

District Survey Reports and Sustainable Sand Mining: Reaffirming Scientific Environmental Governance through *Vinay Shrivastav v. State of Uttar Pradesh* (NGT Principal Bench)

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Abstract: District Survey Reports (DSRs) constitute the scientific foundation of the regulatory framework governing sand mining in India. The decision of the National Green Tribunal, Principal Bench, in *Vinay Shrivastav v. State of Uttar Pradesh* underscores that a DSR cannot be treated as a procedural formality; it must be supported by a scientifically credible replenishment study and evaluated in accordance with the Sustainable Sand Mining Management Guidelines, 2016 and the Enforcement and Monitoring Guidelines for Sand Mining, 2020. This case arose from the DSR of District Hamirpur, Uttar Pradesh, prepared in 2024 and approved by the SEIAA with conditions relating to replenishment study disclosure and geo-coordinates. This paper analyses the legal significance of the decision, its contribution to environmental jurisprudence, and its implications for future regulation of riverbed mining.

Keywords: Sand Mining, District Survey Report, District Survey Authority, EIA Notification, Sustainable Sand Mining Guidelines, 2016, Enforcement and Monitoring guidelines for Sand Mining, 2020.

I. INTRODUCTION

“The Vedic vision of nature is not one of ownership but of trusteeship. The Earth nourishes humanity as a mother nourishes her child; therefore, extraction of natural resources must never exceed nature’s capacity to regenerate.” Sand mining is legally permitted only when it is environmentally planned, scientifically limited, and administratively transparent. River sand is indispensable for infrastructure development, yet unscientific extraction has caused riverbank erosion, degradation of aquatic habitats, groundwater depletion and disturbance of river morphology. Judicial intervention, particularly after *Deepak Kumar v. State of Haryana*¹, transformed sand mining regulation by insisting upon scientific assessment before permitting extraction. Within this framework, the District Survey Report emerged as the central planning document governing identification of mining areas and sustainable extraction.

II. THE LEGAL STATUS OF THE DISTRICT SURVEY REPORT

A District Survey Report (DSR) is the foundational scientific and regulatory document governing the sustainable extraction of minor minerals, particularly riverbed sand, in India. It is prepared at the district level to identify mineral-bearing areas, assess the environmental characteristics of river systems, determine the quantity of extractable mineral based on scientific assessment, and ensure that mining activities are carried out in an environmentally sustainable manner. The DSR serves as the primary basis for the grant of environmental clearance, identification of mining blocks, auction of mining leases, and monitoring of mining operations.

¹ (2012) 4 SCC 629



The process begins with the identification of rivers and potential sand-bearing areas within a district. The District Administration, in coordination with the Mining Department and other technical agencies, collects information regarding river stretches, existing mining leases, geological characteristics, land use, forest areas, protected areas and other environmentally sensitive locations. Topographical maps, satellite imagery, cadastral maps and field inspections are used to obtain an accurate understanding of the river system.

The next stage involves a field survey and scientific assessment of the selected river stretches. Experts examine the river's geomorphology, width, depth, flow pattern, sediment characteristics, groundwater conditions, erosion-prone areas and nearby infrastructure such as bridges, embankments and roads. The purpose of this survey is to determine whether mining in a particular stretch is environmentally feasible and to identify areas where mining should be prohibited.

A crucial component of the DSR is the replenishment study. This study assesses the quantity of sand naturally deposited in the river during a particular period, usually after the monsoon season. By comparing the rate of natural sediment deposition with the proposed quantity of extraction, the replenishment study helps determine how much sand can be safely mined without disturbing the ecological balance of the river. It ensures that extraction does not exceed the river's natural regenerative capacity and therefore forms the scientific basis of sustainable sand mining.

Based on the information collected during surveys and replenishment studies, the District Survey Report is prepared. The report generally includes details of mineral-bearing areas, environmentally sensitive zones, annual replenishment, permissible mining depth, mining area boundaries, geo-coordinates, transportation routes, nearby infrastructure, environmental safeguards and recommendations regarding areas where mining should or should not be permitted. The DSR also contains maps and supporting scientific data to facilitate environmental appraisal.

After preparation, the DSR is placed before the State Expert Appraisal Committee (SEAC) for technical scrutiny. The SEAC examines whether the report complies with the requirements of the EIA Notification, SSMG-2016 and EMGSM-2020 and whether the scientific data is adequate to support mining. Based on the recommendations of the SEAC, the State Environment Impact Assessment Authority (SEIAA) considers the report and accords its approval, subject to necessary conditions wherever required.

Only after a valid DSR has been prepared and approved can the Government proceed with the identification of mining blocks, grant of environmental clearance and auction or allocation of mining leases in accordance with the applicable statutory framework. Thus, the District Survey Report serves as the scientific foundation upon which the legality and sustainability of sand mining depend. A defective or inadequately prepared DSR undermines the entire environmental clearance process and may render subsequent mining approvals vulnerable to judicial review.

