BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH AT NEW DELHI

ORIGINAL APPLICATION 240 OF 2021

IN THE MATTER OF:

Citizens for Green Doon ...Appellant

Versus

Union of India & Ors. ...Respondents

INDEX

S. No.	Particulars	Page No.
1.	Written Submissions on behalf of NHAI	1-9
2.	**Annexure R-20** True copy of muck disposal plan submitted for State of Uttarakhand on 20.07.2020 and for State of Uttar Pradesh on 27.08.2020 available on Parivesh Portal	10-14

RESPONDENT No.4

THROUGH

Madhu Sweta
Advocate
Enrl. No. D/601/1997
Singhania & Partners LLP
Solicitors & Advocates
P-24, Green Park Extension
New Delhi-110016

Dated: 08.12.2021
Place: New Delhi

WRITTEN SUBMISSIONS ON BEHALF OF NHAI

At the threshold, it is submitted that the submissions made hereunder by the Respondent No.4/NHAI, are in continuation and accordance with the reply. The same may be referred and read as a part and parcel of these submissions and contents of which are not repeated herein for the sake of brevity.

I. Introduction

1. OA No. 240/2021 has been filed by the Applicant u/s 14 & 15 of the National Green Tribunal Act, 2010 challenging the Stage-I Forest Clearance **("FC")** dated 29.09.2020**[Pages 137-148/OA]** in relation to the Uttarakhand **("UK")** stretch of the road issued by MoEF;
   and the Stage-I FC dated 23/24.12.2020 **[Pages 90-93/OA]** in relation to the State of Uttar Pradesh**("UP")**.
2. The project is a part of the Bharatmala Pariyojna which is the umbrella program for National Highway development focusing on improving the efficiency of road freight and passenger movement across the country. The present matter pertains to the upgradation and expansion of the existing 20KM stretch of NH-72A of this 20 km, approx. 16 kms fall in the State of UP and the remaining 4 kms (approx.) fall in the State of UK, as evident from Map **[Pg.217/Reply/OA]**.
3. The project has received Stage-I FC under the Forest (Conservation) Act, 1980 on 23/24.12.2020 for the stretch in the State of UP (km 00.00 - km 16.160) and on 29.9.2020 for the stretch in the State of UK (km 16.160 - km 19.785).
4. The user agency, i.e., the NHAI has divided the road project into two segments - one falling within the State of UP (around 16km) and the rest falling within the State of UK. Thus, there are two sets of Stage-I Clearances under the FCA. This stretch of the NH-72A passes through the forest and wildlife area of Shivalik Forest Division, UP, in close vicinity of the Rajaji National Park as well as the Dehradun Forest Division in UK. The proposal envisages converting an existing 2 - lane road into a 4 - lane

road with predominantly a 25-metre carriageway and involves construction of a tunnel as well.

5. In view of the existing road 20 km (Ganeshpur to Dehradun) falling in Eco-sensitive zone (ESZ) of Rajaji National Park (RNP), NHAI preferred to conduct study for Wildlife mitigation from expert body Wildlife institute of India (WII), Dehradun before finalizing the project elements.

6. A Detailed report was submitted by WII in Aug, 2020. This study was conducted by Scientist Dr. Vibhas Pandav, department of endangered species management, WII, Dehradun.

7. Out of 20 km section from Ganeshpur to Dehradun, 18.5 km is forest area and out of this forest area 14.5 km falls in UP and 4 km falls in Uttarakhand.

II. Statutory Scheme for Grant of FC

8. The Diversion of forest land for non-forest purpose is contemplated u/s 2(ii) of the Forest Conservation Act, 1980 **("FCA")**. Non-forest purpose is further divided into two categories, namely Linear Projects and Localized/Non-Linear Projects.

   i. Linear projects: Rule 2(cd) of the Forest Conservation Rules, 2003 defines linear projects as all projects involving strip/linear diversion of forest land for purposes such as roads, railway lines, pipelines, transmission lines, etc.

   ii. Non-Linear Projects: This involves diversion of major forest area from one or many forest diversions as per activity and requirement of the project which involves felling of the trees for the proposed diversion area.

