

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL

PRINCIPAL BENCH, NEW DELHI

Original Application No.316/2026

IN THE MATTER OF:

Kuljinder Singh

...Applicant

Versus

Union of India & Ors.

...Respondents

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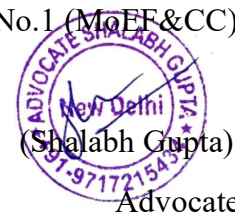
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Place: Delhi

Dated: 23.07.2026

Respondent No.1 (MoEF&CC)

Through



Advocate

IN THE HON'BLE NATIONAL GREEN TRIBUNAL,
PRINCIPAL BENCH, NEW DELHI

IN

O.A. No. 316/2026

IN THE MATTER OF:

Kuljinder Singh.

....APPLICANT

VERSUS

Union of India & Ors.

....RESPONDENT(S)

REPLY AFFIDAVIT ON BEHALF OF RESPONDENT No. 1 i.e.,
(MINISTRY OF ENVIRONMENT FOREST & CLIMATE CHANGE).

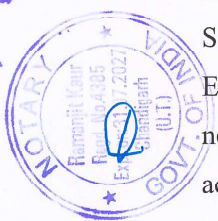
I, Dr. K.M. Selvan, S/o Shri Muthu Kanaga Raj, aged 41 years, presently working as Scientist 'E' in the Ministry of Environment, Forest and Climate Change, Regional Office(NZ), Chandigarh do hereby solemnly affirm and state as under:-

1. That I, in my official capacity of Scientist 'E' in the Ministry Environment, Forest and Climate Change at Regional Office, Chandigarh i.e. Respondent No. 1 in the above mentioned matter, am conversant with the facts and circumstances of the case on the basis of official records, and as such authorized and competent to swear this affidavit.
2. That, it is most respectfully submitted that a short affidavit is being filed by the answering respondent at this stage and craves leave and liberty to file a detailed Affidavit to the aforesaid application, as and when required.
3. It is submitted that the instant Original Application inter alia challenges the issuance of a fresh tender/auction notices in April 2026 by the Department of Water Resources, Government of Punjab, purportedly for "desilting" of river stretches. The instant matter further raises issues of environmental illegality whereby large-scale commercial extraction of sand, gravel and fertile alluvial material is being systematically carried out across the river systems, floodplains and agricultural belts of the State of Punjab under the deceptive and misleading nomenclature of "desilting".



Dr. K.M. Selvan

4. The applicant prays the following:
- Pass an order allowing the present application and quash and set aside the Impugned Tender/Auction Notices issued by the Respondent No. 4 in April 2026 (Annexure A-2 Colly) and all consequential actions taken pursuant thereto; and;
 - Pass an order allowing the present application and direct Respondents to immediately cease all activities of desilting/mining being carried out pursuant to the Impugned Tender Notices;
 - Pass an order allowing the present application and direct Respondents to strictly comply with SSMMG-2016, EMGSM-2020 and EIA Notification, 2006, including preparation of final DSRs and obtaining prior Environmental Clearance; and;
 - Pass an order allowing the present application and direct the Respondents to strictly comply with the order dated 02.04.2026 passed by this Hon'ble Tribunal in letter and spirit, and to obtain prior Environmental Clearance for any activity involving commercial extraction of minor minerals; and;
 - Impose exemplary costs and environmental compensation upon the Respondent State and its erring officials for the deliberate and contumacious violation of the order of this Hon'ble Tribunal and for causing environmental degradation.
5. It is humbly submitted that, the Ministry issued Environmental Impact Assessment (herein after referred as "EIA") Notification dated 14th September, 2006 which requires certain projects to obtain prior Environmental Clearance ("EC") before any construction work in case of new projects or expansion and modernization of existing projects or activities. The Schedule to the Notification details the categories or projects or activities which require prior environmental clearance.
6. It is further submitted that all projects and activities are broadly categorized into two categories - Category "A" and Category "B", based on the spatial extent of potential impacts and potential impacts on human health and natural and manmade resources. All projects or activities included as Category 'A' in the Schedule, including expansion and modernization of existing projects or activities and change in product mix, require prior environmental clearance from the Central Government in the Ministry of



Signature

Environment, Forest and Climate Change (MoEF&CC) and all projects or activities included as Category 'B' in the Schedule require prior environmental clearance from the State/Union territory Environment Impact Assessment Authority (SEIAA).

7. It is submitted that in exercise of the powers conferred upon the Central Government under sub section (3) of section 3 of the Environment (Protection) Act, 1986 and in accordance with the procedures specified in the EIA Notification, 2006, SEIAAs have been constituted in different States/UTs to discharge the functions of the regulatory authorities for the respective States/UTs.
8. That, the Ministry vide notification no. S.O. 637 (E) dated 28.02.2014 delegated the power to SEIAA to issue show cause notice to project proponents in case of violation of the conditions of the Environmental Clearances (EC) issued by the said Authorities to projects or activities within their jurisdiction and to issue directions to the said project proponents for keeping such EC in abeyance or withdrawing them, if required, for violations. Copy of the Notification S.O. 637 (E) dated 28.02.2014 is marked and annexed herein as **ANNEXURE No. 1.**
9. That the Answering respondent vide notification S.O. 1886 (E) dated 20.04.2022 states that environmental clearances of all minor mineral shall be dealt at State level irrespective of mine lease area. Copy of the Notification S.O. 1886 (E) dated 20.04.2022 is marked and annexed herein as **ANNEXURE No. 2.**
10. That the MoEF&CC vide Notification S.O. 1224 (E) dated 28/03/2020 exempted "*Dredging and de-silting of dams, reservoirs, weirs, barrages, river and canals for the purpose of their maintenance, upkeep and disaster management*" from the requirement of prior Environment Clearance under EIA Notification, 2006. Copy of Ministry's notification dated 28/3/2020 is marked and annexed herein as **ANNEXURE No. 3.**
11. That, subsequently, MoEF&CC vide Notification S.O. 3840(E) dated 30/08/2023 amended the aforementioned provision as "*Dredging and de-silting of dams, reservoirs, weirs, barrages, river and canals for the purpose of their maintenance, upkeep and disaster management shall be subject to the compliance of environmental safeguards issued in this regard from time*



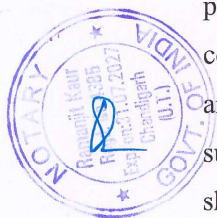
to time". Copy of Ministry's notification dated 30/08/2023 is marked and annexed herein as **ANNEXURE No. 4.**

12. That, the Ministry vide O.M. dated 12/07/2023 directed that exemption from EC for dredging and desilting of dams, reservoirs, weirs, barrages, river and canals shall be subject to Environmental Safeguards as proposed in the National Framework for Sediment Management issued by the Ministry of Jal Shakti, Department of Water Resources, River Development and Ganga Rejuvenation. Copy of Ministry's O.M dated 12/07/2023 is marked and annexed herein as **ANNEXURE No. 5.**

13. Further, Ministry vide OM dated 21/08/2023 entrusted the monitoring of the compliance status of the aforementioned environmental safeguards to the State Pollution Control Board (SPCBs) /Pollution Control Committees (PCCs). Copy of Ministry's O.M dated 21/08/2023 is marked and annexed herein as **ANNEXURE No. 6.**

14. That, this Ministry has formulated guidelines, namely the 'Enforcement & Monitoring Guidelines for Sand Mining' (EMGSM-2020), which supplement the existing 'Sustainable Sand Mining Management Guidelines, 2016' (SSMMG-2016). These guidelines aim to enhance the monitoring of sand mining, covering the entire process from the identification of sand mineral sources to their dispatch and end-use by consumers and the general public. Additionally, EMGSM-2020 serves as a reference document for collecting critical information necessary for enforcing regulatory provisions and outlines essential infrastructural requirements for effective monitoring of sustainable sand mining. Furthermore, both EMGSM-2020 and SSMG-2016 shall be read and implemented in sync with each other. In the event of any ambiguity or inconsistency between the provisions of these documents, the provisions of the 'Enforcement & Monitoring Guidelines for Sand Mining-2020' shall prevail.

15. It is humbly submitted that, the answering Respondent vide Notification S.O No. 3611 (E) dated 25.07.2018 in Appendix- 'X' has laid down a detailed procedure for preparation of District Survey Report (DSR) for sand mining or river bed mining, as well as procedure for preparation of District Survey Report for minor minerals other than sand mining or river bed mining. In the notification dated 25.07.2018 it has been stated 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. Copy of the Notification S.O No. 3611 (E) dated 25.07.2018 marked and annexed herein as **ANNEXURE No. 7.**

16. That in the matter of Civil Appeal no. 3661 of 2020 in State of Bihar Vs Pawan Kumar Hon'ble Supreme Court vide order dated 10.11.2021 emphasized on the importance of DSR. The DSR is required to be prepared before the auction/c-auction/ grant of mining lease by Mining Department or Department dealing with mining activity in the respective States. 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 as they are better equipped to visit the sites and prepare the draft DSR for the concerned district.

1. "xxx 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.

.....xxx"

Copy of the Hon'ble Supreme Court order dated 10.11.2021 in Civil Appeal no. 3661 of 2020 in State of Bihar vs. Pawan Kumar is marked and annexed herein as **ANNEXURE No. 8.**

17. It is submitted that the Hon'ble Supreme Court in its judgment dated 08.05.2025 in State of Uttar Pradesh & Anr. vs. Gaurav Kumar & Ors.



(CIVIL APPEAL NO. 14170 OF 2024) & connected cases, had categorically held that EC can be issued only on the basis of a valid and subsisting DSR. In the case, the Court upheld the National Green Tribunal's directive that no auction for sand-mining blocks can proceed on the basis of a draft DSR. Only a final, fully compliant DSR can serve as the basis for environmental clearance and subsequent e-auction. Paragraph 21 of the said judgment is extracted herein:

- iii. (i). *A District Survey Report is a document of seminal importance as it enables informed decision making.*
- iv. (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.*
- v. (iii). *A valid and a subsisting DSR alone can be the basis for an application for grant of EC. A draft DSR is untenable for grant of an EC.....*” Copy of the Hon'ble Supreme Court order dated 08.05.2025 in Civil Appeal no14170 of 2024 in State of Uttar Pradesh vs. Gaurav Kumar is marked and annexed herein as **Annexure No. 9.**

ii. 21. *We conclude by holding that:*

18. That, Ministry vide OM dated 19/06/2026 (NCM) issued clarification regarding preparation and updation of District Survey Report (DSR) for minor minerals under Appendix-X of the EIA Notification, 2006 (as amended). Copy of Ministry's O.M dated 19/06/2026 is marked and annexed herein as **ANNEXURE No. 10.**

19. That, it is respectfully submitted that State Department of Mines and Geology is the Nodal Authority in the State for dealing with the allotment of mining leases under the Mines and Minerals (Development and Regulation) Act (MMDR Act) and is entrusted with the enforcement and regulation of mining operations in a State including illegal mining. Further, the State Government is empowered under Section 23 C of the Mines and Minerals (Development and Regulation) Act 1957(MMDR Act) to make rules for prevention of illegal mining, transportation and storage of minerals.



20. That, in view of the aforementioned facts and circumstances, this Hon'ble Tribunal may kindly be pleased to pass appropriate order(s)/directions as the Hon'ble Tribunal may deem fit and proper in the interest of justice.



VERIFICATION

Verified at Chandigarh on this day 22nd of July 2026 that the contents of this affidavit based on official record(s) maintained and information available in the office are true and correct, no part of it is false and nothing has been concealed there from.

Nusken
I identified the deponent/executant who
sign./thumb marked in my presence.

The contents of this Affidavit/Document has
been explained to the deponent/executants.
He/She has admitted the same to be correct.
The deponent/executant has signed/Registered
at Sr. No. 2072 P. No. 118 Date 22/07/2026

ATTESTED
R
RAMANJIT KAUR
Notary, Distt. Courts, Chandigarh

22 JUL 2026

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भारत का राजपत्र The Gazette of India

सी.जी.-डी.एल.-अ.-20042022-235241
CG-DL-E-20042022-235241

असाधारण
EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

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नई दिल्ली, बुधवार, अप्रैल 20, 2022/चैत्र 30, 1944
NEW DELHI, WEDNESDAY, APRIL 20, 2022/CHAITRA 30, 1944

पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय

अधिसूचना

नई दिल्ली, 20 अप्रैल, 2022

का.आ. 1886(अ).—केंद्रीय सरकार पर्यावरण और वन विभाग के पूर्ववर्ती मंत्रालय में पर्यावरण (संरक्षण) अधिनियम, 1986 की धारा (3) की उप-धारा (1) और उप-धारा (2) के खंड (v) के अधीन प्रदत्त शक्तियों का प्रयोग करते हुए, पर्यावरण समाघात निर्धारण अधिसूचना, 2006 (जिसे इसमें इसके पश्चात ईआईए अधिसूचना, 2006 कहा गया है), परियोजनाओं की कतिपय प्रवर्ग के लिए पूर्व पर्यावरणीय मंजूरी आज्ञापक बनाने के लिए, संख्या का.आ.1533(अ), तारीख 14 सितंबर, 2006 द्वारा प्रकाशित की है।

और राज्य पर्यावरण समाघात निर्धारण प्राधिकरण (एसईआईए) का गठन प्रवर्ग ख के अधीन सभी प्रस्तावों के लिए पर्यावरण मंजूरी (ईसी) पर विचार और अनुदान के लिए प्रत्यायोजित शक्तियों का प्रयोग करने हेतु राज्य स्तर पर ईआईए अधिसूचना, 2006 के कार्यान्वयन के लिए पर्यावरण (संरक्षण) अधिनियम, 1986 की धारा 3 की उप-धारा (3) के अधीन किया गया है;

और राज्य पर्यावरण समाघात निर्धारण प्राधिकरण ने पर्यावरण मंजूरी मूल्यांकन प्रक्रिया में पिछले पंद्रह वर्षों में पर्याप्त अनुभव प्राप्त किया है और राज्य स्तर पर पर्यावरण मंजूरी प्रस्तावों के कुशल और पारदर्शी निपटान के लिए परिवेश पोर्टल के माध्यम से पूरी तरह से ऑनलाइन कर दिया गया है;

और केंद्रीय सरकार राज्य स्तर पर मंजूरी की प्रसुविधा के लिए पर्यावरण मंजूरी प्रक्रिया को और विकेंद्रीकृत करना आवश्यक समझती है;

और आज की तारीख में, सुरक्षा भागीदारी के महत्वपूर्ण तत्वों के साथ राष्ट्रीय रक्षा और सामरिक महत्व से संबंधित प्रवर्ग ख की परियोजनाओं का राज्य स्तर पर भी मूल्यांकन किया जा रहा है, जिसे केंद्रीय सरकार राष्ट्रीय सुरक्षा चिंताओं को ध्यान में रखते हुए केंद्रीय रूप से मूल्यांकन करना आवश्यक समझती है;

अतः अब, केंद्रीय सरकार, पर्यावरण (संरक्षण) नियम, 1986 के नियम 5 के उप-नियम (4) के साथ पठित पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 3 की उप-धारा (1) और उप-धारा (2) के खंड (v) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए उक्त नियमों के नियम 5 के उप-नियम (3) के खंड (क) के अधीन नोटिस की अपेक्षा को समाप्त करने के पश्चात्, लोकहित में भारत सरकार की तत्कालीन पर्यावरण एवं वन मंत्रालय की अधिसूचना संख्यांक का.आ. 1533(अ), तारीख 14 सितम्बर, 2006, की अधिसूचना में निम्नलिखित और संशोधन करती है अर्थात्:-

उक्त अधिसूचना में-

(1) पैरा 4 में, उप-पैरा (iii) क) के स्थान पर, निम्नलिखित रखा जाएगा, अर्थात्: -

(iii) क) राष्ट्रीय रक्षा या सामरिक या सुरक्षा महत्व से संबंधित हैं या जिन्हें केंद्रीय सरकार द्वारा संकटकाल जैसे महामारी, प्राकृतिक आपदाओं जैसी अत्यावश्यकताओं के कारण ऐसी प्रवर्ग 'ख' परियोजनाओं को अधिसूचित किया गया है या राष्ट्रीय कार्यक्रमों या स्कीमों या मिशन या ऐसी परियोजनाओं के अधीन पर्यावरण के अनुकूल क्रियाकलापों का संवर्धन करने के लिए जो इस अधिसूचना में यथा अधिकथित समय-सीमा से अधिक विलंबित हैं और समय-समय पर इस संबंध में यथा-अधिकथित मानदंडों को पूरा करती हैं, उन्हें केंद्रीय स्तर पर प्रवर्ग 'ख' परियोजनाओं के रूप में विचार किया जाएगा;

(2) अनुसूची में, -

(i) मद 1(क) के सामने, -

(क) स्तंभ (3) में, -

(क) गैर-कोयला खनन पट्टे के संबंध में "> 100 हेक्टेयर खनन पट्टा क्षेत्र" के स्थान पर, निम्नलिखित रखा जाएगा, अर्थात्: -

"कोयले के अलावा अन्य प्रमुख खनिज खनन पट्टे के संबंध में >250 हेक्टेयर खनन पट्टा क्षेत्र";

(ख) ">150 हेक्टेयर" प्रतीक, अंक और अक्षर के स्थान पर, "> 500 हेक्टेयर" प्रतीक, आंकड़े और अक्षर रखे जाएंगे;

(ख) स्तंभ (4) में, -

(क) गैर-कोयला खनन के संबंध में <100 हेक्टेयर खनन पट्टा क्षेत्र के स्थान पर,

पट्टा", निम्नलिखित रखा जाएगा, अर्थात्: -

"लघु खनिज खनन पट्टों के संबंध में सभी खनन पट्टा क्षेत्र और कोयले के अलावा अन्य प्रमुख खनिज खनन पट्टे के संबंध में <250 हेक्टेयर खनन पट्टा क्षेत्र";

(ख) "<150 हेक्टेयर" के प्रतीकों, अंकों और अक्षरों के स्थान पर "<500 हेक्टेयर" के प्रतीक, अंक और अक्षर रखे जाएंगे;

(ii) मद 1(ग) के सामने, -

(क) स्तंभ (3) में, -

(क) क्रम संख्या (i) में, "> 50 मेगावाट, प्रतीकों, अंकों और अक्षरों के स्थान पर "> 100 मेगावाट" प्रतीक, आंकड़े और अक्षर रखे जाएंगे;

(ख) क्रम संख्या (ii) और उससे संबंधित प्रविष्टियों का लोप किया जाएगा;

(ख) स्तंभ (4) में, -

(क) क्रम संख्या (i) में, "<50 मेगावाट" प्रतीक, अंक और अक्षर के स्थान पर, "<100 मेगावाट" प्रतीक, आंकड़े और अक्षर रखे जाएंगे;

(ख) क्रम संख्या (ii) में, -

(I) "और <50,000 हेक्टेयर" शब्द, प्रतीक और अंक का लोप किया जाएगा;

(II) बिंदु (ग) में सारणी में, "से <50,000" शब्द, प्रतीक और अंक का लोप किया जाएगा; ।

(ग) स्तंभ (5) में, क्रम संख्या (ii) के पश्चात, निम्नलिखित क्रम संख्या अंतःस्थापित किया जाएगा, अर्थात् :-

"(iii) अंतर-राज्यीय मुद्दों से संबंधित सिंचाई परियोजनाओं का मूल्यांकन केंद्रीय स्तर पर श्रेणी में परिवर्तन के बिना किया जाएगा।";

(iii) मद 1(घ) के सामने,-

(क) स्तंभ (3) में, "> 50 मेगावाट" प्रतीकों, अंकों और अक्षरों के स्थान पर, "> 100 मेगावाट" प्रतीकों, अंकों और अक्षरों को रखा जाएगा;

(ख) स्तंभ (4) में, "<50 मेगावाट" प्रतीक, अंक और अक्षर के स्थान पर, "<100 मेगावाट" प्रतीक, आंकड़े और अक्षर रखे जाएंगे;

(iv) मद 2(क) के सामने, -

(क) स्तंभ (3) में, ">1" प्रतीकों और अंक के स्थान पर, ">2.5" प्रतीकों और अंक को रखा जाएगा;

(ख) स्तंभ (4) में, "<1" प्रतीकों और अंक के स्थान पर, "< 2.5" प्रतीक और अंक रखे जाएंगे;

(ग) स्तंभ (5) में, विद्यमान पैरा के पश्चात, निम्नलिखित पैरा अंतःस्थापित किया जाएगा, अर्थात् :-

"खनन पट्टा क्षेत्र के भीतर स्थित धुलाई मशीनों के साथ एकीकृत कोयला खनन परियोजनाओं को कोयला खनन परियोजनाओं के लिए विद्यमान सीमा के अनुसार केंद्रीय स्तर या राज्य स्तर पर, यथास्थिति, विचार किया जाना जारी रहेगा।";

(v) मद 2 (ख) के सामने, -

(क) स्तंभ (3) में, विद्यमान प्रविष्टियों का लोप किया जाएगा;

(ख) स्तंभ (4) में, "<0.5 मिलियन टीपीए का उत्पादन" प्रतीक, अंक, शब्द और अक्षर के स्थान पर, "सभी खनिज परिष्करण परियोजना, परिष्करण की प्रक्रिया पर ध्यान दिए बिना" शब्द रखे जाएंगे;

(ग) स्तंभ (5) में, विद्यमान पैरा के पश्चात, निम्नलिखित पैरा रखा जाएगा,

अर्थात् :-

"भीतर स्थित लाभकारी संयंत्रों के साथ एकीकृत खनन परियोजनाएं खनन पट्टा क्षेत्र पर केन्द्रीय स्तर पर विचार किया जाता रहेगा या यथास्थिति, राज्य स्तर, खनन परियोजनाओं के लिए विद्यमान सीमा के अनुसार।";

(vi) मद 7 (क) के सामने,-

(क) स्तंभ (3) में, "सभी परियोजनाओं" शब्दों के स्थान पर "सभी नई परियोजनाएं" शब्द रखे जाएंगे;

(ख) स्तंभ (4) में, निम्नलिखित अंतःस्थापित किया जाएगा, अर्थात् :-

"सभी विस्तार परियोजनाएं, जिनमें हवाई पट्टियां भी सम्मिलित हैं, जो वाणिज्यिक उपयोग के लिए हैं।"

[फा. सं. आईए 3-22/10/2022-आईए. III]

डॉ. सुजीत कुमार बाजपेयी, संयुक्त सचिव

टिप्पण : मूल अधिसूचना भारत के राजपत्र, असाधारण, भाग II, खंड III, उप-खंड (ii), संख्या का.आ. 1533(अ), तारीख 14 सितंबर, 2006 द्वारा प्रकाशित की गई थी और अधिसूचना संख्या का.आ. 1807(अ), तारीख 12 अप्रैल, 2022 द्वारा अंतिम संशोधन किया गया था।

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 20th April, 2022

S.O. 1886(E).—WHEREAS, the Central Government in the erstwhile Ministry of Environment and Forests, in exercise of its powers under sub-section (1) and clause (v) of sub-section (2) of section (3) of the Environment (Protection) Act, 1986 has published the Environment Impact Assessment Notification, 2006 (hereinafter referred to as the EIA Notification, 2006), vide number S.O.1533 (E), dated the 14th September, 2006 for mandating prior environmental clearance for certain category of projects;

And whereas, the State Environment Impact Assessment Authorities (SEIAAs) have been constituted under sub-section (3) of section 3 of the Environment (Protection) Act, 1986 for implementation of the EIA Notification, 2006 at State level for exercising delegated powers to consider and grant Environmental Clearance (EC) for all proposals under Category B;

And whereas, the SEIAAs have gained substantial experience over the past fifteen years in the EC appraisal process and the process at the State level has also been made completely online through the PARIVESH portal for efficient and transparent disposal of EC proposals;

And whereas, the Central Government deems it necessary to further decentralise the EC process for facilitating clearances at State level;

And whereas, as on date, category 'B' projects, relating to national defence and strategic importance with significant element of security involvement are also being appraised at the State level which, the Central Government deems it necessary to be appraised centrally taking into account national security concerns;

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 (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 rule 5 of the said rules, in public interest, hereby makes the following further amendments in the notification of the Government of India, in the erstwhile Ministry of Environment and Forests, number S.O. 1533 (E), dated the 14th September, 2006, namely:-

In the said notification,-

(1) in paragraph 4, for sub-paragraph (iii a), the following shall be substituted, namely:-

(iii a) Such Category 'B' projects, relating to the National defence or strategic or security importance or those as notified by the Central Government on account of exigencies such as pandemics, natural disasters or to promote environmentally friendly activities under National Programmes or Schemes or Missions or such projects which are inordinately delayed beyond the stipulated timeline as laid down in this notification and also meet the criteria as laid down in this regard from time to time, shall be considered at the Central level as Category 'B' projects;

(2) in the Schedule,-

(i) against item 1(a),-

(a) in column (3),-

(A) for ">100 ha. of mining lease area in respect of non-coal mining lease", the following shall be substituted, namely:-

">250 ha mining lease area in respect of major mineral mining lease other than coal";

(B) for the symbol, figures and letters "> 150 ha", the symbol, figures and letters "> 500 ha" shall be substituted;

(b) in column (4),-

(A) for "≤ 100 ha of mining lease area in respect of non-coal mine lease", the following shall be substituted, namely:-

"All mining lease area in respect of minor mineral mining leases and ≤ 250 ha mining lease area in respect of major mineral mining lease other than coal";

(B) for the symbols, figures and letters “ ≤ 150 ha”, the symbols, figures and letters “ ≤ 500 ha” shall be substituted;

(ii) against item 1(c),—

(a) in column (3),—

(A) in serial number (i), for the symbols, figures and letters “ ≥ 50 MW”, the symbols, figures and letters “ ≥ 100 MW” shall be substituted;

(B) serial number (ii) and the entries relating thereto shall be omitted;

(b) in column (4),—

(A) in serial number (i), for the symbol, figures and letters “ < 50 MW”, the symbol, figures and letters “ < 100 MW” shall be substituted;

(B) in serial number (ii),—

(I) the word, symbol and figures “and $< 50,000$ ha.” shall be omitted;

(II) in point (c) in the table, the word, symbol and figures “to $< 50,000$ ” shall be omitted;

(c) in column (5), after serial number (ii), the following serial number shall be inserted, namely:—

“(iii) Irrigation projects involving Inter-State issues shall be appraised at Central level without change in category.”;

(iii) against item 1(d),—

(a) in column (3), for the symbols, figures and letters “ ≥ 50 MW”, the symbols, figures and letters “ ≥ 100 MW” shall be substituted;

(b) in column (4), for the symbol, figures and letters “ < 50 MW”, the symbol, figures and letters “ < 100 MW” shall be substituted;

(iv) against item 2(a),—

(a) in column (3), for the symbols and figure “ ≥ 1 ”, the symbols and figures “ ≥ 2.5 ” shall be substituted;

(b) in column (4), for the symbols and figure “ < 1 ”, the symbols and figures “ < 2.5 ” shall be substituted;

(c) in column (5), after the existing paragraph, the following paragraph shall be inserted, namely:—

“Integrated coal mining projects with washeries located within mining lease area shall continue to be considered at Central level or State level, as the case may be, as per the extant threshold for coal mining projects.”;

(v) against item 2 (b),—

(a) in column (3), the existing entries shall be omitted;

(b) in column (4), for the symbol, figures, words and letters “ < 0.5 million TPA throughput”, the words “All mineral beneficiation projects irrespective of the procedure for beneficiation” shall be substituted;

(c) in column (5), after the existing paragraph, the following paragraph shall be inserted, namely:—

“Integrated mining projects with beneficiation plants located within mining lease area shall continue to be considered at Central level or State level, as the case may be, as per the extant threshold for mining projects.”;

(vi) against item 7 (a),—

(a) in column (3), for the words “All projects”, the words “All new projects” shall be substituted;

(b) in column (4), the following shall be inserted, namely:—

“All expansions projects, including airstrips, which are for commercial use.”.