The DSR is intended to integrate geological, hydrological and environmental data into a single planning document. Appendix X to the EIA Notification, 2006², read with SSMG-2016³ and EMGSM-2020⁴, requires identification of mineral-bearing stretches, environmentally sensitive areas, annual replenishment, geomorphological characteristics, permissible mining depth and sustainable extraction limits. Accordingly, environmental clearance cannot rest upon an inadequately prepared DSR.

Sustainable Sand Mining Management Guidelines, 2016 (SSMG-2016)

The **Sustainable Sand Mining Management Guidelines, 2016 (SSMG-2016)** were issued by the Ministry of Environment, Forest and Climate Change (MoEF&CC) in response to the growing environmental crisis caused by indiscriminate and unscientific extraction of sand from riverbeds. The Guidelines were formulated pursuant to the directions of the Supreme Court in *Deepak Kumar v. State of Haryana*, wherein the Court recognised that even mining of minor minerals can have serious ecological consequences and therefore requires scientific regulation. The principal

² Environmental Impact Assessment Notification, 2006

³ *Sustainable Sand Mining Management Guidelines, 2016*

⁴ Enforcement & Monitoring Guidelines for Sand Mining, 2020



objective of SSMG-2016 is to establish a comprehensive framework for balancing developmental needs with environmental conservation by ensuring that extraction of sand is undertaken in an environmentally sustainable, scientifically planned and socially responsible manner.

The Guidelines proceed on the fundamental premise that rivers are not merely sources of construction material but living ecological systems. River sand performs several ecological functions, including maintaining channel stability, regulating groundwater recharge, supporting aquatic biodiversity, preventing excessive erosion and sustaining the natural sediment transport process. Excessive or unregulated extraction disturbs this delicate equilibrium, leading to channel incision, collapse of riverbanks, lowering of the water table, degradation of riparian habitats and increased flood vulnerability. SSMG-2016 therefore shifts the regulatory focus from maximising mineral extraction to ensuring the long-term sustainability of river ecosystems.

A defining feature of SSMG-2016 is the introduction of the **District Survey Report (DSR)** as the scientific foundation of sand mining regulation. The Guidelines require every district to prepare a DSR before any mining lease is identified or environmental clearance is granted. The DSR must contain a detailed assessment of available mineral resources, river morphology, geomorphological characteristics, environmentally sensitive areas, infrastructure such as bridges and embankments, groundwater conditions, erosion-prone stretches and the annual replenishment of sand deposits. Through this exercise, the DSR becomes the principal planning document that identifies areas suitable for mining while simultaneously protecting ecologically fragile zones. The objective is to ensure that mining decisions are based on scientific evidence rather than administrative convenience or commercial considerations.

The Guidelines further prescribe detailed environmental safeguards governing the actual process of mining. These include restrictions on the depth of mining, maintenance of adequate buffer distances from bridges, embankments and other hydraulic structures, prohibition of mining in vulnerable stretches of rivers, regulation of mechanised mining, and restoration of mined areas. Importantly, SSMG-2016 emphasises that extraction should never exceed the natural replenishment capacity of the river. By integrating these safeguards into the regulatory process, the Guidelines operationalise the constitutional principles of sustainable development, the precautionary principle and the public trust doctrine, thereby giving practical effect to the environmental mandate under Articles 21, 48A and 51A(g) of the Constitution.

Enforcement and Monitoring Guidelines for Sand Mining, 2020 (EMGSM-2020)

While SSMG-2016 established a robust scientific framework for planning sand mining operations, experience revealed that illegal extraction, unauthorised transportation, manipulation of transit permits and weak enforcement continued to undermine its effectiveness. Recognising these practical deficiencies, the Ministry issued the **Enforcement and Monitoring Guidelines for Sand Mining, 2020 (EMGSM-2020)**. These Guidelines do not replace SSMG-2016; rather, they supplement it by providing an integrated mechanism for enforcement, monitoring and technological surveillance. The Ministry has expressly clarified that **SSMG-2016 and EMGSM-2020 are to be read and implemented in harmony**, with EMGSM-2020 prevailing in case of any inconsistency.

The central philosophy of EMGSM-2020 is that sustainable sand mining cannot be achieved merely through scientific planning unless there is continuous monitoring throughout the mining cycle. Accordingly, the Guidelines prescribe an end-to-end regulatory framework covering identification of mining sites, grant of environmental clearance, extraction, transportation, storage and final utilisation of sand. They seek to eliminate opportunities for illegal mining by strengthening institutional accountability and incorporating modern technology into every stage of the regulatory process.

