

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

Action Taken Report

in compliance of orders dated 26.07.2023 & 09.11.2023

In matter of: In re : News item published in The Tribune dated 16.01.2023 titled
"Joshimath disaster a warning for Mussoorie"

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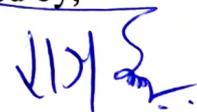
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Date: 12.03.2024

Place: Dehradun

Filed by,

Signature:



Name:

Dr. Rajendra Singh
Scientific Officer
UKPCB, Dehradun

Action Taken Report

In matter of

Original Application No. 51 of 2023

In matter of: In re :

News item published in The Tribune dated 16.01.2023 titled “Joshimath disaster a warning for Mussoorie”

I. BACKGROUND

1. That the Hon’ble National Green Tribunal, Principal Bench, New Delhi, in matter of Original Application No. 51/2023, In re: News item published in The Tribune dated 16.01.2023 titled “Joshimath disaster a warning for Mussoorie”, pleased to direct *inter alia* following directions on dated 09.11.2023:

“.....

5. *We find that the UKPCB has not given any time bound schedule and mainly some general proposals have been made. The direction of the Tribunal on 26.07.2023 was very clear to prepare an action plan identifying issues, remedial actions to be taken and agencies accounted for implementation/execution. No such action plan has either been prepared or produced before the Tribunal. Learned Counsel for UKPCB seeks three weeks’ time to place on record the action plan in terms of the directions of the Tribunal. The prayer is allowed.*
6. *List this matter on 24.01.2024.*

II. ACTION TAKEN

1. In compliance of the above directions, a meeting was held on 05.12.2023 under the Chairmanship of Principal Secretary, Forest, Environment & Climate Change, Government of Uttarakhand. After the due discussions and deliberations in each preventive and remedial measures, it was decided


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that concern department will provide action plan for execution of preventive and remedial measures.

Copy of the Minutes of Meeting held on dated 05.12.2023.2023 is enclosed as **ANNEXURE-1**.

2. Based on information and proposed action plan provided by the concern departments, Action Plan for execution of identified activities under “Preventive and Remedial Measures” is prepared and enclosed herewith as **ANNEXURE-2**.
3. The performance monitoring of STPs located in Mussoorie area are being carried out by Uttarakhand Pollution Control Board on monthly basis. Analysis report from April, 2023 to February, 2024 is enclosed herewith as **ANNEXURE-3**.
4. It is pertinent to mention that the State has already identified the activities for execution of suggestive “Preventive and Remedial Measures”. Some activities are already being executed by line departments, while some activities are part of regular activities. The proposed activities will to be completed within targeted time line.



मा.राष्ट्रीय हरित प्राधिकरण, नई दिल्ली में योजित मूल आवेदन संख्या-51/2023Suo Moto in Re: News Items published in the newspaper the Tribune, dated 16.01.2023 entitled "Joshimath Disaster a warning for Mussoorie" के संबंध में प्रमुख सचिव, पर्यावरण संरक्षण एवं जलवायु परिवर्तन विभाग, उत्तराखण्ड शासन की अध्यक्षता में दिनांक 05.12.2023 को सम्पन्न बैठक का कार्यवृत्त:-

उपस्थिति:-

1. श्री नितीन भदौरिया, अपर सचिव, शहरी विकास विभाग, उत्तराखण्ड शासन।
2. श्री विनीत कुमार, अपर सचिव, लोक निर्माण विभाग, उत्तराखण्ड शासन।
3. डॉ.पूजा गर्ब्याल, अपर सचिव, पर्यटन विभाग, उत्तराखण्ड शासन।
4. सुश्री कहकशां नसीम, अपर सचिव, पर्या.संरक्षण एवं जलवायु परिवर्तन विभाग, उत्तराखण्ड शासन।
5. श्री जे.एल.शर्मा, संयुक्त सचिव, सिंचाई विभाग, उत्तराखण्ड शासन।
6. श्री प्रदीप जोशी, संयुक्त सचिव, जलागम विभाग, उत्तराखण्ड शासन।
7. श्री विक्रम सिंह यादव, संयुक्त सचिव, आपदा प्रबन्धन विभाग, उत्तराखण्ड शासन।
8. श्री डी.एम.एस.राणा, संयुक्त सचिव, जलागम विभाग, उत्तराखण्ड शासन।
9. श्री एस.पी.सुबुद्धि, निदेशक, राज्य पर्यावरण संरक्षण एवं जलवायु परिवर्तन निदेशालय, उत्तराखण्ड।
10. श्री सुशांत पटनायक, सदस्य सचिव, उत्तराखण्ड प्रदूषण नियंत्रण बोर्ड, देहरादून।
11. श्री जयपालन सिंह, विभागाध्यक्ष, सिंचाई विभाग, उत्तराखण्ड।
12. श्री एन.पी.सिंह, सी.ई., लोक निर्माण विभाग, उत्तराखण्ड।
13. श्री डी.के.यादव, इंजीनियर, लोक निर्माण विभाग, देहरादून।
14. श्री अतुल गुप्ता, अधिशासी अभियन्ता, MDDA, देहरादून।
15. डा.एल.एन. मिश्रा, अपर निदेशक, शहरी विकास विभाग, उत्तराखण्ड।
16. श्री एस.एम. श्रीवास्तव, सी.टी.सी.पी., देहरादून।
17. श्री संदीप, ई.ई., पेयजल निगम, देहरादून।
18. श्री संजय कुमार, सी.ई. (एच.ओ.), पेयजल निगम, देहरादून।
19. श्री संजय सिंह, सी.ई. (जी.), पेयजल निगम, देहरादून।

सर्वप्रथम बैठक में उपस्थित समस्त प्रतिभागियों का स्वागत करते हुए बैठक का शुभारम्भ किया गया। बैठक में सदस्य सचिव, उत्तराखण्ड प्रदूषण नियंत्रण बोर्ड द्वारा अवगत कराया गया कि प्रश्नगत मूल आवेदन संख्या-51/2023 में मा.प्राधिकरण द्वारा दिनांक 26.07.2023 को पारित आदेश के क्रम में संबंधित विभागों से प्राप्त आख्यानुसार मा.प्राधिकरण में दाखिल Status Report on "Carrying Capacity of Mussoorie" रिपोर्ट के Preventive and Remedial Measures के अनुसार कार्यायोजना तैयार कर दिनांक 08.11.2023 को मा.प्राधिकरण में दाखिल की गई।