[F. No. IA3-22/10/2022-IA.III]

Dr. SUJIT KUMAR BAJPAYEE, Jt. Secy.

Note : The principal notification was published in the Gazette of India, Extraordinary, Part II, Section III, sub-section (ii), vide, number S.O. 1533(E), dated the 14th September, 2006 and was last amended, vide, the notification number S.O. 1807(E), dated the 12th April, 2022.



भारत का राजपत्र The Gazette of India

असाधारण

EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)

PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित

PUBLISHED BY AUTHORITY

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No. 545]

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पर्यावरण और वन मंत्रालय

अधिसूचना

नई दिल्ली, 28 फरवरी, 2014

का.आ. 637(अ).—केन्द्रीय सरकार, पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 23 द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए उक्त अधिनियम की धारा 5 के अधीन इसमें निहित शक्तियों को पर्यावरण (संरक्षण) अधिनियम, 1986 की धारा 3 की उप-धारा (3) के अधीन केंद्रीय सरकार द्वारा गठित किए गए सभी राज्य और संघराज्यक्षेत्र पर्यावरण समाघात प्राधिकरणों (जिन्हें इसमें इसके पश्चात् उक्त प्राधिकरण कहा गया है) को उक्त प्राधिकरणों द्वारा अपनी अधिकारिता के भीतर परियोजनाओं या क्रिया कलापों को जारी पर्यावरण अनापत्तियों की शर्तों के अतिक्रमण की दशा में परियोजना प्रस्तावकों को कारण बताओ नोटिस जारी करने तथा इस शर्त के अधीन कि केंद्रीय सरकार शक्तियों के ऐसे प्रत्यायोजन का प्रतिसंहरण कर सकेगी या उक्त अधिनियम की धारा 5 के उपबंधों को स्वयं अवलंब ले सकेगी, यदि केंद्रीय सरकार की राय में लोक हित में ऐसी कार्यवाही आवश्यक है, यदि अपेक्षित हो तो अतिक्रमणों के लिए उक्त परियोजना प्रस्तावकों को ऐसी पर्यावरण अनापत्तियों को उन्हें प्रास्थगित रखने या वापस लिए जाने हेतु निदेश जारी करने की शक्तियों का प्रत्यायोजन करती है।

[सं. जे-11013/2/2013-आई ए (आई)]

अजय त्यागी, संयुक्त सचिव

MINISTRY OF ENVIRONMENT AND FORESTS

NOTIFICATION

New Delhi, the 28th February, 2014

S.O. 637(E).—In exercise of the powers conferred by section 23 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby delegates the powers vested in it under section 5 of the said Act to all the State and Union Territory Environment Impact Assessment Authorities (Hereinafter referred to as the said Authorities) constituted by the Central Government under sub-section (3) of section 3 of Environment (Protection) Act, 1986, to issue show cause notice to project proponents in case of violation of the conditions of the environment clearances issued by the said Authorities to projects or activities within their jurisdiction and to issue directions to the said project proponents for keeping such environment clearances in abeyance or withdrawing them, if required, for violations, subject to the condition that the Central Government may revoke such delegations of powers or may itself invoke the provisions of section 5 of the said Act, if in the opinion of the Central Government such a Course of action is necessary in the public interest.

[No. J-11013/2/2013-IA. (I)]

AJAY TYAGI, Jt. Secy.

अधिसूचना

नई दिल्ली, 28 फरवरी, 2014

का.आ. 638(अ).—केन्द्रीय सरकार, पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 19 के खण्ड (क) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए उक्त की धारा के प्रयोजन के लिए इससे उपाबद्ध उस सारणी के स्तंभ (3) में उनमें से प्रत्येक के सामने उल्लिखित अधिकारिता के साथ उस सारणी के स्तंभ (2) में उल्लिखित प्राधिकरण या अधिकारी को प्रातिकृत करती है:

सारणी

क्रम संख्यांक	प्राधिकरण/अधिकारी	अधिकारिता
(1)	(2)	(3)
1.	पर्यावरण (संरक्षण) अधिनियम, 1986 की धारा 3 की उपधारा (3) के अधीन केन्द्रीय सरकार द्वारा गठित राज्य या संघ राज्यक्षेत्र स्तर पर्यावरण समाघात प्राधिकरण (एस.ई.आई.ए.ए.)	संपूर्ण राज्य या संघ राज्यक्षेत्र
2.	पर्यावरण और वन मंत्रालय (एम.ओ.ई.एफ.) के किन्हीं प्रादेशिक कार्यालयों में तैनात कोई निदेशक, वन संरक्षक या अपर प्रधान मुख्य वन संरक्षक	पर्यावरण और वन मंत्रालय द्वारा यथा-विनिश्चित प्रादेशिक कार्यालय की अधिकारिता

[सं. जे-11013/2/2013-आई ए (आई)]

अजय त्यागी, संयुक्त सचिव

NOTIFICATION

New Delhi, the 28th February, 2014

S.O. 638(E).—In exercise of the powers conferred by clause (a) of section 19 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby authorises the Authority or officer mentioned in column (2) of the Table hereto for the purpose of the said section with the jurisdiction mentioned against each of them in column (3) of that Table:

TABLE

S. No.	Authority/Officer	Jurisdiction
(1)	(2)	(3)
1.	State or Union Territory level Environment Impact Assessment Authority (SEIAA) constituted by the Central Government under sub-section (3) of section 3 of the Environment (Protection) Act, 1986.	Whole of State or Union Territory
2.	Any Director, Conservator of Forests or Additional Principal Chief Conservator of Forests Posted in any of the Regional Offices of the Ministry of Environment and Forests (MoEF).	Jurisdiction of the Regional Office as decided by the Ministry of Environment and Forests

[No. J-11013/2/2013-IA. (I)]

AJAY TYAGI, Jt. Secy.



भारत का राजपत्र The Gazette of India

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असाधारण
EXTRAORDINARY
भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)
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No. 1088]

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पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय

अधिसूचना

नई दिल्ली, 28 मार्च, 2020

का.आ. 1224(अ).—खनिज विधि (संशोधन) अधिनियम 2020 (2020 का 2), खान और खनिज (विकास और विनियमन) अधिनियम, 1957 (1957 का 67) (जिसे इसमें इसके पश्चात् एमएमडीआर अधिनियम कहा गया है) द्वारा 10 जनवरी, 2020 से प्रभावी संशोधन किया गया है और अन्य बातों के साथ कानूनी निर्वाधन के अंतरण के लिए उपबंधों से संबंधित नई धारा 8ख का अंतःस्थापन किया गया है;

और, एमएमडीआर अधिनियम की धारा 8ख की उप-धारा (2) यह उपबंध करता है कि इस अधिनियम में या तत्समय प्रवृत्त किसी अन्य विधि में अंतर्विष्ट किसी बात के होते हुए भी, धारा 8क की उप-धारा (5) और उप-धारा (6) के उपबंधों के अधीन अवसान होने वाले खनन पट्टे का सफल बोली लगाने वाला और उस अधिनियम के अधीन या तद्वीन बनाए गए नियमों के अधीन उपबंधित प्रक्रिया के अनुसार नीलामी के माध्यम से अर्जित सभी विधिमान्य अधिकार, अनुमोदन, निकासी, अनुज्ञप्ति और इसी प्रकार दो वर्ष की अवधि के लिए पूर्ववर्ती पट्टेदार पर निहित होना समझा जाएगा;

और, एमएमडीआर अधिनियम की धारा 8ख की उप-धारा (3) यह उपबंध करता है कि तत्समय प्रवृत्त अन्य विधि में अंतर्विष्ट किसी बात के होते हुए भी, यह उस भूमि पर जिसमें नया पट्टा के प्रारंभ से दो वर्ष की अवधि के लिए पूर्ववर्ती पट्टेदार द्वारा खनन संक्रियाएं कार्यान्वित किए जा रहे थे, निरंतर खनन संक्रियाओं को नए पट्टेदार के लिए विधिपूर्ण किया जाएगा;

और, एमएमडीआर अधिनियम को पूर्वोक्त संशोधन के प्रयोजन के लिए केंद्रीय सरकार, भारत सरकार के तत्कालीन पर्यावरण और वन मंत्रालय की अधिसूचना सं. का. आ. 1533 (अ), तारीख 14 सितंबर, 2006 (जिसे इसमें इसके पश्चात् ईआईए अधिसूचना, 2006 कहा गया है) के सुसंगत उपबंधों को सम्मिलित करने के लिए आवश्यक समझती है।

और, पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय में सड़कों के लिए साधारण पृथ्वी का उपयोग करने के लिए पूर्व पर्यावरणीय अनापत्ति की अपेक्षा के अधित्याग के लिए अभ्यावेदनों की प्राप्ति पर; और पारंपरिक समुदाय द्वारा अंतर ज्वारीय क्षेत्र के भीतर चूने के गोले (मृत भू-पटल), पवित्र स्थानों, आदि के मैनुअल निकासी;

अतः, अब, केन्द्रीय सरकार, पर्यावरण (संरक्षण) नियम, 1986 के नियम 5 के उप-नियम (4) के साथ पठित पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 3 की उप-धारा (1) और उप-धारा (2) के खंड (v) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, लोकहित में, उक्त नियमों के नियम 5 के उप-नियम (3) के खंड (क) के अधीन सूचना की अपेक्षा से अभिमुक्ति के पश्चात् और अधिसूचना सं. का. आ. 4307 (अ), तारीख 29 नवंबर, 2019 को अधिकांत करते हुए, ईआईए अधिसूचना, 2006 में निम्नलिखित संशोधन करती है, अर्थात् :-

उक्त अधिसूचना में, -

(i) पैरा 11 में, उप-पैरा (2) के पश्चात् निम्नलिखित उप-पैरा अंतःस्थापित किया जाएगा, अर्थात् :-

“(3) खान और खनिज (विकास और विनियमन) अधिनियम, 1957 (1957 का 67) की धारा 8क की उप-धारा (5) और उप-धारा (6) के उपबंधों के अधीन अवसान होने वाले खनन पट्टे का सफल बोली लगाने वाला और उस अधिनियम के अधीन और तद्विना बनाए गए नियमों के अधीन उपबंधित प्रक्रिया के अनुसार नीलामी के माध्यम से चयनित नया पट्टा के प्रारंभ की तारीख से दो वर्ष की अवधि के लिए पूर्ववर्ती पट्टेदार पर निहित पूर्व पर्यावरणीय अनापत्ति विधिमान्य अर्जित किया गया समझा जाएगा और यह नया पट्टा प्रारंभ की तारीख से दो वर्ष की अवधि के लिए या उसमें उल्लिखित निबंधनों शर्तों के अनुसार नया पर्यावरणीय अनापत्ति, नया निकासी अभिप्राप्त होने तक, इसमें से जो भी पूर्वतर हो, उक्त पट्टा क्षेत्र पर पूर्ववर्ती पट्टेदार का स्वीकृत पर्यावरणीय अनापत्ति के निबंधनों और शर्तों के अनुसार निरंतर खनन संक्रिया नया पट्टेदार के लिए विधिपूर्ण होंगी;

परन्तु, सफल बोली लगाने वाला नया पट्टा मंजूर करने की तारीख से दो वर्ष की अवधि के भीतर विनियामक प्राधिकरण से पूर्व पर्यावरणीय अनापत्ति के लिए आवेदन करेगा और अभिप्राप्त करेगा।”;

(ii) अनुसूची के मद 1 (क) के सामने, स्तंभ (5) के खंड (2) के टिप्पण के पश्चात् निम्नलिखित खंड अंतःस्थापित किया जाएगा, अर्थात् :-

“(3) उक्त पट्टा के अवसान के पश्चात् पूर्ववर्ती पट्टेदार द्वारा खनन और खनिज (विकास और विनियमन) अधिनियम, 1957 (1957 का 67) के उपबंधों के अधीन खनन पट्टे के अवसान होने तक भीतर पड़ी पहले से ही खनिज बाह्य सामग्री का निष्क्रमण या निष्कासन और परिवहन उस अधिनियम के अधीन और तद्विना बनाए गए नियमों के अधीन उपबंधित प्रक्रिया के अनुसार नीलामी के माध्यम से चयनित सफल बोली लगाने की इस प्रकार अनुज्ञात खनन हैसियत के भाग के रूप में नहीं होगा।”

(iii) परिशिष्ट – IX के लिए, निम्नलिखित परिशिष्ट प्रतिस्थापित किया जाएगा, अर्थात् :-

“परिशिष्ट – 9

कतिपय मामलों के पर्यावरणीय अनापत्ति की अपेक्षा से छूट

निम्नलिखित मामलों को पूर्व पर्यावरणीय अनापत्ति की अपेक्षा नहीं होगी, अर्थात् :-

1. मैनुअल खनन द्वारा साधारण मिट्टी या बालू की कुम्हारों द्वारा मिट्टी के घड़े, लैम्प, खिलौने, आदि बनाने के लिए उनकी प्रथाओं के अनुसार निकासी।
2. मैनुअल खनन द्वारा मिट्टी की टाइलें बनाने द्वारा जो मिट्टी की टाइलें बनाते हैं, के लिए साधारण मिट्टी या बालू की निकासी।
3. किसानों द्वारा बाढ़ के पश्चात् कृषि भूमि से बालू के जमाव को हटाना।

4. ग्राम पंचायत में अवस्थित स्रोतों से बालू और साधारण मिट्टी को वैयक्तिक उपयोग या ग्राम में समुदाय कार्य के लिए प्रथा के अनुसार खनन।
5. सामुदायिक कार्य जैसे ग्रामीण तालाबों या टैंकों से गाद हटाना, महात्मा गांधी राष्ट्रीय ग्रामीण रोजगार और गारंटी स्कीमों, अन्य सरकारी स्कीमों, प्रायोजित तथा सामुदायिक प्रयासों द्वारा ग्रामीण सड़कों, तालाबों या बांधों का संनिर्माण।
6. सड़क, पाइपलाइन, आदि जैसे रेखीय परियोजनाओं के लिए साधारण मिट्टी की निकासी, निष्कासन या प्रयोग करना।
7. बांधों, तालाबों, मेड़ों, बैराजों, नदी और नहरों की उनके अनुरक्षित तथा आपदा प्रबंधन के प्रयोजन के लिए तलमार्जन और गाद निकालना।
8. गुजरात में गुजरात सरकार की तारीख 14 फरवरी, 1990 की अधिसूचना सं. जीयू / 90 (16)/ एमसीआर-2189 (68) / 5 – सीएचएच द्वारा बंजारा और ओड द्वारा बालू के पारंपरिक उपजीविका कार्य।
9. पारंपरिक समुदाय द्वारा अंतर ज्वारीय क्षेत्र के भीतर चूने के गोलों (मृत भू-पटल), पवित्र स्थानों, आदि के मैनुअल निकासी।
10. सिंचाई या पेयजल के लिए कुओं की खुदाई।
11. यथास्थिति, ऐसे भवनों की नींव के लिए खुदाई जिनके लिए पूर्व पर्यावरणीय अनापत्ति अपेक्षित नहीं है।
12. जिला कलेक्टर या जिला मजिस्ट्रेट या किसी अन्य सक्षम प्राधिकारी के आदेश पर किसी नहर, नाला, ड्रेन, जल निकाय, आदि में होने वाली दरार को भरने के लिए साधारण मिट्टी या बालू का उत्खनन ताकि किसी आपदा या बाढ़ जैसी स्थिति से निपटा जा सके।
13. ऐसे क्रियाकलाप, जिन्हें राज्य सरकार द्वारा विधान या नियमों के अधीन गैर खननकारी क्रियाकलाप के रूप में घोषित किया गया है।”

[फा. सं. जेड-11013 / 47 / 2018-आई. ए. II (एम)]

गीता मेनन, संयुक्त सचिव

टिप्पण : मूल अधिसूचना भारत के राजपत्र, असाधारण, भाग II, खंड 3, उप-खंड (ii) में सं. का. आ. 1533 (अ), तारीख 14 सितंबर 2006 द्वारा प्रकाशित की गई थी और निम्नलिखित सं. द्वारा पश्चात्कर्ती संशोधन किया गया :-

1. का. आ. 1949 (अ), तारीख 13 नवंबर, 2006;
2. का. आ. 1737 (अ), तारीख 11 अक्टूबर, 2007;
3. का. आ. 3067 (अ), तारीख 1 दिसंबर, 2009;
4. का. आ. 695 (अ), तारीख 4 अप्रैल, 2011;
5. का. आ. 156 (अ), तारीख 25 जनवरी, 2012;
6. का. आ. 2896 (अ), तारीख 13 दिसंबर, 2012;
7. का. आ. 674 (अ), तारीख 13 मार्च, 2013;
8. का. आ. 2204 (अ), तारीख 19 जुलाई, 2013;
9. का. आ. 2555 (अ), तारीख 21 अगस्त, 2013;
10. का. आ. 2559 (अ), तारीख 22 अगस्त, 2013;
11. का. आ. 2731 (अ), तारीख 9 सितंबर, 2013;

12. का. आ. 562 (अ), तारीख 26 फरवरी, 2014;
13. का. आ. 637 (अ), तारीख 28 फरवरी, 2014;
14. का. आ. 1599 (अ), तारीख 25 जून, 2014;
15. का. आ. 2601 (अ), तारीख 7 अक्टूबर, 2014;
16. का. आ. 2600 (अ), तारीख 9 अक्टूबर, 2014;
17. का. आ. 3252 (अ), तारीख 22 दिसंबर, 2014;
18. का. आ. 382 (अ), तारीख 3 फरवरी, 2015;
19. का. आ. 811 (अ), तारीख 23 मार्च, 2015;
20. का. आ. 996 (अ), तारीख 10 अप्रैल, 2015;
21. का. आ. 1142 (अ), तारीख 17 अप्रैल, 2015;
22. का. आ. 1141 (अ), तारीख 29 अप्रैल, 2015;
23. का. आ. 1834 (अ), तारीख 6 जुलाई, 2015;
24. का. आ. 2571 (अ), तारीख 31 अगस्त, 2015;
25. का. आ. 2572 (अ), तारीख 14 सितंबर, 2015;
26. का. आ. 141 (अ), तारीख 15 जनवरी, 2016;
27. का. आ. 648 (अ), तारीख 3 मार्च, 2016;
28. का. आ. 2269 (अ), तारीख 1 जुलाई, 2016;
29. का. आ. 2944 (अ), तारीख 14 सितंबर, 2016;
30. का. आ. 3518 (अ), तारीख 23 नवंबर, 2016;
31. का. आ. 3999 (अ), तारीख 9 दिसंबर, 2016;
32. का. आ. 4241 (अ), तारीख 30 दिसंबर, 2016;
33. का. आ. 3611 (अ), तारीख 25 जुलाई, 2018;
34. का. आ. 3977 (अ), तारीख 14 अगस्त, 2018;
35. का. आ. 5733 (अ), तारीख 14 नवंबर, 2018;
36. का. आ. 5736 (अ), तारीख 15 नवंबर, 2018;
37. का. आ. 5845 (अ), तारीख 26 नवंबर, 2018;
38. का. आ. 345 (अ), तारीख 17 जनवरी, 2019;
39. का. आ. 1960 (अ), तारीख 13 जून, 2019;
40. का. आ. 236 (अ), तारीख 16 जनवरी, 2020;
41. का. आ. 751 (अ), तारीख 17 फरवरी, 2020; और
42. का. आ. 1223 (अ), तारीख 27 मार्च, 2020।

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 28th March, 2020

S.O. 1224(E).—WHEREAS, *vide* the Mineral Laws (Amendment) Act, 2020 (2 of 2020), the Mines and Minerals (Development and Regulation) Act, 1957 (67 of 1957) (hereinafter referred to as MMDR Act) has been amended with effect from the 10th day of January, 2020 and, *inter alia*, new section 8B relating to the provisions for transfer of statutory clearances has been inserted;

AND WHEREAS, sub-section (2) of section 8B of the MMDR Act provides that notwithstanding anything contained in this Act or any other law for the time being in force, the successful bidder of mining leases expiring under the provisions of sub-sections (5) and (6) of section 8A and selected through auction as per the procedure provided under this Act and the rules made thereunder, shall be deemed to have acquired all valid rights, approvals, clearances, licences and the like vested with the previous lessee for a period of two years;

AND WHEREAS, sub-section (3) of section 8B of the MMDR Act provides that notwithstanding anything contained in any other law for the time being in force, 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 two years from the date of commencement of the new lease;

AND WHEREAS, in pursuance of the aforesaid amendment to the MMDR Act, the Central Government deems it necessary to align the relevant provisions of the notification of the Government of India in the erstwhile Ministry of Environment and Forests number S.O. 1533 (E), dated the 14th September, 2006 (hereinafter referred to as the EIA Notification, 2006);

AND WHEREAS, the Ministry of Environment, Forest and Climate Change is in the receipt of representations for waiver of requirement of prior environmental clearance for borrowing of ordinary earth for roads; and manual extraction of lime shells (dead shell), shrines, etc., within inter tidal zone by the traditional community;

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 (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 number S.O. 4307(E), dated the 29th November, 2019, hereby makes the following further amendments in the EIA Notification, 2006, namely:-

In the said notification,-

(i) in paragraph 11, after sub-paragraph (2), the following sub-paragraph shall be inserted, namely:-

“(3) The successful bidder of the mining leases, expiring under the provisions of sub-sections (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 thereunder, 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.”;

(ii) in the Schedule, against the item 1(a), in the column (5), after clause (2) of the Note, the following clause shall be inserted, namely:-

“(3) The evacuation or removal and transportation of already mined out material lying within the mining leases expiring under the provisions of the Mines and Minerals (Development and Regulation) Act, 1957 (67 of 1957), by the previous lessee, after the expiry of the said lease, shall not form the part of the mining capacity so permitted to the successful bidder, selected through auction as per the procedure provided under that Act and the rules made thereunder.”;

(iii) for Appendix-IX, the following Appendix shall be substituted, namely:-

“APPENDIX-IX

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 by manual mining, by the Kumhars (Potter) to prepare earthen pots, lamp, toys, etc. as per their customs.
2. Extraction of ordinary clay or sand by manual mining, 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 or bunds undertaken in Mahatma Gandhi National Rural Employment and Guarantee Schemes, other Government sponsored schemes and community efforts.
6. Extraction or sourcing or borrowing of ordinary earth for the linear projects such as roads, pipelines, etc.
7. Dredging and de-silting of dams, reservoirs, weirs, barrages, river and canals for the purpose of their maintenance, upkeep and disaster management.
8. 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.
9. Manual extraction of lime shells (dead shell), shrines, etc., within inter tidal zone by the traditional community.
10. Digging of wells for irrigation or drinking water purpose.
11. Digging of foundation for buildings, not requiring prior environmental clearance, as the case may be.
12. Excavation of ordinary earth or clay for plugging of any breach caused in canal, nallah, drain, water body, etc., to deal with any disaster or flood like situation upon orders of the District Collector or District Magistrate or any other Competent Authority.
13. Activities declared by the State Government under legislations or rules as non-mining activity.”

