N	87° 9' 21.060" E	3.98
4526	GO_Z5_CHI_14	24° 53' 51.540" N	87° 9' 21.060" E	4.08
4527	GO_Z5_CHI_14	24° 53' 51.215" N	87° 9' 21.060" E	3.90
4528	GO_Z5_CHI_14	24° 53' 50.889" N	87° 9' 21.059" E	4.01
4529	GO_Z5_CHI_14	24° 53' 50.564" N	87° 9' 21.059" E	3.97
4530	GO_Z5_CHI_14	24° 53' 56.091" N	87° 9' 21.422" E	5.30
4531	GO_Z5_CHI_14	24° 53' 55.766" N	87° 9' 21.422" E	5.03
4532	GO_Z5_CHI_14	24° 53' 55.441" N	87° 9' 21.421" E	3.69
4533	GO_Z5_CHI_14	24° 53' 55.116" N	87° 9' 21.421" E	3.75
4534	GO_Z5_CHI_14	24° 53' 54.790" N	87° 9' 21.421" E	3.60
4535	GO_Z5_CHI_14	24° 53' 54.465" N	87° 9' 21.420" E	3.76
4536	GO_Z5_CHI_14	24° 53' 54.140" N	87° 9' 21.420" E	3.70
4537	GO_Z5_CHI_14	24° 53' 53.815" N	87° 9' 21.419" E	3.67
4538	GO_Z5_CHI_14	24° 53' 53.490" N	87° 9' 21.419" E	4.12
4539	GO_Z5_CHI_14	24° 53' 53.165" N	87° 9' 21.419" E	4.06
4540	GO_Z5_CHI_14	24° 53' 52.840" N	87° 9' 21.418" E	4.04
4541	GO_Z5_CHI_14	24° 53' 52.515" N	87° 9' 21.418" E	3.54
4542	GO_Z5_CHI_14	24° 53' 52.190" N	87° 9' 21.417" E	3.60
4543	GO_Z5_CHI_14	24° 53' 51.864" N	87° 9' 21.417" E	4.04
4544	GO_Z5_CHI_14	24° 53' 51.539" N	87° 9' 21.417" E	4.05
4545	GO_Z5_CHI_14	24° 53' 51.214" N	87° 9' 21.416" E	3.85
4546	GO_Z5_CHI_14	24° 53' 50.889" N	87° 9' 21.416" E	3.90
4547	GO_Z5_CHI_14	24° 53' 50.564" N	87° 9' 21.415" E	4.29
4548	GO_Z5_CHI_14	24° 53' 55.765" N	87° 9' 21.778" E	3.90
4549	GO_Z5_CHI_14	24° 53' 55.440" N	87° 9' 21.778" E	4.52
4550	GO_Z5_CHI_14	24° 53' 55.115" N	87° 9' 21.777" E	3.84
4551	GO_Z5_CHI_14	24° 53' 54.790" N	87° 9' 21.777" E	3.59
4552	GO_Z5_CHI_14	24° 53' 54.465" N	87° 9' 21.777" E	3.58
4553	GO_Z5_CHI_14	24° 53' 54.140" N	87° 9' 21.776" E	3.75
4554	GO_Z5_CHI_14	24° 53' 53.815" N	87° 9' 21.776" E	3.86
4555	GO_Z5_CHI_14	24° 53' 53.490" N	87° 9' 21.775" E	3.78
4556	GO_Z5_CHI_14	24° 53' 53.165" N	87° 9' 21.775" E	4.05
4557	GO_Z5_CHI_14	24° 53' 52.839" N	87° 9' 21.775" E	4.21
4558	GO_Z5_CHI_14	24° 53' 52.514" N	87° 9' 21.774" E	3.55
4559	GO_Z5_CHI_14	24° 53' 52.189" N	87° 9' 21.774" E	3.64
4560	GO_Z5_CHI_14	24° 53' 51.864" N	87° 9' 21.773" E	3.99
4561	GO_Z5_CHI_14	24° 53' 51.539" N	87° 9' 21.773" E	4.09
4562	GO_Z5_CHI_14	24° 53' 51.214" N	87° 9' 21.773" E	3.98
4563	GO_Z5_CHI_14	24° 53' 50.889" N	87° 9' 21.772" E	4.11
4564	GO_Z5_CHI_14	24° 53' 50.564" N	87° 9' 21.772" E	4.45
4565	GO_Z5_CHI_14	24° 53' 55.115" N	87° 9' 22.134" E	4.32
4566	GO_Z5_CHI_14	24° 53' 54.790" N	87° 9' 22.134" E	4.04
4567	GO_Z5_CHI_14	24° 53' 54.465" N	87° 9' 22.133" E	3.62
4568	GO_Z5_CHI_14	24° 53' 54.140" N	87° 9' 22.133" E	3.74
4569	GO_Z5_CHI_14	24° 53' 53.814" N	87° 9' 22.132" E	3.78
4570	GO_Z5_CHI_14	24° 53' 53.489" N	87° 9' 22.132" E	3.80
4571	GO_Z5_CHI_14	24° 53' 53.164" N	87° 9' 22.132" E	3.70
4572	GO_Z5_CHI_14	24° 53' 52.839" N	87° 9' 22.131" E	3.91
4573	GO_Z5_CHI_14	24° 53' 52.514" N	87° 9' 22.131" E	3.87
4574	GO_Z5_CHI_14	24° 53' 52.189" N	87° 9' 22.130" E	4.06
4575	GO_Z5_CHI_14	24° 53' 51.864" N	87° 9' 22.130" E	3.87
4576	GO_Z5_CHI_14	24° 53' 51.539" N	87° 9' 22.129" E	3.90
4577	GO_Z5_CHI_14	24° 53' 51.213" N	87° 9' 22.129" E	3.97
4578	GO_Z5_CHI_14	24° 53' 50.888" N	87° 9' 22.129" E	4.05
4579	GO_Z5_CHI_14	24° 53' 54.464" N	87° 9' 22.490" E	3.74
4580	GO_Z5_CHI_14	24° 53' 54.139" N	87° 9' 22.489" E	3.75
4581	GO_Z5_CHI_14	24° 53' 53.814" N	87° 9' 22.489" E	3.76
4582	GO_Z5_CHI_14	24° 53' 53.489" N	87° 9' 22.488" E	3.56
4583	GO_Z5_CHI_14	24° 53' 53.164" N	87° 9' 22.488" E	3.65
4584	GO_Z5_CHI_14	24° 53' 52.839" N	87° 9' 22.488" E	3.63
4585	GO_Z5_CHI_14	24° 53' 52.514" N	87° 9' 22.487" E	3.68
4586	GO_Z5_CHI_14	24° 53' 52.188" N	87° 9' 22.487" E	3.66
4587	GO_Z5_CHI_14	24° 53' 51.863" N	87° 9' 22.486" E	3.77
4588	GO_Z5_CHI_14	24° 53' 51.538" N	87° 9' 22.486" E	3.80
4589	GO_Z5_CHI_14	24° 53' 51.213" N	87° 9' 22.486" E	3.74
4590	GO_Z5_CHI_14	24° 53' 50.888" N	87° 9' 22.485" E	3.87
4591	GO_Z5_CHI_14	24° 53' 53.814" N	87° 9' 22.845" E	3.80
4592	GO_Z5_CHI_14	24° 53' 53.489" N	87° 9' 22.845" E	3.95
4593	GO_Z5_CHI_14	24° 53' 53.163" N	87° 9' 22.844" E	3.89
4594	GO_Z5_CHI_14	24° 53' 52.838" N	87° 9' 22.844" E	3.74
4595	GO_Z5_CHI_14	24° 53' 52.513" N	87° 9' 22.844" E	3.78
4596	GO_Z5_CHI_14	24° 53' 52.188" N	87° 9' 22.843" E	3.78
4597	GO_Z5_CHI_14	24° 53' 51.863" N	87° 9' 22.843" E	3.68
4598	GO_Z5_CHI_14	24° 53' 51.538" N	87° 9' 22.842" E	3.69
4599	GO_Z5_CHI_14	24° 53' 51.213" N	87° 9' 22.842" E	3.70
4600	GO_Z5_CHI_14	24° 53' 53.163" N	87° 9' 23.201" E	3.93
4601	GO_Z5_CHI_14	24° 53' 52.838" N	87° 9' 23.200" E	3.84
4602	GO_Z5_CHI_14	24° 53' 52.513" N	87° 9' 23.200" E	3.79
4603	GO_Z5_CHI_14	24° 53' 52.188" N	87° 9' 23.200" E	4.56
4604	GO_Z5_CHI_14	24° 53' 51.863" N	87° 9' 23.199" E	4.04
4605	GO_Z5_CHI_14	24° 53' 51.537" N	87° 9' 23.199" E	4.47
4606	GO_Z5_CHI_14	24° 53' 51.212" N	87° 9' 23.198" E	3.90
4607	GO_Z5_CHI_14	24° 53' 52.512" N	87° 9' 23.557" E	4.00
4608	GO_Z5_CHI_14	24° 53' 52.187" N	87° 9' 23.556" E	3.92
4609	GO_Z5_CHI_14	24° 53' 51.862" N	87° 9' 23.556" E	4.86
4610	GO_Z5_CHI_14	24° 53' 51.537" N	87° 9' 23.555" E	4.54
4611	GO_Z5_CHI_14	24° 53' 52.187" N	87° 9' 23.913" E	3.77
4612	GO_Z5_CHI_14	24° 53' 51.862" N	87° 9' 23.912" E	4.17
4613	GO_Z5_CHI_14	24° 53' 51.537" N	87° 9' 23.912" E	4.16
4614	GO_Z9_KAJ_5	24° 49' 22.248" N	87° 14' 31.724" E	24.18
4615	GO_Z9_KAJ_5	24° 49' 21.923" N	87° 14' 31.723" E	24.05
4616	GO_Z9_KAJ_5	24° 49' 21.598" N	87° 14' 31.722" E	24.44
4617	GO_Z9_KAJ_5	24° 49' 22.898" N	87° 14' 32.081" E	24.08
4618	GO_Z9_KAJ_5	24° 49' 22.573" N	87° 14' 32.081" E	25.26
4619	GO_Z9_KAJ_5	24° 49' 22.248" N	87° 14' 32.080" E	26.20
4620	GO_Z9_KAJ_5	24° 49' 21.922" N	87° 14' 32.079" E	25.33
4621	GO_Z9_KAJ_5	24° 49' 21.597" N	87° 14' 32.079" E	26.94
4622	GO_Z9_KAJ_5	24° 49' 21.272" N	87° 14' 32.078" E	24.78
4623	GO_Z9_KAJ_5	24° 49' 22.897" N	87° 14' 32.437" E	24.51
4624	GO_Z9_KAJ_5	24° 49' 22.572" N	87° 14' 32.437" E	25.33
4625	GO_Z9_KAJ_5	24° 49' 22.247" N	87° 14' 32.436" E	25.79
4626	GO_Z9_KAJ_5	24° 49' 21.922" N	87° 14' 32.436" E	25.68
4627	GO_Z9_KAJ_5	24° 49' 21.597" N	87° 14' 32.435" E	25.63
4628	GO_Z9_KAJ_5	24° 49' 21.272" N	87° 14' 32.434" E	25.19
4629	GO_Z9_KAJ_5	24° 49' 20.947" N	87° 14' 32.434" E	25.64
4630	GO_Z9_KAJ_5	24° 49' 22.572" N	87° 14' 32.793" E	25.39
4631	GO_Z9_KAJ_5	24° 49' 22.246" N	87° 14' 32.792" E	26.07
4632	GO_Z9_KAJ_5	24° 49' 21.921" N	87° 14' 32.792" E	26.07
4633	GO_Z9_KAJ_5	24° 49' 21.596" N	87° 14' 32.791" E	25.71
4634	GO_Z9_KAJ_5	24° 49' 21.271" N	87° 14' 32.791" E	26.11
4635	GO_Z9_KAJ_5	24° 49' 20.946" N	87° 14' 32.790" E	25.65
4636	GO_Z9_KAJ_5	24° 49' 20.621" N	87° 14' 32.789" E	25.08
4637	GO_Z9_KAJ_5	24° 49' 22.246" N	87° 14' 33.149" E	26.25
4638	GO_Z9_KAJ_5	24° 49' 21.921" N	87° 14' 33.148" E	26.08
4639	GO_Z9_KAJ_5	24° 49' 21.596" N	87° 14' 33.147" E	26.02
4640	GO_Z9_KAJ_5	24° 49' 21.270" N	87° 14' 33.147" E	25.89
4641	GO_Z9_KAJ_5	24° 49' 20.945" N	87° 14' 33.146" E	25.99
4642	GO_Z9_KAJ_5	24° 49' 20.620" N	87° 14' 33.146" E	25.59
4643	GO_Z9_KAJ_5	24° 49' 20.295" N	87° 14' 33.145" E	24.57
4644	GO_Z9_KAJ_5	24° 49' 22.245" N	87° 14' 33.505" E	25.84
4645	GO_Z9_KAJ_5	24° 49' 21.920" N	87° 14' 33.504" E	25.84
4646	GO_Z9_KAJ_5	24° 49' 21.595" N	87° 14' 33.504" E	26.13
4647	GO_Z9_KAJ_5	24° 49' 21.270" N	87° 14' 33.503" E	25.33
4648	GO_Z9_KAJ_5	24° 49' 20.945" N	87° 14' 33.502" E	24.90
4649	GO_Z9_KAJ_5	24° 49' 20.620" N	87° 14' 33.502" E	24.77
4650	GO_Z9_KAJ_5	24° 49' 20.295" N	87° 14' 33.501" E	24.72
4651	GO_Z9_KAJ_5	24° 49' 21.920" N	87° 14' 33.861" E	25.34
4652	GO_Z9_KAJ_5	24° 49' 21.594" N	87° 14' 33.860" E	25.21
4653	GO_Z9_KAJ_5	24° 49' 21.269" N	87° 14' 33.859" E	25.34
4654	GO_Z9_KAJ_5	24° 49' 20.944" N	87° 14' 33.859" E	24.37
4655	GO_Z9_KAJ_5	24° 49' 20.619" N	87° 14' 33.858" E	24.83
4656	GO_Z9_KAJ_5	24° 49' 20.294" N	87° 14' 33.857" E	24.81
4657	GO_Z9_KAJ_5	24° 49' 19.969" N	87° 14' 33.857" E	24.80
4658	GO_Z9_KAJ_5	24° 49' 21.919" N	87° 14' 34.217" E	25.28
4659	GO_Z9_KAJ_5	24° 49' 21.594" N	87° 14' 34.216" E	25.45
4660	GO_Z9_KAJ_5	24° 49' 21.269" N	87° 14' 34.216" E	25.36
4661	GO_Z9_KAJ_5	24° 49' 20.944" N	87° 14' 34.215" E	24.95
4662	GO_Z9_KAJ_5	24° 49' 20.618" N	87° 14' 34.214" E	24.71
4663	GO_Z9_KAJ_5	24° 49' 20.293" N	87° 14' 34.214" E	24.81
4664	GO_Z9_KAJ_5	24° 49' 19.968" N	87° 14' 34.213" E	24.70
4665	GO_Z9_KAJ_5	24° 49' 19.643" N	87° 14' 34.212" E	24.89
4666	GO_Z9_KAJ_5	24° 49' 21.593" N	87° 14' 34.572" E	25.21
4667	GO_Z9_KAJ_5	24° 49' 21.268" N	87° 14' 34.572" E	25.55
4668	GO_Z9_KAJ_5	24° 49' 20.943" N	87° 14' 34.571" E	25.65
4669	GO_Z9_KAJ_5	24° 49' 20.618" N	87° 14' 34.570" E	25.44
4670	GO_Z9_KAJ_5	24° 49' 20.293" N	87° 14' 34.570" E	25.41
4671	GO_Z9_KAJ_5	24° 49' 19.968" N	87° 14' 34.569" E	24.96
4672	GO_Z9_KAJ_5	24° 49' 19.643" N	87° 14' 34.569" E	24.66
4673	GO_Z9_KAJ_5	24° 49' 19.317" N	87° 14' 34.568" E	24.89
4674	GO_Z9_KAJ_5	24° 49' 21.593" N	87° 14' 34.929" E	26.12
4675	GO_Z9_KAJ_5	24° 49' 21.268" N	87° 14' 34.928" E	25.72
4676	GO_Z9_KAJ_5	24° 49' 20.942" N	87° 14' 34.927" E	25.47
4677	GO_Z9_KAJ_5	24° 49' 20.617" N	87° 14' 34.927" E	25.70
4678	GO_Z9_KAJ_5	24° 49' 20.292" N	87° 14' 34.926" E	25.82
4679	GO_Z9_KAJ_5	24° 49' 19.967" N	87° 14' 34.925" E	25.49
4680	GO_Z9_KAJ_5	24° 49' 19.642" N	87° 14' 34.925" E	25.70
4681	GO_Z9_KAJ_5	24° 49' 19.317" N	87° 14' 34.924" E	26.94
4682	GO_Z9_KAJ_5	24° 49' 18.992" N	87° 14' 34.924" E	26.29
4683	GO_Z9_KAJ_5	24° 49' 21.267" N	87° 14' 35.284" E	26.55
4684	GO_Z9_KAJ_5	24° 49' 20.942" N	87° 14' 35.284" E	26.00
4685	GO_Z9_KAJ_5	24° 49' 20.617" N	87° 14' 35.283" E	25.90
4686	GO_Z9_KAJ_5	24° 49' 20.292" N	87° 14' 35.282" E	26.08
4687	GO_Z9_KAJ_5	24° 49' 19.967" N	87° 14' 35.282" E	25.86
4688	GO_Z9_KAJ_5	24° 49' 19.641" N	87° 14' 35.281" E	25.60
4689	GO_Z9_KAJ_5	24° 49' 19.316" N	87° 14' 35.280" E	25.85
4690	GO_Z9_KAJ_5	24° 49' 18.991" N	87° 14' 35.280" E	26.48
4691	GO_Z9_KAJ_5	24° 49' 18.666" N	87° 14' 35.279" E	26.33
4692	GO_Z9_KAJ_5	24° 49' 20.941" N	87° 14' 35.640" E	26.06
4693	GO_Z9_KAJ_5	24° 49' 20.616" N	87° 14' 35.639" E	25.60
4694	GO_Z9_KAJ_5	24° 49' 20.291" N	87° 14' 35.639" E	26.03
4695	GO_Z9_KAJ_5	24° 49' 19.966" N	87° 14' 35.638" E	26.28
4696	GO_Z9_KAJ_5	24° 49' 19.641" N	87° 14' 35.637" E	26.17
4697	GO_Z9_KAJ_5	24° 49' 19.316" N	87° 14' 35.637" E	25.91
4698	GO_Z9_KAJ_5	24° 49' 18.991" N	87° 14' 35.636" E	26.03
4699	GO_Z9_KAJ_5	24° 49' 18.665" N	87° 14' 35.635" E	26.75
4700	GO_Z9_KAJ_5	24° 49' 18.340" N	87° 14' 35.635" E	25.97
4701	GO_Z9_KAJ_5	24° 49' 20.941" N	87° 14' 35.996" E	26.37
4702	GO_Z9_KAJ_5	24° 49' 20.616" N	87° 14' 35.995" E	26.04
4703	GO_Z9_KAJ_5	24° 49' 20.290" N	87° 14' 35.995" E	25.98
4704	GO_Z9_KAJ_5	24° 49' 19.965" N	87° 14' 35.994" E	26.18
4705	GO_Z9_KAJ_5	24° 49' 19.640" N	87° 14' 35.994" E	26.30
4706	GO_Z9_KAJ_5	24° 49' 19.315" N	87° 14' 35.993" E	25.26
4707	GO_Z9_KAJ_5	24° 49' 18.990" N	87° 14' 35.992" E	25.69
4708	GO_Z9_KAJ_5	24° 49' 18.665" N	87° 14' 35.992" E	26.50
4709	GO_Z9_KAJ_5	24° 49' 18.340" N	87° 14' 35.991" E	26.81
4710	GO_Z9_KAJ_5	24° 49' 18.015" N	87° 14' 35.990" E	26.16
4711	GO_Z9_KAJ_5	24° 49' 20.615" N	87° 14' 36.352" E	26.27
4712	GO_Z9_KAJ_5	24° 49' 20.290" N	87° 14' 36.351" E	25.87
4713	GO_Z9_KAJ_5	24° 49' 19.965" N	87° 14' 36.350" E	26.07
4714	GO_Z9_KAJ_5	24° 49' 19.640" N	87° 14' 36.350" E	26.23
4715	GO_Z9_KAJ_5	24° 49' 19.315" N	87° 14' 36.349" E	25.91
4716	GO_Z9_KAJ_5	24° 49' 18.989" N	87° 14' 36.349" E	25.86
4717	GO_Z9_KAJ_5	24° 49' 18.664" N	87° 14' 36.348" E	26.00
4718	GO_Z9_KAJ_5	24° 49' 18.339" N	87° 14' 36.347" E	26.55
4719	GO_Z9_KAJ_5	24° 49' 18.014" N	87° 14' 36.347" E	26.80
4720	GO_Z9_KAJ_5	24° 49' 17.689" N	87° 14' 36.346" E	25.76
4721	GO_Z9_KAJ_5	24° 49' 20.614" N	87° 14' 36.708" E	26.68
4722	GO_Z9_KAJ_5	24° 49' 20.289" N	87° 14' 36.707" E	26.01
4723	GO_Z9_KAJ_5	24° 49' 19.964" N	87° 14' 36.707" E	26.25
4724	GO_Z9_KAJ_5	24° 49' 19.639" N	87° 14' 36.706" E	26.17
4725	GO_Z9_KAJ_5	24° 49' 19.314" N	87° 14' 36.705" E	25.72
4726	GO_Z9_KAJ_5	24° 49' 18.989" N	87° 14' 36.705" E	25.75
4727	GO_Z9_KAJ_5	24° 49' 18.664" N	87° 14' 36.704" E	25.93
4728	GO_Z9_KAJ_5	24° 49' 18.339" N	87° 14' 36.703" E	26.15
4729	GO_Z9_KAJ_5	24° 49' 18.013" N	87° 14' 36.703" E	26.54
4730	GO_Z9_KAJ_5	24° 49' 17.688" N	87° 14' 36.702" E	26.51
4731	GO_Z9_KAJ_5	24° 49' 17.363" N	87° 14' 36.702" E	25.52
4732	GO_Z9_KAJ_5	24° 49' 20.289" N	87° 14' 37.064" E	26.37
4733	GO_Z9_KAJ_5	24° 49' 19.964" N	87° 14' 37.063" E	25.96
4734	GO_Z9_KAJ_5	24° 49' 19.638" N	87° 14' 37.062" E	26.36
4735	GO_Z9_KAJ_5	24° 49' 19.313" N	87° 14' 37.062" E	26.34
4736	GO_Z9_KAJ_5	24° 49' 18.988" N	87° 14' 37.061" E	25.89
4737	GO_Z9_KAJ_5	24° 49' 18.663" N	87° 14' 37.060" E	26.27
4738	GO_Z9_KAJ_5	24° 49' 18.338" N	87° 14' 37.060" E	25.99
4739	GO_Z9_KAJ_5	24° 49' 18.013" N	87° 14' 37.059" E	26.46
4740	GO_Z9_KAJ_5	24° 49' 17.688" N	87° 14' 37.058" E	26.55
4741	GO_Z9_KAJ_5	24° 49' 17.363" N	87° 14' 37.058" E	26.66
4742	GO_Z9_KAJ_5	24° 49' 17.037" N	87° 14' 37.057" E	25.50
4743	GO_Z9_KAJ_5	24° 49' 20.288" N	87° 14' 37.420" E	27.26
4744	GO_Z9_KAJ_5	24° 49' 19.963" N	87° 14' 37.419" E	26.27
4745	GO_Z9_KAJ_5	24° 49' 19.638" N	87° 14' 37.418" E	26.05
4746	GO_Z9_KAJ_5	24° 49' 19.313" N	87° 14' 37.418" E	26.31
4747	GO_Z9_KAJ_5	24° 49' 18.988" N	87° 14' 37.417" E	26.49
4748	GO_Z9_KAJ_5	24° 49' 18.663" N	87° 14' 37.417" E	26.20
4749	GO_Z9_KAJ_5	24° 49' 18.337" N	87° 14' 37.416" E	26.15
4750	GO_Z9_KAJ_5	24° 49' 18.012" N	87° 14' 37.415" E	26.13
4751	GO_Z9_KAJ_5	24° 49' 17.687" N	87° 14' 37.415" E	26.38
4752	GO_Z9_KAJ_5	24° 49' 17.362" N	87° 14' 37.414" E	26.57
4753	GO_Z9_KAJ_5	24° 49' 17.037" N	87° 14' 37.413" E	26.06
4754	GO_Z9_KAJ_5	24° 49' 16.712" N	87° 14' 37.413" E	25.12
4755	GO_Z9_KAJ_5	24° 49' 19.962" N	87° 14' 37.775" E	27.10
4756	GO_Z9_KAJ_5	24° 49' 19.637" N	87° 14' 37.775" E	26.18
4757	GO_Z9_KAJ_5	24° 49' 19.312" N	87° 14' 37.774" E	26.51
4758	GO_Z9_KAJ_5	24° 49' 18.987" N	87° 14' 37.773" E	26.20
4759	GO_Z9_KAJ_5	24° 49' 18.662" N	87° 14' 37.773" E	26.51
4760	GO_Z9_KAJ_5	24° 49' 18.337" N	87° 14' 37.772" E	26.06
4761	GO_Z9_KAJ_5	24° 49' 18.012" N	87° 14' 37.772" E	26.52
4762	GO_Z9_KAJ_5	24° 49' 17.687" N	87° 14' 37.771" E	26.59
4763	GO_Z9_KAJ_5	24° 49' 17.361" N	87° 14' 37.770" E	26.38
4764	GO_Z9_KAJ_5	24° 49' 17.036" N	87° 14' 37.770" E	26.30
4765	GO_Z9_KAJ_5	24° 49' 16.711" N	87° 14' 37.769" E	25.23
4766	GO_Z9_KAJ_5	24° 49' 16.386" N	87° 14' 37.768" E	24.77
4767	GO_Z9_KAJ_5	24° 49' 19.312" N	87° 14' 38.130" E	26.29
4768	GO_Z9_KAJ_5	24° 49' 18.986" N	87° 14' 38.130" E	26.21
4769	GO_Z9_KAJ_5	24° 49' 18.661" N	87° 14' 38.129" E	26.16
4770	GO_Z9_KAJ_5	24° 49' 18.336" N	87° 14' 38.128" E	26.16
4771	GO_Z9_KAJ_5	24° 49' 18.011" N	87° 14' 38.128" E	26.14
4772	GO_Z9_KAJ_5	24° 49' 17.686" N	87° 14' 38.127" E	26.07
4773	GO_Z9_KAJ_5	24° 49' 17.361" N	87° 14' 38.127" E	26.26
4774	GO_Z9_KAJ_5	24° 49' 17.036" N	87° 14' 38.126" E	26.28
4775	GO_Z9_KAJ_5	24° 49' 16.711" N	87° 14' 38.125" E	26.18
4776	GO_Z9_KAJ_5	24° 49' 16.386" N	87° 14' 38.125" E	25.39
4777	GO_Z9_KAJ_5	24° 49' 16.060" N	87° 14' 38.124" E	24.77
4778	GO_Z9_KAJ_5	24° 49' 18.986" N	87° 14' 38.486" E	26.36
4779	GO_Z9_KAJ_5	24° 49' 18.661" N	87° 14' 38.485" E	26.66
4780	GO_Z9_KAJ_5	24° 49' 18.336" N	87° 14' 38.485" E	26.31
4781	GO_Z9_KAJ_5	24° 49' 18.011" N	87° 14' 38.484" E	26.24
4782	GO_Z9_KAJ_5	24° 49' 17.685" N	87° 14' 38.483" E	26.24
4783	GO_Z9_KAJ_5	24° 49' 17.360" N	87° 14' 38.483" E	26.73
4784	GO_Z9_KAJ_5	24° 49' 17.035" N	87° 14' 38.482" E	26.27
4785	GO_Z9_KAJ_5	24° 49' 16.710" N	87° 14' 38.481" E	26.35
4786	GO_Z9_KAJ_5	24° 49' 16.385" N	87° 14' 38.481" E	26.47
4787	GO_Z9_KAJ_5	24° 49' 16.060" N	87° 14' 38.480" E	26.16
4788	GO_Z9_KAJ_5	24° 49' 15.735" N	87° 14' 38.480" E	24.72
4789	GO_Z9_KAJ_5	24° 49' 18.660" N	87° 14' 38.842" E	26.40
4790	GO_Z9_KAJ_5	24° 49' 18.335" N	87° 14' 38.841" E	26.50
4791	GO_Z9_KAJ_5	24° 49' 18.010" N	87° 14' 38.840" E	26.56
4792	GO_Z9_KAJ_5	24° 49' 17.685" N	87° 14' 38.840" E	26.37
4793	GO_Z9_KAJ_5	24° 49' 17.360" N	87° 14' 38.839" E	26.38
4794	GO_Z9_KAJ_5	24° 49' 17.035" N	87° 14' 38.838" E	26.29
4795	GO_Z9_KAJ_5	24° 49' 16.709" N	87° 14' 38.838" E	26.37
4796	GO_Z9_KAJ_5	24° 49' 16.384" N	87° 14' 38.837" E	26.59
4797	GO_Z9_KAJ_5	24° 49' 16.059" N	87° 14' 38.836" E	26.33

District Mining Officer,
Godda

TABLE REPRESENTING ELEVATION (in m) WITH RESPECT TO 10m X 10m GRID WITHIN POTENTIAL SAND GHATS IN GODDA DISTRICT OF JHARKHAND

