

## ENVIRONMENTAL COMPLIANCE OF MLHEP UPTO JUNE, 2020.

Ref: ENVIRONMENTAL CLEARANCE OF MYNTDU LESHKA H.E.PROJECT (3X42) MW.

VIDE MOEF's LETTER NO. J.12011/4/99 – IA - 1 DT the 26<sup>th</sup> Sept, 2001.

| Sl.No. | TERMS AND CONDITIONS   | COMPLIANCE/ACTION PLANS  |
|--------|--|--|
| i)     | <p><b>SPECIFIC CONDITION -A</b></p> <p>2500 HA degraded Catchment Area shall be treated within five years at a cost of Rs.26.55 lakhs.</p>   | <p>CAT works have been completed by different agencies like Soil Conservation Department, Horticulture Department, JHADC and MeECL except Forest Department. <b>Annexure -A.</b></p>   |
| ii)    | <p>Awareness among public as well as the miners through Govt. Agencies/NGO's/Local bodies should be created about the ill effects of unscientific coal mining and haphazard dumping.</p> | <p>During the construction period, several awareness programmed was conducted, along with Govt. Agencies and NGOs, in and around the catchment area of the MLHEP about the unscientific coal mining and hazardous dumping of coal. At that time, the response from the public was underwhelming as it highlighted the inefficiency of their mining techniques. Due to the NGT ban, the Project Authority has stopped all awareness programmed due to opposition of the public against the ban. <b>Annexure -B.</b></p>   |
| iii)   | <p>Govt. /Autonomous Bodies should be persuaded to undertake some Pilot Project for scientific mining. Successful demonstration will help in promoting scientific mining.</p>            | <p>During the construction period, the project authority had constructed pilot projects at several locations in the catchment area for treatment of Acid Mine Drainage. The projects comprised of limestone channels where Acid Mine Drainage was contained and neutralized before discharge into streams and proved successful. The same was also suggested to the local Headman and people as well as the coal miners association in the awareness programmes mentioned previously. Due to the NGT ban, some of the AMD treatment projects have been demolished by local miners as an act of retaliation against the ban. Hence, construction and maintenance of the pilot projects has been put on hold.</p> <p style="text-align: center;">The MeECL would like to continue the treatment of mine water and acid mine drainage by the biological process of phycoremediation by employing suitable strains of algae. This office has already contacted the concerned Consultant specialised in phycoremediation treatment of AMD and talks are underway.</p> <p><b>Annexure-C.</b></p> |

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| i v) | Dumping area should be identified and proper care should be taken for storage of coal. The dumping yard should have suitable cover to prevent rain water from coming into contact with dumped coal.  | Dumping area are identified and preventive measures like providing drainage system, retaining wall on the Coal dumping yards have been taken up at 8 miles, Lumshyrmit etc in collaboration with the owners of these dumping yards at various places of the Catchment area. The owners of these yards have been made to understand the importance of canalizing the coal wash and A.M.D through treatment tanks before allowing it to flow into the stream. The project authority along with the Meghalaya State Pollution Control Board headed the awareness program calling upon the local people, NGO's, Headmen of khlehriat East Jaintia Hills District which falls under CAT MLHEP to take up some preventive measure in a coal dumping area through pilot project. <b>Annexure-D</b> |
| v)   | Some of the tributaries are carrying water with pH value as low as 3.1 Possibility of extracting Sulphuric acid from such water may be explored. If found commercial viable, it will reduce the acidic inflow into the river besides providing employment opportunity. | A team from CSMRS, New Delhi, have submitted a final Report on chemical Investigation of water at Myntdu River and its tributaries to assess its long term effects on durability of concrete, (a copy of this Report have been furnished to MOEF, Regional) and as per their observation, extraction of Sulphuric acid from this water is not economically feasible as its presence is of insignificant in quantity and hence possibility of extracting Sulphuric acid from such water is not economically viable, incompliance to the condition laid down by M.O.E.F. Hence no further action was taken during this period.  |
| vi)  | The Environmental cell needs to be restructured to make it fully multi-disciplinary by including one Biologist and Chairman of the village Panchayat.  | During the construction of the project, an Executive Engineer headed the Environmental Division i.e Myntdu Leshka Civil Division –III along with Technical and Non- Technical Staffs were posted against this cell. But after commissioning of the Project the office have been shifted to Umiam,Ri-Bhoi Dist and renamed as office of the ExecutiveEngineer(C),Environment Division,MePGCL,Umiam.<br><b>Annexure-E</b>   |