[F. No. Z-11013/47/2018-IA.II (M)]

GEETA MENON, Jt. Secy.

Note: The principal notification was published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) *vide* number S.O. 1533 (E), dated the 14th September, 2006 and subsequently amended *vide* the following numbers:-

1. S.O. 1949 (E), dated the 13th November, 2006;
2. S.O. 1737 (E), dated the 11th October, 2007;
3. S.O. 3067 (E), dated the 1st December, 2009;
4. S.O. 695 (E), dated the 4th April, 2011;
5. S.O. 156 (E), dated the 25th January, 2012;
6. S.O. 2896 (E), dated the 13th December, 2012;
7. S.O. 674 (E), dated the 13th March, 2013;
8. S.O. 2204 (E), dated the 19th July, 2013;
9. S.O. 2555 (E), dated the 21st August, 2013;
10. S.O. 2559 (E), dated the 22nd August, 2013;
11. S.O. 2731 (E), dated the 9th September, 2013;
12. S.O. 562 (E), dated the 26th February, 2014;
13. S.O. 637 (E), dated the 28th February, 2014;

14. S.O. 1599 (E), dated the 25th June, 2014;
15. S.O. 2601 (E), dated the 7th October, 2014;
16. S.O. 2600 (E), dated the 9th October, 2014;
17. S.O. 3252 (E), dated the 22nd December, 2014;
18. S.O. 382 (E), dated the 3rd February, 2015;
19. S.O. 811 (E), dated the 23rd March, 2015;
20. S.O. 996 (E), dated the 10th April, 2015;
21. S.O. 1142 (E), dated the 17th April, 2015;
22. S.O. 1141 (E), dated the 29th April, 2015;
23. S.O. 1834 (E), dated the 6th July, 2015;
24. S.O. 2571 (E), dated the 31st August, 2015;
25. S.O. 2572 (E), dated the 14th September, 2015;
26. S.O. 141 (E), dated the 15th January, 2016;
27. S.O. 648 (E), dated the 3rd March, 2016;
28. S.O. 2269(E), dated the 1st July, 2016;
29. S.O. 2944(E), dated the 14th September, 2016;
30. S.O. 3518 (E), dated 23rd November 2016;
31. S.O. 3999 (E), dated the 9th December, 2016;
32. S.O. 4241(E), dated the 30th December, 2016;
33. S.O. 3611(E), dated the 25th July, 2018;
34. S.O. 3977 (E), dated the 14th August, 2018;
35. S.O. 5733 (E), dated the 14th November, 2018;
36. S.O. 5736 (E), dated the 15th November, 2018;
37. S.O. 5845(E), dated the 26th November, 2018;
38. S.O. 345(E), dated the 17th January, 2019;
39. S.O. 1960(E), dated the 13th June, 2019;
40. S.O. 236(E), dated the 16th January, 2020;
41. S.O. 751(E), dated the 17th February, 2020; and
42. S.O. 1223(E), dated the 27th March, 2020.

भारत का राजपत्र
The Gazette of India

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असाधारण
EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं. 3679]	नई दिल्ली, बृहस्पतिवार, अगस्त 31, 2023/भाद्र 9, 1945
No. 3679]	NEW DELHI, THURSDAY, AUGUST 31, 2023/BHADRA 9, 1945

पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय

अधिसूचना

नई दिल्ली, 30 अगस्त, 2023

का.आ. 3840(अ).—केंद्रीय सरकार द्वारा पर्यावरण (संरक्षण) अधिनियम, 1986 की धारा (3) की उपधारा (1) और उपधारा (2) के खंड (v) के अधीन तत्कालीन पर्यावरण एवं वन मंत्रालय में परियोजनाओं के कतिपय प्रवर्गों के लिए पूर्व पर्यावरणीय मंजूरी को आज्ञापक बनाने के लिए संख्यांक 1533 (अ), तारीख 14 सितंबर, 2006 (जिसे इसमें इसके पश्चात ईआईए अधिसूचना कहा गया) द्वारा एक अधिसूचना जारी की गई;

और, केंद्रीय सरकार ने, अन्य बातों के साथ, कतिपय परियोजनाओं के संबंध में पूर्व पर्यावरण मंजूरी की अपेक्षित कतिपय क्रियाकलापों में छूट देने के लिए अधिसूचना संख्या 1224(अ), तारीख 28 मार्च, 2020, द्वारा ईआईए अधिसूचना में परिशिष्ट-IX में संशोधन किया;

और, राष्ट्रीय हरित अधिकरण, नई दिल्ली की प्रधान न्यायपीठ ने नोबल एम पाइकाडा बनाम भारत संघ और अन्य के मामले में 2020 के मूल आवेदन संख्या 190 में अपने तारीख 28 अक्टूबर, 2020 के आदेश द्वारा उक्त अधिसूचना पर पुनः विचार करने के निर्देश पारित किया;

अतः अब, केंद्रीय सरकार, पर्यावरण (संरक्षण) नियम, 1986 के नियम 5 के उप-नियम (4) के साथ पठित पर्यावरण (संरक्षण) अधिनियम, 1986, (1986 का 29) की धारा 3 की उप-धारा (1) और उप-धारा (2) के खंड (v), द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, उक्त नियम के नियम 5 के उप-नियम (3) के खंड (क) के अधीन नोटिस की अपेक्षा को समाप्त करने के पश्चात, सार्वजनिक हित में, भारत सरकार की अधिसूचना संख्या का. आ.1533(अ), तारीख 14 सितंबर, 2006 में निम्नलिखित संशोधन करती है: अर्थात्:-

उक्त अधिसूचना में, परिशिष्ट-IX में, क्रम संख्या 6 और 7 और उससे संबंधित प्रविष्टियों के स्थान पर, निम्नलिखित क्रम संख्या और प्रविष्टियाँ रखी जाएंगी, अर्थात्:-

"6. सड़क, पाइपलाइन आदि जैसी रैखिक परियोजनाओं के लिए साधारण मिट्टी की निकासी, या सोर्सिंग या प्रयोग करना इस संबंध में समय-समय पर जारी मानक संचालन प्रक्रियाओं और पर्यावरणीय सुरक्षा उपायों के अनुपालन के अधीन होगा।

7. बांधों, तालाबों, मेड़ों, बैराजों, नदी और नहरों के अनुरक्षित और आपदा प्रबंधन के प्रयोजन के लिए तलमार्जन और गाद निकालना इस संबंध में समय-समय पर जारी मानक संचालन प्रक्रियाओं और पर्यावरणीय सुरक्षा उपायों के अनुपालन के अधीन होगा।

[फा.सं. 3-70/2020-आईए.III]

डॉ. सुजीत कुमार बाजपेयी, संयुक्त सचिव,

टिप्पण: मूल अधिसूचना भारत के राजपत्र, असाधारण भाग- 2, खंड 3, उप-खंड (ii) संख्या का. आ.1533(अ), तारीख 14 सितंबर, 2006 द्वारा प्रकाशित की गई और अधिसूचना क्रमांक का. आ. 2226(अ), तारीख 18 मई, 2023 द्वारा अंतिम बार संशोधित किया गया।

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 30th August, 2023

S.O. 3840(E).—WHEREAS, the Central Government in the erstwhile Ministry of Environment and Forests, under sub-section (1) and clause (v) of sub-section (2) of section (3) of the Environment (Protection) Act, 1986 issued a notification vide number S.O.1533 (E), dated the 14th September, 2006 (hereinafter referred to as the EIA Notification) for mandating prior environmental clearance for certain categories of projects;

AND WHEREAS, the Central Government, *inter alia*, amended Appendix-IX to the EIA Notification vide notification number S.O. 1224(E), dated the 28th March, 2020, to exempt certain activities from the requirement of prior environmental clearance in respect of certain projects;

AND WHEREAS, the National Green Tribunal, Principal Bench at New Delhi vide its order dated the 28th October, 2020 in Original Application No. 190 of 2020 in the matter of Noble M Paikada vs. Union of India & Ors. passed the directions for revisiting the said notification;

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, (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 rule 5 of the said rules, in public interest, hereby makes following further amendments in the notification of the Government of India number S.O 1533(E), dated the 14th September, 2006, namely:-

In the said notification, in Appendix-IX, for serial numbers 6 and 7 and the entries relating thereto, the following serial number and entries shall be substituted, namely:-

"6. Extraction or sourcing or borrowing of ordinary earth for the linear projects such as roads, pipelines, etc. shall be subject to the compliance of standard operating procedures and environmental safeguards issued in this regard from time to time.

7. Dredging and de-silting of dams, reservoirs, weirs, barrages, river and canals for the purpose of their maintenance, upkeep and disaster management shall be subject to the compliance of environmental safeguards issued in this regard from time to time."

[F. No. 3-70/2020-IA.III]

DR. SUJIT KUMAR BAJPAYEE, Jt. Secy.

Note: The principal notification was published in the Gazette of India, Extraordinary Part-II, Section 3, Sub-section (ii) vide, number S.O. 1533(E), dated the 14th September, 2006 and last amended vide the notification number S.O. 2226(E), dated the 18th May, 2023.

F. No. 3-70/2020-IA.III [141127]

Government of India

Ministry of Environment, Forest and Climate Change

(IA Division)

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Indira Paryavaran Bhawan

Jor Bagh Road, Aliganj,

New Delhi - 110003

Dated: 12th July, 2023OFFICE MEMORANDUM

Subject: Clarification on the exemption from EC provided vide Notification S.O. 1224 (E) dated 28.03.2020 for dredging and de-silting of dams, reservoirs, weirs, barrages, river and canals for the purpose of their maintenance, upkeep and disaster management - reg.

The Ministry, vide Notification S.O. 1224 (E) dated 28.03.2020, amended the appendix IX of EIA Notification to inter-alia provide exemption from Environmental Clearance (EC) for "*Dredging and de-silting of dams, reservoirs, weirs, barrages, river and canals for the purpose of their maintenance, upkeep and disaster management.*"

2. Subsequently, the above mentioned Notification was challenged before the National Green Tribunal, Principal Bench in Original Application No. 190/2020 in the matter of Noble M. Paikada Vs. Union of India & Ors., wherein the Hon'ble Tribunal while disposing of the application vide order dated 28.10.2020, *inter-alia* held that ".....the exemption should strike balance and instead of being blanket exemption, it needs to be hedged by appropriate safeguards such as the process of excavation and quantum..." and directed to revisit the impugned notification dated 28.03.2020.

3. Subsequently, the Ministry of Jal Shakti, Department of Water Resources, River Development and Ganga Rejuvenation in consultation with the MoEF&CC issued the National Framework for Sediment Management. The document deals with the issue of environmental safeguards pertaining to desilting/ dredging of dams, reservoirs etc.

4. The above mentioned framework was referred to the concerned Expert Appraisal Committee (EAC) for deliberation. After due deliberation, the EAC opined that the framework addresses the environmental concerns associated with the sediment management practices in dam/reservoirs/barrages in a comprehensive and holistic manner.

5. Based on the recommendations of the EAC and keeping in view the direction of Hon'ble NGT, the matter has been examined by the Ministry in detail and it is hereby directed that the exemption from EC provided vide S.O. 1224 (E) dated 28.03.2020 for dredging and desilting of dams, reservoirs, weirs, barrages, river and canals shall be subject to Environmental Safeguards as proposed in the National Framework for Sediment Management (*copy enclosed*) issued by the Ministry of Jal Shakti, Department of Water Resources, River Development and Ganga Rejuvenation as enclosed to this Office Memorandum.

6. This is issued with the approval of the Competent Authority.

Encl: as above.


(Sundar Ramanathan)
Scientist 'E'

To

1. Chairman, Central Pollution Control Board (CPCB)
2. Chairman and Member Secretaries of SEIAA/ SEACs
3. Chairpersons/Member Secretaries of all SPCBs/UTPCCs
4. All the Officers of I.A. Division

Copy for information to:

1. PS to Hon'ble Minister for Environment, Forest and Climate Change
2. PS to Hon'ble MoS (EF&CC)
3. PPS to Secretary (EF&CC)
4. PPS to DGF&SS (EF&CC)
5. PPS to AS(TK)/PPS to JS (SKB)
6. Website, MoEF&CC/Guard file



Government of India
Ministry of Jal Shakti
Department of Water Resources,
River Development
and Ganga Rejuvenation

2200



National Framework for Sediment Management



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सत्यमेव जयते

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जल बचत – जल संचय

NATIONAL FRAMEWORK FOR SEDIMENT MANAGEMENT

MINISTRY OF JAL SHAKTI
DEPARTMENT OF WATER RESOURCES,
RIVER DEVELOPMENT & GANGA REJUVENATION

NEW DELHI
October, 2022

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गजेन्द्र सिंह शेखावत
Gajendra Singh Shekhawat



सत्यमेव जयते
75
आज़ादी का
अमृत महोत्सव



जल शक्ति मंत्री
भारत सरकार
Minister for Jal Shakti
Government of India

FOREWORD

Rivers are extremely valuable natural resource and important part of human life. They are a major source of fresh water; a source of sustenance and featuring strongly in our cultures and religious practices. Rivers also act as agents of rich deposits of sediment which forms the flood plains and valleys. Often dams are constructed on rivers to store water and manage it for human use.

In present times, due to rapid urbanization and development, many new issues are coming up, leading to change in the river dynamics. Reservoirs are also losing their storage capacity because of sedimentation. Hence, comprehensive sediment management has now become the need of the hour for the sustainable development of the water resources of the country.

Ministry of Jal Shakti (MoJS) is actively involved in overall planning, policy formulation, coordination and management of the water resources of the country. MoJS has taken several policy initiatives and enacted legislations for managing the rivers from time to time. In yet another milestone, MoJS has come up with the Framework for Sediment Management, for managing the sediments in a holistic manner. This framework lays emphasis on sediment management through integrated river basin management plan. It provides reference of all existing guidelines/policies dealing with the various aspects of the sediment management.

The Framework will facilitate the concerned stakeholders such as the State Governments, other Ministries, departments etc. in planning strategies and implementation of projects giving due consideration to environment and ecology.

(Gajendra Singh Shekhawat)



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E-mail : minister_jalshakti@gov.in

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पंकज कुमार
PANKAJ KUMAR
सचिव
SECRETARY



भारत सरकार
जल शक्ति मंत्रालय
जल संसाधन, नदी विकास
और गंगा संरक्षण विभाग
GOVERNMENT OF INDIA
MINISTRY OF JAL SHAKTI
DEPARTMENT OF WATER RESOURCES,
RIVER DEVELOPMENT & GANGA REJUVENATION



PREFACE

Rivers are our lifelines. They are enablers of human development. Rivers serve as an important source of drinking water, provide pathways for navigation as well as sediments to the floodplains. These sediments enrich the soil with nutrients. Deltas and river banks, where much sediment is deposited, are often the most fertile agricultural areas in a region. Areas rich in sediments are often rich in biodiversity. Sediments carried by the rivers include good quality sand which is extensively used in the construction industry.

However, rapid urbanization and development, impact natural processes of the river. Dams and barrages constructed across the river for various uses alter the flow dynamics and sediment distribution pattern. The impact of climate change on river flows presents another challenge. Sediment transport being a complex phenomenon, integrated sediment management in a river basin should be the way forward for sustainable management of sediment.

Ministry of Jal Shakti has prepared a "National Framework for Sediment Management". The formulation of the National Framework on Sediment Management is the result of the efforts put in by various officers of Department of Water Resources, River Development & Ganga Rejuvenation (DoWR, RD&GR) and Central Water Commission (CWC). The document has been prepared after extensive discussion and consultation with the State Governments/Union Territories and stakeholding Ministries/Departments.

The National Framework document will serve as a guidance document for management of sediment across the river basin. It is hoped that the National Framework will be made use of by stakeholders in line with other existing guidelines/policies for efficient and sustainable sediment management in the country.

(Pankaj Kumar)



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Abbreviations

BC Ratio	:	Benefit Cost Ratio
BIS	:	Bureau of Indian Standards
CWC	:	Central Water Commission
DoWR, RD & GR	:	Department of Water Resources, River Development and Ganga Rejuvenation
DPR	:	Detailed Project Report
DRIP	:	Dam Rehabilitation and Improvement Project
EPC	:	Engineering, Procurement and Construction
GIS	:	Geographic Information System
GoI	:	Government of India
GSI	:	Geological Survey of India
HKKP	:	Har Khet Ko Pani
IWAI	:	Inland Waterways Authority of India
MCM	:	Million Cubic Meter
MoEF&CC	:	Ministry of Environment, Forest and Climate Change
MoPSW	:	Ministry of Ports, Shipping and Waterways
MoRTH	:	Ministry of Road Transport and Highways
NHAI	:	National Highways Authority of India
NHIDCL	:	National Highways & Infrastructure Development Corporation Limited
NOC	:	No Objection Certificate
O&M	:	Operation and Maintenance
PMKSY	:	Pradhan Mantri Krishi Sinchayee Yojana
PSU	:	Public Sector Undertaking
RRR	:	Repair, Renovation and Restoration
SLUSI	:	Soil & Land Use Survey of India
SPCB	:	State Pollution Control Board
TAC	:	Technical Advisory Committee
ToR	:	Terms of Reference
UTPCC	:	Union Territory Pollution Control Committee

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Glossary of Terms

Aggradation	:	to raise the level of (a river valley, a stream bed, etc.) by depositing sediment, or the like.
Appurtenant structure	:	consists of spillways, low level outlet structure and water conduits, hydro-mechanical equipment, energy dissipation and river training structure and other associated structures acting integrally with the dam.
Bathymetry	:	a type of hydrographic survey that allow us to measure the depth of a water body as well as map the underwater features.
Bed Load	:	the sediment which is in almost continuous contact with the bed, carried forward by rolling, sliding or hopping.
Channel	:	a feature that conveys surface water and is open to the air.
Channelization	:	the straightening and deepening of a stream channel to permit the water to move faster or to drain a wet area for farming.
Contour Bunding and Trenching	:	the hill side is split up into small compartments on which the rain is retained and surface run-off is modified with prevention of soil erosion.
Degradation	:	process of lowering of channel bed due to the erosion of sediment
Density Current	:	as clear water of reservoir comes in contact with muddy inflow, due to the difference in densities a "stratified flow" condition occurs and the underflow is called as "density current".
Dredging	:	process that removes deposited sediment from the bottom of rivers/reservoirs using different techniques.
Estuary	:	an area where a freshwater river or stream meets the ocean.
Lateral connectivity	:	connectivity between channel-riparian and floodplain
Longitudinal connectivity	:	upstream and downstream connectivity
NOC	:	No Objection Certificate.
Riparian	:	pertaining to the banks of streams, wetlands, lakes or tidewater.
Sediment Budgeting	:	an accounting of the inflow, outflow, and storage changes of sediment in a river/reservoir system.

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Suspended Load	:	part of the total sediment transport which is maintained in suspension by turbulence in the flowing water for considerable periods of time without contact with the stream bed.
Trap efficiency	:	the ratio of total deposited sediment to the total sediment inflow.
Wash Load	:	consists of fine particles, which do not exist on the bed of the reach under consideration, which remain in suspension throughout the reach.
Watershed	:	an area of land that contains a common set of streams and rivers that all drain into a single larger body of water, such as a larger river, a lake or an ocean.

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NATIONAL FRAMEWORK FOR SEDIMENT MANAGEMENT

PREAMBLE

Sediment transport, bank erosion and associated channel mobility represent key physical processes of rivers; their understanding is of crucial importance for defining river restoration and management strategies. Most alluvial rivers have experienced increased sedimentation or bed load deficit, both due to natural processes and series of human interventions in the river catchment along the river bank or on river itself and in the riparian zone. Rapid urbanization and industrialization in flood plains, encroachment of river beds, changes due to various human activities and deforestation in catchment area of rivers etc are the main causes of increased sedimentation in rivers. Problem of sedimentation in rivers is somewhat moderated by trapping sediment in reservoirs. However, it results in loss of reservoir storage thereby reducing its benefits and serviceable life.

Sediment management in reservoirs and dams is becoming crucial to water resources development and management. Reservoirs have been used worldwide to provide reliable water supply for irrigation, domestic, industrial, hydro power generation, and flood management etc. Dams have contributed significantly towards economic development, food production security, resilience building against natural disaster (droughts and floods) and mitigation of ill effects of climate changes. Old dams have traditionally been designed with a certain “design life”, typically 50 or 100 years, which were determined by sedimentation rate, trap efficiency, provision of sediment storage pool volume (dead storage). Most reservoirs are therefore gradually being filled up. The annual reservoir storage loss globally due to sedimentation is around 0.5 to 1 % in average but varies easily between 0 and 5% depending on the location. Half of the dams in India are more than 25 years old. As the ageing dams approach the end of their original design lives and depletion of their storage capacity due to sedimentation, water scarcity will be more widespread. Thus, there is an urgent need to update policies and guidelines for exploring all options for alleviating the impact of reservoir sedimentation.

Common practices carried out by river management agencies demonstrate that sediment management has rarely been based upon best practices developed on scientific knowledge. For these reasons, a different approach to sediment management is desirable, incorporating: (i) knowledge and management of sediments at the basin scale; (ii) a wider application of available scientific knowledge.

While keeping rivers in pristine condition is the ultimate goal, development of civilization has always been on the banks of the rivers, to utilise blessings of the rivers and their water. Dams and barrages have to be constructed across the river to utilise the water resources for overall development of the country and the society. Therefore, sediment issues in dams, barrages and rivers cannot be dealt separately. For a sensible sustainable sediment management in rivers and reservoirs, it is necessary to adopt a scientific framework for sediment management at national level. This national framework document highlights the key issues related to sediment management and recommendations for policy-makers and stakeholders. The document is prepared to take appropriate actions and measures by the concerned Departments and other stakeholders.

1.0 COMPOSITION OF SEDIMENT AND TRANSPORT:

Sediment transport is the movement of organic (humus, decomposing material such as algae, leaves etc.) and inorganic particles by water. This is related with the total energy available with water, composition of the river bank material/catchment soil composition & topography along with other factors like seismic/tectonic activity and anthropogenic factors. In other words, greater the quantity of flow and velocity, the more sediment will be conveyed. Water flow can be strong enough to suspend particles in the water column as they move downstream, or simply push them along the bottom of a waterway. The intermediate type of movement where particles move downstream in a series of bounces or jumps, sometimes touching the bed and sometimes carried along in suspension until they fall back to the bed is called saltation. Transported sediment may include mineral matter, chemicals, pollutants and organic material. The total transported sediment load includes all particles moving as bed load, suspended load and wash load (very fine particles). As per BIS Code IS: 6339 (as been revised in 2013), the classification of coarse, medium and fine sediment is as under:

Sediment type	Particle size
Coarse sediment	$D > 0.25 \text{ mm}$
Medium sediment	$D = 0.062 \text{ mm to } 0.25 \text{ mm}$
Fine sediment	$D < 0.062 \text{ mm}$

1.1 Sedimentation in Rivers and Reservoirs

Deposition and erosion of sediment along the length of river is a natural phenomenon. However, sediment deposition at any place in river depends on many factors such as the stages of rivers, catchment/ watershed/ drainage characteristics, its size, geological disposition along the course of the river and human interventions, whereas erosion of soil in the catchment of a river is greatly governed by rainfall & its intensity, slope, soil characteristics, forestation etc. of the catchment area.

Siltation is a natural process through which river tries to reach to a stable regime condition.

Similarly, sedimentation in reservoirs is also a natural process. The detailed process of siltation/sedimentation in rivers and reservoirs is given at **Annexure-I**. Policy intervention requires due attention in the reaches where human settlement and economic activities are extended. Sediment is a socio-economic, environmental and geo-morphological resource, as well as a tool of nature. However, changes in sediment quantity and quality can have a significant impact both in rivers and reservoirs and prove to be resource as well as menace in its own manner.

1.1.1 Rivers:

Sediment in rivers mainly contains boulders, cobbles, pebbles, sand, silt and clay. Sand has high economic value and is a valuable material largely used in construction works. Due to huge demand of sand, MoEF&CC, Govt. of India has come up with "Sustainable Sand Mining Management Guidelines – 2016 and supplemental document "Enforcement and monitoring guidelines for sand mining-2020". Boulders, cobbles and pebbles are also very important for construction industry.

However, when sediment in rivers is deposited at undesirable place, it turns into a menace. It may cause aggradation and degradation. Further, it also causes meandering, braiding and widening of rivers, which in turn causes erosion of river banks and endangers the embankments and settlements on the banks of rivers. Sedimentation in rivers also causes reduction of navigable depth and rising of river beds causing drainage congestion. In such cases, it becomes necessary to remove the sediment by suitable means at selected places.

1.1.2 Reservoirs:

Due to reduction of velocity of water in reservoirs, part of incoming sediment gets trapped. Sedimentation in reservoir results in loss of capacity, impacts dam safety, risk to downstream habitation etc. as sedimentation in reservoirs is generally accumulative. By removal of sediment, the capacity and life of a reservoir can be extended, planned operational benefits can be ensured, and minimise the risk to downstream stakeholders.