ANNEXURE - B17

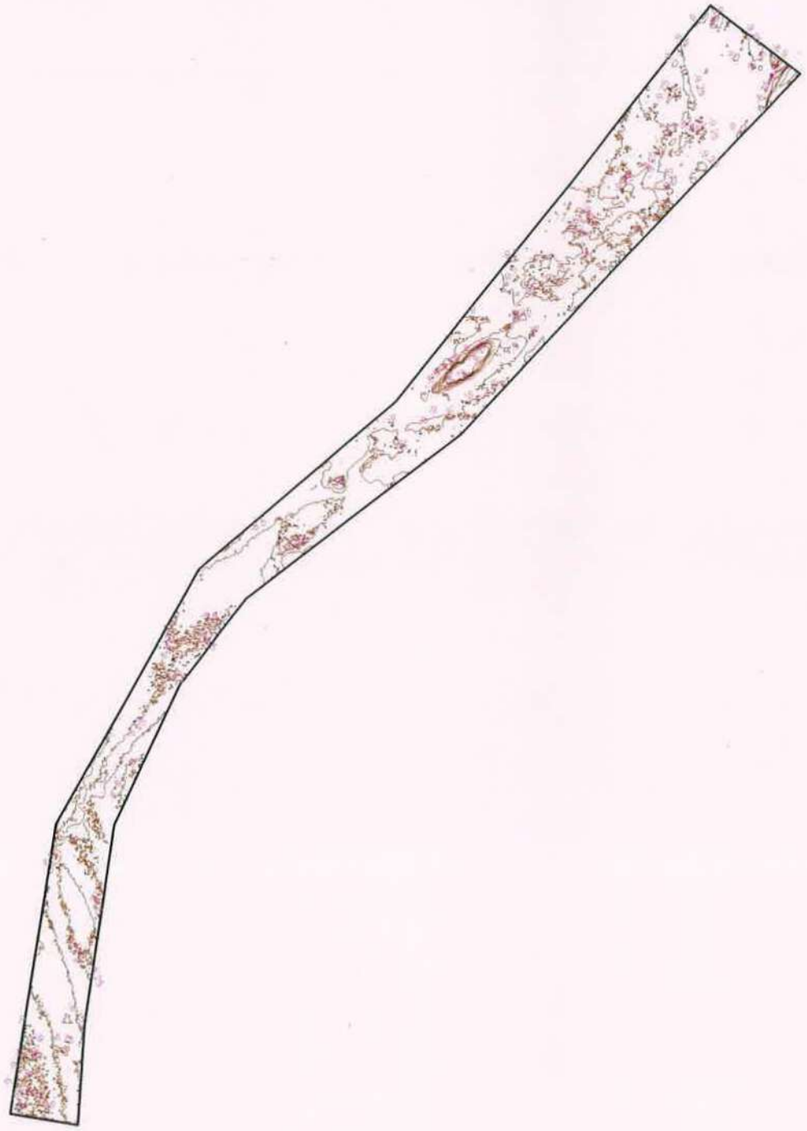
4798	GO_Z9_KAJ_5	24° 49' 15.734" N	87° 14' 38.836" E	25.77
4799	GO_Z9_KAJ_5	24° 49' 15.409" N	87° 14' 38.835" E	24.65
4800	GO_Z9_KAJ_5	24° 49' 18.335" N	87° 14' 39.197" E	26.52
4801	GO_Z9_KAJ_5	24° 49' 18.009" N	87° 14' 39.197" E	26.84
4802	GO_Z9_KAJ_5	24° 49' 17.684" N	87° 14' 39.196" E	26.51
4803	GO_Z9_KAJ_5	24° 49' 17.359" N	87° 14' 39.195" E	26.55
4804	GO_Z9_KAJ_5	24° 49' 17.034" N	87° 14' 39.195" E	26.44
4805	GO_Z9_KAJ_5	24° 49' 16.709" N	87° 14' 39.194" E	26.43
4806	GO_Z9_KAJ_5	24° 49' 16.384" N	87° 14' 39.193" E	26.36
4807	GO_Z9_KAJ_5	24° 49' 16.059" N	87° 14' 39.193" E	26.69
4808	GO_Z9_KAJ_5	24° 49' 15.734" N	87° 14' 39.192" E	26.46
4809	GO_Z9_KAJ_5	24° 49' 15.408" N	87° 14' 39.191" E	24.85
4810	GO_Z9_KAJ_5	24° 49' 15.083" N	87° 14' 39.191" E	24.77
4811	GO_Z9_KAJ_5	24° 49' 18.009" N	87° 14' 39.553" E	26.54
4812	GO_Z9_KAJ_5	24° 49' 17.684" N	87° 14' 39.552" E	26.57
4813	GO_Z9_KAJ_5	24° 49' 17.359" N	87° 14' 39.551" E	26.61
4814	GO_Z9_KAJ_5	24° 49' 17.033" N	87° 14' 39.551" E	26.47
4815	GO_Z9_KAJ_5	24° 49' 16.708" N	87° 14' 39.550" E	26.49
4816	GO_Z9_KAJ_5	24° 49' 16.383" N	87° 14' 39.550" E	26.56
4817	GO_Z9_KAJ_5	24° 49' 16.058" N	87° 14' 39.549" E	26.48
4818	GO_Z9_KAJ_5	24° 49' 15.733" N	87° 14' 39.548" E	26.48
4819	GO_Z9_KAJ_5	24° 49' 15.408" N	87° 14' 39.548" E	26.31
4820	GO_Z9_KAJ_5	24° 49' 15.083" N	87° 14' 39.547" E	25.78
4821	GO_Z9_KAJ_5	24° 49' 14.758" N	87° 14' 39.546" E	24.76
4822	GO_Z9_KAJ_5	24° 49' 17.683" N	87° 14' 39.908" E	26.62
4823	GO_Z9_KAJ_5	24° 49' 17.358" N	87° 14' 39.908" E	26.80
4824	GO_Z9_KAJ_5	24° 49' 17.033" N	87° 14' 39.907" E	26.57
4825	GO_Z9_KAJ_5	24° 49' 16.708" N	87° 14' 39.906" E	26.67
4826	GO_Z9_KAJ_5	24° 49' 16.383" N	87° 14' 39.906" E	26.70
4827	GO_Z9_KAJ_5	24° 49' 16.057" N	87° 14' 39.905" E	26.80
4828	GO_Z9_KAJ_5	24° 49' 15.732" N	87° 14' 39.905" E	26.57
4829	GO_Z9_KAJ_5	24° 49' 15.407" N	87° 14' 39.904" E	26.41
4830	GO_Z9_KAJ_5	24° 49' 15.082" N	87° 14' 39.903" E	26.37
4831	GO_Z9_KAJ_5	24° 49' 14.757" N	87° 14' 39.903" E	26.32
4832	GO_Z9_KAJ_5	24° 49' 14.432" N	87° 14' 39.902" E	25.21
4833	GO_Z9_KAJ_5	24° 49' 17.032" N	87° 14' 40.263" E	26.63
4834	GO_Z9_KAJ_5	24° 49' 16.707" N	87° 14' 40.263" E	26.62
4835	GO_Z9_KAJ_5	24° 49' 16.382" N	87° 14' 40.262" E	26.62
4836	GO_Z9_KAJ_5	24° 49' 16.057" N	87° 14' 40.261" E	26.61
4837	GO_Z9_KAJ_5	24° 49' 15.732" N	87° 14' 40.261" E	26.84
4838	GO_Z9_KAJ_5	24° 49' 15.407" N	87° 14' 40.260" E	26.59
4839	GO_Z9_KAJ_5	24° 49' 15.082" N	87° 14' 40.259" E	26.28
4840	GO_Z9_KAJ_5	24° 49' 14.756" N	87° 14' 40.259" E	26.38
4841	GO_Z9_KAJ_5	24° 49' 14.431" N	87° 14' 40.258" E	26.34
4842	GO_Z9_KAJ_5	24° 49' 14.106" N	87° 14' 40.258" E	25.27
4843	GO_Z9_KAJ_5	24° 49' 16.707" N	87° 14' 40.619" E	26.54
4844	GO_Z9_KAJ_5	24° 49' 16.381" N	87° 14' 40.618" E	26.73
4845	GO_Z9_KAJ_5	24° 49' 16.056" N	87° 14' 40.618" E	26.71
4846	GO_Z9_KAJ_5	24° 49' 15.731" N	87° 14' 40.617" E	26.93
4847	GO_Z9_KAJ_5	24° 49' 15.406" N	87° 14' 40.616" E	26.74
4848	GO_Z9_KAJ_5	24° 49' 15.081" N	87° 14' 40.616" E	26.87
4849	GO_Z9_KAJ_5	24° 49' 14.756" N	87° 14' 40.615" E	26.53
4850	GO_Z9_KAJ_5	24° 49' 14.431" N	87° 14' 40.614" E	26.51
4851	GO_Z9_KAJ_5	24° 49' 14.105" N	87° 14' 40.614" E	26.38
4852	GO_Z9_KAJ_5	24° 49' 13.780" N	87° 14' 40.613" E	25.63
4853	GO_Z9_KAJ_5	24° 49' 16.056" N	87° 14' 40.974" E	26.90
4854	GO_Z9_KAJ_5	24° 49' 15.731" N	87° 14' 40.973" E	26.96
4855	GO_Z9_KAJ_5	24° 49' 15.405" N	87° 14' 40.973" E	26.84
4856	GO_Z9_KAJ_5	24° 49' 15.080" N	87° 14' 40.972" E	26.84
4857	GO_Z9_KAJ_5	24° 49' 14.755" N	87° 14' 40.971" E	26.76
4858	GO_Z9_KAJ_5	24° 49' 14.430" N	87° 14' 40.971" E	26.60
4859	GO_Z9_KAJ_5	24° 49' 14.105" N	87° 14' 40.970" E	26.44
4860	GO_Z9_KAJ_5	24° 49' 13.780" N	87° 14' 40.969" E	26.28
4861	GO_Z9_KAJ_5	24° 49' 13.455" N	87° 14' 40.969" E	26.48
4862	GO_Z9_KAJ_5	24° 49' 15.405" N	87° 14' 41.329" E	27.10
4863	GO_Z9_KAJ_5	24° 49' 15.080" N	87° 14' 41.328" E	26.88
4864	GO_Z9_KAJ_5	24° 49' 14.755" N	87° 14' 41.328" E	26.98
4865	GO_Z9_KAJ_5	24° 49' 14.430" N	87° 14' 41.327" E	26.78
4866	GO_Z9_KAJ_5	24° 49' 14.104" N	87° 14' 41.326" E	26.46
4867	GO_Z9_KAJ_5	24° 49' 13.779" N	87° 14' 41.326" E	26.13
4868	GO_Z9_KAJ_5	24° 49' 13.454" N	87° 14' 41.325" E	26.45
4869	GO_Z9_KAJ_5	24° 49' 13.129" N	87° 14' 41.324" E	26.60
4870	GO_Z9_KAJ_5	24° 49' 15.079" N	87° 14' 41.684" E	27.15
4871	GO_Z9_KAJ_5	24° 49' 14.754" N	87° 14' 41.684" E	26.84
4872	GO_Z9_KAJ_5	24° 49' 14.429" N	87° 14' 41.683" E	26.80
4873	GO_Z9_KAJ_5	24° 49' 14.104" N	87° 14' 41.683" E	26.62
4874	GO_Z9_KAJ_5	24° 49' 13.779" N	87° 14' 41.682" E	25.67
4875	GO_Z9_KAJ_5	24° 49' 13.454" N	87° 14' 41.681" E	26.47
4876	GO_Z9_KAJ_5	24° 49' 13.128" N	87° 14' 41.681" E	26.62
4877	GO_Z9_KAJ_5	24° 49' 12.803" N	87° 14' 41.680" E	26.60
4878	GO_Z9_KAJ_5	24° 49' 14.103" N	87° 14' 42.039" E	26.85
4879	GO_Z9_KAJ_5	24° 49' 13.778" N	87° 14' 42.038" E	26.60
4880	GO_Z9_KAJ_5	24° 49' 13.453" N	87° 14' 42.037" E	26.60
4881	GO_Z9_KAJ_5	24° 49' 13.128" N	87° 14' 42.037" E	26.53
4882	GO_Z9_KAJ_5	24° 49' 12.803" N	87° 14' 42.036" E	26.51
4883	GO_Z9_KAJ_5	24° 49' 13.452" N	87° 14' 42.394" E	26.96
4884	GO_Z9_KAJ_5	24° 49' 13.127" N	87° 14' 42.393" E	26.73
4885	GO_Z10_KAJ_6	24° 48' 5.388" N	87° 15' 49.222" E	36.93
4886	GO_Z10_KAJ_6	24° 48' 5.712" N	87° 15' 49.579" E	37.27
4887	GO_Z10_KAJ_6	24° 48' 5.387" N	87° 15' 49.578" E	37.17
4888	GO_Z10_KAJ_6	24° 48' 5.062" N	87° 15' 49.578" E	36.95
4889	GO_Z10_KAJ_6	24° 48' 4.737" N	87° 15' 49.577" E	36.71
4890	GO_Z10_KAJ_6	24° 48' 6.037" N	87° 15' 49.936" E	37.77
4891	GO_Z10_KAJ_6	24° 48' 5.711" N	87° 15' 49.935" E	37.17
4892	GO_Z10_KAJ_6	24° 48' 5.386" N	87° 15' 49.934" E	36.99
4893	GO_Z10_KAJ_6	24° 48' 5.061" N	87° 15' 49.934" E	36.97
4894	GO_Z10_KAJ_6	24° 48' 4.736" N	87° 15' 49.933" E	37.04
4895	GO_Z10_KAJ_6	24° 48' 4.411" N	87° 15' 49.932" E	37.03
4896	GO_Z10_KAJ_6	24° 48' 4.086" N	87° 15' 49.932" E	36.85
4897	GO_Z10_KAJ_6	24° 48' 5.386" N	87° 15' 50.291" E	37.28
4898	GO_Z10_KAJ_6	24° 48' 5.061" N	87° 15' 50.290" E	36.86
4899	GO_Z10_KAJ_6	24° 48' 4.735" N	87° 15' 50.289" E	37.02
4900	GO_Z10_KAJ_6	24° 48' 4.410" N	87° 15' 50.289" E	37.34
4901	GO_Z10_KAJ_6	24° 48' 4.085" N	87° 15' 50.288" E	37.15
4902	GO_Z10_KAJ_6	24° 48' 3.760" N	87° 15' 50.287" E	36.96
4903	GO_Z10_KAJ_6	24° 48' 3.435" N	87° 15' 50.287" E	37.13
4904	GO_Z10_KAJ_6	24° 48' 4.735" N	87° 15' 50.645" E	37.34
4905	GO_Z10_KAJ_6	24° 48' 4.410" N	87° 15' 50.645" E	37.21
4906	GO_Z10_KAJ_6	24° 48' 4.085" N	87° 15' 50.644" E	37.15
4907	GO_Z10_KAJ_6	24° 48' 3.759" N	87° 15' 50.643" E	37.15
4908	GO_Z10_KAJ_6	24° 48' 3.434" N	87° 15' 50.643" E	37.04
4909	GO_Z10_KAJ_6	24° 48' 3.109" N	87° 15' 50.642" E	37.21
4910	GO_Z10_KAJ_6	24° 48' 2.784" N	87° 15' 50.641" E	36.99
4911	GO_Z10_KAJ_6	24° 48' 4.084" N	87° 15' 51.000" E	37.39
4912	GO_Z10_KAJ_6	24° 48' 3.759" N	87° 15' 51.000" E	37.29
4913	GO_Z10_KAJ_6	24° 48' 3.434" N	87° 15' 50.999" E	37.33
4914	GO_Z10_KAJ_6	24° 48' 3.109" N	87° 15' 50.998" E	37.16
4915	GO_Z10_KAJ_6	24° 48' 2.783" N	87° 15' 50.997" E	37.10
4916	GO_Z10_KAJ_6	24° 48' 2.458" N	87° 15' 50.997" E	37.02
4917	GO_Z10_KAJ_6	24° 48' 2.133" N	87° 15' 50.996" E	37.02
4918	GO_Z10_KAJ_6	24° 48' 3.108" N	87° 15' 51.354" E	37.23
4919	GO_Z10_KAJ_6	24° 48' 2.783" N	87° 15' 51.354" E	37.14
4920	GO_Z10_KAJ_6	24° 48' 2.458" N	87° 15' 51.353" E	37.13
4921	GO_Z10_KAJ_6	24° 48' 2.133" N	87° 15' 51.352" E	37.33
4922	GO_Z10_KAJ_6	24° 48' 1.807" N	87° 15' 51.352" E	37.15
4923	GO_Z10_KAJ_6	24° 48' 1.482" N	87° 15' 51.351" E	37.11
4924	GO_Z10_KAJ_6	24° 48' 2.457" N	87° 15' 51.709" E	37.30
4925	GO_Z10_KAJ_6	24° 48' 2.132" N	87° 15' 51.708" E	37.25
4926	GO_Z10_KAJ_6	24° 48' 1.807" N	87° 15' 51.708" E	37.27
4927	GO_Z10_KAJ_6	24° 48' 1.482" N	87° 15' 51.707" E	37.48
4928	GO_Z10_KAJ_6	24° 48' 1.157" N	87° 15' 51.706" E	37.34
4929	GO_Z10_KAJ_6	24° 48' 0.831" N	87° 15' 51.706" E	36.94
4930	GO_Z10_KAJ_6	24° 48' 1.806" N	87° 15' 52.064" E	37.29
4931	GO_Z10_KAJ_6	24° 48' 1.481" N	87° 15' 52.063" E	37.34
4932	GO_Z10_KAJ_6	24° 48' 1.156" N	87° 15' 52.063" E	37.45
4933	GO_Z10_KAJ_6	24° 48' 0.831" N	87° 15' 52.062" E	37.26
4934	GO_Z10_KAJ_6	24° 48' 0.506" N	87° 15' 52.061" E	37.06
4935	GO_Z10_KAJ_6	24° 48' 1.155" N	87° 15' 52.419" E	37.41
4936	GO_Z10_KAJ_6	24° 48' 0.830" N	87° 15' 52.418" E	37.46
4937	GO_Z10_KAJ_6	24° 48' 0.505" N	87° 15' 52.417" E	37.27
4938	GO_Z10_KAJ_6	24° 48' 0.180" N	87° 15' 52.417" E	37.10
4939	GO_Z10_KAJ_6	24° 47' 59.855" N	87° 15' 52.416" E	37.07
4940	GO_Z10_KAJ_6	24° 48' 0.504" N	87° 15' 52.774" E	37.61
4941	GO_Z10_KAJ_6	24° 48' 0.179" N	87° 15' 52.773" E	37.45
4942	GO_Z10_KAJ_6	24° 47' 59.854" N	87° 15' 52.772" E	37.11
4943	GO_Z10_KAJ_6	24° 47' 59.529" N	87° 15' 52.771" E	37.11
4944	GO_Z10_KAJ_6	24° 47' 59.204" N	87° 15' 52.771" E	37.16
4945	GO_Z10_KAJ_6	24° 47' 59.853" N	87° 15' 53.128" E	37.59
4946	GO_Z10_KAJ_6	24° 47' 59.528" N	87° 15' 53.128" E	37.33
4947	GO_Z10_KAJ_6	24° 47' 59.203" N	87° 15' 53.127" E	37.26
4948	GO_Z10_KAJ_6	24° 47' 58.878" N	87° 15' 53.126" E	37.38
4949	GO_Z10_KAJ_6	24° 47' 58.553" N	87° 15' 53.126" E	37.40
4950	GO_Z10_KAJ_6	24° 47' 58.228" N	87° 15' 53.125" E	37.42
4951	GO_Z10_KAJ_6	24° 47' 57.903" N	87° 15' 53.124" E	37.50
4952	GO_Z10_KAJ_6	24° 47' 58.877" N	87° 15' 53.482" E	37.30
4953	GO_Z10_KAJ_6	24° 47' 58.552" N	87° 15' 53.482" E	37.44
4954	GO_Z10_KAJ_6	24° 47' 58.227" N	87° 15' 53.481" E	37.53
4955	GO_Z10_KAJ_6	24° 47' 57.902" N	87° 15' 53.480" E	37.54
4956	GO_Z10_KAJ_6	24° 47' 57.577" N	87° 15' 53.480" E	37.68
4957	GO_Z10_KAJ_6	24° 47' 57.252" N	87° 15' 53.479" E	37.67
4958	GO_Z10_KAJ_6	24° 47' 56.927" N	87° 15' 53.478" E	37.47
4959	GO_Z10_KAJ_6	24° 47' 56.602" N	87° 15' 53.478" E	37.69
4960	GO_Z10_KAJ_6	24° 47' 56.276" N	87° 15' 53.477" E	37.83
4961	GO_Z10_KAJ_6	24° 47' 58.227" N	87° 15' 53.837" E	37.66
4962	GO_Z10_KAJ_6	24° 47' 57.901" N	87° 15' 53.837" E	37.50
4963	GO_Z10_KAJ_6	24° 47' 57.576" N	87° 15' 53.836" E	37.50
4964	GO_Z10_KAJ_6	24° 47' 57.251" N	87° 15' 53.835" E	37.81
4965	GO_Z10_KAJ_6	24° 47' 56.926" N	87° 15' 53.834" E	37.85
4966	GO_Z10_KAJ_6	24° 47' 56.601" N	87° 15' 53.834" E	37.60
4967	GO_Z10_KAJ_6	24° 47' 56.276" N	87° 15' 53.833" E	38.04
4968	GO_Z10_KAJ_6	24° 47' 55.951" N	87° 15' 53.832" E	38.11
4969	GO_Z10_KAJ_6	24° 47' 55.626" N	87° 15' 53.832" E	38.15
4970	GO_Z10_KAJ_6	24° 47' 55.300" N	87° 15' 53.831" E	37.99
4971	GO_Z10_KAJ_6	24° 47' 54.975" N	87° 15' 53.830" E	37.50
4972	GO_Z10_KAJ_6	24° 47' 54.650" N	87° 15' 53.830" E	37.25
4973	GO_Z10_KAJ_6	24° 47' 57.576" N	87° 15' 54.192" E	37.58
4974	GO_Z10_KAJ_6	24° 47' 57.251" N	87° 15' 54.191" E	37.72
4975	GO_Z10_KAJ_6	24° 47' 56.925" N	87° 15' 54.191" E	37.97
4976	GO_Z10_KAJ_6	24° 47' 56.600" N	87° 15' 54.190" E	37.84
4977	GO_Z10_KAJ_6	24° 47' 56.275" N	87° 15' 54.189" E	38.00
4978	GO_Z10_KAJ_6	24° 47' 55.950" N	87° 15' 54.189" E	38.15
4979	GO_Z10_KAJ_6	24° 47' 55.625" N	87° 15' 54.188" E	38.21
4980	GO_Z10_KAJ_6	24° 47' 55.300" N	87° 15' 54.187" E	38.25
4981	GO_Z10_KAJ_6	24° 47' 54.975" N	87° 15' 54.187" E	38.48
4982	GO_Z10_KAJ_6	24° 47' 54.650" N	87° 15' 54.186" E	38.12
4983	GO_Z10_KAJ_6	24° 47' 54.324" N	87° 15' 54.185" E	37.32
4984	GO_Z10_KAJ_6	24° 47' 53.999" N	87° 15' 54.184" E	37.34
4985	GO_Z10_KAJ_6	24° 47' 53.674" N	87° 15' 54.184" E	38.17
4986	GO_Z10_KAJ_6	24° 47' 56.925" N	87° 15' 54.547" E	37.93
4987	GO_Z10_KAJ_6	24° 47' 56.600" N	87° 15' 54.546" E	37.95
4988	GO_Z10_KAJ_6	24° 47' 56.275" N	87° 15' 54.545" E	38.32
4989	GO_Z10_KAJ_6	24° 47' 55.949" N	87° 15' 54.545" E	38.00
4990	GO_Z10_KAJ_6	24° 47' 55.624" N	87° 15' 54.544" E	38.26
4991	GO_Z10_KAJ_6	24° 47' 55.299" N	87° 15' 54.543" E	38.21
4992	GO_Z10_KAJ_6	24° 47' 54.974" N	87° 15' 54.543" E	38.33
4993	GO_Z10_KAJ_6	24° 47' 54.649" N	87° 15' 54.542" E	38.15
4994	GO_Z10_KAJ_6	24° 47' 54.324" N	87° 15' 54.541" E	38.06
4995	GO_Z10_KAJ_6	24° 47' 53.999" N	87° 15' 54.541" E	37.80
4996	GO_Z10_KAJ_6	24° 47' 53.674" N	87° 15' 54.540" E	37.34
4997	GO_Z10_KAJ_6	24° 47' 53.348" N	87° 15' 54.539" E	38.51
4998	GO_Z10_KAJ_6	24° 47' 53.023" N	87° 15' 54.539" E	38.46
4999	GO_Z10_KAJ_6	24° 47' 56.274" N	87° 15' 54.902" E	37.86
5000	GO_Z10_KAJ_6	24° 47' 55.949" N	87° 15' 54.901" E	37.92
5001	GO_Z10_KAJ_6	24° 47' 55.624" N	87° 15' 54.900" E	38.25
5002	GO_Z10_KAJ_6	24° 47' 55.299" N	87° 15' 54.900" E	38.46
5003	GO_Z10_KAJ_6	24° 47' 54.973" N	87° 15' 54.899" E	38.41
5004	GO_Z10_KAJ_6	24° 47' 54.648" N	87° 15' 54.898" E	38.53
5005	GO_Z10_KAJ_6	24° 47' 54.323" N	87° 15' 54.897" E	38.48
5006	GO_Z10_KAJ_6	24° 47' 53.998" N	87° 15' 54.897" E	38.06
5007	GO_Z10_KAJ_6	24° 47' 53.673" N	87° 15' 54.896" E	37.83
5008	GO_Z10_KAJ_6	24° 47' 53.348" N	87° 15' 54.895" E	38.60
5009	GO_Z10_KAJ_6	24° 47' 53.023" N	87° 15' 54.895" E	38.67
5010	GO_Z10_KAJ_6	24° 47' 52.698" N	87° 15' 54.894" E	38.36
5011	GO_Z10_KAJ_6	24° 47' 52.372" N	87° 15' 54.893" E	38.10
5012	GO_Z10_KAJ_6	24° 47' 55.623" N	87° 15' 55.256" E	37.87
5013	GO_Z10_KAJ_6	24° 47' 55.298" N	87° 15' 55.256" E	38.22
5014	GO_Z10_KAJ_6	24° 47' 54.973" N	87° 15' 55.255" E	38.89
5015	GO_Z10_KAJ_6	24° 47' 54.648" N	87° 15' 55.254" E	38.87
5016	GO_Z10_KAJ_6	24° 47' 54.323" N	87° 15' 55.254" E	38.47
5017	GO_Z10_KAJ_6	24° 47' 53.997" N	87° 15' 55.253" E	38.49
5018	GO_Z10_KAJ_6	24° 47' 53.672" N	87° 15' 55.252" E	38.38
5019	GO_Z10_KAJ_6	24° 47' 53.347" N	87° 15' 55.252" E	38.36
5020	GO_Z10_KAJ_6	24° 47' 53.022" N	87° 15' 55.251" E	38.77
5021	GO_Z10_KAJ_6	24° 47' 52.697" N	87° 15' 55.250" E	38.60
5022	GO_Z10_KAJ_6	24° 47' 52.372" N	87° 15' 55.249" E	38.30
5023	GO_Z10_KAJ_6	24° 47' 52.047" N	87° 15' 55.249" E	38.25
5024	GO_Z10_KAJ_6	24° 47' 54.647" N	87° 15' 55.611" E	38.37
5025	GO_Z10_KAJ_6	24° 47' 54.322" N	87° 15' 55.610" E	38.66
5026	GO_Z10_KAJ_6	24° 47' 53.997" N	87° 15' 55.609" E	38.57
5027	GO_Z10_KAJ_6	24° 47' 53.672" N	87° 15' 55.608" E	38.35
5028	GO_Z10_KAJ_6	24° 47' 53.347" N	87° 15' 55.608" E	38.48
5029	GO_Z10_KAJ_6	24° 47' 53.021" N	87° 15' 55.607" E	38.66
5030	GO_Z10_KAJ_6	24° 47' 52.696" N	87° 15' 55.606" E	38.66
5031	GO_Z10_KAJ_6	24° 47' 52.371" N	87° 15' 55.606" E	38.59
5032	GO_Z10_KAJ_6	24° 47' 52.046" N	87° 15' 55.605" E	38.53
5033	GO_Z10_KAJ_6	24° 47' 51.721" N	87° 15' 55.604" E	38.38
5034	GO_Z10_KAJ_6	24° 47' 53.996" N	87° 15' 55.965" E	38.69
5035	GO_Z10_KAJ_6	24° 47' 53.671" N	87° 15' 55.965" E	38.55
5036	GO_Z10_KAJ_6	24° 47' 53.346" N	87° 15' 55.964" E	38.58
5037	GO_Z10_KAJ_6	24° 47' 53.021" N	87° 15' 55.963" E	38.61
5038	GO_Z10_KAJ_6	24° 47' 52.696" N	87° 15' 55.963" E	38.73
5039	GO_Z10_KAJ_6	24° 47' 52.371" N	87° 15' 55.962" E	38.61
5040	GO_Z10_KAJ_6	24° 47' 52.045" N	87° 15' 55.961" E	38.91
5041	GO_Z10_KAJ_6	24° 47' 51.720" N	87° 15' 55.960" E	38.64
5042	GO_Z10_KAJ_6	24° 47' 51.395" N	87° 15' 55.960" E	38.55
5043	GO_Z10_KAJ_6	24° 47' 53.345" N	87° 15' 56.320" E	38.59
5044	GO_Z10_KAJ_6	24° 47' 53.020" N	87° 15' 56.319" E	38.80
5045	GO_Z10_KAJ_6	24° 47' 52.695" N	87° 15' 56.319" E	39.03
5046	GO_Z10_KAJ_6	24° 47' 52.370" N	87° 15' 56.318" E	39.08
5047	GO_Z10_KAJ_6	24° 47' 52.045" N	87° 15' 56.317" E	38.78
5048	GO_Z10_KAJ_6	24° 47' 51.720" N	87° 15' 56.317" E	39.17
5049	GO_Z10_KAJ_6	24° 47' 51.395" N	87° 15' 56.316" E	38.75
5050	GO_Z10_KAJ_6	24° 47' 51.069" N	87° 15' 56.315" E	38.48
5051	GO_Z10_KAJ_6	24° 47' 50.744" N	87° 15' 56.315" E	38.55
5052	GO_Z10_KAJ_6	24° 47' 52.694" N	87° 15' 56.675" E	38.84
5053	GO_Z10_KAJ_6	24° 47' 52.369" N	87° 15' 56.674" E	39.11
5054	GO_Z10_KAJ_6	24° 47' 52.044" N	87° 15' 56.673" E	39.26
5055	GO_Z10_KAJ_6	24° 47' 51.719" N	87° 15' 56.673" E	39.17
5056	GO_Z10_KAJ_6	24° 47' 51.394" N	87° 15' 56.672" E	39.04
5057	GO_Z10_KAJ_6	24° 47' 51.069" N	87° 15' 56.671" E	38.73
5058	GO_Z10_KAJ_6	24° 47' 50.744" N	87° 15' 56.671" E	38.59
5059	GO_Z10_KAJ_6	24° 47' 50.419" N	87° 15' 56.670" E	38.59
5060	GO_Z10_KAJ_6	24° 47' 52.044" N	87° 15' 57.030" E	38.67
5061	GO_Z10_KAJ_6	24° 47' 51.718" N	87° 15' 57.029" E	39.10
5062	GO_Z10_KAJ_6	24° 47' 51.393" N	87° 15' 57.028" E	39.39
5063	GO_Z10_KAJ_6	24° 47' 51.068" N	87° 15' 57.028" E	38.99
5064	GO_Z10_KAJ_6	24° 47' 50.743" N	87° 15' 57.027" E	38.86
5065	GO_Z10_KAJ_6	24° 47' 50.418" N	87° 15' 57.026" E	38.53
5066	GO_Z10_KAJ_6	24° 47' 51.393" N	87° 15' 57.384" E	38.14
5067	GO_Z10_KAJ_6	24° 47' 51.068" N	87° 15' 57.384" E	38.88
5068	GO_Z10_KAJ_6	24° 47' 50.742" N	87° 15' 57.383" E	39.05
5069	GO_Z10_KAJ_6	24° 47' 50.742" N	87° 15' 57.739" E	38.06

District Mining Officer,
Godda.