9. The instant project falls under the Linear project category as the proposed highway alignment from Ganeshpur to Dehradun of 20km is designed to have an Elevated Highway (approx. 12km long), to minimize footprint on the ground. In this 12km section, the cross slope across the project highway is about 5% which is far less than 25% and hence, is classified as plain terrain.

10. Para 1.4 **[Page 397/Reply/OA]** of Chapter I of Part B to the Handbook of Guidelines for effective and transparent implementation of Forest Conservation Act, 1980 dated 28.03.2019 contemplates that the grant of forest clearance shall be divided in three steps:
    i. In-principal approval (Stage-I)
    ii. Final approval (Stage-II)
    iii. State Govt. Order under Section 2 of Forest (Conservation) Act, 1980 incorporating all the conditions stipulated by Central Govt. on the recommendation of State Govt.
11. Accordingly, Stage-I approval in the State of UP was granted on 23/24.12.2020 **[Page 224/Reply/OA],** Stage-II approval was granted on 20.07.2021 **[Page 325/Reply/OA]** and the State Government order was also issued vide letter dated 27.11.2021 **[Page 209/Reply/OA]**.
12. Likewise, in the State of UK, Stage-I approval was granted on 29.09.2020 and Stage-II approval is yet to be issued.

III. Salient Features of the Project

13. The proposed road has saving of about 30,000 trees, saving of about 9 lakh tons of earth/rock cut as compared to conventional widening of road in hills. Further, animals are free to move beneath the highway avoiding complete man animal conflicts. Further, noise barriers have also been provisioned in elevated section along the highway to avoid disturbance to animals from vehicle noise. The proposed 20 km project comprising of elevated road and tunnel is about Rs.1500 Cr. as against about Rs.500 Cr. for widening of existing road in hills in conventional case.
14. With ease of traffic movement due to project highway, there would be huge reduction in carbon emission and disturbance to the wildlife.
15. The 12 km long elevated highway is the longest wildlife corridor, not in India but in Asia too, is an example of co-existence of development and preserving nature.
16. As per present traffic condition (more than 20000 PCU (equivalent passenger car units)), there is a minimum requirement of 4 lane highway for safe traffic movement. Hence, 25m width is minimum requirement.

Further, 2 lane road capacity is upto 10500 PCU and 2 lane road cannot be provided with divider and carrying such high traffic in 2 lane road is a serious safety hazard apart from creating traffic bottleneck.

17. It is evident from above that the Respondent/NHAI has taken utmost care in deciding project elements considering concerns of flora and fauna in consultation with expert Wildlife Institute, Rajaji National Park (RNP) and State Govt Forest/Wildlife officials of both the States, which has resulted in cutting of lesser no. of trees, avoiding cutting of hills to great extent, enabling crossing of animals beneath the highway. This stretch of Highway is setting an example of co-existence of development and preserving nature, in fact highway would be complementing the Wildlife as compared to existing highway.

IV. Challenge in the Original Application

18. *The grievance of the Applicant in respect of UK stretch, is that in terms of MoRTH Circular dated 23.03.2018 [Pages 94-96/OA], the maximum width of carriageway in hilly areas ought to be 7 metres with paved shoulders*.

19. The reliance placed on the Circular dated 23.03.2018, is misplaced for the following reasons:-

i. The said Circular limits the width of carriageway to 2 lanes plus paved shoulders in "mountainous terrain" typically in context of higher elevation (for e.g., Char dham highway passing entirely in Himalayan region) so as to restrict the hill slope cut, cutting of trees, etc.

ii. The mountainous/hilly terrain is classified as per Indian Road Congress (IRC) codes as having cross slope more than 25% i.e., 1(V):4(H) across the highway alignment, whereas the terrain having cross slope below 25% is classified as Plain/rolling terrain.

iii. As per IRC, a Highway project passing in different terrain shall be designed based on maximum classification of terrain type in a highway alignment. In case of stretches where hilly terrain intervenes for short and/or isolated stretches in plain/rolling terrain, the criteria

for such stretches shall be as per standards for plain/rolling terrain. The uniform application of design standards is desirable for safe and smooth flow of traffic. (ref: Clause 6.1 of IRC:52 - 2019). Therefore, the entire Delhi Dehradun Highway has been designed considering "plain/rolling terrain".