2.0 BASIC PRINCIPLES OF SEDIMENT MANAGEMENT

2.1 Sediment Management in Watershed

It is imperative to minimise the sediment intake to a minimum level for a dam or reservoir for its optimal functionality and longevity. This involves a two-pronged approach: catchment area treatment and appropriate land use planning to address unsustainable land use to reduce soil erosion & sediment production. Catchment area interventions need to be given priority as it arrests silt within the boundary of a watershed which will help in minimizing siltation in river bed & reservoirs. Details on catchment area treatment/intervention are given in **Annexure II**. The steps to reduce sediment inflow must include determination of inflow of silt into the river/reservoir. Sediment inflow assessment may be based on soil erosion modelling and silt monitoring along with assessment of agronomic practices and other land-based activities, point & non-point source of pollutions, agriculture run-off in the catchment, which is essential to determine quantity and quality of sediment and the reservoir's rate of sedimentation.

To reduce sediment production in the watershed sustainably, the following actions should be taken:

- (i) study watershed characteristics
- (ii) current status of watershed management activities
- (iii) assess the vulnerability of watershed in terms of soil erosion by using available observed sediment data at various streams G&D sites, water reservoirs (if hydrographic survey data available), soil loss modelling, to identify and prioritise the degraded micro-watershed for treatment with biological and engineering measures for erosion control,
- (iv) stream bank erosion control using various river training works
- (v) trapping sediment upstream in river before entering into reservoir and
- (vi) planting trees to provide vegetation cover and retention to the soil for preventing erosion.

To start with, the Digital Micro Watershed Atlas of India- 2019 of Soil and Land Use Survey of India (SLUSI), Ministry of Agriculture can be followed for delineation & management planning. The “Common Guidelines for Watershed Development Projects”, Department of Land Resources, 2008, Ministry of Rural Development, Govt. of India may be referred for development of watershed

projects. For implementation of the watershed programme, a synergy is required to ensure the convergence of various programs implemented by the various central ministries and State Governments.

2.2 Sediment Management in Rivers

The following basic principles should be followed for sediment management of Indian rivers:-

1. Sediment management should become a part of integrated river basin management plan. Regular sediment budgeting for all basins should be done especially which are affected by heavy siltation problem.
2. Removal of sediments from river bed may help in channelization of river flow during the lean season and improve the navigability, but will not have any considerable effect on flood levels.
3. There is natural deposition of sediments upstream of any barrage, but this attains equilibrium after few years. Desiltation in upstream of a barrage may be taken for channelization of stream flow. However proper operation of Gates should be ensured for reducing sediment deposition in the upstream of the Barrages/Wier.
4. Urbanization and infrastructure development works like buildings, roads, embankments etc. require large amount of sediment. The quantity of sediment removed in such cases from the river shall be limited to the extent to which it does not harm the ecology of river or gainfully utilized in developmental works, whichever amount is less. Exploitable quantity should be determined "a-priori" and the reach should be monitored for excessive exploitative practices.
5. There is a need to pursue the de-siltation/dredging schemes with utmost care backed by scientific study, including simulations through mathematical and/or physical model study at appropriate scales and employing consistent formulations applicable to the given site. Mathematical and/or physical model study is exempted for dredging/de-siltation carried out for navigation purpose by Inland Waterways Authority of India.
6. If necessary, permanent observation stations may be opened for collecting data such as cross-section, hydrological observation etc. This should be coupled with periodic monitoring of various morphological changes with space technology such as formation of shoals, meandering tendency of the river, effect of construction of hydraulic structures, damages to the bank, effect of afforestation/ deforestation and tectonic occurrences. Data sharing mechanism is to be established in case of an inter-state river.
7. Different approaches of sediment management may be resorted to in rivers depending upon the stages of the river. The details of the same, along with some other management strategies are given in **Annexure-II**.
8. Sediment management action must follow best practices to minimize damage to the environment and river morphology. Restriction details for de-siltation/dredging are placed at **Annexure-III**.

9. In case, if it is not possible to utilise sediment removed by dredging/de-silting of rivers; a proper utilisation/disposal plan needs to be prepared, with the consideration that it does not create any environmental, ecological and social issues.

2.2.1 Effect of De-siltation in Reducing Floods

In general, de-silting of rivers does significantly affect flood levels. In this regard, it is mentioned that the Mittal Committee was constituted by the erstwhile Ministry of Water Resources in the year 2001, under the Chairmanship of Dr. B.K. Mittal, Former Chairman, Central Water Commission. The main objectives of the Committee were to identify the cause and extent of siltation in rivers, to suggest measures to minimize siltation, to examine as to whether de-silting is a technically feasible means to minimize magnitude of floods in rivers, to suggest appropriate technology/ methods of de-silting of rivers, to propose a realistic operational programme in a time-bound manner and other related aspects. The findings/recommendations of the Committee were as follows:

- (i) De-silting of rivers for flood control is not an economically viable solution;
- (ii) Dredging in general has been found to be inadequate and should not be resorted to, particularly in major rivers;
- (iii) There are, of course, some locations such as tidal rivers, confluence points with narrow constrictions and the like which can be tackled by de-silting after thorough examination and techno-economic justification;
- (iv) Selective dredging is suggested depending upon local conditions; and
- (v) De-silting of rivers can marginally minimize the magnitude of floods and be effective only for a short period.

However, selective need-based dredging of certain reaches of rivers coupled with structural and non-structural measures may be considered in order to protect habitation, agriculture land, airports, industrial and institutional installations etc.

2.2.2 Extraction for Navigational Purpose

Inland Waterways Authority of India (IWAI) is required to carry out dredging to clear shoals/shallow patches on fairways in National Waterways as a mandatory functional requirement in terms of provisions of Section 14 (Chapter IV) of IWAI Act, 2016 (82 of 85).

The above dredging shall be necessitated to be carried out at frequent intervals as and when shoals are surfaced and identified based on continuous fortnightly/monthly bathymetric surveys being carried out by IWAI. This maintenance dredging is also required to be taken up at short notice and complete the dredging in a time bound manner to facilitate navigation. The above maintenance activities of dredging including its disposal are also exempted from obtaining clearance from MoEF&CC.

2.2.3 Extraction for Economic Uses

Sediment deposit in both rivers and reservoirs at some places contains considerable quantity of sand. In places where sediment deposits are having good sand content (of the order of 30% - 40%), it is possible to extract sand from sediment to meet the ever-increasing demand of sand. Sediment component such as silt and clay bears comparatively lesser economic value but still can be used in many works such as for brick making, as filling material, construction of embankments, roads,

constructing raised platforms for flood proofing etc. Its different uses are given at **Annexure-IV**. There is possibility of revenue generation in such cases.

2.2.4 Indispensable Removal

Many a time, excess deposition of sediment at undesirable places causes bank erosion, shifting of river course and navigational issues. Sediment deposition on the mouth of a river may cause large scale flooding due to drainage congestion. At many places, sediment needs to be removed from a river to channelize it to bring it to its original course especially during pre-monsoon and post monsoon. In such cases, it is imperative to remove the sediment by practically suitable means. Similarly, in some old reservoirs, especially those which are supplying drinking water, sediment removal becomes necessary to regain their capacity. In hydro-power projects, excess deposition of sediment just below the intake level of turbines hamper their operation and has to be removed with suitable means.

2.3 Sediment Management in Reservoirs

The importance of reservoir sedimentation management is evident when one considers that the cost of replacing storage lost annually due to sediment deposition throughout the world is significant. If sedimentation can be managed successfully, the loss in reservoir storage space due to this phenomenon can be lowered and life of reservoir can be prolonged significantly. The benefit of effective reservoir sedimentation management is enormous.

It is possible to successfully manage reservoir sedimentation by using comprehensive sediment management strategy coupled with measures to reduce sediment yield from watershed, route sediments around or through storage, and recover the lost capacity of reservoir through de-silting. Integrated management of reservoir sedimentation is easy to manage for new reservoirs which can be integrated at planning stage itself. In the existing reservoirs, one or combination of more than one technique can be explored in a holistic way. None of single technique/measure can be 100% effective for long term sustainability of sediment management in reservoirs. Due consideration shall be given to address environmental and social safeguards during the planning stage. In addition to this, robust institutional and sound financing mechanism forms the integral part of comprehensive planning and implementation strategy for sediment management.

The brief detail of framework for addressing sediment problems in reservoirs are given in the following paras.

2.3.1 Measures to Minimise Sediment Deposition in Reservoirs

The main source of incoming sediment to any reservoir is catchment erosion. Therefore, the first step to address the root cause of incoming sediment is watershed management through various engineering and bio-engineering techniques to arrest sediment erosion effectively. The next step is to manage the sediment deposited in the river by routing the sediment around or through the storage by various kinds of sediment by-pass and sediment pass-through interventions. There are structural and non-structural techniques for sediment routing. Sediment Bypass, include Flood Bypass Channel or Tunnel and off-stream reservoirs for bypassing sediment inflows away from reservoirs. Sediment pass-through strategies including draw-down flushing (complete and partial), pressure flushing, sluicing and venting turbid density currents are non-structural interventions comprising operational techniques for evacuating sediment from the reservoirs.

There are several techniques for sediment routing that take advantage of temporal variation in sediment discharge, managing flows during periods of highest sediment yield to minimize sediment trapping in the reservoir. The basic strategy is to impound the clear water and release the sediment-laden flood flows. Sediment routing techniques require a part of the river inflow and storage volume for transporting sediment around or through the reservoir. Consequently, this may not be feasible in reservoirs, where all the inflow is being captured and stored. However, as reservoir capacity is diminished by sedimentation, sediment routing may become more feasible.

The sediment not arrested through the above referred two stages, partially gets deposited in the reservoir and part of it is discharged downstream of the reservoir (suspended and colloidal). The deposited sediment in the reservoir is to be dredged to restore the lost capacity to the possible extent keeping in view techno-economic and environmental feasibility.

2.3.2 De-silting of Reservoirs

Sediment deposit in reservoirs may have adverse impact on storage, as well as safety of dams. The safety of reservoirs is directly having huge consequences to the downstream habitations as well as other vital installations along with the planned benefits. Dam safety requirement shall be complied with, when it comes to enforcing constructive or operational sediment management measures; at no time should such measures lead to an unacceptable state of dam safety.

Sediment management measures to reclaim live storage, to improve operations or for environmental reasons shall be in compliance with applicable environmental requirement, unless they are necessary to preserve immediate dam safety, and prevent an uncontrolled release of reservoir water that could lead to even larger environmental damages or cause loss of life, injuries or large damages to properties in the downstream area.

At the same time, for existing reservoirs; in case of high sediment inflow, long term integrated watershed management shall be explored effectively. In some of existing large reservoir(s), watershed management has resulted substantial reduction in erosion in turn reduced the sediment inflow viz. in Maithon Reservoir, initial average annual loss of capacity of 7.38 MCM reduced currently to 1.37 MCM over a period of time.

Annual loss of overall storage of Panchet Reservoir was reduced from 14.98 MCM/year (years 1959-66) to 4.06 MCM/year (years 1996- 2019) considering the maximum flood management pool of 132.62m (435 ft.) mainly on the ground of construction of Tenughat Dam upstream of Panchet Dam.”

MAITHON DAM WATERSHED MANAGEMENT



Drainage line treatment



Rainwater harvesting structures

Maithon dam (Damodar Valley Corporation - DVC) is a 56.08 m high composite dam constructed across river Barakar, Dhanbad District (Jharkhand). The initial gross storage capacity of Maithon dam is 1196 MCM with live storage of 607 MCM considering the Maximum flood management pool of 150.91 m (495 ft.) and minimum drawdown level of 132.62 m (435 ft.)

- It is a multipurpose dam with main function of flood control, supplying water for irrigation, Municipal & Industrial use, hydro power generation, and tourism. The construction commenced in December' 1951 and completed in September' 1957.
- Damodar Valley Corporation is working since 1949-50 to tackle the soil erosional problems in upper Damodar-Barakar catchment area through soil and water conservation/integrated watershed management programs with multidisciplinary approach by its Soil Conservation Department located at Hazaribagh.



Key Soil Conservation Measures

- ✓ Afforestation, Pastoral Development, Contour Trenching
- ✓ Field hedge, pasture and horticultural development, drainage line treatments, silt detention dams, ponds' renovation, reclamation of land, demonstrations on moisture conservation
- ✓ Construction of water harvesting structures

- Measures have played a significant role in arresting sediment deposition by more than 60% which has resulted, among other benefits, in reducing loss rates in storage capacity from 7.38 MCM/year (years 1955-65) to 1.37 MCM/Year (years 2002-19).

The structural invention(s) which includes renovation of low-level permanent river outlet with appropriate replacement provision for original valve with a new gate to allow sluicing during high flow event, renovation of power plant penstocks by replacing few penstock with a sluicing pipe and modifying the other penstock for electricity generation, retrofitting of dams by providing de-silting tunnel(s), silt-bypass weir/tunnel(s)/ tank/ chamber(s), de-silting etc. can be explored on case to case basis keeping in view engineering and techno-economic and environmental feasibility in providing such modifications. Such typical strategies have been experimented in Shihmen reservoir, Taiwan.

SHIHMEN DAM (TAIWAN) SEDIMENT MANAGEMENT

The reservoir management in Taiwan faces lots of challenge. The main source of rainfall is the northeast monsoon. Mean annual precipitation is about 2500 mm/year. On an average 3 to 4 typhoon strike the country every year. Soil erosion is very high, almost having a rate of 3 to 6 mm/year. Shihmen dam is located very near to Taoyuan city of Taiwan. It was commissioned in year 1964

- The gross storage capacity is 309 MCM. This dam is a classic example of post construction retrofitting for integrated sediment management. The journey of sediment management started by construction of 121 check dams which majority of these got filled by year 2007. It is estimated that annual inflow of sediment in reservoir is 3.42 MCM.

SUSTAINABLE SEDIMENT MANAGEMENT STRATEGIES AT SHIHMEN DAM



Sediment yield reduction (Check Dams)



Mechanical & Hydraulic Dredging



Sluicing



Routing-venting turbidity currents



Simultaneous operation of spillway and penstock sluice venting turbid density current

- Then structural inventions included modification of permanent river outlet gates (4%) by replacing the original Howell-Bunger valve with a jet flow gate to allow sluicing during high flow events, renovated the power plant penstocks, replacing one penstock with a sluicing pipe and modifying the other penstock for electricity generation (55%), introduction of two nos of sediment-bye pass tunnels i.e. Dawanping (21%, under construction) and amuping (19%, commissioned) silt sluice tunnels. Also, some part is managed by dredging near dam (15%) and dredging upstream of dam (12%). This arrangement is almost balancing the inflow sediment with outgoing sediment volume

A majority of Indian reservoirs have been built through conventional design life approach rather than life cycle management approach. The latter approach considers storage as renewable as compared to exhaustible by first one. Furthermore, abandoning dam sites may not be affordable in any respect, as available sites for new reservoirs are very limited. Hence, there exist ample scope and cost-effectiveness in prolonging their lifetime.

De-silting plan for a given reservoir should be comprehensive. It shall be prepared based on latest bathymetry survey inputs along with representative sub profiling data of a given reservoir. The basic information shall include various methods of dredging along with their utilities and performances in accordance with different specific site conditions, proposed method with justification, estimated cost and proposed dredging volume, revenue and non-revenue models, cost benefit analysis vis-a-vis restored capacity, disposal plan of dredged material with detail of sediment stacking and processing yard, method of contract which include EPC/turnkey or work contract method with fixed time schedule, environment and social safeguards and monitoring mechanism etc. The de-silting of Manglam Dam in Kerala is a classic example of revenue model under implementation.

MANGLAM DAM'S REVENUE MODEL FOR DE-SILTATION



Wet Dredging at Mangalam Dam

- ❑ Mangalam dam, was commissioned in 1957. The original gross storage and live storage are 25.49 MCM and 25.34 MCM respectively. Reservoir offers water for Irrigation, and drinking water to the people of Palakkad district, Kerala.
- ❑ As per hydrographic survey of 2015 including sub-bottom profiling sampling (grid size 50mx50m) the revised capacity of Mangalam reservoir is 19.9 MCM.
- ❑ Kerala Water Resources Department published a **Standard Operating Procedure for de-silting of reservoirs** in year 2017. Mangalam dam was the first de-silting project taken up.
- ❑ Since deposited sediment was found to be comprised about 60% of silt and clay; and 35% sand, State government adopted a revenue-based model, with turnkey method of contracting, for using sediment as a resource (e.g., agricultural, construction, and pottery activities)



SUSTAINABLE SEDIMENT
MANAGEMENT STRATEGIES
AT MANGLAM DAM



Mechanical (dry) and
Hydraulic (wet)
dredging



Revenue-based Model
for Sediment
Management

❑ The revenue model resulted in earning of Rs 17 Cr, completely subsuming the cost of de-silting of Rs. 107 Cr. Although, de-silting amount is not very large, but this revenue-based model is very encouraging for dam owners by restoring lost capacity of about 3.0 MCM which is equivalent to creation of additional water storage in true sense.



Revenue Model using
sediment as resource

The following basic principles should be followed in De-silting of reservoirs:

- i. Regular monitoring of sediment deposition in reservoir should be carried out. Integrated Bathymetry survey with sub-profiling sampling needs to be done to determine the actual quantity of sedimentation in reservoirs and estimation of the rate of sedimentation.
- ii. For reservoirs selected for potential intervention, it is necessary to perform a diagnosis of the sedimentation problem, formulate and select the most viable management alternative, prior to implementing the selected measures.
- iii. In case, if it is not possible to utilise sediment removed by dredging/de-silting / flushing from reservoirs; a proper utilisation/disposal plan needs to be prepared, with the consideration that it does not create any environmental, ecological and social issues.

- iv. De-siltation for restoring the lost capacity of the reservoirs may be carried out by comparative analysis of revenue and non-revenue models. For reservoirs, which are constructed for providing drinking water supply as well as other strategic services, de-silting may be done on need basis including non-revenue model. Also for safety of dam, it requires the de-silting; this may be preceded to other concern keeping in view associated disaster consequences.
- v. De-siltation/Dredging/Flushing in the cascade of reservoirs depends on the natural sediment load and may be shared between reservoirs. Appropriate monitoring mechanism along with institutional strengthening provision shall be inbuilt items in any programme of sedimentation management of reservoirs especially once the reservoir located in a lower riparian State is affected, when carried out in the reservoir, due care should be taken so that it does not affect downstream reservoirs. Proper consultation, with the reservoir authorities of downstream projects should be done. In case of hydro-power plants, each project or cascade projects should have coordinated Standard Operating Procedure (SOP), so that to the extent possible, sediment concentration may follow normal river regime during flushing.
- vi. De-siltation/dredging work shall not affect any existing structures/ facilities. De-siltation, especially in reservoirs shall be done in such a manner that it does not induce any landslides and slip circle failure in case of quick drawdown conditions. Restriction details for de-siltation/dredging are placed at **Annexure-III**.
- vii. In financing for new facilities, sediment management measures are considered to be an integral part of the facility cost. A life-cycle management approach shall always be recommended. For de-silting existing reservoirs, recurrent measures are financed through O&M budget. Reclamation of live storage is to be considered as like creating a new facility. Also, de-silting for reinstating safe operation is financed like other rehabilitation works (e.g. DRIP).
- viii. Financing de-silting in cascades of reservoirs depends on the natural sediment load and may be shared between the reservoirs. Appropriate monitoring mechanism along with institutional strengthening provision shall be inbuilt items in any program of sedimentation management. Also, in case de-silted material is discharged or dumped in the downstream of dam, impacting immediate downstream reservoir located in lower riparian State, proposed Plan may also be shared with lower riparian State. In case of a reservoir having interstate implications, the downstream states should have a member in the State/Central TAC.
- ix. The dredged material is a resource and the beneficial reuse in convergence with various concern organisation/agencies will not only bring direct economic values, but also social and environmental merits. Hence its end use should be part of comprehensive action plan. The possible major use of dredged material includes land reclamation, improvement & filling, construction & protection materials (for highways, railways, flood protection embankment etc.), top soil enhancement and agricultural use, habitat creation and restoration, beach nourishment and shore protection, river management (e.g. sand plug for channel closure) etc.
- x. A Feasibility Report should be prepared considering various techniques of removal of sediment. The economic analysis of long term benefits owing to consideration of removed sediment as a resource should be an important part of the feasibility report. Restored capacity of reservoir should be considered equivalent to creation of new live storage and apart from the intended benefits in terms of various uses of reservoir water

(irrigation, drinking water, industrial water, hydro power, fisheries, tourism etc.), the benefits from selling of sand for construction purpose, silt and clay for pottery and tiling industries in the open market by the contractor should also be considered for cost-benefit analysis. The use of revenue model shall be invariably explored. However, in case of strategic restoration of lost capacity (like drinking water, trans-boundary rivers etc.), even the non-revenue model may be considered. In order to ensure credible and bankable competitive bidding, the bid document shall be supported in terms of proposed volume and composition of dredged sediment through a latest close interval sub-bed profiling data of reservoir.

The details about the measures that can be adopted for sediment management of reservoir are listed in **Annexure-V**.

2.3.3 Data Base & Survey:

- i. Dam owners / Project Authority must carry out integrated bathymetry survey with sub-profiling sediment sampling of all large reservoirs of the country, keeping in view proper intervention for reclaiming of storage to improve water security. The survey is to be carried out at prescribed as per Compendium on sedimentation of reservoirs in India (2020).
- ii. For preparation of strategic action plan for handling the challenge of reservoir sedimentation in future, integrated Bathymetry Survey and Sub-bottom Profiling should be conducted compulsorily. The sub bottom profiling would give the thickness of underwater sediment, its composition (type), density etc.
- iii. Remote sensing Technique can be used for regular sediment assessment.
- iv. GIS-based model for predicting sediment quantity and quality based on basin characteristics and river flow can be developed.
- v. Video documentation of entire exercise of de-siltation, dredging, and other interventions executed for sediment management can be made so that cross learning can be promoted.

2.3.4 Retrofitting of Existing Dams

Retrofitting of existing dams: keeping in view availability of very limited sites for construction of new storage reservoir(s) along with various other challenges including R&R and environment impacts, dam owner(s)/Project Authority/(ies) may explore for retrofitting of few dams at a marginal cost. This retrofitting can be in many forms i.e. increasing the height of dam to the safe extent possible to create additional storageto meet extra demand, harnessing the available much easy hydroelectric potential at appropriate location(s), pumped storage option(s) etc. to make these reservoirs part of climate resilient strategies.

2.3.5 Institutions and Financing:

Certain guiding principles determine the arrangement of institutional setup and financing: Firstly, sediment management measures must never compromise dam safety and result in unacceptable state of dam safety. Secondly, sediment management measures must comply with prevailing environmental requirements, unless dam safety requires otherwise. Thirdly, reservoir sediment management is to be considered as an integral part of planning, design and operation of any new facility. Finally, sediment

management decisions follow similar considerations, needs, rules, processes as those for other environmental projects.

For de-silting of existing reservoirs, recurrent measures are financed through O&M budget. In order to handle the challenge of reservoir sedimentation on long term basis, all owners of reservoirs shall initiate policy interventions for earmarking certain percentage of dam revenues for carrying out de-siltation activities for sustainable dam operation and maintenance. Reclamation of live storage is to be considered akin to creating a new facility.

Financing de-silting in cascades of reservoirs depends on the natural sediment load and may be shared between reservoirs. Appropriate monitoring mechanism along with institutional strengthening provision shall be inbuilt items in any programme of sedimentation management.

2.4 Sediment Management for Lakes/Water Bodies

Lakes and water bodies constitute important habitats and food resources for a diverse array of fish, aquatic life, and wildlife. These are of great importance to mankind. They regulate the flow of river. During the rainy season, they prevent flooding and they help to maintain the flow of water during the dry season. Therefore, sediment management for Lakes and Water bodies are equally important for their sustenance. The scheme, namely, “Repair, Renovation & Restoration (RRR) of Water Bodies” is under implementation by Ministry of Jal Shakti, GoI with the objective of comprehensive improvement and restoration of water bodies in the country presently covered under the “Guidelines for the scheme on Repair, Renovation and Restoration (RRR) of Water Bodies under PMKSY (HKKP) – 2022”.

3.0 CLIMATE CHANGE PERSPECTIVE

Climate change is now an unequivocally accepted phenomenon, which in turn will result in increased hydrologic variability. This is an emerging challenge for development and sustainability of water resources management. The water storage infrastructure more generally, are appropriate focal points for both sustainable development and climate resilience. In turn, sediment management is a necessary element of sustainable and climate-resilient plan that includes reservoir storage and hydro-power generation.

Climate change, such as more frequent and intense rain events, can increase erosion and result in greater amounts of sediment washing from watershed, reaching into rivers and reservoirs. To mitigate adverse impact of climate change in reliability of water supply, construct reservoir storage spaces as large as possible. In reservoir sediment management context, developing and retaining enough reservoir storage space to satisfy water supply needs over the very long term requires inclusion of reservoir sediment management facilities in dam and reservoir designs right from the start, at project conception. It requires abandoning the conventional design life approach to dam design and adopting a life-cycle management approach.

In run-of-river projects, sediment management aims to improve operational efficiency. If sediment is not removed from run-of-river facilities before it enters the canal heads/the turbines, it may cause heavy siltation in canals and clogging of the cooling water intakes of the electro-mechanical equipment and also abrasion of the blades of the turbine, which decrease the efficiency as well as increase operation and maintenance costs and diminish the amount of power that can be generated. The objective of sediment management in storage

projects is to ensure project longevity for storing large amounts of water for planned benefits and use during droughts. Such storage also provides the opportunity to attenuate floods up to some extent.