One of the most significant contributions of EMGSM-2020 is its emphasis on **technology-based monitoring**. The Guidelines recommend the use of Geographic Information Systems (GIS), remote sensing, satellite imagery, drone surveys, geo-referenced mapping, GPS-enabled vehicle tracking, RFID systems, CCTV surveillance, electronic transit permits and automated weighbridges. These technological interventions facilitate real-time monitoring of mining operations, improve transparency, minimise illegal transportation and enable regulatory authorities to verify



compliance with environmental conditions. Such measures represent a significant departure from conventional inspection-based enforcement by creating a digital monitoring architecture capable of tracking the movement of minerals from extraction sites to end-users.

Another important feature of EMGSM-2020 is the strengthened role assigned to **replenishment studies**. The Guidelines recognise that sustainable extraction is possible only if the annual rate of sand removal does not exceed the river's natural capacity to regenerate sediment. Consequently, they prescribe a scientific methodology for assessing replenishment through periodic field investigations and geomorphological analysis. The replenishment study is no longer treated as a mere technical formality but as an essential scientific basis for determining permissible extraction limits and evaluating the environmental sustainability of mining proposals. This approach ensures that environmental clearance is founded upon empirical scientific evidence rather than assumptions regarding mineral availability.

EMGSM-2020 also strengthens institutional coordination by assigning clear responsibilities to the MoEF&CC, State Environment Impact Assessment Authorities (SEIAAs), State Expert Appraisal Committees (SEACs), State Pollution Control Boards, Mining Departments, District Magistrates and enforcement agencies. It envisages periodic inspections, environmental audits, accountability of regulatory authorities, preparation of scientifically robust District Survey Reports, assessment of environmental compensation for illegal mining and adoption of mine closure plans. Collectively, these measures transform sand mining regulation from a permit-based administrative exercise into a comprehensive environmental governance framework founded upon scientific assessment, technological monitoring and institutional accountability

III. THE VINAY SHRIVASTAV DECISION

The controversy in *Vinay Shrivastav v. State of Uttar Pradesh & Ors.* arose before the National Green Tribunal, Principal Bench, New Delhi, through Original Application (OA) No. 09 of 2025, which was subsequently heard along with OA No. 100 of 2025 as both applications involved identical questions concerning the legality of the District Survey Report (DSR), 2024 prepared for District Hamirpur, Uttar Pradesh. The matter was heard by a Bench comprising Hon'ble Mr. Justice Prakash Shrivastava, Chairperson, and Dr. A. Senthil Vel, Expert Member. The applicants challenged the 2024 DSR of District Hamirpur and, in one application, the advertisement inviting bids for sand mining from the riverbed. Their central grievance was that the DSR was prepared and approved without a proper replenishment study having been placed before SEAC and SEIAA at the stage of approval. The respondents argued that the relevant contents of the replenishment study had been incorporated, and that the DSR had been approved with conditions requiring upload of the replenishment study and geo-coordinates. The Tribunal accepted that the full replenishment study had not been placed before SEIAA at the time of approval, but it declined to annul the DSR immediately; instead, it directed SEAC and SEIAA to re-appraise the DSR after examining the replenishment study. Rather than invalidating the report outright, the Tribunal adopted a corrective approach that preserved administrative continuity while ensuring environmental compliance.

That part of the order is doctrinally significant wherein the Tribunal relied on the Supreme Court's later clarification in *Union Territory of Jammu & Kashmir v. Raja Muzaffar Bhat*⁵ that a detailed replenishment study is an integral part of the DSR and that a DSR without a proper replenishment study is untenable.

IV. JURISPRUDENTIAL SIGNIFICANCE

The decision enhances Indian environmental jurisprudence in several aspects.. It strengthens the precautionary principle by requiring scientific certainty before permitting environmentally sensitive activities and it reinforces sustainable development by balancing developmental needs with ecological preservation. It also enhances transparency by requiring regulatory authorities to rely upon verifiable scientific material instead of administrative assumptions. It

⁵ Civil Appeal no. 8055 of 2022



improves accountability by emphasising that SEAC and SEIAA must independently evaluate the scientific validity of DSRs before granting approvals.

V. CRITICAL EVALUATION

The decision exposes persistent deficiencies in DSR preparation across several States, including outdated data, inadequate field surveys and insufficient replenishment analysis. Strengthening the regulatory regime requires periodic revision of DSRs, GIS-based mapping, satellite monitoring, independent scientific audits and greater transparency through public disclosure.

VI. CONCLUSION

The judgment marks an important development in India's environmental jurisprudence by reaffirming that sustainable sand mining begins with a scientifically prepared DSR. It aligns environmental governance with constitutional principles of ecological protection and ensures that mineral extraction remains compatible with long-term river conservation