2- उक्तानुसार उत्तराखण्ड प्रदूषण नियंत्रण बोर्ड द्वारा मा.प्राधिकरण में दिनांक 08.11.2023 को दाखिल रिपोर्ट पर मा.प्राधिकरण में दिनांक 09.11.2023 को सुनवाई हुई, जिसके प्रस्तर-5 में मा.प्राधिकरण द्वारा निम्न निर्देश दिये गये हैं :-

05:- We find that the UKPCB has not given any time bound schedule and mainly some general proposals have been made. The direction of the Tribunal on 26.07.2023 was very clear to prepare an action plan identifying issues, remedial actions to be taken and agencies accounted for implementation/execution. No such action plan has either been prepared or produced before the Tribunal. Learned Counsel for UKPCB seeks three weeks' time to place on record the action plan in terms of the directions of the Tribunal. The prayer is allowed.

3- प्रमुख सचिव महोदय द्वारा बैठक में उपस्थित समस्त अधिकारीगणों के साथ विभागवार चर्चा/समीक्षा की गई एवं विचार-विमर्शोपरान्त सभी विभागों को यह निर्देश दिये गये कि प्रकरण पर मुख्य सचिव महोदय की अध्यक्षता में दिनांक 11.09.2023 को सम्पन्न बैठक के कार्यवृत्त संख्या-160582/2023 दिनांक 10.10.2023 में सुझाये गये Preventive and Remedial Measures तथा मा.प्राधिकरण द्वारा दिनांक 26.07.2023 एवं दिनांक 09.11.2023 में पारित आदेशों के क्रम में अपने-अपने विभाग में कार्ययोजना का ड्राफ्ट **Word Format** एवं **PDF** दोनों में तैयार करते हुए, तत्संबंधी सूचना दिनांक 15.12.2023 तक प्रत्येक दशा में उत्तराखण्ड प्रदूषण नियंत्रण बोर्ड, देहरादून (E-mail:- msukpcb@yahoo.com) & (Shri. Rajendra Kathait, Scientific Officer, UKPCB, E-Mail:-rskathait2009@gmail.com, Mob No-9412383118) को उपलब्ध कराना सुनिश्चित करें।

अन्त में सभी प्रतिभागियों का धन्यवाद ज्ञापित करते हुए बैठक का समापन किया गया।

Signed by Kahkashan
Naseem

Date: 14-12-2023 16:51:02
(कहकशा नसीम)

अपर सचिव।

उत्तराखण्ड शासन

पर्यावरण, संरक्षण एवं जलवायु परिवर्तन अनुभाग

संख्या- 175196/XXXVIII-1-2023

देहरादून: दिनांक:- 14, दिसम्बर, 2023

प्रतिलिपि:- निम्नलिखित को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित:-

1. अपर मुख्य सचिव/प्रमुख सचिव/सचिव, जलागम विभाग, लोक निर्माण विभाग, पर्यटन विभाग, कृषि विभाग, आवास विभाग, शहरी विकास विभाग, पेयजल विभाग, सिंचाई विभाग, वन विभाग एवं आपदा प्रबन्धन विभाग, उत्तराखण्ड शासन।
2. निदेशक, राज्य पर्यावरण संरक्षण एवं जलवायु परिवर्तन निदेशालय, उत्तराखण्ड।
3. सदस्य सचिव, उत्तराखण्ड प्रदूषण नियंत्रण बोर्ड, देहरादून।
4. विभागाध्यक्ष, सिंचाई विभाग, उत्तराखण्ड।
5. सी.ई., लोक निर्माण विभाग, उत्तराखण्ड।
6. उपाध्यक्ष, MDDA, देहरादून।

I/175196/2023

7. अपर निदेशक, शहरी विकास विभाग, उत्तराखण्ड।
8. प्रबन्ध निदेशक, पेयजल निगम, देहरादून।
9. गार्ड फाईल।

आज्ञा से,

Signed by Ashutosh Shukla

Date: 14-12-2023 17:06:11

(आशुतोष शुक्ल)

उप सचिव।

In the matter of O.A. No. 51 of 2023
In compliance of order dated 26.07.2023 and 09.11.2023

ACTION PLAN FOR EXECUTION OF PREVENTIVE AND REMEDIAL MEASURES

Preventive & Remedial Measures	Activities Identified	Responsible Department/ Agency	Remarks (Action already completed or is ongoing activity may be specified)	Action Proposed With specific Timeline
<p>1. For tunnel and major civil structures projects like hotel, hospital etc. it is suggested that detailed engineering and geological geotechnical investigations should be done as per BIS Codes and construction permission should only be granted after clearance of the report from the State/Centre appointed Statutory Body.</p>	<p>1. Office order for detailed engineering and geological geotechnical investigation as per BIS code. 2. Office order regarding procedure for granting permission for major construction.</p>	<p>Public Works Department (PWD)</p>	<p>Public Work Department (PWD):</p> <ul style="list-style-type: none"> ▪ Site selection and construction of major civil structures like-tunnel, building, bridge etc. are made only after intensive geological investigations through departmental geologist and as well as external specialized agencies, as and when required. Necessary order in this regard is already issued. ▪ Geotechnical investigation report is made an integral part of DPR and bridge and other heavy structures are being 	<p>Public Work Department has already made requisite provisions for construction of tunnel, heavy construction, bridges etc. Necessary Office order/Circulars have been issued.</p>