Map showing Contours of 0.25 Meter Interval Inside Sand Ghat In Gerua River In Godda District

87°8'40"E 87°9'0"E

25°1'20"N



N

ABBREVIATION FORM		
District	GO	Godda
Zone	Z2	Zone 2
River	GE	Gerua

87°8'40"E 87°9'0"E

25°1'20"N

Legend

Sand Ghat Boundary

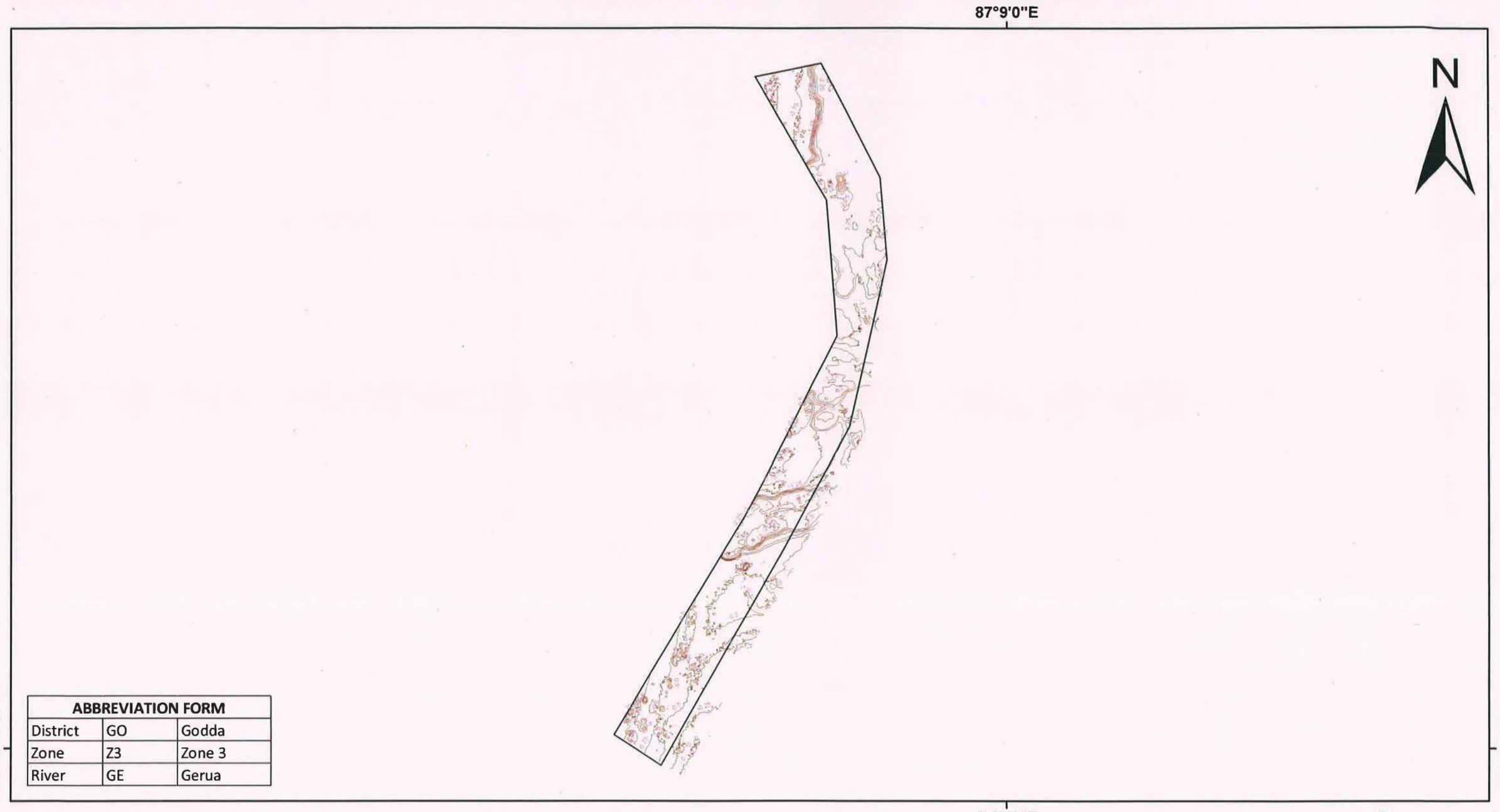
Contour Line

Sand Ghat Code	Area (in Ha)
GO_Z2_GE_1	1.97

0 40 80 160 240 320 Meters

District Mining Officer
Godda.

Map showing Contours of 0.25 Meter Interval Inside Sand Ghat In Gerua River In Godda District



ABBREVIATION FORM		
District	GO	Godda
Zone	Z3	Zone 3
River	GE	Gerua

Legend

Sand Ghat Boundary

Contour Line

Sand Ghat Code	Area (in Ha)
GO_Z3_GE_2	0.92

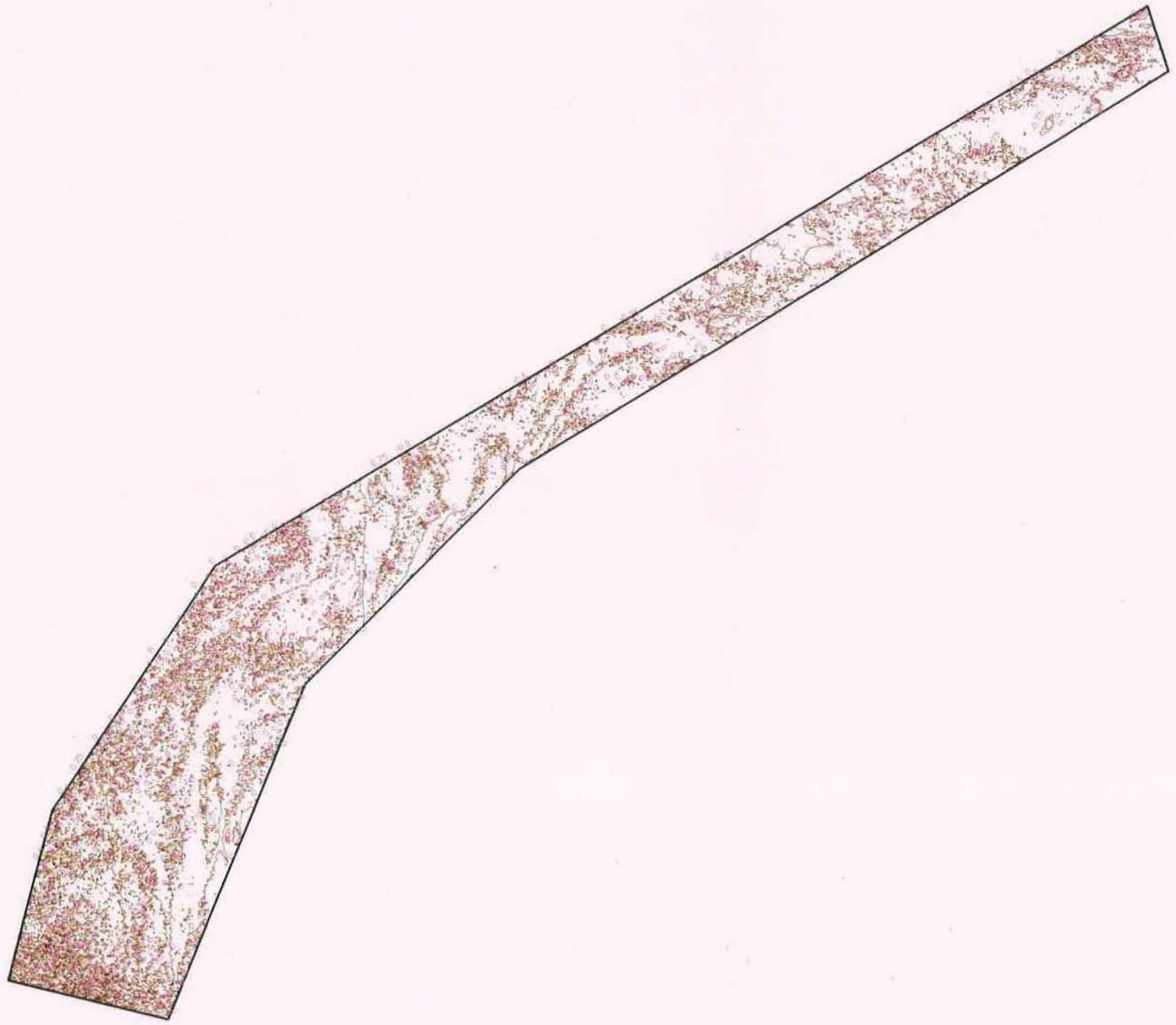
District Mining Officer,
Godda.

0 25 50 100 150 200
Meters

Map showing Contours of 0.25 Meter Interval Inside Sand Ghat In Chir River In Godda District

87°8'40"E 87°9'0"E

24°55'20"N



N

ABBREVIATION FORM		
District	GO	Godda
Zone	Z5	Zone 5
River	CHI	Chir

Legend

Sand Ghat Boundary

Contour Line

Sand Ghat Code	Area (in Ha)
GO_Z5_CHI_3	3.51

0 40 80 160 240 320 Meters

District Mining Officer,
Godda.

Map showing Contours of 0.25 Meter Interval Inside Sand Ghat In Chir River In Godda District

87°9'0"E

24°54'20"N

24°54'20"N

87°9'0"E

ABBREVIATION FORM		
District	GO	Godda
Zone	Z5	Zone 5
River	CHI	Chir

Legend

Sand Ghat Boundary

Contour Line

Sand Ghat Code	Area (in Ha)
GO_Z5_CHI_4	3.3

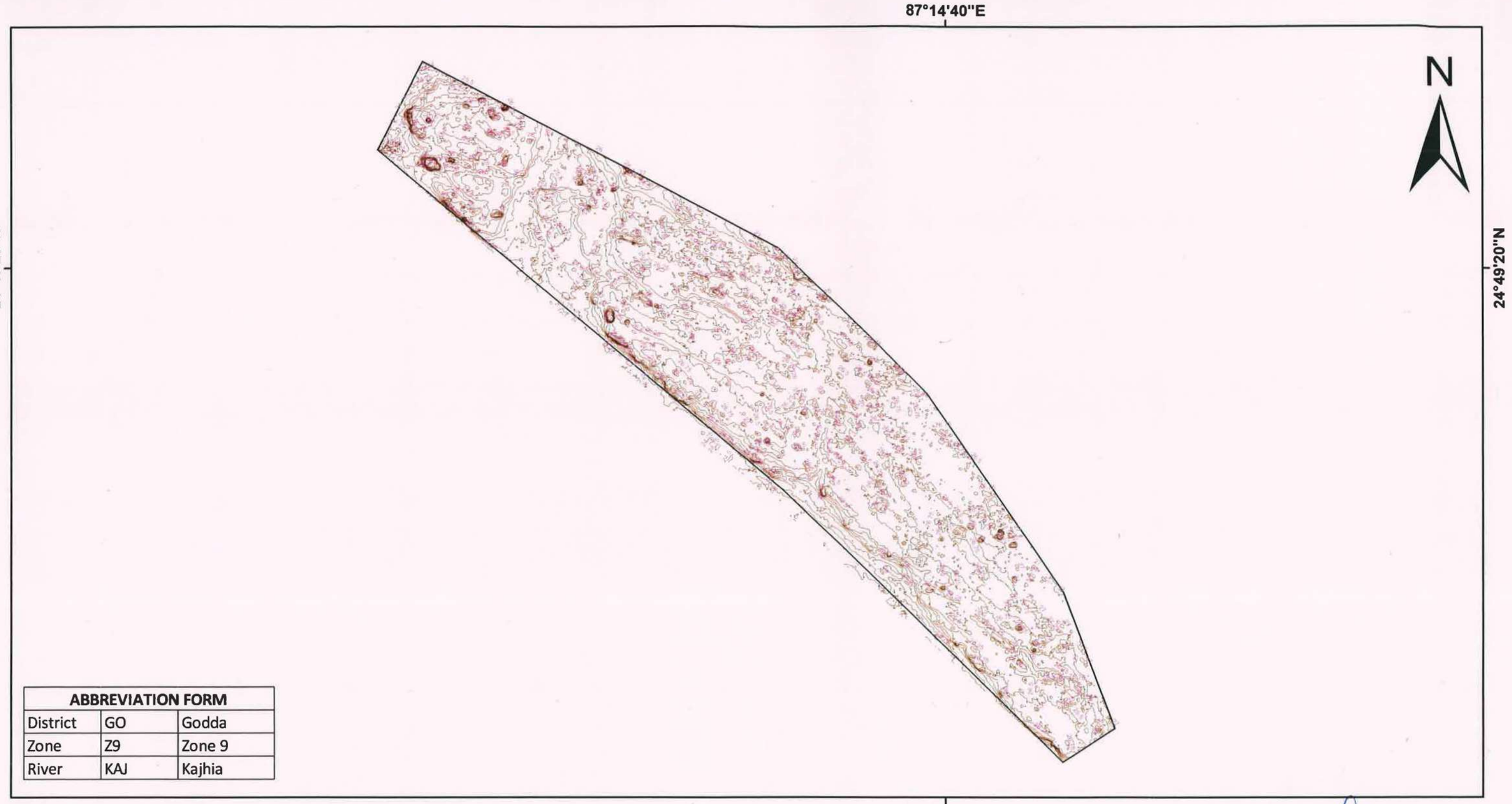
District Mining Officer
Godda.

0 12.5 25 50 75 100 Meters

Map showing Contours of 0.25 Meter Interval Inside Sand Ghat In Kajhia River In Godda District

87°14'40"E

24°49'20"N



24°49'20"N

87°14'40"E

ABBREVIATION FORM		
District	GO	Godda
Zone	Z9	Zone 9
River	KAJ	Kajhia

Legend

Sand Ghat Boundary

Contour Line

Sand Ghat Code	Area (in Ha)
GO_Z9_KAJ_5	2.71

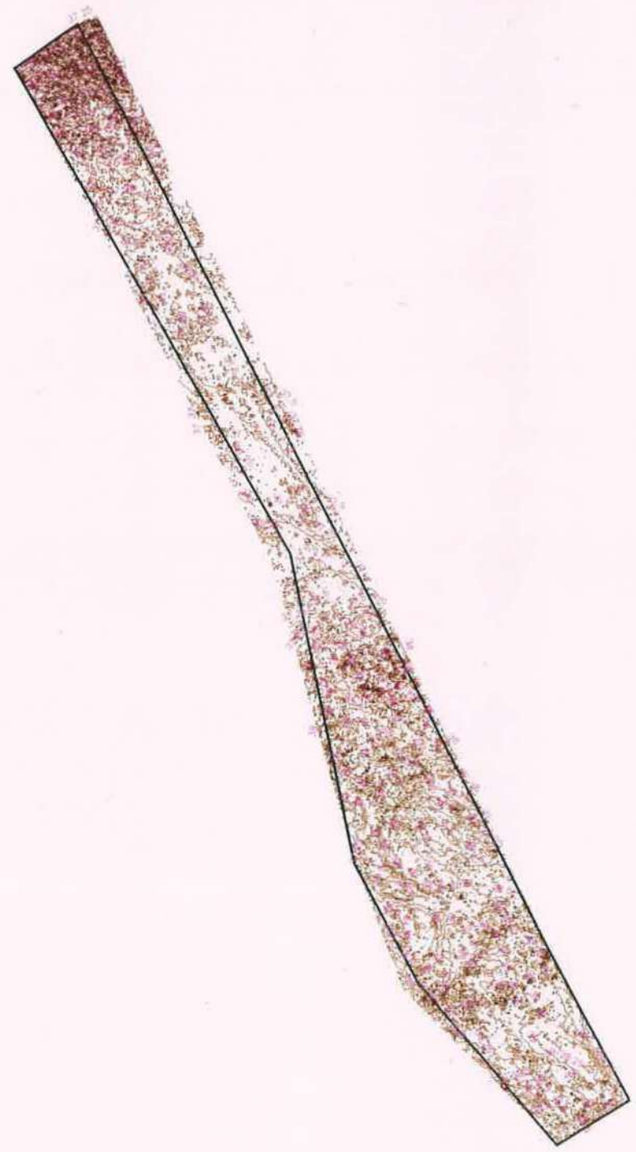
District Mining Officer
Godda

0 25 50 100 150 200 Meters

Map showing Contours of 0.25 Meter Interval Inside Sand Ghat In Kajhia River In Godda District

87°15'40"E 87°16'0"E

24°48'0"N



N

ABBREVIATION FORM		
District	GO	Godda
Zone	Z10	Zone 10
River	KAJ	Kajhia

87°15'40"E 87°16'0"E

Legend

Sand Ghat Boundary

Contour Line

Sand Ghat Code	Area (in Ha)
GO_Z10_KAJ_6	1.82

District Mining Officer
Godda

0 37.5 75 150 225 300 Meters

Map showing Contours of 0.25 Meter Interval Inside Sand Ghat In Sakri River In Godda District

87°6'20"E 87°6'40"E

24°44'0"N

N

ABBREVIATION FORM		
District	GO	Godda
Zone	Z12	Zone 12
River	SAK	Sakri

87°6'20"E 87°6'40"E

Legend

Sand Ghat Boundary

Contour Line

Sand Ghat Code	Area (in Ha)
GO_Z12_SAK_7	5.51

District Mining Officer
Godda

0 60 120 240 360 480
Meters

Map showing Contours of 0.25 Meter Interval Inside Sand Ghat In Sakri River In Godda District

87°7'0"E

87°7'20"E

N

24°43'0"N

ABBREVIATION FORM		
District	GO	Godda
Zone	Z13	Zone 13
River	SAK	Sakri

Legend

Sand Ghat Boundary

Contour Line

Sand Ghat Code	Area (in Ha)
GO_Z13_SAK_8	2.59

District Mining Officer
Godda.

0 40 80 160 240 320

Meters

Map showing Contours of 0.25 Meter Interval Inside Sand Ghat In Ribani River In Godda District

ABBREVIATION FORM		
District	GO	Godda
Zone	Z14	Zone 14
River	RIB	Ribani

Legend

Sand Ghat Boundary

Contour Line

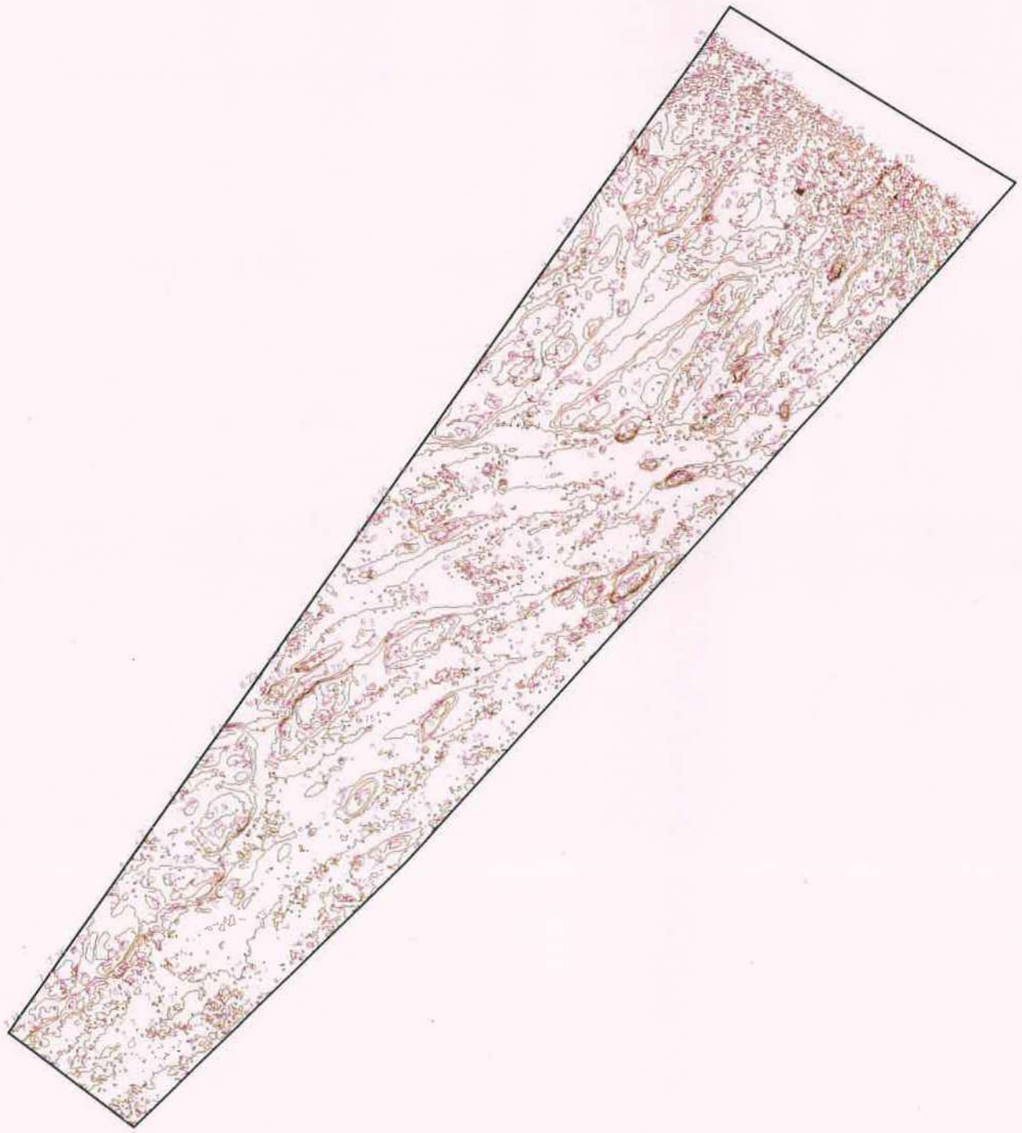
Sand Ghat Code	Area (in Ha)
GO_Z14_RIB_9	11.29

0 100 200 400 600 800 Meters

District Mining Officer
Godda.

Map showing Contours of 0.25 Meter Interval Inside Sand Ghat In Chir River In Godda District

87°9'20"E



N

ABBREVIATION FORM		
District	GO	Godda
Zone	Z15	Zone 15
River	CHI	Chir

87°9'20"E

Legend

Sand Ghat Boundary

Contour Line

Sand Ghat Code	Area (in Ha)
GO_Z15_CHI_10	2.39

District Mining Officer
Godda.

0 25 50 100 150 200 Meters

Map showing Contours of 0.25 Meter Interval Inside Sand Ghat In Chir River In Godda District

87°8'40"E 87°9'0"E

24°52'20"N

N

ABBREVIATION FORM		
District	GO	Godda
Zone	Z16	Zone 16
River	CHI	Chir

Legend

Sand Ghat Boundary

Contour Line

Sand Ghat Code	Area (in Ha)
GO_Z16_CHI_11	2.1

District Mining Officer
Godda.

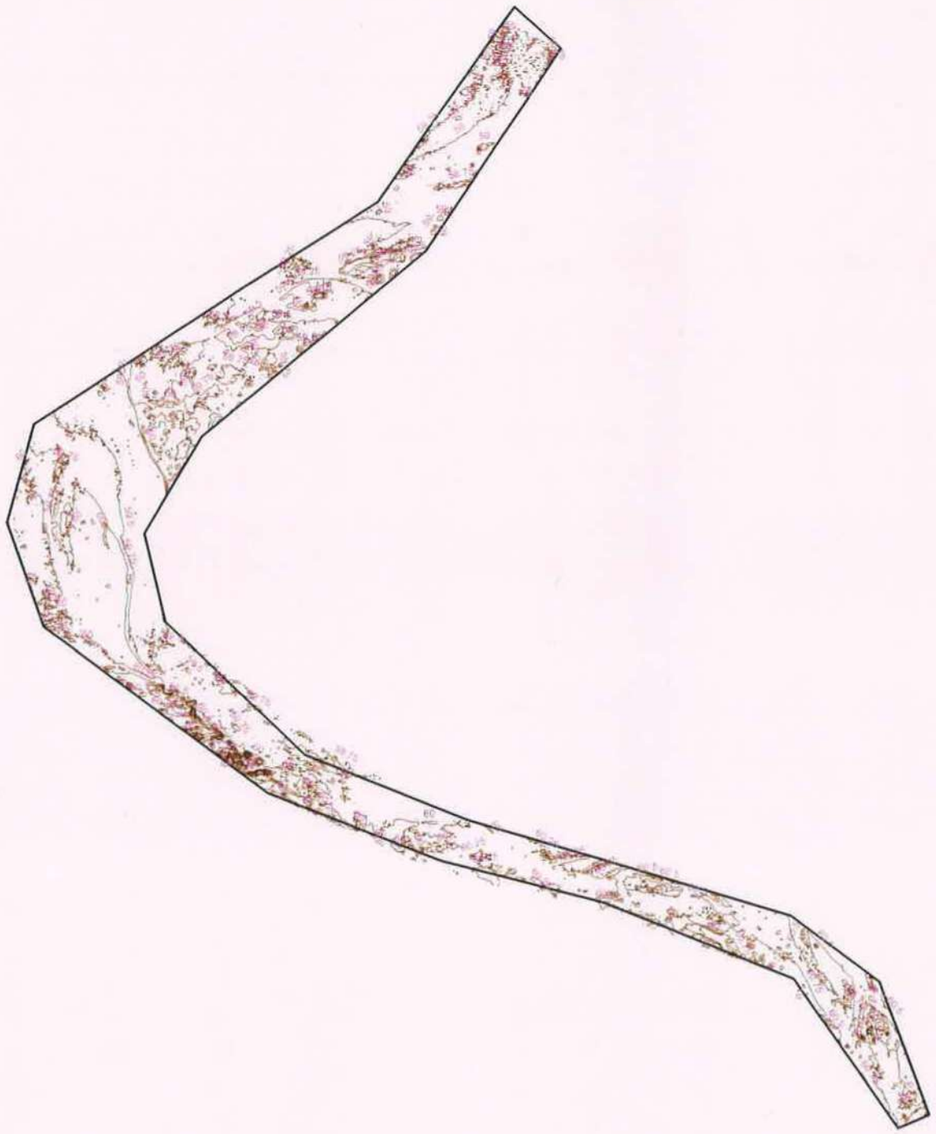
0 30 60 120 180 240
Meters

Map showing Contours of 0.25 Meter Interval Inside Sand Ghat In Chir River In Godda District

87°7'40"E

87°8'0"E

N



24°43'20"N

24°43'20"N

ABBREVIATION FORM		
District	GO	Godda
Zone	Z17	Zone 17
River	CHI	Chir

87°7'40"E

87°8'0"E

Legend

Sand Ghat Boundary

Contour Line

Sand Ghat Code	Area (in Ha)
GO_Z17_CHI_12	3.54

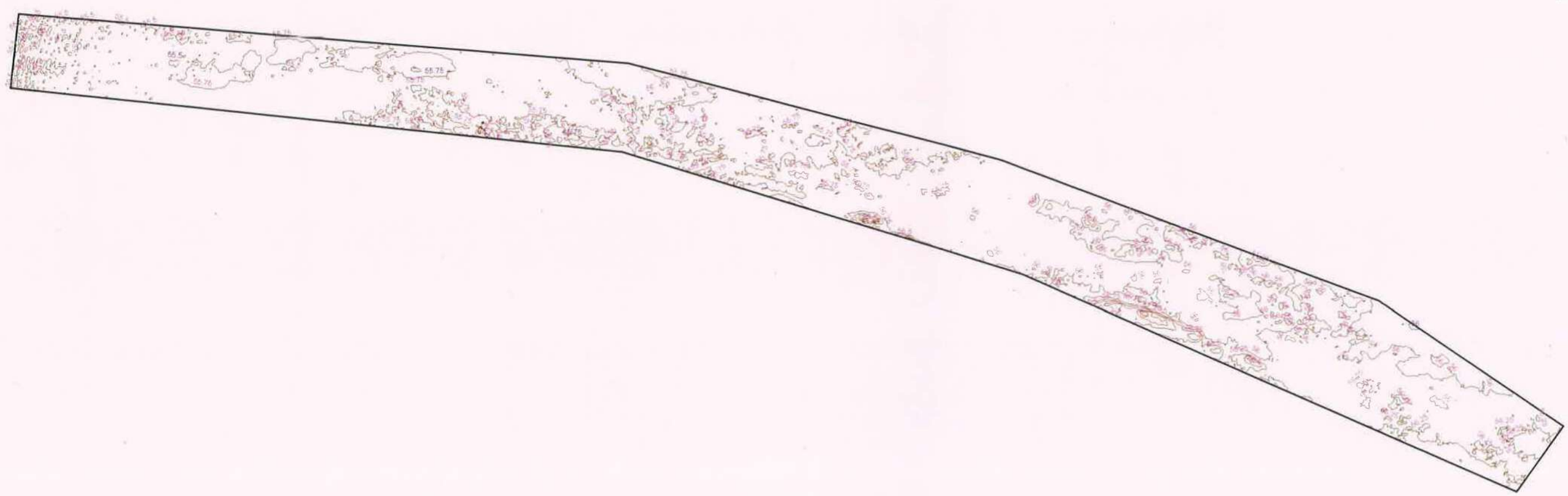
District Mining Officer
Godda

0 50 100 200 300 400
Meters

Map showing Contours of 0.25 Meter Interval Inside Sand Ghat In Chir River In Godda District

87°7'40"E

N



ABBREVIATION FORM		
District	GO	Godda
Zone	Z18	Zone 18
River	CHI	Chir

87°7'40"E

Legend

Sand Ghat Boundary

Contour Line

Sand Ghat Code	Area (in Ha)
GO_Z18_CHI_13	1.06

District Mining Officer
Godda

0 15 30 60 90 120
Meters

Map showing Contours of 0.25 Meter Interval Inside Sand Ghat In Chir River In Godda District

87°9'20"E

24°54'0"N

N

24°54'0"N

ABBREVIATION FORM		
District	GO	Godda
Zone	Z5	Zone 5
River	CHI	Chir

87°9'20"E

Legend

Sand Ghat Boundary

Contour Line

Sand Ghat Code	Area (in Ha)
GO_Z5_CHI_14	3.98

District Mining Officer
Godda

0 30 60 120 180 240 Meters

Map showing Contours of 0.25 Meter Interval Inside Sand Ghat In Chir River In Godda District

87°8'40"E

N

24°54'40"N

24°54'40"N

87°8'40"E

ABBREVIATION FORM		
District	GO	Godda
Zone	Z5	Zone 5
River	CHI	Chir

Legend

Sand Ghat Boundary

Contour Line

Sand Ghat Code	Area (in Ha)
GO_Z5_CHI_15	1.81

District Mining Officer
Godda

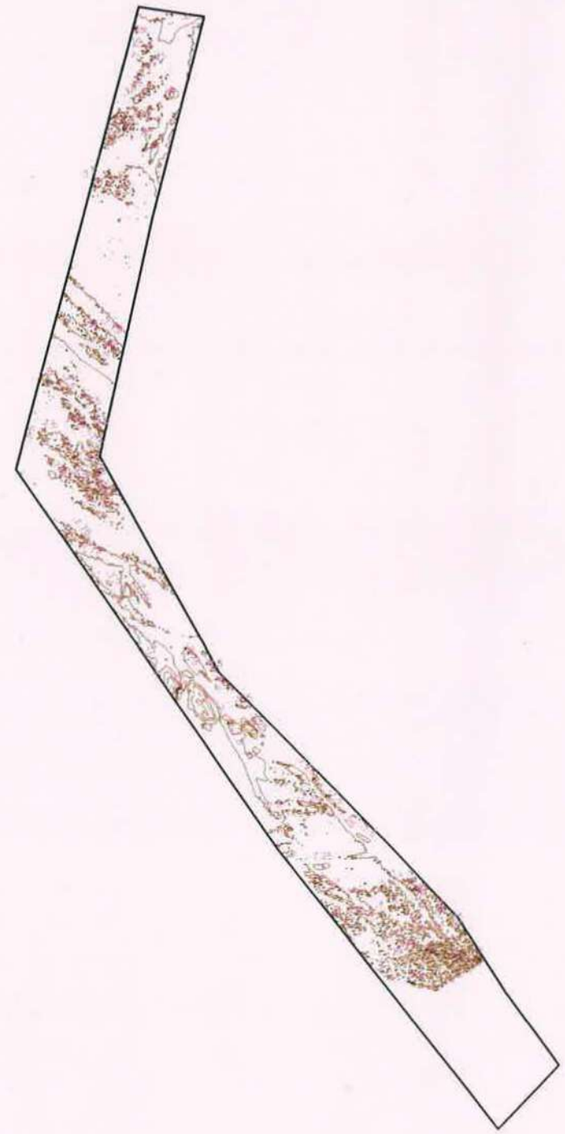
0 20 40 80 120 160
Meters

Map showing Contours of 0.25 Meter Interval Inside Sand Ghat In Gerua River In Godda District

87°8'40"E

87°9'0"E

25°0'40"N



N

ABBREVIATION FORM		
District	GO	Godda
Zone	Z2	Zone 2
River	GE	Gerua

87°8'40"E

87°9'0"E

Legend

Sand Ghat Boundary

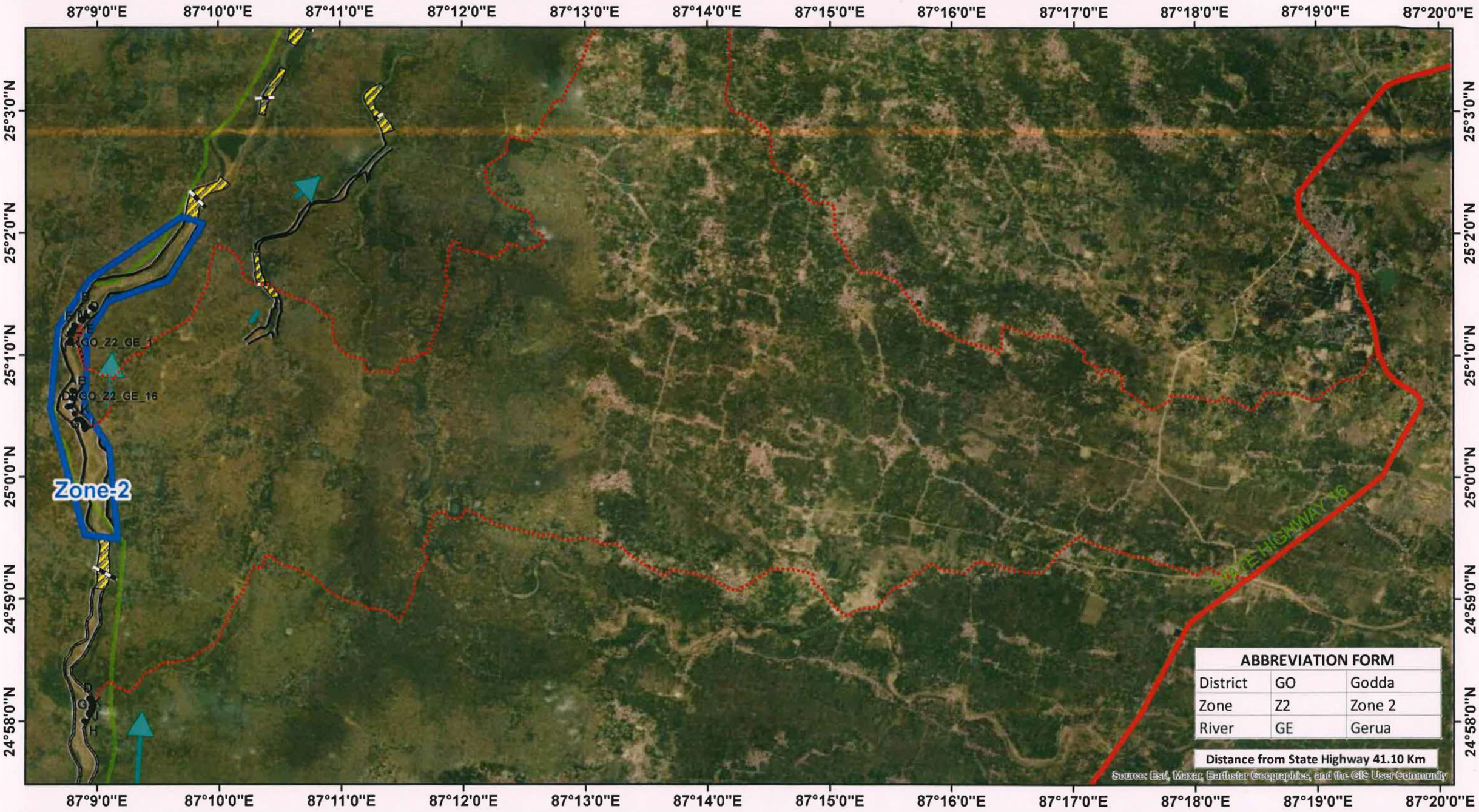
Contour Line

Sand Ghat Code	Area (in Ha)
GO_Z2_GE_16	2.36

District Mining Officer,
Godda.