iv. The total length of the proposed Delhi Dehradun Economic Corridor (Highway) is 210 km, in which last 20 km is the section between Ganeshpur to Dehradun. Dehradun is a foothill of Himalayas and its elevation is about 700m from the mean sea level. The existing road, which is primarily 2 lane/less than 2 lanes, passes through hill in about 11 km. These hills are connecting Dehradun with Plains, having lower elevation as compared to Himalayas range beyond Dehradun.

20. ***The Applicant alleged that the Forest Clearance is granted based on misleading facts.***

21. The aforesaid argument is completely misplaced and is liable to be rejected for the following reasons:-

i. Para 15 of Form A Part II is the report of Site inspection carried out by concerned DFO (Saharanpur, UP) on 05.11.2020. It is noteworthy that the DFO (Saharanpur, UP) and Conservator of Forest (UP) did not find any endangered species during the site inspections dated 05.11.2020 and 11.11.2020. There is, therefore, no infirmity in the finding at Para 8(v) of Form A **[Page 61/OA]**.

ii. Considering project design elements, State wildlife Boards of UP and Uttarakhand have recommended the proposals to National Board of Wildlife (NBWL). Accordingly, the Central Government had also accorded approval on the recommendation of NBWL.

iii. It is pertinent to note that with the planning of road as elevated and the tunnel, all species of animals including endangered can freely pass beneath the elevated road/ over the tunnel, without the danger of hitting with vehicles, thus avoiding the complete man-animal conflict.

iv. The WII conducted a study between 25.04.2020 to 04.07.2020 to identify all the animal trails on both sides of the project road and

submitted a report dated 04.08.2020. The finding of WII is that 25 different Wild species was reported to be crossing this highway at different locations.

v. To conduct the study, 81 camera traps were deployed along the identified trails to detect wild animals using the area and crossing events. Detailed study was carried out in the entire 20km stretch of NH-72 between Ganeshpur to Dehradun. The road in this 20 KM stretch has been classified into three distinct zones based on their geographical features.

   a. Zone I (Length: 4.9 KM) from Ganeshpur to Mohand, it is a flat terrain and lies entirely in Shivalik Forest Division (UP).
   b. Zone II (Length 13.3 km) Mohand (U.P.) to Asarodi Police Checkpost in Uttarakhand.
   c. Zone III (Length 1.8 km) Asarodi police check post up to the edge of Mohbewala settlement in Doon valley, Dehradun.

vi. The Proposed Mitigation Measures of WII is as under –

   a. The proposed mitigation measures are furnished on **Page No. 19** of the report of Wildlife Institute of India.
   b. After detailed study of different wildlife crossings, WII proposed a total length of openings/elevated structures in a length of 10.3 KM in the stretch falling in UP portion & at least 2 openings of minimum 200 m length each in the UK.

vii. Based on the proposed mitigation measures, it was decided that integrated structure from Km 17.940 to KM 19.785 (Total length 1.885 KM) including 2 nos. of Elephant Under Pass (EUP) of 200m length each in Uttarakhand shall be raised structures & remaining highway stretch shall be at ground.

viii. That for construction of elevated corridor or at ground road, except at curves & cutting section, 25m width of land is required. Hence, in both the conditions, almost same number of tree felling shall be needed. To minimize the number of trees cutting, the approaches of the EUPs have been proposed on the Retaining Earth walls as against the general

practice of sloping embankments in rural sections to restrict the footprint on ground.

ix. As per the WII report, it was suggested to have an 850m integrated structure with at least two openings of 200m each at designated sites. In compliance to this suggestion, from Km 17.940 to KM 19.785 (Total length 1.885 KM) is raised with two Elephant Underpass along with its approaches. Therefore, out of the 3.4 KM section in Uttarakhand, 1.88 KM has already been planned to be raised. In the remaining portion of 1.6 KM of the highway, 3 Minor bridges, 3 animal underpasses, 5 Box culverts & 8 Pipe culverts have also been provided for use by wild animals and reptiles etc. for crossing the highway.

x. It is pertinent to mention that the entry in Uttarakhand is proposed through a tunnel. The geometry of the highway after tunnel is sloping towards Dehradun. The project has already been designed on limiting gradient for elevation profile. Any further increase in elevation will result in extending the approaches towards Dehradun city side which is highly built up.