<p>2. The MDDA should develop a GIS based Decision Support System (DSS) for the use of the decision makers, managers and administrators, by putting all the</p>			<p>made prior geo-technical investigation as per IS:1892-1979 <i>Code of Practice for Subsurface investigation for foundation</i> and IRC: 78-2014 <i>Standards Specifications & Code of Practice for road bridges</i>.</p> <ul style="list-style-type: none"> ▪ Tunnel are made in accordance of IRC SP-91-2010 (Code for Practice for Subsurface Investigation for Foundation) guidelines. Standards prescribed by BIS are followed. ▪ Provisions of National Building code is being followed. 	
<p>2. The MDDA should develop a GIS based Decision Support System (DSS) for the use of the decision makers, managers and administrators, by putting all the</p>	<p>1. Development of GIS based Support System (DSS). 2. Integration of GIS based Decision Support System (DSS) of Mussoorie Town with high</p>	<p>Mussoorie Dehradun Development Authority (MDDA)</p>		<p>Mussoorie-Dehradun Development Authority (MDDA): GIS based Decision Support System (DSS) is being prepared through Gati Shakti Portal. The major features are – Slope Analysis, Disaster Prone Area, Geological</p>

<p>data/information (i.e. geological, geomorphological, hydrological, environmental and developed infrastructures) of the Mussoorie Town area in an integrated high resolution (i.e., 1:10,000) common geospatial web-based platform, viz., geoportal.</p>	<p>resolution (i.e 1:10000) common geospatial web based portal.</p>		<p>Report, Forest area & private forest areas. Timeline: 6-12 Months</p>
<p>3. Proper examination of existing building and it may be necessary to strengthen the retrofitting of structures to prevent them from sliding or collapsing. This could involve underpinning or adding reinforcement to the foundations. Technical auditing of multi-story buildings (≥ 3) by</p>	<p>1. Examination of existing buildings of Mussoorie town. 2. Strengthening and retrofitting of identified structures / reinforcement of foundation vulnerable structures of Mussoorie town. 3. Technical Auditing of multi-story</p>	<p>Mussoorie Dehradun Development Authority (MDDA) / Nagar Palika Parisad (NPP), Mussoorie</p> <p>Nagar Palika Parisad (NPP), Mussoorie: Nagar Palika Parisad, Mussoorie has identified a total of 19 building structures which have been categorized as unsafe. Notices have been served to residents/owners for demolition of these unsafe structures.</p>	<p>Mussoorie Development Authority (MDDA): In order to ascertain proper examination of existing building and retrofitting of structures along with technical auditing of multi-story buildings, MDDA has requested to Central Building Research Institute (CBRI), Roorkee for the same.</p>

<p>experts on annual or biennial basis can be conducted at MDDA level to know about the health of the building.</p>	<p>building (≥ 3 storied) on Mussoorie town on annual and biennial basis.</p>	<p>Public Works Department (PWD)</p>	<p>Public Works Department (PWD): While repairing of roads and other construction activities, stone/boulders are not removed, however, necessary strengthening activities are undertaken as per requirement of structure and slope stabilization. No blasting and stabilized rocks/stones are removed from landslide probe areas, however strengthening is done through gabion, breast wall. In this regard, Office Circular is already issued. Further, Chronic Landslide zone, Landslide Prone area/Slope Stabilization is done with consultation of Professionals/ Approved institutes like- GSI, IIT, Geo Technical Experts/Geologist.</p>	<p>Time line: 6-12 Months</p>
<p>4. When repairing roads or building structures, it was recommended that the boulders not be removed by digging or blasting the hillsides. In landslide prone areas, stones and boulders should not be removed from the bottom of the hill because this would remove toe support, increasing the likelihood of landslides. It is necessary to fill in any cracks that have appeared on the slopes.</p>	<p>1. SOP for repairing of roads and construction of buildings in Mussoorie town, to prevent landslide incidences.</p>	<p>Public Works Department (PWD)</p>	<p>Public Works Department (PWD): While repairing of roads and other construction activities, stone/boulders are not removed, however, necessary strengthening activities are undertaken as per requirement of structure and slope stabilization. No blasting and stabilized rocks/stones are removed from landslide probe areas, however strengthening is done through gabion, breast wall. In this regard, Office Circular is already issued. Further, Chronic Landslide zone, Landslide Prone area/Slope Stabilization is done with consultation of Professionals/ Approved institutes like- GSI, IIT, Geo Technical Experts/Geologist.</p>	<p>Landslide Treatment at Km 25 of NH No. 1 i.e Dehradun- Mussoorie State Highway is proposed after topographical, geological and geotechnical investigations and duly approved by IIT, Delhi. Following activities are proposed:</p> <ul style="list-style-type: none"> ▪ Slope correction & Re-profiling, Stabilizing the slide by providing a reinforced shored structure at the toe of hill side. ▪ Stabilizing the top of hill side using high tensile wire mesh punched with ground anchors & soil nails. ▪ Sub-surface rains (beneath shored Structure)

<p>consisting of Geo-Composite drain tube drainage with mini pipes, non-woven geotextile & additional semi perforated PVC pipes used to reduce the pore water pressure.</p>	<ul style="list-style-type: none">▪ Surface drain & Toe drains, intermediate toe drains at the berms & guiding the drain to the nearest sump.▪ Catchment drain shall be provided in every bench & at toe of hill/valley slope.▪ Rectangular shape relief culvert beneath the road to drain the water from back slope subsurface drain & toe drain.▪ Non-woven coir geotextile (as erosion control blanket). <p>Timeline: June, 2024</p>