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| vii)  | It is proposed to treat mine water and the Acid Mine Drainage (AMD) with lime before releasing into streams. Simply treating it with lime will not serve the purpose. AMD contains a number of metals like Zinc Sulphides (ZnS), etc. So AMD can be oxidized to corresponding oxides (FeO, ZnO <sub>2</sub> , MnO <sub>2</sub> and Al <sub>2</sub> O <sub>3</sub> ) which are hydrolyzed to form corresponding hydroxides and are precipitated out at pH more than 9. These metals are thus removed by removing the precipitate; otherwise the soluble metals (like Fe, Zn, etc) will interfere with plant nutrition of agricultural land. As such AMD should be allowed to undergo the above reaction during treatment. | The CSMRS vide their Final Report on chemical Investigation of water of Myntdu River and its tributaries to assess its long term effect on durability of concrete, have mentioned that the water quality of the river is fit for irrigation purpose (A copy of the extract has been furnished to MOEF, Office) Though this water is never used for irrigation purposes and the project is not a multipurpose project and on the downstream of Tailrace and Dam site, the river is flowing through a deep gorge till it reaches the international border of Indo-Bangla. |
| viii) | Monitoring of grasses in the project area should be done periodically and the existing types should be surveyed & kept on record and intimated to the MOEF. Conservation of the rare grasses along with other rare species as mentioned in the BSI report, if needed should be done in other adjacent areas around.  | During the construction phase of the project, a group of BSI Scientists had inspected the site during the year 2007, a report has not been received, even upon reminders sent officially, as well as talks in person. Enclosed, please find pictures from the site inspection with BSI officials, as well as official reminder. MeECL is still following up on the progress of the report and the same will be intimated to your office. However, till date there has been no response. <b>Annexure-F</b>   |
| ix)   | As the animals are expected to move to new habitat within the Catchment area of the lake, as suggested by the Chief Wildlife warden, 250 meter from the shore be declared as protected area where there will be no human activities.   | 250 meters above shore comprise a huge area of Orange plantation. This will create a conflict with local people since their livelihood is mainly in Orange cultivation. The matter is being taken up with Chief Wildlife warden, Shillong.  |
| x)    | Long-term permanent cultivation may be encouraged and financial support will be given by Me.S.E.B (now Me.E.C.L) to the villagers so that they do not indulge in shifting cultivation any longer. This will prevent soil erosion and vegetation will ensure moisture retention for the dam.  | Shifting cultivation within the Catchment area does not exist and villagers are not practicing this cultivation and rather habituated in long term permanent cultivation like cultivation of Oranges, Betel Nut, Betel Leaves, Broom stick etc. The Project Authority has distributed and encourages the Villagers of Thangbuli, Umladkhur, Iapmala and Suchen etc to take up the Orange Plantation works for which support and financial assistant are being provided by MeECL.  |
| xi)   | To minimize the adverse effects on wildlife, project authorities have to ensure that minimal damage is done even during the construction period, taking care to see that remedial measures are taken for any damage done.  | Only the minimum areas, required for construction of the infrastructural facilities such as roads, colonies, stone quarries etc, as well as for the structures such as Dam, Tunnel, Power House, Penstocks etc, will be subjected to construction activities. The Catchment area will not be affected by the Project activities.  |

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| xii)  | Revised cost of estimates Project covering appropriate fund requirements for the purposed management plan for improving water quality should be included in the revised cost and brought it to the notice of the CEA.  | The project authority has revised the Environmental completion costs amounting to Rs. 2034.34 lakhs including all the works taken up in the catchment area including improving water quality as well as in the project area. <b>Annexure – G</b>   |
| xiii) | Besides the existing PHC at Pdengshakap village, as additional health infrastructure, a Hospital is to be established near the vicinity of the Dam-site as proposed in the action plan. The Hospital should have all facilities for adequate health care covering emergencies, casualties prevention and control of vector born disease like Malaria, Japanese encephalitis, Maternity child health, Obstetrics and Gynaecology etc. | As informed during the site visit for monitoring of EC that the Hospital building is already made it could not be functioned, since no Doctor's responded formally to the advertisement for filling of the post probably due to the shortage of doctors and seclusion of the posting area. The PHC at Pdengshakap is 20Km from the farthest site i.e Power House and can be reached in 30-40 minutes and all medical needs are procured from this PHC. <b>Annexure – H</b> |