NO PLAN FOR MUCK DISPOSAL

22. The muck disposal plan was submitted for State of Uttarakhand on 20.07.2020 and for State of Uttar Pradesh on 27.08.2020 and the same is also available on the website of Parivesh Portal. The muck disposal plan undertaking was submitted by NHAI vide letter dated 07.01.2021 alongwith the forest proposal which was uploaded online. The procedure to be followed for disposal is incorporated in the said proposal as **Annexure-5 [Pg.268/Reply/OA],** which provides clear quantification of muck expected to be generated from this stretch and its methodology of utilization in other parts of Delhi-Dehradun. Further, while inviting tender, a specific para was added under scope of work of Contractors for muck disposal wherein, the Contractors are made responsible to utilize or dispose off muck in environment friendly manner. True copy of muck disposal plan submitted for State of Uttarakhand on 20.07.2020 and for

State of Uttar Pradesh on 27.08.2020 available on Parivesh Portal is annexed and marked as **Annexure R-20**.

23. In the present project, lesser quantity of muck shall be generated since, the length of 20 km stretch is planned as elevated/ raised corridor and the hill cutting will be carried out in approaches to tunnel only.

24. During preparation of Detailed Project Report (DPR), studies for disposal/ utilization of muck generated were also done in detail. As per DPR studies, the estimated quantity of muck to be generated and their proposed utilization is as under:-

S. No.	**Muck generation during**	**Muck Generation Quantity (cum)**	**Muck utilization for**	**Muck Utilization Quantity (Cum)**
1.	Road Work, tunnel and Foundation work.	9,61,015	Adjacent road package, Embankment, RE wall, Haul Road, Worker Camp and other road works etc.	8,85,800
	Balance Quantity	**75215 Cum (Approx.)**		

25. In the present project, the muck generated shall be utilized in raising embankment and construction of RE wall, construction camp / making haul road/balancing work in additional area taken for temporary work and approach road of this stretch itself.

26. The remaining generated muck is proposed to be utilized in another green field road project namely "Eastern peripheral Expressway to Saharanpur bypass" road project, a part of Delhi-Dehradun Economic Corridor project. This road section is also proposed to be constructed along with this project road and is located at a distance of about 40 km. Being a green field road having 118 km road length, this project requires large quantity of material and the remaining quantity of muck/ disposal material of Ganeshpur- Dehradun Road project is proposed to be used in this road section as filling material/other suitable use.

Compensatory Afforestation has unrealistic targets

27. The compensatory afforestation has been proposed in 20 hectare patch in Carbary compartment of Malhan Range in Dehradun Forest Division. As per the norms of planting 2000 plants per hectare under compensatory afforestation, total 40000 (Forty Thousand) plants will be planted on proposed Compensatory Afforestation site against 2572 number of trees (including Sal trees) proposed to be felled, and for every single tree to be felled, 15 new saplings will be planted.

28. The proposed planting site is located at an aerial distance of approx. 6 km from outer boundary of Rajaji National Park, and 6.012 Km from the site where trees are to be felled. The Forest Division, Dehradun will be responsible for the maintenance of the newly planted Sal trees.

29. In the said project, all the proceedings for Compensatory Afforestation are being followed as per Chapter 2, Part B of Handbook of guidelines for effective and transparent implementation of the provisions of Forest Conservation Act, 1980 dated 28.03.2019 issued by MOEFCC. The present project is covered under Clause 2.5 of said chapter, which deals with "Special provisions for CA for certain categories of projects". Therefore, in lieu of 9.6224 ha of forest land proposed for diversion, compensatory afforestation has been proposed on 20 ha of degraded Forest land which is **"twice"** in extent of area of diverted forest land.