<p>5. Provision of effective drainage system should be ensured. Due to the lack of proper surface draining system, the rainwater of most of the buildings is being infiltrated into the ground which generates sub-surface flow and accelerates the process of land creeping resulting in damage to buildings and other properties causing economic and environmental disruptions. For safeguarding the buildings and environmental conservation, it is necessary to ensure that the rainwater of each building roof is being drained out properly into the nearest natural drainage line.</p>	<p>1. Preparation of Drainage Plan of Mussoorie Town that includes indicating discharge of drain water of each building roof to natural drainage system.</p>	<p>Irrigation Department</p>	<p>Irrigation Department: An estimate of Rs. 48.75 lakh for preparation of GIS based Master Drainage Plan and DPR for Mussoorie City, Distt. Dehradun and sent to Secretary, Irrigation GoUK vide letter no. 3380, dated 30.10.2023. Further letter was sent to Secretary, Disaster Management, GoUK on dard 17.11.2023 for sanctioning of above estimate.</p> <p>The objective and scope of the above work is to prepare a detailed project report for Master Drainage Plan of Mussoorie town, Distt. Dehradun, Uttarakhand.</p> <p>It would include the following tasks:</p> <ul style="list-style-type: none"> ▪ To carry out detailed drainage studies of storm water of the Mussoorie Township. ▪ To prepare sustainable proper Master Drainage Plan for the Mussoorie township. ▪ To carry out Isotope Hydrological survey, Geo-Technical Survey, Geophysical 	<ul style="list-style-type: none"> ▪ After the approval of the estimate by the Uttarakhand government, the process of inviting tenders for preparing the drainage plan will be completed in approximately 60 days. ▪ Master Drainage Plan/DPR and Geological Study will be prepared within 09 months after completion of the tender process and determination of the agency for preparing the drainage plan. ▪ After formation of DPR, it will be sent to Uttarakhand Government for administrative and financial approval. <p style="text-align: center;">Timeline: 2 Months</p> <p>After the administrative and financial approval of the work is issued by the</p>
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<p>6. Phytoremediation of degraded slopes can be initiated, that can help to anchor the soil and prevent erosion. Broad leaved native trees can be promoted for stabilizing slopes, especially in the landslide prone areas.</p>	<p>1. Soil Conservation, afforestation and other soil stabilization activities to be carried out in degraded slopes.</p>	<p>Forest Department / Uttarakhand Landslide Mitigation and Management Center (ULMMC)</p>	<p>Survey and Sub-Surface Percolation study, a letter has been sent to the Director Wadia Institute of Himalayan Geology, Dehradun on dated 16.12.2023.</p> <p>A request for proposal (RFP) has been published on dated 15.12.2023 for selection of consultant firm providing consultancy services for preparation of GIS based Master Drainage Plan including DPR.</p> <p>Divisional Forest Division, Mussoorie:</p> <p>Some places affected by landslides and degraded slopes around Mussoorie have been selected for treatment. An action plan has been prepared as following:</p> <ul style="list-style-type: none"> ▪ Creation of Nursery for soil binding Plants (50,000 No.) ▪ Assisted Natural Regeneration of degraded areas by planting Oak saplings (100 ha.) ▪ Jute geo textile treatment for Stabilizing degraded slope (5 ha.) 	<p>Uttarakhand Government, the above work will be completed by the department in about 18 months.</p> <p>Timeline: 18 Months</p>
				<p>The works proposed in the action plan will be started from the year 2024 subjected to budget availability.</p> <p>Timeline: Dec. 2024</p>

			<p>Uttarakhand Landslide Mitigation and Management Center (ULMMC):</p>	<p>Proposal For Treating Landslide Prone Areas Around Mussoorie</p> <p>Assessment: Large scale topographic mapping of the area would be carried out using Total Station so as to facilitate large scale geological mapping.</p> <p>Time line: Feb., 2024</p> <p>A multi-institutional team comprising experts from GSI, IIRS, WIHG and IIT-R would be mobilized by ULMMC to assess the landslide threat around Mussoorie. Besides geology, geomorphology and land use, all active and dormant landslide zones around Mussoorie would be mapped through ground survey. Assistance of appropriate satellite imagery would also be taken for this work.</p> <p>Based on the data set so generated landslide hazard</p>
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<p>around Mussoorie would be assessed and active landslides to be treated would be identified.</p>	<p>Time Line: March, 2024</p>	<p>DPR for treatment: Based on the landslides identified by the multi-institutional team ULMMC would be engaging technical agency for preparing the DPR for slope treatment. It would be clearly specified in the terms of reference of the technical agency that preference be given to bio-engineering measures and in particular native plant species.</p>	<p>Time Line: June, 2024</p>	<p>Agency for Treatment: Suitable department of the State Government would be nominated for executing the works suggested in the DPR and the required budgetary</p>

<p>7. Water availability concerning to current demand in summer and winter months should be maintained and proper supply system to be ensured. Recharge / rejuvenation of natural springs should be explored with scientific intervention. Natural spring in the region should be monitored and re-charge activities (proper plantation) can be initiated on proper scientific basis. Springs</p>		<p>Peyjal Nigam/ Forest Department</p>	<p>provision would be made for treating the identified slopes. Time Line: 1-2 Years</p> <p>Post Treatment Monitoring: ULMMC would undertake post-treatment monitoring so as to ensure that there is no instability and the treated slope is stable.</p>																																				
<p>Uttarakhand Peyjal Nigam (UKPJN): Inventorization and Geo Mapping of existing sources have been carried out. Details of existing water sources are as follows :-</p> <table border="1"> <thead> <tr> <th>Title</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>Khanalty water source</td> <td>30°28'36''</td> <td>78°02'23''</td> </tr> <tr> <td>Under cliff water source</td> <td>30°28'66''</td> <td>78°02'45''</td> </tr> <tr> <td>Bansi water source</td> <td>30°27'51''</td> <td>78°02'45''</td> </tr> <tr> <td>Kandighat water source</td> <td>30°28'01''</td> <td>78°01'45''</td> </tr> <tr> <td>New Bee water source</td> <td>30°27'10''</td> <td>78°03'43''</td> </tr> <tr> <td>John Machenan water source</td> <td>30°27'19''</td> <td>78°03'40''</td> </tr> <tr> <td>Chamar Khadd water source</td> <td>30°27'22''</td> <td>78°03'32''</td> </tr> <tr> <td>Bhilaru water source</td> <td>30°28'01''</td> <td>78°04'03''</td> </tr> <tr> <td>Jincy water source</td> <td>30°28'24''</td> <td>78°04'18''</td> </tr> <tr> <td>Kolty water source</td> <td>30°28'02''</td> <td>78°06'33''</td> </tr> <tr> <td>Dhobighat water source</td> <td>30°26'58''</td> <td>78°04'50''</td> </tr> </tbody> </table>				Title	Latitude	Longitude	Khanalty water source	30°28'36''	78°02'23''	Under cliff water source	30°28'66''	78°02'45''	Bansi water source	30°27'51''	78°02'45''	Kandighat water source	30°28'01''	78°01'45''	New Bee water source	30°27'10''	78°03'43''	John Machenan water source	30°27'19''	78°03'40''	Chamar Khadd water source	30°27'22''	78°03'32''	Bhilaru water source	30°28'01''	78°04'03''	Jincy water source	30°28'24''	78°04'18''	Kolty water source	30°28'02''	78°06'33''	Dhobighat water source	30°26'58''	78°04'50''
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<p>(act as natural piezometers) are good indicators for any change in the groundwater in the mountainous area. Therefore, there is an urgent need to inventories all springs located in the vicinity/periphery of Mussoorie town. Their periodic monitoring may be a good tool for detecting any natural calamities events in advance in the mountainous regions.</p>			
	Company Khadd water source	30°27'29''	78°04'41''
	Brookland water source	30°26'45''	78°05'10''
	Nalapani water source	30°26'39''	78°05'11''
	Pargakhala water source	30°26'25''	78°04'57''
	Douglus dale water source	30°26'58''	78°04'59''
Sainti Pani water source	30°28'29''	78°03'10''	
<p>Uttarakhand Peyjal Nigam (UKPJN): Presently 7 MLD water is being supplied through various existing sources nearby Mussoorie by Uttarakhand Jal Sansthan. The work of Yamuna river water supply is going on and 85% work completed. Balance work is likely to be completed by 30 June 2024.</p>		<p>At present the water is being supplied to the Mussoorie town through various existing sources by Uttarakhand Jal Sansthan. The work of Yamuna water supply is being done by Uttarakhand peyjal Nigam and 85% work completed. At present 4 MLD water is being taken from Yamuna water supply scheme. After completion of scheme 11.70 MLD water will be supplied to the Mussoorie town. Time line: June, 2024</p>	