### GENERAL CONDITION 'B'

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| i)   | Adequate free fuel arrangement should be made to the labour force engaged in the construction work at Project cost so that indiscriminate felling of trees is prevented. Fuel depot (Kerosene) should be opened near the site to provide fuel to the labour force etc. | The Contractors/Firms engage around 400 to 500 labour forces for the construction work. The fire wood is being bought from established fire wood depots outside the project area at the cost of the contractors. More over no trees from the Project are being used as fire wood. It is also understood that no Kerosene can be supplied from fuel depot established in the project area.  |
| ii)  | Medical facilities as well as recreational facilities should be provided to the labourers. All the labourers to be engaged for construction works should be thoroughly examined by health personnel and adequately treated before issuing them work permits.           | As replied under specification condition 'A' (xiii) PHC at Pdengshakap is being utilised. All laborers' engaged during the construction works are periodically examined by Doctors and adequately treated. The concerned contractors engaging the labourers have been asked to get all labourers medically examined at periodic intervals before work permits are issued/renewed. The contractors have hired a local Doctor to come twice a week to their camp. They also have a dispensary and an ambulance near the Damsite. Recreational facilities arranged through the concerned contractors. |
| iii) | Restoration of construction area including dumping site of excavated materials at Dam-site should be ensured by leveling, filling up of borrow pits, land scalping etc. The area should be properly afforested with suitable plantation.                               | Restoration of areas affected by construction works has been taken up in consultation with the State Soil Conservation Dept., Social Forestry etc. Leveling of excavated materials, filling up of depressed areas and borrows pits etc has been carried out by erecting retaining walls along the river side, road side etc. so that the loose soil does not fall into the river or roll down the hill slopes. Also, stabilization of hill side slopes is being carried out with turfing, pallasiding etc.<br><b>Annexure 'I'.</b>   |
| iv)  | Downstream of the Dam, Flood-Zoning approach should be done. No settlement should be allowed within flood zone.  | There are no settlements downstream of the proposed Dam upto the Indo-Bangladesh Border where the River Myntdu enters Bangladesh. Flood Zoning approach will be adopted wherever necessary.  |

## FOREST CONDITIONS COMPLIANCE UPTO, JUNE, 2020.

Vide MOEF Ref: - No. F.No. 8-33/2000-FC Date: 6/5/2003

| Sl.No | TERMS AND CONDITION   | COMPLIANCE/ACTION PLANS  |
|-------|---|--|
| i)    | Legal status of the forest land shall remain unchanged.   | MeECL desires in keeping the legal status unchanged and respective Headman of the nearby villages are being requested so that negative impact of any sort of pressure on the forest is avoided.  |
| ii)   | Compensatory afforestation shall be raised and maintained over non-forest land identified and handed over to the State Forest Department for this purpose at the project-cost.  | 99 hectares of land in Kyrdemkulai, Ri-Bhoi District handed over to the Forest Deptt, Khasi Hills Division, Shillong. The matter is being pursued with the concerned office.   |
| iii)  | Felling of trees shall be confined to only such areas where it will obstruct project construction and it shall be done under strict supervision of the State Forest Department. | The felling of trees is being strictly confined to only the areas which need infrastructural Development such as roads and colonies besides the major Hydraulic Structures such as Dam, Power House, etc. The Range Officer pays regular visit to the site along with the Officers of Project authority in respect of felling of trees. Prior to the felling, trees were duly marked by the Forest Officers.               |
| iv)   | The Catchment Area shall be treated at the cost of User Agency as per the Catchment Area Treatment Plan.  | The CAT Plan has been carried out by District Council, Soil Conservation, Horticulture, Forest Department, and Me.E.C.L for implementation of the scheme. <b>Annexure 'A'</b> .  |
| v)    | Site for construction of colonies should be selected at such places where a minimum felling of trees is involved.   | Since Project Area constitutes 55 percent of Non-Forest Area, at present all the buildings (Temporary and Permanent buildings) including Inspection Bungalow are completed in those areas where not a single tree was felled. However, some buildings have been constructed and completed near the Power House Site where a few number of trees were fell down and intimation has given to State Forest Department office. |
| vi)   | Free fuel wood/alternate energy sources shall be provided to the laborers working at the project-site so as to avoid any pressure on the forest areas.                          | As mentioned in Sl.No (i) General Condition 'B' the project Authority have provided alternate energy i.e Electricity to all the labour camp of componies.  |
| vii)  | Water shall be made available free of cost for forestry and allied activities in the vicinity of the project.   | There are sufficient numbers of springs/small streams which are tapped for providing water wherever required. Also, the existing water supply arrangements at the colonies are utilized to supply water for forestry and allied activities.  |
| viii) | Green belt, preferably of native species, of adequate width shall be raised around the reservoir at the project cost.   | Above the Periphery line along the reservoir i.e. above the F.R.L Orange gardens covering of 25 percent to 30 percent of the area exist, and acts as a natural green belt, Me.E.C.L through land owner taken up Orange Plantation in all sides of Myntdu, Amshariang and Lamu rivers.  |