In light of the submissions made herein above, it is prayed that this Hon'ble Tribunal may graciously be pleased to dismiss the present original application; and pass such other or further Order as this Hon'ble Tribunal may deem fit.

RESPONDENT No.4

THROUGH

Madhu Sweta

Madhu Sweta,
Advocate
Enrl. No. D/601/1997
Singhania & Partners LLP
Solicitors & Advocates
P-24, Green Park Extension
New Delhi-110016
Mob. 9871650888

Place: New Delhi
Date: 08.12.2021

Annexure R-20

10

प्रारुप–49

Muck Disposal Plan

Name of Project: - *"Improvement, upgradation and construction of Ganeshpur-Dehradun road (NH72A) in the state of Uttar Pradesh (Km 0.0 to Km 16.115) and Uttarakhand (km 16.115 to km 19.746) to 4 lane configuration".*

INTRODUCTION

As around 14 km(Ganeshpur-Dehradun) road is located on rolling and hilly terrain significant quantity of material would be excavated for construction of Tunnel, foundation work, hill cutting work for establishing of project road alignment.
Muck generation is considered a significant impact on land environment and the excavation shall result in large quantity of excavated material i.e. muck which shall have to be evacuated and disposed of in a planned manner so that it takes a least possible space and is not hazardous to the environment. The muck disposal sites cause increased sedimentation in the rivers (though insignificant compared to natural sedimentation) and totally spoils the visual aesthetics of the area. It is of prime importance that these sites will have to be rehabilitated as soon as the disposal sites are full.

QUANTITY OF MUCK TO BE GENERATED

Based on the geological nature of the rocks and engineering properties of the soil, a part of the muck generated can be used as construction material in road work. The balance needs to be suitably disposed. Normally, muck is disposed in low-lying areas or depressions. Trees, if any, are cut before muck disposal, however, shrubs, grass or other types of undergrowth in the muck disposal at sites perish. The muck disposal sites will be suitably stabilized on completion of the muck disposal.

MUCK GENERATION FROM PROJECT COMPONENTS AND UTILIZATION

SL	Project Component	Muck Generation Quantity (Cum)	Project Component	Muck utilization Quantity (Cum)
1	Tunnel from km 16+110 to km 16+270	22628.50	Tunnel from km 16+110 to km 16+270	00
2	Road widening/Hill cutting and raising from km 16+270 to km 18+420	410794.00	Road widening/Hill cutting and raising from km 16+270 to km 18+420	68468.14
3	Elephant Underpass from km 18+420 to Km 18+570	00	From km 18+420 to Km 18+570 Elephant Underpass	00
4	Road widening work from km 18+570 to km 19+010	00	Road widening work from km 18+570 to km 19+010	194261.74
5	Elephant Underpass from km 19+010 to km 19+190	00	Elephant Underpass from km 19+010 to km 19+190	00
6	Road widening work from km 19+190 to km 19+746	3.023	Road widening work from km 19+190 to km 19+746	105095.73
	Total	433425.64		367825.6
	Balance Quantity	**65600.03**		

Total quantity of generated muck to be disposed is65600.03 Cum.
Add Swell factor 25% for Rock/Earth material
So, Bank material is 100%/100= 1

20/7/20
परियोजना निदेशक/Project Director
भारतीय राष्ट्रीय राजमार्ग प्राधिकरण
National Highways Authority of India
पी0आई0यू0/PIU-Dehradun

Loose Material = Bank Material + Swell
Or
Loose = 1+ (25/100) = 1.25
Total Material to be disposed=considering swell factor =65600.03x 1.25= 82000.03 Cum

DISPOSAL OF MUCK

As detailed above total quantity of muck likely to be generated is 433425.64cum. Out this 433425.64 cum quantity of muck, 367825.6cum muck will be utilized in project work itself. Remaining/balance quantity of muck measuring **65600.03** cum need to be disposed off, which will be 82000.03 Cum after addition of swell factor @ 25 %.