0 45 90 180 270 360 Meters

Route Map of Zone 2 , Godda District, Jharkhand



Legend

- Godda District Boundary
- Railway
- Bridge
- River Flow Direction
- Metalled Roads
- Approach Roads
- No Mining Zone
- Safety Barrier
- Sand Deposit Zone
- Sand Ghat

Sand Ghat Code	Area (in Ha)
GO_Z2_GE_16	2.36
GO_Z2_GE_1	1.97

Limiting Coordinates of Zone 2	
Starting Point	87°9'45.921"E 25°2'6.462"N
Ending point	87°9'2.398"E 24°59'31.02"N

District Mining Officer
Godda

N W E S

0 1,100 2,200 4,400 6,600 Meters

Route Map of Zone 3 , Godda District, Jharkhand

Legend

- Godda District Boundary
- Railway
- Bridge
- River Flow Direction
- Metalled Roads
- Approach Roads
- No Mining Zone
- Safety Barrier
- Sand Deposit Zone
- Sand Ghat

Sand Ghat Code	Area (in Ha)
GO_Z3_GE_2	0.92

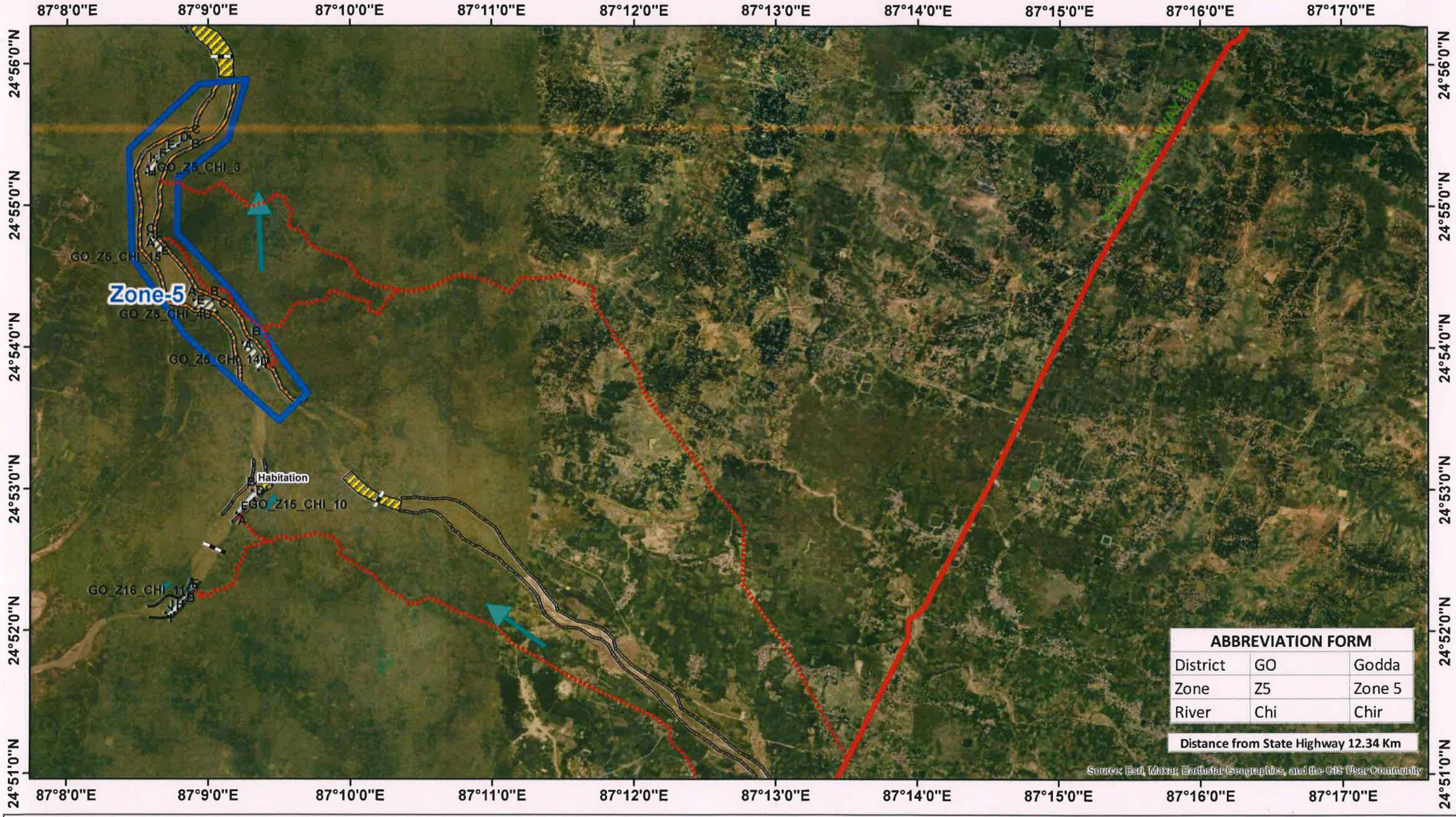
Limiting Coordinates of Zone 3	
Starting Point	87°9'3.131"E 24°59'2.919"N
Ending point	87°8'52.458"E 24°56'15.97"N

District Mining Officer
Godda

N W E S

0 1,000 2,000 4,000 6,000 Meters

Route Map of Zone 5 , Godda District, Jharkhand



ABBREVIATION FORM		
District	GO	Godda
Zone	Z5	Zone 5
River	Chi	Chir

Distance from State Highway 12.34 Km

Legend

- Godda District Boundary
- Railway
- Bridge
- River Flow Direction
- Metalled Roads
- Approach Roads
- No Mining Zone
- Safety Barrier
- Sand Deposit Zone
- Sand Ghat

Sand Ghat Code	Area(in Ha)
GO_Z5_CHI_3	3.51
GO_Z5_CHI_4	3.3
GO_Z5_CHI_14	3.98
GO_Z5_CHI_15	1.81

Limiting Coordinates of Zone 5	
Starting Point	87°9'5.473"E 24°55'51.753"N
Ending point	87°9'36.452"E 24°53'34.835"N

District Mining Officer
Godda

N
W
E
S

0 950 1,900 3,800 5,700
Meters

Route Map of Zone 9 , Godda District, Jharkhand

Legend

- Godda District Boundary
- Railway
- Bridge
- River Flow Direction
- Metalled Roads
- Approach Roads
- No Mining Zone
- Safety Barrier
- Sand Deposit Zone
- Sand Ghat

Sand Ghat Code	Area (in Ha)
GO_Z9_KAJ_5	2.71

Limiting Coordinates of Zone 9	
Starting Point	87°14'2.521"E 24°49'38.748"N
Ending point	87°14'50.094"E 24°49'10.957"N

District Mining Officer,
Godda

N W E S

0 312.5 625 1,250 1,875 Meters

Route Map of Zone 10 , Godda District, Jharkhand

87°15'0"E 87°16'0"E 87°17'0"E 87°18'0"E

24°48'0"N

24°47'0"N

87°15'0"E 87°16'0"E 87°17'0"E 87°18'0"E

Legend

- Godda District Boundary
- Railway
- Bridge
- River Flow Direction
- Metalled Roads
- Approach Roads
- No Mining Zone
- Safety Barrier
- Sand Deposit Zone
- Sand Ghat

Sand Ghat Code	Area (in Ha)
GO_Z10_KAJ_6	1.82

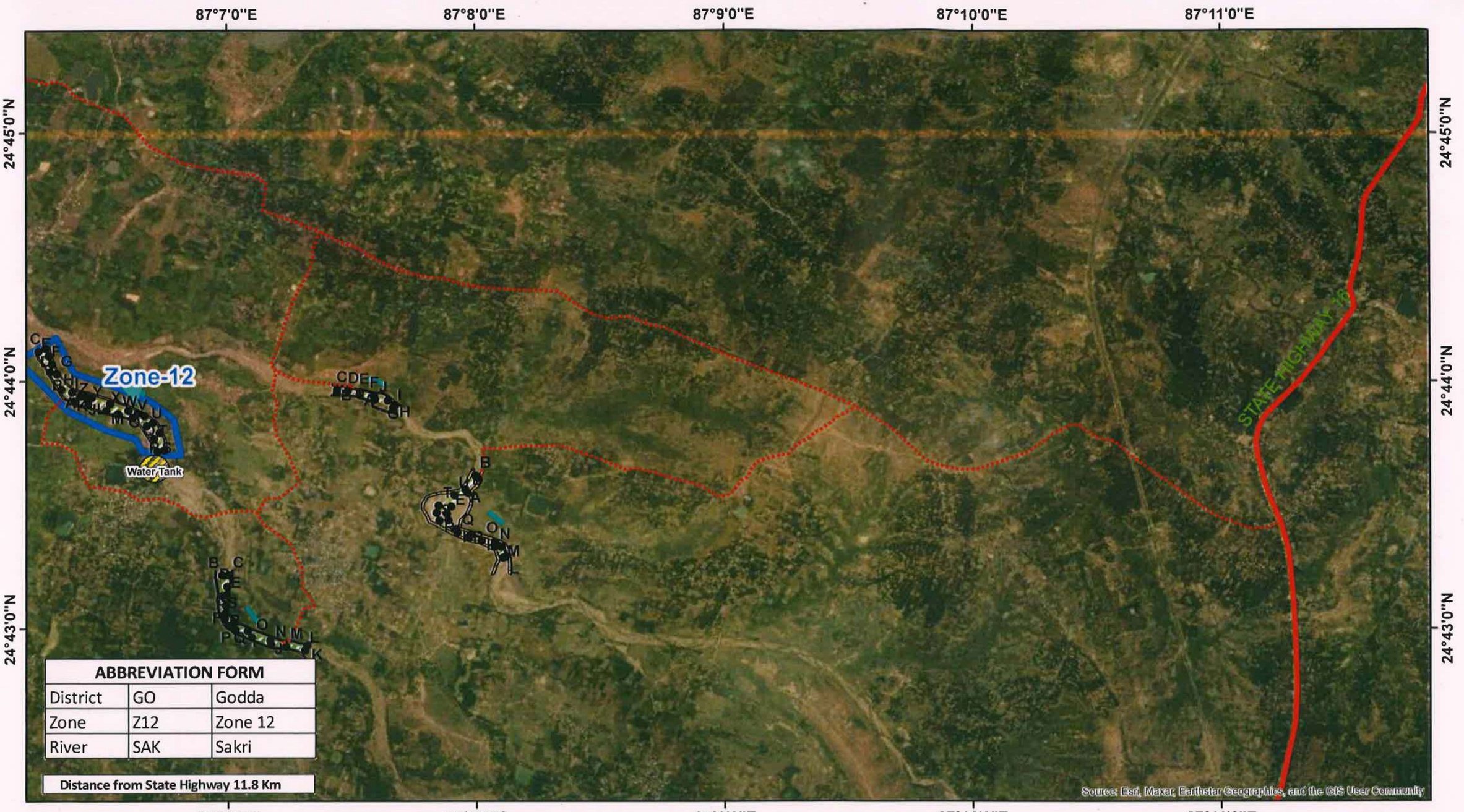
Limiting Coordinates of Zone 10	
Starting Point	87°15'37.541"E 24°48'10.992"N
Ending point	87°17'32.872"E 24°46'35.642"N

District Mining Officer
Godda

N W E S

0 360 720 1,440 2,160 Meters

Route Map of Zone 12 , Godda District, Jharkhand



ABBREVIATION FORM		
District	GO	Godda
Zone	Z12	Zone 12
River	SAK	Sakri

Distance from State Highway 11.8 Km

Legend

- Godda District Boundary
- Railway
- Bridge
- River Flow Direction
- Metalled Roads
- Approach Roads
- No Mining Zone
- Safety Barrier
- Sand Deposit Zone
- Sand Ghat

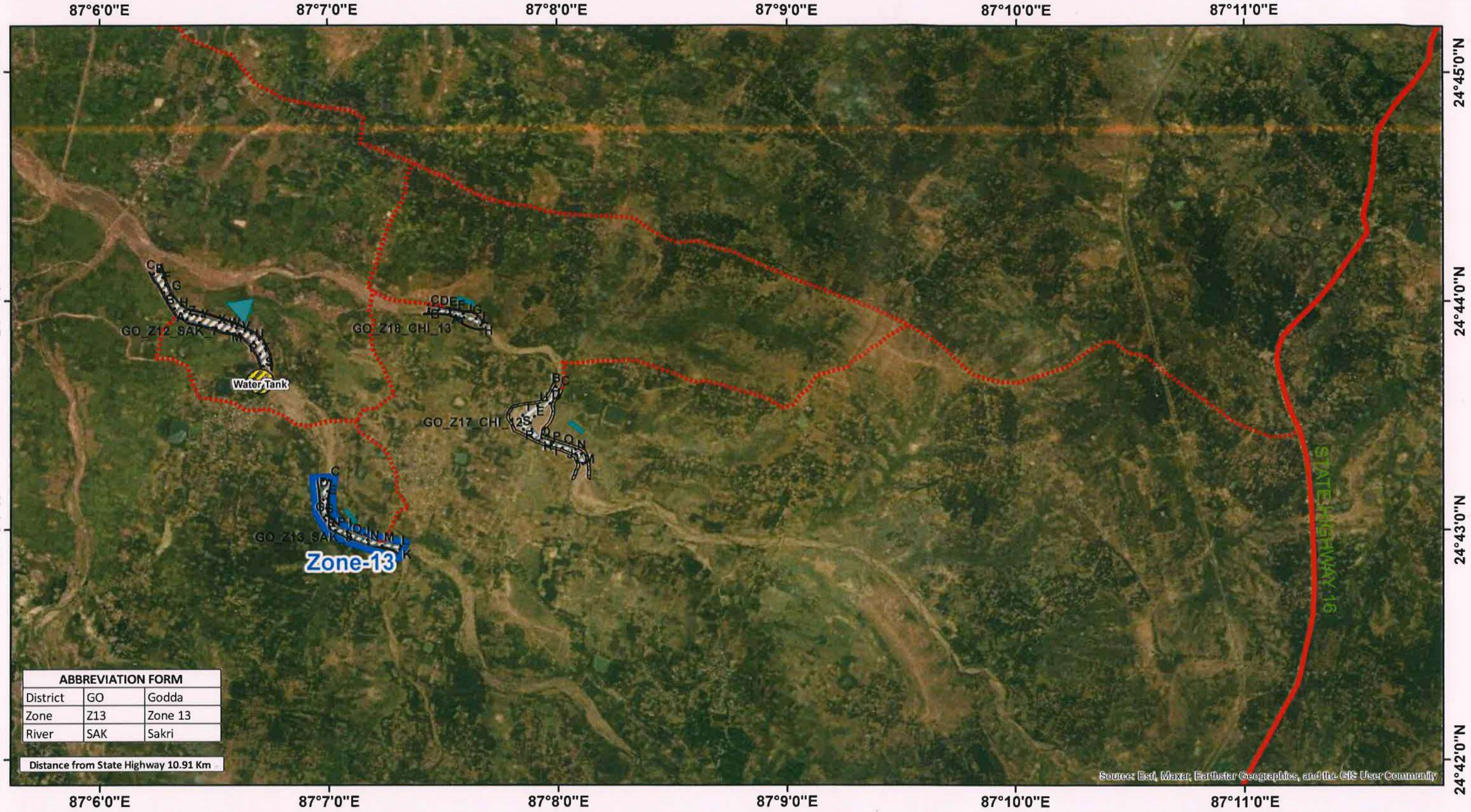
Sand Ghat Code	Area (in Ha)
GO_Z12_SAK_7	5.51

Limiting Coordinates of Zone 12	
Starting Point	87°6'14.791"E 24°44'8.364"N
Ending point	87°6'42.61"E 24°43'42.513"N

District Mining Officer
Godda

0 550 1,100 2,200 3,300 Meters

Route Map of Zone 13 , Godda District, Jharkhand



ABBREVIATION FORM		
District	GO	Godda
Zone	Z13	Zone 13
River	SAK	Sakri

Distance from State Highway 10.91 Km

Legend

- Godda District Boundary
- Railway
- Bridge
- River Flow Direction
- Metalled Roads
- Approach Roads
- No Mining Zone
- Safety Barrier
- Sand Deposit Zone
- Sand Ghat

Sand Ghat Code	Area (in Ha)
GO_Z13_SAK_8	2.59

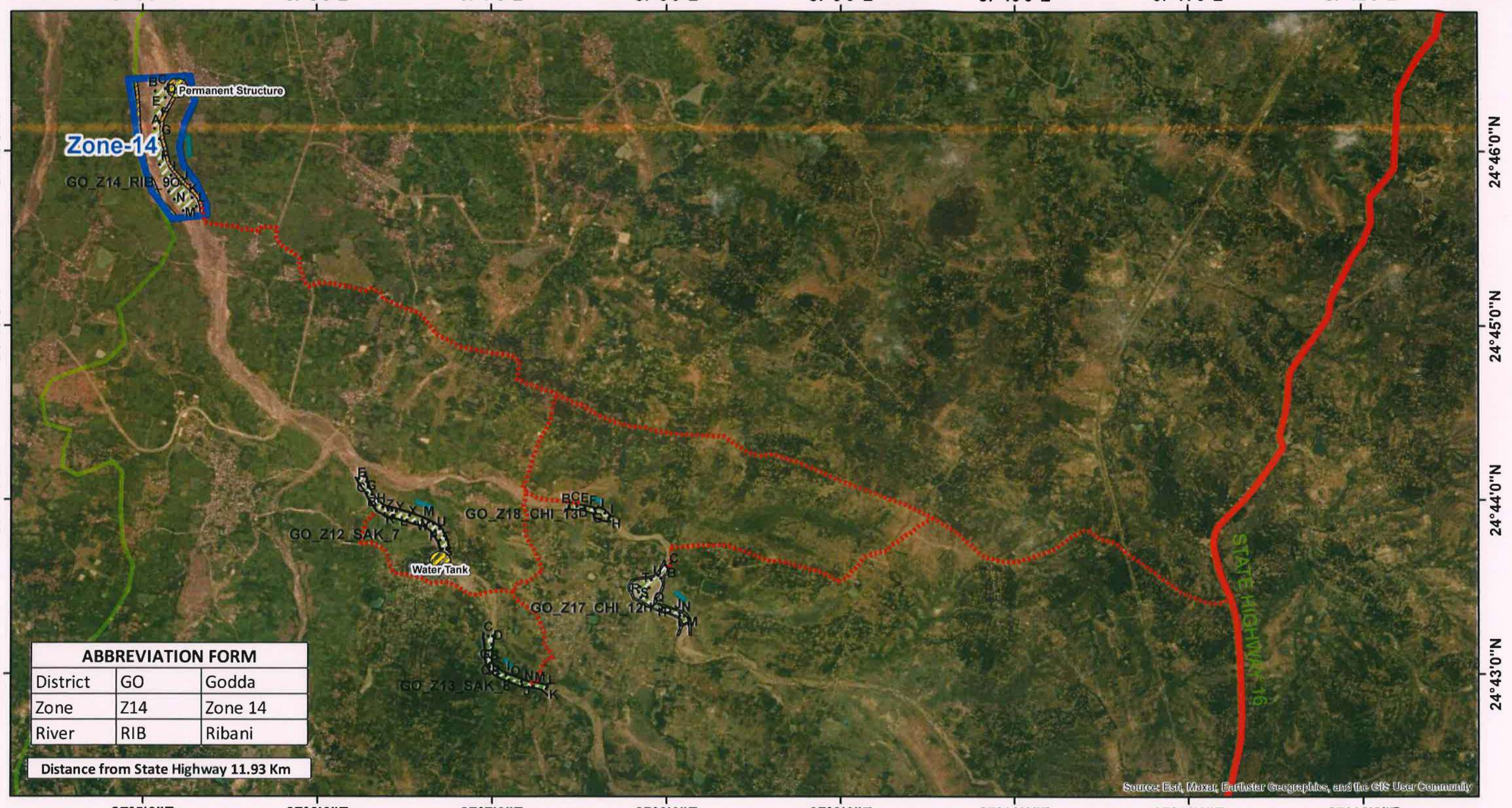
Limiting Coordinates of Zone 13	
Starting Point	87°6'58.695"E 24°43'13.971"N
Ending point	87°7'18.991"E 24°42'53.057"N

District Mining Officer
Godda

N
W E
S

0 550 1,100 2,200 3,300 Meters

Route Map of Zone 14 , Godda District, Jharkhand



ABBREVIATION FORM		
District	GO	Godda
Zone	Z14	Zone 14
River	RIB	Ribani

Distance from State Highway 11.93 Km

Legend

- Godda District Boundary
- Railway
- Bridge
- River Flow Direction
- Metalled Roads
- Approach Roads
- No Mining Zone
- Safety Barrier
- Sand Deposit Zone
- Sand Ghat

Sand Ghat Code	Area (in Ha)
GO_Z14_RIB_9	11.29

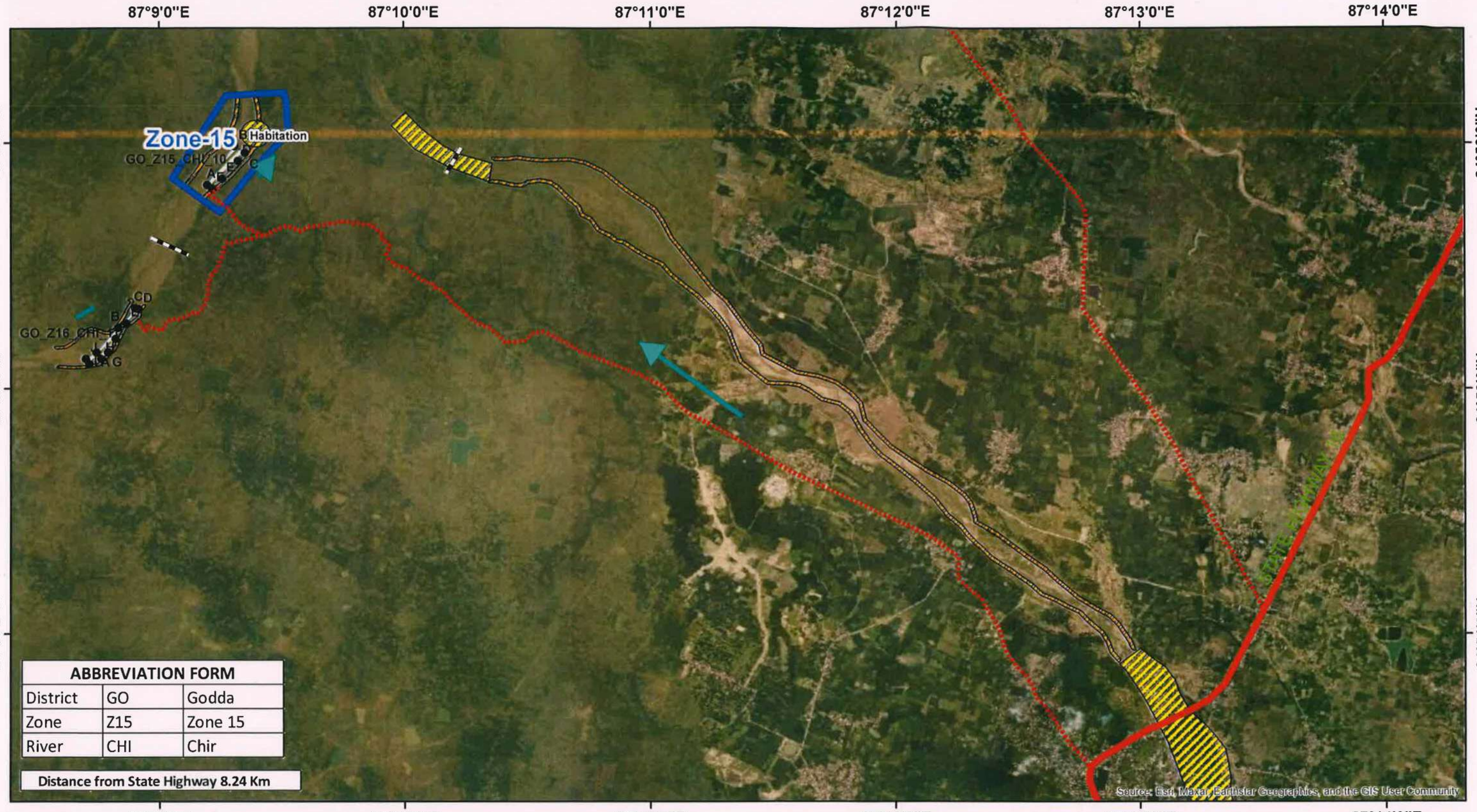
Limiting Coordinates of Zone 14	
Starting Point	87°5'5.895"E 24°46'25.5"N
Ending point	87°5'16.622"E 24°45'37.014"N

District Mining Officer
Godda

N
W E
S

0 800 1,600 3,200 4,800
Meters

Route Map of Zone 15 , Godda District, Jharkhand



ABBREVIATION FORM		
District	GO	Godda
Zone	Z15	Zone 15
River	CHI	Chir

Distance from State Highway 8.24 Km

Legend

- Godda District Boundary
- Railway
- Bridge
- River Flow Direction
- Metalled Roads
- Approach Roads
- No Mining Zone
- Safety Barrier
- Sand Deposit Zone
- Sand Ghat

Sand Ghat Code	Area (in Ha)
GO_Z15_CHI_10	2.39

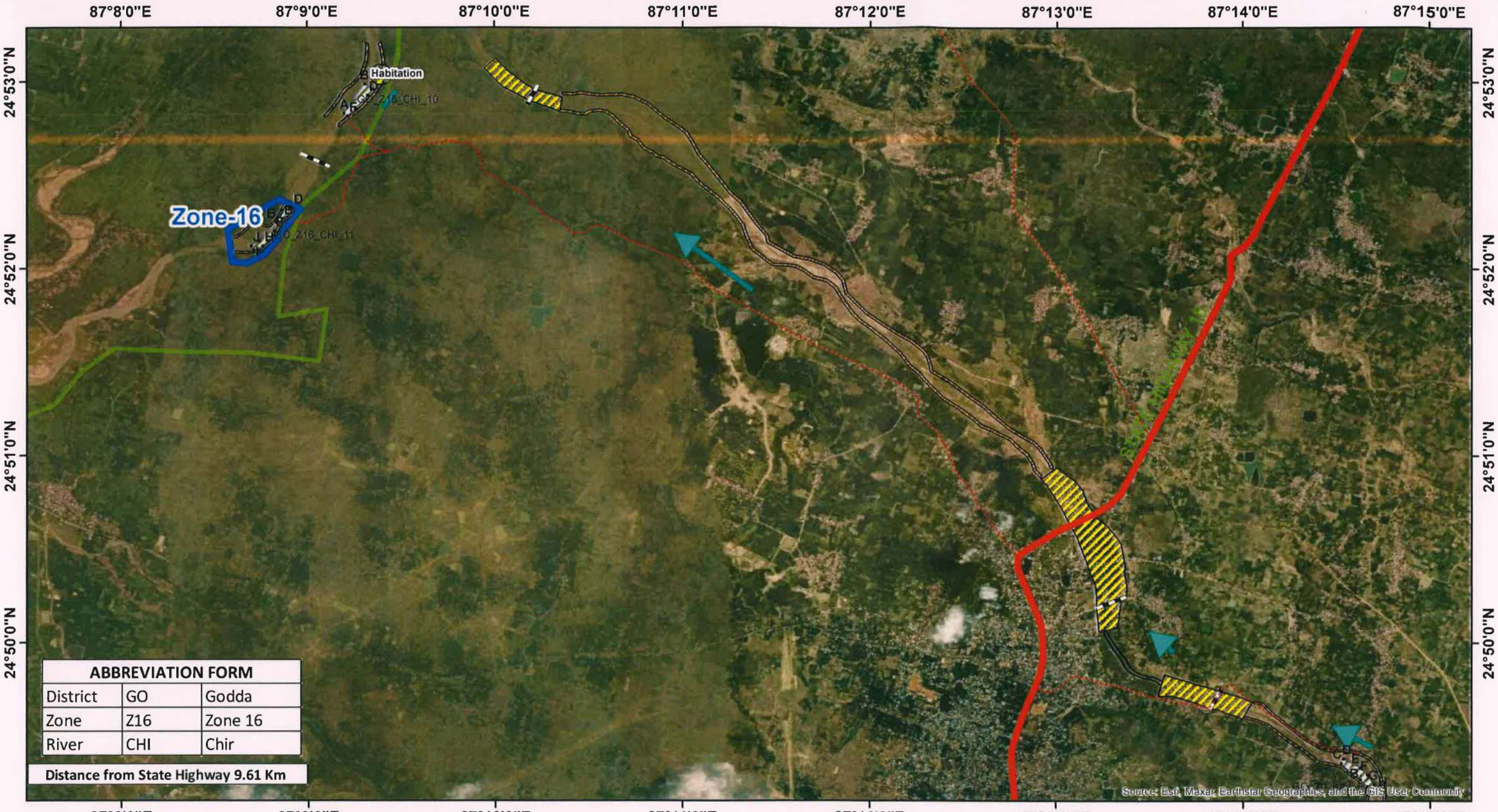
Limiting Coordinates of Zone 15	
Starting Point	87°9'30.642"E 24°53'12.412"N
Ending point	87°9'9.399"E 24°52'47.042"N