			<p>Mussoorie Forest Division, Mussoorie: Soil, moisture and water conservation related works are proposed in the action plan for recharge and rejuvenation of natural springs –</p> <ul style="list-style-type: none"> ▪ Contour Trench (20 ha.) ▪ Gully Plugging (5000 Nos.) ▪ Percolation Tank/Pond (50 Nos.) ▪ RR Dry Check dam (100 Nos.) ▪ Crate wire check dam (15 Nos.) 	<p>The works proposed in the action plan will be started from the year 2024 subjected to budget availability.</p> <p style="text-align: right;">Timeline: Dec. 2024</p>
<p>8. Spring-shed rejuvenation and management activities can be initiated on proper scientific basis for safeguarding and augmentation of the discharge of the springs</p>	<p>1. Spring-shed rejuvenation plan and Incentive based Mechanism (IBM) for protection and preservation of the springs/brooklet.</p>	<p>Forest Department</p>	<p>Mussoorie Forest Division, Mussoorie: A pilot project on Incentive Based Mechanism is being prepared for Bhiladu Water Spring in association with GIZ, Germany.</p>	<p>The works proposed in the action plan will be started from the year 2024 subjected to budget availability.</p> <p style="text-align: right;">Timeline: Dec. 2024</p>

and subsequently the local streams fed by springs. Since most of the water supply schemes of Mussoorie town are from the local springs/brooklet, incentive-based mechanism (IBM) can be adopted for effective protection and preservation of the springs/brooklet. Beside that recharge zones shall also increase soil moisture content which will help in enriching biodiversity through natural regeneration of trees, shrubs and grasses, etc. and shall increase both flora and fauna in the forest. On the other hand, due to increase in soil moisture content on forest land the incidences of forest fire, which are causing

<p>irreparable loss to the environment and the entire ecosystem will be controlled as a result of this mitigation measure.</p>				
<p>9. Roof top Rain water harvesting can be promoted to meet the deficit water demand, at least in the peak tourist period.</p>	<p>1. Provision of building by-law and office order/guidelines for rooftop rainwater harvesting.</p>	<p>Mussoorie Dehradun Development Authority (MDDA)</p>	<p>Mussoorie Development (MDDA): As per the Uttarakhand Building Construction and Development Byelaws, 2011 (as amended 2015), provision of rain water harvesting is mandatory in construction of more than 125 Sq. meter land covered area. Maps are being approved with rainwater harvesting provisions.</p>	<p>Necessary provisions are already made by MDDA.</p>
<p>10. Open rain water seepage must be stopped through the construction of a <i>pucca</i> drainage system. Water should not be allowed to accumulate in any depression; instead, drains should be</p>	<p>1. Preparation of Drainage Plan of Mussoorie town.</p>	<p>Irrigation Department</p>	<p>Irrigation Department: Same as point no. 5. Public Works Department: Public Works Department has already made provisions of drain along the road and lined drain in residential areas.</p>	<p>Same as point no. 5 Necessary Office Circulars are already issued by the Public Works Department.</p>

<p>built to transport it to safe areas.</p>		<p>Uttarakhand Peyjal Nigam/ UKPCB</p>	<p>Uttarakhand Peyjal Nigam (UKPJN):</p> <ul style="list-style-type: none"> ▪ 95% sewerage network of Mussoorie town is completed and only 5% area of outskirts area of Mussoorie is left. <p>Construction of sewerage network is under progress and to be completed by the July 2024.</p> <ul style="list-style-type: none"> ▪ 05 STPs of 7.32 MLD capacity, namely at Kulri-0.90 MLD, Landhour North-0.80 MLD, Bhattafall-3.12 MLD, Happy Valley-1.20 MLD and Landhour South-1.30 MLD are functional. ▪ 05 STPs of 3.25 MLD capacity, namely at Library-Bhiladu-1.10 MLD; Dhobughat-0.05 MLD, Camelback-0.70 MLD, Company Garden-0.70 MLD and Arcedia-0.70 MLD are under construction. ▪ The feasibility of reuse of treated water is being explored. 	<p>Sewerage Network and establishment of new STPs for Mussoorie town.</p> <p>Time line: July, 2024</p>
<p>11. Proper sewerage network and appropriate treatment facilities should be ensured. The sewage water should not be allowed to percolate or connect with natural ground water. Feasibility of reuse of treated water for secondary uses can be explored.</p>	<ol style="list-style-type: none"> 1. Existing sewerage network and sewage treatment capacity. 2. Proposed sewerage network and sewage treatment capacity. 3. Re-use plan of treated water from sewage treatment units. 			