This is a not a very less in quantity and will be further utilized in construction camp / making haul road/balancing work in additional area taken for temporary work and approach road.
In case, there is remaining material (muck), it will be re-utilized in another section of this road km 00+00 to 16+115 (Uttarakhand Part) for raising embankment near elephant underpass and approach roads.
Further, in case of additional generation of muck due to unpredicted calculation like land slide etc, the generated muck will be utilized in another green field road project namely "Eastern peripheral Expressway to Saharanpur bypass road project. This road section is also proposed to be constructed along with this project road and are located at a distance of about 50 km. Being a green field road having 118 km road length, requires large quantity of material and remaining quantity of muck/ disposal material of Ganeshpur- Dehradun road project will be used in this road section as filling material/other suitable use. The cost for transportation of muck is included in contract agreement of contractor/concessionaire. No separate muck disposal area and plan is required.

As, muck is property of Forest Department royalty will be paid as per prevailing norm.

SL	Particulars	Remarks
1	Calculation of muck to be generated. Swell factor to be applied.	Total quantity of generated muck is 433425.64Cum. Add Swell factor 25% for Rock/Earth material So, Bank material is 100%/100= 1 Loose Material = Bank Material + Swell Or Loose = 1+ (25/100) = 1.25 Total Material to be disposed (433425.64- 367825.6= **65600.03)** considering swell factor =**65600.03** x 1.25= 82000.03 Cum Note- Component wise quantification is given in above table.
2.	Quantity of muck to be utilized in the project activities	367825.6Cum
3.	Balance quantity of muck which requires disposal/ management plan.	Without swell factor/original quantity = 433425.64Cum With swell factor (@25%)= 82000.03 Cum
4	Carriage of muck from the muck generation site to the dumping site.	As per contract condition muck will be carried by contractor at their own cost which will be included in civil cost.
5.	Ownership of land and the consent of land owners in case muck	Another section of this same road (Ganeshpur-Dehradun) is under ownership of NHAI.

	disposal is proposed on non-forest land.	For construction of road namely "Eastern peripheral Expressway to Saharanpur bypass road project", is being acquired and will be under ownership of NHAI.
6	Photograph & carrying capacity of proposed dumping site (Muck disposal site)	Carrying capacity of proposed site is much more than required disposal quantity (82000.03 Cum). The length of green field 4 lane road is 118 km and average embankment height is 2 meter with 60-meter width/RoW.
7	Development of dumping site-construction of retaining walls and other structure as per requirement of the site. The objective is to completely stop rolling down of the muck.	Not applicable, due to above mentioned reason in column no. 6.
8	Rehabilitation of dumping site like leveling, planting of grass, shrubs and tree species.	Not applicable, due to above mentioned reason in column no. 6.

Note: - Cost to be incurred on the above activities has to be given component wise. Details of dumping site including length, width and height of structures to be erected must be mentioned. - included under civil cost.
Undertaking by user agency has to be given to the effect that:
*1. Muck management plan will be implemented by user agency and in case of non-implementation of plan; they will be liable to penalty / action at their cost- **Agreed***
*2. The proposed dumping site is located away from river/ stream/ Nala.-**Yes***

Date 20/07/2020

Place: - Dehradun

GM (Tech) cum Project Director
NHAI-PIU Dehradun
Uttarakhand.
Name: - Vibhav Mittal

Signature & Seal

Attachment – 8

Muck Disposal Plan

Name of Project: - *"Improvement, upgradation and construction of Ganeshpur-Dehradun road (NH72A) in the state of Uttar Pradesh (Km 0.0 to Km 16.160) and Uttarakhand (km 16.160 to km 19.785) to 4 lane configuration"*

INTRODUCTION

Around 14 km project road alignment is located on rolling and hilly terrain, significant quantity of material would be excavated for construction of Tunnel, foundation work, hill cutting work for establishing of project road alignment.

Muck generation is considered a significant impact on land environment and the excavation shall result in large quantity of excavated material i.e. muck which shall have to be evacuated and disposed of in a planned manner so that it takes a least possible space and is not hazardous to the environment. The muck disposal sites cause increased sedimentation in the rivers (though insignificant compared to natural sedimentation) and totally spoils the visual aesthetics of the area. It is of prime importance that these sites will have to be rehabilitated as soon as the disposal sites are full.