District Mining Officer
Godda

N W E S

0 550 1,100 2,200 3,300 Meters

Route Map of Zone 16 , Godda District, Jharkhand



ABBREVIATION FORM		
District	GO	Godda
Zone	Z16	Zone 16
River	CHI	Chir

Distance from State Highway 9.61 Km

Legend

- Godda District Boundary
- Railway
- Bridge
- River Flow Direction
- Metalled Roads
- Approach Roads
- No Mining Zone
- Safety Barrier
- Sand Deposit Zone
- Sand Ghat

Sand Ghat Code	Area (in Ha)
GO_Z16_CHI_11	2.1

Limiting Coordinates of Zone 16	
Starting Point	87°8'54.094"E 24°52'20.851"N
Ending point	87°8'35.224"E 24°52'7.21"N

District Mining Officer,
Godda

N W E S

0 700 1,400 2,800 4,200 Meters

Route Map of Zone 17 , Godda District, Jharkhand

ABBREVIATION FORM		
District	GO	Godda
Zone	Z17	Zone 17
River	CHI	Chir

Distance from State Highway 6.49 Km

Legend

- Godda District Boundary
- Railway
- Bridge
- River Flow Direction
- Metalled Roads
- Approach Roads
- No Mining Zone
- Safety Barrier
- Sand Deposit Zone
- Sand Ghat

Sand Ghat Code	Area (in Ha)
GO_Z17_CHI_12	3.54

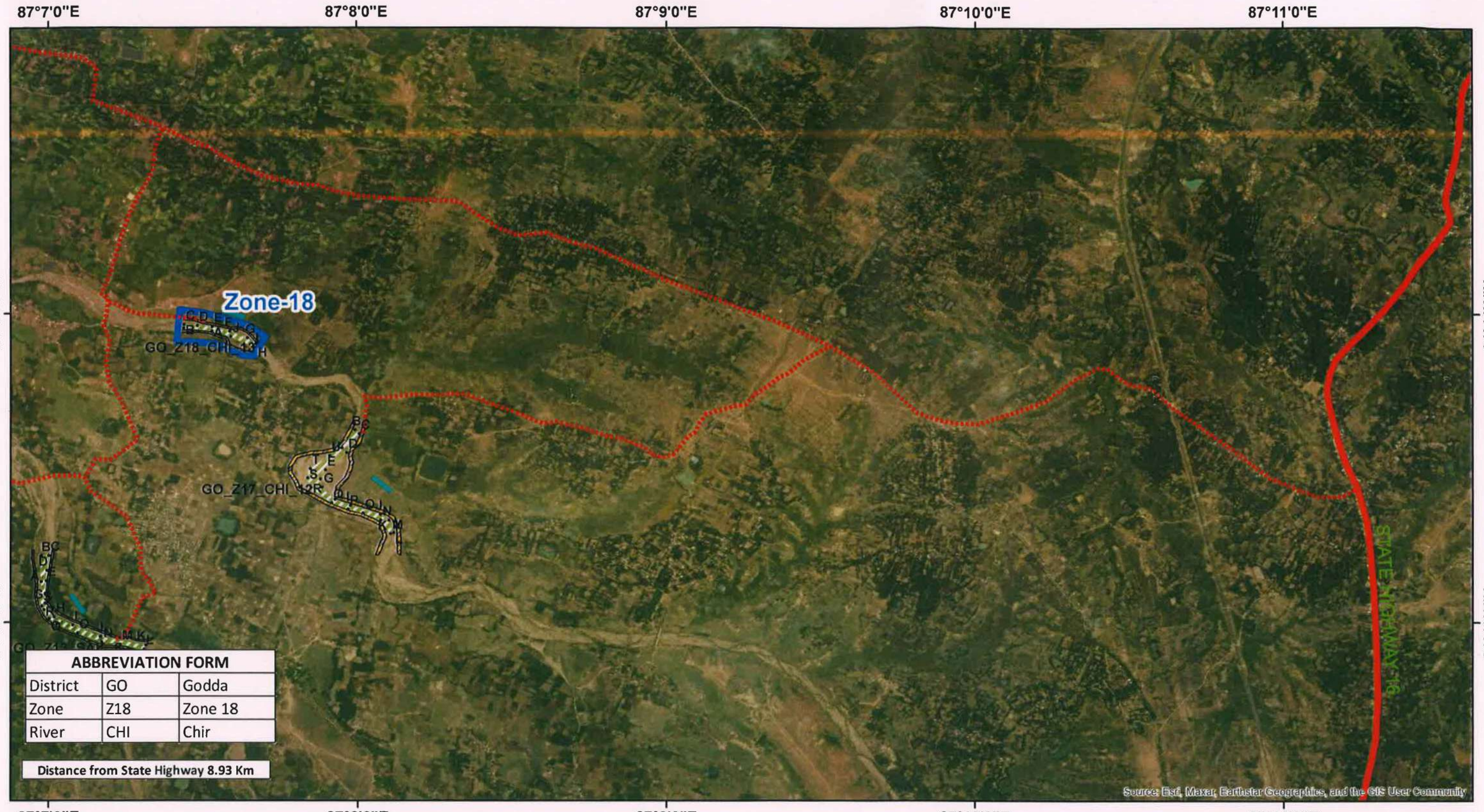
Limiting Coordinates of Zone 17	
Starting Point	87°8'0.261"E 24°43'38.309"N
Ending point	87°8'6.346"E 24°43'13.723"N

District Mining Officer
Godda

N W E S

0 362.5 725 1,450 2,175 Meters

Route Map of Zone 18 , Godda District, Jharkhand



ABBREVIATION FORM		
District	GO	Godda
Zone	Z18	Zone 18
River	CHI	Chir

Distance from State Highway 8.93 Km

Legend

- Godda District Boundary
- Railway
- Bridge
- River Flow Direction
- Metalled Roads
- Approach Roads
- No Mining Zone
- Safety Barrier
- Sand Deposit Zone
- Sand Ghat

Sand Ghat Code	Area (in Ha)
GO_Z18_CHI_13	1.06

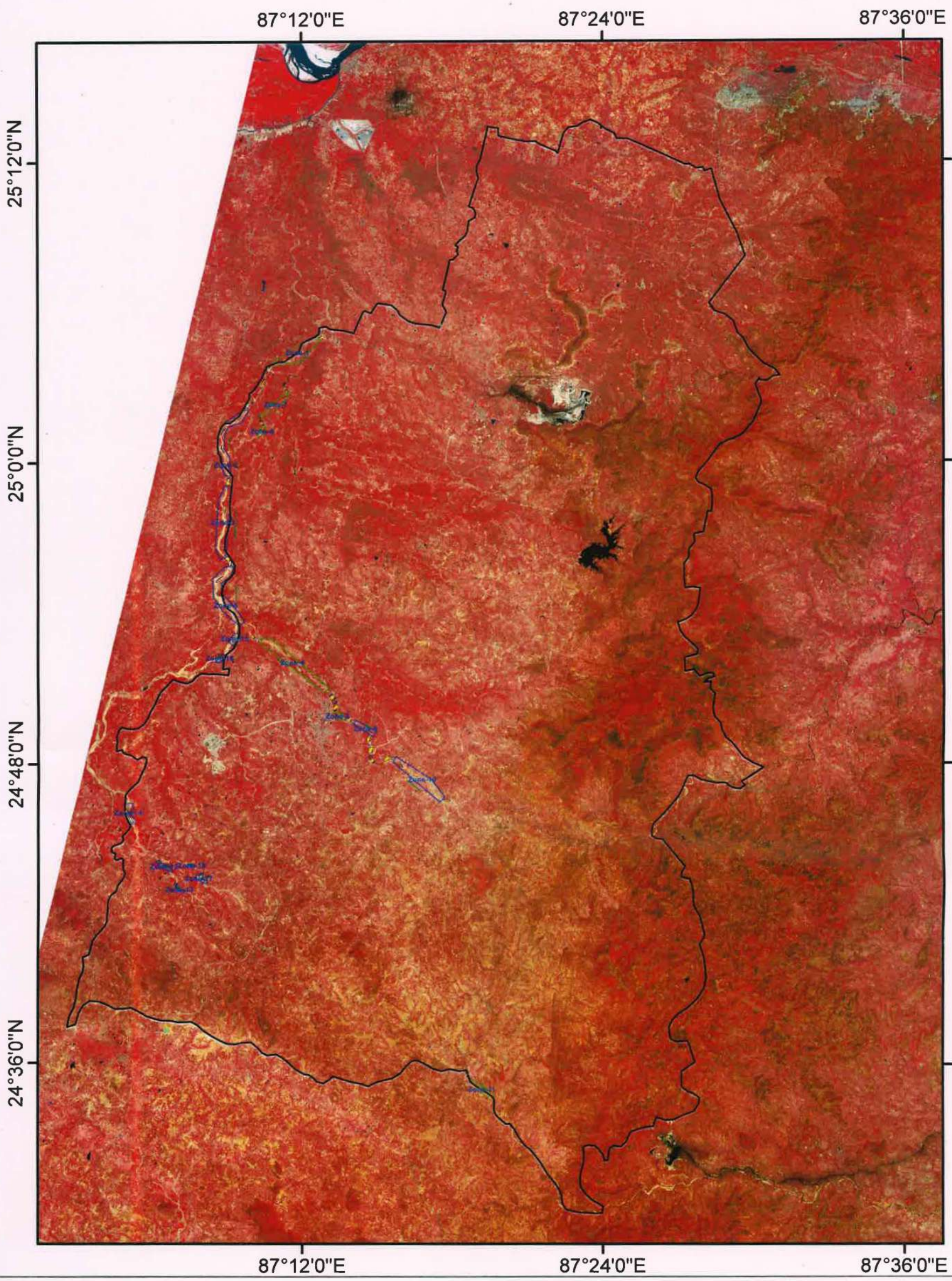
Limiting Coordinates of Zone 18	
Starting Point	87°7'25.293"E 24°43'57.89"N
Ending point	87°7'41.164"E 24°43'53.856"N

District Mining Officer
Godda

N W E S

0 450 900 1,800 2,700 Meters

Map showing Sand Potential Areas in Godda District, Jharkhand; Superimposed on Sentinel 2 Satellite Imagery



Godda District Boundary
Railway
Bridge
River Flow Direction
No Mining Zone
Category 2 Sand Deposit Zone
Category 1 Sand Deposit Zone
Sand Ghat

District Mining Officer
Godda

1 cm = 3 km

N
W
E
S

0 3,400 6,800 13,600 20,400
Meters

Stream Order map of Godda District

87°0'0"E 87°10'0"E 87°20'0"E 87°30'0"E 87°40'0"E

25°10'0"N 25°0'0"N 24°50'0"N 24°40'0"N 24°30'0"N

N

Zone-1
Zone-7
GO_Z2_BUR_1
Zone-2
GO_Z3_BUR_2
Zone-3
GO_Z5_CHI_3
GO_Z5_CHI_4
Zone-5
GO_Z15_CHI_10
GO_Z16_CHI_11
Zone-4
Zone-8
GO_Z9_KAJ_5
GO_Z10_KAJ_6
Zone-10
Zone-14
GO_Z14_RIB_9
GO_Z12_SAK_7
GO_Z17_CHI_12
Zone-11

0 4 8 16 24 32
Kilometers

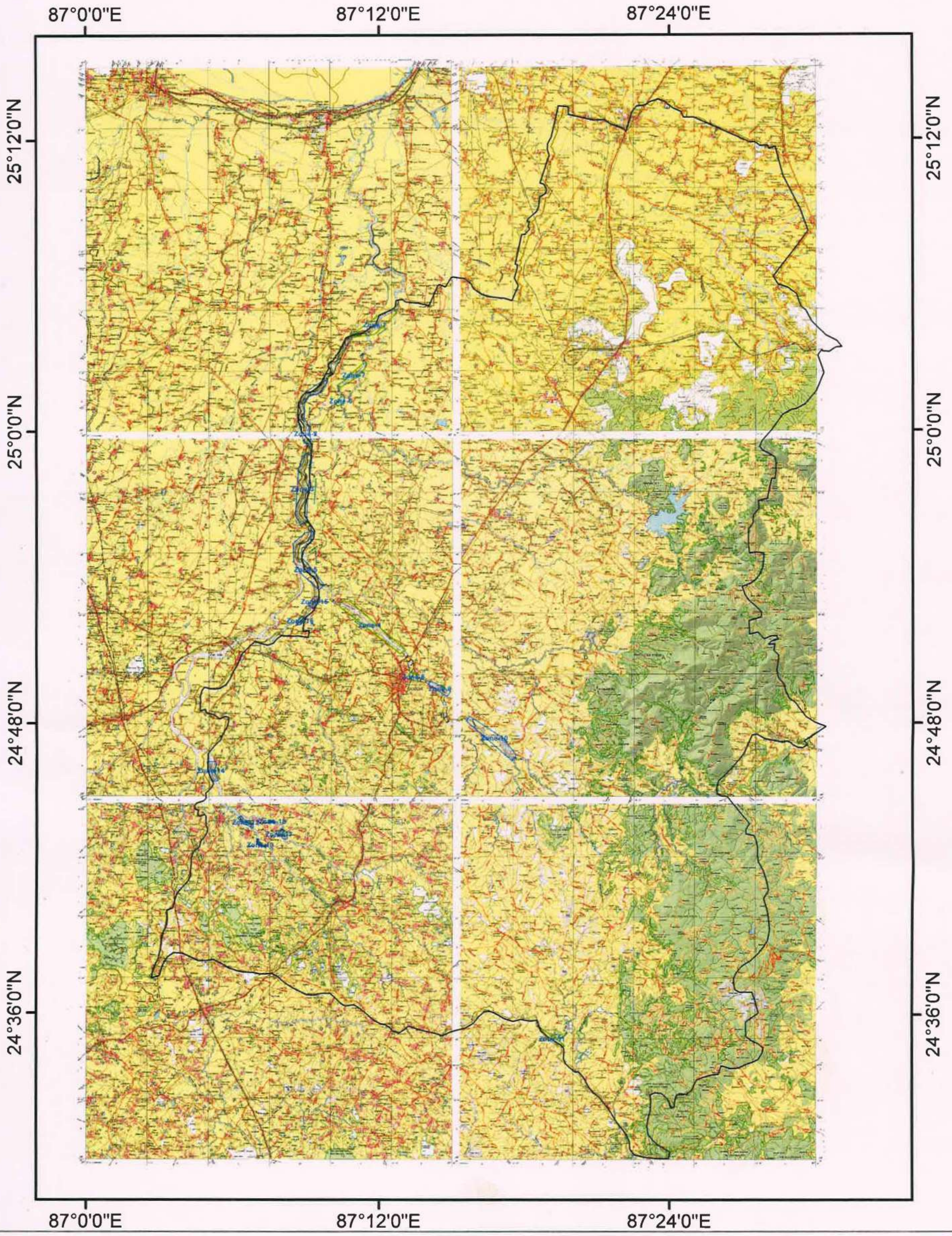
Legend

Stream_Order

- 1
- 2
- 3
- 4
- 5
- 6

District Mining Officer
Godda

Map showing Sand Potential Areas in Godda District, Jharkhand; Superimposed on Survey of India Toposheet



Godda District Boundary
Railway
Bridge
River Flow Direction
No Mining Zone
Category 2 Sand Deposit Zone
Category 1 Sand Deposit Zone
Sand Ghat

District Mining Officer
Godda

1 cm = 3 km

N
W
E
S

0 3,400 6,800 13,600 20,400
Meters

झारखण्ड सरकार
खान एवं भूतत्व विभाग

जिला	गोड्डा

*जिला– गोड्डा के **Category-2** के बालूघाट/बालूघाटों के समूह की ई–नीलामी हेतु निविदा दस्तावेज*

https://www.jharkhandtenders.gov.in

ई–नीलामी हेतु निविदा दस्तावेज में निम्नांकित विवरण हैः–

क्र०	दस्तावेज की विवरणी	पृष्ठ संख्या
1	निविदा के बावत् प्रक्रिया, शर्त्त एवं बंधेज (अनुलग्नक–1)	01–12
2	ई–नीलामी हेतु बालूघाट की विवरणी (अनुलग्नक –2)	13
3	तकनीकि निविदा का प्रपत्र (अनुलग्नक –3)	14–15
4	आवंटन हेतु चिन्हित कुल बालूघाट की विवरणी (अनुलग्नक–4)	16
5	घोषणा पत्र का प्रारूप (अनुलग्नक–5)	17

अनुलग्नक–1

जिला खनन कार्यालय, गोड्डा।

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निविदा दस्तावेज

(1) पंजीयन की प्रक्रिया :–

(i) ई–ऑक्शन प्रक्रिया में भाग लेने वाले इच्छुक व्यक्तियों को सर्वप्रथम ई–प्रोक्योरमेंट पोर्टल https://www.jharkhandtenders.gov.in में पंजीयन कराना अनिवार्य होगा। यदि बोलीदाता द्वारा पूर्व में ई–ऑक्शन में भाग लेने हेतु पंजीयन कराया जा चुका हो, तो पुनः पंजीयन की आवश्यकता नहीं है। संभावित बोलीदाताओं को नीलामी में भाग लेने हेतु एक वैध श्रेणी–3 डिजिटल हस्ताक्षर (signature+Encryption) एवं यूजर आई0डी0 प्राप्त करना अनिवार्य है। पंजीकरण हेतु संबंधित बोलीदाता के पास एक वैध ई–मेल आई0डी0 होना अनिवार्य है।

(ii) ई–प्रोक्योरमेंट पोर्टल https://www.jharkhandtenders.gov.in पर पंजीयन लिंक के द्वारा सर्वप्रथम पंजीयन करना होगा। पंजीयन पर क्लिक करने पर एक नई ऑनलाईन प्रपत्र में दर्शाये गये विवरण को दर्ज करना होगा। सम्पूर्ण विवरण दर्ज करने के पश्चात आपको नियम एवं शर्तो को स्वीकार करना होगा तथा विंडों में दर्शित **CAPTCHA** को दर्ज कर अपना पंजीयन कराना होगा।

(iii) इस प्रक्रिया को पूर्ण करने के पश्चात पोर्टल के विडों पर निविदादाता द्वारा किया गया पंजीयन सफलतापूर्वक किया गया है, इसका संदेश प्राप्त होगा। यदि आवश्यकता हो तो संबंधित प्रपत्र का प्रिंट आउट भी प्राप्त कर सकते हैं।

(iv) उपरोक्त प्रक्रिया के उपरांत आपको यूजर आई0डी0 एवं पासवर्ड प्राप्त होगा। इस यूजर आई0डी0 एवं पासवर्ड का उपयोग नीलामी की प्रक्रिया में भाग लेने के लिए कर सकेंगे।

(2) बालूघाटों की आवंटन हेतु नीलामी की शर्त्त एवं बंधेज :–

(i) प्रत्येक **बालूघाट/बालू घाटों के समूह** को एक इकाई बालूघाट मानते हुए प्रत्येक इकाई के लिए अलग–अलग निविदा कागजात को ई–नीलामी पोर्टल से डाउनलोड करना होगा एवं अलग–अलग अग्रधन राशि के साथ निविदा देनी होगी।

(ii) एक व्यक्ति/समिति/फर्म/कम्पनी को अधिकतम बालू घाटों की आवंटन के रकबा के बावत् शर्त्ते प्रशासनिक दृष्टिकोण से The Jharkhand Sand Mining Rules, 2025 के नियम–5 का अनुपालन करते हुए जिला स्तरीय समिति द्वारा निर्धारित किया जाएगा।

(iii) आवंटन ई–निविदा–सह–नीलामी प्रक्रिया द्वारा की जायेगी।

(3) पात्रता :– निबंधित कम्पनियॉ, पार्टनरशीप, सोसाईटी, सहकारी संस्था सहित, सोल प्रोपराईटरशीप, व्यक्तियों और संस्थाओं के भागीदार को पात्रता के निम्नांकित मानदण्डों को पूरा करना होगा :–

(i) भारत का नागरिक होना।

(ii) पैन कार्ड धारी होना।

(iii) रॉयल्टी/जी0एस0टी0 निबंधन प्रमाण पत्र का होना :–

संबंधित जिला से जी0एस0टी0 निबंधन प्रमाण–पत्र/पूर्व से निबंधित नहीं रहने पर एक माह के अंदर निबंधन करा लेने संबंधी घोषणा–पत्र/शपथ–पत्र।

(iv) पिछले तीन वित्तीय वर्षों (वर्ष 2022–23, 2023.24 एवं 2024–25) के दौरान बीडर का औसत वार्षिक टर्नओभर उसके द्वारा बीड किये गये बालूघाट के सुरक्षित मूल्य के 35 प्रतिशत् से कम नही होना चाहिए। भागीदारी की दशा में, सभी सदस्यों के संयुक्त तकनीकी और वित्तीय क्षमता पर पात्रता के लिए जिला स्तरीय समिति द्वारा विचार किया जाएगा। उपरोक्त सभी वित्तीय वर्षों का औसत वार्षिक टर्नओभर चार्टेड आकउन्टेड द्वारा सत्यापित होना चाहिए।

(v) खान एवं भूतत्व विभाग एवं अन्य अधीनस्थ कार्यालय में किसी प्रकार का कोई बकाया नहीं हो। बकाया राशि की वसूली के लिए नीलाम पत्र वाद दर्ज रहने पर निविदा के लिए पात्र नहीं होंगे।

(vi) किसी राज्य/केन्द्र सरकार के विभाग/निगम/उपक्रम द्वारा काली सूची में नहीं डाला गया हो।

(vii) संबंधित उपायुक्त/अनुमंडल पदाधिकारी द्वारा निर्गत आचरण प्रमाण–पत्र (जो छः (06 Months) से पहले का ना हो)। आचरण प्रमाण पत्र में यह अंकित होना चाहिए की उनके विरुद्ध संज्ञेय अपराध का कोई मुकदमा नहीं है और उसका अच्छा नैतिक चरित्र है। गलत चरित्र प्रमाण–पत्र समर्पित करने पर संबंधित निविदादाता द्वारा जमा की गई सभी राशि जप्त कर 02 वर्षों के लिए काली सूची में डाल दिया जायेगा एवं अन्य विधिसम्मत् कार्रवाई की जाएगी। संबंधित जिला से आचरण प्रमाण–पत्र पूर्व से निर्गत नहीं रहने पर LoI निर्गत होने के पूर्व आचरण प्रमाण–पत्र कार्यालय में दाखिल करेंगें, इस आशय का घोषणा–पत्र/शपथ–पत्र।

(4) निविदा देने की प्रकिया :–

केवल ऑन लाईन पद्धति ई–प्रोक्योरमेंट पोर्टल https://www.jharkhandtenders.gov.in के माध्यम से निविदा आवेदन किया जायेगा

(5) ई–ऑक्शन की प्रक्रिया :–

(i) नीलामी की सूचना में दर्शित समय के पूर्व इच्छुक व्यक्ति को https://www.jharkhandtenders.gov.in पोर्टल में पंजीयन के समय प्राप्त यूजर आई0डी0 एवं पासवर्ड प्रविष्टि करना होगा।

(ii) पोर्टल में प्रविष्टि के उपरांत एक्टिविटी विंडों में क्लिक करना होगा। इस विंडों में क्लिक के उपरांत आवेदक को ऑक्शन का चयन करना होगा।

(iii) अग्रधन राशि एवं आवेदन शुल्क सफलता पूर्वक जमा करने के पश्चात् बोलीदाता https://www.jharkhandtenders.gov.in द्वारा प्रदान किये गये यूजर आई0डी0 का उपयोग करते हुए लॉगिन करेंगे एवं भुगतान रसीद के साथ सभी वांछित कागजात अपलोड करेंगे।

(iv) ई–प्रोक्योरमेंट पोर्टल https://www.jharkhandtenders.gov.in के माध्यम से Tender-cum-Auction (After Financial Opening) Mode में ई–नीलामी की प्रक्रिया सम्पन्न की जाएगी, जिसका Process Flow निम्न प्रकार है :–

Technical Evaluation → Financial Opening → Auction → Financial Evaluation → Contract Award.

(नोटः– पोर्टल के माध्यम से निविदा दो Cover System में समर्पित की जानी है यथा 1. तकनीकी एवं 2. प्रारम्भिक वित्तीय प्रस्ताव (Initial Price Offer)''

(6) तकनीकि निविदा के लिए निम्नांकित कागजात पोर्टल पर अपलोड किया जाना होगा :–

(क) निविदा देने वाले को कुल सुरक्षित राशि का 10 प्रतिशत, अग्रधन (Earnest Money) की राशि के रूप में केवल ऑनलाईन जमा ली जाएगी।

(ख) निविदा के बावत् प्रक्रिया शर्त्तों एवं बंधेजों के प्रत्येक पृष्ठ पर मुहर के साथ हस्ताक्षर।

(ग) निविदा आवेदन पर मुहर के साथ हस्ताक्षर।

(घ) पैन कार्ड एवं आधार कार्ड की स्वअभिप्रमाणित फोटोप्रति।

(च) संबंधित जिला में पूर्व में अगर निविदादाता द्वारा वृहत खनिज का खनन पट्टा अथवा लघु खनिज का खनन पट्टा/अनुज्ञप्ति धारित हो अथवा स्टॉकिस्ट अनुज्ञप्ति लिया गया हो तो संबंधित जिले के जिला खनन पदाधिकारी से बकाया रहित प्रमाण पत्र लेकर जमा करना होगा। यदि निविदादाता पूर्व में कोई आवंटन/खनन पट्टा/अनुज्ञप्ति नहीं लिये हो तो इस आशय का शपथ–पत्र संलग्न करना होगा। बकाया राशि की वसूली के लिए नीलाम पत्र वाद दर्ज रहने पर निविदा के लिए पात्र नहीं होंगे।

(छ) जी0एस0टी0 निबंधन प्रमाण–पत्र/पूर्व से निबंधित नही रहने पर एक माह के अन्दर निबंधन करा लेने संबंधी शपथ पत्र। GST प्रमाण पत्र प्राप्त होने के पश्चात् ही खनिज के प्रेषण के लिए अनुमति प्रदान की जाएगी।

(ज) फर्म/HUF/प्राईवेट लि0 कम्पनी के मामले में अद्यतन लेखा (Balance sheet)।

(झ) समिति के मामले मे अंकेक्षण रिपोर्ट।

(ञ) चार्टर्ड एकाउटेंट द्वारा सत्यापित् **वित्तीय वर्ष** 2022–23, 2023–24 एवं 2024–25 का वार्षिक लेखा एवं चार्टर्ड एकाउटेंट द्वारा सत्यापित् **वित्तीय वर्ष** 2022–23, 2023–24 एवं 2024–25 का औसत वार्षिक टर्नओभर।

(ट) **वित्तीय वर्ष** 2022–23, 2023–24 एवं 2024–25 के आयकर रिर्टन की स्वअभिप्रमाणित प्रति।

(ठ) मेमोरेण्डम/आर्टिकल्स ऑफ एसोसिएशन/उप नियम। (व्यक्ति विशेष को छोड़कर अन्य मामले में)

(ड) साझेदारी के मामले में साझेदारी दस्तावेज का स्व अभिप्रमाणित प्रति।

(ढ) स्वअभिप्रमाणित दो पासपोर्ट साईज फोटों।

(ण) इस आशय का शपथ पत्र कि निविदादाता/पार्टनरशिप फर्म/HUF/कंपनी को राज्य/केन्द्र सरकार के किसी विभाग/उपक्रम द्वारा काली सूची में नहीं डाला गया है।

(त) निविदा दस्तावेज के साथ संलग्न घोषणा पत्र पर सहमति (निविदादाता के लेटर हेड पर), हस्ताक्षर एवं मुहर सहित।

(7) बोली लगाते समय बोलीदाता के सभी आई0टी0 संसाधनों एवं उपकरणो के सुचारू रूप से कार्य करने की जिम्मेदारी पूर्ण रूप से बोलीदाता की होगी। किसी भी प्रकार की तकनीकी समस्या एवं इन्टरनेट विच्छेद संबंधी मामलो में संबंधित निविदा आमंत्रित करने वाले पदाधिकारी की कोई जिम्मेदारी नहीं होगी। इस कारण से हुई क्षति के लिए बोलीदाता स्वयं जिम्मेदार होंगे।

(8) सभी इच्छुक निविदादाता ई–नीलामी हेतु पंजीकरण करने एवं ऑन–लाईन आवेदन करने से पूर्व नियम एवं शर्त्तो को अच्छी तरह से पढ़ ले। आवेदन करने के बाद यह माना जायेगा कि निविदादाताओं द्वारा नियम एवं शर्त्तो को ध्यान से पढ़ लिया गया है तथा सभी नियम शर्त्ते उनको मान्य है। बाद में इस संबंध में किसी भी प्रकार का दावा/आपत्ति अस्वीकार्य होगा।

(9) नीलामी की तिथि एवं समय ई–नीलामी कार्यक्रम में उल्लेखित है। सभी इच्छुक बोलीदाता यह सुनिश्चित हो लेंगे कि ई–नीलामी से संबंधित अपने सभी आई0टी0 संसाधनो एवं उपकरणों की समुचित जाँच कर ली है एवं निर्धारित नीलामी कार्यक्रम के अनुसार ही भाग लेंगे।

(10) निविदा दस्तावेज शुल्क अप्रतिदेय (Non-Refundable) होगा। अतः राशि वापसी से संबंधित किसी भी प्रकार के अनुरोध अथवा आवेदन पर विचार नहीं किया जायेगा और इस संबंध में किसी प्रकार का कोई दावा अनुरक्षणीय (Non-Maintainable) होगा।

(11) सभी प्राप्त निविदा के कागजातों को डाउनलोड करने के पश्चात् जिला स्तरीय समिति द्वारा दस्तावेजों की जाँच की जायेगी। केवल वैध दस्तावेज समर्पित करने वाले निविदादाताओं का ही प्रारंभिक वित्तीय प्रस्ताव का मूल्यांकन किया जाएगा तथा उन्हें ही ई–नीलामी की प्रक्रिया में भाग लेने हेतु स्वीकृति दी जायेगी।

(12) तकनीकी सफल डाकवक्ताओं का प्रारम्भिक वित्तीय प्रस्ताव, जो डाकवक्ताओं द्वारा निविदा दस्तावेज के साथ संलग्न BoQ में समर्पित किया जाएगा, का मूल्यांकन जिलास्तरीय समिति द्वारा किया जाएगा तथा उच्चतम वित्तीय डाक (डाकवक्ता की विवरणी गोपनीय रखते हुए) को घोषित किया जाएगा। यह उच्चतम डाक Forward ई–नीलामी की प्रक्रिया हेतु Base Price होगा, जिसकी विवरणी ई–नीलामी की तिथि सहित नीलामी पोर्टल में ससमय प्रविष्टि की जाएगी। निविदा अपलोड करने की अन्तिम तिथि के अगले कार्य दिवस से तकनीकी निविदा की जिला स्तरीय समिति द्वारा जाँच/मूल्यांकन कर सफल निविदादाताओं की सूची सिस्टम में अपलोड करने तथा प्रारम्भिक वित्तीय प्रस्ताव के मूल्यांकन की तिथि के मध्यावधि, निविदा आमंत्रित करने वाले पदाधिकारी द्वारा निविदा को खोला जायेगा।

(13) ऑक्शन मोड के चयन के उपरांत निविदादाता को संबंधित सम्पदा का चयन करना होगा, जिसके उपरान्त नीलामी में प्रदर्शित सम्पदाओं की सूची विंडों में प्रदर्शित होगी।

(14) प्रत्येक बोलीदाता के कम्प्यूटर विंडों पर अन्य बोलीदाताओं की सर्वोच्च बोली ही प्रदर्शित होगी। बोलीदाता के नाम तथा पहचान पूर्णतः गोपनीय होगी।