The life cycle of dams and reservoirs consists of operation and maintenance, continued and regular implementation of reservoir sediment management approaches, and regular refurbishment of the dam and its appurtenant structures. Reservoir sediment management and refurbishment of the dam and its appurtenant structures allow for continued use of the dam and its reservoir, ideally in perpetuity. In principle, the approach does not include the element of disposal. A major difference between the life-cycle management approach and the design life approach is the focus on preventing storage loss caused by reservoir sedimentation. It eliminates the threat of losing the reservoir's ability to store water over the very long term and promotes continued use of the dam and reservoir, providing utility to both current and future generations.

4.0 ENVIRONMENT AND SOCIAL SAFEGUARDS

Dredging and de-silting of dams, reservoirs, weirs, barrages, rivers and canals for purpose of their maintenance, upkeep and disaster management is exempted from environment clearance as per S.O.141(E) of MoEF&CC dated 15th January, 2016. However, reservoir sediment management methods such as by-passing, flushing or de-silting of existing reservoirs are associated with environment & social risks and impacts, which are to be identified based on interventions proposed and locational sensitivity, if any, such as dam/reservoir located in protected area, reservoirs notified as wetlands/bird sanctuaries, etc. and some of the above interventions would involve creation of new infrastructures. In such cases all statutory clearances will be required. Wild life clearance would be applicable if reservoir is in a notified protected area. For structural intervention for sediment by-passing in existing dams or any other activity, if the land required is forest land, diversion of forest land would attract forest clearance process as per Forest Conservation Act, 1980.

For the de-siltation activity, a proper Feasibility Report along with Environment Management Plan to dispose the silt is required to be prepared as per the guidelines provided in the "Handbook for Assessing and Managing Reservoir Sedimentation", CWC,2019. "Operational Procedures for Assessing and Managing Environmental Impacts in Existing Dam Projects", Central Water Commission, November 2020 with competent level approval of MoEF&CC, can be referred for the environmental and social safeguard issues related to de-silting in the existing dams in context of various statutory and regulatory norms.

5.0 DISPOSAL OF DREDGED / DESILTED MATERIALS

- a) The proposal for de-siltation/ dredging activities shall be prepared as per applicable guidelines and prior approval may be taken from concerned agencies to ensure hassle free implementation. River gravels/sands/silts are valuable resource and could be used gainfully in construction works, including housing, roads, embankment and land reclamation activities.
- b) Appropriate sediment disposal plan shall be a part of Feasibility Report along with applicable Environment and Social safeguards. Dredged material shall be disposed as per the approved Environmental Management Plan. It should not contaminate any water body, adverse impact to the flora and fauna existing adjacent to the disposal site(s) etc.
- c) Desilted material should not be used for filling up of wetlands and water bodies including oxbow lakes, as these are important for recharging ground water and providing base flow in rivers during lean season.

- d) In the case of de-silting of reservoirs, regarding applicability and procedures for Environment Clearance, Forest Clearance and Wildlife Clearance, activity listed at Sl. No.18, Table 2.2, can be referred in the “Operational Procedures for Assessing and Managing Environmental Impacts in Existing Dam Projects” CWC, November, 2020. This referred guideline has the competent level approval of MoEF&CC.
- e) NOC from State Pollution Control Board (SPCB)/Union Territory Pollution Control Committee (UTPCC) as well as concerned local authorities is required in advance for disposal site for disposal of dredged materials. Requirement of NOC from State/Union Territory Pollution Control Board and from local authorities for disposal of dredged material is exempted for dredging carried out for navigation purpose by Inland Waterways Authority of India.

6.0 EVALUATION OF SEDIMENT MANAGEMENT PROJECTS

Dredging/de-silting projects including all components and their techno-economic performances need to be evaluated. An ongoing monitoring program is essential for optimizing sediment management. Short and long-term monitoring plans should be developed as an integral aspect of the Sustainable Management Plan.

7.0 APPRAISAL OF THE PROPOSAL

- 7.1 Regarding Environmental Clearance of project other than de-silting of reservoirs, “Procedure for Environmental Clearance for Mining of Minor Mineral including Cluster”, as enumerated in appendix XI of MOEF&CC Gazette notification no. S.O. 141 (E) dated 15.01.2016 (as amended from time to time) may be followed; including the exemptions. The exemption given in Appendix XI of MOEF&CC Gazette notification regarding dredging and de-silting of dams, reservoirs, weirs, barrages, river and canals will be applicable for purpose of annual/routine maintenance/upkeep and disaster management only.
- 7.2 There are instances of sediment removal from dams/rivers for different purposes and activities like for commercial purposes, restoration of storage capacity of reservoirs, channelization of rivers, etc. Such activities generally do not fall under regular maintenance/upkeep or disaster management and will be governed by this national framework for sediment management.
- 7.3 The detailed procedure for appraisal, environmental & other clearances and monitoring of the proposals of sand and gravel mining has been described in the “Sustainable Sand Mining Management Guidelines, 2016” of MoEF&CC”.

Further, the detailed Guidelines for de-silting of reservoirs, its applicability and procedures for Environment Clearance, Forest Clearance, and Wildlife Clearance, activity listed at Sl. No.18, Table 2.2, in the “Operational Procedures for Assessing and Managing Environmental Impacts in Existing Dam Projects” CWC, November, 2020 may also be referred.

- 7.4 For de-silting/ dredging of sediment from rivers/ reservoirs; comprehensive DPR may be prepared by the State Authority/ Project authority/ PSU/private company etc. A Technical Advisory Committee (TAC) may be constituted by concerned State for appraisal and

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approval of the DPR for the techno-economic viability. Concerned regional Chief Engineer of CWC or his representative should be included as one of members of the State TAC. Suggested composition of State TAC is enclosed at **Annexure-VI**.

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ANNEXURE-I

SEDIMENTATION PROCESS IN RIVERS AND RESERVOIRS

All rivers and streams flowing in alluvial plains tend towards a stable flow condition maintaining a balance between the silt load carried, silt load deposited, and the resulting volume and velocities achieved. This is generally called a stable sediment regime for the river. When underlying parameters of volume and velocities are disturbed, either due to lower gradient (entering into plain reaches) or encroachment in flood plain, widening of the channel (braiding of river streams), suspended silt particles in the river water settle down, this is called siltation. This phenomenon is normally called sedimentation when it occurs in a reservoir.

Main factors responsible for the siltation / sedimentation are:

- (i) Physical and hydrological characters of the catchment, such as slope, geology and structures, land use, land cover, urbanisation, agricultural practices, deforestation and forest degradation etc.,
- (ii) Intensity of erosion in the catchment (sheet, rill, gully and stream channel erosion) including over-exploitation of minerals,
- (iii) Occurrence of landslides/landslips especially in hilly areas with heavy rainfall
- (iv) Construction of Roads, Houses etc. in the flood plain.
- (v) Quality, quantity and concentration of the sediment brought down by the river,
- (vi) Size, shape and length of the reservoir and operation strategies impacting trap efficiency of the reservoir,
- (vii) Some additional sources of silt generation are as follows:
 - a) In rural areas, the erosion source is typically soil degradation due to intensive or inadequate agricultural practice thereby resulting in an increased amount of silt and clay in the water bodies that drain the area.
 - b) In urban areas, the additional siltation sources are construction activities and seepage & sewage sludge discharged from household/business establishments with no septic tanks/wastewater treatment facilities.
 - c) In water, the main pollution source is sediment from dredging, and the deposited dredged material near water shore.

The detailed phenomena of sedimentation in rivers and reservoirs are explained as under:-

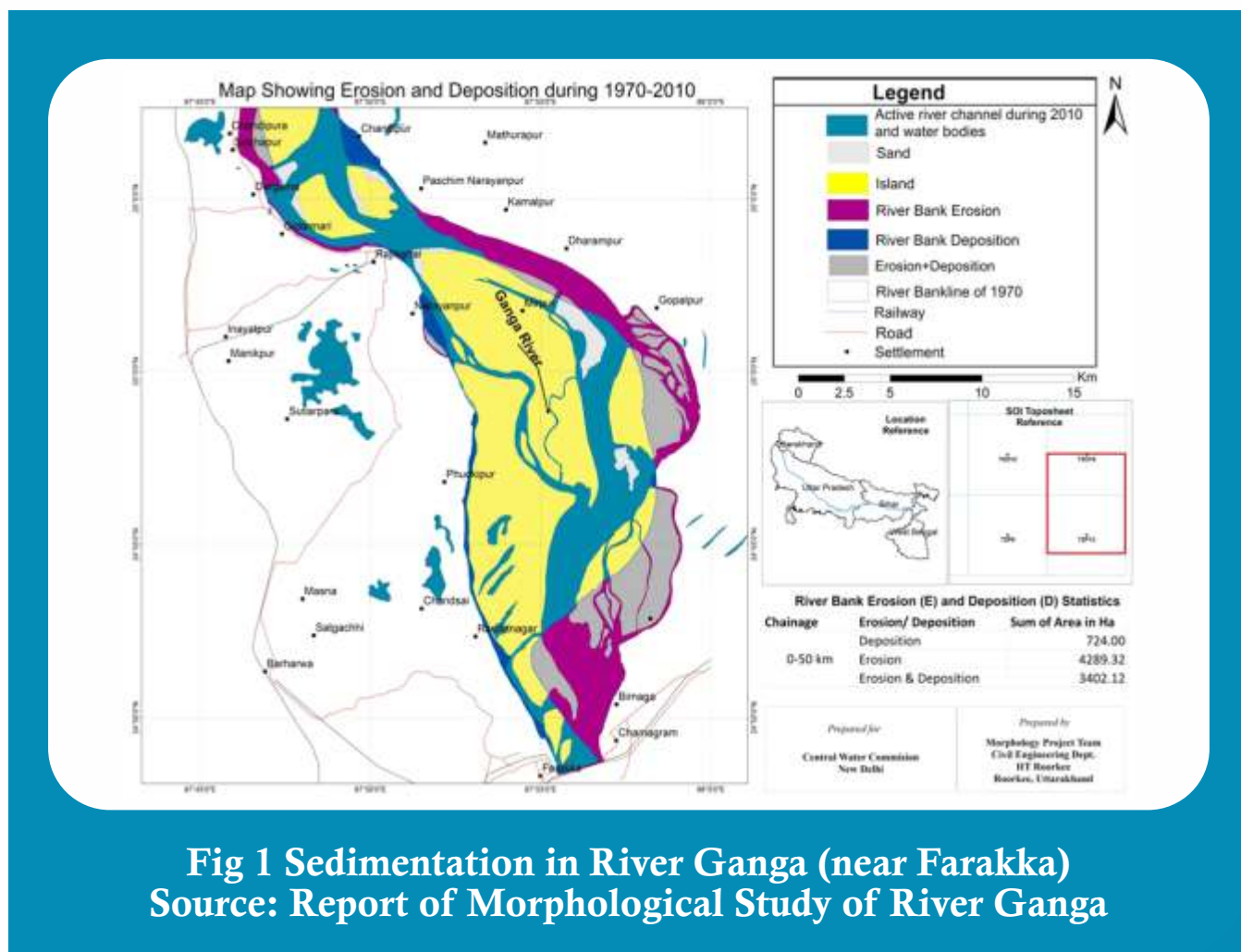
SEDIMENTATION IN RIVERS

Rivers are natural channels to drain water from highlands to lowlands/seas. Erosion and aggradations are the most important geological processes which have brought down large amounts of sediments from the higher elevations to the plains and have formed large fertile plains, which were adopted by the hominoid races for their development and sustenance. Big towns were located on the banks of rivers to

meet needs of water and navigation. These sediments are responsible for formation of delta of a river and providing sand to sea beaches. Further, flora and fauna (e.g. Mangrove forest) depend on water and sediment supply from rivers. Fishes and other aquatic organisms choose specific sediment types of river environments for feeding, breeding and spawning. Over time, the high lands of an area get worn down. The material thus eroded is utilized further downstream to build banks and flood plains.

Sediment carrying capacity of a river is directly proportional to the kinetic energy of water. With more kinetic energy water is capable of carrying larger amount of sediment and of bigger size. However, due to human interventions on rivers (e.g. Dams, bund, barrages etc.) natural regime of river is disturbed. Traditional flood plains remain no longer available for offloading the excess sediments and river is forced to deposit sediment in its channel or nearby. Further, as the river flows from high gradient to low gradient, momentum of the flow is reduced progressively by consumption of the kinetic energy in overcoming the flow resistance and consequently reducing its capacity to carry the sediments by tractive forces along the bed and suspension of coarser particles through turbulence, inducing thereby silt deposition en route. In the Indian context, which is essentially having monsoon type climate, there is huge variation of flows in different seasons.

Further, during floods also the rate of increase and decrease of flow is very high. As sediment carrying capacity of river is directly proportional to the quantity and velocity of water, during high flows considerable sediment is carried in the river which is deposited as the flow reduces. This rapid change of flows causes erosion and deposition at different places. This is also the main cause of change of cross-sections in alluvial rivers.



SEDIMENTATION IN RESERVOIRS

Reservoirs are generally a part of the river system and quantity of sediment entering in the reservoir is dependent on the catchment area, type of soil, vegetation cover and gradient of river upstream of the reservoir. The river water entering the reservoir carries sediments which settle at various reaches in the reservoir. River systems erode material from the ground they flow over; these sediments are then transported downstream. When a river is dammed, the velocity of the water is slowed down and thus its ability to transport these sediments is reduced. When the velocity is too low the sediments in the river water will begin to settle down. The largest particle will settle first, near the upstream end of the reservoir, and often cause what is known as backwater delta. The finer suspended colloidal material (silts and clays) will settle down close to the dam where velocities are even lower. Some of the finer particles will remain in suspension and will flow through/over the outlet structures. The backwater delta will move forward towards the dam wall as time progresses. Depending on the shape, density, viscosity, size of the particle and flow, sediment settles in a reservoir in different patterns. The layer of water containing fine particles travel further down towards the dam as density current and may deposit there or near the rim of the reservoir. A major secondary effect is the downstream degradation of the river channel caused by the releases of clearer water. Siltation in rivers may or may not be accumulative; whereas sedimentation in reservoirs is generally accumulative.

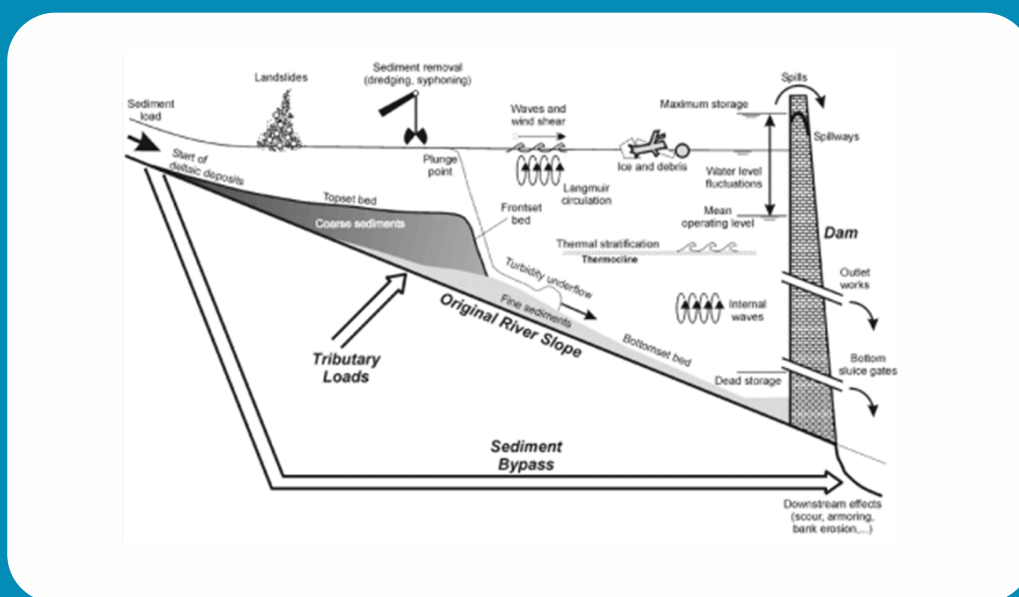


Fig 2 Sedimentation Pattern in Reservoir (USBR, 2006)

Sedimentation processes in a reservoir are quite complex because of the wide variation of the many influencing factors, the most important being, (1) hydrological fluctuations in water and sediment inflow, (2) sediment particle size variation, (3) reservoir operation fluctuations, and (4) physical controls or size and shape of the reservoir. Other factors that for some reservoirs may be quite important are: vegetative growth in upper reaches, turbulence and/or density currents, erosion of deposited sediments and/or shoreline deposits, and operation for sluicing of sediment through the dam.

ANNEXURE-II

APPROACH FOR SEDIMENT MANAGEMENT OF RIVERS

To reduce sediment production in the watershed sustainably, the main actions include (i) study watershed characteristics, (ii) assess the vulnerability of watershed in terms of soil erosion & sediment production using modelling and to identify & prioritise the degraded micro-watershed for treatment, (iii) treatment of the prioritised micro watersheds with biological and engineering erosion control measures, (iv) stream bank erosion control using river training works like spurs etc., and (v) trapping sediment upstream of reservoir (in river) .

Identification of hotspots may be carried out for prioritizing the action plans for Sediment Management thereby helping in targeted, cost-effective interventions. It is recommended to quantify the sediment load in order to identify effectiveness and type of interventions required.

A. Upper course- In this stage, the rivers have steep slopes and high sediment transport capacity. The following sediments management practices may be adopted-

- a. Catchment Area Treatment-** Catchment Area Treatment and Watershed Development works along with good agricultural practices and river bank protection/anti-erosion works are necessary to reduce silt inflow into the river system and must be undertaken in a comprehensive way. Catchment area treatment on watershed approach plays an important role in minimizing sedimentation. Watershed management programme needs to be integrated with river basin management programme appropriately. An effective and permanent method of sediment control is soil conservation in the catchment.

The method to be adopted in catchment may include-

- i. Afforestation and forest management
- ii. Regrading and grassland management
- iii. Cultivation practices, such as crop rotation, increasing organic matter, mulching, seasonal cover crops, contour cultivation, strip cropping and terracing.
- iv. Gully control and check dams- contour bunding and trenching.
- v. Appropriate land use controls for protecting areas of importance.
- vi. The various on-farm practices to control the soil detachment to reduce silt load may include the following practices:
 - To maintain grass cover on soil
 - To control sediment generation through film trap
- vii. Adoption of practice of bio-filter strips, field borders, sediment retention terraces and ponds

- b. **Regrading & Check dams-** Regrading of river bed slope and construction of check dams may be suitably adopted for management of degradation of river beds as per techno-economic feasibility.
- c. Controlled construction activities of roads and houses also reduce the silt intake in hilly areas.
- d. Occurrence of landslides / landslips especially in hilly areas with heavy rainfall need to be controlled by proper slope stability measures.
- e. **Storage Reservoirs-** The reservoirs are built to store water. Incidentally, these act as settling tanks for sediment and trap the sediment carried by the river. Therefore, the sediment concentration of the water released from the reservoir gets effectively reduced depending upon the size of the reservoir.
- f. River training works such as bank protection, spurs etc. should also be made for the vulnerable reaches to check the river bank erosion.
- g. **Boulder/Gravel/ Sand Mining-** In the upper course, boulder, gravels and sand (course & fine) are deposited in the river. If these are mined at this stage and used for construction purpose, then Boulder/ Gravel/sand mining can be done strictly as per following guidelines-

- I. “Sustainable Sand Mining Management Guidelines – 2016” of MoEF&CC
- ii. “Sand Mining Framework” released by Ministry of Mines in March, 2018
- iii. GSI Guidelines for riverbed gravel/ sand mining.

B. Middle course- In this stage, the river exits the hills, enters the plains, gets meandered mostly on bed of fine sand, has a wide river bed and flood plain. Most importantly, the river gets modified through human interventions in terms of huge quantities of water diversion/abstraction and subjected to high degree of pollutant loads from domestic, industrial and agricultural activities. In this stage, following sediments management practices may be adopted:-

- a. **River training works such as bank protection, spurs etc –** River training works are used to control the erosion of river banks. Erosion control of riverbank reduces the sediments intake in river
- b. **Submerged Vanes & Bandalling-** These methods may be adopted for management of localized aggradations within the river course as per techno-economic feasibility.
- c. **Sand Mining -** In this stage, sand is deposited in the river. If these are mined at this stage and used for construction or other purposes, then a major portion of sediment can be reduced. Sand mining can be done as per the guidelines mentioned above.
- d. **De-siltation/Dredging-** De-silting using sluicing and flushing near water resources infrastructure is very effective in increasing their serviceability. However, there exist some

locations such as congestion at the mouth of tidal rivers, confluence points and the likes which can be tackled by de-silting after thorough examination. For navigation purpose the river reaches in the waterway path can be dredged, to have minimum required draft for plying vessels. De-silting improves the hydraulic efficiency if done near outlets and intakes.

When the meander loop extends substantially in the lateral direction, the friction loss over the meander length generates a head loss thereby resulting in a rise in the flood levels. Over the course of time, when the water path around a meander lengthens, arising to a critical level, a natural cut-off takes place. Construction of artificial cut-offs (cunnette) can be utilized as a method for flood control.

It is necessary to appreciate that de-silting does not always lead to reduction of flood levels as the levels in the river are essentially controlled by the hydraulic conditions persisting at the cross sections forming upstream and downstream boundaries of the reach. The lowering of the bed level within the reach may not have influence on them consequently leading back to drainage problems within the season or within a few years. On the other hand, unsystematic dredging may have the effect on bank destabilisation.

- C. Lower course-** In this stage, the river experiences considerable changes in the sediment transport and deposition, causes wide spread flooding, undergoes frequent changes in the channel path/ delta formation.

The following sediments management practices may be adopted:-

- (a) **Desiltation/ Dredging-** In this stage, generally delta formation occurs due to heavy siltation, which leads to drainage congestion and the mouth of river gets choked. In these areas, dredging/ de-silting works may be undertaken to maintain flow continuity and ensure sediments transportation to sea.
- (b) **River training works wherever possible may be taken up for sediment management.**

General Guidelines for carrying out de-siltation/ dredging work

- (i) A study of the river reach may be selected for de-siltation/ dredging by appropriate mathematical and/ or physical model studies by employing consistent practices. Based on the outcome, the DPR may be prepared.
- (ii) Dredging for de-silting of Indian rivers may be adopted only in exceptional circumstances or when no other sustainable alternative is available. However, dredging for maintaining the necessary draft for maintaining the navigation may be done as and where required. However, it shall be ensured that such dredging does not cause any considerable pollution to river water and not harm flora and fauna.
- (iii) The de-silting of any river reach needs to be justified bringing out clearly the flooding caused due to siltation along with technical comparisons of the alternative flood mitigation measures with “do nothing” or “proposed de-silting/ dredging” being other options. It should invariably be associated with sediment flux studies and morphological studies to confirm no significant adverse effect on downstream or upstream reach of the river including the safety and effectiveness of river crossings, water intakes, existing river

bank / flood protection measures, etc. Post dredging, sediment flux studies should also be carried out to quantify the amount of silt likely to be deposited in future i.e. Sediment modelling studies for the river may be done before taking up any such project.

- (iv) Negative impact on ecology and environment due to de-silting may also be studied along with other studies and should be invariably made a part of DPR.
- (v) The quantity of sediments needed to be removed from rivers is usually very high. Since it may not be easy to find lands for silt disposal, therefore it should be ensured that all silt removed from river should be utilized in some works in association with concerned state government.
- (vi) The proposal for de-siltation/ dredging work should also contain environmentally acceptable, practically possible silt disposal/ utilisation plan. River gravels/sands/silts are valuable resource and could be used gainfully in construction works, including housing, roads, embankment and reclamation works. Since it is very difficult to find lands for silt disposal therefore it should be ensured that all silt removed from river is utilized in some works in association with concerned state governments. However, in the critical cases where it becomes necessary to remove the silt for free flow of water or protection of any installation, action may be taken up with the prior approval of the committee.
- (vii) Under no circumstances, disposal should create any contamination of water bodies, harmful to the flora and fauna existing adjacent to the disposal sites or disposed material should come back into the river again.
- (viii) Desilted material should not be used for filling up of wetlands and water bodies including oxbow lakes, as these are important for recharging the ground water and providing base flow in rivers during lean season.
- (ix) The modus operandi for sediment disposal should be finalized before carrying out dredging. No project should be executed before formulating a suitable and sustainable action plan for sediment disposal and be preceded by EIA Study, as per MoEF& CC notification dated 15.01.2016 to avoid damage to ecology. The methodology to be adopted (say use of dredgers etc.) should be clearly laid down in the proposal so that its co-relation with the environmental hazards can be made.
- (x) Normally, funds required for dredging projects are enormous. Before embarking on a major de-silting operation in any of the rivers, the financial implications may be discussed in detail.
- (xi) The dredging/de-siltation/mining activities thereby disturbing the river regime may result into some adverse impacts, i.e., (a) River bed degradation; (b) Bank erosion; (c) Channel widening; (d) Lowering of water surface elevations in the river channel; (e) Lowering of water table elevations adjacent to the river; (f) Reduction in the structural integrity of bridges, pipelines, jetties, barrages, weirs, foundations supporting high tension lines, existing bank protection works and other man-made structures; and (g) Loss of environmental values resulting from (a) through (e). Restrictions as presented in **Annexure III** need to be enforced

before planning and executing any dredging/ de-silting / mining activities. These restrictions may be modified only after proper study and monitoring the effects of dredging / de-silting / mining.