QUANTITY OF MUCK TO BE GENERATED

Based on the geological nature of the rocks and engineering properties of the soil, a part of the muck generated can be used as construction material in road work. The balance needs to be suitably disposed. Normally, muck is disposed in low-lying areas or depressions. Trees, if any, are cut before muck disposal, however, shrubs, grass or other types of undergrowth in the muck disposal at sites persist. The muck disposal sites will be suitably stabilized on completion of the muck disposal.

MUCK GENERATION FROM PROJECT COMPONENTS AND UTILIZATION

SL	Project Component	Muck Generation Quantity	Project Component	Muck utilization Quantity
1	Road and tunnel	**488307.00**	For road work	**517975.00**
2	For foundation work	39283.00	-	--
	Total	**527590.00**		**517975.00**
	Balance Quantity	**9615.00**		

Total quantity of generated muck to be disposed is **9615.00** Cum.

Add Swell factor 25% for Rock/Earth material

So, Bank material is 100%/100= 1

Loose Material = Bank Material + Swell

Or

Loose = 1+ (25/100) = 1.25

Total Material to be disposed=considering swell factor =**9615.00 x** 1.25= **12,018.75**Cum

DISPOSAL OF MUCK

As detailed above total quantity of muck to be generated is 527590.00 cum. Out this 527590.00 cum quantity of muck, 517975.00 cum muck will be utilized in project work itself. Remaining quantity of muck 9615.00 cum need to be disposed off safely which will be 12,018.75 cum after addition of swell factor @ 25 %.

This is a very less in quantity and will be further utilized in construction camp / making haul road/ approach road.

In case, there is remaining material (muck), it will be re-utilized in another section of this road km 16+115 to 19+746 (Uttarakhand Part) for raising embankment near elephant underpass at two locations.

As, muck is property of Forest Department royalty will be paid as per prevailing norm

22/8/20

श्री पी.के. मौर्य/ P.K. Mourya
Project Director
National Highways Authority of India
(Ministry of Road Transport & Highways)
Dehradun

SL	Particulars	Remarks
1	Calculation of muck to be generated. Swell factor to be applied.	Total quantity of generated muck to be disposed is **9615.00** Cum. Add Swell factor 25% for Rock/Earth material So, Bank material is 100%/100= 1 Loose Material = Bank Material + Swell Or Loose = 1+ (25/100) = 1.25 Total Material to be disposed=considering swell factor =**9615.00** x 1.25= **12,018.75** Cum Note- Component wise quantification is given in above table.
2.	Quantity of muck to be utilized in the project activities	**517975.00** Cum
3.	Balance quantity of muck which requires disposal/ management plan.	Without swell factor/original quantity = **9615.00** Cum With swell factor (@25%) = **12018.75** Cum
4	Carriage of muck from the muck generation site to the dumping site.	As per contract condition muck will be carried by contractor at their own cost which will be included in civil cost.
5.	Ownership of land and the consent of land owners in case muck disposal is proposed on non-forest land.	With NHAI-PIU Dehradun.
6	Photograph & carrying capacity of proposed dumping site (Muck disposal site)	Carrying capacity of proposed site is much more than required disposal quantity (**12018.75** cum).
7	Development of dumping site-construction of retaining walls and other structure as per requirement of the site. The objective is to completely stop rolling down of the muck.	Not applicable, due to above mentioned reason in column no. 6.
8	Rehabilitation of dumping site like leveling, planting of grass, shrubs and tree species.	Not applicable, due to above mentioned reason in column no. 6.

Note: - Cost to be incurred on the above activities has to be given component wise. Details of dumping site including length, width and height of structures to be erected must be mentioned. - included under civil cost.
Undertaking by user agency has to be given to the effect that:
*1. Muck management plan will be implemented by user agency and in case of non-implementation of plan; they will be liable to penalty / action at their cost- **Agreed***
*2. The proposed dumping site is located away from river/ stream/ Nala.-**Yes***

27/08/20

Date 27/08/2020

Place: - Dehradun

GM (Tech) cum Project Director
NHAI-PIU Dehradun
Uttarakhand.
Name: - Pankaj Kumar Mourya

Signature & Seal