(15) आवश्यकता पड़ने पर ऑन–लाईन निविदा प्रक्रिया प्रांरभ होने के पश्चात्, किन्तु प्रक्रिया पूर्ण होने के पूर्व कभी भी लिखित सूचना निर्गत कर नीलामी कार्यक्रम में परिर्वतन किया जा सकता है, जो मात्र ऑन–लाईन प्रदर्शित होगा। अतः बोलीदाता को https://www.jharkhandtenders.gov.in पोर्टल से सूचना देखते रहना होगा। बोलीदाता की ये जम्मेवारी होगा की वह पोर्टल का अवलोकन करते रहे। किसी अन्य माध्यम से सूचना नही दी जायेगी।

(16) किसी विशिष्ट सम्पदा के ई–नीलामी की प्रक्रिया में निर्धारित समय सीमा के अंतिम 05 मिनट में यदि किसी बोलीदाता द्वारा बोली समर्पित की जाती है तो सिस्टम द्वारा स्वतः बोली समाप्ति की अवधि को केवल एक बार मात्र अगले पचपन मिनट (55 minutes) की अवधि के लिए विस्तारित कर दिया जायेगा। उसके बाद अवधि विस्तार नहीं किया जायेगा।

(17) सफलतम बोलीकर्ता को स्वचालित सिस्टम द्वारा ई–मेल एवं पोर्टल के माध्यम से उच्चतम बोलीकर्त्ता होने की सूचना दी जाएगी।

(18) ई–नीलामी की प्रक्रिया के तहत बोलीदाताओ द्वारा यदि किसी प्रकार की अनियमितता अथवा भ्रष्ट आचरण का प्रयोग किया जाता है तो उस नीलामी प्रक्रिया को तत्काल स्थगित किया जा सकता है। निविदा प्रक्रिया को रद्द करने का अधिकार संबंधित जिलास्तरीय समिति के पूर्ण विवेकाधिकार में होगा।

(19) **बालूघाटों की आवंटन की प्रक्रिया एवं सफल निविदादाता का चयनः–**

(i) बालूघाटों की आवंटन उच्चतम डाकवक्ता/बोलीदाता के पक्ष में ई– निविदा–सह–नीलामी (e-tendering-cum-auction) के माध्यम से उन निविदादाताओं के बीच से की जाएगी जिनकी तकनीकी निविदा, निविदा दस्तावेजों में वर्णित पात्रताओं की शर्त्तों के अनुसार उपयुक्त पाई जाएगी।

(ii) जो व्यक्ति/समिति/फर्म/HUF/कम्पनी तकनीकी निविदा में सफल होंगे, सिर्फ उन्हीं निविदादाताओं को ई–नीलामी में भाग लेने का मौका दिया जायेगा। ई–नीलामी में जो उच्चतम डाकवक्ता होंगे वही सफल निविदादाता माने जायेंगे।

(iii) उच्चतम निविदादाता/डाकवक्ता द्वारा आवंटन लेने से इन्कार करने या निर्धारित अवधि में अन्य औपचारिकताएं पूर्ण नहीं करने पर या असफल रहने पर उनकी जमा अग्रधन जप्त कर ली जायेगी एवं अगले 02 वर्ष के लिए निविदा में भाग लेने से वंचित कर दिया जायेगा।

(iv) ई–नीलामी में न्यूनतम बोली की बढ़ोतरी राशि (Incremental Value) निम्नवत होगी :–

SL. No.	Reserve Price (RP)	Minimum Incremental Bid Amount
1	Upto 1 Cr.	10% of R.P
2	More than 1 Cr. and upto 10 cr.	5% of R.P
3	More than 10 Cr. and upto 100 cr.	3% of R.P
4	More than 100 Cr.	2% of R.P

(v) तकनीकी निविदा में सफल निविदादाताओं द्वारा ई–नीलामी में भाग नहीं लेने के कारण नीलामी विफल हो जाने पर तकनीकी निविदा में सफल सभी निविदादाताओं की अग्रधन राशि जप्त कर ली जाएगी।

(vi) एकल निविदा प्राप्त होने की स्थिति में पुनः अल्प निविदा आमंत्रित की जायेगी। दूसरी बार भी यदि और कोई निविदादाता नहीं आते हैं, तो एकल निविदा को सुरक्षित जमा के उपर बोली की स्थिति में समिति की अनुशंसा के साथ प्रमण्डलीय आयुक्त को भेजा जाएगा एवं प्रमण्डलीय आयुक्त के अनुमोदनोपरान्त एकल निविदादाता के पक्ष में बालूघाटो का नियमानुसार आवंटन उपायुक्त द्वारा की जा सकेगी।

(vii) नीलामी राशि केवल प्रथम वर्ष के लिए आवंटन की राशि मानी जाएगी दूसरे एवं उसके बाद की आवंटन राशि गत वर्ष की आवंटन राशि के 110 प्रतिशत के बराबर होगी।

(viii) अपेक्षित दस्तावेजों को पोर्टल पर अपलोड करने, अपेक्षित राशि के भुगतान, पट्टा संविदा के निष्पादन के बाद कार्य–आदेश उच्चतम डाकवक्ता के पक्ष में निर्गत किया जाएगा।

(ix) खनन पट्टाधारीआवंटन अवधि के दौरान नियमों/निविदा दस्तावेज के अधीन किये गये प्रावधानों के अनुसार संपूर्ण खनन एवं अन्य देय करों का भुगतान करेगा।

(20) सफल निविदादाता के चयन के बाद की औपचारिकताएँ :–

i. Preferred Bidder द्वारा, Letter of Intent निर्गत होने के 15 कार्य दिवस के अन्दर Annual Mineral Concessional Value as quoted in the auction का 10 प्रतिशत राशि Performance Security के रूप में संबंधित जिला खनन कार्यालय में, ऑनलाईन जमा करना होगा।

ii. अग्रधन राशि आवंटन अवधि की समाप्ति के बाद लौटायी जाएगी बशर्त्ते कि कोई अन्य बकाया वसूल नहीं किया जाना हो। अग्रधन राशि पर किसी तरह का कोई ब्याज देय नहीं होगा।

iii. अग्रधन राशि और नीलामी की किस्तों का भुगतान ऑनलाईन माध्यम से स्वीकार किया जायेगा जो–

(क) किसी व्यक्ति की दशा में ऑनलाईन राशि अंतरण अपने स्वयं के बैंक खाते से किया जाएगा।

(ख) भागीदारी फर्म/HUF की दशा में ऑनलाईन राशि अंतरण संबंधित फर्म अथवा उसके भागीदारों के बैंक खाते से किया जाएगा।

(ग) कंपनी की दशा में ऑनलाईन राशि अंतरण संबंधित कंपनी या उसके प्रबंध निदेशक या उसके संबंधित निदेशकों के खाते से किया जाएगा।

(घ) किसी भी कारण से ई–नीलामी रद्द होने के मामलें में, सफल डाकवक्ता द्वारा जमा की गई कोई भी राशि, जिसमें अग्रधन राशि आदि शामिल हो, को उपायुक्त के विवेकाधिकार पर वापस किया जाएगा। हालांकि इस संबंध में किसी तरह का ब्याज अथवा मुआवजे एवं नुकसान आदि के लिए कोई दावा मान्य नहीं होगा।

(21) वैधानिक अनापत्तिः– बालूघाट संचालन हेतु आवश्यक समस्त वैधानिक अनापत्ति/अनुमति (जैसेः– खनन योजना, पर्यावरणीय स्वीकृति, जल एवं वायु सहमति आदि सफल डाकवक्ता द्वारा प्राप्त की जाएगी। (यदि सफल डाकवक्ता द्वारा बालूघाटों के समूह को एक इकाई मानते हुए नीलामी में भाग लिया गया है तो सभी प्रकार का वैधानिक अनापत्ति/अनुमति प्रत्येक बालूघाट के लिए अलग–अलग प्राप्त करना होगा।) वैधानिक अनापत्ति/अनुमति के पश्चात् ही बालू खनन प्रारंभ किया जा सकेगा। वैधानिक अनापत्ति/अनुमति के बिना अथवा वैधानिक अनापत्ति/अनुमति में अनुज्ञात मात्रा से अधिक मात्रा या निर्धारित क्षेत्र से बाहर खनन किए जाने की दशा में सुसंगत नियमों के अनुसार संबंधित सफल डाकवक्ता/खनन पट्टाधारीपर कार्रवाई की जाएगी। वैधानिक अनापत्ति/अनुमति निम्नानुसार हैः–

i. **खनन योजनाः–** खनन योजना प्रभावी नियमों में उल्लिखित प्रावधानों के अनुसार सफल डाकवक्ता/खनन पट्टाधारी द्वारा RQP से तैयार कर राज्य सरकार/निदेशक, खान द्वारा प्राधिकृत पदाधिकारी के समक्ष लेटर ऑफ इंटेंट निर्गत होने से 30 दिनों के अन्दर अनुमोदन के लिए प्रस्तुत करेगा। खनन योजना बनाने पर होने वाले व्यय का वहन संबंधित खनिज डाकवक्ता/खनन पट्टाधारीद्वारा किया जायेगा।

ii. **पर्यावरणीय स्वीकृतिः–** सफल डाकवक्ता/खनन पट्टाधारीखनन योजना अनुमोदन के 15 दिनों के अन्दर पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार के सक्षम प्राधिकार के समक्ष पर्यावरणीय स्वीकृति (EC) के लिए प्रस्ताव समर्पित करेगा। समयबद्ध रीति से पर्यावरणीय एवं अन्य वैधानिक स्वीकृति प्राप्त करना सफल डाकवक्ता की जिम्मेवारी होगी। अपेक्षित पर्यावरणीय स्वीकृति एवं अन्य आवश्यक स्वीकृति प्राप्त करने में किसी भी प्रकार की देरी के लिए सफल डाकवक्ता स्वंय जिम्मेवार होंगे एवं इस संबंध में किसी भी प्रकार की क्षतिपूर्ति के लिए कोई भी दावा मान्य नहीं होगा।

iii. **जल एवं वायु सहमतिः–** पर्यावरणीय स्वीकृति प्राप्त करने के पश्चात सफल डाकवक्ता अधिकतम 07 (सात) दिवस के अंदर जल (प्रदूषण निवारण एवं नियंत्रण) अधिनियम, 1974 तथा वायु (प्रदूषण निवारण एवं नियंत्रण) अधिनियम, 1981 के अधीन सक्षम पदाधिकारी के समक्ष सहमति/Consent to Establish/ Consent to Operate प्राप्त करने हेतु आवेदन प्रस्तुत करेगा।

iv. **खनन के लिए अनुमत मात्राः–** खनन योजना, पर्यावरणीय स्वीकृति तथा जल (प्रदूषण निवारण एवं नियंत्रण) अधिनियम, 1974 तथा वायु (प्रदूषण निवारण एवं नियंत्रण) अधिनियम, 1981 के तहत प्राप्त सहमति मे वर्णित बालू की मात्रा (इनमें से जो भी न्यूनतम हो) तक ही खनन अनुमान्य होगा।

v. बिना किसी वैध कारण के पर्यावरणीय स्वीकृति, Consent to Establish/ Consent to Operate /जल एवं वायु सहमति प्राप्त नहीं कर पाते है या प्राप्त करने में रूचि नहीं लेते है तो, उपायुक्त द्वारा Performance Security जप्त कर पुनः नीलामी की कार्रवाई की जाएगी।

(22) आवंटन विलेख/पट्टा संविदा (डीड) निष्पादन करनाः–

i. सफल डाकवक्ता द्वारा सभी वैधानिक अनापत्ति प्राप्त करने के उपरान्त, 5 वर्षों की अवधि के लिए बालू खनन करने हेतु समानुदान/आवंटन किया जाएगा। सफल डाकवक्ता झारखण्ड लघु खनिज समनुदान नियमावली, 2004 यथा संशोधित के विहित प्रपत्र में खनन पट्टा संविद निष्पादित करेगा। खनन पट्टा की अवधि, पट्टा संविद निष्पादन की तिथि से पॉच वर्षों के लिए विधिमान्य होगा।

ii. निविदा की समाप्ति के पश्चात्, घाटवार आवश्यक वैधानिक अनापत्ति प्रमाण पत्र प्राप्त करते हुए पट्टा संविद का निष्पादन कर खनन कार्य किया जा सकेगा।

(23) बालू खनन की अनुमतिः– खनन पट्टाधारीको सभी अपेक्षित वैधानिक अनापत्ति/अनुमति प्राप्त करने, अपेक्षित किस्त का भुगतान करने एवं पट्टा संविदा निष्पादन के बाद बालू खनन की अनुमति दी जाएगी।

(24) भुगतान की शर्त्तेः–

नीलामी/आवंटन की राशि की वसूली Jharkhand Sand Mining Rules, 2025 के नियम–6(V) के अन्तर्गत की जाएगी जो निम्नवत् है –

a. Bid amount shall be for the period of first year of allocation that will start from the execution of Lease deed. Bid amount for the second and subsequent year shall be One Hundred and Ten Percent (110%) of bid amount of the previous lease year.

b. Earnest Money deposit shall be Ten Percent (10%) of the reserve price, that to be deposited by prospective bidder along with their tender document. For Preferred Bidder Performance Security deposit shall be Ten Percent (10%) of annual mineral concessional value as quoted in the auction within 15 working days of issuance of letter of intent (LoI). Performance security deposit shall be adjusted in the last/third installment.

c. initially annual mineral concessional value shall be calculated as per annual mineble sand quantity of District Survey Report and finally as per environmental clearance for the first and subsequent year of lease period, which is term and bid amount that shall be deposited/adjusted proportionately as per following table :-

Sl. No.	Installment	Schedule for payment
1	First Installment (50%)	a. Before granting of first permit for the first year b. 15th March for Subsequent year.
2	Second Installment (25%)	15th October
3	Third Installment (25%)	15th January

In case of failure of payment of installments, the generation of e-challan shall be stopped and its shall be reopen only after payment of advance payment of installment.

d. Royalty and contribution to the District Mineral Foundation Truest of the sand deposit shall be payable as per schedule/table mention in the rule V(c) and income tax, environmental cess, management fee, GST, Stamp value and registration charges etc. shall be paid as per applicable law.

(25) **बालू का विक्रय मूल्यः–** अंतिम उपयोगकर्त्ता अथवा आम जन हेतु बालू का मूल्य बाजार द्वारा विनिश्चित किया जाएगा।

(26) **बालू खनन हेतु प्रतिबंधित क्षेत्रः**– बालू खनन हेतु प्रतिबंधित क्षेत्र प्रभावी नियमों के अनुसार होगें।

(27) **खनन योग्य मात्रा में वृद्धिः–**

जिन बालूघाटों से बालू खनन 03 मीटर से कम अनुमान्य है, उन बालूघाटों के लिए भविष्य में पर्यावरण, वन एवं जलवायु परिर्वतन मंत्रालय एवं राज्य पर्यावरण समाघात निर्धारण प्राधिकरण (SEIAA) द्वारा खनन योग्य गहराई 03 मीटर तक अनुमान्य किये जाने की स्थिति में खनन योग्य मात्रा में वृद्धि के अनुसार आवंटन राशि में भी समानुपातिक वृद्धि की जाएगी एवं इसका भुगतान खनन पट्टाधारीको करना होगा।

(28) **खनन योजना का हस्तानान्तरण :–** किसी भी खनिज समानुदान के समयपूर्व समाप्त किये जाने अथवा प्रत्यार्पित किये जाने की स्थिति में अनुमोदित खनन योजना नये खनन पट्टाधारी/समानुदानधारी के साथ आवंटन की स्थिति स्वतः स्थानान्तरित समझी जायेगी।

(29) **पर्यावरणीय स्वीकृति का हस्तानान्तरण :–** सरकार द्वारा विधि मान्य प्रक्रिया से आवंटन/समानुदान रद्द किये जाने पर विधिक कार्रवाई या खनन पट्टाधारी द्वारा प्रत्यार्पित किये जाने की स्थिति में वैसे खनिज अनुदान/पट्टा/बालूघाट/खदान के लिए स्वीकृत पर्यावरणीय जिस अवधि के लिए पूर्व में निर्गत हो, उसे विधिमान्य ईकाई (Entity) को निर्धारित या विस्तारित अवधि के लिए स्थानान्तरित की जायेगी।

(30) **JIMMS पोर्टल**–

(क) खनन पट्टाधारीसभी उपभोक्ताओं (छोटे, मध्यम एवं बड़े) को बालू का विक्रय केवल ऑनलाइन मोड के माध्यम से करेगा। खनन पट्टाधारीद्वारा मासिक प्रगति प्रतिवेदन निश्चित रूप से विभागीय JIMMS पोर्टल पर डाला जाएगा। बन्दोबस्तधारी को विभागीय JIMMS पोर्टल पर प्रतिदिन का खनन, भंडारण का ब्यौरा अद्यतन करना अनिवार्य होगा।

(ख) बालू ढोने वाले सभी वाहन, बालू के परिवहन के लिए आवश्यक रूप से ई–चालान की प्रिंटेड प्रति साथ रखेगें। Incharge check gate, Mining Inspector, Sub Divisional Magistrate/Any other officers authorised by the collector, District/Assistant Mining Officers, District Collector/District Commissioner, Deputy Director of Mines, Additional Director of Mines/Director of Mines तथा Additional Chief Secretary/Principal Secretary/Secretary/ Commissioner, Mines के द्वारा मांगे जाने पर दिखाना होगा। सफल डाकवक्ता/खनन पट्टाधारीद्वारा बालूघाटो से बालू परिवहन के प्रयोजनार्थ अवैध, अनिबंधित या अनाधिकृत वाहन का उपयोग नहीं किया जाएगा। उल्लंघन की स्थिति में The Jharkhand Sand Mining Rule, 2025

तथा The Jharkhand Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules, 2017 एवं MMDR Act, 1957 के प्रावधानों के तहत नियमानुसार कार्रवाई की जाएगी।

(31) **पुनर्भरण अध्ययन** (Replenishment study):– खनन पट्टाधारीद्वारा मॉनसून अवधि के पहले और बाद में नदी तल में बालू की मात्रा का पुनर्भरण अध्ययन (Replenishment study) अद्यतन तकनीक का उपयोग करते हुए खान एवं भूतत्व विभाग/खान निदेशालय से मान्यता प्राप्त संस्थानों/एजेंसियो के माध्यम से कराया जाएगा और इसका एक प्रतिवेदन पर एवं उपायुक्त के कार्यालय को समर्पित करना होगा। विभाग/खान निदेशालय/उपायुक्त द्वारा पुनर्भरण अध्ययन क्रियान्वित किए जाने की दशा में, अध्ययन का खर्च संबंधित खनन पट्टाधारी से वसूल किया जाएगा।

(32) **जल संसाधन विभाग से अनापत्तिः**– किसी बालूघाट से बालू उठाने की दशा में यदि लिंक रोड और बालूघाट के बीच कोई प्राकृतिक जल मार्ग सिंचाई नहर पड़ती हो तो खनिज समानुदान धारक जल संसाधन विभाग की पूर्व अनुमति से बालू के परिवहन के लिए अस्थायी संरचनाएँ खड़ा कर सकेगा। पूर्व अनुमति के लिए ऐसे आवेदन जल संसाधन विभाग के संबंधित मुख्य अभियंता के समक्ष दिए जाएंगे। आवेदन की तिथि के एक माह के भीतर यदि इस संबंध में खनिज समानुदान धारक को कोई विनिश्चय संसूचित नहीं किया जाय तो यह समझा जाएगा कि संबंधित विभाग को इस प्रस्ताव में कोई आपत्ति नहीं है।

(33) खनन पट्टाधारीद्वारा पर्यावरण, वन एवं जलवायु परिवर्त्तन मंत्रालय, भारत सरकार द्वारा निर्गत Sustainable Sand Mining Managment Guidlines, 2016, Enforcement & Monitoring Guidelines for Sand Mining, 2020, Mines and Mineral Development Act, 1957, झारखण्ड बालू खनन नियमावली, 2025 एवं अन्य संगत नियमावली तथा अधिनियम के प्रावधानों का अक्षरशः अनुपालन किया जायेगा।

(34) **शास्तिः–** किसी नियम, शर्त्त एवं बंधेज के उल्लंघन के लिए The Jharkhand Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules, 2017, झारखण्ड बालू खनन नियमावली, 2025, Mines and Mineral Development Act, 1957 एवं अन्य प्रभावी नियमावली/अधिनियम के प्रावधानों के अनुसार शास्ति अधिरोपित की जाएगी।

(35) **सामान्य शर्त्तें :–**

(i) निविदादाता/सफल डाकवक्ता/खनन पट्टाधारी द्वारा ई–मेल के माध्यम से किया गया पत्राचार ही मान्य होगा।

(ii) खनन पट्टाधारी को बालू के परिवहन हेतु वाहन के चालक को ऑनलाईन ई–चालान (परिवहन चालान) निर्गत करना होगा। उसकी मूल प्रति (प्रिंट आउट) चालक के पास उपलब्ध रहना चाहिए।

(iii) आवंटन लेने के बाद सभी बालूघाटों के लिये बालू के उत्खनन कार्य में संलग्न सभी सहयोगी व्यक्तियों/प्रबंधकों की सूची, पूर्ण पता एवं फोटो के साथ एक माह के अन्दर संबंधित जिला खनन कार्यालय को उपलब्ध कराना तथा यदि इसमें कोई बदलाव होता है तो उसकी भी सूची संबंधित जिला खनन कार्यालय में उपलब्ध कराना सुनिश्चित करेंगें।

(iv) बालू के उत्पादन एवं प्रेषण के लिये पंजी संधारित करनी होगी। खनन पट्टाधारी विहित प्रपत्र में बालू के उत्पादन तथा प्रेषण से संबंधित मासिक रूप से विवरणी (रिटर्न) ऑनलाईन पोर्टल पर समर्पित करेगा।

(v) **खनन पट्टाधारी नदी तट से बालू प्रेषण के बिन्दु पर एक साईनबोर्ड लगाएगा जिसपर खनन पट्टाधारी का नाम एवं पता, आवंटन की अवधि, स्थानीय मैनेजर का नाम एवं पता तथा बालू का विक्रय मूल्य प्रदर्शित किया जाएगा। यदि साईन बोर्ड निरीक्षण में नहीं पाया गया तो शास्ति अधिरोपित की जाएगी।**

(vi) खनन पट्टाधारी श्रम विधियों के प्रावधानों के अनुसार आश्रय गृह, पीने का पानी, शिशु गृह (क्रेचेज) तथा फर्स्ट एड किट की व्यवस्था संबंधित बालूघाटों में लगे श्रमिकों के लिए करेगा।

(vii) खनन पट्टाधारीसंबंधित क्षेत्रों का निरीक्षण करेगा तथा स्वयं/ अथवा अपने द्वारा अधिकृत प्रतिनिधियों के माध्यम से बालूघाटों का प्रचालन करेगा। किसी रूप में किये गये उपपट्टा (सबलेटिंग) के लिए आवंटन रद्द कर दी जाएगी। बालूघाटों/नदी तल तक बालू के परिवहन के प्रयोजनार्थ पहुँच पथ (अप्रोच रोड़) का निर्माण खनन पट्टाधारीद्वारा स्वयं अपने खर्च से किया जाएगा।

(viii) बालूघाट की सुरक्षा की जिम्मेदारी बंदोस्तधारी की होगी।

(ix) खनन पट्टाधारीद्वारा सतत् बालू खनन प्रबंधन मार्गदर्शिका, 2016/2020/पर्यावरणीय स्वच्छता प्रमाण पत्र में विनिर्दिष्ट शर्त्तों के अनुरूप कार्य किया जाएगा। महिला श्रमिकों से सूर्यास्त के बाद कोई कार्य नही लिया जायेगा।

(x) बालू लदे सभी वाहनों को तारपोलिन से ढककर बालू का परिवहन करना अनिवार्य होगा।

(xi) खनिज की अनुपलब्धता, मार्ग व्यवधान, सीमा विवाद इत्यादि से संबंधित कोई व्यवधान अथवा अन्यान्य कारण से उठाव में बाधा उत्पन्न होने पर सरकार द्वारा कोई क्षतिपूर्त्ति देय नहीं होगा।

(xii) खनन पट्टाधारीपर्यावरण, वन एवं जलवायु परिवर्त्तन मंत्रालय/SEIAA द्वारा मॉनसून अवधि (10 जून, से 15 अक्टूबर तक प्रति वर्ष) में नदी तल से खनन के लिए अधिरोपित रोक, खनिज संसाधनों की अनुपलब्धता, पहुँच पथ में किसी बाधा, सीमा विवाद अथवा उसके किसी अन्य कारण के चलते उत्पन्न किसी समस्या के कारण बालू के उत्पादन/प्रेषण में उत्पन्न अवरोध की दशा में किसी प्रतिपूर्ति का हकदार नही होगा।

(xiii) खनन पट्टाधारीबंदोबस्त क्षेत्र के भीतर किसी अवैध खनन के लिए जिम्मेवार होगें और पाई गई किसी शिकायत पर गंभीरता से विचार किया जाएगा तथा खनन पट्टाधारीके विरूद्ध अपराधिक मामला दायर किया जाएगा।

(xiv) खनन पट्टाधारीउपायुक्त द्वारा बालूघाटों के संचालन के संबंध में लोकहित में जारी निर्बंधनों और शर्त्तों तथा निदेशों का पालन करेगा।

(xv) उपर्युक्त शर्त्तों का पालन नहीं करने पर कारण पृच्छा निर्गत कर आवंटन रद्द करने की कार्रवाई की जा सकेगी ।

(xvi) खनन पट्टाधारी को खनन राजस्व का भुगतान नही करने की दशा में 90 दिनों के अंदर कारण स्पष्ट करने हेतु नोटिस दी जायेगी। निर्धारित अवधि के अंदर खनन पट्टाधारीद्वारा बकाए का भुगतान करने में असफल रहने की दशा में राशि वसूली की कार्रवाई के साथ–साथ आवंटन रद्द करने की भी कार्रवाई की जाएगी।

(xvii) निविदादाता निविदा में भाग लेने के पूर्व अक्षांश–देशांतर के आधार पर तैयार किये गए नदी में बालूघाट क्षेत्रों में बालू की उपलब्धता, बालू निकासी हेतु परिवहन मार्गों, जल संसाधन विभाग के नदी

में प्रतिबंधित क्षेत्रों तथा अन्य प्रतिबंधित क्षेत्रों के आलोक में अपने स्तर से तकनीकी जाँच कराकर पूर्ण रुप से संतुष्ट हो लेंगें। नीलामी के पश्चात किसी प्रकार का कोई आपत्ति/दावा स्वीकार नहीं किया जायेगा।

(xviii) नीलामी हेतु प्रस्तावित बालूघाटों से संबंधित तकनीकी तथा अन्य बिन्दुओं यथा भूमि के अंचल, थाना, मौजा, खाता, खेसरा, रकबा तथा GPS Co-ordinate के संबंध में विवाद/त्रुटि पाए जाने पर संशोधन का अधिकार संबंधित जिला खनन कार्यालय का होगा। बालूघाटों का सीमांकन एवं नियमानुसार निर्धारित आयाम/विशिष्टियों का सीमा स्तंभ का अधिष्ठापन GPS Co-ordinate के अनुसार बालू खनन पट्टाधारीको कराना होगा तथा खनन के क्रम में संधारित कराना खनन पट्टाधारीकी जवाबदेही होगी, जिसे खान निरीक्षक की उपस्थिति में प्रमाणित कराकर खनन कार्य कराना होगा।

(xix) बालू का विक्रय निबंधित एवं व्यवसायिक वाहन के माध्यम से ही किया जायेगा। किसी भी परिस्थिति में अनिबंधित एवं बिना वाहन संख्या के (unrealistic vehicle) वाहन से बालू का विक्रय नही किया जायेगा। उल्लंघन किये जाने की स्थिति में जमा Performance Security जप्त कर ली जायेगी।

(xx) बालू खनन पट्टाधारीको बालू लदे भारी वाहनों का परिवहन जल संसाधन विभाग द्वारा नहरों एवं बांधो पर निर्मित प्रतिबंधित सड़क या परिवहन विभाग द्वारा प्रतिबंधित सड़क/पुल–पुलिया से नहीं करना है।

(xxi) बालूघाट में रैयती/बंदोबस्त जमीन होने पर संबंधित रैयत से सहमति प्राप्त कर बालू का खनन करना होगा। यह जिम्मेदारी पूर्णतः खनन पट्टाधारीकी होगी एवं जिला खनन कार्यालय/उपायुक्त का कार्यालय से कोई क्षतिपूर्ति का दावा मान्य नहीं होगा।

(xxii) निकाले गये खनिजों के लिए वार्षिक आधार पर की गई स्वामिस्व की संगणना वार्षिक आवंटन की राशि से अधिक होने पर खनन पट्टाधारीद्वारा निकाली गई अतिरिक्त मात्रा के लिए आवंटन राशि के अतिरिक्त स्वामिस्व का भुगतान करना होगा।

(xxiii) खनन पट्टाधारी को सड़क, परिवहन एवं उच्च मार्ग मंत्रालय भारत सरकार के विशिष्टियों के अनुरूप **GPS युक्त वाहन ही प्रयोग करना होगा**। सफल डाकवक्ता/खनन पट्टाधारीपरिवहन चालान विभागीय पोर्टल में निबंधित वाहनों के लिए ही निर्गत करेंगे, जो GPS युक्त हो एवं जिसकी Tracking हेतु विभागीय पोर्टल पर डाटा शेयर किया जा सके।

(xxiv) सर्वर मेन्टेनेन्स या विधि व्यवस्था हेतु ई–चालान बन्द किया जा सकता है एवं इस अवधि हेतु कोई क्षतिपूर्ति देय नहीं होगा।

(xxv) खनन पट्टाधारीद्वारा पर्यावरणीय स्वीकृति क्षेत्र से बाहर न स्वंय खनन करना है और न ही किसी को करने देना है। संबंधित बालूघाट से 100 मीटर की परिधि में यदि अवैध खनन पाया जाता है एवं इसकी सूचना यदि खनन पट्टाधारीद्वारा संबंधित उपायुक्त का कार्यालय/जिला खनन कार्यालय को नही दी जाती है, तो संबंधित खनन पट्टाधारी की संलिप्तता मानते हुए नियमानुसार कार्रवाई किया जायेगा।

(xxvi) खनन पट्टाधारी द्वारा पर्यावरणीय स्वीकृति क्षेत्र से बाहर खनन करने, निर्धारित गइराई से ज्यादा खनन करने, पर्यावरणीय स्वीकृति के प्रावधानों के विरूद्ध खनन करने एवं खनन योग्य मात्रा से अधिक

खनन करने की कृत को अवैध खनन माना जाएगा एवं The Jharkhand Minerals (Prevention of Illegal Mining, Transportation and Storage) rules 2017 के नियम के तहत संबंधित खनन पट्टाधारीके विरूद्ध जुर्माना राशि अधिरोपित की जाएगी। जुर्माना राशि जमा नहीं करने पर वसूली हेतु नियमानुसार कार्रवाई की जाएगी।

(xxvii) खनन पट्टाधारी द्वारा बालूघाटों से बालू का परिवहन The Jharkhand Minerals (Prevention of Illegal Mining, Transportation and Storage) rules 2017 के प्रावधानों एवं इस संबंध में अन्य अधिसूचित नियम के तहत किया जाएगा। अनियमितता की स्थिति में उपरोक्त नियमावली के तहत जुर्माना लगाया जाएगा।

(xxviii) खनन पट्टाधारी द्वारा आवंटन अवधि के दौरान किसी भी कारण से खनन कार्य नहीं करने की स्थिति में, किसी भी प्रकार का मुआवजा/नुकसान एवं क्षतिपूर्ति का दावा मान्य नहीं होगा।

(xxix) ई–नीलामी एवं बालूघाट की आवंटन अवधि के दौरान उत्पन्न किसी भी प्रकार का विवाद का निपटारा सक्षम न्यायालय द्वारा किया जाएगा।

(xxx) खान निदेशालय/उपायुक्त आवश्यकता पड़ने पर बालूघाटों का सर्वेक्षण कर सकता है, ताकि यह सुनिश्चित हो सके कि बालूघाटों से बालू खनन की पूरी प्रक्रिया प्रचलित नियमों/प्रावधानों के अनुरूप हो रही है।