			<p>Uttarakhand Pollution Control Board (UKPCB):</p> <ul style="list-style-type: none"> ▪ Performance monitoring of operational STPs is being carried out by the Uttarakhand Pollution Control Board on monthly basis. ▪ Performance monitoring carried out between April to December, 2023 is enclosed as Annexure-3. 	<p>Performance monitoring of STPs outlet.</p> <p>Time line: Regular activity</p>
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<p>12. Construction of new buildings are already restricted. Further, the new /additional construction related extension should be properly monitored. All the building foundations should be mapped by a competent engineering geologist to know about the safe bearing capacity of the foundation and treatment of cut slope. In consultation with the designer, type of foundation (footing, strip, raft) and height of building can be finalized. Then only after this, the map can be submitted to MDDA for approval.</p>	<p>1. Guidelines of building map approval keeping in mind safe bearing capacity of the foundation, treatment of cut slope, type of foundation and height of buildings.</p>	<p>Mussoorie Dehradun Development Authority (MDDA)</p>	<p>Mussoorie Development Authority (MDDA): The MDDA is competent authority for approval of maps for new constructions in Mussoorie area. Soil testing report, structural drawing of houses and geological report of site are mandatory requirement for consideration of maps in Mussoorie area. Apart from above, NOC from Mining department, Forest department and Uttarakhand Jal Sansthan is also required.</p>	<p>Necessary provisions have already been made by MDDA.</p>
<p>13. The regulations related to waste management should be strictly followed. Dumping sites</p>	<p>1. Compliance of Solid waste Management Rules, 2016 with</p>	<p>Nagar Palika Parisad, Mussoorie (NPP) /</p>	<p>Nagar Palika Parisad, Mussoorie (NPP): With specific reference to Rule-22 of Solid Waste Management</p>	<p>Material Recovery Facility (MRF):</p>

<p>around water bodies should be strictly restricted to prevent pollution threats on the important sources of drinking water of the city. QR code based Digital Direct Refund System should be implemented for management of plastic waste. IEC activities to be promoted amongst visiting tourist towards solid waste and plastic waste management.</p>	<p>specific reference to rule-22.</p> <ol style="list-style-type: none"> 2. Restrictions of dumping of solid waste near water bodies. 3. Status of QR Code based Digital Direct Refund System. 4. IEC activities among tourist towards solid waste and plastic waste management. 	<p>Uttarakhand Pollution Control (UKPCB)</p>	<p>Rules, 2016, following arrangement have been made by NPP, Mussoorie:</p> <ul style="list-style-type: none"> ▪ Waste processing facility is being set up at IDH area in Mussoorie. ▪ Material Recovery Facility (MRF) along with Bio-methanation plant has established. ▪ Mechanism for segregated waste transportation in covered vehicles. ▪ Solid Waste processing facility is about 250 meters from seasonal stream. ▪ QR code based Digital Direct Refund System (DDRS): Meetings were held with distributors, associations, Commercial and un-organized vendors. ▪ Conducting Information, Education and Communication (IEC) activities for effective management of waste. 	<p>Time line: Operational</p> <p>Operation of Bio-methanation Plant: Time line: Jan, 2024</p> <p>QR Code based Direct Digital Refund System (DDRS): Time Line: June. 2024.</p> <p>IEC Activity: Time line: Regular Activity</p>
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		<p>Uttarakhand Pollution Control Board (UKPCB):</p> <ul style="list-style-type: none"> ▪ Regulation for Waste Management: The provisions of Solid Waste Management Rules, 2016; Plastic Waste Management Rules, 2016 and notification related to banned SUPs is being followed. ▪ SUPs Grievance Portal: CPCB's SUPs grievance portal is being monitored and public complaints are duly redressed. Such activities are ongoing. ▪ IEC Activities: Under the IEC activities, UKPCB has undertaken awareness campaign at Municipal P.G. College, Mussoorie under "Mission LiFE" program. The Program include- introduction and objectives of "Mission LiFE", Pledge for "Mission LiFE" and exhibition on waste minimization and recycling of various types of waste. Such activities will be continued. 	<p>Time line: Regular Activity</p>
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<p>14. Strict measures should be made to promote the usage of biodegradable materials and ban on use of Single Use Plastics (SUPs) items should be strictly enforced.</p>	<p>1. Special drive for enforcement of banned SUPs items. 2. Promotion of bio-degradable alternatives of banned SUP items. 3. IEC activities.</p>	<p>Uttarakhand Pollution Control (UKPCB) / Nagar Palika Parisad (NPP), Mussoorie</p>	<p>Uttarakhand Pollution Control Board (UKPCB): i. Special drives at market places, <i>Mandis</i> etc. were undertaken against uses of banned Single Use Plastic (SUPs) items at various places of Dehradun. Activity includes, imposition of penalties and seizure of banned plastic items. ii. Special drives against use of Single Use Plastics (SUPs) items are carried out in Mussoorie and nearby areas jointly with urban local body. Emphasis is given in market places, wholesalers, <i>Sabji Mandis</i> etc. In case of non-compliance, penalty and Environmental compensation to be levied as per State Government Notification and CPCB guidelines, respectively. This activity is ongoing.</p>	<p>Time line: Regular Activity</p>
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<p>15. Local people should be involved in the Environmental Conservation programs and awareness/training</p>	<p>1. IEC activities on Environmental Conservation and awareness/training</p>	<p>Uttarakhand Pollution Control Board (UKPCB) /</p>	<p>iii. IEC activities with Schools/Colleges/Hoteliers etc. shall be continued.</p> <p>Nagar Palika Parisad (NPP), Mussoorie:</p> <p>i. Public notices were issued regarding banned SUPs and penal action against defaulters.</p> <p>ii. Extensive IEC activities including rallies with school children were undertaken by NPP, Mussoorie for discouraging banned SUPs. A total of 206 challans were made and imposed penalty of Rs.1,07,450.00 against violators.</p> <p>iii. Such IEC and enforcement activities will be continued.</p>	<p>Time line: Regular Activity</p>
<p></p>	<p></p>	<p>Uttarakhand Pollution Control Board (UKPCB):</p>	<p>IEC Activities: Under the IEC activities, Uttarakhand Pollution Control Board has undertaken</p>	<p>Time line: Regular Activity</p>