OTHER STRATEGIES

1. Silt management upstream of bridges, barrages & weirs

Shoal formation upstream of barrages/bridges in the pond area is a natural phenomenon. Reduced velocities of water in upstream of barrage leads to deposit of silt, but sometime after construction, this attains equilibrium and the incoming silt is washed away through the under sluices and during the flood season when all gates of the barrage are open.

- I. Upstream reaches of construction works, like barrages/bridges, etc., tend to get silted leading to wandering of river. As the waterway provided for design flood condition is much larger than actual waterway required in normal condition, there is a tendency for shoal formation upstream of barrages. Possibly, proper operation of gates verified on the basis of physical or mathematical modelling, river training, cut-off developments and provision of extra water way near the constrictions could be tried after proper assessment without impacting the morphology of river elsewhere. The area freed from the development in the form of oxbow lakes should be used for flood moderation rather than reclaiming it for other purposes.
- II. Sediment sluicing may be incorporated to maintain sediment continuity from upstream to downstream reaches after carrying out necessary studies.

2. Lateral Connectivity for Sediment Management- Construction of embankment has resulted in breaking the lateral connectivity of river with its flood plain. Therefore, the silt carried by the river is being deposited in river bed only leaving the flood plains devoid of sediments. This has resulted in rising of river bed and causing bank erosion at high flood levels. In order to provide lateral connectivity to the river with its flood plains, sluice gates may be provided at appropriate places in the embankment to allow controlled flooding in flood plains. This will allow silt carried by the river to be deposited in its flood plains in thin layers distributed over vast areas and will ultimately result in reduction of silt loads in rivers and will make the agriculture fields in flood plains fertile. This will benefit in multiple ways-

- (a) Reduced high flood levels in downstream.
- (b) Increased fertility of flood plains. Thus reducing the dependency of farmers on chemical fertilizers.
- (c) Recharge of ground water.
- (d) Rejuvenation of the water bodies etc.

Here, it may be mentioned that the sluice gates which allow incoming of flood waters in country side will be used for discharging extra water in river again when flood levels in rivers go down. Such sluice gates will also reduce drainage congestion on country side, if any.

3. Floodplain Management

River tends to achieve equilibrium on its own given the hydrology, sediment and natural bed and bank disposition. It is necessary to provide the river sufficient flood plain areas and lakes along the river to

moderate the flood level. Any encroachment of flood plain, reclamation of lakes or disconnection of lakes from river should be avoided. Rather, adjoining lakes/depressions may be de-silted to increase their storage capacities. The de-silting of lakes, etc., should be in such a manner that the sediment continuity is maintained and should not lead to head cut that creates safety issues for the river crossings, water intakes or river training works locally or upstream.

To maintain the hydrological and ecological balance, regulation of different activities in the river bed and different zones of flood plain is essential. The River Regulation Zoning for demarcating necessary zones should be implemented as early as possible. Central Water Commission in 1975 has already prepared a draft Flood Plain Zoning Bill in this regard.

4. Solid Waste Management

Solid waste from community including garbage, rubbish, agricultural waste, toxic Industrial discharge, construction debris, landfills in the catchment area etc. all contributes to pollution in rivers which damages highly sensitive and fragile river ecosystem. Such anthropogenic activities cause aggradations and morphological changes in the river. The disposal of solid waste needs to be controlled by the community, local municipal bodies and government bodies.

Special care should be taken for solid waste generated out of industrial processes. Many times, the same contains toxic materials and intermixing with other silt may render the same unusable for food chain use. Such waste should not be allowed to be dumped in the river.

5. River rejuvenation / Environmental flow

There is need to construct storages with sufficient flood cushion. The stored water needs to be released during the non-monsoon period in such a way that environmental flow and silt carrying capacity of river is by and large maintained. This will also improve the ecology of river. In this regard, DoWR, RD & GR, Ministry of Jal Shakti, GoI has issued guidelines on e-flow for river Ganga in 2018 vide notification dated 09.10.18

6. Bed-load management

Bed-load relocation (dredging) and artificial bed load supply, etc. Flood Control Programs-Detention basins (holding ponds), energy dissipaters in channels (culvert outlet controls, forced hydraulic jumps, drop structures, stilling wells, etc. Land use controls: these are used to reduce storm runoff), Embankments/dyke/levee construction, Periodic flushing of rivers, etc may be used to control the sediments.

7. Land Management and Soil Conservation Techniques

Check dams, settling basins, vegetation covers, agricultural practices, etc. may be adopted to control sedimentation.

8. Artificial Nourishment (with sediments) in the River

Due consideration has to be given for artificial nourishment (with sediment) in River stretches/ Reaches that contain inadequate quantity of bed sediments. This is very important to protect psammophilic/ lithophilic organism that are inhibiting in river stretches devoid of adequate supply of sediments.

Further, artificial sediment nourishment is required, in certain cases, to contain the adversities of hungry water effect in river environment. This will also minimise the ill-effect on coastal and near shore environment as well.

9. Application of Multi-Temporal High-resolution Satellite Imagery

Multi-temporal high-resolution satellite imagery may be used for identification of hotspots (heavily sediment-laden stretches). However, there are some limitations for monitoring suspended sediment concentration using remote sensing such as availability of satellite data for the study period as sediment yield is time-dependent and simultaneous satellite imagery might not be available. Therefore, more research is necessary to harness the advancements in satellite remote sensing for studying the suspended sediment dynamics and sediment management in river stretches.

ANNEXURE-III

DREDGING/DE-SILTING/ MINING RESTRICTIONS

The dredging/ de-silting/ mining restrictions are intended to limit the adverse impacts associated with it. They are intended to limit those impacts to a level which will have limited and manageable minor effect on the morphology and ecology of the river. These are guiding principles and de-silting works should be done only and after detailed studies are undertaken. If the State Government/local bodies have any regulatory law in this regard, conservative restriction shall be followed. However, dredging by Government agencies like IWAI, PSUs etc. for maintaining the necessary draft for maintaining the navigation may be done as and where required.

1.0 Restriction on River Bed Degradation

The magnitude of dredging-induced river bed degradation is a key factor influencing the degree of instability of the river channel. This may result in secondary impacts such as bank erosion, channel widening, lowering of water surface elevations adjacent to the river, alteration of aquatic and terrestrial habitat, and a reduction in the structural integrity of man-made structures. Since secondary impacts increase as riverbed degradation increases, the degree of dredging/ de-silting/ mining induced river channel instability can be limited by identifying and selecting appropriate reaches for suitably controlling the amount of dredging related degradation. The dredging /de-silting / mining of the river reach shall be altered or terminated if the average river bed degradation over a 10 km reach length is more than 1 meter. A reach of river which has been dredged / de-silted /mined out and closed for further dredging will not be reopened until sufficient materials have accumulated to support renewed dredging activities for a reasonable period of time.

2.0 Restrictions Concerning Man-made Structures

2.1 Barrage or weirs or jetties

The barrages or weirs act as a river bed control structures across river and have huge influence on the river bed. If they fail, it could induce unintended severe riverbed degradation, bank erosion and channel widening due to design and other related issues. The unregulated dredging/ de-silting can result in Structural/functional failure of the structure in addition to the ill effects on river regime. To safeguard the structural integrity of the barrage or a weir, following restrictions shall apply:-

- a) Dredging/ de-silting/ mining activity upstream of structure will be allowed only beyond 200 m or $L/5$ whichever is more (Where L is the length of barrage/weir).
- b) Dredging/de-silting/ mining activities downstream of the structures will be allowed only beyond a distance of 800 m or L whichever is less (Where L is the length of barrage/weir).
- c) The region of extraction shall be decided in upstream so as to have a positive effect on hydraulics of the pond and channel.
- d) Maximum volume of extraction on downstream shall be decided by proper monitoring so that it will not have any effect on the integrity of the structure.

2.2 Water Intake Structures

No dredging below the natural bed level will be allowed within 150 m distance from the intake structures for safeguarding structural integrity. However, dredging can be carried out, if the water flow to the intake structures has been obstructed by excessive sedimentation. The dredging activity shall be restricted so that the water level reduction will not lead to functional difficulties in diverting water in to the intakes.

2.3 Bridges

No dredging will be allowed below the level of top of raft/bottom of pier within 150 m of any bridge crossing to safeguard the structural integrity of the bridge. This shall not be applied where water way has been obstructed by excessive sediment deposit and is causing flooding of upstream reaches.

2.4 Pipelines

2.4.1 Pipelines buried in the riverbed have a high potential to be adversely impacted by dredging activities. If degradation of the riverbed exposes pipelines, damage could occur through sagging, buoyancy or displacement of the line downstream due to an accumulation of debris. The following restrictions will limit the potential for dredging/ de-silting/ mining induced localized degradation to expose buried pipelines:

- a) No dredging will be allowed within 60 m of any pipelines that is buried 3 m or below the river bed.
- b) No dredging will be allowed within 150 m from any pipeline that is buried less than 3 m below the river bed. Additional restrictions may be required for any pipeline located on or above the river bed. Such restrictions could be developed on a case by case basis.

2.4.2 Laying of pipelines/telecommunication lines/internet cables etc. below the bed of any river should be done only after the approval of the concerned competent authority.

2.5 Bank Stabilization Structures

No dredging will be allowed within 60 m of the most upstream and downstream point of the bank stabilization structure. Dredging/ de-silting/ mining restrictions as shown in Figure 1 & 2 and the limit given in Guidelines/Notification 2020 of MoEF&CC shall apply for the bank stabilization structures. The same restrictions shall apply to levees or embankments also.

2.6 Other structures

The support structure for high tension lines passing over the river shall also be treated as bridge piers and relevant restrictions as provided in clause.2.3 for bridges shall apply. Restrictions regarding other man-made structures not identified in this section may be determined on a case to case basis.

3.0 Restrictions Concerning Natural Formations

3.1 Natural Rock or Hard Deposits in River Channel

Natural rock or hard deposits located on or in the riverbed may act as riverbed controls and/or may increase aquatic habitat diversity. The importance of rock or hard deposit is dependent upon extent of its area, its thickness and other relevant factors. Based on these hard deposits, river is restrained to flow along a predefined alignment. Dredging/ de-silting/ mining shall not dislodge such hard deposits or dredging of collected silt upstream or downstream of such hard stratum shall not in turn displace it, whereby the river loses its control. Therefore, restrictions concerning natural rock deposits will have to be dealt case by case basis. River Ganga flows along important ghats of Varanasi and other such places, where people gather in large numbers. It is held to flow along these ghats due to peculiar alignment formed by rock or hard strata and silt deposits together. Hence, dredging / de-silting / mining shall be avoided at these places entirely along the width and at least 5 km upstream and downstream of such congregational areas. However, for navigational purpose, limited dredging will be allowed in such shallow reaches as recommended in DPR.

3.2 River Banks

Dredging/ de-silting/ mining close to riverbanks have a high potential to adversely impact the stability of those banks, especially when dredging/ de-silting/ mining occurs near the outside of sharp river bends. Bank erosion induced by such dredging can result in the loss of land, damages to man-made structures, and adverse impact to environmental resources. Therefore, to limit the potential bed/bank degradation, restrictions as per notifications and guidelines being notified under Environment (Protection) Act, 1986 (latest Guidelines/Notification 2020 of MoEF&CC) shall apply on Dredging/ de-silting/ mining. The restrictions as shown in Figures 1 and 2 may be used as a guide as documented for river Ganga in the report of the Committee constituted for preparation of guidelines for works on de-siltation from Bhimgauda (Uttarakhand) to Farakka (West Bengal) prepared in 2017. Such restrictions for other rivers need to be derived by studies.

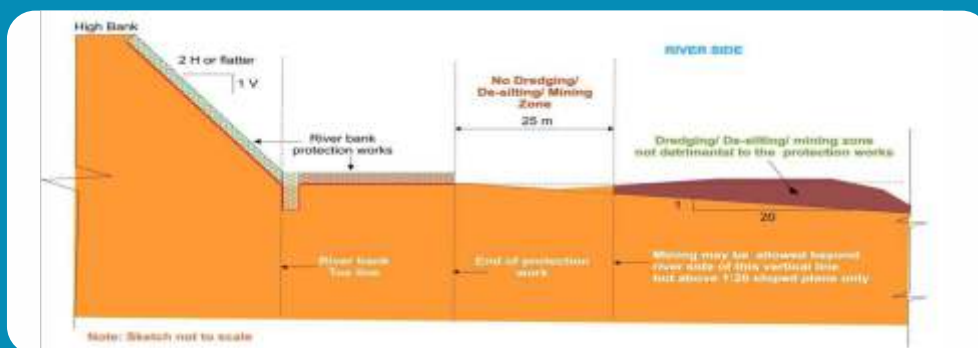


Figure 1: Typical Dredging / De-silting / Mining Restrictions for protecting river bank with bank protection works

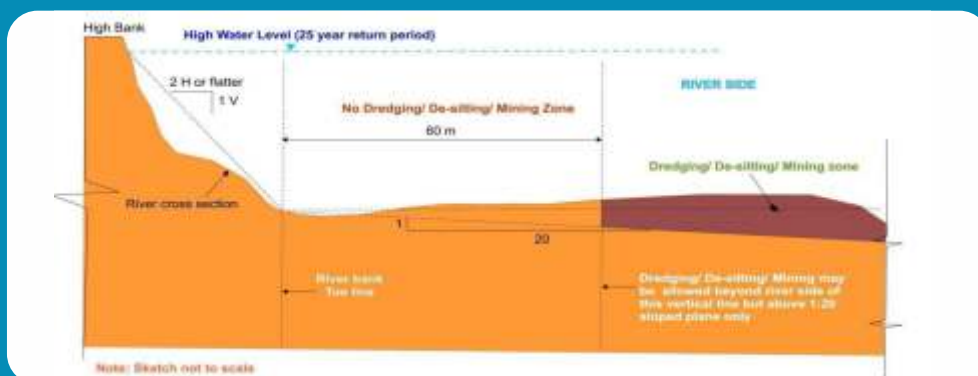


Figure 2: Typical Dredging / De-silting / Mining Restrictions for protecting natural river banks

ANNEXURE-IV

SEDIMENT-A RESOURCE

NATURAL FUNCTIONS OF SEDIMENT

The presence of the sediment in rivers is very important and equally beneficial. It is important because it often enriches the soil with nutrients. This deposited sediment on the banks and flood plains of a river which is highly mineral-rich makes excellent and the most fertile farmlands. This even reduces the need of fertilisers and pesticides to be used for cropping.

Areas rich in sediments are often also rich in biodiversity. They also provide the spawning bed for fishes. Further, deltas are the wetlands that form as rivers empty their water and sediment into oceans/seas. These deltas are important wetland habitats. Plants such as lilies and hibiscus grow in deltas, as well as herbs such as wort, which are used in traditional medicines. Many animals (Hilsa fish, crustaceans such as oysters, etc) are indigenous to the shallow, shifting waters of a delta. River sediment is an important source of beach nourishment. Sediment starvation may result in receding riparian zones and wetland.

BENEFICIAL USES OF SEDIMENT

Most dredged/removed/extracted material can be a valuable resource and should be considered for beneficial uses. Potential beneficial uses of dredged material should be thoroughly examined as part of pre-project planning studies. Preliminary surveys should be made during the reconnaissance phase of new studies and detailed aerial and ground surveillance should be conducted for feasibility studies. Modern tools such as remote sensing, visual data management systems and automatic data processing may be employed to help determine the most appropriate locations and best uses for dredged material.

Depending upon the geological formation a river passes through, the dredged material will vary in its composition. Therefore, the suitability of the dredged material has to be investigated/ assessed for its optimal application. Physical, engineering and chemical characteristics of dredged material proposed for beneficial use must be determined during the initial stages of planning. A number of standard soil properties are used to determine the physical and engineering characteristics of dredged material. Soil tests mainly would include grain-size analysis, Atterberg's Limits, bulk density, specific gravity and compaction characteristics. Engineering tests may mainly include shear strength, compressibility and permeability parameters. The chemical characteristics determination may include chemical constituents, cation exchange capacity, Nitrogen, Sulphur, Heavy metals, water quality considerations, concentration, organic content and contamination depending on the potential use.

The most common beneficial use of the dredged material is as a substrate for habitat development which refers to the establishment and management of relatively stable and biologically productive plant and animal habitats. This can range from wetland, upland, aquatic to island habitats. The river dredged material, if suitable can be used for construction, raising and strengthening of embankments, dykes, levees for bank protection works, raised platforms for flood proofing etc. This would serve the dual purpose of increasing the water flow area in the river as well as a resource material for use in river bank protection works.

Shore erosion is a major issue along the country's coastline and one of the most desirable, cost-effective shore protection alternatives is beach nourishment, which is usually accomplished by transporting sand/ sandy dredged material from inshore or offshore locations by truck, hopper dredge or hydraulic pipeline to an eroding beach.

Other uses for dredged material include agriculture, forestry, horticulture, aquaculture industries, reclamation of abandoned strip mine sites, capping of solid waste landfills, protect landfills, manufacture bricks and hardened material that could be moderately contaminated and still be acceptable.

The dredged material is generally a good fill material for a variety of construction projects and serves as foundation material for road projects. Industrial/commercial development near waterways can be aided by the availability of hydraulic fill material from nearby dredging activities. The use of dredged material to expand or enhance river bank or port-related facilities has the potential benefits to the local economy.

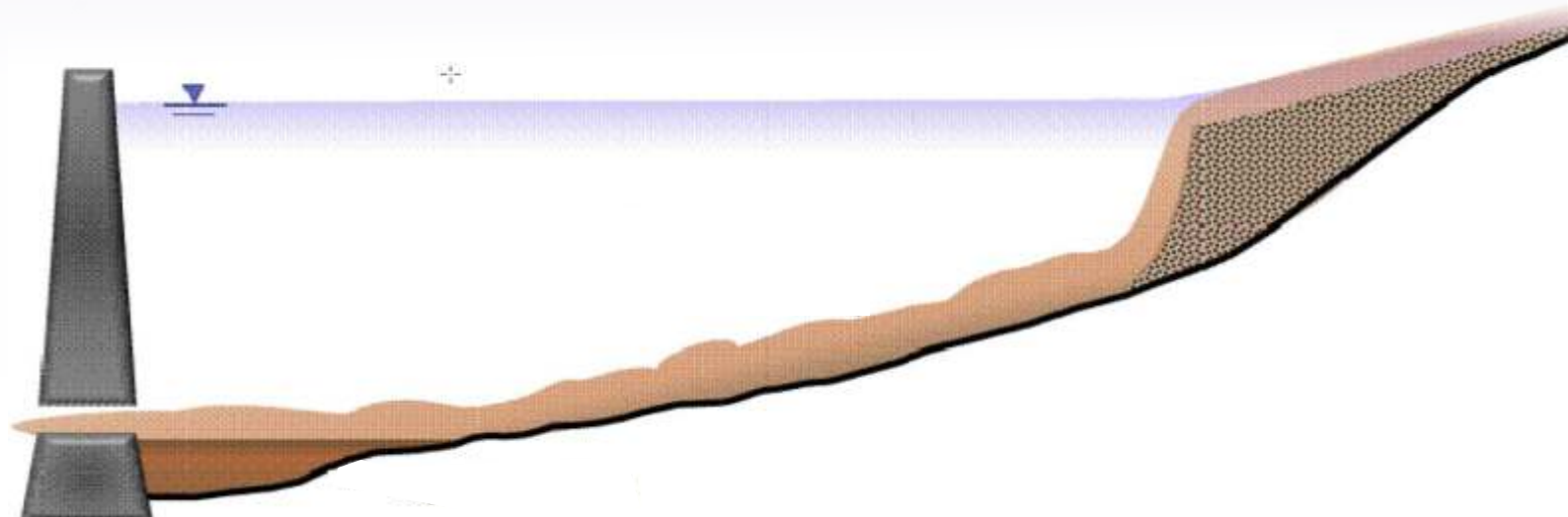
In spite of the sometimes poor foundation qualities, dredged material containment areas have become useful sites of high and low rise residential and business complexes. However, it is mandatory to ascertain the competency and suitability of the dredged material when it is proposed to be used in the foundation or as a construction material. Success has been attained where the properties of the dredged material have been properly accounted for in the residential design. A number of coastal areas have been built on dredged material foundations in areas where insufficient land was available for a commercial airport and use of dredged material was easily justified both economically and socially.

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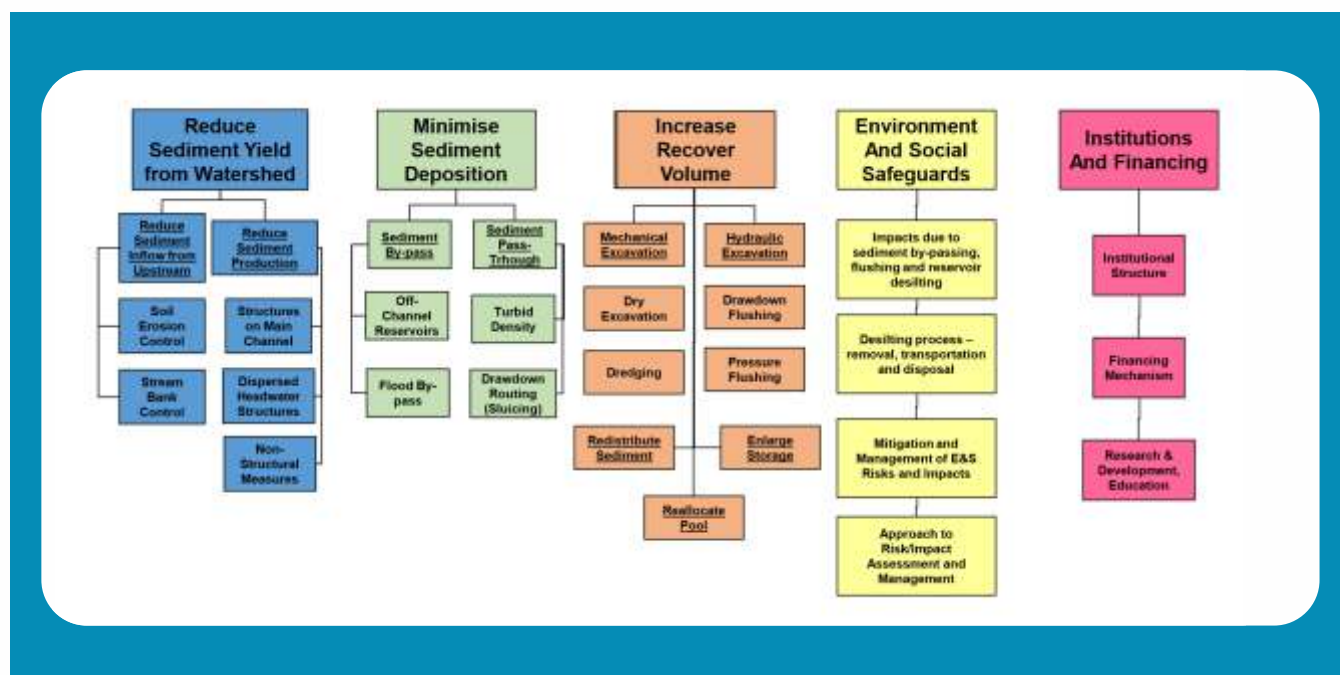
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ANNEXURE-V



MEASURES FOR SEDIMENT MANAGEMENT IN RESERVOIR



Measures to reduce sediment yield from watershed are common for rivers as well as reservoirs. The approach given under **Annexure-II** may be referred for further details.

The other strategies for sediment management in reservoirs are described hereunder:

A. Minimize Sediment Deposition

1.0 Sediment Bypass

It is a technique for reducing sediment inflow/deposition into reservoirs. This can be further sub divided into two categories:

1.1 Flood Bypass Channel or Tunnel

The purpose of a bypass is to divert sediment laden flood flows around a reservoir to downstream of the dam. By-passing a reservoir by making use of conveyance structures (tunnel or channel) is often only feasible when favorable hydrological, topographical and morphological conditions exist. The ideal geometry for sediment bypass is one where the river makes a sharp turn between the point of sediment collection and the point of sediment reintroduction to minimize the length of the conveyance device and take advantage of the relatively steeper gradient for gravity flow. Where that ideal condition does not exist, the technique is most practical where the reservoir is relatively short, as there must be sufficient gradient to drive the transport of sediment through the diversion tunnel or diversion channel. This measure has considerable financial implication in construction of diversion infrastructures, hence may not be preferable options for many reservoirs.

1.2 Off-stream reservoir

Off-channel/Off-stream storage reservoirs are built adjacent to the main river channel (e.g., a small tributary or on the flood plain). Water from the main river is diverted into the reservoir during times of low sediment concentrations. It is an alternate approach to sediment bypass tunnel, such that the diversions from the weir are clear-water diversions, while sediment-laden water is left in the river to pass downstream. Similar to sediment bypass, there needs to be sufficient gradient to drive flow through diversion channels or tunnels to the off-channel storage feature. One advantage of this approach is that all bed load entering into reservoirs can be excluded.