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अनुलग्नक–2

ई–नीलामी के माध्मय से आवंटन हेतु बालूघाटों की विवरणी

जिला– गोड्डा।

क्रमांक	आवेदक का नाम एवं पता	बालूघाट/बालूघाटों के समुह की विवरणी	अग्रधन राशि	अभ्युक्ति
1	2	3	4	5

आवेदक का हस्ताक्षर
नाम–
मोहर–

अनुलग्नक–3

बालूघाट/बालूघाटों के समुह की नीलामी हेतु तकनीकी निविदा का प्रपत्र

(निविदादाता अपने लेटर–हेड अथवा सादा कागज का प्रयोग करें।)

1. निविदादाता का नाम :
   (व्यक्ति विशेष के मामलों में, अन्यथा समिति या प्राईवेट लि0 कम्पनी या फर्म या HUF के मामले में प्रबंधक/अधिकृत हस्ताक्षर करने वालो का नाम)

2. पिता का नाम :
   (व्यक्ति विशेष के मामलों में, अन्यथा समिति या प्राईवेट लि0 कम्पनी या फर्म या HUF के सचिव/प्रबंधक/अधिकृत हस्ताक्षर करने वाले के पिता का नाम)

व्यक्ति का फोटो (व्यक्ति विशेष को छोड़कर अन्य मामले में प्रबंधक/मैनेजिंग पार्टनर का फोटो)

3. पत्राचार का पता :
4. ई–मेल :
5. स्थायी पता :
6. सम्पर्क हेतु दूरभाष सं0 : (कार्या0) (आ0) (मो0)
7. पैन कार्ड संख्या एवं आधार कार्ड संख्या (स्वः अभिप्रमाणित छायाप्रति संलग्न करें) :
8. बकाया रहित प्रमाण–पत्र :
   (कृपया स्वअभिप्रमाणित छायाप्रति संलग्न करें)
   संबंधित जिला से स्वामिस्व स्वच्छता प्रमाण पत्र
9. Chartered Accoutant द्वारा सत्यापित वित्तीय वर्ष–2022–23, 2023–24 एवं 2024–25 Annual Accounts (Profit and Loss Account सहित) की स्वअभिप्रमाणित प्रति संलग्न करें :
10. स्वअभिप्रमाणित दो पासपोर्ट साईज फोटों :
11. GST निबंधन प्रमाण–पत्र/पूर्व से निबंधित नही रहने पर एक माह के अंदर निबंधन करा लेने संबंधी शपथ–पत्र :
12. कम्पनी के मामलें में वित्तीय वर्ष 2022–23, 2023–24 एवं 2024–25 का आयकर रिटर्न। अन्य मामलों में वित्तीय वर्ष 2022–23, 2023–24 एवं 2024–25 के आयकर विवरणी की स्वअभिप्रमाणित प्रति। :
13. उपायुक्त/अनुमंडल पदाधिकारी द्वारा निर्गत आचरण प्रमाण–पत्र/आचरण प्रमाण–पत्र नहीं रहने की स्थिति में घोषणा–पत्र/शपथ–पत्र (स्वअभिप्रमाणित छायाप्रति संलग्न करें) :
14. समिति /फर्म/HUF/प्राईवेट लि0 कम्पनी के मामले में अद्यतन अंकेक्षण रिपोर्ट :
15. मेमोरेण्डम/आर्टिकल्स ऑफ एसोसियेशन/उप नियमः (कृपया संलग्न करें)(व्यक्ति विशेष को छोड़कर अन्य

के मामले में)

16. साझेदारी फर्म के मामले में साझेदारी दस्तावेज : की स्वअभिप्रमाणित छायाप्रति संलग्न करें।
17. जिला का नाम :
18. बालूघाट ईकाई का विवरण जिसके लिये : निविदा दी गई है। :
19. अग्रधन की राशि तथा उसका पूर्ण विवरण :
    i. बैक एवं शाखा का नाम–
    ii. UTR No.-
    iii. तिथि–
    iv. राशि–
    v. निविदादाता का बैंक खाता संख्या–

तिथि–

नाम एवं हस्ताक्षर

अनुलग्नक–4

जिला खनन कार्यालय, गोड्डा।

जिलान्तर्गत आगामी पाँच वर्षो के लिए बन्दोबस्ती हेतु बालूघाटों की विवरणी :

S/N	River Name	NIT No./Group Name	Sand Ghats Name	Area in (Ha.)	Geo coordinates (Max and Min as per DSR)		As per page no 127 of approved DSR total excavation (m^3/year)	As per page no 127 of approved DSR total excavation (cft/year)	Reserve Price as finalised by tendering committee (in Rs)
					Latitude	Longitude			
A	B	C	D	E	F	G	H	I	j
								h*35.315	i*12.80
1	Gerua Nadi	MINES/ GODDA/ SAND/1/2025 (Group- A)	Raha Sand Ghat	1.97	25°01'05.793"N to 25°01'23.482"N	87°08'45.451"E to 87°08'57.953"E	19,700.00	6,95,705.50	₹ 89,05,030.40
2	Gerua Nadi		Deshbarang Sand Ghat	0.93	24°57'59.720"N to 24°58'11.367"N	87°08'53.483"E to 87°08'57.995"E	9,261.00	3,27,052.22	₹ 41,86,268.35
3	Chir Nadi		Chakwa Sand Ghat	3.52	24°55'12.871"N to 24°55'29.236"N	87°08'33.315"E to 87°08'52.095"E	17,592.00	6,21,261.48	₹ 79,52,146.94
4	Chir Nadi		Jasmata Sand Ghat	3.03	24°54'14.838"N to 24°54'19.927"N	87°08'53.529"E to 87°09'03.550"E	60,681.00	21,42,949.52	₹ 2,74,29,753.79
5	Kajhia Nadi		Haripur Garbanna Sand Ghat	2.71	24°49'12.465"N to 24°49'23.151"N	87°14'31.343"E to 87°14'42.586"E	13,566.00	4,79,083.29	₹ 61,32,266.11
6	Kajhia Nadi		Ghat Jhiluwa Sand Ghat	1.82	24°47'50.145"N to 24°48'06.120"N	87°15'49.074"E to 87°15'57.814"E	14,592.00	5,15,316.48	₹ 65,96,050.94
7	Sakri Nadi		Lauamba Pasai Sand Ghat	5.51	24°43'42.877"N to 24°43'07.955"N	87°06'14.092"E to 87°06'44.471"E	66,138.00	23,35,663.47	₹ 2,98,96,492.42
8	Sakri Nadi		Pasai Gari Sand Ghat	2.59	24°42'54.790"N to 24°43'12.958"N	87°06'58.521"E to 87°07'18.825"E	44,066.00	15,56,190.79	₹ 1,99,19,242.11
9	Ribani Nadi		Asarimadhuri Teliyatikar Sand Ghat	11.29	24°45'39.300"N to 24°46'21.298"N	87°05'03.738"E to 87°05'18.226"E	90,355.00	31,90,886.83	₹ 4,08,43,351.36
10	Chir Nadi		Dhodhari Sand Ghat	2.39	24°52'48.827"N to 24°52'59.176"N	87°09'11.663"E to 87°09'20.982"E	19,146.00	6,76,140.99	₹ 86,54,604.67
11	Chir Nadi		Dalpatpur Sirsa Sand Ghat	2.1	24°52'05.954"N to 24°52'19.657"N	87°08'41.800"E to 87°08'54.847"E	16,833.00	5,94,457.40	₹ 76,09,054.66
12	Chir Nadi		Amjora Surapaprwa Machkhar Sand Ghat	3.55	24°43'17.184"N to 24°43'37.360"N	87°07'50.284"E to 87°08'06.883"E	70,924.00	25,04,681.06	₹ 3,20,59,917.57
13	Chir Nadi		Taratikar Pakariya Badgawn Sand Ghat	1.06	24°43'53.537"N to 24°43'57.876"N	87°07'26.224"E to 87°07'40.294"E	5,309.00	1,87,487.34	₹ 23,99,837.89
14	Chir Nadi		Sanatan Sand Ghat	3.98	24°53'50.239"N to 24°54'03.008"N	87°09'14.217"E to 87°09'24.264"E	31,873.00	11,25,595.00	₹ 1,44,07,615.94
15	Chir Nadi		Jasmata 2 Sand Ghat	1.82	24°54'39.727"N to 24°54'48.365"N	87°08'34.061"E to 87°08'41.742"E	12,726.00	4,49,418.69	₹ 57,52,559.23
16	Gerua Nadi		Bade Sand Ghat	2.37	25°00'23.178"N to 25°00'42.368"N	87°08'45.276"E to 87°08'54.569"E	23,652.00	8,35,270.38	₹ 1,06,91,460.86
				50.64		**Total :**	**5,16,414.00**	**1,82,37,160.41**	**₹ 23,34,35,653.25**

Note : 1. Detailed Co-ordinate of each sand ghat will be as per approved District Survey Report (DSR) sand of Godda District (Page no.- 77 to 84 of Approved DSR of Godda District).

2. Final mineable Quantity as per Rule- 6(V)(c) of Jharkhand Sand Mining Rules, 2025.

अनुलग्नक–5

घोषणा पत्र

1. यह कि मैं भारत का नागरिक हूँ एवं मेरी उम्र 21 वर्ष से अधिक है।
2. यह कि प्रारम्भिक वित्तीय प्रस्ताव (Initial Price Offer) Reserve Price/ Base Price के समान या उससे अधिक समर्पित की गयी है।
3. यह कि निविदा दस्तावेजों की सभी शर्त्ते मुझे मान्य है।
4. यह कि मुझे ज्ञात है कि Jharhkand Sand Mining Rules, 2025 के तहत अधिकतम 1000 हे० तक के रकबा हेतु बालूघाटों का समनुदान मेरे पक्ष में किया जा सकेगा। अतएव 1000 हे० से अधिक रकबा के बावत उच्चतम डाकवक्ता घोषित होने की स्थिति में अंतिम परिणाम, जिसका रकबा घटाते हुए कुल समनुदान का रकबा 1000 हे० या उससे कम होगा, के संदर्भ में लिया गया निर्णय मान्य होगा।
5. यह कि मेरा/मेरे सभी साझेदारों/निदेशक मंडल के सभी सदस्यों का नैतिक चरित्र अच्छा है तथा खान एवं खनिज (विकास एवं विनियमन) अधिनियम, 1957 यथा संशोधित एवं इसके अधीन प्रतिपादित नियमावली के तहत दण्डनीय किसी अपराध के लिए दोषसिद्ध नहीं किया गया हूँ एवं मैं तथा मेरे HUF/फर्म/कम्पनी सक्रिय रूप से अवैधानिक गतिविधियों/असमाजिक कार्यों एवं संगठित आपराधिक गतिविधियों में लिप्त नहीं है। यदि आवंटन प्राप्त होने के पश्चात् भी यह प्रमाणित हो जाता है कि मैं/मेरा/HUF/मेरे साझेदारी फर्म के साझेदार/मेरे कम्पनी के निदेशक मंडल के सदस्य अवैधानिक गतिविधियों, असामाजिक कार्यों एवं संगठित आपराधिक गतिविधियों में लिप्त है, तो मुझें/HUF/साझेदारी फर्म/कम्पनी को प्रदान की गयी आवंटन निरस्त कर दी जाए।
6. यह कि मैं/मेरा HUF/मेरा साझेदारी फर्म/मेरी कम्पनी बालूघाट का आवंटन प्राप्त करने के पश्चात् बालूघाट को किसी अन्य व्यक्ति को सबलीज नहीं करूँगा।
7. यह कि निविदा दस्तावेज के साथ समर्पित सभी शपथ पत्र में दिये गये सभी कथन पूर्णतः सत्य है और किसी तथ्य को छुपाने पर इसकी जानकारी बाद में यदि विभाग/निदेशालय/उपायुक्त/जिला खनन कार्यालय को मिलती है, तो मेरी/मेरा HUF/मेरी साझेदारी फर्म/मेरी कम्पनी को बालूघाट का आवंटन रद्द किया जा सकता है। इसके लिए मैं स्वयं जिम्मेवार रहूँगा तथा मेरे द्वारा क्षतिपूर्ति का कोई दावा नहीं किया जाएगा।

निविदादाता का हस्ताक्षर एवं मुहर

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ANNEXURE A-13

2025 SCC OnLine SC 1069

In the Supreme Court of India

(BEFORE P.S. NARASIMHA AND MANOJ MISRA, JJ.)

Civil Appeal No. 14170 of 2024

State of Uttar Pradesh and Another ... Appellant(s);

Versus

Gaurav Kumar and Others ... Respondent(s).

With

Civil Appeal No. 14933 of 2024

With

Civil Appeal No. 14000 of 2024

Civil Appeal No. 14170 of 2024, Civil Appeal No. 14933 of 2024 and Civil Appeal No. 14000 of 2024

Decided on May 8, 2025

Advocates who appeared in this case :

Mr. Vishnu Shankar Jain, AOR, Mr. Vanshdeep Dalmia, AOR, Mr. S.P. Singh, Sr. Adv., Mrs. Revathy Raghavan, AOR, Ms. Kavya Roy Choudhury, Adv., Mr. B.N. Thakur, Adv., Mr. Ashish Pratap Singh, Adv., Mr. Rohit Gupta, Adv., For Appellant(s)

Mr. Ajit Sharma, AOR, Mr. Kanchan Kumar, Adv., Mr. Yuvrajsinh C Solanki, Adv., Mr. Lareb Habib Ansari, Adv., Mr. Pradeep Misra, AOR, Mr. Tejaswi Kumar Pradhan, AOR, For Respondent(s)

The Judgment of the Court was delivered by

P.S. NARASIMHA, J.:—

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Under Para 3A
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18. Enforcement And Monitoring Guidelines For Sand Mining, 2020:
19. Decision Of this Court In *State Of Bihar* V. *Pawan Kumar*
20. Conclusions

1. *Affirmation:* We unequivocally uphold the law and the regulations governing sand mining, demanding zero tolerance for unauthorized activities, strict adherence to these regulations is non-negotiable.

1.1. Unregulated sandmining disrupts riverine ecosystems, alters natural flow patterns, and leads to erosion and habitat loss. Aquatic biodiversity suffers as spawning grounds are destroyed and water quality deteriorates. The destabilisation of riverbanks increases flooding, risking human life and animal habitat alike. Moreover, the illicit sand trade often operates under the shadow of organised crime, undermining the rule of law and weakening governance structures. Therefore, absolute standards with get tough policies, strict enforcement and quick accountability are compelling for effective regulatory control.

1.2. We have upheld the decision of National Green Tribunal[1] quashing e-auction notice dated 13.02.2023 issued by the State Government for sand mining and the consequent grant of Letters of Interest (LOIs) in favour of successful bidders on the ground that the auction was conducted in the absence of a valid, final and a subsisting District Survey Report (DSR). We have also held that a *Draft* DSR is not tenable. A draft DSR can never be the basis for a recommendation by the District Level Expert Appraisal Committee (DEAC) and for the District Level Environment Impact Assessment Authority (DEIAA) for B2 category projects pertaining to mining of minor minerals lease area less than or equal to five hectares to grant environment clearance.

2. *Facts:* District Magistrate, Saharanpur issued notice inviting e-tenders on 13.02.2023 for sand gravel, boulders, etc. available in the riverbed in Saharanpur district under the U.P. Sub Mineral (Remedy)

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Rules, 2021. Questioning the legality and validity of the e-auction notice, respondent no. 1, a resident of Haryana approached the National Green Tribunal by filing an original application invoking section 14 and 18 of the National Green Tribunal Act contending that the e-auction notice is illegal as there was no District Survey Report (DSR) as on that date. It was his contention that the last DSR for the Saharanpur district of 2017 expired in the year 2022. Thereafter, steps were taken to prepare a DSR for the succeeding 5 years for Saharanpur district, but only a draft DRS was ready by 13.01.2023. However, even before its finalization, the impugned e-auction notice was issued by District Magistrate, Saharanpur on 13.02.2023 which according to the respondent no. 1 is illegal and unsustainable in law.

3. *Proceedings before the NGT leading to Civil Appeals & Submissions* : NGT vide order dated 13.03.2023 constituted a Joint Committee comprising of Central Pollution Control Board (CPCB), State Pollution Control Board (UPPCB) and District Magistrate, Saharanpur (D.M.) to collect relevant information and submit a factual report. The Joint Committee submitted its report on 10.07.2023 indicating that pursuant to the e-auction notice dated 13.02.2023 Letters of Interest (LOI) were issued with respect to 14 sites for river bed mining. Accordingly, the NGT impleaded the parties holding LOIs as party respondents to the original application.

3.1. Pending further proceedings before the NGT, the State Expert Appraisal Committee (SEAC) considered the draft DSR and accorded its approval on 03.05.2024 and then, the State Environment Impact Assessment Authority (SEIAA) granted its approval to the fresh DSR in its 814th meeting on 24.05.2024.

3.2. However, in view of the fact that the last subsisting DSR issued in 2017 expired after five years, i.e. by 2022 and that only a draft DSR dated 13.01.2023 was subsisting when the impugned e-auction notice dated 13.02.2023 was issued, the NGT quashed the auction on the ground that it is in violation of the legal mandate under the 2006 EIA Notification, as amended in 2006, 2018 and also the Enforcement and Monitoring Guidelines for Sand Mining, 2020 and decision of this Court in *State of Bihar* v. *Pawan Kumar*[2].

3.3. Questioning the legality and validity of the judgment of the NGT, 3 appeals are filed before us. The first Civil Appeal No. 14170 of 2024 is by the State of U.P., represented by Ld. ASG Aishwarya Bhati, assisted by Mr. Vishnu Shankar Jain. In the other Civil Appeal No. 14933 of 2024 and Civil Appeal No. 14000 of 2024 by M/s Vedanta Associates and Nutressaorganics India Pvt. Ltd., LOI holders, we have also heard Mr. Ranjit Kumar, Sr. Advocate, ably assisted by Mr. Vanshdeep Dalmia and also Mr. S.P. Singh, Sr. Advocate respectively.

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3.4. Having considered submissions of the Ld. Counsels for the appellants in detail and having examined the relevant documents and material on record we had agreed with the reasoning and the conclusions drawn by the NGT and therefore proceeded to dismiss the civil appeals[3]. By way of this judgment, we supply detailed reasons for our decision.

4. *Sandmining and its impact on Environment:* Sand holds significant ecological and environmental value. Coastal dunes, river, and seabeds act as natural buffers against storms, floods, and rising sea levels, thereby enhancing climate resilience. Sand also supports vital ecosystems by providing habitat for numerous plant and animal species, including microorganisms crucial to nutrient cycling and water purification. Its role in maintaining the structural integrity of freshwater and marine systems underscores its contribution to biodiversity and environmental sustainability. As such, the stewardship of sand resources is not only an economic imperative but also an ecological necessity.

4.1. As per a study[4] undertaken by the United Nations Environment Programme (UNEP), approximately 50 billion tonnes of aggregate sand and gravel are reportedly removed globally each year. With the rapid increase in global population and urbanization, the demand for sand continues to rise at an unprecedented rate.[5] Consequently, it has become the most extracted mineral on the planet, with billions of tons being mined annually from riverbeds, lakes, coastlines, and deltas.

4.2. The rate at which we are mining sand, for whatsoever purposes, is much higher than the replenishment rate. This imbalance between consumption and natural replenishment is what becomes the cause of worry.[6] The geological processes that produce sand—like the weathering of rocks and the movement of sediments through rivers cannot match the rate at which we're extracting sand from nature. Further, human interventions, such as damming rivers or diverting their natural courses block the natural downstream flow of sediment. As a result, sand fails to reach the places where it would normally accumulate, the river deltas and coastal areas. Beaches are wearing away faster than natural forces can restore them, and riverbeds are being emptied more quickly than upstream erosion can replenish them.[7]

4.3. The need for development, and the concerns to preserve ecology stands at crossroads when it comes to the issue of sand mining. The urgent need is to raise awareness that while sand is a crucial resource for economic and industrial development, it also plays a vital role in climate resilience and preserving healthy ecosystems.

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4.4. While a complete ban on sand mining would certainly restore ecology and preserve environment, we all know that such a measure is impractical. Way ahead is sustainable development with effective regulation. While development may be necessity for societal progress, it must be pursued with a balanced approach that prioritizes environmental conservation.[8] It is imperative for regulatory authorities to design an effective and an efficient regulatory regime and implement it by maintaining absolute standards and strict enforcement[9].

5. *Legal Framework* : We will now refer to the legal framework concerning mining and its regulation in India. The mining sector forms the backbone of key industries such as steel, cement, petroleum, petrochemicals, fertilizers, power generation and of course, for erection of civil infrastructure. Government of India Act, 1935 placed the subject of "mines" and "development of minerals" under the control of Central Legislature and Provincial Legislature vide Entry 36, List I and Entry 23, List II. However, there was no dedicated legislation to deal with issues of mining. With the advent of the Constitution, Entry 54 of List I[10] and Entry 23 List II[11] became the source of legislative competence to enact laws developing and regulating mining. Parliament enacted the Mines and Minerals (Regulation and Development) Act, 1957.[12] Section 2[13] of MMRD Act is the declaration that it is expedient in the public interest that the Union should take under its control regulation of mines and development of minerals as indicated in Schedule I. However, the scope of this enactment was limited to development and regulation of mines and minerals, with no special emphasis on the environmental concerns. Hence, recourse has to be made to the environmental legislations such as the Water Act, 1974, Air Act, 1981 and the Environment Protection Act, 1986, and policies such as the National Mineral Policy, 2008, followed by the National Mineral Policy, 2019.

6. *Environment Protection Act, 1986* : The Environment Protection Act, 1986[14], is an overarching legislation governing the field of environment protection. The object of the 1986 Act is to "*provide for the protection and improvement of environment and for matters connected there with*". Section 3[15] enable the Central Government to take such measures as are deemed or necessary for the purpose of protecting and improving the quality of the environment and also preserving, controlling and abating environmental pollution. Section 5[16] gives the Central Government the power to issue directions.

7. *EIA Notifications* : In exercise of powers under section 3(2)(v) read with the Environment Protection Rules, 1986, the Ministry of Environment, Forest and Climate Change (MoEFCC) issued an important notification, popularly referred to as the EIA Notification

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1994.

8. *EIA Notification, 1994* : The EIA Notification was a landmark regulation that made environmental clearance mandatory for certain industrial and developmental projects, including mining. It introduced a structured process for assessing the potential environmental consequences of proposed projects before granting approval. It was stipulated that the expansion or modernization of any activity, where such expansion would result in an increase in the existing pollution load or the establishment of a new project listed under Schedule I of the said Notification, shall not be undertaken in any part of India without obtaining prior Environmental Clearance (EC) from the Central Government, in accordance with the procedure prescribed therein. This regulatory required project proponents to conduct an Environmental Impact Assessment (EIA), obtain public feedback, and implement mitigating measures to minimize environmental damage. It established a structured procedure for the grant of EC to ensure that industrial and developmental projects adhere to environmental safeguards. As per Para 2 of the Notification, any individual or entity intending to undertake a new project, or seeking expansion or modernization of an existing industry or project, as specified in Schedule I, was required to submit an application to the Secretary, MoEFCC.

8.1. Schedule I of the Notification enumerated 29 categories of projects that necessitated prior EC. Notably, Item 20 pertained specifically to mining projects, thereby bringing such activities under the purview of environmental regulation. This provision underscored the legislative intent to subject mining operations to rigorous environmental scrutiny, ensuring that mineral extraction did not proceed without due assessment of its impact on our ecology. Para 2 provided that in respect of mining projects, amongst others, the project proponent shall intimate the Government of the location site, and it may grant clearance after conducting necessary investigation and survey.

9. *EIA Notification, 2006* : Twelve years after the EIA Notification 1994, MoEFCC issued the present notification EIA Notification, 2006[17]. Para 2 of the 2006 Notification reads as under;

> *"2. Requirements of prior Environmental Clearance (EC):— The following projects or activities shall require prior environmental clearance from the concerned regulatory authority, which shall hereinafter referred to be as the Central Government in the Ministry of Environment and Forests for matters falling under Category 'A' in the Schedule and at State level the State Environment Impact Assessment Authority (SEIAA) for matters falling under Category 'B' in the said Schedule, before any construction work, or preparation of land by the project management except for securing the land, is*

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started on the project or activity:

(i) All new projects or activities listed in the Schedule to this notification;

(ii) Expansion and modernization of existing projects or activities listed in the Schedule to this notification with addition of capacity beyond the limits specified for the concerned sector, that is, projects or activities which cross the threshold limits given in the Schedule, after expansion or modernization;

(iii) Any change in product - mix in an existing manufacturing unit included in Schedule beyond the specified range."

9.1. Projects under the 2006 Notification were categorized into Category 'A' and Category 'B' based on spatial extent of potential impact on human health and natural and manmade resources. For projects included under Category A, EC from Central Government is mandated. As far as projects categorized under Category B are concerned, the EC shall be obtained from a new body created, the State Environmental Impact Assessment Authority, SEIAA. Further, Paras 5, 6 and 7 gives a detailed procedure for grant of prior EC. The same are extracted below for ready reference:

"5. Screening, Scoping and Appraisal Committees:

The same Expert Appraisal Committees (EACs) at the Central Government and SEACs (hereinafter referred to as the (EAC) and (SEAC) at the State or the Union territory level shall screen, scope and appraise projects or activities in Category 'A' and Category 'B' respectively. EAC and SEAC's shall meet at least once every' month.

(a) The composition of the EAC shall be as given in Appendix VI. The SEAC at the State or the Union territory level shall be constituted by the Central Government in consultation with the concerned State Government or the Union territory Administration with identical composition;

(b) The Central Government may, with the prior concurrence of the concerned State Governments or the Union territory Administrations, constitutes one SEAC for more than one State or Union territory for reasons of administrative convenience and cost;

(c) The EAC and SEAC shall be reconstituted after every three years;

(d) The authorised members of the EAC and SEAC, concerned, may inspect any site(s) connected with the project or activity in respect of which the prior environmental clearance is sought, for the purposes of screening or scoping or appraisal, with prior notice of at least seven days to the applicant, who shall provide necessity facilities for the inspection;

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(e) The EAC and SEACs shall function on the principle of collective responsibility. The Chairperson shall endeavour to reach a consensus in each case, and if consensus cannot be reached, the view of the majority shall prevail.

6. Application for Prior Environmental Clearance (EC):

An application seeking prior environmental clearance in all cases shall be made in the prescribed Form 1 annexed herewith and Supplementary Form 1 A if applicable, as given in Appendix II, after the identification of prospective site(s) for the project and/or activities to which the application relates, before commencing any construction activity, or preparation of land, at the site by the applicant. The applicant shall furnish, along with the application, a copy of the pre-feasibility project report except that, in case of construction projects or activities (item 8 of the Schedule) in addition to Form 1 and the Supplementary Form 1 A, a copy of the conceptual plan shall be provided, instead of the pre-feasibility report.

7. Stages in the Prior Environmental Clearance (EC) Process for New Projects:

7(i) The environmental clearance process for new projects will comprise of a maximum of four stages, all of which may not apply to particular cases as set forth below in this notification. These four stages in sequential order are:

- *Stage (1) Screening (Only for Category 'B' projects and activities)*
- *Stage (2) Scoping*
- *Stage (3) Public Consultation*
- *Stage (4) Appraisal*

.....”

9.2. Under Para 8, the appropriate authority can either grant or reject prior EC. Para 9 deals with the tenure and validity of an EC and Para 10 provides for post grant monitoring. The Appendix III enumerates the generic structure of an EIA application and its essentials.

9.3. Over the years, amendments were brought about in this EIA Notification, 2006 for the purpose of strengthening the EC norms and laying down further procedures for close scrutiny. For the present purpose, we are not concerned with other details, except to indicate herein the background in which amendments leading to requirement of District Survey Report, with which we are concerned, are incorporated in the notification. The starting point for this can be said to be the decision of this Court in *Deepak Kumar* v. *State of Haryana*[18].

10. *Deepak Kumar* v. *State of Haryana* : Validity of certain mining

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leases granting permission for sand mining in violation of environment norms in the State of Haryana came up for consideration before this Court. Deprecating the practice of issuing auction notice without conducting necessary studies to analyse the impact such mining will have on the ecology, this Court held;

> *"8..... Sand mining on either side of the rivers, upstream and instream, is one of the causes for environmental degradation and also a threat to the biodiversity. Over the years, India's rivers and riparian ecology have been badly affected by the alarming rate of unrestricted sand mining which damage the ecosystem of rivers and the safety of bridges, weakening of riverbeds, destruction of natural habitats of organisms living on the riverbeds, affects fish breeding and migration, spells disaster for the conservation of many bird species, increases saline water in the rivers, etc.*
>
> *9. 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, instream roughness elements, depth, velocity, turbidity, sediment transport, stream discharge and temperature. Altering these habitat characteristics can have deleterious impacts on both instream 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.*
>
> *10. We are expressing our deep concern since we are faced with a situation where the auction notices dated 3-6-2011 and 8-8-2011 have permitted quarrying, mining and removal of sand from instream and upstream of several rivers, which may have serious environmental impact on ephemeral, seasonal and perennial rivers and riverbeds and sand extraction may have an adverse effect on biodiversity as well. Further, it may also lead to bed degradation and sedimentation having a negative effect on the aquatic life. The rivers mentioned in the auction notices are on the foothills of the fragile Shivalik Hills. Shivalik Hills are the source of rivers like Ghaggar, Tangri, Markanda, etc. River Ghaggar is a seasonal river which rises up in the outer Himalayas between Yamuna and Satluj and enters Haryana near Pinjore, District Panchkula, which passes through Ambala and Hissar and reaches Bikaner in Rajasthan. River Markanda is also a seasonal river like Ghaggar, which also originates from the lower Shivalik Hills and enters Haryana near Ambala.*

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During monsoon, this stream swells up into a raging torrent, notorious for its devastating power, as also, River Yamuna.

11. We find that it is without conducting any study on the possible environmental impact on/in the riverbeds and elsewhere the auction notices have been issued. We are of the considered view that when we are faced with a situation where extraction of alluvial material within or near a riverbed has an impact on the river's 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 ha, separated by 1 km, because their collective impact may be significant, hence the necessity of a proper environmental assessment plan.

* * *

25. Quarrying of river sand, it is true, is an important economic activity in the country with river sand forming a crucial raw material for the infrastructural development and for the construction industry but excessive instream sand and gravel mining causes the degradation of rivers. Instream mining lowers the stream bottom of rivers which may lead to bank erosion. Depletion of sand in the streambed and along coastal areas causes the deepening of rivers which may result in destruction of aquatic and riparian habitats as well. Extraction of alluvial material as already mentioned from within or near a streambed has a direct impact on the stream's physical habitat characteristics.

26. We are of the considered view that it is highly necessary to have an effective framework of mining plan which will take care of all environmental issues and also evolve a long-term rational and sustainable use of natural resource base and also the bio-assessment protocol. Sand mining, it may be noted, may have an adverse effect on biodiversity as loss of habitat caused by sand mining will affect various species, flora and fauna and it may also destabilise the soil structure of river banks and often leaves isolated islands. We find that, taking note of those technical, scientific and environmental matters, MoEF, Government of India, issued various recommendations in March 2010 followed by the Model Rules, 2010 framed by the Ministry of Mines which have to be given effect to, inculcating the spirit of Article 48-A and Article 51-A(g) read with Article 21 of the Constitution."

(emphasis supplied)

10.1. The above quoted observations became the jurisprudential basis for evaluating the DSR for gauging the impact assessment of sand-mining on the ecology and the environment in general even at the district level.