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| ix)   | The State Government shall issue Notification(s) under Section 4(or Section 29, as the case may be) of the Indian Forest Act, 1927 or the reservoir (to be created under the project) as RF/PF within six months w.e.f. the date of issue of this letter.                        | It is learnt that the state Forest Department is initiating into the matter.  |
| x)    | Reclamation of the quarries shall be carried out as per the reclamation plan at the project cost under the supervision of the State Forest Department. Reclamation of the quarries shall be completed as early as possible and in no case later than the closure of the project. | The works is completed in consultation with the Range Officer, Forest Deptt. (T) Jaintia Hills District.  |
| xi)   | The dumping area shall be stabilized, reclaimed and plantation of suitable species be carried out over dumping areas at the project-cost under the supervision of the State Forest Department.   | All preventive measures are taken up to checked the erosion of dumping soil construction of walls turfing, palasiding and plantation are carried out in consultation with state forest department.  |
| xii)  | The User Agency shall ensure that muck does not roll down the slopes, shall be rehabilitated at the project-cost under the supervision of the State Forest department.   | As mentioned above, all necessary steps are being taken to avoid the rolling down of muck along the hill slopes by providing walls wherever possible.   |
| xiii) | All efforts shall be made for protecting the environment at the project- cost.   | The Department is fully aware of its obligations in preserving the Environment of the project area. All officers, firms, local contractors during construction of the project have been instructed to keep this aspect in mind while executing various works of the project and are adhered to. |
| xiv)  | No labour camps shall be set up nor shall any habitation be allowed to come up in the forest area.   | As spelled out in point No. 5. No labour camps, habitation have been allowed in the forest area.  |
| xv)   | All efforts should be made by the User Agency to avoid any damage to the wildlife found in the area.   | All concerned personnel have been instructed not to disturb the wildlife and fully protect them in the vicinity of the project area and co-operation is being received from surrounding villagers.  |
| xvi)  | Steps should be taken to minimize biotic pressure over adjoining/nearby forests.   | Proper watch will be kept by the Project Authorities along with the villagers so that no damages are done to the existing as well as adjoining forest areas.  |
| xvii) | The forest land shall not be used for any purpose other than that specified under the proposal.  | Since the land for the Project is being acquired as per specific requirements plan, the land earmarked for the purpose will be strictly adhered to and will not be used for any other purposes and solely for the Project.  |