<p>on landslides, mountain risks, etc. to be initiated.</p>	<p>on landslides, mountain risks, etc.</p>	<p>Nagar Palika Parisad (NPP), Mussoorie</p>	<p>awareness campaign at Municipal P.G. College, Mussoorie under “Mission LiFE” program. The program include- introduction and objectives of “Mission LiFE”, Pledge for “Mission LiFE” and exhibition on waste minimization and recycling of various types of waste. Such activities with involvement of local people will be continued.</p>	<p>Time line: Regular Activity</p>
<p>Nagar Palika Parisad (NPP), Mussoorie:</p> <ul style="list-style-type: none"> ▪ Different activities such as – Poster making, slogan writing, essay writing were conducted in different schools. ▪ Tree plantation was carried out at different locations of town on the occasion of Harela festival. 			<p>Time line: Regular Activity</p>	

<p>16. Registration of tourists should be done according to carrying capacity of the area, especially the available parking space, guest room availability, etc. Tourist can be charged for visiting the Mussoorie area and the payment can be utilized for managing waste and cleanliness.</p>	<p>1. Registration of tourists and provision of eco-tax.</p>	<p>Tourism Department / Nagar Palika Parisad (NPP), Mussoorie</p>	<p>Nagar Palika Parisad (NPP), Mussoorie: Eco tax is being levied from tourist vehicles entering to Mussoorie by Nagar Palika Parisad, Mussoorie. Collected tax is being used for environment and tourism development activities of Mussoorie.</p>	<p>Uttarakhand Tourism: The registration process of Tourist for Mussoorie can be created and completed in next 30 days. Time line: Jan., 2024</p>
<p>17. New construction can be allowed for land owners/local inhabitants as per plan and by-laws of building construction of MDDA and carrying capacity with a specific control on height of the building, slope percentage, drainage and control construction in freeze zone.</p>	<p>1. Action Plan for permitting /restricting construction activities as per by-laws of building construction, height of building, slope percentage, drainage, and control construction in freeze zone.</p>	<p>Mussoorie Dehradun Development Authority (MDDA)</p>	<p>Mussoorie Dehradun Development Authority (MDDA): In order to restrict the new construction, the Government has earmarked the Mussoorie area into Freeze Zone and non-Freeze Zone. Approval of maps up to 100 Sq. Meter covered area with in Freeze zone and 150 Sq. Meter outside the Freeze zone area are being considered with restrictions of 30⁰</p>	<p>Necessary provisions have already been made by MDDA.</p>

			slope and permitted height. Moreover, such approval is being accorded to the permanent resident of Mussoorie only.	
<p>18. At present, the preparation of Master Plan of Mussoorie is in progress. The mitigation and preventive measures can be incorporated in the Master Plan for sustainable development.</p>	<p>1. Status of preparation of Master Plan of Mussoorie and incorporation of preventive and mitigation suggested.</p>	<p>Mussoorie Dehradun Development Authority (MDDA)</p>		<p>Mussoorie Dehradun Development Authority (MDDA): The Master Plan of Mussoorie is being prepared by the Town and Country Planning Department. MDDA has requested to the Town and Country Planning Department for incorporation of “Preventive and Mitigation measures” as suggested in the Master Plan of Mussoorie. Time line: Dec., 2024</p>
<p>19. For the smooth traffic management and to avoid traffic congestion the total number of permissible vehicles</p>	<p>1. Traffic Management Plan of Mussoorie town.</p>	<p>Traffic Police</p>	<p>Uttarakhand Traffic Police: Uttarakhand Traffic Police has worked out Traffic Plan for Mussoorie in order to manage</p>	<p>Time line: Regular Activity</p>

<p>may not be exceeded beyond the capacity of parking facility provided by Nagar Palika, Mussoorie, Tourism Department, MDDA, Hotels, <i>Dhramshalas</i>, <i>Gurudwaras</i> etc. The road side parking may be allowed subject to free flow of traffic as managed by the local police.</p>		<p>traffic load and avoid congestion. Traffic Police has also assessed available parking space in the City and accordingly Traffic plans - Plan-'A', Plan-'B', Plan-'C' and Plan-'D' have been prepared. Traffic Plan(s) will be executed as per graded response or situation.</p>	
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Uttarakhand Pollution Control Board
Performance Monitoring of STPs located in Mussoorie (Dehradun)

S.N o.	Name of the Sewage Treatment Plant (With Capacity)	Sampling Point						
		Inlet of STP			Outlet of STP			
		pH	BOD (mg/L)	TSS (mg/L)	pH	BOD (mg/L)	TSS (mg/L)	Fecal Coliform (MPN/100 ml)
APRIL- 2023								
1	3.12 MLD STP at Bhatta fall, Mussoorie	7.20	160	156	8.10	9.2	10	94
2	0.8 MLD STP at Landour(N), Mussoorie	7.10	180	175	7.40	8.4	09	84
3	0.9 MLD STP at Kurli Bazaar, Mussoorie	6.95	195	189	7.80	8.8	09	79
4	1.3 MLD STP at Landour (S), Mussoorie	STP found non-operational as plant was under maintenance work. (Date of Inspection: 01-04-2023.)						
5	1.2 MLD STP at Happy Valley, Mussoorie	STP found non-operational at the time of inspection. (Date of Inspection: 01-04-2023).						
MAY, 2023								
1	1.3 MLD STP at Landou (S), Mussoorie	7.20	180	178	7.70	9.2	10	350
2	3.12 MLD STP at Bhatta fall, Mussoorie	6.90	165	163	7.14	9.6	11	170
3	0.8 MLD STP at Landour (N), Mussoorie.	7.14	185	181	8.30	8.8	10	540
4	1.2 MLD STP at Happy Valley, Mussoorie.	7.05	195	199	7.80	10	13	16×10 ²
5	0.9 MLD STP at Kurli Bazaar, Mussoorie.	6.70	200	196	7.09	9.2	10	110