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11. *EIA Notification 2016:* Following the decision of this Court in *Deepak Kumar* (supra) the Government amended the EIA Notification 2006 to introduce special procedure with respect to river bed mining, sand mining and mining of minor minerals. The preamble of this notification is important even for considering the nature, scope and ambit of the DSR which has fallen for our consideration. The relevant portion of the preamble is as under;

> *"And whereas, in pursuance to the order of Hon'ble Supreme Court dated the 27th February, 2012 in I.A. No. 12-13 of 2011 in Special Leave Petition (C) No. 19628-19629 of 2009, in the matter of* Deepak Kumar *v.* State of Haryana, *prior environmental clearance has now become mandatory for mining of minor minerals irrespective of the area of mining lease;*
>
> *And whereas, as a result of the above said Order of Hon'ble Supreme Court, the number of cases which are now required to obtain prior environmental clearance has increased substantially;*
>
> *And whereas, the Hon'ble National Green Tribunal, vide its order dated the 13th January, 2015 in the matter regarding sand mining has directed for making a policy on environmental clearance for mining leases in cluster for minor minerals;*
>
> *And whereas, the State Governments have represented for streamlining the process of environmental clearance for mining of minor mineral;*
>
> *And whereas, the Ministry of Environment, Forest and Climate Change in consultation with State Governments, has prepared Guidelines on Sustainable Sand Mining detailing the provisions on environmental clearance for cluster, creation of District Environment Impact Assessment Authority and proper monitoring of sand mining using information technology and information technology enabled services to track the mined out material from source to destination;*
>
> *Now, therefore, in exercise of the powers conferred by subsection (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 read with clause (d) of sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986, the Central Government hereby makes the following amendments in the said notification, namely:—*
>
> *In the said notification,- (a) in paragraph 2, after the words "in the said Schedule", the following words shall be inserted, namely:— "and at District level, the District Environment Impact Assessment Authority (DEIAA) for matters falling under Category 'B2' for mining of minor minerals in the said Schedule"; (b) after paragraph 3, the following paragraph shall be inserted…"*

12. *Establishment of District Level Environment Impact*

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Assessment Authority (DEIAA) & District Expert Appraisal Committee (DEAC) under Para 3A : As is evident from the above extracted portion of the preamble to the EIA Notification 2016, two bodies namely, the DEIAA and DEAC have been established by inserting Para 3A to the EIA Notification, 2006 for grant of EC to a newly introduced category (by amending para 2), called category B2. The amended Para 3A establishing DEIAA and DEAC, is extracted herein below for ready reference;

"3A. District Level Environment Impact Assessment Authority:

(I) A District Level Environment Impact Assessment Authority hereinafter referred to as the DEIAA shall be constituted by the Central Government under sub-section (3) of section 3 of the Environment (Protection) Act, 1986 comprising of four members including a Chairperson and a Member-Secretary.

(2) The District Magistrate or District Collector shall be the Chairperson of the DEIAA.

(3) The Sub-Divisional Magistrate or Sub-Divisional Officer of the district head quarter of the concerned district of the State shall be the Member-Secretary of the DEIAA.

(4) The other two members of the DEIAA shall be the senior most Divisional Forest Officer and one expert. The expert shall be nominated by the Divisional Commissioner of the Division or Chief Conservator of Forest, as the case may be. The term and qualifications of the expert fulfilling the eligibility criteria are given in Appendix VII to this notification.

(5) The members of the DEIAA who are serving officers of the concerned State Government or the Union territory Administration shall be ex-officio members except the expert member.

(6) The District Level Expert Appraisal Committee hereinafter referred to as the DEAC shall comprise of eleven members, including a Chairman and a Member-Secretary.

(7) The senior most Executive Engineer, Irrigation Department in the district of respective State Governments or Union territory Administration shall be the Chairperson of the DEAC.

(8) The Assistant Director or Deputy Director of the Department of Mines and Geology or District Mines Officer or Geologist of the district shall be the Member-Secretary of the DEAC in that order.

(9) A representative of the State Pollution Control Board or Committee, senior most Sub-Divisional Officer (Forest) in the district, representative of Remote Sensing Department or

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Geology Department or State Ground Water Department, one occupational health expert or Medical Officer to be nominated by the District Magistrate or District Collector, Engineer from Zila Parishad, and three expert members to be nominated by the Divisional Commissioner or Chief Conservator of Forest, as the case may be, shall be the other members of the DEAC. The term and qualifications of the experts fulfilling the eligibility criteria are given in Appendix VII to this notification.

10) The members of the DEAC who are serving officers of the concerned State Government or the Union territory Administration shall be ex-officio members except the expert members.

(11) The District Magistrate or District Collector shall notify an agency to act as Secretariat for the DEIAA and the DEAC and shall provide all financial and logistic support for their statutory functions.

(12) The DEIAA and DEAC shall exercise the powers and follow the procedure as specified in the said notification, as amended from time to time.

(13) The DEAC shall function on the principle of collective responsibility and the Chairman shall endeavor to reach a consensus in each case and if consensus cannot be reached, the view of the majority shall prevail.";

13. *New category called Category B2 for sandmining in districts was introduced through para 4(iv)*> : Paragraph 4 of the EIA notification 2006 relating to categorization of projects and activities was also amended and category B2 falling within the jurisdiction of the DEIAA, acting on the decision and recommendation of DEAC is introduced. Relevant portion of para 4(iv) is as under;

"4. Categorization of projects and activities:

(i)

(ii)

(iii)

(iv) The 'B2' Category projects pertaining to mining of minor mineral of lease area less than or equal to five hectare shall require prior environmental clearance from DEIAA. The DELAA shall base its decision on the recommendations of DEAC, as constituted for this notification."

14. *Preparation of District Survey Report Introduced through Para 7(iii)* : Para 7 of the EIA Notification 2006 has already been reproduced. It relates to the process before grant of EC. While 7(i) related to process for new projects, which comprises of four stages namely, screening, scoping, public consultation and appraisal

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respectively; para 7(ii) relates to process for expansion or modernisation or change of project mix in existing projects. It is in this very paragraph that the amendment introduces para 7(iii). Introduction of para 7(iii) for the first time contemplated, preparation of DSR for sand mining or river bed mining and mining of other minor minerals. Para 7(iii) reads as under;

"7. Stages in the Prior Environmental Clearance (EC) Process for New Projects

(i) ....

(ii) ...

(iii) Preparation of District Survey Report for Sand Mining or River Bed Mining and Mining of other Minor Minerals:

(a) The prescribed procedure for preparation of District Survey Report for sand mining or river bed mining and mining of other minor minerals is given in Appendix X.

(b) The prescribed procedure for environmental clearance for mining of minor minerals including cluster situation is given in Appendix XI."

15. *Procedure for preparation of DSR introduced through Appendix X* : Procedure for preparation of the above referred DSR under para 7(iii) is laid down in great detail in Appendix X to the notification. Appendix X, apart from laying down the detailed procedure, also declares that the, "*District Survey Report shall form the basis for application for environmental clearance, preparation of reports and appraisal of projects. The Report shall be updated once every five years*." Appendix X is as follows;

"PROCEDURE FOR PREPARATION OF DISTRICT SURVEY REPORT

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

Identification of areas of aggradations or deposition where mining can be allowed; and identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited and calculation of annual rate of replenishment and allowing time for replenishment after mining in that area.

The report shall have the 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

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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

In addition to the above, the report shall contain the following:

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

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

(c) District wise detail of existing mining leases of land and aggregates.

A survey shall be carried out by the DEIAA with the assistance of Geology Department or Irrigation Department or Forest Department or Public Works Department or Ground Water Boards or Remote Sensing Department or Mining Department etc. in the district.

Drainage system with description of main rivers

* * *

Methodology adopted for calculating mineral potential

The mineral potential is calculated based on field investigation and geology of the catchment area of the river or streams. As per the site conditions and location, depth of minable mineral is defined. The area for removal of the 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 or stream. For example in some hill States mineral constituents like boulders, river born Bajri, 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 or stream.

The District Survey Report shall be prepared for each minor mineral in the district separately and its draft shall be placed in the public domain by keeping its copy in Collectorate and posting it on district's website for twenty one days. The comments received shall be considered and if found fit, shall be incorporated in the final Report to be finalised within six months by the DEIAA.

The District Survey Report shall form the basis for application for environmental clearance, preparation of reports and appraisal of projects. The Report shall be updated once every five years."

(emphasis supplied)

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16. *Challenge to the Notification 2016 the direction of NGT in Satendra Pandey's case* : Environmental concerns were expressed that the amendments brought about by the EIA notification 2016 did not translate into action the mandate of this Court's decision in *Deepak Kumar* (supra). These concerns were considered by the NGT in *Satendra Pandey* v. *MoEFCC*[19] wherein the following directions were issued.

> *"22. For all these reasons, we direct that the procedure laid down in the impugned Notification be brought in consonance and in accord with the directions passed in the case of* Deepak Kumar *(supra) by (i) providing for EIA, EMP and therefore, Public Consultation for all areas from 5 to 25 ha falling under Category B-2 at par with Category B-1 by SEAC/SIEAA as well as for cluster situation wherever it is not provided; (ii) Form-1M be made more comprehensive for areas of 0 to 5 ha by dispensing with the requirement for Public Consultation to be evaluated by SEAC for recommendation of grant EC by SEIAA instead of DEAC/DEIAA; (iii) if a cluster or an individual lease size exceeds 5 ha the EIA/EMP be made applicable in the process of grant of prior environmental clearance; (iv) EIA and/or EMP be prepared for the entire cluster in terms of recommendation 5 (supra) of the Guidelines for the purpose of recommendations 6, 7 and 8 thereof; (v) revise the procedure to also incorporate procedure with respect to annual rate of replenishment and time frame for replenishment after mining closure in an area; (vi) the MoEF & CC to prepare guidelines for calculation of the cost of restitution of damage caused to mined-out areas along with the Net Present Value of Ecological Services forgone because of illegal or unscientific mining."*

17. *EIA Notification for prescribing procedure for preparation of DSR of minor minerals other than sandmining and river bed mining:* A further amendment was introduced to the EIA Notification, 2006 as amendment by the EIA Notification 2016 for the purpose of prescribing a separate procedure for preparing DSR for minor minerals other than sand mining and river bed mining through notification dated 25.07.2018. This amendment introduces Part II to Appendix X which reads as under;

> *II. PROCEDURE FOR PREPARATION OF DISTRICT SURVEY REPORT OF MINOR MINERALS OTHER THAN SAND MINING OR RIVER BED MINING*
>
> *The District Survey Report shall be prepared for each minor mineral in the district separately and its draft shall be placed in the public domain by keeping its copy in Collectorate and posting it on district's website for twenty one days. The comments received shall be considered and if found fit, shall be incorporated in the final*

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Report to be finalised within six months by the DEIAA.

The District Survey Report for minor minerals other than sand mining or River bed mining shall be as per structure mentioned below:

FORMAT FOR PREPARATION OF DISTRICT SURVEY REPORT FOR MINOR MINERALS OTHER THAN SAND MINING OR RIVER BED MINING

1) Introduction

2) overview of Mining Activity in the District;

3) general profile of the district;

4) geology of the district;

5) drainage of irrigation pattern;

6) land utilization pattern in the district : forest, agricultural, horticultural, mining etc;

7) surface water and ground water scenario of the district;

8) rainfall of the district and climatic condition;

9) details of the mining leases in the district……..

10) details of royalty or revenue received in last three years;

11) details of production of minor minerals in last three years;

12) mineral map of the district;

13) list of Letter of Intent (LOI) Holders in the district along with its validity….

14) total mineral reserve available in the District.

15) quality/grade of mineral available in the District;

16) use of mineral;

17) demand and Supply of the Mineral in the last three years;

18) mining leases marked on the map of the district;

19) details of the area of where there is a cluster of mining leases viz. number of mining leases, location (latitude and longitude);

20) details of Eco-sensitive Area, if any, in the District;

21) impact on the Environment (Air, Water, Noise, Soil, Flora & Fauna, land use, agriculture, forest etc.) due to mining activity;

22) remedial Measures to mitigate the impact of mining on the Environment;

23) reclamation of Mined out area (best practice already implemented in the district, requirement as per roles and regulation, proposed reclamation plan);

24) risk Assessment & Disaster Management Plan;

25) details of the Occupational Health issues in the District. (Last five-year data of number of patients of Silicosis & Tuberculosis is also needs to be submitted);

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26) plantation and Green Belt development in respect of leases already granted in the District;

27) any other information.

18. *Enforcement and Monitoring Guidelines for Sand Mining, 2020* : It is important to mention at this stage the MoEFCC has also issued the Sustainable Sand Mining Management Guidelines, 2016[20] and the Enforcement and Monitoring Guidelines for Sand Mining, 2020[21]. The 2020 Guidelines does not replace the 2016 Guidelines, rather, they both supplement and complement each other.

18.1. Building on the 2016 Guidelines, MoEFCC came with the 2020 Guidelines. One of the key objectives with which the said guidelines were framed was to regulate the sand and gravel mining in the country. Para 4.1.1 deals with preparation of DSR. It is recognized therein that, "*preparation of District Survey Report is a very important step and sustainable sand mining in any part of the country will depends on the quality of District Survey Report*." A detailed procedure is given in para 4.1.1, the relevant portion of which is extracted as under;

"*a) District Survey Report for sand mining shall be prepared before the auction/e-auction/grant of the mining lease/Letter of Intent (LoI) by Mining department or department dealing the mining activity in respective states.*

b) The first step is to develop the inventory of the River Bed Material and Other sand sources in the District. In order to make the inventory of River Bed Material, a detailed survey of the district needs to be carried out, to identify the source of River Bed Material and alternative source of sand (M-Sand). The source will include rivers, de-siltation of reservoir/dams, Patta lands/Khatedari Land, M-sand etc.

.....

c) District Survey Report is to be prepared in such a way that it not only identifies the mineral-bearing area but also define the mining and no mining zones considering various environmental and social factors.

d) Identification of the source of Sand & M-Sand.....

e) Defining the sources of Sand/M-Sand in the district is the next step for identification of the potential area of deposition/aggradation wherein mining lease could be granted.....

* * *

p) Public consultation-The Comments of the various stakeholders may be sought on the list of mining lease to be auctioned. The State Government shall give an advertisement in the local and national newspaper for seeking comments of the general public on the list of mining lease included in the DSR. The DSR should be

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placed in the public domain for at least one month from the date of publication of the advertisement for obtaining comments of the general public. The comments so received shall be placed before the sub-divisional committee for active consideration. The final list of sand mining areas [leases to be granted on riverbed & Patta land/Khatedari land, desiltation location (ponds/lakes/dams), M-Sand Plants (alternate source of sand)] after the public hearing needs to be defined in the final DSR in the format as per Annexure-V. The details regarding cluster and contiguous cluster needs to be provided in Annexure-VI. The details of the transportation need to be provided in Annexure-VII."

19. Decision of this Court in *State of Bihar* v. *Pawan Kumar*[22] : Considering the mandatory requirement of preparation of DSR, which shall form the basis for grant of EC for sand mining in any districts, this Court specifically directed appraisal by SEIAA and SEAC as under;

16.2. Needless to state that while preparing DSRs and the appraisal thereof by SEAC and SEIAA, it should be ensured that a strict adherence to the procedure and parameters laid down in the policy of January 2020 should be followed.

19.1. Further, noting the existence of the *Enforcement and Monitoring Guidelines for Sand Mining, 2020*, the Court directed as under;

"*12. It could thus be seen that in accordance with the 2020 Guidelines, the DSR is required to be prepared before the auction/e-auction/grant of mining lease by Mining Department or Department dealing with mining activity in the respective States. It is further provided that the potential site for mining having its impact on the forest, protected area, habitation and bridges should be avoided. For this, a Sub-Divisional Committee is required to be formed which, after the site visit, is required to decide regarding the suitability of the sites for mining. The Sub-Divisional Committee is further required to record its reasons for selecting the mining lease in the patta land. Various details are required to be given in the annexures appended to the said policy.*

13. It is further to be noted that Appendix X of the Notification dated 15-1-2016, issued by MoEF and CC also provides for composition of the Sub-Divisional Committee:

"A Sub-Divisional Committee comprising 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."

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14. It is to be noted that with the advent of modern technology, various technological gadgets like drones and satellite imaging, etc. can be used for identification of the potential sites and preparation of the DSR and also to check misuse and unauthorised mining."

(emphasis supplied).

19.2. We have also noted that the NGT has been taking a consistent stand about the mandatory requirement of a DSR being a condition precedent to carry mining activity.[23] Further, the decision of the NGT that DSR should be the basis for an application for grant of an EC and that an application without DSR is incomplete cannot be processed or proceeded further is correct in law.[24] We may add that a 'draft DSR' is virtually a non-existing DSR for purpose of grant of environmental clearance.

20. *Conclusion:* Having considered the regulatory regime introduced from time to time, increasing the width as well as the depth of scrutiny before granting an environmental clearance for sand mining, we are of the opinion that there is a mandatory requirement of preparation of a DSR. The DSR shall form the basis for application of environmental clearance. It shall also be the basis for preparation of reports and also appraisal of the projects. Another important facet of DSR is that it shall be prepared for all the districts and the draft is to be placed in the public domain. There is a requirement for keeping a copy of DSR in Collectorate. It must also be posted on the district's website for 21 days. After comments are received, they shall be considered and if found correct, they will be incorporated in the final report. The final DSR will then be finalized within 6 months by the DEIAA. The lifetime of the report is five years. After five years the existing DSR will not be tenable and a new DSR will have to be prepared and finalized. The purpose and object of prescribing a lifetime of five years for subsistence of a DSR is for the reason that the position of ecology and the environment is rapidly changing and the position that exists five years back, may not subsist for later days. It is true that it might have changed even before the expiry of five years but a reasonable estimate, to work as a benchmark is a policy consideration. May be a precautionary principle, it is not only legal and valid but is also mandatory. It must be enforced strictly and with all vigor.

21. We conclude by holding that:

(i). A District Survey Report is a document of seminal importance as it enables informed decision making.

(ii). Preparation of a DSR as per the procedure prescribed for its preparation under Appendix X, read with para 7(iii)(a), is required to be followed meticulously.

(iii). A valid and a subsisting DSR alone can be the basis for an

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application for grant of EC. A draft DSR is untenable for grant of an EC.

(iv). Preparation of reports and appraisal of projects by DEIAA and DEAC shall be on the basis of a valid and a subsisting DSR.

(v). DEIAA and DEAC are recognized as the authorities fastened with the statutory duty of preparing the DSR every five years and this duty compels them to have a comprehensive and a real time perspective of the environment position of the district including its eco-sensitivity and other fragilities.

22. For the reasons stated above, we reiterate our decision of dismissing these civil appeals against the judgment and order passed by the NGT holding that the e-auction notice dated 13.02.2023 is illegal and contrary to law.

———

[1] Hereinafter, "NGT".

[2] (2022) 3 SCC 102. Hereinafter, "*Pawan Kumar*".

[3] By order dated 12.02.2025.

[4] UNEP (2019). Sand and sustainability : Finding new solutions for environmental governance of global sand resources : synthesis for policy makers. United Nations Environment Programme, Nairobi.

[5] Yi Han, *et al.*, 'Ecological impacts of unsustainable sand mining : urgent lessons learned from a critically endangered freshwater cetacean', Proceedings of the Royal Society, 2023.

[6] Marco Hernandez, Simon Scarr & Katy Daigle, *The Messy Business of Sand Mining Explained*, REUTERS (Feb. 18, 2021),

[7] E.S. Rentier & L.H. Cammeraat, The environmental impacts of river sand mining, Science of The Total Environment, Volume 838, Part 1, 2022,

[8] Naveen Kumar, *Sand Mining in India - Grain of Despair : Failure of Regulatory Machinery*, 2023 SCC OnLine Blog OpEd 44.

[9] *At the same time, while only so much can come from the regulatory side, we must also endeavor to explore alternatives to sand mining. Researchers from the University of Geneva (UNIGE) and the Sustainable Minerals Institute at the University of Queensland (UQ) have identified a sustainable alternative to natural sand, termed "ore-sand".[9] Derived from mineral processing waste, ore-sand offers a dual solution to two pressing global challenges : the growing demand for sand and the massive accumulation of mining waste, which currently amounts to 30-60 billion tonnes annually. By repurposing what was once considered discarded material, ore-sand not only reduces environmental pressure on natural ecosystems but also promotes a circular economy. According to experts like UNIGE's Pascal*

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Peduzzi and UQ's Daniel Franks, this innovation can significantly cut down on mine tailings while providing a responsible, scalable sand resource. If adopted widely, ore-sand could help shift the global construction industry toward more sustainable and environmentally conscious practices.

[10] 54 (List I) : Regulation of mines and minerals development to the extent to which such regulation and development under the control of the Union is declared by Parliament by law to be expedient in the public interest.

[11] 23 (List II) Regulation of mines and minerals development subject to the provisions of List I with respect to regulation and development under the control of the Union.

[12] Act No. 67 of 1957. Hereinafter, "MMRD Act".

[13] Section 2. Declaration as to expediency of Union Control.-It is hereby declared that it is expedient in the public interest that the Union should take under its control the regulation of mines and the development of minerals to the extent hereinafter provided.

[14] Act No. 29 of 1986. Hereinafter, "1986 Act".

[15] *3. Power Of Central Government To Take Measures To Protect And Improve Environment.-*

(1) Subject to the provisions of this Act, the Central Government, shall have the power to take all such measures as it deems necessary or expedient for the purpose of protecting and improving the quality of the environment and preventing controlling and abating environmental pollution.

(2) In particular, and without prejudice to the generality of the provisions of sub-section (1), such measures may include measures with respect to all or any of the following matters, namely:—

…….

(3) The Central Government may, if it considers it necessary or expedient so to do for the purpose of this Act, by order, published in the Official Gazette, constitute an authority or authorities by such name or names as may be specified in the order for the purpose of exercising and performing such of the powers and functions (including the power to issue directions under section 5) of the Central Government under this Act and for taking measures with respect to such of the matters referred to in sub-section (2) as may be mentioned in the order and subject to the supervision and control of the Central Government and the provisions of such order, such authority or authorities may exercise the powers or perform the functions or take the measures so mentioned in the order as if such authority or authorities had been empowered by this Act to exercise those powers or perform those functions or take such measures.

[16] *5. Power To Give Directions.- Notwithstanding anything contained in any other law but subject to the provisions of this Act, the Central Government may, in the exercise of its*

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powers and performance of its functions under this Act, issue directions in writing to any person, officer or any authority and such person, officer or authority shall be bound to comply with such directions.

Explanation—For the avoidance of doubts, it is hereby declared that the power to issue directions under this section includes the power to direct—

(a) the closure, prohibition or regulation of any industry, operation or process; or

(b) stoppage or regulation of the supply of electricity or water or any other service.

[17] Hereinafter, "2006 Notification".

[18] (2012) 4 SCC 629. Hereinafter, "*Deepak Kumar*".

[19] 2018 SCC OnLine NGT 2388.

[20] Hereinafter, "2016 Guidelines".

[21] Hereinafter, "2020 Guidelines".

[22] (2022) 2 SCC 348. Hereinafter, "*Pawan Kumar*".

[23] *Anjani Kumar* v. *State of U.P.*, 2017 SCC OnLine NGT 979.

[24] *Raza Muzaffar Bhat* v. *SEIAA, J&K*, Appeal No. 24/2022, NGT, Principal Bench.

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BEFORE THE NATIONAL GREEN TRIBUNAL,
EASTERN BENCH, KOLKATA

MEMORANDUM OF APPLICATION

I.A. NO. OF 2025
IN

ORIGINAL APPLICATION NO. OF 2025

IN THE MATTER OF:

RIZWAN ...APPLICANT

VERSUS

STATE OF JHARKHAND & ORS ...RESPONDENTS

APPLICATION ON BEHALF OF THE APPLICANT SEEKING

INTERIM RELIEF

TO,

THE HON'BLE CHAIRPERSON
AND HIS COMPANION MEMBERS
OF THE NATIONAL GREEN TRIBUNAL

THE HUMBLE ORIGINAL APPLICATION OF THE APPLICANT HEREIN:

MOST RESPECTFULLY SHOWETH:

1. The present Application is being filed under Section 14 and 15 of the National Green Tribunal Act, 2010 raising a serious *Substantial Question relating to the Environment*, by challenging the District Survey Report **[IMPUGNED DSR]** for District Godda, Jharkhand. The present OA further challenges the Impugned E-Auction Notice dated 02.09.2025 **[IMPUGNED AUCTION NOTICES]** issued by the Respondent No. 4 District Mining Officer, Godda and the subsequent Letter of Intents (LOIs) issued if any in furtherance of the said Impugned Auction Notices.

2. That the detailed facts and circumstances leading to the filing of the present Application have been set out in detail in the body of the Application and the same are not being repeated herein for the sake of brevity and to avoid prolixity. The Applicant craves leave of this Hon'ble Tribunal to refer to and rely upon the averments and submissions made in the body of the Original Application and the same may be read as part and parcel of the present Application also.

3. That the Impugned DSR has been prepared without jurisdiction by a private consultant and not by the Sub-Divisional Committee, Godda, without adherence to the Enforcement & Monitoring Guidelines for Sand Mining, 2020 **[EMGSM, 2020]** issued by the MOEF, and approved by the expert bodies of SEAC/SEIAA, UP in a hurried, casual, arbitrary and perfunctory manner, without application of mind, in complete dissonance of the Judgment passed by the Hon'ble Supreme Court in *'Bengaluru Development Authority v Sudhakar Hegde & Ors'*, (2020) 15 SCC 63.

4. That under the Impugned Auction Notice dated 02.09.2025 the mineable quantities auctioned are more than the replenished rate as provided under the DSR/Replenishment Study of 2022, which is in complete derogation of the Orders passed by this Hon'ble Tribunal in *Anuj Singh* and *Balbir Sandhu*. The said variation/discrepancy in the auctioned and the replenished quantity is demonstrated in the Table mentioned in the Synopsis to the OA. That the Applicant has a strong *prima facie* case in its favour, and irreparable injury and loss to the Environment would be caused if illegal and excessive mining is allowed to continue and contaminate the ground water. The balance of convenience is in favour of the environment.

5. That the Application is made bonafide and in the interest of justice.

PRAYER

In view of the above facts and circumstances and reasons stated above, it is humbly prayed that this Hon'ble Tribunal may be pleased to:

a) Pass an Order staying the Impugned Auction Tender Notice dated 02.09.2025 issued by the Respondent and No. 4, District Mining Officer, Godda, Jharkhand;

b) Pass an Order directing the Respondent State Authorities that no LOI/EC/Mining Leases shall be granted in furtherance of the Impugned Auction Notice dated 02.09.2025 till the pendency of the present OA; and

c) Pass any other Orders as the Hon'ble Tribunal may deem fit and proper in the facts and circumstances of the instant case;

AND FOR THIS ACT OF KINDNESS THE APPLICANT AS IN DUTY BOUND SHALL EVER PRAY

FILED BY:

[VANSHDEEP DALMIA]
COUNSEL FOR THE APPLICANT
206, Jor Bagh, New Delhi-110003

M. No. 9810077085
Email id: vanshdeepdalmia@gmail.com

Place: Kolkata
Filed on: 15.09.2025

Serial No. 53 dated 15.9.25

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,
EASTERN ZONE BENCH, KOLKATA

I.A. NO. _____ OF 2025
IN
ORIGINAL APPLICATION NO. _____ OF 2025

IN THE MATTER OF:

RIZWAN ...APPLICANT

VERSUS

STATE OF JHARKHAND & ORS ...RESPONDENTS

AFFIDAVIT

I, Md Rizwan aged about years S/o Imran R/o Habibpur, Bhatuabadi Habibpur, Jagdishpur, Post and Police Station- Bhagalpur, District- Bhagalpur, Bihar - 813105, do hereby solemnly affirm and declare as under:

1. That I am the Applicant in the above Original Application and I am well conversant with the facts and circumstances of the case and competent to depose the present Affidavit.
2. That I have read and understood the contents of the accompanying application(s) which has been drafted on my instructions and I say that the facts stated therein are true to my knowledge.
3. That the averments of facts stated herein above are true to my knowledge, no part of it is false and nothing material has been concealed therefrom.

Md Rizwan

DEPONENT

VERIFICATION:-

Verified at Bhagalpur on this 15th day September 2025, that the contents of the present affidavit are true and correct to my knowledge, no part of it is false and nothing material has been concealed therefrom.

DEPONENT

Identified by
Advocate
15.09.25
EN-1526/2020

Md Rizwan
eponent....
Who is identified by...
lemnly affirm and declare
fore me
Md. Shamim Akhter
Notary, Bhagalpur

NOTARY
MD. SHAMIM AKHTER-Adv.
Bhagalpur
R.No. 1491/J/02
GOVT. OF BIHAR (INDIA)

INDIA JUDICIAL

Government of Bihar

e-Court Fee

e-Court Fee Receipt No:	GBRBOR026C250900044435
Date & Time	15-Sep-2025 03:09 PM
Name of the ACC/Registered User	District Co-operative Central Bank, Bhagalpur
Location	Civil Court Bhagalpur
Name of Applicant	MD. RIZWAN
e-Court Fee Amount	100 (One Hundred Rupees Only)

NOTARY
MD. RIZWAN
ADVOCATE
Bhagalpur
GOVT. OF BIHAR (INDIA)

IN-250179367

Statutory Alert:
1. The authenticity of this Stamp certificate should be verified at https://enibandhan.bihar.gov.in or using enibandhan Mobile App.
Any discrepancy in the details on this Certificate and as available on the website/Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.

VAKALATNAMA

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,
EASTERN ZONE BENCH, KOLKATA
ORIGINAL APPLICATION NO. OF 2025

IN THE MATTER OF:
RIZWAN ...APPLICANT

VERSUS

STATE OF JHARKHAND & ORS ...RESPONDENTS

KNOW ALL to whom these presents shall come that I, _____, do hereby appoint: -

VANSHDEEP DALMIA
ADVOCATE
206, Jor Bagh, New Delhi - 110003
E.mail-vanshdeepdalmia@gmail.com /Mob: 9810077085
Enrl-D/1376/2009

(Hereinafter called the Advocate) to be my Advocate in the above noted case and authorize him: -

To act, appear and plead in the above noted case in this Court or in any other Court in which the same may be tried or heard and also in the appellant Court including High Court subject to payment of fees separately for court by me/us.

To sign, file, verify and present pleadings, appeals cross-objections or petition for executions review, revision, withdrawal, compromise or other petitions or affidavits or other documents as may be deemed necessary proper for the prosecution of the said in all its stages subjects to payment of fees for each stage.

To file and take back documents, to admit and /or deny the document of opposite party.

To withdraw or compromise the said case or subject to arbitration any differences of disputes that may arise touching or in any manner relating to the said case. To take execution proceedings.

The deposit, draw and receive money, cheques, cash and grant receipts hereof and to do all other acts and things which may be necessary to be done for the progress and in the course of the prosecution of the said case.

To appoint and instruct any other Legal Practitioner authorizing him to exercise the power and authority hereby conferred upon the Advocate whenever he may think fit do so and to sign the power of attorney on our behalf.

And I/We the undersigned 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 intends and purpose.

And I/We the undersigned do hereby agree to ratify and all acts done by Advocate or his substitute in the matter as my/our own acts, as if done by me/us to all intents and purposes.

And I/We undertake that I/We or my/our duly authorise agent would appear in Court on all hearings and will inform the Advocate for appearance when the case is called.

And I/We undersigned do hereby agree not to hold the advocate of his substitute responsible for the result of the said case. The adjournment costs whenever ordered by the Court shall be of the Advocate, which he shall receive and retain for himself.

And I/We the undersigned do hereby agree that in the event of the whole or part of the fee agreed by me/us to be paid to the advocate remaining unpaid he shall be entitled to withdraw from the prosecution of the said until the same is paid up.

The fee settled is only for the above case and above Court. I/We hereby agree that once the fees is paid, I/We will not be entitled for the refund of the same in any case whatsoever and if the case prolongs for more than three years the original fee shall be paid again by me/us.

IN WITNESS WHEREOF I/We do hereunto set my/our hand to these presents the contents of which have been understood by me/us on this 15 day of SEP 2025
Accepted subject to the terms of the fees.

VNDA
ADVOCATE

CLIENT

Anuska
D/6313/2019

Shambhavi Singh
D/6754/2023

ADVOCATES' WELFARE FUND STAMP
2278458
DELHI
TWENTY FIVE RUPEES