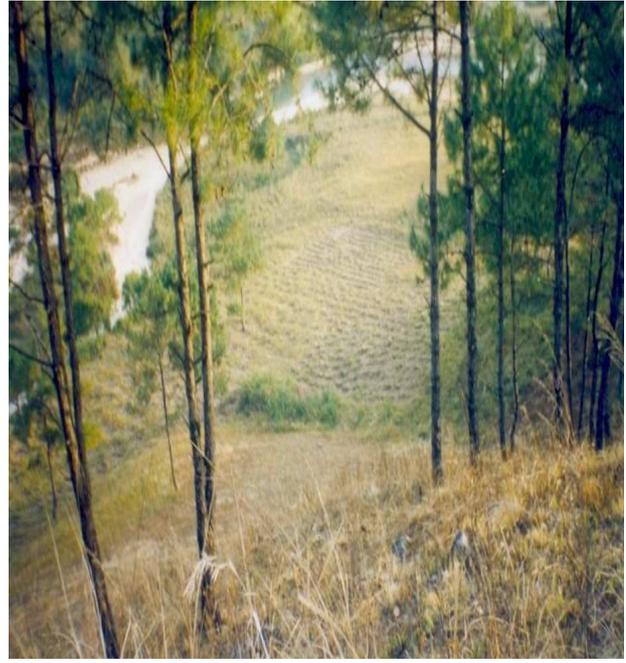
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|---|--|--|
| xviii)  | Any other condition that the State Government of the Chief Conservator of Forests (Central), Regional Office, Shillong, may impose from time to time in the interest of afforestation and protection and improvement of flora and fauna of the area. | The Project Authorities are committed and are observing all Guidelines being issued by the Ministry of Environment & Forest, (Regional) in the interest of proper and effective afforestation and also to provide a protection and improvement on Flora and Fauna of the area. |
| <b>Vide MOEF Ref: - No.No.J-12011/35/2008-IA-1 Date: 12/08/2008</b> |  |  |
| <b>SL.No</b>  | <b>TERMS AND CONDITION</b>   | <b>COMPLIANCE/ACTION PLANS</b>   |
| i   | <b><u>Specific condition-A</u></b><br>Since the proposed extension is toward the river side a protection wall shall have to be constructed to protect the power house from the flood water   | Construction of protection wall behind Power House, including streamlining of the river, is completed and Compliance with the condition.<br><b>Annexure-J</b>  |

**ANNEXURE - 'A'**

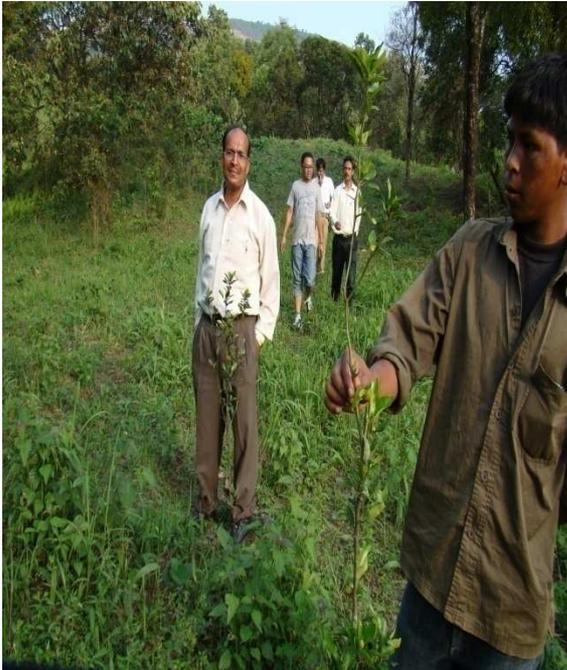
**PHYSICAL PROGRESS REPORT OF THE CATCHMENT AREA TREATMENT  
PLAN FOR MYNTDU LESHKA H.E.PROJECT (3X42 MW)**

| Sl. No.              | Items  | Unit      | Progress up to June. 2020 | Balance Quantity | Target Year of Completion | Remarks  |
|----------------------|--|-----------|---------------------------|------------------|---------------------------|--|
| Biological Measures  | Pasture Land   | 100 Ha    | Completed                 | Nil              | Completed                 | Works are in progress.                         |
|                      | Forest land (Barren & degraded)                        | 1400 Ha   | 1093.74                   | 206.26           | 2023                      | Forest Deppt.will take up the remaining works. |
|                      | Watershed Management                                   | 200 Ha    | 200Ha                     | Nil              | Completed                 | Completed                                      |
| Engineering Measures | Bench Terracing.                                       | 350 Ha.   | Completed                 | Nil              | Completed                 | Completed                                      |
|                      | Nalla bunding and gully plugging                       | 80 Nos.   | Completed                 | Nil              | Completed                 | Completed                                      |
|                      | Brush Dam  | 100 Nos.  | Completed                 | Nil              | Completed                 | Completed                                      |
|                      | Check Dam  | 5 Nos.    | Completed                 | Nil              | Completed                 | Completed                                      |
|                      | Half Moon Terracing                                    | 18750 Nos | Completed                 | Nil              | Completed                 | Completed                                      |
|                      | StreamBank Stabilizations                              | 20 km     | 52 Nos. walls             | Nil              | Completed                 | Completed                                      |
| Agronomic Techniques | Sub tropical fruit tree plantation (Orange plantation) | 450 Ha.   | 450 Ha                    | Nil              | Completed                 | Completed                                      |