2.0 Sediment Pass-through

It is the technique for evacuation of sediments from reservoir. There are various methods for pass-through described here under:

2.1 Reservoir drawdown/slucing

Sluicing is an operational technique by which a substantial portion of the incoming sediment load is passed through the reservoir and dam before the sediment particles can settle, thereby reducing the trap efficiency of the reservoir. This is accomplished in most cases by operating the reservoir at a lower level during the flood season in order to maintain sufficient sediment transport capacity (turbulent and colloidal) through the reservoir. Higher flow velocities and higher sediment transport capacities in the water flowing through the reservoir result from operating the reservoir at these lower levels. The increased sediment transport capacity of the water flowing through the reservoir reduces the volume of sediment that is deposited. After the flood season, the pool level in the reservoir is raised to store relatively clear water. Effectiveness of sluicing operations depends mainly on the availability of excess runoff, on the grain size of the sediments and on reservoir morphology. One advantage of this approach is that deposition in the reservoir is minimized and the sediment continues to be transported downstream during the flood season when sediment is naturally discharged by the river. Finer sediments are more effectively transported through the reservoir than coarse sediments. A drawdown and sluicing strategy may be employed at reservoirs of all sizes, but the duration of sluicing depends on the watershed size and the time scale of flood events.

2.2 Vent turbid density currents

In some instances sediments can flow into a reservoir as a density current. This phenomenon can occur when the sediment concentration in the inflow is much higher than the water in the impoundment and/or there is a significant temperature difference between the incoming flow and the impounded water. Under such circumstances the density current may flow under the impounded water in the reservoir toward the dam. If the density current is not allowed to flow through the dam by means of low-level gates, a technique known as density current venting, it will curl up at the dam and its return-flow will mix with the clearer water in the reservoir. The sediment thus mixed into the clearer water will deposit with time. Most dams have been designed with a dead storage capacity below which there are no outlets and therefore the water in this zone cannot be used. Many designers incorrectly assumed that sediments would naturally deposit in this dead storage.

B. Increase/Recover Volume

1.0. Mechanical Excavation

1.1. Dry Excavation

By dry excavation, sediment which is temporarily above water is removed from the reservoir bed. At the upper delta area of the reservoir with coarse sediment deposits from flood events, the reservoir bed can be dried out and excavated by lowering the reservoir level, for instance on a seasonal basis if water level variations over the seasons are predictable. Earth-moving equipment such as bulldozers, scrapers, excavators and trucks are used. Dry excavation in the delta may be done in combination with installing a sediment check dam at the upstream end of the reservoir and mechanically removing sediment captured in the check dam.

By completely emptying the reservoir of water, access is allowed to dry excavation of the finer sediment in the lower part of the reservoir. Dry excavation in this part will in general be more challenging due to the finer material which tends to have higher water content if unconsolidated, and considerable time may be required for the sediment to dewater and consolidate. Furthermore, the access road by truck along the reservoir bed to transport the excavated sediment away may be difficult to establish. Costs of emptying the reservoir should also consider the lost benefits of power production, flood control, water supply for irrigation etc.

Coarse sediment at the upper delta consisting of sand and gravel, usually represent a higher commercial value than fine silty or clayish material from the lower part of the estuary. Such added benefits of reusable sediment which could be transported directly to the buyer of such sediment, should be considered.

The feasibility of mechanical excavation as compared to alternatives also depends on the volume of material involved to be transported from the reservoir by truck and the difficulty of obtaining suitable sites for placement of the excavated material within an economic distance with least environmental and social impact.

As dry excavation with complete emptied reservoir is performed by shutting down the dam for one year or more, it will be a larger investment in terms of lost benefits, and the interval in between such operations should be a specified number of years to be determined by careful sedimentation analyses. In case of cascade of reservoirs, the lost benefits may be alleviated by de-silting reservoirs in rotation.

1.2. Dredging

By dredging, sediment is removed from the reservoir bed from beneath the water. Mechanical excavators mounted on barges represent one option whereas hydraulic dredging with use of slurry pipelines by which a mix of sediment and water is pumped onshore is another option. Mechanical excavators are most efficient with coarse and/or well consolidated sediment in shallow areas. While excavating and lifting sediment from the bottom to the water surface, spill may occur, and the softer/finer material, the more spill.

Hydraulic dredging is a common solution to sediment removal in the deeper part of the reservoir. Transport and disposal of sediment are key factors to consider. One option is to

discharge the dredged material downstream of the dam in a way, so that the downstream river has capacity for this extra sediment load. In such case, hydrosuction dredging or siphon dredging utilising the gravity of force can be considered to reduce pump energy requirements. Another option is to pump the slurry to nearby containment areas, from where the water can be drained, and the dredged material can settle and consolidate for either permanent disposal or transport by other means (trucks) to other disposal sites.

Important considerations for accessing the feasibility are the cost and efficiency of the dredging equipment itself, power supply, the dredging operation including synchronisation with the river flow, natural as well as released flow downstream, the transport and disposal of the slurry and/or excavated sediment, the sediment spilling including adverse effects this may have on the environmental conditions within the reservoir. Transport of heavy dredging equipment, spare parts, fuel etc. to and from the reservoir site is another consideration.

Pump energy, abrasion of equipment, and availability of nearby containment areas (including the river downstream) are main factors which determine the feasibility of dredging. Considering that sedimentation is of increasing concern in many countries, substantial product development goes on and many new technologies such as submersible dredge pumps emerge. Thus, awareness of the newest solutions within dredging is important to identify the best technical solutions.

Every dam site has its own constraints and opportunities when it comes to de-silting and solutions may be very different for e.g. small irrigation dams and for large hydro-power reservoirs

2.0. Hydraulic Excavation

2.1. Draw-down Flushing

Flushing is a technique whereby the flow velocities in a reservoir are increased to such an extent that deposited sediments are re-mobilized and transported through low-level outlets in the dam. For flushing to be successful, in general the ratio of reservoir storage to mean annual flow should not exceed 4%, because with larger storage the reservoir cannot be easily drawn down. Also flushing flows need to pass through the low-level outlet without appreciable backwater; it may not be feasible to use large floods which exceed low-level gate capacity as flushing event.

Two approaches to flushing exist: complete draw-down flushing and partial draw-down flushing. Complete draw-down flushing (reservoir is emptied during the flood season), resulting in the creation of river-like flow conditions in the reservoir. Partial draw-down flushing occurs when the reservoir level is drawn down only partially. In this case the sediment transport capacity in the reservoir increases, but usually only enough to allow sediment within the reservoir to be re-located, i.e., sediment is moved from upstream locations in the reservoir basin to locations further downstream and closer to the dam.

2.2. Flushing Sediment for Dams in Series

In flushing sediment through a series of dams, simultaneous flushing can be accomplished by releasing the flushing pulse first from the upstream reservoir. Just before that pulse reaches the next downstream reservoir, its lower level gates are also opened to pass the sediment. After finishing the

sediment flush, the reservoirs are refilled and clear water released from upper level gates to flush the downstream channel of deposited sediment. The basic sequence of operations is to draw down the reservoir water level, maintaining a free-flow state over several hours (the duration being determined by the amount of sediment to be flushed), and then allowing the reservoir water level to recover.

2.3. Pressure flushing

This technique is a variant of draw-down flushing, rather than drawing the reservoir down so that it is acting like a river in carrying its sediment load, pressure flushing works only to remove sediment directly upstream of the dam to keep intakes operational. The reservoir level is not lowered, but outlets are opened to remove sediments a short distance upstream of the outlet, creating a cone-shaped area of scour just upstream of the outlet, the scour hole being created in a fraction of the time it would take to refill. However, the scale of sediment removal by this technique is much smaller than with draw-down flushing. Rather, pressure flushing serves to reduce sediment concentrations to the intake and thereby reduce abrasion of hydraulic structures by sediment. To maintain or restore reservoir capacity, pressure flushing is not an effective technique.

3.0. Adaptive Strategies

As an alternative to actively handling sediment, the lifetime of reservoirs may be prolonged through other approaches. This must be considered in the feasibility studies of de-silting. A non-exhaustive list of options is described below.

3.1. Reconfigure Reservoir Layout

Other than from siltation over the last decades of an ageing reservoir, the hydrological design basis may have altered (e.g. different hydrograph inflow due to climate change, upstream watershed characteristics etc.), and the water resource demands downstream may also have changed considerably.

With new design criteria, consideration of new benefits and new costs (including environmental and social safeguarding costs), definition of minimum requirements, a redesign of the existing reservoir may therefore be considered. With relevant modifications, a conversion of the current layout of the reservoir into a different reservoir (although located at the same place) may be investigated.

Reconfiguration could be by dividing the existing pool into two or more interlinked pools, some possibly off-channel. Pools could serve different purposes (flood control, water supply for irrigation and other, hydro-power, fishery, tourism etc). Each pool will have better steering of sediment processes such as siltation of fine sediment in some pools and coarse sediment in other (upstream) pools. Efficient sediment handling strategies will be devised for each. The overall storage capacity will most likely be less (as existing siltation is still there), but the remaining capacity is better utilised.

A reconfiguration of the reservoir layout and utilisation will be an attempt to convert the design into a life cycle management mode instead of the original finite lifetime mode. Re-establishing a natural long-term balance of sediment considering the need for natural sediment transport processes in the downstream river should be part of this approach.

3.2. Modify Reservoir Structures

The lifetime of the reservoir may be extended by few passive modifications of the structures in the reservoir or addition of new structures.

Check dams upstream of the reservoir will arrest coarse sediment, which can subsequently be dry excavated. Other guiding structures could be built in parts of the reservoir (or sub-pools) to manipulate the flow pattern and thereby the sediment transport and siltation pattern. Submerged guiding walls could steer the near-bed sediment processes like fluid mud. The elevation of outlets could be increased. Sediment screens could protect inlets. Eddy formations in front of penstocks which cause high suspended sediment concentrations could be arrested by structural measures to reduce coarser abrasive sediment that reaches turbines. Protective coatings of gates, pipelines, and other equipment exposed to scour or abrasion by sediment.

The crest of the dam may be elevated to increase the storage volume, and the elevation of the spillway can be increased and thereby modifying the overall rules of reservoir operation. This will, however, not address the overall siltation issue, but simply extend the lifetime of the reservoir.

3.3. Improve Operational Efficiency

The efficiency of the storage capacity allocated for different purposes must be considered as an alternative to increase the storage volume. The feasibility of such solutions may be many times more beneficial but may involve participation of other stakeholders also. Examples are provided in the following.

Flood control is usually based on decades-old operating rules. With modern technology and use of low-cost internet-of-things sensor technologies, real-time hydrological data can be collected, processed and used as the backbone of dynamic rule-curves.

The same real-time data technology is applicable for hydro-power production, which may also take other parameters into account in a dynamic multi-criteria optimisation using real-time data of grid demands, electricity spot pricing forecasts, as well as conjunctive use of stored water for multiple purposes (power production during flood prone season, or crop-growth season etc.).

The loss of water in irrigation canal systems (transmission losses), as well as the field efficiency in the command area (equal distribution between fields, use of drip and sprinkler irrigation etc.), and the crop efficiency of water use (crop-per-drop) can in most cases be substantially improved. Examples of water loss of 50-80% are not uncommon in irrigation systems and should be considered as options alongside with desilting reservoirs. Other water-intensive activities drawing water from the reservoir may also be optimised.

4.0. Mechanical Removal of Silt

During low season (low flow conditions) when the reservoir is dry or marginally filled, silt may be removed from the live storage area and transported to a desired safe location. Though Environmental impact during dry excavation is generally not very high, as dry earth is being removed, it should not contribute to sediment runoff during subsequent rainy/flood conditions. This dumping place should be selected in such a way that neither it becomes a cause of sedimentation of the same reservoir from which the sediment is removed nor cause of deposition in subsequent reservoirs. Further, the temporary approach roads laid for truck movements for silt

removal shall be cleared off on completion of the work as it may affect the flow path of water into the reservoir later.

5.0. Handling of Removed Sediment

Disposal or use of sediment which is removed from the reservoir is a major consideration which must be investigated thoroughly as part of the feasibility analysis. The characteristics of the sediment: Quantity as well as Quality, must be clarified as part of the long-term sediment monitoring programme as well as additional sediment analysis in connection with de-silting projects. The quality of sediment is related to its physical properties (grain size, density, load-bearing capacity, cohesiveness etc.) as well as chemical and biological properties (toxicity, nutrient contents, metal contents, organic contents, sediment oxygen demand etc.) and determines its environmental impact and potential utilisation. Different options for handling the sediment must be considered for planning de-siltation actions. The available strategies are Disposal of Sediment below Dam, Transport and Disposal Off-channel, filling up old abandoned mineral mines to reduce land subsidence, Redistribute sediment within reservoir, utilisation as resource, etc.

ANNEXURE-VI

**Suggestive composition of State Technical
Advisory Committee (TAC) for Techno-economic
Appraisal of Sediment Management Schemes**

S No	Committee Composition	
1	Principal Secretary(Irrigation/Flood Control/ water Resources)	Chairman
2	Representative of State Finance Department	Member
3	Chief Engineer of CWC of concerned basin	Member
4	Representative from State Environment & Forest Department	Member
5	Member (Technical). Inland Waterways Authority of India and Development Advisor (Ports) MoPSW.	Member
6	Representative from Dept of Mining	Member
7	Representative from District Administration of concerned area	Member
8	Engineer- in-Chief (Flood control/ Water Resources/ Navigation/ Irrigation)	Member
9	Representative from Ministry of Earth Sciences	Member
10	Representative from Building Construction Dept/ Road Construction Dept	Member
11	Regional Officer, MoRTH/NHAI/NHIDCL	Member
12	Member from Downstream State (in case of Inter State implication)	Member
13	Chief Engineer/General Manager (Dam Owner/ Project Authority	Member Secretary

Terms of Reference (ToR) of the Committee:

1. The Committee shall examine the proposal in detail from Technical, Environmental and Financial and social aspects including BC ratio.
2. Committee shall examine details critically and ensure that the proposed works are not repetitive in nature.
3. Source of funding of scheme may be mentioned.
4. Committee shall check the DPR prepared as per guidelines and having all relevant information.
5. Committee may co-opt any member as Special Invitee.
6. Committee shall ensure that works are not broken in pieces to reduce the level of approval.

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सत्यमेव जयते

**Government of India
Ministry of Jal Shakti
Department of Water Resources,
River Development
and Ganga Rejuvenation**

National Framework for Sediment Management

F. No. 3-70/2020-IA.III [141127]
 Government of India
 Ministry of Environment, Forest and Climate Change
 (IA Division)

Indira Paryavaran Bhawan
 Jor Bagh Road, Aliganj,
 New Delhi - 110003

Dated: 21st August, 2023

OFFICE MEMORANDUM

Subject: Monitoring and enforcement mechanism for the Standard Operating Procedure (SoP)/environmental safeguards issued for (i) Extraction or sourcing or borrowing of ordinary earth for the linear projects such as roads, pipelines, etc. and (ii) dredging and de-silting of dams, reservoirs, weirs, barrages, rivers and canals for the purpose of their maintenance, upkeep and disaster management - reg.

The Ministry vide Notification S.O. 1224 (E) dated 28/03/2020 had *inter-alia* provided exemption from prior Environmental Clearance for extraction or sourcing or borrowing of ordinary earth for the linear projects such as roads, pipelines, etc., and dredging and de-silting of dams, reservoirs, weirs, barrages, rivers and canals for the purpose of their maintenance, upkeep and disaster management.

2. Subsequently, in pursuance to the order dated 28/10/2020 of Hon'ble National Green Tribunal, Principal Bench in Original Application No. 190/2020 in the matter of Noble M. Paikada Vs. Union of India & Ors, the MoEF&CC issued Office Memoranda of even number dated 8/8/2022 and 12/07/2023 respectively regarding the Standard Operating Procedure (SoP)/environmental safeguards to be followed for the entries 6 and 7, as mentioned below, under the Appendix IX of the EIA Notification, 2006 which have been exempted from the requirement of obtaining environment clearance vide Notification dated 28/03/2020 :

6. *Extraction or sourcing or borrowing of ordinary earth for the linear projects such as roads, pipelines, etc.*
7. *Dredging and de-silting of dams, reservoirs, weirs, barrages, river and canals for the purpose of their maintenance, upkeep and disaster management.*

3. The Ministry deems it necessary to ensure that aforementioned SoP/environmental safeguards are implemented in letter and spirit at the field level, for which a monitoring and enforcement mechanism needs to be put in place.

4. In this regard, it is enjoined upon all the Project Proponents availing of the aforesaid provisions and carrying out activities related to entries 6 and 7 of Appendix IX of the EIA Notification, 2006 to inform the concerned State Pollution Control Board (SPCBs) / Pollution Control Committees (PCCs) at least a fortnight before start of such activities in writing giving details of such activities and the environment safeguards being observed by them as laid out in the applicable SOP referred to in the para number 2 above.

5. All the State Pollution Control Board (SPCBs) / Pollution Control Committees (PCCs) shall independently monitor the compliance status of the aforementioned SoP/environmental safeguards as the case may be. All the State Pollution Control Board (SPCBs) / Pollution Control Committees (PCCs) shall also monitor the aforementioned SoP/environmental safeguards while monitoring the compliances of the CTE (Consent to Establish) and CTO (Consent to Operate) conditions. Further, the SPCBs/PCCs shall initiate legal action against the project proponent under the relevant provisions of Environment (Protection) Act, 1986 for the projects not complying with the aforesaid SoP/environmental safeguards, as may be applicable.

6. This is issued with the approval of the Competent Authority.


(Sundar Ramanathan)
Scientist 'E'

To

1. Chairman, Central Pollution Control Board (CPCB)
2. Chairman and Member Secretaries of SEIAA/ SEACs
3. Chairpersons/Member Secretaries of all SPCBs/UTPCCs
4. All the Officers of I.A. Division

Copy for information to:

1. PS to Hon'ble Minister for Environment, Forest and Climate Change
2. PS to Hon'ble MoS (EF&CC)
3. PPS to Secretary (EF&CC)
4. PPS to DGF&SS (EF&CC)
5. PPS to AS(TK)/PPS to JS (SKB)
6. Website, MoEF&CC/Guard file



भारत का राजपत्र The Gazette of India

असाधारण

EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)

PART II—Section 3—Sub-section (ii)

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पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय

अधिसूचना

नई दिल्ली, 25 जुलाई, 2018

का.आ. 3611(अ).—भारत सरकार के तत्कालीन पर्यावरण और वन मंत्रालय की अधिसूचना सं. का.आ. 1533(अ) तारीख 14 सितंबर, 2006, भारत के राजपत्र, असाधारण, भाग II, खंड 3, उपखंड (ii) में (जिसे इसमें इसके पश्चात् उक्त अधिसूचना कहा गया है) प्रकाशित की गई थी, जिसके द्वारा पूर्व पर्यावरण निकासी के संबंध में निदेश जारी किए गए हैं ;

और पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय में उक्त अधिसूचना को का.आ. 141(अ) तारीख 15 जनवरी, 2016 द्वारा संशोधित किया है, जिसमें गौण खनिजों के लिए जिला सर्वेक्षण रिपोर्ट तैयार करने की प्रक्रिया को विहित किया गया है ;

और रांची स्थित माननीय झारखंड उच्च न्यायालय ने 2015 की रिट याचिका (पीआईएल) संख्या 1806, स्वप्रेरणा बनाम झारखंड राज्य एवं अन्य के मामले में रिट याचिका (पीआईएल) सं. 2013 की 290, हेमंत कुमार शिल्कारवर बनाम झारखंड राज्य एवं अन्य के मामले में, अन्य बातों के साथ, तारीख 11 अप्रैल, 2018 और 19 जून, 2018 के आदेश में बालू और रेत से भिन्न गौण खनिजों के लिए जिला सर्वेक्षण रिपोर्ट तैयार करने या बालू और रेत से भिन्न गौण खनिजों की जिला सर्वेक्षण रिपोर्ट तैयार करने के लिए शक्तियों का प्रत्यायोजन करने के लिए राज्य सरकार और/या जिला पर्यावरण संघात निर्धारण प्राधिकरण और जिला विशेषज्ञ मूल्यांकन समिति को निदेश दिया है ;

और केंद्रीय सरकार लोक हित में पर्यावरण (संरक्षण) नियम, 1986 के नियम 5 के उपनियम (3) के खंड (क) के अधीन सूचना देने की अपेक्षा से अभिमुक्ति प्रदान करती है ;

और केंद्रीय सरकार, पर्यावरण (संरक्षण) नियम, 1986 के नियम 5 के उपनियम (4) के साथ पठित पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 3 की उपधारा (1) और उपधारा (2) के खंड (v) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए भारत सरकार के तत्कालीन पर्यावरण और वन मंत्रालय की अधिसूचना सं. का.आ. 1533(अ) तारीख 14 सितंबर, 2006 में निम्नलिखित और संशोधन करती है, अर्थात् :-

उक्त अधिसूचना में परिशिष्ट 10 के स्थान पर निम्नलिखित रखा जाएगा, अर्थात् :--

“परिशिष्ट 10

[पैरा 7 (III) (क) देखें]

1. बालू खनन या नदी तल खनन के लिए जिला सर्वेक्षण रिपोर्ट तैयार करने के लिए प्रक्रिया

जिला सर्वेक्षण रिपोर्ट तैयार करने का मुख्य उद्देश्य (भरणीय बालू खनन के लिए मार्गदर्शक सिद्धांतों के अनुसार) निम्नलिखित को सुनिश्चित करना है :--

उच्चयन या जमाव के क्षेत्रों की पहचान, जहां खनन को अनुज्ञात किया जा सकता है ; और भूक्षयण के क्षेत्रों की पहचान तथा अवसंरचना ढांचों और प्रतिष्ठापनों से निकटतम जहां खनन को प्रतिषिद्ध किया जाना चाहिए और भराई की वार्षिक दर की गणना तथा उस क्षेत्र में खनन के पश्चात् भराई के लिए समय को अनुज्ञात करना ।

रिपोर्ट के निम्नलिखित संघटक होंगे :

- (1) प्रस्तावना ;
- (2) जिले में खनन कार्यकलापों का विहंगावलोकन ;
- (3) अवस्थिति क्षेत्र और वैधता की अवधि सहित जिले में खनन पट्टों की सूची ;
- (4) पिछले तीन वर्ष में प्राप्त स्वामित्व या राजस्व के ब्यौरे ;
- (5) पिछले तीन वर्ष के दौरान बालू या रेत या गौण खनिज के उत्पादन के ब्यौरे ;
- (6) जिले की नदियों में तलछट के जमा होने की प्रक्रिया ;
- (7) जिले का साधारण प्रोफाइल ;
- (8) जिले में भू उपयोग का पैटर्न : वन, कृषि, उद्यान कृषि, खनन आदि ;
- (9) जिले की भूगर्भीय स्थिति ;
- (10) मासवार वर्षा ;
- (11) भूगर्भ और खनीज संपदा ।

पूर्वोक्त के अतिरिक्त रिपोर्ट में निम्नलिखित अंतर्विष्ट होंगे :

- (क) जिलावार नदी या धारा और अन्य रेत के स्रोत के ब्यौरे ;
- (ख) जिलावार रेत या कंकड़ या समग्र संसाधनों की उपलब्धता ;
- (ग) जिलावार विद्यमान रेत के खनन पट्टों के ब्यौरे और समग्र ।

जिला पर्यावरण संघात निर्धारण प्राधिकरण द्वारा भूविज्ञान विभाग या सिंचाई विभाग या वन विभाग या लोक निर्माण विभाग या भू-जल बोर्ड या सुदूर संवेदन विभाग या खनन विभाग आदि की सहायता से जिले में सर्वेक्षण किया जाएगा ।

मुख्य नदियों के विवरण सहित निकासी प्रणाली

क्रम सं.	नदी का नाम	निष्कासन क्षेत्र (वर्ग किलोमीटर)	जिले में प्रतिशत निष्कासित क्षेत्र
(1)			
(2)			

महत्वपूर्ण नदियों और धाराओं की मुख्य विशेषताएं :

क्रम सं.	नदी या धारा का नाम	जिले में कुल लंबाई (किलोमीटर में)	उद्भव का स्थान	उद्भव के स्थान पर ऊंचाई
(1)				
(2)				

खनिज छूट के लिए सिफारिश किया गया नदी या धारा का भाग	खनिज छूट के लिए सिफारिश किए गए क्षेत्र की लंबाई (किलोमीटर में)	खनिज छूट के लिए सिफारिश किए गए क्षेत्र की औसत चौड़ाई (मीटर में)	खनिज छूट के लिए सिफारिश किया गया क्षेत्र (वर्ग मीटर में)	खनन योग्य खनिज क्षमता (मीट्रिक टन में) (कुल खनिज क्षमता का 60 प्रतिशत)

खनिज क्षमता

बोल्डर (मीट्रिक टन)	रेत (मीट्रिक टन)	बालू (मीट्रिक टन)	कुल खनन योग्य खनिज क्षमता (मीट्रिक टन)

वार्षिक जमाव

क्रम सं.	नदी या धारा	खनिज छूट के लिए सिफारिश किया गया नदी या धारा का भाग	खनिज छूट के लिए सिफारिश किए गए क्षेत्र की लंबाई (किलोमीटर में)	खनिज छूट के लिए सिफारिश किए गए क्षेत्र की औसत चौड़ाई (मीटर में)	खनिज छूट के लिए सिफारिश किया गया क्षेत्र (वर्ग मीटर में)	खनन योग्य खनिज क्षमता (मीट्रिक टन में) (कुल खनिज क्षमता का 60 प्रतिशत)
(1)						
(2)						
जिले के लिए योग						