June, 2023								
1	1.3 MLD STP at Landour (S), Mussoorie	6.90	170	166	8.01	8.4	09	170
2	3.12 MLD STP at Bhatta fall, Mussoorie.	7.20	160	155	7.50	9.2	10	84
3	0.8 MLD STP at Landour (N), Mussoorie	7.60	180	175	7.90	8.4	09	220
4	1.2 MLD STP at Happy Valley, Mussoorie	7.01	190	192	7.40	9.2	11	140
5	0.9 MLD STP at Kurli Bazaar, Mussoorie.	6.80	195	193	7.30	10	12	280
July, 2023								
1	1.3 MLD STP at Landour (S), Mussoorie.	7.05	165	163	8.80	9.2	11	120
2	3.12 MLD STP at Bhatta fall, Mussoorie.	7.08	155	151	7.90	8.8	09	79
3	0.8 MLD STP at Landour (N), Mussoorie.	7.30	175	172	8.60	9.6	11	150
4	0.9 MLD STP at Kurli Bazaar, Mussoorie.	6.60	190	186	8.20	9.6	10	240
5	1.2 MLD STP at Happy Valley, Mussoorie.	STP was found closed and non-operational at the time of visit and also no any representative was present there. (Date of inspection: 10-07-2023).						
August, 2023								
1	1.3 MLD STP at Landour (S), Mussoorie	7.30	160	156	7.45	8.8	10	170
2	3.12 MLD STP at Bhatta fall, Mussoorie.	6.80	150	148	7.50	9.6	11	210
3	0.8 MLD STP at Landour (N), Mussoorie.	6.90	165	163	8.20	8.8	10	170
4	1.2 MLD STP at Happy Valley, Mussoorie.	7.10	180	185	7.40	10	14	210
5	0.9 MLD STP at Kurli Bazaar, Mussoorie.	7.50	180	178	7.90	8.8	09	1600

September, 2023								
1	1.3 MLD STP at Landour (S), Mussoorie.	7.27	165	163	7.84	9.2	10	210
2	3.12 MLD STP at Bhatta fall, Mussoorie.	7.35	155	151	7.89	9.6	09	170
3	0.8 MLD STP at Landour (N), Mussoorie.	7.45	175	173	7.96	9.2	10	220
4	1.2 MLD STP at Happy Valley, Mussoorie.	7.25	185	189	7.90	10	12	920
5	0.9 MLD STP at Kurli Bazaar, Mussoorie.	6.34	190	192	7.86	9.6	11	170
October, 2023								
1	1.3 MLD STP at Landour (S), Mussoorie.	7.30	170	167	8.11	10.0	11	920
2	3.12 MLD STP at Bhatta fall, Mussoorie.	8.14	150	147	8.35	8.8	08	130
3	0.8 MLD STP at Landour (N), Mussoorie.	7.47	170	168	8.30	10.0	12	350
4	1.2 MLD STP at Happy Valley, Mussoorie.	7.09	180	182	7.78	9.2	10	170
5	0.9 MLD STP at Kurli Bazaar, Mussoorie.	6.84	185	188	8.79	8.8	10	94
November, 2023								
1	1.3 MLD STP at Landour (S), Mussoorie.	6.55	165	163	7.05	9.6	10	350
2	3.12 MLD STP at Bhatta fall, Mussoorie.	6.44	145	143	7.55	9.2	09	170
3	0.8 MLD STP at Landour (N), Mussoorie	7.41	165	162	8.17	9.2	10	110
4	1.2 MLD STP at Happy Valley, Mussoorie	7.04	175	178	7.71	10.0	12	540
5	0.9 MLD STP at Kurli Bazaar, Mussoorie	6.66	190	192	7.99	9.2	11	130

December, 2023								
1	1.3 MLD STP at Landour (S), Mussoorie	6.85	160	156	7.31	9.2	09	170
2	3.12 MLD STP at Bhatta fall, Mussoorie.	6.91	150	147	7.11	8.8	08	140
3	0.8 MLD STP at Landour (N), Mussoorie	7.05	160	158	7.29	10.0	12	350
4	1.2 MLD STP at Happy Valley, Mussoorie.	7.42	180	184	7.63	10.8	14	920
5	0.9 MLD STP at Kurli Bazaar, Mussoorie.	6.84	185	188	7.38	9.6	12	220
January, 2024								
1	1.3 MLD STP at Landour (S), Mussoorie.	7.36	155	153	8.80	10.0	11	540
2	3.12 MLD STP at Bhatta fall, Mussoorie.	7.03	145	143	7.54	9.2	09	220
3	0.8 MLD STP at Landour (N), Mussoorie.	6.80	155	152	8.32	9.2	10	130
4	1.2 MLD STP at Happy Valley, Mussoorie.	6.84	175	177	7.89	8.8	09	170
5	0.9 MLD STP at Kurli Bazaar, Mussoorie.	6.65	180	182	7.98	9.2	11	170
February, 2024								
1	1.3 MLD STP at Landour (S), Mussoorie	6.71	150	147	7.11	9.2	10	350
2	3.12 MLD STP at Bhatta fall, Mussoorie.	6.62	140	136	7.30	8.8	08	110
3	0.8 MLD STP at Landour (N), Mussoorie	6.90	150	148	7.87	9.6	10	140
4	1.2 MLD STP at Happy Valley, Mussoorie.	7.13	170	173	7.48	9.2	10	130
5	0.9 MLD STP at Kurli Bazaar, Mussoorie.	6.95	185	189	7.78	10.0	13	280
Sewage Treatment final effluent standards (As Notified by MoEF&CC).					6.5-9.0	30	<100	<1000
Note: All values are in mg/l except pH, Fecal coliform (MPN Per 100 ml).								