**ANNEXURE – ‘A’**



**CAT Works Undertaken By Jaintia Hills Autonomous District Council.**



**Orange Plantation**

**Tree Plantation**

**CAT Works Undertaken By MLHEP, MeECL**

**ANNEXURE - 'B'**

**PHOTOGRAPHS OF AWARENESS PROGRAMMES**



**Amlarem**



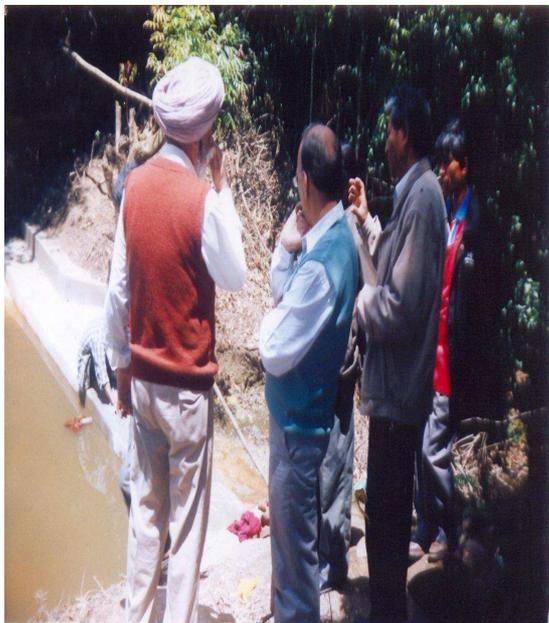
**Shohshrieh**



**Jowai**



**ANNEXURE – ‘C’  
PILOT PROJECTS**



**Mustem**

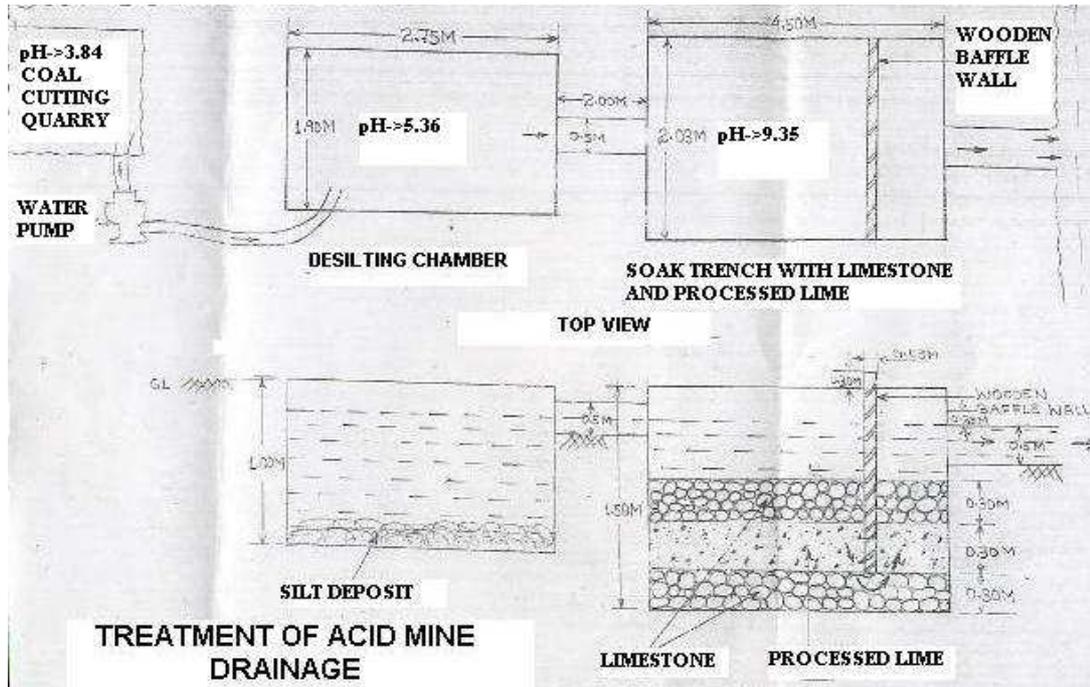
**Lumshyrmit**



**Shkentalang**



**Chyrmang**



**Schematic Diagram of a Pilot Project**



**Meeting with local miners**

**ANNEXURE – ‘D’**

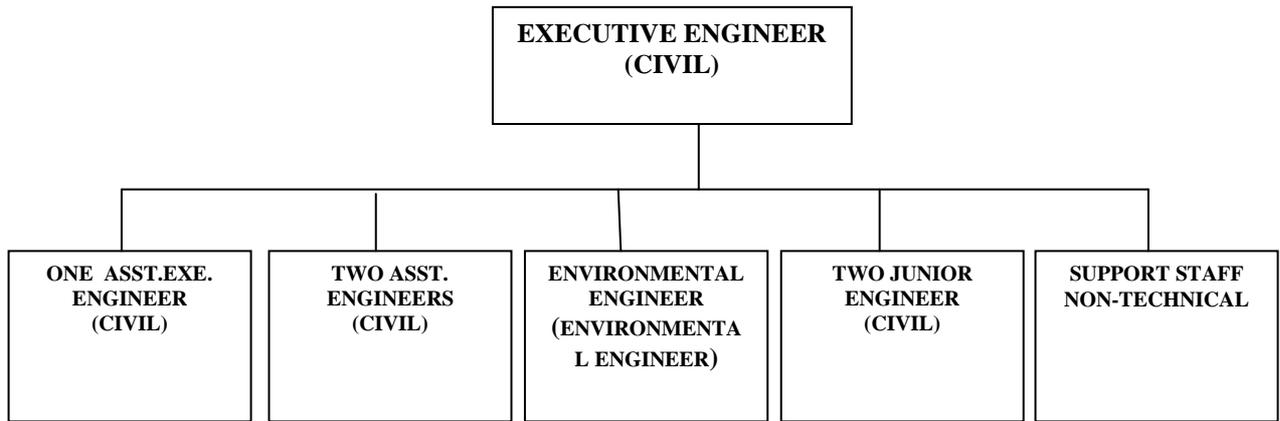