उप प्रभागीय समिति, जो (i) उप प्रभागीय मजिस्ट्रेट (ii) निम्नलिखित विभागों के अधिकारियों (क) सिंचाई विभाग (ख) राज्य प्रदूषण नियंत्रण बोर्ड या समिति (ग) वन विभाग (घ) भू-विज्ञान या खनन अधिकारी से मिलकर बनेगी, खनन के लिए उपयुक्तता या खनन को प्रतिषिद्ध करने के लिए प्रत्येक स्थान का, जिसके लिए पर्यावरण निकासी का आवेदन किया गया है, भ्रमण करेगी।

खनन क्षमता की संगणना करने के लिए अंगीकृत विधि :

खनन क्षमता की संगणना स्थान की जांच और नदी या धारा के आवाह क्षेत्र के भू-विज्ञान के आधार पर की जाएगी। स्थल स्थिति और अवस्थिति, खनन योग्य खनिजों को परिभाषित किया जाएगा। किसी नदी या धारा में खनिजों के खनन का विनिश्चय भू-आकृति विज्ञान और अन्य कारकों के आधार पर किया जा सकता है, यह किसी विशिष्ट नदी या धारा के क्षेत्र का 50 से 60 प्रतिशत हो सकता है। उदाहरणार्थ कुछ पहाड़ी राज्यों में खनिज संघटक, जैसे बोल्डर, नदी से उत्पन्न रेत, बालू को एक मीटर तक संसाधन खनिज माना जाता है। अन्य संघटक जैसे कले और तलछट को किसी विशिष्ट नदी या धारा की खनिज क्षमता की संगणना करते समय अपशिष्ट माना जाता है।

जिला सर्वेक्षण रिपोर्ट जिले में तैयार की जाएगी और उसके प्रारूप को पब्लिक डोमेन में कलेक्टर के कार्यालय में

उसकी एक प्रति रखकर रखा जाएगा तथा उसे 21 दिन के लिए जिले की वेबसाइट पर भी पोस्ट किया जाएगा। प्राप्त टिप्पणियों पर विचार किया जाएगा तथा यदि सही पाया जाता है तो जिला पर्यावरण संघात निर्धारण प्राधिकरण द्वारा छह मास के भीतर तैयार की जाने वाली अंतिम रिपोर्ट में उसे सम्मिलित किया जाएगा।

जिला सर्वेक्षण रिपोर्ट पर्यावरण निकासी, रिपोर्टों और मूल्यांकन परियोजनाओं को तैयार करने का आधार बनेगी। रिपोर्ट को प्रत्येक पांच वर्ष में एक बार अद्यतन किया जाएगा।

II. बालू खनन या नदी तल खनन से भिन्न गौण खनिजों के लिए जिला सर्वेक्षण रिपोर्ट तैयार करने की प्रक्रिया

जिला सर्वेक्षण रिपोर्ट को जिले में प्रत्येक गौण खनिज के लिए पृथक् रूप से तैयार किया जाएगा और उसके ड्राफ्ट को पब्लिक डोमेन में कलेक्टर के कार्यालय में उसकी एक प्रति रखकर रखा जाएगा तथा उसे 21 दिन के लिए जिले की वेबसाइट पर भी पोस्ट किया जाएगा। प्राप्त टिप्पणियों पर विचार किया जाएगा तथा यदि सही पाया जाता है तो जिला पर्यावरण संघात निर्धारण प्राधिकरण द्वारा छह मास के भीतर तैयार की जाने वाली अंतिम रिपोर्ट में उसे सम्मिलित किया जाएगा।

बालू खनन या नदी तल खनन से भिन्न गौण खनिजों के लिए जिला सर्वेक्षण रिपोर्ट नीचे वर्णित संघटकों के अनुसार होगी :--

बालू खनन या नदी तल खनन से भिन्न गौण खनिजों के लिए जिला सर्वेक्षण रिपोर्ट तैयार करने का प्रारूप

- (1) प्रस्तावना ;
- (2) जिले में खनन कार्यकलापों का विहंगावलोकन ;
- (3) जिले का साधारण प्रोफाइल ;
- (4) जिले की भूगर्भीय स्थिति ;
- (5) सिंचाई निष्कासन पैटर्न ;
- (6) जिले में भू उपयोग का पैटर्न : वन, कृषि, उद्यान कृषि, खनन आदि ;
- (7) जिले में सतह जल और भूमिगत जल का परिदृश्य ;
- (8) जिले में वर्षा वृत्ति और जलवायु स्थिति ;
- (9) निम्नलिखित प्रारूप के अनुसार जिले में खनन पट्टों के ब्यौरे :--

क्रम सं.	खनिज का नाम	पट्टेदार का नाम	पट्टेदार का नाम और संपर्क संख्या	खनन पट्टा अनुदान आदेश संख्या एवं तारीख	खनन पट्टे का क्षेत्र (हेक्टेयर में)	खनन पट्टे की अवधि (प्रारंभिक)		खनन पट्टे की अवधि (पहला/दूसरा नवीकरण)	
						से	तक	से	तक
1	2	3	4	5	6	7	8	9	10

खनन प्रचालन के प्रारंभ होने की तारीख	प्रास्थिति (कार्यशील/गैर-कार्यशील पारेषण आदि के लिए स्थायी रूप से कार्यशील)	कैप्टिव/गैर-कैप्टिव	पर्यावरणीय निकासी अभिप्राप्त (हां/नहीं) यदि हां तो पर्यावरण निकासी अनुदत्त करने की तारीख सहित पत्र संख्या	खनन पट्टे की अवस्थिति (अक्षांश देशांतर) एवं	खनन की विधि (खुली/भूमिगत)
11	12	13	14	15	16

- (10) पिछले तीन वर्ष के दौरान प्राप्त स्वामिस्व या राजस्व
 (11) पिछले तीन वर्ष के दौरान उत्पादन किए गए गौण खनिज के व्यौरे
 (12) जिले का खनिज मानचित्र
 (13) निम्नलिखित प्ररूप के अनुसार जिले में आशय पत्र के धारकों की उसकी वैधता सहित सूची :-

क्रम सं.	खनिज का नाम	पट्टेदार का नाम	आशय पत्र धारक का पता एवं संपर्क संख्या	आशय पत्र आदेश की संख्या एवं तारीख	आबंटित किए जाने वाले खनन पट्टे का क्षेत्र	आशय पत्र की वैधता	उपयोग (कैप्टिव/ गैर-कैप्टिव)	खनन पट्टे की अवस्थिति (अक्षांश एवं देशांतर)
1	2	3	4	5	6	7	8	9

- (14) जिले में उपलब्ध कुल खनिज भंडार ;
 (15) जिले में उपलब्ध खनिज की क्वालिटी / ग्रेड ;
 (16) खनिज का उपयोग ;
 (17) पिछले तीन वर्षों के दौरान खनिज की मांग और पूर्ति ;
 (18) जिले के मानचित्र पर चिह्नांकित खनिज पट्टे ;
 (19) उस क्षेत्र के व्यौरे, जहां खनिज पट्टों का समूह है, अर्थात् खनिज पट्टों की संख्या, अवस्थिति (अक्षांश और देशांतर) ;
 (20) जिले में पारिस्थितिकी संवेदनशील क्षेत्र, यदि कोई हो ;
 (21) पर्यावरण (वायु, जल, ध्वनि, मृदा, वनस्पति और प्राणी, भू-उपयोग, कृषि, वन आदि) पर खनन कार्यकलाप का संघात ;
 (22) पर्यावरण पर खनन संघात को कम करने के लिए उपचारात्मक उपाय ;
 (23) खनन किए गए क्षेत्र को पुनः प्राप्त करना (जिले में नियमों और विनियम, प्रस्तावित पुनः प्राप्ति योजना के अनुसार) सर्वोत्तम व्यवहार को पहले ही कार्यान्वित किया गया है ;
 (24) जोखिम निर्धारण एवं आपदा प्रबंधन योजना ;
 (25) जिले में व्यवसायिक सुरक्षा मुद्दों के व्यौरे (सिलिकोसिस एवं तपेदिक के रोगियों के पिछले पांच वर्ष के डाटा को प्रस्तुत करने की आवश्यकता है) ;
 (26) जिले में पहले ही अनुदत्त पट्टों के संबंध में पौधा रोपण और हरित पट्टी विकास ;
 (27) कोई अन्य सूचना ।

जिला पर्यावरण संघात निर्धारण प्राधिकरण (डीईआईए) जिले में गौण खनिज की किस्म की प्रकृति के आधार पर संबंधित राज्य सरकार के खनिज और भू-विज्ञान विभाग के परामर्श से जिला सर्वेक्षण रिपोर्ट में अतिरिक्त मानकों को सम्मिलित कर सकेगी ।

जिला सर्वेक्षण रिपोर्ट पर्यावरणीय निकासी, रिपोर्टों को तैयार करने और परियोजनाओं के मूल्यांकन के लिए आधार होगी । रिपोर्ट को प्रत्येक पांच वर्ष में एक बार अद्यतन किया जाएगा ।”

[फा. सं. एल-11011/26/2018-आईए-II(एम)]

ज्ञानेश भारती, संयुक्त सचिव

टिप्पण : मूल अधिसूचना भारत के राजपत्र, असाधारण, भाग II, खंड 3, उप-खंड (ii) में सं. का.आ. 1533(अ) तारीख 14 सितंबर 2006 द्वारा प्रकाशित की गई थी और तत्पश्चात् उसे निम्नानुसार संशोधित किया गया :--

1. का. आ. 1949 (अ), तारीख 13 नवंबर, 2006;
2. का. आ. 1737 (अ), तारीख 11 अक्टूबर, 2007;
3. का. आ. 3067 (अ), तारीख 1 दिसंबर, 2009;
4. का. आ. 695 (अ), तारीख 4 अप्रैल, 2011;
5. का. आ. 156 (अ), तारीख 25 जनवरी, 2012;
6. का. आ. 2896 (अ), तारीख 13 दिसंबर, 2012;
7. का. आ. 674 (अ), तारीख 13 मार्च, 2013;
8. का. आ. 2204 (अ), तारीख 19 जुलाई 2013;
9. का. आ. 2555 (अ), तारीख 21 अगस्त, 2013 ;
10. का. आ. 2559 (अ), तारीख 22 अगस्त, 2013;
11. का. आ. 2731 (अ), तारीख 9 सितंबर, 2013;
12. का. आ. 562 (अ), तारीख 26 फरवरी, 2014;
13. का. आ. 637 (अ), तारीख 28 फरवरी, 2014;
14. का. आ. 1599 (अ), तारीख 25 जून, 2014;
15. का. आ. 2601 (अ), तारीख 7 अक्टूबर, 2014;
16. का. आ. 2600 (अ), तारीख 9 अक्टूबर, 2014;
17. का. आ. 3252 (अ), तारीख 22 दिसंबर, 2014;
18. का. आ. 382 (अ), तारीख 3 फरवरी, 2015;
19. का. आ. 811 (अ), तारीख 23 मार्च, 2015;
20. का. आ. 996 (अ), तारीख 10 अप्रैल, 2015;
21. का. आ. 1142 (अ), तारीख 17 अप्रैल, 2015;
22. का. आ. 1141 (अ), तारीख 29 अप्रैल, 2015;
23. का. आ. 1834 (अ), तारीख 6 जुलाई, 2015;
24. का. आ. 2571 (अ), तारीख 31 अगस्त, 2015;
25. का. आ. 2572 (अ), तारीख 14 सितंबर, 2015;
26. का. आ. 141 (अ), तारीख 15 जनवरी, 2016;
27. का. आ. 648 (अ), तारीख 3 मार्च, 2016;
28. का. आ. 2269 (अ) तारीख 1 जुलाई, 2016;
29. का. आ. 2944 (अ), तारीख 14 सितंबर, 2016;
30. का. आ. 3518 (अ) तारीख 23 नवंबर 2016;
31. का. आ. 3999 दिसंबर (अ) तारीख 9 दिसंबर, 2016; और
32. का. आ. 4241 (अ) तारीख 30 दिसंबर, 2016

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 25th July, 2018

S.O. 3611(E).—Whereas by notification of the Government of India in the erstwhile Ministry of Environment and Forest issued *vide* number S.O. 1533(E), dated the 14th September, 2006 published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) (hereinafter referred to as the said notification) directions have been given regarding the prior environmental clearance;

And whereas, the Ministry of Environment, Forest and Climate Change has amended the said Notification *vide* S.O. 141 (E) dated 15th January, 2016 wherein the procedure for preparation of District Survey Report for minor mineral has been prescribed;

And whereas, 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;

And whereas, the Central Government hereby in the public interest dispense with the requirement of notice under clause (a) of sub-rule (3) of rule 5 of the Environment Protection Rules, 1986,

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 (29 of 1986) read with sub-rule (4) of rule 5 of the Environment (Protection) Rules, 1986, the Central Government hereby makes the following further amendments to the notification of the Government of India, in the erstwhile Ministry of Environment and Forests *vide* number S.O. 1533(E), dated the 14th September, 2006, namely: –

In the said notification, for Appendix X, the following shall be substituted, namely: -

“APPENDIX - X

[See paragraph 7 (iii) (a)]

I. PROCEDURE FOR PREPARATION OF DISTRICT SURVEY REPORT FOR SAND MINING OR RIVER BED MINING

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 Bajri 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 District Environment Impact Assessment Authority 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
(1)			
(2)			

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
(1)				
(2)				

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)
(1)						
(2)						
Total for the District						

A Sub-Divisional Committee comprising of (i) Sub-Divisional Magistrate, (ii) Officers from (a) Irrigation department, (b) State Pollution Control Board or Committee, (c) Forest department, (d) 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 in the district and its draft shall be placed in the public domain by keeping its copy in Collectorate and posting it on the district's website for twenty-one days. The comments received shall be considered and if found correct, shall be incorporated in the final Report to be finalised within six months by the District Environment Impact Assessment Authority.

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.

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 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 Utilisation 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 as per the following format: -

Sl. No.	Name of the Mineral	Name of the Lessee	Address & Contact No. of Lessee	Mining lease Grant Order No. & date	Area of Mining lease (ha)	Period of Mining lease (Initial)		Period of Mining lease (1 st /2 nd ...renewal)	
						From	To	Form	To
1	2	3	4	5	6	7	8	9	10

Date of commencement of Mining Operation	Status (Working/Non-Working/Temp. Working for dispatch etc.)	Captive/ Non-Captive	Obtained Environmental Clearance (Yes/No), If Yes Letter No with date of grant of EC.	Location of the Mining lease (Latitude & Longitude)	Method of Mining (Opencast/Underground)
11	12	13	14	15	16

- (10) details of Royalty or Revenue received in last three years;
- (11) details of Production of Minor Mineral 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 as per the following format :-
- (14) total Mineral Reserve available in the District;

Sl. No.	Name of the Mineral	Name of the Lessee	Address & Contact No. of Letter of Intent Holder	Letter of Intent Grant Order No. & date	Area of Mining lease to be allotted	Validity of LoI	Use (Captive/ Non-Captive)	Location of the Mining lease (Latitude & Longitude)
1	2	3	4	5	6	7	8	9

- (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 rules 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);
- (26) plantation and Green Belt development in respect of leases already granted in the District;
- (27) any other information.

The District Environment Impact Assessment Authority (DEIAA) based on the nature and type of minor mineral in the District may include the additional parameters in the District Survey Report in consultation with the Department of Mines and Geology of the concerned State Government.

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”;

[F.No. L-11011/26/2018-IA-II (M)]

GYANESH BHARTI, Jt. Secy.

Note : The principal notification was published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) *vide* number S.O. 1533 (E), dated the 14th September, 2006 and subsequently amended by :-

1. S.O. 1949 (E), dated the 13th November, 2006;
2. S.O. 1737 (E), dated the 11th October, 2007;
3. S.O. 3067 (E), dated the 1st December, 2009;
4. S.O. 695 (E), dated the 4th April, 2011;
5. S.O. 156 (E), dated the 25th January, 2012;
6. S.O. 2896 (E), dated the 13th December, 2012;
7. S.O. 674 (E), dated the 13th March, 2013;
8. S.O. 2204 (E), dated the 19th July 2013;
9. S.O. 2555 (E), dated the 21st August, 2013;
10. S.O. 2559 (E), dated the 22nd August, 2013;
11. S.O. 2731 (E), dated the 9th September, 2013;
12. S.O. 562 (E), dated the 26th February, 2014;
13. S.O. 637 (E), dated the 28th February, 2014;
14. S.O. 1599 (E), dated the 25th June, 2014;
15. S.O. 2601 (E), dated the 7th October, 2014;
16. S.O. 2600 (E), dated the 9th October, 2014;
17. S.O. 3252 (E), dated the 22nd December, 2014;
18. S.O. 382 (E), dated the 3rd February, 2015;
19. S.O. 811 (E), dated the 23rd March, 2015;
20. S.O. 996 (E), dated the 10th April, 2015;

21. S.O. 1142 (E), dated the 17th April, 2015;
22. S.O. 1141 (E), dated the 29th April, 2015;
23. S.O. 1834 (E), dated the 6th July, 2015;
24. S.O. 2571 (E), dated the 31st August, 2015;
25. S.O. 2572 (E), dated the 14th September, 2015;
26. S.O.141 (E), dated the 15th January, 2016;
27. S.O.648 (E), dated the 3rd March, 2016;
28. S.O. 2269 (E) dated the 1st July, 2016;
29. S.O. 2944 (E) dated the 14th September, 2016;
30. S.O. 3518 (E) dated the 23rd November 2016;
31. S.O. 3999 (E) dated the 9th December, 2016; and
32. S.O. 4241 (E) dated the 30th December, 2016.

RAKESH
SUKUL

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REPORTABLE

IN THE SUPREME COURT OF INDIA

CIVIL APPELLATE JURISDICTION

CIVIL APPEAL NOS. 3661-3662 OF 2020

THE STATE OF BIHAR AND OTHERS ...APPELLANT(S)

VERSUS

PAWAN KUMAR AND OTHERS ETC. ...RESPONDENT(S)

ORDER

Per Court

1. The present appeals challenge the judgment and order dated 14th October 2020, passed by the National Green Tribunal, Principal Bench, New Delhi (hereinafter referred to as “the Tribunal”) in O.A. No. 40/2020/EZ with O.A. No. 57/2020/EZ, thereby issuing the following directions:-

- (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 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 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 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 EMGSM-2020 read in sync with each other.”

2. The appellant-State of Bihar has assailed the said judgment and order dated 14th October 2020, 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 the case of ***Satendra Pandey v. Ministry of Environment, Forest and Climate Change and Another***¹ 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

¹ O.A. No. 186 of 2016 (M.A. No. 350/2016)

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. He 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 14th October 2020, needs to be set aside and the State needs to be permitted to finalize the tenders received by it.

4. 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 finalized in accordance with the judgment of the Tribunal.

5. 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 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.

6. 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.

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 Others**². 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:-

2 (2012) 4 SCC 629

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

4.1.1 Preparation of District Survey Report.

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**."

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 annexures 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

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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.

15. List the matter after 20 weeks.

.....J.
[L. NAGESWARA RAO]

.....J.
[SANJIV KHANNA]

.....J.
[B.R. GAVAI]

**NEW DELHI;
NOVEMBER 10, 2021.**



2025 INSC 650

REPORTABLE

IN THE SUPREME COURT OF INDIA
CIVIL APPELLATE JURISDICTION

CIVIL APPEAL NO. 14170 OF 2024

STATE OF UTTAR PRADESH & ANR.

...APPELLANT(S)

VERSUS

GAURAV KUMAR & ORS.

...RESPONDENT(S)

WITH

CIVIL APPEAL NO. 14933 OF 2024

WITH

CIVIL APPEAL NO. 14000 OF 2024

J U D G M E N T

PAMIDIGHANTAM SRI NARASIMHA, J.

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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 Tribunal¹ 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

¹ Hereinafter, “NGT”.

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) 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 the 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.

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 appeals³. 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,

² (2022) 3 SCC 102. Hereinafter, "*Pawan Kumar*".

³ By order dated 12.02.2025.

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 study⁴ 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 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.

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 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.⁷

4.3. The need for development, and the concern 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

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,

plays a vital role in climate resilience and preserving healthy ecosystems.

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 enforcement⁹.

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,

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 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.*

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 I¹⁰ and Entry 23 List II¹¹ became the source of legislative competence to enact laws for developing and regulating mining. Parliament enacted the Mines and Minerals (Regulation and Development) Act, 1957.¹² Section 2¹³ 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

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.

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, 1986¹⁴, 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 3¹⁵ 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

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.

environmental pollution. Section 5¹⁶ 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 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

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 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.

Environmental Clearance (EC) from the Central Government, in accordance with the procedure prescribed therein. This regulatory regime 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, 2006¹⁷. 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 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

¹⁷ Hereinafter, “2006 Notification”.

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;

(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 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

¹⁸ (2012) 4 SCC 629. Hereinafter, “*Deepak Kumar*”.

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. 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.

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 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..."

12. Establishment of District Level Environment Impact 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:

(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.";*

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 Para 7(i) related to the process for new projects, which comprises of four stages namely, screening, scoping, public consultation and appraisal 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*

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)

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

¹⁹ 2018 SCC OnLine NGT 2388.

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 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 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);*
- 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 that the MoEFCC has also issued the Sustainable Sand Mining Management Guidelines, 2016²⁰ and the Enforcement and Monitoring Guidelines for Sand Mining, 2020²¹. 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

²⁰ Hereinafter, “2016 Guidelines”.

²¹ Hereinafter, “2020 Guidelines”.

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 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**

Kumar²²: Considering the mandatory requirement of preparation of DSR, which shall form the basis for grant of EC for sand mining

²² (2022) 2 SCC 348. Hereinafter, “Pawan Kumar”.

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.”

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

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.

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. As 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 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.

.....J.
[PAMIDIGHANTAM SRI NARASIMHA]

.....J.
[MANOJ MISRA]

**NEW DELHI;
MAY 08, 2025**

F. No. IA-L-11011/138/2025-II (NCM)
Government of India
Ministry of Environment, Forest and Climate Change
(IA Division – Non-Coal Mining Sector)

Indira Paryavaran Bhawan,
 Jor Bagh Road, Aliganj,
 New Delhi-110003

Date: 19th June 2026

OFFICE MEMORANDUM

Subject: Clarification regarding preparation and updation of District Survey Report (DSR) for minor minerals under Appendix-X of the EIA Notification, 2006 (as amended) – regarding.

The undersigned is directed to refer to Notification S.O. 141(E) dated 15.01.2016 and Notification S.O. 3611(E) dated 25.07.2018 issued under the Environment (Protection) Act, 1986 regarding preparation of District Survey Reports (DSRs) for sand mining or river bed mining and for minor minerals other than sand mining or river bed mining.

2. The Hon'ble High Court of Kerala, vide order dated 05.11.2025 in W.P.(C) Nos. 9338, 10719, 12228 and 25928 of 2025, observed that the provisions of Appendix-X of the EIA Notification, 2006 do not specifically indicate the authority responsible for conducting surveys and preparation of District Survey Reports (DSRs) for minor minerals other than sand mining or river bed mining and directed the Ministry to issue an appropriate clarification. Accordingly, the matter was examined by the Expert Appraisal Committee (Non-Coal Mining Sector) in consultation with States/UTs, taking into account the provisions of Appendix-X, the judgment of the Hon'ble Supreme Court dated 10.11.2021 in Civil Appeal No. 3661 of 2020 titled '*State of Bihar & Ors. v. Pawan Kumar & Ors.*' and other relevant judicial pronouncements.

3. Based on the recommendations of the Expert Appraisal Committee (Non-Coal Mining Sector), in order to ensure uniform implementation of the provisions relating to preparation and updation of District Survey Reports (DSRs), the following clarification is hereby issued:

- a. The State Department of Mines and Geology shall be the nodal organization/authority for preparation of District Survey Report (DSR) for sand mining or river bed mining and minerals other than sand mining or river bed mining through the sub-divisional committee consisting of various officers as given under:
 - i. Sub-Divisional Magistrate;
 - ii. Officer from Irrigation Department;
 - iii. Officer from State Pollution Control Board/Committee;
 - iv. Officer from Forest Department; and
 - v. District Geologist/Mining Officer.
- b. The State Department of Mines and Geology shall submit the Draft DSR prepared through the above sub-divisional committee to SEAC/SEIAA for approval.

- c. The DSR for sand mining or river bed mining and minerals other than sand mining or river bed mining can be updated once in five years. However, if new resource comes to the knowledge of Geology and Mining Department of State, then addition in the DSR can be affected as supplementary/addendum DSR after following the above stated process.
4. The above clarification is subject to the outcome of the Civil Appeal No. 3799-3800 of 2019 in the matter titled '*Union of India v. Rajeev Suri and Ors.*', pending before the Hon'ble Supreme Court.
5. This issues with the approval of the Competent Authority.


(Sundar Ramanathan)
Scientist 'F'

To

1. The Principal Secretaries, Environment Department of all the States/UTs
2. The Chairman/Member Secretaries of all the SEIAAs/SEACs
3. The Chairman/Member Secretary of CPCB
4. The Chairman/ Member Secretaries of all SPCBs/UTPCCs
5. All the officers of IA Division

Copy for information to:

1. PS to Hon'ble Minister of Environment, Forest and Climate Change
2. PS to Hon'ble Minister of State (EF&CC)
3. PPS to the Secretary (EF&CC)
4. PPS to the AS(AG)/ AS(AA)
5. PPS to the JS (RA)
6. PARIVESH 2.0