**DUMPING YARD**



**8<sup>th</sup> (Eight) Mile**

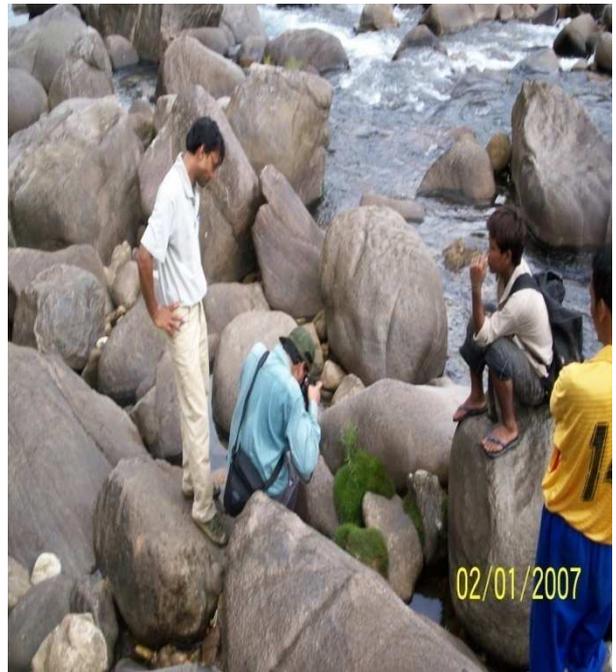
**ANNEXURE - 'E'**

**ORGANIZATIONAL CHART OF ENVIRONMENT DIVISION, MePGCL, UMIAM,  
RI-BHOI**



**ANNEXURE – ‘F’**

**MONITORING OF RARE GRASSES**



**Project Area**

**ANNEXURE - 'H'**

**Health Camp**



**Suchen**



**Shohshrieh**



**Pdengshakap**

**ANNEXURE - 'I'**

**Restoration & Stabilization of Soil**



**Breast wall**



**Bamboo pallasiding and Turfing**



**Energy dissipation**



**Boulder sausage**

## Annexure-J



**Protection Wall behind the Power House**